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When Actions Don't Lead to Results: The Puzzle of Non-Culmination

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When Actions Don't Lead to Results: The Puzzle of Non-Culmination

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Resumo

O presente trabalho tem como objectivo geral estudar a relação entre os processos culminados e o seus estados resultativos em português europeu. Tradicionalmente, o estado resultativo está implícito nos processos culminados (Vendler, 1957; Dowty, 1979; Moens & Steedman, 1988; Cunha, 2004; 2013; Oliveira, 2013). Ou seja, se “O João destruiu a aldeia” é verdadeiro, então “A aldeia está destruída” deve ser verdadeiro. No entanto, existem casos, designados de *non-culminating accomplishments*, em que um processo culminado permite uma interpretação em que o estado resultativo indicado pelo predicado não é necessário para que a predicação seja verdadeira. Por exemplo, “*Le médecin l'a soigné, mais il n'est pas guéri du tout* (O médico tratou-o, mas ele não está curado de todo)” não soa contraditório (Demirdache & Martin, 2015). A origem destas leituras não culminativas dos processos culminados ainda não obteve consenso, embora esteja a ser cada vez mais estudada em línguas tipologicamente não relacionadas (Koenig et al., 2017; Martin, 2019; Guéron & Vogeleer, 2021).

Neste trabalho, explora-se a hipótese de que os estados resultativos dos processos culminados em português europeu podem ser divididos em sete tipos, de acordo com as localizações temporais desses estados resultativos, o tempo de vida relevante da entidade descrita no evento, o uso do participípio, o significado lexical do verbo e a relação causal entre o estado resultativo e o processo culminado. As condições de verdade do estado resultativo podem depender do tipo de estado em questão (estados permanentes ou transitórios).

A existência de *non-culminating accomplishments* em Portuguese Europeu ainda não é clara. No âmbito deste estudo, foi realizada uma experiência com o objetivo de responder às seguintes questões: (1) Os *non-culminating accomplishments* são aceitáveis para falantes nativos de português europeu? (2) Que tipo de *non-culminating accomplishments* existe em português europeu? (3) O sujeito intencional é um requisito para leituras não culminativas? (4) Poderão diferentes tipos de estado resultativo afetar a aceitabilidade e o processamento dos *non-culminating accomplishments*? (5) Existem

dificuldades no processamento de diferentes tipos de *non-culminating accomplishments*?

A análise dos dados permitiu chegar às seguintes conclusões: (1) Os *non-culminating accomplishments* são aceitáveis para falantes nativos de português europeu até um certo ponto. (2) Existem quatro tipos de *non-culminating accomplishments* em português europeu: verbos do tipo “lavar”, verbos de transferência, verbos psicológicos transitivos e processos culminados incompletos (Guéron & Vogeleer, 2021). (3) Os sujeitos intencionais podem afetar a aceitabilidade dos *non-culminating accomplishments*, no entanto, a aceitabilidade dos exemplos com sujeitos não intencionais também é significativa. (4) Diferentes tipos de estados resultativos podem afetar a aceitabilidade dos *non-culminating accomplishments*; as frases são geralmente mais bem aceites quando o evento é mais desenvolvido. (5) As dificuldades de processamento dos *non-culminating accomplishments* em Português Europeu parecem limitar-se apenas aos *non-culminating accomplishments* do tipo “tentativa falhada” (*failed attempt*), o que indicia que este tipo de *non-culminating accomplishment* não existe em português.

Palavras-chave: [aspeto, processo culminado, estado resultativo, *non-culminating accomplishment*, processamento de frases]

Abstract

This work aims to study the relation between accomplishments and their result states in European Portuguese. Traditionally, the result state is implicit in the accomplishment (Vendler, 1957; Dowty, 1979; Moens & Steedman, 1988; Cunha, 2004; 2013; Oliveira, 2013). In other words, if “*O João destruiu a aldeia* (John destroyed the village)” is true, then “*A aldeia está destruída* (The village is destroyed)” must be true. However, there are cases, called non-culminating accomplishments, in which an accomplishment allows for an interpretation in which the result state indicated by the predicate is not necessary for the predication to be true. For example, “*Le médecin l’a soigné, mais il n’est pas guéri du tout* (The doctor treated him, but he is not cured at all)” does not sound contradictory (Demirdache & Martin, 2015). The origin of these non-culminative readings of culminated processes has not yet reached consensus, although it is increasingly being studied in typologically unrelated languages (Koenig et al., 2017; Martin, 2019; Guéron & Vogeleer, 2021).

This work explores the hypothesis that the result states of accomplishments in European Portuguese could be divided into seven types according to the temporal locations of these result states, the relevant lifetime of the entity described in the event, the usage of the participle verb form, the lexical meaning of the verb, and the causal relation between the result state and the accomplishment. The truth condition of the result state could depend on the type of state (permanent or temporary).

The existence of non-culminating accomplishments in European Portuguese is still unclear. As part of this study, an experiment was carried out to answer the following questions: (1) Are non-culminating accomplishments acceptable to native speakers in European Portuguese? (2) Which types of non-culminating accomplishments exist in European Portuguese? (3) Is the intentional subject a requirement for non-culminating readings? (4) Could different result states affect the acceptability and processing of non-culminating accomplishments? (5) Are there any difficulties when processing different types of non-culminating accomplishments?

The data analysis led to the following conclusions: (1) Non-culminating accomplishments are acceptable for native speakers of European Portuguese to a certain extent. (2) There are four types of non-culminating accomplishment in European Portuguese: *wash verbs*, *transfer verbs*, *transitive psychological verbs*, and *incomplete accomplishments* (Guéron & Vogeleer, 2021). (3) Intentional subjects can affect the acceptability of the non-culminating accomplishments; however, the acceptability ratings for non-intentional subjects are also significant. (4) Different result states can affect the acceptability of the non-culminating accomplishments; the sentences are generally better accepted when the event is developed further. (5) The difficulties of processing non-culminating accomplishments in European Portuguese seem limited only to *failed attempts*, indicating that this type of non-culminating accomplishment does not apply in Portuguese.

Key-words: [aspect, accomplishment, result state, non-culminating accomplishment, sentence processing]

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Introduction

The term “accomplishment” comes from Vendler (1957). Events or eventualities are categorized into activities, states, achievements, and accomplishments. In studies on typologies of aspectual classes, accomplishments denote time-extended events by default (when not modified by grammatical aspect) and have a natural (whether or not included in the lexical meaning of the verb) endpoint. Below are examples of accomplishments in European Portuguese.

(1). Accomplishments

- a. *O João construiu a casa.* (John built the house)
- b. *A Maria pintou a parede.* (Mary painted the wall)
- c. *O Pedro comeu a maçã.* (Peter ate the apple)

For example, in (1a), the event “John built the house” takes a certain amount of time by default. The event comes to an end when it reaches the natural endpoint, which is “the house is built”.

In the literature, there are typically two subevents associated with an accomplishment: the DO event and the BECOME event, as described by Dowty (1979) and Rothstein (2004), or the preparatory process and the culmination point, as discussed by Moens and Steedman (1988). In (1a), the first subevent would be the activity of “John building the house”, and the second subevent would be “the house being built”.

These two subevents are typically accompanied by a result state. The structure of accomplishments leads authors to believe that having a result is a key feature of verbs that denotes a change-of-state event (Parsons, 1990; Rappaport Hovav & Levin, 1998). Example (2) shows the result states of the accomplishments.

(2). Result states

- a. *O João corrigiu o exemplo.* (John corrected the example)
→ *O exemplo {está/ficou} correto.* (The example is correct)
- b. *O João aqueceu a sopa.* (John heated the soup)

→A sopa {está/ficou} quente. (The soup is hot)

c. O João empurrou o Pedro. (John pushed Peter)

→O Pedro {está/ficou} no chão. (Peter is on the floor)

Traditionally, the result states implied by the accomplishments should be associated with the truth condition of the accomplishment. It means that if “*O João destruiu a aldeia* (John destroyed the village)” is true, then “*A aldeia está destruída* (The village is destroyed)” should be true. However, studies have shown that in various languages, accomplishments do not always imply that the event has reached its culmination (Tatevosov, 2008; Martin, 2019; Guéron & Vogeleer, 2021).

Imagine a scenario where we hear the utterance “*O João lavou a camisa* (John washed the shirt)”. Does it mean that the shirt is clean? Or when we hear “*O João destruiu a aldeia* (John destroyed the village)”, can we be sure that no house remains standing in the village? In addition, the relation between the truth condition of the accomplishment and the truth condition of the result state could depend on the type of result state. For example, the result state in (2c) seems easier to deny (“John pushed Peter, but Peter is not on the floor”) than the result state in (2a) (“?John corrected the answer, but the answer is not correct”).

A non-progressive accomplishment that allows an interpretation in which the culmination and the result state are absent is called a non-culminating accomplishment. Examples of non-culminating accomplishments are provided in (3), where the result state can be easily denied in the second clause.

(3). Non-culminating accomplishments

a. *ts'áqw-an'-lhkan ti n-kíks-a lhkúnsa ku sq'it, t'u7 qelh-cál-lhkan ku k'wík'wena7 t'u natchw.* (St'át'imcets)

‘I ate my cake today, but I saved a little for tomorrow.’

(Bar-El, 2005:4)

b. *kerim ešik-ni ac-xan-dí, alaj boša-ma-Ɂan-dí.* (Karachay-Balkar)

‘Kerim opened the door, but didn’t finish.’

(Tatevosov, 2008:396)

c. *Le médecin l'a soigné, mais il n'est pas guéri du tout.* (French)

'The doctor treated him, but he is not cured at all.'

(Demirdache & Martin, 2015:202)

The phenomenon of non-culminating accomplishment is becoming increasingly well-studied across typologically unrelated languages. However, in European Portuguese, in particular, whether non-culminating accomplishments exist is still unclear. In the present study, I investigate the relation between accomplishment events and their result states in European Portuguese. In particular, the primary focus will be on how certain result states are easier to deny.

First, I will discuss how various types of result states relate to the accomplishment. In European Portuguese, result states could be expressed by verbal participles, ADJPs, ADVPs, PPs, or NPs. Some of them are individual-level predicates, and the others are stage-level predicates. Individual-level predicates express permanent or stable properties, while stage-level predicates express transitory or episodic properties (Carlson, 1977; Dowty, 1979; Kratzer, 1995). This means that the denial of the result state should only be possible with stage-level predicates.

Secondly, I will conduct an experiment to test the processing of non-culminating accomplishments in European Portuguese. In the literature, there are multiple types of non-culminating accomplishments, according to the lexical meaning of the verb and its relationship with the result state (Koenig et al., 2017; Martin, 2019; Guéron & Vogeleer, 2021). The present study will follow the typology proposed by Guéron and Vogeleer (2021), dividing non-culminating accomplishments into five types and testing their processing and acceptability in European Portuguese.

The present study is structured in four parts. In chapter one, I will review properties in the literature related to aspect. I introduce what has become the standard view in the literature on situation aspect and viewpoint aspect, as well as briefly introducing the

relation between aspect and tense, as well as aspect and modality. In addition, I will discuss the features that divide the situation aspect: dynamism, durativity, and telicity.

Chapter two introduces the concept of accomplishment and the properties of accomplishments. I review the work of Vendler (1957), Dowty (1979), Moens and Steedman (1988), and Rothstein (2004) in section 2.1 to section 2.5. In section 2.6 and 2.7, I will propose my typology of result states in European Portuguese.

Chapter three is dedicated to non-culminating accomplishments and their features. I will first discuss two important theoretical backgrounds frequently mentioned in theories concerning non-culminating accomplishments, causation and maximality, in section 3.1 and section 3.2. In section 3.2, I will propose a different view on maximality that does not rely on the traditional counterfactual causation theory, but instead uses the force theory to represent the event's structure. In section 3.3, I will provide a brief overview of the studies in the literature on non-culminating accomplishments. I will discuss the works of Tatevosov (2008), Wright (2014), Gyarmathy and Altshuler (2020), Martin (2019), and Guéron and Vogeleer (2021). After a brief discussion in section 3.4, I will show the prior experimental works in various languages that are related to the features of non-culminating accomplishment in section 3.5, including Foppolo et al. (2021) on Italian, Bott et al. (2024) on English and German, Minor et al. (2023) on Russian, Spanish, and English, Kasher and Hachohen (2023) on Russian, Kaplan et al. (2021) on English, and Fritz-Huechante et al. (2020) on Spanish and Korean. In section 3.6, I hypothesize the potential features of non-culminating accomplishments in European Portuguese.

In chapter four, I describe an experiment designed to test native speakers' processing and acceptability of non-culminating accomplishments in European Portuguese. The material in the experiment is created according to the typology in Guéron and Vogeleer (2021). Participants took part in both offline (a 5-point Likert scale) and online experiments (a self-paced reading task) using their own computers via the internet in a paradigm designed using the Penn Controller for Ibex, PCIBex (Zehr & Schwarz, 2018).

Sections 4.1 and 4.2 show the research questions and the methods of the experiment. In section 4.3, I analyze and discuss the results of the experiments.

I conclude the present study with general conclusions, a summary of the proposals made throughout the chapters, and some ideas for future work.

1. Aspect

In this chapter, I will discuss theories related to aspect, primarily lexical aspect. Aspect can be divided into grammatical aspect and lexical aspect. Grammatical aspect is often determined by grammatical morphemes in different languages, such as the simple past and progressive in English, or the perfect and imperfect in Portuguese. However, the grammatical aspect is linked to the lexical aspect of the situation, as it involves the combination of the lexical aspect, grammatical morphemes, and pragmatic interferences. On the other hand, the lexical aspect is typically regarded as the inherent temporal structure of a situation, and it can be used to describe various classes of predicates. This chapter will be brief, as it also serves as an introduction to the present study.

This chapter will be divided into five sections. In section 1.1, I will discuss theories about lexical aspect (situation types) and grammatical aspect (viewpoint aspect). I will use Smith's (1997) theory as an introduction to the grammatical aspect, as other studies on European Portuguese (Cunha, 2004; 2013) also seem to employ the term similarly to Smith (1997). Additionally, I will discuss the other two semantic categories related to aspect. 1.1.2 is for tense, and 1.1.3 is for modality.

In the following sections, I will discuss the parameters of situation types commonly used in the literature (Cunha, 2007; Leal, 2009): dynamism, durativity and telicity.

In section 1.2, I will discuss the theories concerning dynamism in Rothstein (2004) and Croft (2012). This feature divides situations into states, which are static, and events, which are dynamic. Dynamism is essentially related to change in a particular situation, whether or not there are differentiated and successive phases.

In section 1.3, I will discuss the theories about durativity, showing different perspectives. The durative feature concerns the duration of the given situation. In fact, what constitutes a durative event is a topic of debate in the literature. I will mainly follow the

theory presented in Piñón (1997), as it can address some problems that other theories introduce.

In section 1.4, the topic of discussion will be telicity. Telicity is essentially about whether or not there is an end to the situation itself. Atelic situations can continue indefinitely, and telic situations represent events that must cease at some natural point. I will discuss the theories of Tenny (1994), Krifka (1998), Jackendoff (1996), and Filip (2008) and try to address the strengths and weaknesses of each theory. The maximality theory in Filip (2008) is especially interesting as it introduces a pragmatic factor into the semantic theory of telicity, which will be discussed further in chapter three.

Finally, section 1.5 will be the conclusion of this chapter.

1.1. Aspect

In this section, I will briefly discuss three grammatical categories: aspect, tense and modality. I will focus on the differences between them, including aspect and tense, as well as aspect and modality. In addition, two categories of aspect are introduced using the terms “situation aspect” and “viewpoint aspect”. Finally, I will talk about the coercion theory that concerns the interaction between the situation aspect and the viewpoint aspect.

1.1.1. Situation aspect and viewpoint aspect

Traditionally, Comrie (1976) defines aspect as different ways of viewing the internal temporal constituency of a situation. The situation aspect involves classifying the event or state according to its temporal properties; it is the inherent property of the situation itself. Roughly speaking, we can distinguish situations in which something “happens” as events and situations where nothing changes as states.

For European Portuguese, Cunha (2004) categorises situation aspect into five types according to the differences in temporal properties of dynamism, durativity and telicity of the VP:

(1). Situation types¹

- State: static, durative (*ser alto* (be high), *estar doente* (be sick))
- Activity: dynamic, durative, atelic (*correr* (run), *beber leite* (drink milk))
- Accomplishment: dynamic, durative, telic, consisting of process and outcome (*escrever a tese* (write the thesis), *pintar um quadro* (paint a room))
- Semelfactive (Point): dynamic, atelic, instantaneous (*tocar o sino* (ring the bell), *espirrar* (sneeze))
- Achievement: dynamic, telic, instantaneous (*ganhar a corrida* (win the race), *chegar* (reach))

(Smith, 1997, p. 3)

Activity, accomplishment, semelfactives, and achievement can all fit inside the group of events, while states have their own group. Situation aspect is often called lexical aspect because certain verbs are associated with certain situation types. Still, the verb argument also plays an important role in determining the temporal property of the VP. The differences between a telic and an atelic event come from whether the event has a natural endpoint: telic events are events with a natural endpoint, while atelic events are events without a natural endpoint. I will follow Comrie (1976) and use “situations” as a general term: “situations” include “events” and “states”. States are static situations, i.e., continue as before unless changed. In contrast, events are dynamic situations, i.e., they require a continual input of energy if they are not to come to an end. (Comrie, 1976, p. 13) Durativity is a feature that distinguishes events which correspond to an interval of time and events which correspond to an instant of time. Note here that some authors consider the instantaneous feature as conceptual or an idealisation, while others think it truly takes no time at all, i.e., with zero duration:

¹ Situation types (or aspectual classes) were first proposed by Vendler (1957) and developed by Dowty (1979). However, there are other approaches to categorize situations, such as Bach (1986) and Verkuyl (1989). I use the five-way distinction here because it is more commonly used in the literature about aspect.

An event such as [win the race] may take several milliseconds, strictly speaking, without marring its categorization as [Instantaneous].

(Smith, 1997, p. 19)

Imagine that there are instantaneous events which - while not changes themselves - nonetheless presuppose changes in their immediate vicinity... I will argue that there are such instantaneous events and that they can serve as the denotata of achievements.

(Piñón, 1997, p. 1)

I will discuss the three features of situation types in detail in further sections. For now, let us assume the features of the situation aspect are the properties of the situations that the speaker wishes to describe and not the situation in the real world.² While situation aspect (lexical aspect) is an inherent property of the situation itself, viewpoint aspect depends more on the speaker's description of the situation. It usually involves an aspectual marker or a grammatical morpheme, which indicates the choice of the speaker about the situation.

Smith (1997) categorises viewpoint aspect into three types according to how much of a situation they make visible. The term "visibility" in Smith (1997) is the status of what is in focus in the event description. The three types are shown below:

(2). Viewpoint types

- Perfective viewpoints focus a situation on its entirety, including both initial and final endpoints.
- Imperfective viewpoints focus on part of a situation, including neither initial nor final endpoints.

² This is the view of Moens & Steedman (1988) and Smith (1997). There are different opinions. For example, Filip (1993) considers that "speakers may have different expectations about the way situations obtain or evolve in time" and that situation aspect "has more to do with our commonsense beliefs and expectation about various states of affairs." (Filip, 1993, p.111)

- Neutral viewpoints are flexible, including the initial endpoint of a situation and at least one internal stage (where applicable).

(Smith, 1997, p. 3)

The combination of situation aspect and viewpoint aspect makes sentences have aspectual meanings. From the speaker's perspective, the situation aspect is built up with the verb, the arguments and the adverbs and then combined with the speaker's choice of viewpoint, forming different types of sentences:

(3). Sentential aspect

- Perfective accomplishment: Portuguese: *O João comeu a maçã*. (John ate the apple).
- Imperfective accomplishment: Portuguese: *O João estava a comer a maçã*. (John was eating the apple).
- Perfective achievement: Portuguese: *A Maria atingiu o topo*. (Mary reached the top).
- Imperfective achievement: Portuguese: *O avião está a aterrar*. (The plane is landing).
- Neutral accomplishment³: French: *Jean mange une pomme*. (John is eating an apple).

1.1.2. Aspect and Tense

As mentioned above, aspect is not concerned with relating the time of the situation to any time-point other than the internal temporal structure of the event itself. This is because aspect is formed when the speaker concentrates on the internal temporal structure of the situation: whether the situation is dynamic or static, punctual or durative, repetitive or nonrepetitive, and whether the situation has a natural endpoint or not. There is, however, another verbal category that also concerns the temporal

³ This example is from Smith (1997).

structure of the event. This verbal category is tense: unlike aspect, tense concerns the time of the situation referred to some other time (Comrie, 1976).

Reichenbach (1956) classifies tenses as denoting a three-way relation between the time of speech (ST), the time of the event (ET) and the time of a reference point (RT). The reference time (RT) is marked by an adverb or contextually; the speech time (ST) is the moment the utterance is made; and the event time (ET) is the moment the event occurs. Dik and Hengeveld (1997) suggest that tense operators serve to locate the situation on the time axis in relation to some t_r . When t_r coincides with the moment of speaking, they call it Absolute Tense. When t_r is distinct from t_o , they call it Relative Tense.

They argue that tense operators distinguish the relation between the situation and t_r in the following parameters:

- the situation is anterior to, simultaneous with, or posterior to t_r ;
- the situation is relatively close to, or relatively far removed from t_r .

(Dik & Hengeveld, 1997, p. 238)

Both aspect and tense are based on an abstract "time" category. However, while tense deals with the external temporal relation between the time that the situation occupies and the time of speech or reference, aspect deals with the internal temporal profile of the situation itself. That is to say, tense is a relational category, and aspect is not. Boland (2006) provides a clearer illustration that can represent the difference between them. He argues that aspectual operators select relevant parts of the entire temporal structure of a situation (TSit) as TT (Topic time), and tense markers locate TT on the time axis in relation to the speech time (ST) interval.

Figure 1-1- Representation of perfect aspect: PRED-ed.

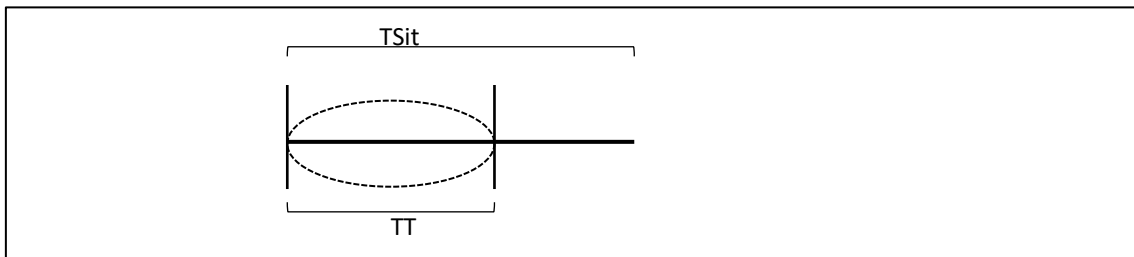


Figure 1-2- Representation of another perfect aspect: have PRED-ed.

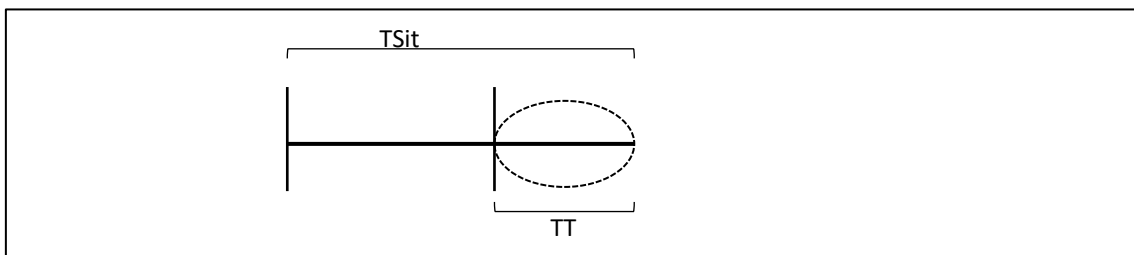


Figure 1-3- Representation of present tense and perfect: *Mary has written a letter.*

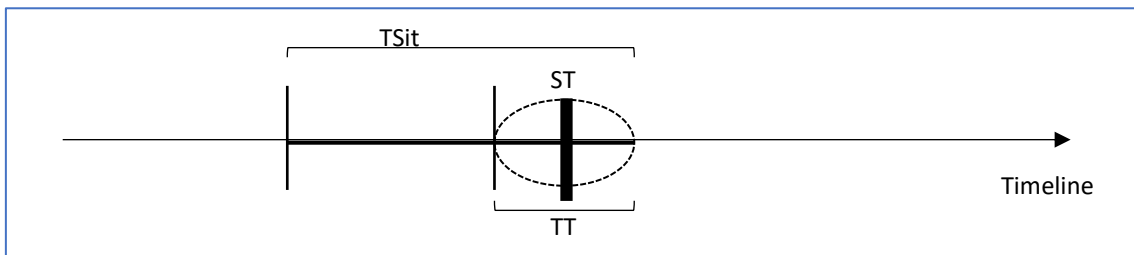
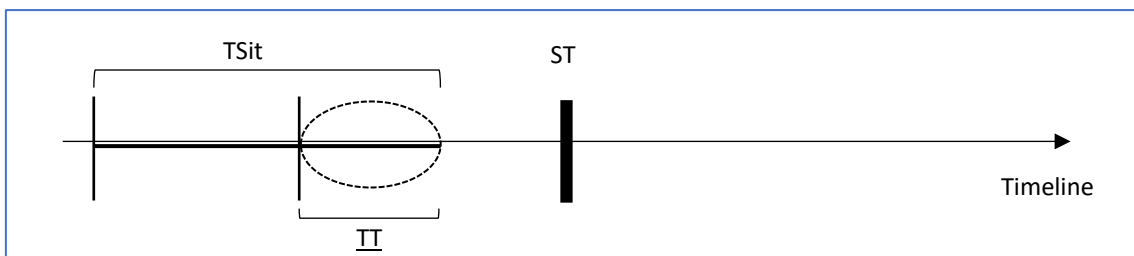


Figure 1-4- Representation of past tense and perfect: *Mary had written a letter.*



(Boland, 2006, p. 58)

Following Klein (1994), the TT in figure 1-1, 1-2, 1-3 and 1-4 are not the same as the time of the event in Reichenbach (1956), but only as “the time span to which the speaker’s

claim on this occasion is confined”. This means that TT is the time span in the description of the event, but not the time when the event occurs in the real world. For example, the speaker could choose to include in TT the entire time interval of the event, as in “Mary wrote a letter.” or only a part of the time span of the event, as in “Mary was writing a letter.” or “Mary stopped writing the letter.” In figure 1-3 and 1-4, the length of TT is selected by *aspect* and the position of TT on the timeline (relative to ST) is selected by *tenses*. That is why when we change the tense from present tense to past tense, the positions of TT and TSit change together.

To summarise, tense is inherently a relational category since it always involves more than one element. Aspect, on the other hand, ignores temporal relations that are external to it and only focuses on the internal scenario.

1.1.3. Aspect and modality

Another semantic category usually associated with tense and aspect is modality (Cunha, 2013). Like tense and aspect, modality has to do with the meaning of the sentence. However, unlike tense and aspect, modality does not concern how situations (events and states) are placed in time; rather, it concerns whether something is possible or necessary.

Cunha (2013) defines modality as the attitude toward what is being said. The attitude could come from the speaker (in the case of a simple sentence) or the person represented by the subject of the main clause (in the case of a complex sentence with a subordinate clause). Van Der Auwera and Plungian (1998) divide modality into four types: participant-internal modality, participant-external modality, deontic modality and epistemic modality. The first type, “participant-internal modality”, refers to a kind of possibility (the participant’s capability) or necessity (the participant’s internal need) internal to a participant engaged in the state of affairs. The second type, “participant-external modality”, refers to the possibility or necessity external to the participant involved in the state of affairs. The first two types are shown as examples below:

(4).

- a. Boris **can** get by with sleeping five hours a night. (participant-internal, possibility)
- b. Boris **needs to** sleep ten hours every night for him to function properly. (participant-internal, necessity)
- c. To get to the Station, you **can** take bus 66. (participant-external, possibility)
- d. To get to the Station, you **have to** take bus 66. (participant-external, necessity)

(Van Der Auwera & Plungian, 1998, p. 80)

The third type, “deontic modality”, is a subdomain of participant-external modality. It identifies the enabling or compelling circumstances external to the participant which relate to a permission or obligation that acts on the speaker or the person represented by the subject of the main clause. The last type, “epistemic modality”, refers to a judgement of the speaker and often represents the evaluation of probability by the speaker toward what is said. These two types are also associated with possibility and necessity. See examples below:

(5).

- a. *O chefe **permitiu** que os empregados fizessem ponte.* (deontic, permission/ possibility)
“The boss allowed the employees to take a break.”
- b. ***Tens de** me entregar o trabalho até amanhã.* (deontic, obligation/ necessity)
“You have to hand me the work until tomorrow.”
- c. ***Provavelmente**, a Ana vende a casa.* (epistemic, possibility)
“Ana will probably sell the house.”

d. *O Luís tem a certeza de que a Ana vai vender a casa.* (epistemic, necessity)

“Luis is certain that Ana will sell the house.”

(Cunha, 2013, p. 558)

Many authors (Coates, 2014; Lyons, 1977; Sweetser, 1982) refer to all types of non-epistemic modality as “root” modality. The link between aspect and modality is generalised in Abraham and Leiss (2008):

- Perfective aspect is compatible (converges strongly) with root modality.
- Imperfective aspect is compatible (converges strongly) with epistemic modality.

(Abraham & Leiss, 2008, p. 14)

According to Abraham and Leiss (2008), the perfective aspect and the root modality have two phases, one event phase and one implicative result phase. In addition, epistemic modality, like imperfective aspect, is monophasic. The configurations of situations are illustrated below:

(6).

a. Perfective aspect:

|>>>>>>>>>>|-----|
perfective event present state

b. Root modality:

|>>>>>>>>>>|-----|
root modal event projected future

c. Imperfective aspect:

|-----|
imperfective event

d. Epistemic modality:

|-----|
epistemic event

(Abraham & Leiss, 2008, p. 17)

For example, (6a) could represent the configuration of the sentence “John ate an apple.”, with the present state being “the apple was eaten”. (6b) could represent “John must eat the apple”, with the projected future being “the apple will be eaten”. (6c) and (6d) could represent “John was eating the apple” and “John must be eating the apple”, respectively. However, there would be no implicative phase in the configurations.

There is evidently more to the aspect-modality interface. I will not go into too much detail on this topic since this section just serves as an introduction to the modality category. In the end, modality focuses on whether situations are possible or necessary rather than how they are positioned in time. In addition, modality can be expressed through a wide range of linguistic categories, including verbs (like *have to*, *permit*), adverbs (like *probably*), adjectives (like *possible*) and nouns (like *assurance*).

1.1.4. Aspectual shift

There are some authors (Dowty, 1979; Filip, 1993; Rothstein, 2004) that suggest the VP would undergo a shift operation when combined with a viewpoint aspect (e.g., an achievement VP shifts into an activity VP in sentences like “Our pizza is arriving”) to maintain the theory of specific situation aspect are not compatible with specific viewpoint aspect, while there are others (Arche, 2013; Verkuyl, 1972) who suggest that situation aspect are independent from viewpoint aspect. Moens and Steedman (1988) coercion theory supports the first type of relation between situation aspect and viewpoint aspect. For example, they argue that the progressive auxiliaries (imperfective viewpoint) require their event⁴ to be an activity. If the event is not an activity, then it would change its type through a transition network, as shown below:

(7). Transition of situation aspect:

- a. Activity → accomplishment
- b. Activity → semelfactive
- c. Activity → state

⁴ Events and situations are used interchangeably here: event type = situation type.

- d. Achievement → semelfactive
- e. Achievement → accomplishment
- f. Achievement → state
- g. Accomplishment → activity
- h. Accomplishment → semelfactive
- i. Semelfactive → activity
- j. Semelfactive → achievement
- k. Semelfactive → state

(7) includes all the transition routes in Moens and Steedman (1988). In sentences like (8a), the accomplishment VP is coerced into an activity VP by route (7g). In sentences like (8b), the achievement VP is first coerced into an accomplishment by route (7e), then coerced again by (7g) into an activity.

(8). Progressives

- a. Roger was running a mile.
- b. Harry was reaching the top.

(Moens & Steedman, 1988, pp. 18-19)

If following the coercion theory, the sentential aspect of (8a) and (8b) would be the same because the construction would be both [progressive + activity]. However, as Rothstein (2004) points out, progressive achievements differ from progressive accomplishments in various ways:

(9). Difference between progressive achievements and progressive accomplishments:

- a. A temporal adverbial can be combined with a progressive achievement to locate its telic point, but it cannot locate the telic point of an accomplishment.

- b. Progressive achievements, unlike progressive accomplishments, cannot be modified by temporal adverbials, which include their beginning (*for x time/ halfway through*).

(Rothstein, 2004, pp. 42-44)

The differences in (9) are two important features in Rothstein (2004). Rothstein, embracing the coercion theory, suggests that the transition from an achievement to an accomplishment (route 7e) is, in fact, shifting it into an “abstract accomplishment”, which differs from normal accomplishment in the sense that there is no lexically specified event⁵ (we do not know what is the “abstract accomplishment”) thus we have no information about the left boundary of the “abstract accomplishment”. While it can explain (9b) because it would require information about both the left and right boundaries of the accomplishment to modify the beginning of the progressive achievement, the theory still could not address the problem in (9a). See the contrast below:

(10).

- a. Roger is running a mile in five minutes.
- b. Harry is reaching the top in five minutes.

If an operation turns the achievement in (10b) into an accomplishment, then the output should have the same properties as an accomplishment. However, as we can see, this is not the case. According to Rothstein, in (10a), the temporal adverbial can modify the activity part of the accomplishment and the telic point of the accomplishment. That is to say, (10a) could have the reading of “the beginning (left boundary) of the accomplishment event is located five minutes after the speech time”, and also the reading of “the telic point (right boundary) of the accomplishment is located five

⁵ According to Rothstein, the abstract accomplishment, which is the product of coercion, can only be represented by its culmination. For example, the abstract accomplishment that comes from the achievement “arrive at the station” could be “walk to the station”, “swim to the station”, or “fly to the station”. That is to say, the property of the activity part of the abstract accomplishment is lexically unspecified. Only the culmination of the abstract accomplishment is available as the denotation of the achievement.

minutes after the speech time”. In contrast, the temporal adverbial in (10b) can only modify the telic point, i.e., the reading of (10b) can only be “the telic point (right boundary of the derived “abstract accomplishment”) is located five minutes after the speech time”.

Coming back to the coercion theory in Moens and Steedman (1988), they state that the futurate progressive is a state derived from a preparatory process (activity), i.e., the VP in (10b) would go through two coercions: the first one turns the achievement into an accomplishment and the second one turns the accomplishment into the activity. This idea also faces the same problem: there should be no difference in the readings between (10a) and (10b) if the coercion operation turns both VPs into the same type. If following Moans and Steedman, the events in (10a) and in (10b) are both derived activities: “Roger is running a mile” = “Harry is reaching the top” = activity. However, as mentioned above, the temporal adverbial cannot modify the activity in (10b) as opposed to (10a). To be more precise, see the illustrations below:

Figure 1-5- Two readings of *Roger is running a mile in five minutes*.

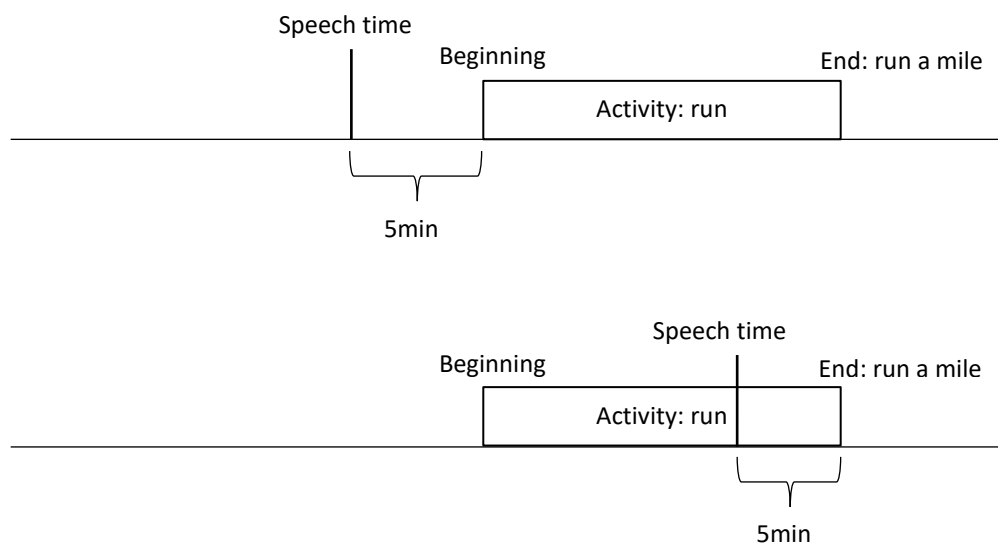


Figure 1-6- Reading of *Harry is reaching the top in five minutes*.

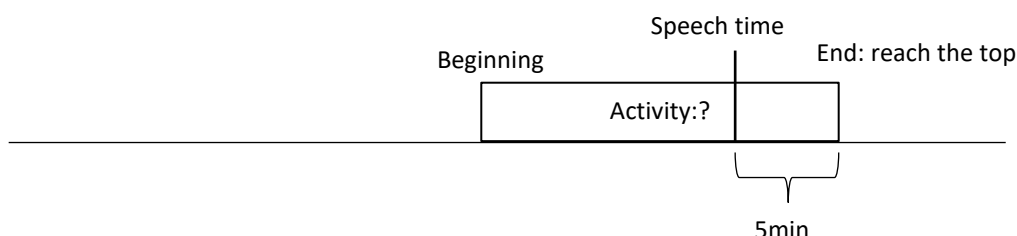


Figure 1-5 shows that (10a) can have two readings, with the temporal adverbial “in five minutes” modifying different parts of the timeline. However, (10b) can only have one reading, illustrated in Figure 1-6.

The second problematic example under coercion theories is that imperfective viewpoint cannot modify the telicity of the event. Arche (2013) argues that the truth condition of the progressive does not depend on the actual final culmination. If the progressive were an atelicity head (it turns the telic VP into an atelic VP), the culmination would not be available. That is to say, if a telic VP gets coerced into an atelic VP, some fundamental facts regarding the difference between homogeneous and heterogeneous VPs would be lost. This is because all VPs in the progressive would become alike. However, this seems not the case, as shown in the examples below:

(11).

- a. When Matisse met Picasso, he was painting his self-portrait.
- b. Maria’s first son was born when she was writing her thesis.

(Arche, 2013, p. 12)

Both (11a) and (11b) can have an interpretation that culmination is not reached (after the time interval), as well as the interpretation that culmination is reached (after the time interval).

If we know about Picasso, we know that he culminated the painting; however, that does not make (11a) anomalous. That is, (11a) is perfectly compatible with the situation in which Picasso finished his painting. If the hearer is familiar with Picasso's work, an interpretation in which the painting is understood as non-culminated does not arise. The same thing occurs in (11b); if you are familiar with the Maria of the sentence and you know that she actually completed her thesis, the interpretation of non-culmination does not arise. If the hearer is not familiar with her, however, then she or he has no foundation to draw any conclusion about whether Maria completed the thesis.

(Arche, 2013, p. 12)

As we can see, the addition of viewpoint aspect cannot change the telicity of the event. In addition, an observation (shown below) from Kearns (2003) further proves that events maintain their situation property when combined with progressives. Not only the telicity of the event cannot be changed by the progressive, but the duration of the event cannot be modified as well.

(12). VPs without duration

- a. # Despite sniper fire, Bates was still reaching the gate.
- b. # Despite sniper fire, Bates continued reaching the gate.
- c. # The flight is still arriving at Gate 10.
- d. # The flight continued arriving at Gate 10.

(Kearns, 2003, p. 11)

(13). VPs with duration

- a. Despite sniper fire, John was still eating the apple.
- b. Despite sniper fire, John continued eating the apple.
- c. Marry is still running.
- d. Marry continued running.

Comparing (12) and (13), the aspectual modifications like "continue" or "still" are well-formed with durative VPs, namely progressive accomplishments (13a) and (13b) and

progressive activities (13c) and (13d). In contrast, these modifications cannot be asserted into progressive achievements, showing that the temporally continuative reading is unavailable.

Note that if following the coercion theory, the structure of sentences in (12) and (13) would be the same. Taking (12b) and (13b) for example, they should both be represented as [quantized NP + still + durative VP], whether the VP in (b) is coerced into an accomplishment or an activity. Interestingly, the duration of the coerced durative VP is not accessible to continuative *still* and aspectual verb *continue*.

In the end, although the coercion or aspectual shift theory is widely used in the literature (Dowty, 1979; Filip, 1993; Moens & Steedman, 1988; Rothstein, 2004), there are still questions that are difficult to explain. In the present study of accomplishments, the idea is to understand the relation between the accomplishment and the result state of the accomplishment. The current study's scope may be excessively broad if the coercive theory is included. This is because derived accomplishments or "abstract accomplishments" would evidently be included in the discussion alongside their problematic behaviours. For this purpose, it would be essential to establish the directions of the present study to try not to employ the coercion theory in the following sections and chapters. I will try to only use the simplest form of accomplishments and avoid the coercive mechanism. Nevertheless, viewpoint aspect does add additional information to situation aspect, and situation aspect is the focus of the following sections.

1.2. Dynamism

One feature that determines an event's situation aspect is dynamism. To distinguish between states and events, Vendler (1957) first proposed that activities and accomplishments can occur in progressive and that achievements and states cannot. In addition, states differ from achievements since states correspond to a period of time, whereas achievements correspond to a unique moment.

According to Cunha (2013), a situation is dynamic if it includes a series of successive phases, and the initial state is likely to change. On the other hand, a non-dynamic or static situation does not include phases, and it takes place over a specific period of time without any change in the state of affairs described.

Essentially, dynamic situations include activities, achievements, accomplishments and points. On the other hand, only states are non-dynamic. See examples below:

(14). Dynamic situations and non-dynamic situations

- a. *correr* (run) (activity)
- b. *partir o braço* (break the arm) (achievement)
- c. *comer uma maçã* (eat an apple) (accomplishment)
- d. *bater à porta* (knock the door) (point)
- e. *estar doente* (be sick) (state)

(14a), (14b), (14c) and (14d) are dynamic, while (14e) is non-dynamic.

Dowty (1979)⁶ distinguish states and non-stative events with various linguistic tests:

- only non-statives occur in the progressive.
- only non-statives occur as complements of *force* and *persuade*.
- only non-statives can occur as imperatives.
- only non-statives co-occur with the adverbs *deliberately* and *carefully*.
- only non-statives appear in Pseudo-cleft constructions.
- statives do not have habitual interpretations in simple present tense.

(Dowty, 1979, pp. 55-56)

Situations are represented by VPs in (14). A dynamic situation is essentially a situation with changes or movements. Smith (1991) suggests that dynamism correlates to two linguistic properties: one is that dynamic situations may have agents, which are sources of energy or volition. The other is that dynamic situations may have habitual

⁶ Dowty's theory will be discussed further in chapter 2.

interpretations when combined with present tense and perfect viewpoint⁷. These features can be demonstrated below:

(15). Agency⁸

- a. Wash your car!
- b. John carefully washed his car.
- c. What John did was wash the car.
- d. * Know Greek!
- e. * John carefully knew Greek.
- f. * What John did was know Greek.

(16). Habitual reading

- a. Mary swims in the ocean.
- b. Ellen believes in ghosts.

(Smith, 1997, p. 40)

Dowty also utilises agency as a criterion in his aspectual class. However, he suggests that verbs like *sit*, *stand* or *lie* are statives and that each situation type has agentive and non-agentive categories.

The first feature is demonstrated in (15). On the one hand, the situations in the first three examples are accomplishments, which are dynamic. On the other hand, the situations in (15d), (15e) and (15f) are states, which are non-dynamic or stative. From the observations above, Smith argues that imperative sentences and complements of command verbs require dynamic VPs; they are associated with agency because only a controllable event can be commanded or persuaded. In addition, adverbs of manner and instrument are only compatible with dynamic VPs. Furthermore, the pro-verb “do” in

⁷ As mentioned in section 1, tense only locates the situation on the timeline and can be combined with various aspects. For example, “Mary swims in the ocean” is a combination of present tense and perfective aspect; “Mary is swimming in the ocean” is a combination of present tense and imperfective aspect.

⁸ The agency tests originate from Lakoff (1965, p.168). The habitual tests originate from Kenny (1963, p.123). Like these two tests, the linguistic tests in this chapter originate from various sources (Vendler, 1957; Kenny, 1963; Lakoff, 1965; Comrie, 1976; Dowty, 1979) and are frequently used and modified in the literature. I use Smith’s organized version in this chapter only for convenience purposes.

the pseudo-cleft construction is associated with agency and control and requires a dynamic situation. In (16), the two examples are all felicitous, except that in (16a), the interpretation must be habitual, as in “Mary swims every day”. On the contrary, the interpretation of (16b) is not habitual.

Note that there are exceptions to these requirements, as pointed out in Rothstein (2004); in some specific contexts, states can be used in an imperative sentence:

(17). Teacher to student: “Know the answer by tomorrow, or there will be big trouble.”

Rothstein’s solution for this problem is to coerce the stative situation (state) into a dynamic situation (achievement). In Rothstein (2004), the author suggests that states are non-dynamic because we cannot identify stages in the development of a state (a state cannot develop into a different state); no change necessarily takes place while a state holds. Wright (2014), following Tenny (1994) and Hay et al. (1999), suggests that dynamicity represents not just movement/change but change against the background of some landmark. The moving/changing entities participating in an event associated with a dynamic verb move or change with respect to some point of reference. Croft (2012) suggests that dynamism also depends on the scope of the description of the event. There typically exist two readings for some states/activities: the undirected activity reading describing one occasion (dynamic), and the inherent state reading describing states in general (non-dynamic). As shown below:

(18).

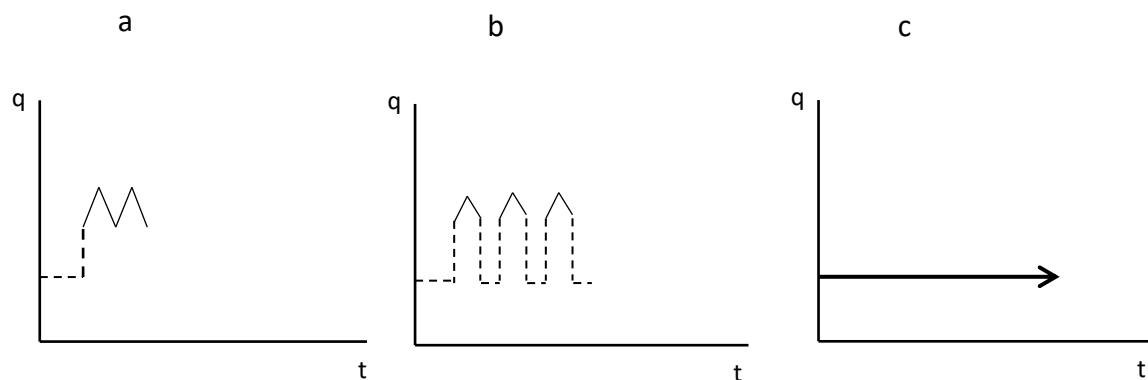
- a. He is being polite. (fine-grained)
- b. He is polite. (coarse-grained)
- c. She is hiking through the woods. (fine-grained)
- d. She hikes every weekend. (coarse-grained)

(Croft, 2012, p. 97)

According to Croft, (18a) and (18c) have the same structure: they are dynamic situations representing a single occasion within a relatively short time, shown by the compatibility

with the progressive. Following his theory, like “hiking”, “being polite” behaves more like an activity and not a state⁹. The dynamic feature comes from the scope of fine-grained, high-magnification time scale. Croft uses an illustration to represent the two readings:

Figure 1-7- Activity and state readings



(Croft, 2012, p. 96)

Figure 1-7.a represents the events in (18a) and (18c) on a time axis (t) and a qualitative axis (q). The *q* dimension represents the properties of a predicate’s meaning. The dotted lines represent the part of the event that is not in the description, and the solid lines represent the event in the description. Figure 1-7.a shows a process that is extended on the *q* dimension and has a relatively short extension on the *t* dimension. In (18a), it would be “he shows some polite behaviour in this time interval”. In (18c), it would be “she hikes in this time interval”. Figure 1-7.b represents the actual behaviour of a polite person: on those occasions in which politeness is called for, the person behaves politely. That is, the person engages in regular, repeated acts of politeness. It can also represent the behaviour of a person who hikes regularly. In (18b) and (18d), the time extends to the entity’s lifetime; they are non-dynamic inherent states, as shown by the compatibility with the simple present expression in English. Figure 1-7.c represents the personality trait: an inherent state, which is a point on the *q* dimension but is extended

⁹ Dowty (1976) also holds this view.

for the entirety of the *t* dimension. In (18b) and (18d), it represents the state of “he is polite” or “she hikes”. The non-dynamic feature comes from the scope of coarse-grained, low-magnification time scale. Because the behaviour in (18a) and (18c) can be regular and repeatable, or retrospectively, the behaviour in (18b) and (18d) can be segmented into repeating activities. The event is compatible with both progressive and simple past expressions:

If one turns down the magnification on this person’s actions, then the events will no longer be extended on *q*. But at the same time the granularity of *t* will change as well. If the person really is polite regularly, the point-like polite behavior events will extend through the person’s lifetime—the scope of the coarse-grained, low magnification construal on *t*. The point-like polite behavior events will be reconceptualized via good continuation as durative, extending through the length of *t*.

(Croft, 2012, p. 96)

On the other hand, some states are incompatible with progressive forms, like “know the answer” or “be a professor”. This could be because “know something” or “be a professor” cannot be segmented into a regular and repeated situation.

To summarise, dynamism is a feature that describes changes in a situation. In specific contexts, dynamic situations could have a stative reading, and non-dynamic situations could have a dynamic reading: it depends on the scope of the description of the situation and whether the situation can be segmented into a repeating event. That could explain why traditional linguistic tests sometimes fail. However, the dynamism feature of a bare VP is determined by the meaning of its verb and the argument, which is the foundation of the distinction between types of situation aspect.

1.3. Durativity

The properties of durativity have to do with the duration of situations. Thus, some eventualities last for a specific period of time, while others are considered instantaneous

or momentary, i.e. they don't correspond to an interval but to an instant. States, activities and accomplishments typically denote durative situations, while achievements denote punctual situations. According to Cunha (2013), a situation is considered durative if it lasts for a specific period of time and is considered punctual if it is confined to a single linguistically established moment. However, there are different perspectives concerning durativity/punctuality in the literature. First, let us examine some linguistic tests that can distinguish between durative and punctual situations.

1.3.1. Durativity tests

Smith (1997) suggests that the temporal feature of duration has adverbial and verbal correlations of several kinds. This first correlation is that durative situations are compatible with durative adverbials that indicate duration, such as “for an hour, in an hour, slowly or quickly”. On the contrary, these adverbials are either incompatible with instantaneous situations or change the scope of the adverbial:

(19).

- a. Mary walked in the park for an hour. (activity)
- b. Mary built the sandcastle in an hour. (accomplishment)
- c. Mary was sick for a week. (state)
- d. * The bomb exploded for an hour. (achievement)
- e. The bomb exploded in an hour. (achievement, ingressive reading)
- f. He coughed for an hour. (semelfactive, repeating reading)
- g. The door opened slowly. (accomplishment)
- h. * The ballon burst slowly. (achievement)
- i. * The bomb exploded slowly. (achievement)

(Smith, 1997, p. 41)

(19d) (19h) and (19i) are clearly ungrammatical. The adverbial in (19e) changes the scope of the situation, it is interpreted as ingressive: it pertains to an interval before the event. In (19f), the adverbial also changes the scope of the event, it turns the single occasion reading into a repeating occasion reading. The rest of the examples: (19a, b, c, g) are

durative situations, and thus are compatible with durative adverbials. Smith states that these adverbials are interpreted differently when combined with a durative situation or an instantaneous one.

The second correlation is that durative situations are compatible with inchoative and terminative aspectual auxiliary verbs (Smith calls them inceptive and terminative morphemes), whereas punctual situations are not:

(20).

- a. Mary began to build the bridge. (accomplishment)
- b. Mary began to run. (activity)
- c. Mary stopped caring¹⁰ about Peter. (state)
- d. Mary stopped building the sandcastle. (accomplishment)
- e. Mary finished building the sandcastle. (accomplishment)
- f. ? The bomb started to explode. (achievement)
- g. ? The bomb stopped exploding. (achievement)
- h. ? The bomb finished exploding. (achievement)

(Smith, 1991, pp. 41-42)

The situations in (20a, b, c, d, e) are durative situations, which are compatible with “begin/start” or “finish/stop”. On the contrary, the situations in (20f, g, h) are punctual (under Smith’s categorisation), which are incompatible with such verbs.

Smith suggests that the slow-motion readings in (20f) and (20g) are to be ignored because no events are instantaneous in this sense. Rothstein (2004) argues that when a “slow-motion” reading is triggered, the situation would have an activity reading as they do not introduce the imperfective paradox (the sentence “*The bomb is exploding, but the bomb has not exploded” is infelicitous under the slow-motion reading). Does this mean that punctual situations like achievements have, in fact, a “very short” duration? I will discuss this problem shortly, but first, let us see the final correlation in Smith (1991).

¹⁰ As discussed in 1.2, the state here, “care about Peter”, would have an activity reading.

The third correlation is that durative situations have an inceptive interpretation with momentary adverbials (at x time), whereas punctual situations have a direct interpretation:

(21).

- a. They ate dinner at noon.
- b. The clock struck at noon.

(Smith, 1997, p. 42)

(21a) includes a durative situation, and the inceptive interpretation would be “the beginning of the event happened at noon”. (21b) includes a punctual situation, and the direct interpretation would be “the whole event is located at noon”.

In addition, the interpretation of imperfective viewpoint when combined with a durative situation focuses on the internal stages, whereas when combined with punctual situations, it focuses on the preliminary stages:

(22).

- a. The door was opening.
- b. Mary was reaching the top.

(Smith, 1997, p. 42)

In the durative situation (22a), the interpretation focuses on the internal stages of the situation, i.e., within the event “open the door”. In the punctual situation (22b), the interpretation focuses on the preliminary stages, i.e., before the event “reach the top”.

1.3.2. Relative punctuality

As we can see from the examples above, situations can essentially be divided into durational situations and punctual situations. However, the literature considers this punctuality or instantaneity of an event differently. These different opinions can be essentially divided into three types: the first type of theory is that a punctual event is an event that has a “very short” duration. The duration is so short that it can be ignored in normal readings but provoked in the “slow-motion” reading. In addition, the punctuality

feature comes from the semantics of the VP (Croft, 2012; Rothstein, 2004; Smith, 1997; Vendler, 1957). See examples below:

(23).

- a. John coughed.
- b. John is coughing.

This type of theory can be explained by the event in (23) “cough”. The single “cough” in (23a) event is considered a punctual event in this type. However, consider, for example, that Peter is commenting on a slowed-down video that includes John's single cough during an anatomy lesson. In this scenario, it would be appropriate for Peter to comment (23b) on the relevant part of the film: “Now the subject is coughing”, even when referring to a single cough. This is because the single act of coughing has now been extended and is durative in that the relevant film sequence lasts for a specific period of time. (Comrie, 1976, p. 43) The event “John coughed” is considered punctual in the first type of theories even though the description of the event has a “very short” duration. In each punctual situation, there would be two readings: the normal reading, where the very short duration is ignored, and the slow-motion reading, where the very short duration is prominent. The two readings, nevertheless, are both punctual events.

Cunha (2007) also holds this perspective. He states that punctual events necessarily have a certain duration when considering their physical structure. However, in linguistic terms, they will be conceived as momentary, i.e. they will be perceived as minimal and indivisible. In addition, he suggests that punctual events can never be divided into subevents, and their reference time can never be partitioned into smaller intervals. Furthermore, he provides some reliable linguistic tests for Portuguese:

(24). Only punctual events can have both temporal location and measurement provided by a punctual adverbial (*às x horas*):

- a. * *A Maria foi portuguesa às cinco da tarde.*
* Mary was Portuguese at five p.m.
- b. *O João esteve na faculdade às cinco da tarde.*

John was in the faculty at five p.m.

- c. *# O cavalo correu às cinco da tarde.*

The horse ran at five p.m.

- d. *# O Pedro tocou a sonata às cinco da tarde.*

Peter played the sonata at five p.m.

- e. *A polícia prendeu o assaltante às cinco da tarde.*

The police arrested the assailant at five p.m.

- f. *A gazela saltou às cinco da tarde.*

The gazelle jumped at five p.m.

(25). Only punctual events are compatible with adverbial expression that refers to punctuality without modifying its temporal structure:

- a. ** A Maria foi portuguesa de repente.*

* Mary suddenly was Portuguese.

- b. ** O João esteve na faculdade de repente.*

John suddenly was in the faculty.

- c. ** O cavalo correu de repente.*

* The horse suddenly ran.

- d. ** O Pedro tocou a sonata de repente.*

Peter suddenly played the sonata.

- e. *A polícia prendeu o assaltante de repente.*

The police suddenly arrested the assailant.

- f. *A gazela saltou de repente.*

The gazelle suddenly jumped.

(Cunha, 2007, p. 7)

(24a, b, c, d) are durative situations and (24e, f) are punctual situations. The state in (24a) is ungrammatical when combined with a punctual adverbial. (24b) is a state, and the reading is to include the punctual adverbial inside its time interval. The activity and accomplishment in (24c) and (24d) can only have a grammatical interpretation when focused on the inchoative reading, i.e., the adverbial locates the beginning of the events.

In (24e) and (24f), the adverbial not only temporally locates the events, but also measures the events: the events begin and end at five p.m. Similarly, (25a) and (25b) are ungrammatical, (25c) and (25d) can only be grammatical when the temporal structure change to the beginning of the events, and only punctual events in (25e) and (25f) are compatible with the adverbial expression “suddenly”.

In addition to the two tests above, Cunha mentioned other tests like combining the event with *parcialmente* (partially) or *cuidadosamente* (carefully). He suggests that the test with “partially” could sometimes fail because the adverbial not only tests the duration of the situation but also the specificity of the natural endpoint. Similarly, the compatibility with adverbials like “carefully” also tests the Agentivity and causality of the event. Thus, these tests could be unreliable.

1.3.3. Conditional punctuality

The second opinion is that punctuality is an extra-linguistic property of situations, not a linguistic feature (Egg, 2002; Tenny, 1994; Verkuyl, 1972). In Egg (2002), the author suggests that the world's knowledge of the duration of specific events triggers the choice of durative or punctual. Verkuyl (1972) states that an event can be both a durative and a punctual one, depending on the context. “Draw a circle” could denote a durative event if the circle is drawn with a pencil, but also a punctual one if it is drawn with a computer. That is to say, like the first type, in this type of theory, a punctual event is also an event that has a “very short” duration; a durative event is considered durative only because, in the majority of contexts, the event has a long duration. This also applies to momentaneous events that have a short duration. However, no matter how short, the event is considered to have a duration. The difference lies within the origin of the feature. Verkuyl (1989) argues that the punctual feature comes from world knowledge and that the momentaneous and terminative aspect should be combined:

The meaning of verbs like *draw*, *write*, etc. is rather such that new techniques can be captured by them, indicating that it was accidental up till now that *draw a circle* pertains only to events taking more than one moment. The length of the

event in question does not seem to be of importance at all if an event is conceived of as taking time.

(Verkuyl, 1989, p. 58)

Note that Verkuyl (1972) argues that durative means imperfective; on the other hand, terminative means perfective. That puts durative as the antonym of terminative. However, this section focuses on the duration of the situation (whether or not it lasts for a specific period of time).

1.3.4. True punctuality

The third approach is to say that punctual events are events without duration (Comrie, 1976; Piñón, 1997). This means that the events mentioned above (*cough, draw a circle*) are not considered punctual under this perspective. Punctuality is defined in Comrie (1976) as below:

The opposite of durativity is punctuality, which thus means the quality of a situation that does not last in time (is not conceived of as lasting in time), one that takes place momentarily. It should be noted that the crucial point here is that punctual situations do not have any duration, not even duration of a very short period.

(Comrie, 1976, p. 42)

Using a truly punctual situation as an example, “John reached the summit of the mountain” describes two moments with different states: one is that John had not yet reached the summit and another moment when he had, with no time intervening between the two. Even in a slow-motion reading, the interval between these two moments would always be zero, and it would always be inappropriate to say “At this point, John is reaching the summit”. Piñón (1997) also argues that punctual situations are events without duration. He suggests that punctual situations are not “changes” because “changes” (the transitions) would take time, however short. Instead, they presuppose changes in their immediate vicinity:

The presupposition in question is above all ontological: because of what they are, instantaneous events are such as to require the existence of other types of events in order to exist themselves. I will argue that there are such instantaneous events and that they can serve as the denotata of achievements.

(Piñón, 1997, p. 1)

Piñón suggests that achievements presuppose the ending of an event and the beginning of a state. See examples below:

(26).

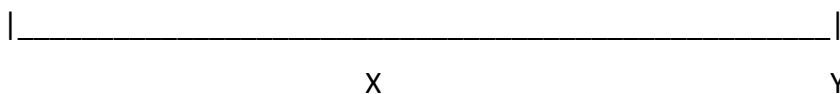
- a. John reached the summit.
- b. Mary recognized Peter.

In (26a), the achievement is a strictly punctual event; it presupposes that there is a “climbing” event before it and there is a “have reached/been reached” state after it. Likewise, in (26b), it presupposes that there is a “seeing” or “hearing” event before it and a “have recognized/ been recognized” state after it. The presuppositions, both the event and the state, are durative. In Piñón’s terms, the presupposed event stretches temporally to the left, and the presupposed state stretches to the right; the event’s ending and the beginning of the state overlap. This overlapping point in the time dimension is the temporal location of the achievement.

Piñón suggests that instantaneous events are located in time but do not take up any time at all. To reinforce this idea, he must add “boundaries” in the realm of situations and define situations without duration (achievements) as the boundaries of other situations (activities and states) in their vicinity. Piñón calls situations without duration “thin” objects, which include only achievements¹¹, and others “thick” objects, which include states, activities and accomplishments. An object would be a boundary of the other if the first part is thin, the second is thick, and the first is a part of the second, as illustrated below:

¹¹ According to Piñón, achievements are not only the left or right boundary of a thick situation but also the boundary(s) and a description of what they bound.

(27). Bounded interval Z



(Piñón, 1997, p. 282)

In (27), Z is a bounded thick situation, Y (represented by a vertical line) is the right boundary of Z and X (represented by a horizontal line) is the body of Z. For instance, Z could be the accomplishment “John climbed the mountain”, then the right boundary Y would be the achievement “John reached the top”, which does not have any duration. It exists as a part of the accomplishment. In addition, achievements can denote beginnings (left boundaries) and endings (right boundaries). For example, in “Rebecca reached the summit”, the “reach” is both the ending of “her climb” and the beginning of “her being at the summit” (Piñón, 1997, p. 291).

The theory in Piñón (1997) solves the problem of slow-motion reading because events are not considered instantaneous, even if they only have a very short duration. In addition, this theory is reinforced by Martin (2011), who suggests that there are punctual achievements and durative achievements. I will use the definition provided by Comrie (1976) as the definition of punctual events in the present study. Note that Comrie states that punctual situations automatically involve a change of state, but that contradicts the definition of punctual events (change must take time). Instead, I will favour the structure of achievements in Piñón (1997), which means punctual situations do not involve a change of state but presuppose one.

1.3.5. Summary

In summary, the durativity of a situation has to do with whether or not the situation lasts for a specific period of time. In the literature, there are three types of perspectives. One is that a punctual situation can have a very short duration, which is ignored in the event description. The second perspective is that the durativity of a situation depends solely on the interpretation. The third perspective is that there are truly instantaneous situations; they do not occupy any time at all, and only those can be in the type of

achievement (and point). Although the third perspective seems more logical and has fewer problems than the first two, it would require a more extensive study to give a categorical statement. Instead, in the present study of accomplishments, I will try not to categorise (accomplishments or achievements) the problematic examples with debatable durativity. However, I will keep the assumption that events exist that are truly punctual. Following Piñón (1997), a durative situation is a situation that occupies a time stretch, no matter how small. In contrast, an instantaneous or punctual situation is a situation that does not take up any time at all.

1.4. Telicity

Telicity is a property that includes a notion of completion. According to Cunha (2013), if a situation has its own terminal limit, which forms a final boundary that decides its finish, then it is telic. On the contrary, a situation is considered atelic if it can, in theory, develop endlessly and lacks a final limit, boundary, or frontier. Atelic predicates represent events that can continue indefinitely, and telic predicates represent events that must cease at some natural point. The literature in this area is vast and can be divided into two strategies. One is to explain how telicity can be affected by the verb and its argument in a syntactic approach, like in Tenny (1994), and the other is to explain telicity in a semantic approach, like in Krifka (1998).

1.4.1. Telicity tests

First, let us examine some linguistic tests that can distinguish telic VPs from atelic ones. According to Smith (1997), the first distinction is that telic verb constellations are usually compatible with adverbials of completion (*finish, in an hour*). In contrast, atelic verb constellations are odd with adverbials of completion, as shown below:

(28).

- a. Mary walked to school in an hour. (telic)
- b. Mary finished walking to school. (telic)

- c. ? Mary walked in the park in an hour. (atelic)
- d. ? Mary finished walking in the park. (atelic)

(Smith, 1997, p. 43)

(28a) and (28b) are telic events (accomplishments), which are compatible with “finish” and “in an hour”. (28c) and (28d) are atelic events (activities), which are not compatible. According to Smith, the contrast is because completion is intrinsic to telic events and irrelevant to atelic events.

The second distinction is that telic verb constellations are usually odd with adverbials of simple duration (*stop, for an hour*). However, they are compatible with atelic verb constellations, as shown below:

(29).

- a. ? Mary walked to school for an hour. (telic)
- b. Mary stopped walking to school. (telic)
- c. Mary walked in the park for an hour. (atelic)
- d. Mary stopped walking in the park. (atelic)

(Smith, 1997, p. 43)

(29a) and (29b) are accomplishments, and (29c) and (29d) are activities. According to Smith, (29a) would be odd, (29b) is good, but it does not indicate event completion, (29c) and (29d) would be perfectly normal.

For European Portuguese, Cunha (2013) provides a test in *Gramática do Português* (Cunha, 2013) to identify some (not all) telic situations. He suggests that telic situations can be distinguished from atelic situations according to the existence of a state of affairs after the culmination, called *estado resultativo* (resultative state). A telic situation like *caminhar até à escola* (walk to school) would have a resultative state that is *estar na escola* (be at school). He suggests that the existence of a resultative state can be represented by a predicative clause with the copula verb *estar* (be), where the patient of the original situation is the subject and the original verb's past participle is the predicative. However, this test can only be utilised in telic situations constructed with a

semantically count nominal argument with the thematic role of patient. (Cunha, 2013, p. 590) See example below:

(30).

- a. *O gato morreu. → O gato está morto.*
The cat died. → The cat is dead.
- b. *O Luís escreveu a tese. → A tese está escrita.*
Luis wrote the thesis. → The thesis is written.
- c. *A Rita espirrou. * A Rita está espirrada.*
Rita sneezed. * Rita is sneezed.
- d. *A Maria guiou o carro. * O carro está guiado.*
Maria drove the car. * The car is driven.

(Cunha, 2013, p. 590)

(30a) and (30b) are telic situations, and the resultative state can be represented. In (30a), the resultative state is constructed by using the patient (*o gato*) of the original situation as the subject and the original verb's (*morrer*) past participle as the predicative (*morto*). The same construction becomes ungrammatical in (30c) and (30d) since they are atelic situations. Nevertheless, as mentioned above, this test can only be utilised in situations with certain structures. When it comes to telic situations with a prepositional phrase, this test will not work, like in *caminhar até à escola* (walk to school).

Observations similar to Cunha's can be found in Dowty (1979). He suggests that telic predicates can be distinguished from atelic predicates because telic predicates induce the imperfective paradox in the progressive, whereas atelic predicates do not:

(31).

- a. John was drawing a circle. (telic)
 $\nrightarrow$ John drew a circle.
- b. John was pushing a cart. (atelic)
 → John pushed a cart.
- c. John was falling asleep. (telic)

⇒ John fell asleep.

Dowty (1979, pp. 133,137)

According to Dowty, (31a) is a telic event (accomplishment) in a progressive tense, and it does not entail the same sentence in a simple tense. Similarly, the achievement in (31c) does not entail the simple tense sentence. On the other hand, the atelic event (activity) in progressive tense (31b) seems to entail the same sentence in simple tense.

Dowty suggests the solution to this problem lies within the truth condition for the progressive operator [PROG ϕ] and the completion operator [BECOME ϕ]. This means that telic predicates and atelic predicates in progressive form employ the same PROG operator, albeit with different truth conditions. In telic events, the truth value of the event at an interval is independent of the truth value of the event at all moments within the interval. On the contrary, in atelic situations, the truth value of the event at an interval is equal to the truth value of the event at all moments within the interval. Similar points can also be found in Verkuyl (1989). However, in some later works (Filip, 1993; Parsons, 1990; Rothstein, 2004), the imperfective paradox is considered not a “paradox” but a “feature” of telic predicates. Rothstein argues that a progressive form denotes a set of intermediate stages related to the telic point and that the occurrence of these stages is not enough to guarantee that the telic point is reached. This essentially turns the imperfective paradox into a part-whole relation, as stated by Filip (1993):

The progressive operator is treated here as expressing a “proper-part” relation (...). There does not seem to be anything paradoxical about making assertion about a part of a situation that involves a definite end-stage. We make such assertions all the time. We make assertions about proper parts of bounded objects, and even of such bounded objects that may have never existed or will never exist in their entirety (...). In general, the existence of a part of an entity does not presuppose the existence of a whole bounded entity, rather it merely

allows for the possible existence of a (contextually) relevant additional quantity or continuation.

(Filip, 1993, p. 261)

Dowty's theory has been criticised by the authors mentioned above. On the one hand, Dowty's theory relies heavily on the concept of "inertia world". An "inertia world" is a possible world that is exactly like the actual world up to the time in question and in which the future course of events after this time develops in ways most compatible with the past course of events (Dowty, 1979, p. 148). However, as Parsons (1990) pointed out, it is not clear how we can distinguish between "inertia worlds" and the real world. On the other hand, Dowty's analysis of the imperfective paradox does not distinguish the temporal structure of accomplishments and achievements. If an accomplishment is true at an interval *I*, then we could say the progressive form of the accomplishment would be true at every subinterval of *I* (with the exception of the final subinterval). However, as discussed in the previous section, this is not the case with achievements. If an achievement is true at *I*, there would be no subintervals of *I*, and the progressive form of the achievement could not be true at *I*.

I will follow Filip (1993) and argue that the progressive operator is a partitive operator. Thus, it denotes an event with a "part-whole" relation *related* to the telic point of the telic predicate. Telic predicates are not cumulative; therefore, they do not allow the event to be described as a proper part of the event. On the contrary, atelic predicates are cumulative; thus, they would allow the situation to be described as a proper part of the situation. Smith's "stop" test thus takes advantage of this feature. In accomplishments, when adding "stop", the description turns into a proper part of the accomplishment, indicating that the event is not complete.

Another distinction in Smith (1997) is related to verbs of time, "take" and "spend". Smith argues that when they have sentential complements, "take" is compatible with telic VPs and "spend" with atelic VPs:

(32).

- a. It took me an hour to write the letter. (telic)
- b. * It took me an hour to listen to music. (atelic)
- c. * I spent an hour writing the letter. (telic)
- d. I spent an hour listening to music. (atelic)

(Smith, 1997, p. 43)

Taking a closer look at these tests, (32a) and (32c) are telic and are only compatible with “take”, (32b) and (32d) are atelic and are only compatible with “spend”. However, similar to the “stop” test above, they cannot be applied to achievements. In addition, as pointed out in Leal (2009), the test with “*gastar x tempo* (take x time)” does not work very well in European Portuguese. See examples below:

(33).

- a. *O João gastou meia hora a correr.*
John took half an hour to run.
- b. *O João gastou meia hora a ler o livro.*
John took half an hour to read the book.
- c. *O João gastou meia hora (da sua vida) a correr a maratona.*
John took half an hour (of his life) to run the marathon.
- d. *O João gastou duas horas (da sua vida) a correr a maratona.*
John took two hours (of his life) to run the marathon.

(Leal, 2009, p. 60)

(33a) is an activity (atelic), and (33b) is an accomplishment (telic). Both are perfectly normal when combined with *gastar x tempo* (take x time) in European Portuguese. Leal (2009) suggests that the expression *gastar x tempo* (take x time) is neutral and can, therefore, be combined with both types without causing aspectual changes. Furthermore, when combined with an accomplishment, the expression could locate a proper part of the event or the entire event. In (33d), because two hours is a long enough length of time, we could conclude that John has reached the end of the marathon.

Meanwhile, in (33c), our understanding of the world forbids us from doing so, given the short time suggested by the adverbial (Leal, 2009, p. 60).

Although the distinctions in Smith (1997) give a rough idea of what a telic situation is and what an atelic situation is, they cannot represent situations without durations (achievements). The linguistic tests presented by Smith (1997) depend not only on the telicity of the situation but also on its duration.

1.4.2. Tenny (1994)

Tenny (1994) introduces a phenomenon called “measuring out”, essentially saying that telicity comes from three sources. One is the lexical meaning of the change-of-state verbs, the second is the argument of the incremental theme verbs, and the third is the path object of the route verbs. See examples below:

(34).

- a. *comer uma maçã* (incremental theme verb)
‘eat an apple’
- b. *derreter o cubo de gelo* (change-of-state verb)
‘melt the ice cube’
- c. *subir a montanha* (route verb)
‘climb the mountain’

Tenny suggests that these verbs' direct internal argument (*uma maçã* in 34a, *o cubo de gelo* in 34b, *a montanha* in 34c) can 'measure out' the event over time, leading to a telic interpretation. The internal argument provides a kind of scale that matches up with the event at various times or in various stages of completion, i.e., where successive stages of the event correspond to more and more of the denotation of the event coming into existence until a final stage in which it is complete:

In the case of incremental-theme verbs, the internal argument is created or consumed over time. With the change-of-state verbs the internal argument undergoes some change in a property over time, and with route or path-object

verbs, the internal argument, although unchanged, provides a gradient along which the progress of the event may be measured.

(Tenny, 1994, p. 18)

According to Tenny, if the direct internal argument that measures out an event is bounded (for example, “an apple” or “the ladder”), then the event would be telic (delimited). On the other hand, if the direct internal argument that measures out an event is unbounded (for example, “ice cream”), then the event would be atelic (non-delimited).

Tenny’s theory shows an important connection between telicity and the direct argument. However, it has been criticised by various authors. (Filip, 1993; Jackendoff, 1996) As pointed out in Jackendoff (1996), it is not always the direct internal argument of the verb that measures out the event. Instead, there are scenarios where the PP or the external argument measures out the event:

(35).

- a. Bill pushed the cart into the house/over the bridge. (telic)
- b. Bill pushed the cart along the road/toward the house. (atelic)
- c. The parade passed the house. (telic)

(Jackendoff, 1996, pp. 310-313)

(36). *O exército abandonou a cidade.* (telic)

The army abandoned the city.

(Leal, 2009, p. 218)

As we can see, the PPs in (35a) and (35b) measure the events. Also, the external arguments in (35c) “the parade” and (36) “*o exército*” (in Portuguese) measure the events. Therefore, it is not always as Tenny suggests: the scale that marks various stages of completion is not always represented by the direct internal argument.

In addition, Tenny suggests that there are three constraints concerning telicity and arguments:

(37). Constraints in Tenny (1994)

- *Measuring-Out Constraint on Direct Internal Argument*
 - a. The direct internal argument of a simple verb is constrained so that it undergoes no necessary internal motion or change, unless it is motion or change which “measures out the event” over time (where “measuring out” entails that the direct argument plays a particular role in delimiting the event).
 - b. Direct internal arguments are the only overt arguments which can “measure out the event”.
 - c. There can be no more than one measuring-out for an event as described by a verb.
- *Terminus Constraint on Indirect Internal Arguments*
 - d. An indirect internal argument can only participate in aspectual structure by providing a terminus for the event described by the verb. The terminus causes the event to be delimited.
 - e. If the event has a terminus, it also has a path, either implicit or overt.
 - f. An event as described by a verb can have only one terminus.
- *The Non-Measuring Constraint on External Arguments:*
 - g. An external argument cannot participate in measuring out or delimiting the event described by a verb. An external argument cannot be a measure, a path, or a terminus.

(Tenny, 1994, pp. 11,68, 83)

In (37), Tenny uses delimited /non-delimited events to represent telic /atelic situations. Essentially, (37a, b, c) suggest that only the direct internal argument can measure out the event to which the verb refers. (37, e, f) refer to how the indirect argument can delimit the event. In (37g), Tenny suggests that external arguments cannot measure out an event, but as pointed out in Filip (1993), it is not the case, as shown in the examples below:

(38).

- a. Martha pushed John into the pool.
- b. John dove into the pool.
- c. John entered the icy water (very slowly).

(Filip, 1993, p. 22)

Filip argues that in (38b) and (38c), it is the external argument “John” that measures out the event (unlike in 38a). Together with the example in (35c), we can say that there are some exceptions in Tenny’s account. However, Tenny provides an in-depth analysis of the importance of the verb’s arguments in introducing telicity effects.

In addition, Tenny proposes a theory called the Aspectual Interface Hypothesis to address the constraints mentioned above:

The universal principles of mapping between thematic structure and syntactic argument structure are governed by aspectual properties relating to measuring-out. Constraints on the aspectual properties associated with direct internal arguments, indirect internal arguments, and external arguments in syntactic structure constrains the kinds of event participants that can occupy these positions. Only the aspectual part of thematic structure is visible to the universal linking principles.

(Tenny, 1994, p. 116)

As mentioned above, Tenny’s account of the telicity is criticised mainly in two ways. One is that the argument that measures out the event is not always the internal direct argument, as shown by (35) and (38). The other is that Tenny’s telicity depends largely on the notion of “measuring out” or “change along a scale”. This notion is not always included in telic predicates, as shown below:

(39).

- a. John ate a handful of peanuts.

- b. John sprayed his shoe with water.
- c. John loaded the truck with dirt.

(Jackendoff, 1996)

(40). *A explosão de uma lata de tinta pintou a parede.*

The explosion of a pint can painted the wall.

These events in (39) and (40) can all have a single action reading. For example, one can eat a handful of peanuts in one gulp; a single spritz may suffice to spray your shoes with water; a single scoop of a steam shovel may suffice to load a truck with dirt. (Jackendoff, 1996) Although these readings involve duration and completion, there are no “gradual changes along the scale”.

1.4.3. Krifka (1998)

Krifka (1998) propose that the nominal argument associated with a particular thematic role is responsible for an event's telic or atelic interpretation. He suggests that this distinction comes from the quantization/ cumulativity distinction of the predicate.

Krifka argues that telicity is the property of an event predicate X that applies to events e such that all parts of e that fall under X are initial and final parts of e (an event e' is an initial part of e if it is not preceded by any part of e , and similarly for final parts):

(41). Initial and final parts

- a. $\forall e, e' \in U_E [INI_E(e', e) \leftrightarrow e' \leq_D e \wedge \neg \exists e'' \in U_E [e'' \leq_E e \wedge e'' \ll_E e']]$
- b. $\forall e, e' \in U_E [FIN_E(e', e) \leftrightarrow e' \leq_D e \wedge \neg \exists e'' \in U_E [e'' \leq_E e \wedge e' \ll_E e'']]$

(Krifka, 1998, p. 9)

(42). Telicity

$\forall X \subseteq U_E [TEL_E(X) \leftrightarrow \forall e, e' \in U_E [X(e) \wedge X(e') \wedge e' \leq_E e \rightarrow INI_E(e', e) \wedge FIN_E(e', e)]]$

(Krifka, 1998, p. 9)

(41a) means that e' is the initial part of e if e' is a part of e and there is no e'' so that e'' is a part of e and e'' is temporally located before e' . (41b) means that e' is the final part of e if e' is a part of e and there is no e'' so that e'' is a part of e and e'' is temporally

located after e' . (42) means that X is telic if there are e and e' which fall under X and e' is a part of e , then e' is the initial and final part of e , i.e., e' is e itself.

According to Krifka, quantized predicates are telic, but not every telic predicate is quantized, whereas cumulative predicates are atelic. The definitions of quantized predicates and cumulative predicates are shown below:

(43). X is quantized iff:

$$\forall x, y [X(x) \wedge X(y) \rightarrow \neg y < x]$$

(44). X is cumulative iff:

$$\exists x, y [X(x) \wedge X(y) \wedge \neg x = y] \wedge \forall x, y [X(x) \wedge X(y) \rightarrow X(x \oplus y)]$$

(Krifka, 1998, p. 3)

(43) means that there are x and y which fall under X , then y is not a proper part of x (the proper part of “eat two apples” is not “eat two apples”). (44) means that for every x and y which fall under X , x is not y , and the sum of x and y also falls under X (the mereological sum of “drink water” and “drink water” is also “drink water”).

Essentially, an event predicate P is telic if whenever e is in P and e' , a part of e , is also in P , then e and e' start and finish at the same time ($e=e'$). An event predicate P is atelic if e is in P and e'' , as a proper part of e , also satisfies the predicate P . Krifka argues that events, like nominals, have a part structure. For example, if x and y fall under *apples*, then the sum of x and y also falls under *apples*. In contrast, if x falls under *three apples*, then it cannot have a proper part y that also falls under *three apples*. Similarly, consider an event with a part structure restricted to temporal parameters: the sum of two events in *eat* will also be in *eat*. In contrast, if x is *eat an apple*, then the sum of two events in *eat an apple* will not be *eat an apple* but *eat two apples*.

Krifka (1989) provides a theory in which there is a homomorphism from objects to events such that the properties of the incremental theme argument (may be realized by syntactic arguments, like subjects or objects, but also by adjuncts) are preserved for the event, i.e., a cumulative argument will lead to a cumulative and thus atelic VP. In

contrast, a quantized argument will lead to a quantized, and thus telic, VP. The relation between the argument and the event is called incremental relation ϑ . ϑ is a homomorphism from the event to the object if it has the following properties:

(45).

- a. mapping to subevents: $\forall x, y \forall e [\theta(x, e) \wedge y < x \rightarrow \exists e' [e' < e \wedge \theta(y, e')]]$
- b. uniqueness of events: $\forall x, y \forall e [\theta(x, e) \wedge y \leq x \rightarrow \exists! e' [e' \leq e \wedge \theta(y, e')]]$
- c. mapping to sub-objects: $\forall x \forall e, e' [\theta(x, e) \wedge e' < e \rightarrow \exists y [y < x \wedge \theta(y, e')]]$
- d. uniqueness of objects: $\forall x \forall e, e' [\theta(x, e) \wedge e' \leq e \rightarrow \exists! y [y \leq x \wedge \theta(y, e')]]$

(Krifka, 1998, pp. 12-14)

(45a) means that if there is a ϑ relation between an object x and an event e and y is a proper part of x , then there is a proper part e' of e that has a ϑ relation with y . (45b) says that if there is a ϑ relation between an object x and an event e , then there is only one part e' of e that has a ϑ relation with any part y of x . (45c) says that if there is a ϑ relation between an object x and an event e , then there is a proper part y of x that has a ϑ relation with every proper part e' of e . (45d) says that if there is a ϑ relation between an object x and an event e , then there is only one part y of x that has a ϑ relation with any part e' of e .

As we can see in (45), Krifka's definition of incremental relation applies both ways: from the object to the event and from the event to the object; the mapping is always one-to-one. That is to say, the ϑ relation depends on the graduality of x : each subevent of e has a different unique part of x as its theme, and each part of x is the theme of a unique part of e , and each part of x is mapped to no more than one part of e . What leads to telic interpretation is the size of x : at some point, x will be used up - this is the culmination point, the point at which e is over.

Krifka then addresses two types of ϑ relations. The first ϑ relation is the strict incremental relation between objects and events with verbs of creation or consumption. Firstly, a bare V is cumulative; for example, in "eat an apple", the sum of two events in *eat* will also be in *eat*. However, the ϑ relation between the event and the object ensures

every subevent in this predicate is unique, thus non-cumulative, because every part of the apple consumed is unique. That is to say, if parts of the apple a are eaten incrementally in an event e , then there is a proper part e' of e such that the part of the apple a_1 was eaten at e' . This is not the case for predicates like “push the cart”: although *the cart* is also non-cumulative, the relation between the object and the event is not incremental. Thus, no proper part of the pushing event maps to a proper part of the cart object.

The second ϑ relation is the general incremental relation between objects and events with verbs like “read”. Unlike events with strict incremental relations mentioned above, “read an article” does not have unique subevents as a proper part, as stated in Krifka (1998):

Assume that the article p has 3 paragraphs p_1 , p_2 , p_3 , and that Mary read p_1 at e_1 , that she read p_2 at e_2 , that she read p_2 again at e_2' , and that she read p_3 at e_3 . Then both $e_1 \oplus e_2 \oplus e_2' \oplus e_3$ and $e_1 \oplus e_2 \oplus e_3$, where the latter event is a proper part of the former, are related to the same object, p , and due to uniqueness of participants there is no proper part of p that is related to $e_1 \oplus e_2 \oplus e_3$.

(Krifka, 1998, p. 18)

Krifka suggests that although the subevents are not unique, the repetition of e_2 between the initial part and the final part of the event does not affect telicity. This is because the minimal convex time that covers the two events ($e_1 \oplus e_2' \oplus e_3$ and $e_1 \oplus e_2 \oplus e_3$) is the same since they both begin with e_1 and end with e_3 . Thus, they can satisfy the interval adverbial “in x time”. That is to say, there is an idealised abstract event (Rothstein, 2004) that can be defined in terms of the reading event e ($e_1 \oplus e_2 \oplus e_3$), and this abstract event is strictly incremental, with subevents and sub-objects mapping in a one-to-one relation.

In addition, the repetition of the initial part and the final part also does not affect telicity, because pragmatic conditions ask us to identify an event that is situated within the

shortest interval (Krifka, 1998). That is to say, if there is an event ($e1' \oplus e1 \oplus e2 \oplus e3 \oplus e3'$), we only identify a proper part of this event ($e1 \oplus e2 \oplus e3$) as the reading event. According to Krifka, the general incremental relation is the smallest relation which contains the (abstract) strict incremental relation. The definitions are shown below:

(46).

- a. strict incremental relation $SINC(\theta)$: there is uniqueness of objects/events and mapping to sub-objects/subevents
and $\exists x, y \exists e, e' [y < x \wedge e' < e \wedge \theta(x, e) \wedge \theta(y, e')]$
- b. incremental relation $INC(\theta)$: $SINC(\theta')$ and $\theta' \subseteq \theta$
and $\forall x, y \forall e, e' [\theta(x, e) \wedge \theta(y, e') \rightarrow \theta(x \oplus y, e \oplus e')]$

(Krifka, 1998, pp. 15-18)

(46a) says that the strict incremental relation has to satisfy the four properties in (45) and that there is a proper part y of x and a proper part e' of e , and y and e' have an incremental relation, and x and e have an incremental relation. (46b) says that for every incremental relation, the mereological sum of sub-objects x and y has an incremental relation with the sum of sub-events e and e' .

As Krifka states, the strict incremental relation (46a) requires the predicate p to have proper parts. Thus, it excludes situations in which the object x and the event e are atomic, like “make a dot”. The general incremental relation in (46b) depends on the idealised abstract event, where there can be a ϑ relation under the event description, but not always follow the one-to-one mapping in the real world. This includes predicates like “read the book”, “wash the shirt”, or “paint the picture”, where there could be an idealised event where the extent of the theme determines the extent of the event, but there also could be repeated subevents.

Despite the fact that Krifka provides a formal semantic analysis that can explain the mereological conditions that hold between the arguments of predicates, the problems in the theory are not to be ignored.

As admitted in Krifka (1998), there are predicates like "peel an orange" and "build the house" that are telic but do not follow the ϑ relation. In those predicates, there is no one-to-one mapping between the event and the object; for example, in the building event, there could be an event, which is the erection of a scaffold that is removed later. In the peeling event, not every part of the object *orange* is mapped to the event. Krifka argues that this is because the lexical meaning of the verb selects a particular aspect of the object to be considered the event's theme. Thus, some parts of the event and objects are excluded from the telic interpretation. Furthermore, some predicates are telic but do not have a quantized theme, like "write a sequence of numbers". Krifka argues this is due to the pragmatic factor that the most plausible way to interpret "write a sequence of numbers" is as applying to the writing of a minimal sequence, that is, a sequence of two numbers, which, in turn, is a quantized theme. However, this approach would mean that the class of predicates that allow a true incremental relation is too restricted. As pointed out by Filip (2008):

There are many telic predicates denoting events whose extent is not (directly) determined by the physical extent/volume of the referent of one of their overtly expressed arguments, but instead by some other measurable dimension associated with events they describe. Just what it is and what type of scale will be activated to measure it will heavily depend on the context, world knowledge and cognitive principles of interpretation.

(Filip, 2008, p. 10)

In the examples above, the extent of the events "peel an orange", "build the house", and "write a sequence of numbers" is related to some other measurable dimension associated with the events, but not the theme argument. This problem is also pointed out by Rothstein (2004), where she provides various examples:

(47). repair the computer; spice the soup; wash the clothes/shirt; dry the clothes;
prove the theorem; paint the picture; solve the Rubik's cube; close the suitcase;
close the door; lock the door; convince the student of the truth of the argument¹²

(Rothstein, 2004, p. 98)

As we can see, Krifka's theory has some limitations. I will try to address them in the next subsection.

1.4.4. Jackendoff (1996)

Jackendoff (1996) suggests a theory that could describe the relation not only between the event and the incremental theme but also between the event and other measurable dimensions. The model in Jackendoff (1996) comes from movements along the path in motion verbs. He argues that telicity comes from the boundedness of the path:

If the path has an explicit endpoint, then the event and the time period have explicit endpoints as well, and the event is telic (an accomplishment). If the path lacks an explicit endpoint, then so do the event and the time period, and the event is atelic (an activity).

(Jackendoff, 1996, p. 318)

Jackendoff constructs situations as relations between events, paths and times, which can be represented in three axes in the conceptual structure. We think of an event of motion as a multi-dimensional construct spread out along some interval on the time axis. For each point t_i on the time axis, there would be a representation of the event with an entity X at some location l_i . Then, this representation is projected onto the event of motion as a whole, as shown below:

¹² As pointed out in Leal (2009), there are some achievements in these examples. Nevertheless, there are also accomplishments which are hard to explain.

(48).	$[1d]^\alpha$	$[1d]^\alpha$	$[1d]^\alpha$	[sp-bound axes]
	0d			
	sit BE ([Thing X], [Space 0d]);		[Time 0d]	[cross-section]

(Jackendoff, 1996, p. 321)

According to Jackendoff, the event, path, and time axes are connected by a structure-preserving binding relation (sp-bound), represented by the α on the top horizontal row in (48). The illustration in (48) should be read from the bottom row to the top: at a certain zero-dimension time $[Time\ 0d]$, there is a situation where the entity $[Thing\ X]$ is at a certain zero-dimension space $[Space\ 0d]$. Then there are three axes to consider: the point-situation is projected onto a durative event (the left vertical column); the point in space is projected onto a path (the middle vertical column); and the point in time is projected onto a time interval (the right vertical column). The zero-dimensionality (0d) and one-dimensionality (1d) represent whether the feature is a point or a line on the axis (there is also 2d, which represents a plane). In addition, the sp-bound relation between the three axes links them together; that is to say, if one chooses any particular point on the event axis, the cross-section (bottom row) it determines is linked to specific points on the path axis and the time axis. Furthermore, a bounded interval on one axis maps onto bounded intervals on the other two axes, and similarly for a non-bounded axis. For motion verbs, the telic and atelic interpretations can be illustrated as below:

(49).

a. Bounded event, path, and time:

$[1d\ (+b)]^\alpha$	$[1d\ (+b)]^\alpha$	$[1d\ (+b)]^\alpha$
0d		
sit BE ([Thing X], [Space 0d]);		[Time 0d]

b. Nonbounded event, path, and time:

[1d (-b)] ^α	[1d (-b)] ^α	[1d (-b)] ^α
Od		
sit BE ([_{Thing} X], [_{Space} Od]);		[_{Time} Od]

(Jackendoff, 1996, p. 324)

The boundedness and non-boundedness features are represented by (+b) and (-b) on the axes. Note that at least for motion verbs, if one of the axes has an end point (+b), then the other two axes have an end point (+b); if one of them does not have an end point (-b), then the other also does not have an end point (-b). From here, Jackendoff argues that telicity is controlled not only by the path axis but also by the time axis, as shown by examples below:

(50).

- a. The cart rolled to NY/into the house/over the bridge/four miles. (telic)
- b. Bill pushed the cart to NY/into the house/over the bridge/four miles.
(telic)
- c. The cart rolled along the road/toward the house. (atelic)
- d. Bill pushed the cart along the road/toward the house. (atelic)
- e. The cart rolled. (atelic)
- f. Bill pushed the cart. (atelic)
- g. The cart rolled through the grass/down the hill in/for ten minutes.
(ambiguous)
- h. The cloud floated through the sky for/in an hour. (ambiguous)

(Jackendoff, 1996, pp. 325-327)

In (50a-b), the path is specified by either a PP or a measure phrase. Thus, the event is telic, and the sentences allow time adverbials that pertain to bounded time periods (in x time); these sentences have the structure in (49a). By contrast, in (50c-f), either the path is specified to be unbounded (50c-d) or, in the absence of a stipulated path, a

unbounded path is assumed by default (50e-f); thus, the event is atelic, and the sentences allow unbounded time adverbials (for x time). These sentences would have the structure in (49b). From the time axis, this relation also holds; in (50g, h), the choice of temporal adverbial fixes the boundedness of the time axis, thus determining whether the path is construed as bounded or not. The ambiguity of (50g, h) comes from the ambiguous lexical meaning of the preposition “through” or “down”. For example, according to Jackendoff, “through” could specify a path from one side to another (bounded), or it could specify a path that has no definite endpoints (unbounded).

The structures in (49a) and (49b) can explain the telicity of motion verbs and verbs of change of possession. Jackendoff states that, unlike change of location, change of possession is basically without duration. For example, in “Bill gave/lent/sold the book to Harriet.”, the time at which the book ceases to belong to Bill is not before the time at which the book comes to belong to Harriet. According to Jackendoff, the change of possession also involves a path, but there are no points between the source and the goal in the “possessional path” from Bill to Harriet. And then, because the path and time are sp-bound, there would be no points between the initial point and the endpoint on the time axis, thus rendering the event instantaneous. If there is no point between two points in the axis, then it is safe to say that the two points overlap, in the sense that the change of possession VP denotes the ending of the event “Bill handed out the book” and the beginning of the state “the book belongs to Harriet”, which follows the characteristic of achievements (Piñón, 1997).

In addition, the structures can also represent verbs of change of properties. See examples below:

(51).

- a. The water got hot in/*for two minutes.
- b. The amoeba flattened out in/*for two minutes.
- c. The water got hotter for/*in two hours.
- d. The crowd grew for/*in two hours.

- e. The water cooled down in/for two minutes.
- f. The chemical reddened in/(continuously) for half a minute.

(Jackendoff, 1996, p. 331)

In (51), the path would be the temperature of the water/the shape of the amoeba/the density of the crowd/the color of the chemical. Jackendoff argues that the telicity of these sentences comes from the property of the entity, which replaces the space feature in the structures. The property of the entity is regarded as forming a linear scale that is the path of the event, as illustrated below:

(52).

- a. Bounded event, path, and time:

$[1d (+b)]^\alpha$	$[1d (+b)]^\alpha$	$[1d (+b)]^\alpha$
Od		
sit BE _{Ident} ([Thing X],	[Property Od]);	[Time Od]

- b. Nonbounded event, path, and time:

$[1d (-b)]^\alpha$	$[1d (-b)]^\alpha$	$[1d (-b)]^\alpha$
Od		
sit BE _{Ident} ([Thing X],	[Property Od]);	[Time Od]

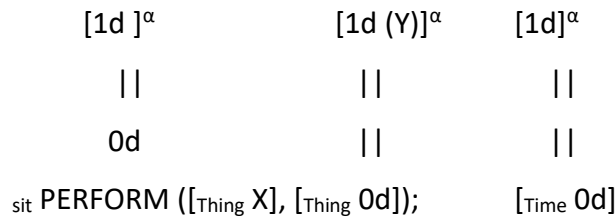
(Jackendoff, 1996, p. 331)

The structures are essentially identical to those of motion verbs: when the path $[Property Od]$ is specified to be bounded, the event would be telic (51a-b); when the path $[Property Od]$ is specified to be non-bounded, the event would be atelic (51c-d). Similar to the motion verbs, if the path is non-specific, the event would be ambiguous between a telic and an atelic interpretation.

The structure can also be applied to VPs with verbs of performance, for example, “read a book” or “sing the tune”. According to Jackendoff, the entities being performed, such

as books and tunes, are conceptualised as objects construed as a linear enclosure along which the performer is located. The performer's location advances along the *path* over time, i.e., the performer is involved in a particular part of the performed entity at a particular time. The structure would be as below, where X is the performer, and Y is the performed entity:

(53). Performance VP:



(Jackendoff, 1996, p. 332)

(53) has all of the features of motion verb VPs since the structures are essentially identical: specified path = telic event; unspecified path = atelic event, as shown in (54).

(54).

- a. Bill read the paper/sang the tune in/??for five minutes.
- b. Bill read fiction/sang opera for/*in five minutes.
- c. Bill read/sang for/*in five minutes.

(Jackendoff, 1996, p. 333)

Now, let us look at some problematic examples mentioned above, namely in (47), repeated below, where the extent of the event is not measured by the physical extension of the theme entity but by some other properties.

(47). repair the computer; spice the soup; wash the clothes/shirt; dry the clothes; prove the theorem; paint the picture; solve the Rubik's cube; close the suitcase; close the door; lock the door; convince the student of the truth of the argument.

(Rothstein, 2004, p. 98)

In those examples, the position of the theme¹³ on the path does not need to be smooth: the theme may stop along the way or even back up. For example, in the cases of “repair the computer” or “solve the Rubik’s cube”, the theme is not moving¹⁴ until one “finds the solution for the problem”. In the case of “paint a picture”, one can paint and paint over the same piece of canvas, meaning that the theme is constantly backtracking. Jackendoff argues that this is because there is a function called *weak sp-binding*, which can be applied to events in general cases. *Weak sp-binding* differs from strong *sp-binding* because it allows stops and backups. Thus, mapping the event, the path and time is not exactly one-to-one. The definitions are shown below:

(55). A function f is a *strong sp-binding* of X into Y iff:

- a. for every $x_i \in X$ there is a $y_i \in Y$ such that $y_i = f(x_i)$
- b. for every $y_i \in Y$ there is a $x_i \in X$ such that $x_i = f(y_i)$
- c. for all $x_i, x_j, f(x_i) \neq f(x_j) \leftrightarrow x_i \neq x_j$

(56). A function f is a *weak sp-binding* of X into Y iff:

- a. for every $x_i \in X$ there is a $y_i \in Y$ such that $y_i = f(x_i)$
- b. for every $y_i \in Y$ there is a $x_i \in X$ such that $x_i = f(y_i)$
- c. for all $x_i, x_j, f(x_i) \neq f(x_j) \rightarrow x_i \neq x_j$

(Jackendoff, 1996, p. 350)

In (55) and (56), the X and Y are axes of equivalent dimensionality, for example, the linear one-dimensional axis of time and path. (55a, b) is the same as (56a, b), the only difference between them is in (c), where strong *sp-binding* requires the mapping to be one-to-one, and weak *sp-binding* does not. For example, in “the cart rolled over the bridge”, the default reading would be that of an event with *strong sp-binding*, where the position of the cart on the bridge and the point in time are mapped one-to-one. In this

¹³ In this case, the theme is a conceptualized object moving alongside the path: a position marker on the progress bar of the event.

¹⁴ In the case of “John repaired the computer”, the conceptualized “position marker” could be staying at “0%” when “John tests the computer”. Then the “position marker” will be moving when “John is actually repairing it”.

interpretation, the cart cannot be in the same position on the bridge at two different time points. By contrast, in “repair the computer”, the default reading would be *weak sp-binding*, where the event can be at the same position in the axis at various time points, because the person is fiddling around and has not found the problem yet. In this case, similar to performance VPs, the bounded path axis would be a linear progression from “0% repaired” to “100% repaired”; the event could stay at any of the points for a period of time, or even back track because perhaps the person made a mistake. However, even in *weak sp-binding*, a different event point is related to a different time point (the computer cannot be both 10% repaired and 30% repaired at the same time). This theory thus can explain some of the problematic examples in (47), which are: *repair the computer; spice the soup; prove the theorem; paint the picture; solve the Rubik’s cube; convince the student of the truth of the argument*. Some other examples can be explained simply by the path in the change of properties VP structure: *close the suitcase; close the door; lock the door*. The path in these examples would be the linear scale of the entity’s property, for example, “100% open” to “100% closed” or “100% unlocked” to “100% locked”.

There are, however, some other examples in (47), namely, “dry/wash the clothes/shirt”. In these VPs, the graduality of the event could be measured by the physical extent of the clothes/shirt, but it could also be measured by the cleanness/dryness of the whole shirt or the predefined wash/dry time of the washing machine. In this case, there could be three different interpretations that are distinguished only pragmatically. These three interpretations have different measure functions, whether it is the physical extent of the theme, the property of the theme or the time. Jackendoff faces similar problems when addressing verbs of creation and consumption. If the time is taken to be one dimensional, there would be two readings; one is that the theme is extended in one dimension and *sp-bound* to the other axes, in cases like “eat an apple bite by bite” or coming into existence bit by bit, in cases like “a circle comes into existence when we draw it the usual way”. In the other case, existence could be treated like a scalar property: there is a gradual route from existence to non-existence or vice versa. This

scale is then bound to time, giving us the reading in which the object as a whole appears gradually (Jackendoff, 1996, p. 334) in cases like “digest” or “the gradual coming into existence/fading out of the Cheshire cat”. These two interpretations are represented below:

(57). X comes into existence bit by bit over interval T:

$[1d]^\alpha$	$[1d X]^\alpha$	$[1d T]^\alpha$
INCH [BE_{Ex} ([0d], IN EXISTENCE); [0d]		

(58). X as a whole comes into existence gradually over interval T:

$[1d]^\alpha$	$[1d \text{ IN EXISTENCE}]^\alpha$	$[1d T]^\alpha$
INCH [$BE_{Ex}(X, [0d],)$];		[0d]

(Jackendoff, 1996, p. 334)

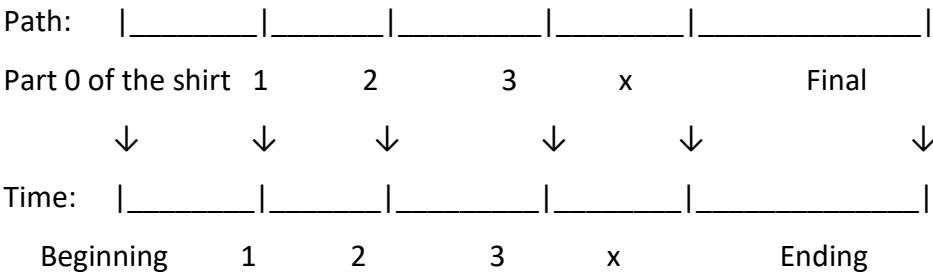
The INCH in (57) and (58) means these events are inchoatives. BE_{Ex} is the conceptual structure predicate encoding existence. The choice of which structure is used also depends on the lexical meaning of the verb; for example, “build” only permits (57) and “digest” only permits (58).

Jackendoff also argues that there is another reading: the instantaneous reading. In this case, time is taken to be zero dimension in scenarios like “one eats a handful of popcorn all at once” or “have a new idea spring 'fully formed' into one's mind”. However, as discussed in the previous section about durativity, these scenarios are not truly without duration; instead, they seem like “very short” events which permit durative readings in the slow-motion scenario. In this perspective, these very short events could fit the structure of (58). If we consider “one eats a handful of popcorn all at once” in a slow-motion scenario, there could be proper parts of the event like “feeding the popcorn to

the mouth” and “chewing”. In this case, the X is being affected as a whole since there is no partial completion of any proper part of the entity, i.e., we cannot say that “a part of the popcorn is eaten”. By contrast, in the “eat apple bite by bite” scenario, we can say that “a part of the apple is eaten”. Essentially, the path axis of an entity that is affected as a whole would be the gradual property of the entity, like in (52a) and (52b), rather than the space, like in (49a) and (49b).

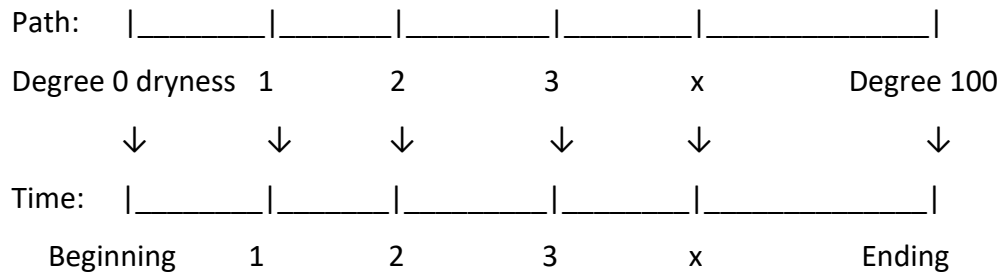
Now, let us apply this theory to “dry the shirt”. In the first interpretation, “dry bit by bit (perhaps by a person holding a hair dryer)”, the measuring path is the extent of the shirt, and then the time axis is defined through the path axis. Thus, the conceptual structure would be that of a performance VP (53); since the person is involved in a specific part of the shirt at a particular time, the shirt is conceptualised as a linear enclosure along which the person is located, and the location advances along the path over time. The path and time axis could be represented as below (ignoring repetitions):

(59). Telic performance reading:



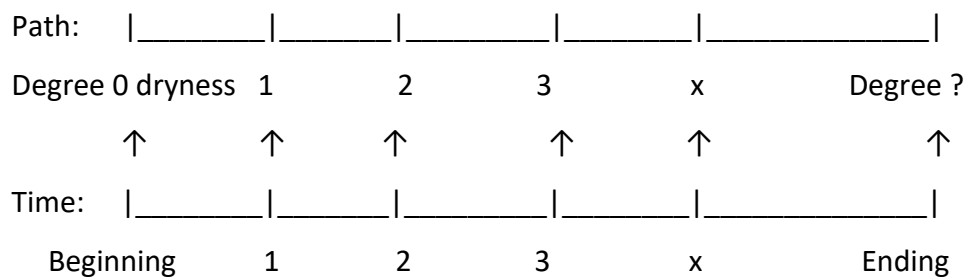
In the second interpretation, where the shirt gets dryer and dryer as a whole (perhaps by hanging it in the sun), the measuring path becomes the property of the shirt. The time axis, again, is defined through the path axis, which can be represented as below:

(60). Telic property reading:



As we can see above, under the performance reading and the property reading, the path axis is defined first and the time axis second, according to the sp-binding feature of the event. However, unlike the two interpretations above, in the third interpretation, where the time is predefined by the drying machine, the event's path is defined through the time axis. Again, this reading specifies the property of the shirt as the path axis because the shirt is affected as a whole. The axes can be represented as below:

(61). Telic predefined time reading:



Note that in (61), the ending of the time axis does not always mean that the property of the shirt is at a degree 100 of dryness (if it is the *goal*). In (60), the event is complete if the property of the entity reaches the *goal* in the path axis (it could be 80- or 100-degree dryness). In (61), however, when the drying machine stops, the property of the shirt could be at 50-degree or 130-degree. Nevertheless, the event is considered complete. So, how can we know that the event is complete if the desired goal is not reached? This could be answered by the maximalization theory of Rothstein and Filip (2006) and Filip

(2008). I will discuss this theory later. But first, let us follow Jackendoff (1996) and see another type of verb.

Jackendoff argues that VPs of *covering* and *filling* form their group because they include a two-dimensional or three-dimensional scale. For example, in “fill the gap” or “cover the table”, the path that measures the event is the 3d space of the gap and the 2d plane of the table.

When X covers Y, every point on the surface of Y is occupied by a part of X; when X fills Y, every point in the volume of Y is occupied by a part of X. That is, Y again measures out X spatially, but in two and three dimensions, respectively.

(Jackendoff, 1996, p. 329)

According to the definition of *cover* and *fill*, Jackendoff argues that the telicity of covering and filling situations comes from the stative sp-binding between theme and location. The "cover" and "fill" readings are the telic readings of "spray" and "load" sentences. When addressing the problems of "spray" and "load" sentences, Jackendoff argues against Tenny (1994). Tenny claims that the “location-with theme” syntax (*Bill sprayed the wall with paint*) invariably expresses a covered/filled end state, while the 'theme-on/in-location' syntax (*Bill sprayed paint on the wall*) is non-committal. But it is not always the case. See examples below:

(62).

- a. Bill sprayed/smeared/dabbed/splashed the wall with paint (for ten minutes), but it still wasn't covered.
- b. Bill loaded the truck with dirt for an hour, but there was still room for more.
- c. Bill crammed/packed the crack with cement (for five minutes), but it still wasn't full.
- d. Bill loaded the truck with three tons of dirt in/*for an hour.
- e. Bill sprayed the wall with thirty gallons of water in/*for five minutes.

(Jackendoff, 1996, pp. 346-347)

Jackendoff suggests that the events in (62a, b, c) can have telic and atelic readings. And (62d, e) can only have telic readings. This means that the 'location-with theme' syntax does not always express a covered/filled end state. See examples below:

(63).

- a. Bill loaded the truck with dirt.
- b. Bill loaded the truck with three tons of dirt.

The theme in (63a), “dirt”, is unbounded, and according to Jackendoff, the event can have a telic reading and an atelic reading. On the contrary, the theme in (63b) “three tons of dirt” is bounded, and the event can only be telic. That is to say, the unbounded theme in (63a) does not force atelicity in “filling/covering” VPs, unlike in other VPs (motion or performance). To address this issue, Jackendoff suggests that the telic reading comes from two sources: one is the specified time axis (if there is one), and the other is the structure of “cover/fill” verbs (if the time axis is unspecified). Depending on the class of “spray/load” verbs, the atelic readings may have distinct structures:

'Container-oriented' verbs specify this spatial distribution in terms of the shape and/or volume of the container; examples are *load*, *pack*, and *cram*. 'Final distributive' verbs express the spatial distribution of the theme over its final location; examples are *smear* and *spread*. 'Path distributive' verbs like *spray* and *splash* specify that the theme is spatially distributed during its travel.

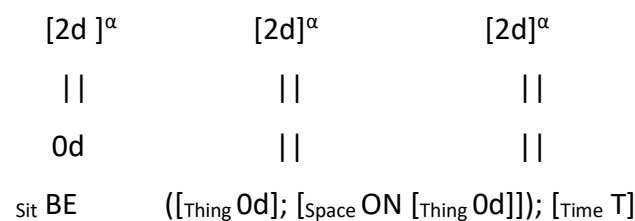
(Jackendoff, 1996, p. 345)

Although not mentioned in Jackendoff (1996), the measuring axis of the three classes is not hard to deduce. In “container-oriented” verbs, when they have atelic readings, the unbounded theme introduces atelicity. When they have telic readings, the bounded theme or the bounded location (specified container) measures the event (one cannot continue to load dirt into the truck/load the truck with dirt if the truck is full). By contrast, in “final distributive” and “path distributive” verbs, the measuring axis is always the theme, whether in telic readings or atelic readings (one can continue to spread jam on the bread/spray the wall with water even if the location is fully covered).

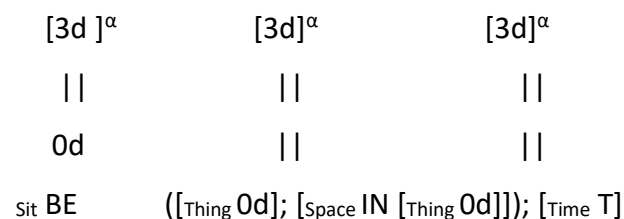
In summary, “spray” and “load” sentences can have both telic and atelic readings, depending on which axis is considered the measuring axis. The telic readings of these sentences not only come from the bounded theme but can also come from the bounded location. In the telic interpretation of events with “container-oriented” verbs (default interpretation for “load the truck with dirt”), the predicate would have a cover/fill end state that is a stative sp-binding structure between theme (dirt) and location (volume of the truck). In this end state, the path measures the theme spatially rather than temporally in two or three dimensions. The end states can be represented as below:

(64).

a. X covers Y



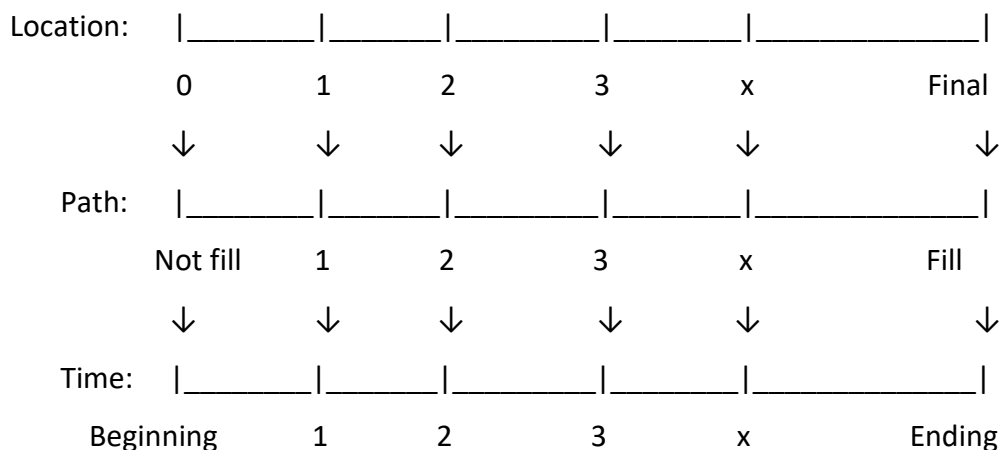
b. X fills Y



(Jackendoff, 1996, p. 329)

Since the structures in (64) are states, time is not projected. There is, however, one more step to the interpretation of the telic predicate “load the truck with dirt”: map this end state onto the event structure. It seems that the telic interpretation of “load the truck with dirt” has the path as (59), except that the beginning and end of the path are defined as “X not fill Y” and “X fills Y” (64b), and that the axis of the “loading” path is mapped through the location of the theme in the “fill” relation (64b). The mapping could be illustrated as below:

(65). Load the truck with dirt:



The illustration in (65) essentially converts the container's three-dimensional space into a one-dimensional line. This is because we must map the points in the path axis onto the time axis. The linear feature of the time axis would require any path to be one-dimensional to maintain a sp-binding relation.

In other telic interpretations, it is the theme and not the location that measures the event, like in (63b): “Bill loaded the truck with three tons of dirt.” Like consumption VPs, we can see two possible structures: one is that the theme is extended in one dimension, as in different bits of dirt loading at different times, and the other is that the path is extended in one dimension as the dirt as a whole loads. However, the path of the loading event is gradual, not because there is a scalar property of the event but because every part of the theme is in motion. If we think about the path of the loading event, there is no gradual loading of the whole quantity of dirt, unlike in the path of the digesting event. Jackendoff observes that these two possible structures are also found in verbs like “flow”, “pour”, or “stream”. Furthermore, verbs of motion that are used with an appropriately linear theme can also have the “flow” interpretation, as shown below:

(66).

- a. Twenty million gallons of water flowed over the dam.
- b. Fog rolled into the city.

- c. The snake crossed the crack in the rock.
- d. The soldiers passed my house.

(Jackendoff, 1996, p. 343)

Jackendoff argues that in these sentences, the observer is fixed at a point, watching parts of the theme go by. Because of the pragmatics of the theme¹⁵, the events in (66) could have different interpretations. Using (66c) as an example, the first interpretation would be that the theme (the snake) is the measuring axis; it forms a sp-binding relation with the event and time. The second is that the path (cross the crack) is the measuring axis, like standard motion events, for example, “the cart rolled into the house” with the structure in (48).

The theory in Jackendoff (1996) provides a solution to the problematic examples in (49). Furthermore, he shows that telicity is not confined to the direct argument. Instead, it could also come from the PP argument. In addition, the author provides an account of the conceptual structure of various types of events and proposes that telicity depends on the theme, path, and location of the situation as well as on pragmatic factors. However, Jackendoff does not provide a solution for the pragmatic factors that affect the scalar properties of the event, as mentioned in the example (62). As pointed out in Kratzer (2002), a particular cleaning event, for example, might culminate as an event of cleaning my kitchen, but might not reach culmination with respect to cleaning my house.

Culmination conditions for verbs built from atelic stems could be inferred using general cognitive principles, rather than relying on knowledge of lexical meanings... Turning atelics into telics, possibly with the help of contextual information, would be the normal job of [telic].

(Kratzer, 2002, pp. 12-13)

¹⁵ I assume that “pragmatics” here means “perspectival ambiguity”. Due to the vagueness of the description of the theme, we could interpret the event (for example, in 66c) as (1) “the huge snake moves bit by bit through the crack” or (2) “the snake is smaller than the length of the crack and moves as a whole through the crack”.

1.4.5. Filip (2008)

In Filip (2008); Rothstein and Filip (2006), the authors propose a novel characterisation of telicity, which is related to the grammar of measurement and scalar semantics:

(67). Telicity corresponds to the maximalization operator MAX_E . It is a monadic operator, such that $MAX_E(\Sigma) \subseteq \Sigma$, which maps sets of partially ordered events onto sets of maximal events $MAX_E(\Sigma)$

(Filip, 2008, p. 2)

The partial order of events comes from the lexical meaning of the VP and possibly world knowledge. Following Krifka (1998), the authors argue that in the simplest case, the ordering criterion is derived from the strictly incremental relation (SINC) in (46a):

MAX_E and (SINC) relation: MAX_E maximalizes a set of events (partially) ordered by the ordering criterion derived from the lexical information constraining the SINC THEME relation on that set of events.

(Rothstein & Filip, 2006, p. 5)

The interpretation of SINC relation provides a scale of objects, which triggers a scalar implicature. See example below:

(68). Mary ate at least three sandwiches in an hour/ (*) for an hour.

(Rothstein & Filip, 2006, p. 6)

In (68), the SINC verb “eat” introduces a scale of events, then the scale is composed with “at least three sandwiches”, which incorporates the requisite ordering criterion and saturates the scale. Thus, the verbal predicate triggers a scalar implicature of “numerical statements describing events of differing sizes”, i.e., there is no lexically specified endpoint, the implicature singles out the largest unique event. The largest event means that the event e ends with the largest stage e_i which is a subevent of (a part of) e . The authors use the definition of *stage* in Landman (1992), who proposes that an event e_1 is a stage of e_2 if e_1 and e_2 are qualitatively distinguishable, e_1 is an earlier version of e_2 , and e_1 grows into e_2 . For example, in (68), there is e_1 , an event of Mary’s eating one

sandwich, and also *e2*, an event of Mary's eating two sandwiches, and so on. Then we consider increasingly larger events, the eating of three sandwiches *e3*, possibly the eating of four sandwiches *e4*, and we select the most informative proposition among these increasingly larger events in a given context (possibly *e3*, *e4* or *e5*). Once the largest stage is selected (for pragmatic reasons), the smaller stages are considered in sequence according to the scale introduced by the VP.

Furthermore, Filip (2008) argues that the scale of object introduced by MAX_E is an abstract representation of measurement, which is characterised by parameters according to Kennedy (2004):

a set of degrees (measurement values) totally ordered with respect to some dimensions, which indicates the property being measured (volume, temperature, length, weight, loudness, intensity, etc.); an ordering relation on the set of degrees, which distinguishes between predicates that describe increasing properties (like tall) and those that describe decreasing properties (like short).

(Filip, 2008, p. 4)

Thus, the operator MAX_E can be applied to a larger group of verbs with general incremental relations (17b) rather than just strictly incremental ones. For example, some VPs allow telic and atelic interpretations like “wash the window for/ in an hour” and “clean the kitchen for /in an hour”. In the telic interpretations of these VPs, MAX_E may be triggered by the time-span adverbial *in an hour* or by pragmatic principles of interpretation at a global or sentential level. In addition, Filip (2008) observes that scalar verbs like “clean” or “empty” do not entail that the absolute maximal degree of the scale was reached:

(69).

- a. I cleaned my system and still found file fragments on my C:drive, why is that?
- b. I emptied the tub, but not completely.

- c. This theater is empty for a theater showing a popular movie.

(Filip, 2008, p. 12)

In (69a), (69b) or (69c), the second clause provides a contextual restriction that shifts the default maximum standard of the implied scale, and events described by the first clause end with respect to some endpoint value that is less than the absolute maximum standard. The maximality requirement that it be reached may be imposed by the context of their use.

The maximality theory could answer the problem in (61) “wash the shirt”, where the washing machine predefines the wash time. In this interpretation, we cannot know the cleanness of the shirt until the event is over. In this scenario, like the scalar verbs, the upper bound of the largest stage could be restricted by context (the limitation of the washing machine). Then the MAX_E operator selects the largest stage that includes the final subevent of the washing event (until the machine stops) to be the denotation of the event description. Thus, the event is considered telic even though the upper bound of the scale of the object is not 100% clean. It could explain why (70) does not sound like a contradiction.

(70). John washed the shirt in the washing machine, but it came out dirty.

Filip (2008) provides an interesting theory concerning telicity by incorporating the maximality theory into the measure function of incremental relations. The theory can explain the pragmatic interference in telicity; the measuring scale of the event can be modified by contextual knowledge. I will discuss the maximality theory further in Chapter Three.

1.4.6. Summary

In summary, telicity should be considered a property of VPs; it depends on the relationship between the theme, the path and the location of the situation, as well as pragmatic factors. The telic/ atelic readings also depend on the relation between the lexical meaning of the verb and its arguments. Some VPs permit both telic and atelic interpretations; the interpretations depend on contextual limitations. In this section, I

have shown some theories concerning telicity, hoping to give an understanding of the concept's nature and discuss each theory's strengths and weaknesses. The most crucial notion for the present study is that there should be a "measurement" in interpreting situations; the telic/atelic readings depend heavily on this feature.

1.5. Conclusion

In this chapter, I have discussed properties that are related to aspect. In section 1.1, the difference between situation aspect and viewpoint aspect is mentioned. I have used the five-way typology when discussing situation types (or aspectual classes). The situation types are state, activity, accomplishment, achievement and point. The reason for using this typology and not the four-way typology proposed by Vendler (1957) or the three-way typology in Bach (1986) is that the five types of situations have been proven to exist independently in European Portuguese (Cunha, 2007). The situation types introduced in this chapter will be discussed further in Chapter 3.

Although not discussing too much about viewpoint aspect, following Arche (2013), I have argued that situation aspect maintains its properties regardless of what aspectual marker or grammatical morpheme occurs. These properties include three parameters: dynamism, durativity and telicity. In addition, situation aspect involves the classification of the event or state according to its temporal properties; it is the inherent property of the situation itself. That is to say, situation types like "accomplishments", "activities", or "achievements" are calculated without aspectual markers or grammatical morphemes in mind. That is why we have "progressive accomplishments" or "progressive achievements". On the other hand, viewpoint aspect depends more on the speaker's description of the situation, whether it is imperfective or perfective.

Moreover, I have mentioned the other two semantic categories usually associated with aspect. Section 1.1.2 focuses on the difference between aspect and tense. Although they both concern the temporal structure of situations, *aspect* concentrates on the internal temporal structure of the situation, whereas *tense* concentrates on the external temporal structure of the situation in relation to the time of speech or reference. I talked

about the theories of Boland (2006), Dik and Hengeveld (1997), and Reichenbach (1956). Section 1.1.3 focuses on the difference between aspect and modality. Unlike tense and aspect, modality does not concern how situations (events and states) are placed in time; rather, it concerns whether something is possible or necessary. Nevertheless, modality is closely related to aspect, as shown by the similar structures proposed in Abraham and Leiss (2008).

Furthermore, in 1.1.4, I have roughly discussed the coercion/ aspectual shift theory (Moens & Steedman, 1988; Rothstein, 2004). I showed some problematic examples that are hard to explain using this theory and some opposing perspectives in Arche (2013) and Kearns (2003). Coercion theory is a convenient way to address the particular behaviour of a situation that does not fit well in the category; however, there are still questions that are difficult to explain. Nevertheless, coercion is widely used in the literature for European Portuguese (Cunha, 2004; 2013; Leal, 2009). In the present study, I wish not to rely solely on the coercion theory in the following chapters to avoid the excessive discussion on "abstract accomplishments" and "progressive achievements" since the focus of the present study is non-derived accomplishment. Following Kearns (2003), I have shown that grammatical morphemes add an additional layer of information instead of bringing a complete shift in situation type. In this chapter, I have focused on situation aspect and its properties since that is the primary concern of the present study.

In the following sections, I have shown theories about the three parameters mentioned above. In each section, I have shown the definition and some linguistic tests provided by Cunha (2013) for European Portuguese and other sources for English (Dowty, 1979; Rothstein, 2004; Smith, 1991; Vendler, 1957). Importantly, these linguistic tests serve as an introduction to each parameter and not as the definition of each parameter. After introducing the linguistic test, some other theories relevant to each property are discussed. Furthermore, there are instances in which the linguistic tests found in the literature are ineffective. In section 1.2, I have discussed the theories concerning dynamism in Dowty (1979), Rothstein (2004) and Croft (2012). The dynamism property

in the literature is frequently linked to agency and change. A dynamic situation can be divided into stages so that the situation can evolve over time. The dynamism feature of a bare VP is determined by the meaning of its verb and the argument. However, this does not mean that a non-dynamic verb (like *be*) always forms a stative situation. Consequently, certain non-dynamic verbs are compatible with the progressive form.

In section 1.3, I have discussed the theories concerning durativity. There are three main perspectives in the literature. The first perspective is that punctual situations include situations which are very short and, therefore, have negligible durations; the punctuality feature comes from the semantics of the VP (Croft, 2012; Rothstein, 2004; Smith, 1997). The second one is that the durativity/punctuality of the situation is conditional. Any situation can be punctual if the speaker ignores the duration, so that the feature would depend more on context and pragmatic factors (Egg, 2002; Tenny, 1994; Verkuyl, 1972). The third perspective is that punctual situations are, in fact, without any duration (Comrie, 1976; Piñón, 1997). The problem in this section is how we can address slow-motion readings in punctual situations. Certain punctual situations from the first perspective could be placed in a slow-motion scenario. In this reading, the negligible, very short duration is "stretched" under focus into a definite period of time. The theory in Piñón (1997) could solve this problem since Piñón suggests that punctual situations do not include "changes" in themselves but presuppose one before them or after them, and that punctual situations do not include events with very short durations. However, a more extensive study is required to give a categorical statement. As the focus of the present study lies elsewhere, I will only keep the assumption that there are differences between truly punctual events and events with a short duration and leave the question of categorising short-duration events for further studies. In the present study, I will try to use only distinguishable durative events (not under a slow-motion reading) when introducing the data.

In section 1.4., I have discussed the theories about telicity, mainly the theories in Tenny (1994), Krifka (1998), Jackendoff (1996) and Filip (2008). Essentially, telicity should be viewed as a property of VPs; it depends on the relation between semantic and pragmatic

factors. The telic/ atelic reading comes from the difference between some (atelic) situations that can continue indefinitely and others (telic) that must, of ontological necessity, cease at some natural point. Telicity also depends on the relation between the lexical meaning of the verb and its arguments. The notion of measure in Tenny (1994) gives us a hint at how the completeness of a telic event is calculated. The theory of incremental relations proposed by Krifka (1998) suggests that the notion of completion comes from the mapping of the part structure of the event and the part structure of the argument. Jackendoff (1996) provides a comprehensive discussion about the telicity effect in various types of verbs and events and eventually suggests a conceptual structure that captures the measuring (or mapping) function that could describe the relation not only between the event and the incremental theme but also between the event and other measurable dimensions. The three theories above lead to a problem of vague measuring argument; that is, when the scale of the measuring argument is vague, how would we determine that the event is complete? This is where the theory of Filip (2008) enters. She uses maximality to explain the pragmatic interference by incorporating the maximality theory into the measure function of the incremental relations. Thus, a sentence's telicity would also depend on context.

Overall, this chapter serves as a general introduction to the concept of aspect and the features of situation types (or aspectual classes). Some notions introduced in this chapter are crucial in the following chapters. The notions of *measurement*, *scale* and *maximality* are more important when discussing result states or consequent states. In the next chapter, I will discuss the focus of the present study, "accomplishments" (for example, *comeu uma maçã*, 'ate an apple'), which are one of the situation types. Some theories mentioned in the present chapter will be examined in detail, emphasising this aspectual class.

2. Accomplishment

This chapter will discuss situation types (or aspectual classes/event types¹⁶). I will focus on the accomplishment type, as it is the subject of the present study. Event types are considered a generalisation of the description of certain events; each type has its own features. The combination of the features determines whether the event can be categorised as an accomplishment or another type.

It is important that we understand exactly what counts as an accomplishment event and what counts as the result before delving into the interaction between them. Note that I will discuss two types of accomplishments in the present study; as of right now, I will follow Wright (2014) and call them strict accomplishments and flexible accomplishments. The differences between them, however, will be saved for chapter 3. This chapter focuses on grasping the meaning of accomplishments in general and discussing the relation between accomplishments and their results.

In section 2.1 to section 2.5, I will discuss and analyse several relevant theories in the literature. The theories include Vendler (1957), Dowty (1979), Moens and Steedman (1988), Verkuyl (1989) and Rothstein (2004). The reasons for the selection are that they cover most of the foundation of theories about accomplishments and are also relevant in the discussion of flexible accomplishments in chapter 3. Several questions will be answered while discussing those theories. Firstly, should the accomplishment type be considered a category for verbs or events? Secondly, what is the definition of an accomplishment? And thirdly, what is the structure of an accomplishment?

In section 2.6, I will discuss several theories concerning the result state of accomplishments. I will combine different theories to address the problems concerning the relation between accomplishments and the result state. The theories in section 2.6 are Moens and Steedman (1988), Parsons (1990) and Croft (2012).

¹⁶ The terms are used interchangeably in this chapter.

Section 2.7 will be dedicated to particularities in European Portuguese that are relevant to the typology of result states.

Finally, section 2.8 will be the conclusion of this chapter.

2.1. Vendler (1957)

The terms for event types come from Vendler (1957). Although not the first to distinguish eventuality types, the author is the first to have a complete four-way classification used by most authors. Events or eventualities are divided between activities, states, achievements and accomplishments. In Vendler (1957), the category for each aspect is proposed, but the distinction between them is just slightly mentioned and has been proven problematic by various authors (Comrie, 1976; Dowty, 1979). However, it is necessary to include Vendler here because the term accomplishment needs to be clarified.

Now, according to Vendler, let us see what exactly an accomplishment is. Vendler classifies aspect as lexical properties of verbs. He introduces the aspectual types by discussing the English progressive tense. Some verbs allow progressive tense, and others do not. The ones that allow progressives are verbs that constitute events that "progress in time", which means the event consists of phases succeeding one another. The verbs that do not allow progressive do not have this characteristic. The author uses this to distinguish four types of verbs into two categories. On the one hand, there are groups of verbs with continuous tense, which can be divided into two groups: activities and accomplishments. On the other hand, other groups of verbs do not have continuous tense, such as states and achievements. This is the first feature of accomplishments; they can be used in continuous tense, as shown in (1):

(1). Progressive

- a. I am running. (Activity)
- b. I am building a castle. (Accomplishment)
- c. # I am knowing. (State)
- d. # I am recognizing. (Achievement)

Note that, unlike what is stated in Vendler (1957), various authors have proved that a significant number of achievements can have the continuous tense, like “I am winning.” (Rothstein, 2004; Smith, 1991; Verkuyl, 1989). See section 2.4. for Rothstein’s account of this problem.

Coming back to the Vendlerian aspectual classification. The author observes that the distinction between activities and accomplishments is that the truth value of an activity is down to any time internal in the event. In contrast, the truth value of accomplishments can only be determined when the event is complete. In other words, activities are homogeneous, while accomplishments are not.

If it is true that someone has been running for half an hour, then it must be true that he has been running for every period within that half-hour. But even it is true that a runner has run a mile in four minutes, it cannot be true that he has run a mile in any period which is a real part of that time, although it remains true that he was running, or that he was engaged in running a mile during any substretch of those four minutes.

(Vendler, 1957, p. 146)

According to Vendler, the second feature of accomplishments is that they are not homogeneous. The third feature of accomplishments is that they occupy a time stretch in the sense that they are not instantaneous (unlike achievements). If an accomplishment happened at time T , then T is on the time stretch in which the accomplishment happened. For example, if we say, “John was building the castle at 10.”, we know that the beginning time of the building event is before 10 and the finishing time of the building event is after 10.

Another feature of accomplishments is that they can appear in agentive constructions, like adding “deliberately” or “carefully”. This feature can also be applied to activities, but not states or achievements.

To distinguish between states and achievements, Vendler suggests that achievements are instantaneous while states last for a period of time. A test for it is in the form of time determination; we can ask the time period for states: “How long have you loved your wife?” but not for achievements: “#How long have you won the race?”

Vendler’s theory provides the distinction between the four aspectual classes, which gives us some idea of the terms “Activities, Accomplishments, States and Achievements.” Furthermore, he provides three linguistic tests for accomplishments; one is the progressive, the second is the truth condition in time intervals, and finally, the test for agentive constructions, which will be used in conjunction with tests in other theories mentioned in this chapter, later on, to determine whether an event is an accomplishment or not. Vendler also provides some examples for each class, as shown below in Table 2-1:

Table 2-1- Vendlerian aspectual classification

Activities	Accomplishments	States	Achievements
run	run a mile	know	reach
write	draw a circle	love	spot

Nevertheless, Vendler only provides some observations about the aspectual classes without suggesting solutions for problems like coercion (Moens & Steedman, 1988) or aspectual shift (Rothstein, 2004). As admitted by Vendler himself, the verb *see* could be used in a state, an activity or an accomplishment. The classification of verbs is criticised by linguists, namely Verkuyl (1993) and Dowty (1979). For example, consider the verb *eat*. If we assume that being an activity is a lexical property of this verb, then surely, by combining it with the noun *breakfast*, this property is preserved for the phrase “eat breakfast”. However, if we combine the verb *eat* with the NP “an apple”, we will have an accomplishment.

2.2. Dowty (1979)

Dowty (1979) provides a more comprehensive analysis of the four aspectual classes. He suggests that the aspectual class is a feature of verb phrases rather than verbs. Following Vendler, Dowty also divides the aspectual class into four groups: activities, accomplishments, states and achievements.

2.2.1. Linguistic tests

Dowty states that each category has its own unique properties and can be distinguished using these properties. The first distinction he discussed is between *stative* (states) and *non-stative* (activities and accomplishments). He provides six tests for the distinction, as shown in (2):

(2). Distinction between *stative* and *non-stative* aspect.

- a. Only non-statives occur in the progressive:
 1. #John is knowing the answer. (state)
 2. John is running. (activity)
 3. John is building a house. (accomplishment)
- b. Only non-statives occur as complements of *force* and *persuade*.
 1. #John forced Harry to know the answer.
 2. John persuaded Harry to run.
 3. John forced Harry to build a house.
- c. Only non-statives can occur as imperatives.
 1. #Know the answer!
 2. Run!
 3. Build a house!
- d. Only non-statives co-occur with agentive adverbs like *deliberately* or *carefully*.
 1. #John deliberately knew the answer.
 2. John ran carefully.
 3. John carefully built a house.

- e. Only non-statives appear in pseudo-cleft constructions.
 - 1. # What John did was know the answer.
 - 2. What John did was run.
 - 3. What John did was build a house.
- f. When occur in non-progressive tenses, only non-statives have a frequentative (or habitual) interpretation in normal contexts.
 - 1. John knows the answer. (≠John has a habit of knowing the answer.)
 - 2. John runs. (=John has a habit of running.)
 - 3. John recites a poem. (=John has a habit of reciting poems.)

According to Dowty, between *non-stative* aspect, activities and accomplishments can be further distinguished by time adverbials and by the entailments when adding such time adverbials. He provides eight tests for this purpose, as shown in (3):

(3). Distinctions between activities and accomplishments.

- a. Accomplishments always allow completive adverbial¹⁷ *in x time*; very marginally allow durative adverbial *for x time*. Activities only allow durative adverbials.
 - 1. ? John painted a picture for an hour.
 - 2. John painted a picture in an hour.
 - 3. John walked for an hour.
 - 4. # John walked in an hour.
- b. In an accomplishment with completive adverbial or durative adverbial, the adverbials can be substituted by “*it took x time to*” or “*spend x time + PROG*” respectively. In the case of activities, the latter substitution is not possible.
 - 1. John spent an hour painting a picture.
 - 2. It took John an hour to paint a picture.

¹⁷ For convenience purposes, I will use the terms completive adverbials and durative adverbials in Smith (1991).

3. John spent an hour walking.
 4. # It took John an hour to walk.
- c. If an activity with a durative adverbial is true, it entails that in any interval of the duration, the denotation of the predicate is true. If an accomplishment with a durative adverbial is true, it does not entail that in any interval of the duration, the denotation of the predicate is true.
1. John walked for an hour. → John walked in any subinterval of the interval of that hour.
 2. John ate the sandwich for three minutes (and then stopped). ↗ John ate the sandwich in any subinterval of the interval of those three minutes.
- d. If an activity in the present progressive tense is true, it entails that the same predicate in the past perfective tense is true. If an accomplishment in the present progressive is true, it entails that the same accomplishment in the past perfective is false.
1. John is walking. → John walked.
 2. John is painting a picture. → John did not paint the picture.
- e. If an activity with *stop* is true, it entails that the activity in the past perfective tense is true. If an accomplishment with *stop* is true, it does not entail that the accomplishment in the past perfective tense is true but entails that the accomplishment in the progressive is true.
1. John stopped walking. → John walked.
 2. John stopped painting the picture. ↗ John painted the picture.
 3. John stopped painting the picture. → John was painting the picture.
- f. Only accomplishments are felicitous when adding *finish*.
1. #John finished walking.
 2. John finished painting a picture.

- g. If an activity with an *almost* adverb¹⁸ is true, it entails that the activity is false without any subevents taking part. In the case of accomplishments, they would have two readings: one entails that a proper part of the accomplishment is realised without the final result; the other entails that the accomplishment is false without any subevents taking part.
1. John almost walked. → John was not walking; he did nothing at all.
 2. John almost painted a picture. → John was painting the picture, but did not finish the painting.
 3. John almost painted a picture. → John was not painting; he did nothing at all.
- h. Some accomplishments in which the result brought about is a non-permanent state of affairs exhibit an ambiguity¹⁹ with durative adverbials which activities never have.
1. The sheriff of Nottingham jailed Robin Hood for four years.
(repetitive reading and single act reading)
 2. The sheriff of Nottingham rode a white horse for four years.
(repetitive reading only)

To further distinguish accomplishments and achievements, Dowty provides another seven tests, as shown below.

(4). Distinction between accomplishments and achievements.

- a. Achievements are generally quite strange with durative adverbials.
 1. John noticed the painting in a few minutes.
 2. ?John noticed the painting for a few minutes.
- b. The substitution of *spent x time PROG* is not possible for achievements, but is possible for accomplishments.

¹⁸ The term “*almost* adverbs” comes from Tenny (2000).

¹⁹ For example, “The sheriff of Nottingham jailed Robin Hood for four years” could mean that (i) Robin Hood was repeatedly in and out of jail in the time period or that (ii) Robin Hood stayed in jail in the time period.

1. It took John a few minutes to notice the painting.
 2. ?John spent a few minutes noticing the painting. (achievement)
 3. It took Peter two hours to paint the wall.
 4. Peter spent two hours painting the wall. (accomplishment)
- c. If an achievement with a completive adverbial is true, it does not entail that during that time interval, the progressive tense of the achievement is true. If an accomplishment with a completive adverbial is true, it entails that during that time interval, the progressive tense of the accomplishment is true.
1. John noticed the painting in 5 minutes. $\Rightarrow$ John was noticing the painting during those 5 minutes.
 2. John painted the picture in 5 minutes. $\rightarrow$ John was painting the picture during those 5 minutes.
- d. Accomplishments are felicitous when adding *finish*, while achievements are not.
1. John finished painting the picture.
 2. #John finished noticing the painting.
- e. Progressive achievements are unacceptable as complements of *stop* (except in a habitual reading).
1. # John stopped noticing the painting.
 2. John used to find a penny under his table every morning, but he stopped finding it yesterday.
- f. “Almost adverbs” does not produce the ambiguity with achievements that it produces with accomplishments.
1. John almost painted a picture. $\rightarrow$ John was not painting; he did nothing at all.
 2. John almost painted a picture. $\rightarrow$ John was painting the picture, but did not finish the painting.

3. John almost noticed the painting. → John did not notice the painting.

g. Achievements are incompatible with agentive adverbs, such as *deliberately* or *carefully*, while accomplishments are compatible.

1. ?John deliberately discovered the solution. (achievement)

2. ?John carefully detected an error. (achievement)

3. Peter carefully painted the castle. (accomplishment)

Dowty summarises the criteria above to form a chart which he claims can distinguish subsets of the four categories, as shown below.

Table 2-2- Criteria for distinguishing aspectual classes.

Criterion	States	Activities	Accomplishments	Achievements
meets non-stative tests	no	yes	yes	?
has habitual interpretation in simple present tense	no	yes	yes	yes
Φ for an hour, spending an hour φ ing	ok	ok	ok	bad
Φ in an hour, take an hour to φ	bad	bad	ok	ok
Φ for an hour entails φ at all time in the hour	yes	yes	no	d.n.a
x is φ ing entails x has φ ed	d.n.a	yes	no	d.n.a
complement of <i>stop</i>	ok	ok	ok	bad
complement of <i>finish</i>	bad	bad	ok	bad
ambiguity with <i>almost</i>	no	no	yes	no
x φ ed in an hour entails x was φ ing during that hour	d.n.a	d.n.a	yes	no
occurs with <i>carefully</i> , <i>attentively</i> , etc.	bad	ok	ok	bad

ok= the sentence is grammatical, semantically normal²⁰

bad= the sentence is ungrammatical, semantically anomalous

d.n.a= the test does not apply to verbs of this class.

(Dowty, 1979, p. 60)

Dowty's theory suggests that the four aspectual classes can be distinguished through these tests in Table 2-2. However, as admitted, sometimes the distinction is not so clear. The first case is the distinction between activities and accomplishments. Dowty observes that in some special contexts, activities can have accomplishment readings, as shown below:

- (5). I haven't finished looking at your term paper yet, but I'll try to finish it tonight so we can discuss it tomorrow.

(Dowty, 1979, p. 61)

In (5), if considering the aspectual class as the classification of the verb, the activity verb "look" has a "special sense" in which it is an accomplishment. In addition, Dowty shows that there could be an accomplishment reading when an activity verb of motion is combined with a locative of destination. Furthermore, he admits that specific verb phrases can be read ambiguously as an activity or an accomplishment, and the two readings are equally felicitous, as in example (6):

- (6).
- a. He read a book for/in an hour.
 - b. She combed her hair for/in five minutes.

(Dowty, 1979, p. 61)

If strictly following the test in Table 2-2, activities with a completive adverbial would be bad, which is not the case in (6). When combined with a durative adverbial, the event, whether "read a book" or "combed her hair", has an irresultative meaning which can only apply to activities. Consequently, the reading of events in (6) depends not only on

²⁰To be grammatical is not the same as to be semantically normal.

the verb but also on the whole sentence. Dowty claims that the durative adverbial in (6) may be restricted to activities exclusively, and the occurrence of them with accomplishments is, in fact, because the accomplishments are being read as activities. This observation shows that Vendler's theory, which categorises aspect as a feature of the verb, is problematic. Dowty suggests that there are indeed some verbs that must be accomplishments. However, other verbs may or may not be accomplishments under specific contexts; the same applies to other aspectual classes.

Another observation that challenges Vendler's classification is that nominals play an important role in the aspect classification.

Accomplishment verbs which take direct objects behave like activities if an indefinite plural object or a mass-noun direct object is substituted for the definite (or indefinite singular) one.

(Dowty, 1979, p. 62)

What Dowty means is that if a VP contains a plural indefinite NP or mass noun NP, it will have the properties of an activity. See examples below:

(7). Achievements and accomplishments with activity readings.

- a. John built houses for a month.
- b. #John finished building houses.
- c. John discovered fleas on his dog for 6 weeks.
- d. Water leaked through John's ceiling for six months.

This problem is because achievements and accomplishments are perfective while activities are durative (following Verkuyl, 1972). Perfective aspect predications have a common feature: they all have a notion of a specific goal that needs to be reached or a task that needs to be accomplished. Accomplishments, in particular, if occurred in simple past tense, would be understood that the goal or the task is reached, whereas if they occurred in progressive tense, they would be interpreted as the actions that the subject performed have not reached the goal, which gives them activity readings.

2.2.2. Accomplishment structures

Dowty further explains that achievements and accomplishments involve a change-of-state towards the goal provided by the logic operator BECOME. The definition of BECOME is:

BECOME ϕ would be true at t iff ϕ is true at t , ϕ is false at t' for some time t' earlier than t , and for all times t'' later than t' but earlier than t ϕ is also false at t'' .

(Dowty, 1979, p. 76)

This means that the BECOME operation is instantaneous, and t is the precise time in which the change-of-state happens. For example, in the accomplishment “John built the house”, let us suppose that the last brick of the house is placed at 9 am, then the BECOME operator in the accomplishment marks the stative “the house is built” at 9 am. We cannot say “the house is built” at any time before 9 am, but we can say it after 9 am. In achievements, the BECOME operation takes place as the denotation of the whole event. For example, in “John discovered the solution”, let us suppose that the event happened at 9 am again; then the stative “the solution is discovered” would be true only after 9 am and false before that time.

Dowty uses the BECOME operator to address the problems in (7). Because an achievement sentence is a BECOME sentence, adding a durative adverbial would be semantically contradictory. Consider the sentence below:

(8). #John discovered the solution for five hours.

In the five hours in (8), the sentence “John discovered the solution” should be true. However, BECOME sentences like “John discovered the solution” mean that a stative is false before the BECOME operation and true only after the operation. In this case, let us suppose that at t , the stative “the solution is discovered” is true, and the stative is false at $t-1$. In addition, as a consequence of the durative adverbial, the BECOME sentence would also be true at $t+1$, which means that the stative “the solution is discovered” is

true at $t+1$ and false at t . It then generates a paradox, in which, at the same time t , the stative “the solution is discovered” would be both true and false.

In the case of plural indefinites or mass nouns, for example, in (9), the subject (“solutions”) of the stative “solutions are discovered” could be divided into several proper parts. As a result, at the same time t , the true stative and the false stative are not affecting the same “solutions”. For example, the “solutions” are divided into solution a and solution b , then at time t , a could be “discovered” and b could be “undiscovered”. The same goes for (10), which presupposes the BECOME sentence “water leaked” is true in these six months. However, at t , the subject of the stative “water” could be different portions of “water” compared to the “water” from $t-1$.

(9). John discovered solutions for five hours.

(10). Water leaked through John’s ceiling for six months.

Dowty claims that the same rule can also be applied to accomplishments, except that, unlike achievements, subjects of accomplishments do not fall within the scope of the BECOME events. Take (7a), for example. At t , the subject of the stative “houses are built” could be a different “house” compared to the “house” from $t-1$, which permits the event to be compatible with durative adverbials.

The subject is not in the scope of the BECOME event in accomplishments because accomplishments can be decomposed into two components, and the BECOME event in accomplishments only includes the stative component embedded in the accomplishment. Again, using “John built the house” as an example, the stative sentence would be “the house was built”, which does not include the subject's action. The action of the subject “John does something” is the prerequisite of the BECOME event, so Dowty claims that a CAUSE operator connects them. Dowty further states that accomplishments have a logical structure that involves the subject's action, the CAUSE operator and the BECOME event, as shown below:

(11). Logical structure of accomplishments: [ϕ CAUSE ψ]

(Dowty, 1979, p. 91)

(12). John built the house.

(13). [John does something] CAUSE [BECOME [the house was built]]

(13) is the interpretation of the accomplishment (12) using the logical structure in (11). Dowty suggests that all accomplishments use causative verbs, and the CAUSE in (11) is a connector linking two propositions rather than a relation between individuals and propositions. Φ is a BECOME sentence or an activity predicate, and ψ is a BECOME sentence. The two sentences are embedded in the accomplishment.

The CAUSE in Dowty's structure of accomplishment uses a modified version of counterfactual causation theory in Lewis (1973). Following Lewis, Dowty suggests that overall similarity among worlds in possible world theory plays an important role in causal relations, in the sense that to determine whether event $c1$ or $c2$ is the cause of event e , we delete the event $c1$ and $c2$ from the actual world separately and see which outcome has the most impact on the actual world. Dowty defines causal relation as below:

(14). Φ depends causally on ψ if and only if Φ , ψ and $\neg\Phi \Box \rightarrow \neg\psi$ are all true.

(15). Φ is a causal factor of ψ if and only if there is a series of sentences $\Phi, \Phi_1, \dots, \Phi_n, \psi$ (for $n \geq 0$) such that each member of the series depends causally on the previous member.

(16). [ϕ CAUSE ψ] is true if and only if (i) ϕ is a causal factor for ψ , and (ii) for all other ϕ' such that ϕ' is also a causal factor for ψ , some $\neg\phi$ -world is more similar to the actual world than any $\neg\phi'$ -world is.

(Dowty, 1979, p. 108)

The counterfactual symbol²¹ $\Box \rightarrow$ in (14) also involves possible worlds, which is the actual world "plus some changes". For example, in a possible world α , in which A is true and otherwise differs minimally from the actual world, then there is a selection function f which takes the proposition A and the possible world α as arguments and gives another possible world as value. The possible world $f(A, \alpha)$ then should be similar to α if not identical to α .

²¹ Dowty calls it the counterfactual symbol or the conditional symbol.

(17).

- a. $A \Box \rightarrow B$ is true in α if B is true in $f(A, \alpha)$.
- b. $A \Box \rightarrow B$ is false in α if B is false in $f(A, \alpha)$.

(Dowty, 1979, p. 101)

In other words, if $A \Box \rightarrow B$ is true, then the worlds most similar to the actual world in which A holds and B holds as well are “more similar” to the actual world than the worlds in which A holds and B does not hold. For example, in a causal relation “smoking causes death”, A is *smoking* and B is *death*, and it is more likely that both events occur, although there are some cases in which A is true and B is false. Overall, Dowty’s CAUSE is a counterfactual causal relation, which could be problematic when applied to specific linguistic data. I will discuss these issues in section 3.1.

According to Dowty, another component in some accomplishments is the action part DO, which involves an *agent*, i.e., the possible subject of DO. However, the *agent* could be intentionally or unintentionally involved in the event of DO, as shown below:

(18). Definition of DO: $\Box [DO(\alpha, \phi) \leftrightarrow \phi \wedge u.t.u.c.o.a(\phi)]$

u.t.u.c.o.a = is under the unmediated control of the agent (denoted by α)

(19). John cut his arm.

(Dowty, 1979, p. 118)

(19) is ambiguous because it has intentional and unintentional readings. Dowty suggests that the ambiguity could be addressed regarding the position of the operator DO in the logical structure of the accomplishment. Whereas for the intentional reading, there is an operation DO1 (α, ϕ_1) (John, use a knife) within the scope of the structure [ϕ CAUSE ψ]. The accomplishment structure is then embedded within another DO2 (α, ϕ_2) event, which is DO (John, cut his arm). The ϕ_2 (cut his arm) contains the whole structure of [ϕ CAUSE ψ]. To be more precise, the intentional reading can be represented as DO2 (John, [DO1 (John, use a knife) CAUSE [the arm was cut]]). The unintentional reading of the sentence would only contain one DO event, which is DO1 (John, use a knife); this DO1

event is the ϕ in the structure $[\phi \text{ CAUSE } \psi]$. The structure of the unintentional reading could be represented as such: $[\text{DO1 (John, use a knife) CAUSE [the arm was cut]}]$.

Another structure of accomplishments is that the CAUSE is non-agentive or instrumental. For example, the reading of “someone pushed John” in the accomplishment “John hit the wall.” Dowty argues that in non-agentive structures, there is no DO event. Instead, there are two BECOME events connected by CAUSE. The last possible structure is the accomplishment with an agentive subject and a secondary agent, like “John forced Bill to speak.” In this case, the structure contains two DO events connected by CAUSE without any BECOME events.

To summarise, there are four structurally different accomplishments, according to Dowty. The four types are shown below:

- a. Non-agentive accomplishments:

$[[\text{BECOME } \phi] \text{ CAUSE } [\text{BECOME } \psi]]$

- b. Non-intentional agentive accomplishments:

$[\text{DO } (\alpha_1, [\pi_n (\alpha_1, \dots, \alpha_n)])] \text{ CAUSE } [\text{BECOME } (\beta_1, [\rho_m (\beta_1, \dots, \beta_m)])]$

- c. ? Intentional agentive accomplishments²²:

$\text{DO } (\alpha_1, [\text{DO } (\alpha_1, \pi_n (\alpha_1, \dots, \alpha_n)) \text{ CAUSE } \phi])$

- d. Agentive accomplishments with secondary agent:

$[\text{DO } (\alpha_1, [\pi_n (\alpha_1, \dots, \alpha_n)])] \text{ CAUSE } [\text{DO } (\beta_1, [\rho_m (\beta_1, \dots, \beta_m)])]$

2.2.3. Imperfective paradox

Now, let’s look at another feature of accomplishments. When an accomplishment is in progressive tense, the event does not entail the accomplishment in perfective tense. This is a feature of accomplishments and can be used as a linguistic test to distinguish accomplishments from activities. Dowty claims that the fact progressive accomplishments fail to entail the BECOME event generates an “imperfective paradox”. See the example below:

²² Dowty is not sure about the viability of this structure.

(20). John was drawing a circle. $\rightarrow$ John was engaged in an activity that aims to bring a circle into existence.

(21). John was drawing a circle. $\nrightarrow$ The circle was brought into existence.

Dowty suggests that progressives involve a PROG operator, which nests in the event structure in progressive accomplishments:

(22). PROG [ϕ CAUSE [BECOME ψ]]

The solution for the imperfective paradox has to depend on the truth condition for the progressive [PROG ϕ]. According to Dowty, in an accomplishment, [ϕ CAUSE [BECOME ψ]] entails both ϕ and [BECOME ψ] because of the counterfactual causative theory he uses to define CAUSE. By contrast, a progressive accomplishment PROG [ϕ CAUSE [BECOME ψ]] must entail ϕ but not entail [BECOME ψ]. Dowty pointed out that the BECOME event is a *possible outcome* for progressive accomplishments, unlike normal ones. So naturally, the PROG operator involves possible worlds in which the outcome is reached. The truth condition for PROG is shown below:

(23). [PROG ϕ] is true at $\langle I, w \rangle$ iff there is an interval I' such that $I \subset I'$ and I is not a final subinterval for I' and for all w' such that $w' \in Inr(\langle I, w \rangle)$, ϕ is true at $\langle I', w' \rangle$.

(Dowty, 1979, p. 147)

(23) means that the progressive operator denotes an event in the real world with its more developed version of the event existing in a possible world, and the real world and possible world are identical up to a certain time. The *Inr* in (23) is an inertia world function. The inertia worlds are worlds exactly like the given world (real world) up to the time in question, and in which the future course of events after this time develops in ways most compatible with the past course of events. In other words, the inertia worlds are worlds in which no elements stop ϕ from happening. Using (20) as an example, in the real world, the event of John drawing is happening at interval I , and no one knows if the event continues to develop, the drawing would be a circle or a semicircle. In the inertia worlds of this event, because of a “common belief” (or “in ways most compatible

with the past course of events”) that the intention of the agent is to draw a circle, φ (John drew a circle) would be true, thus, [PROG ϕ] is also true in the real world.

Regarding the truth condition for PROG, the entailment of [BECOME ψ] in progressive accomplishments could be valid in inertia worlds. The entailment of [BECOME ψ] in normal accomplishment would be in the real world, eliminating the contradiction in accomplishments. Dowty also uses the PROG operator to address several problems in other aspectual classes. However, it would be irrelevant to the present study of accomplishments to address these issues here.

2.2.4. Discussion

To summarise, Dowty’s theory takes aspectual classification to another step and provides various linguistic tests to distinguish the four classes. In particular, accomplishments can be distinguished not only by their acceptability in the combination with temporal adverbials but also by the entailments of the combination. In addition, Dowty’s two-way decomposition of accomplishments suggests that the result subevent of accomplishments has its own structure, which involves a BECOME operator. The structure of a BECOME event is closely related to the syntactic structure of an accomplishment; for example, accomplishments with prepositional phrases have the meaning of the PP embedded in the BECOME event. The same goes for the factitive construction, where the object is followed by an adjective expressing the result-state; the meaning of the adjective is also embedded in the BECOME event. Furthermore, Dowty introduces the inertia world theory to account for the contradiction in the entailment of accomplishments, which could explain why sometimes the result-state of the accomplishment is not realised in the real world.

However, Dowty’s theory is not without some questionable points. Let us start with the linguistic tests to distinguish the four aspectual classes. Firstly, in (4), Dowty suggests that an activity with an *almost*, like “John almost walked”, unambiguously entails that no subevents are realised. However, consider the example below in Tenny (2000):

(24). Dizzie almost touched the fabric.

(Tenny, 2000, p. 314)

The event in (24) is an activity using Dowty's test. For example, the test of temporal adverbials and the test of progressive entailment all show the same behaviour, as shown below:

(25). Activity

- a. Dizzie touched the fabric for an hour.
- b. # Dizzie touched the fabric in an hour.
- c. Dizzie was touching the fabric. → Dizzie touched the fabric.
- d. Dizzie stopped touching the fabric. → Dizzie touched the fabric.

When it comes to the test of the entailments when combined with *almost*, the result is not so clear. (24) is indeed ambiguous between the reading of "Dizzie is getting ready to touch the fabric but abandoned the project" and another reading of "Dizzie started the movement to touch the fabric but did not reach it." Or another reading: "A dirty fabric was covering a dog. Dizzie wanted to touch the dog, but not the dirty fabric, so she avoided the fabric." As stated in Tenny (2000), the adverb *almost* offers many possible readings, limited only by the speaker's imagination. In fact, the second reading, "Dizzie started the movement to touch the fabric but did not reach it", suggests that some subevent of the activity event has taken place. A similar observation is found in Rapp and Stechow (1999), where they suggest that an activity with an *almost* has two readings: one is that the agent performed an "almost-activity", and the other is that the agent did not perform any action. Whether this "almost-activity" counts as a subevent of the activity is not clear. Nevertheless, there is a reading for "activities with *almost*" in which the agent did something.

Now, let's look at the accomplishment part of the *almost* test, where accomplishments should be ambiguous between two readings. Consider (26) from Folli (2015):

(26). Italian

Gianni ha quasi aperto la finestra.

‘Giani has almost opened the window.’

According to Folli (2015), the reading of (26) could be (i) the action has not been performed at all yet, or (ii) the opening has been minimal. However, it cannot mean that Gianni has performed some process.

As we can see, at least for some verbs or VPs, the test with *almost* does not work. Moving on to another *almost* test, Dowty suggests that *almost* does not produce ambiguity with achievements, contrary to accomplishments. The scope of the adverb represents this ambiguity in accomplishments: in one reading, the adverb is modifying the DO²³ part of the accomplishment; in the other reading, the adverb is modifying the BECOME part. However, as pointed out in Tenny (2000), an achievement with *almost* can indeed produce an ambiguity. See example below:

(27). Bob almost kicked the wall.

(Tenny, 2000, p. 314)

One possible reading for (27) is that “Bob was starting to kick the wall but did not reach the wall”. In this reading, the adverb takes scope over the BECOME event - the achievement. The other possible reading is that “Bob was getting ready to kick the wall but abandoned the project”. In this case, the adverb modifies the presupposed DO event of the achievement or the “*prior motion* entailed by the achievement” (Piñón, 1997).

Comparing the ambiguity with *almost* in accomplishments and achievements, the only difference between them is that the DO events in accomplishments are within the denotation of the predicate, and the DO events in achievements are a presupposition, leading to different entailments when combined with *almost*. Dowty’s *almost* tests, as we can see, involve too many complications and specific cases that the effectiveness of the test itself becomes questionable, whether for the distinction between accomplishments and activities or accomplishments and achievements.

²³ I will use Dowty’s term in this section to explain the ideas proposed by other authors, although not all use the same term.

The other problematic point in Dowty's theory is the operator CAUSE. As he uses the counterfactual causative theory, some problems are inevitable. For example, the counterfactual theory cannot clearly explain why people select one causal factor over the other. Consider a scenario of late pre-emption in Paul (1998):

A showdown at high noon, where Quickdraw McGraw and Slow Joe face off against Billy the Kid. At a few second before noon, McGraw and Joe see Billy and begin to draw their guns virtually simultaneously. However, McGraw's draw is a bit faster than Joe's, so McGraw fires first, and as a result, his bullet gets there first. As it happens, McGraw shoots Billy dead at 12:00:00. Billy dies instantly from the bullet wound (a hole in his chest). Without McGraw's act, he would have died that same day, but at 12:00:01, by the hand of Slow Joe (who shot in exactly the same place on his chest).

(Paul, 1998, p. 48)

The scenario could be summarised by an accomplishment: "McGraw killed Billy." However, if using Dowty's theory, it becomes impossible to tell why we cannot say "Joe killed Billy". Both McGraw's fire φ and Joe's fire φ' are causal factors for the death of Billy ψ because of (15) and (16), i.e., if someone shot a person, the person would be dead. Then, we apply (16) to the event. If comparing the possible world without φ and the possible world without φ' , the result is not as desirable. When deleting "McGraw's shot" from the actual world, what would happen is in the $\neg\varphi$ -world "Billy is dead at 12:00:01"; when deleting "Joe's shot" from the actual world, what would happen is in the $\neg\varphi'$ -world "Billy is dead at 12:00:00", which is contrary to the theory: $\neg\varphi$ -world should be more similar to the actual world than any $\neg\varphi'$ -world is.

Another problem of Dowty's CAUSE theory is that if we look at the structure of accomplishments, they always include a CAUSE operator, which means that the causal relation holds in every accomplishment. Furthermore, we can deduce that in every accomplishment using the structure $[[DO] CAUSE [BECOME]]$, the DO event is a causal factor of the BECOME event. However, this is not always the case. See examples below:

(28). Thai

Surii téεη klɔɔn maa.

‘Surri composed poem.’

(Koenig & Muansuwan, 2000)

Koenig and Muansuwan (2000) and Koenig and Chief (2008) observe that in some Asian languages like Thai or Mandarin, the default reading for accomplishments is that of the imperfective, like the progressives, which means that the DO event in (28) “Surri composing” is not a causal factor of the BECOME²⁴ event “the poem is composed”. According to Dowty’s solution for the imperfective paradox, Φ must be entailed, and ψ must not be entailed in the real world. In other words, in the real world, $[\Phi, \psi]$ is false and $[\Phi, \neg\psi]$ is true. Again, this renders $\neg\Phi$ and $\neg\psi$ (Surri does nothing and the poem is not composed) less “close”²⁵ to the actual world than $\neg\Phi$ and ψ (Surri does nothing and the poem is composed). Recall that in (14) and (15), Φ is a causal factor of ψ iff Φ, ψ and $\neg\Phi \rightarrow \neg\psi$ are all true.

Comparing to accomplishments in English:

(29). English

John killed Peter.

In the actual world of (29), John did something Φ and Peter is dead ψ , $[\Phi, \psi]$ is true, $\neg\Phi$ and $\neg\psi$ (John did nothing and Peter is not dead) is indeed “closer” to the actual world than Φ and $\neg\psi$ (John did nothing and Peter is dead).

As we can see, for some Asian languages, at least Thai and Mandarin, Dowty’s theory of the operator CAUSE and the subevent BECOME could be in conflict. We need to address the problem or resort to an alternative account if we want to unify the structure of accomplishments cross-linguistically.

²⁴ The problem could be solved if we consider ψ is “the poem is composed to a degree” rather than “the poem is composed”. However, it would not be aligned with the definition of the imperfective used in Dowty (1979).

²⁵ The term “more or less close to the actual world” could be understood as “more or less probable to happen in the real world”.

The last questionable point I will discuss here concerns the four types of structure of accomplishments proposed by Dowty. These four types are repeated here:

a. Non-agentive accomplishments:

[[BECOME ϕ] CAUSE [BECOME ψ]]

b. Non-intentional agentive accomplishments:

[DO (α_1 , [π_n ($\alpha_1, \dots, \alpha_n$)])] CAUSE [BECOME (β_1 , [ρ_m ($\beta_1, \dots, \beta_m$)])]

c. Intentional agentive accomplishments:

DO (α_1 , [DO (α_1 , π_n ($\alpha_1, \dots, \alpha_n$)) CAUSE ϕ])

d. Agentive accomplishments with secondary agent:

[DO (α_1 , [π_n ($\alpha_1, \dots, \alpha_n$)])] CAUSE [DO (β_1 , [ρ_m ($\beta_1, \dots, \beta_m$)])]

Upon further observation, if agentive accomplishments are divided into two types (intentional and non-intentional²⁶), why is there only one structure in type *d*? Why is there no distinction between “intentional agentive accomplishments with a secondary agent” and “non-intentional agentive accomplishments with a secondary agent”? Dowty seems to suggest that “agentive accomplishments with secondary agent” purely consist of non-intentional agents, according to their structure. Because of the above types, we can deduce that the structure of “intentional agentive accomplishments” has a DO event before the structure of accomplishments: DO [ϕ CAUSE ψ]. By contrast, a non-intentional one does not have this DO event: [ϕ CAUSE ψ]. Furthermore, the structure in *d* can be represented by [ϕ CAUSE ψ], which is in line with non-intentional structures. The problem is: why does type *d* not include a DO event before the [ϕ CAUSE ψ] structure?

The agent in Dowty’s example appears to be intentional, as shown below:

(30). John forced Bill to speak.

(31). John forced Bill to build a house.

(Dowty, 1979, pp. 124-125)

²⁶ Recall that Dowty considers intentionality as a separate category from Agentivity: in an agentive accomplishment (“John cut his arm”), the agent could be intentional or non-intentional.

It is difficult, if not impossible, to think of the event in (30) or (31) as a non-intentional behaviour. Compare (30) with (32):

(32). John cut his arm.

According to Dowty, (30) and (31) have the structure [ϕ CAUSE ψ], while (32) has two possible structures: (i) intentional DO [ϕ CAUSE ψ] and (ii) non-intentional [ϕ CAUSE ψ]. While (30) and (31) can only have the intentional reading, the structure somehow is different from the intentional reading in (32), but is the same as the non-intentional reading in (32) i.e., the structure of “John forced Bill” is the same as “John cut his arm”, albeit the intentionality of the agent is different.

Furthermore, there are also non-agentive accomplishments with secondary agents, which are not represented in Dowty’s structure. For example:

(33). His brother’s murder incited Jean to vengeance.

(Guéron & Vogeleer, 2021, p. 10)

If following Dowty’s definition, the structure of (33) would be [BECOME ϕ] CAUSE [DO (β_1 , [ρm ($\beta_1, \dots, \beta_m$)])].

To sum up, Dowty’s proposal for classifying aspectual predicates and the structure of accomplishments is interesting as it provides linguistic tests for distinguishing accomplishments from other aspectual classes. Furthermore, the aspectual classes in Vendler (1957) are treated as a category for events, not verbs. Indeed, this treatment has been proven to be less problematic. I will argue here that the accomplishment type is a category for events, and the classification not only depends on the lexical meaning of the verb but also on its arguments.

Nevertheless, Dowty uses a two-way decomposition theory and a counterfactual causation theory to address the structure of accomplishments; however, the counterfactual theory cannot clearly explain why people select one causal factor over the other. The linguistic tests in Dowty (1979) will be a starting point when real world data is introduced in chapter 4. Although there are some questionable points, as I just

discussed, the importance of causative relations in accomplishments cannot be overstated. Dowty's theory makes clear that the action part of the accomplishment, whether it is a DO event or a BECOME event, is connected to the result part of the accomplishment via a causative relation. However, the causative relation is proven to be more complicated than what is presented in the theory. There are some compatibility issues with the causative theory that Dowty uses and the structure he proposed. I will discuss the problem of causative relations further in chapter 3.

2.3. Moens and Steedman (1988)

In Moens and Steedman (1988), aspectual types take another form, unlike Vendler (1957). The authors consider the distinction of aspectual types not to depend on temporal relations but on a causal relation called "contingency". To explain the notion of contingency, the authors used examples of several "when" clauses, as shown in (34a) to (34c):

(34).

- a. When John left, Sue cried.
- b. When Sue cried, her mother got upset.
- c. When John left, Sue's mother got upset.

Moens and Steedman (1988, p. 16)

The authors argue that it would be infelicitous to infer (34c) from (34a) and (34b), so the "when" clause is not a purely temporal relation²⁷. From there, the authors suggested an alternative term to describe relations like those in the *when* clause: "contingency". The contingency relation is part temporal, part causal, and at the same time, does not follow the exact rules of both terms. It can be interpreted as a relation that is temporal but does not force a temporal sequence and is causal, but both causing and permitting are taken into consideration. For the authors, *A causes B* means that "if *A* happens, the

²⁷ If using purely temporal expressions like "while", (34c) can be inferred.

probability of B increases.” The notion of causation here should be interpreted probabilistically rather than logically.

For Moens and Steedman (1988), the aspectual types purely come from the speaker's agency, i.e., the speaker's perception and prediction of the relations happening other than what is really happening or what will really happen. This means that the temporal sequence of an aspectual type is purely an invention by the speaker and not an actual sequence. With this prerequisite in mind, the authors first divided the aspectual types into two categories: events and states. Furthermore, events are divided into culminations, points, processes, and culminated processes.

The speaker or the writer who gives out the utterance, for Moens and Steedman (1988), is the determining factor for categorising aspectual types. If, for the speaker, an event is instantaneous or punctual, and the event brings a change of state in the world (not the actual world but the prediction of the speaker), the event is called a culmination. An example of a culmination is presented in (35a):

(35).

- a. Harry reached the top. (culmination)
- b. John hiccupped. (point)

Moens and Steedman (1988, p. 16)

In (35a), there is a consequent state that is temporally located after the event. For the speaker, the consequent state is linked to the culmination event (35a) by a causal relation called “contingency”, which means in (35a) that the possibility of this change of state is related to the culmination event, i.e., for the speaker, (35a) caused or permitted a change of state.

A point is like a culmination in the sense that it is an indivisible event to the speaker. Still, the point is not related to a consequent state in the perception or interpretation of the speaker, like the example (35b).

The difference between a culmination and a point is that a culmination is an instantaneous event with a consequent state, but a point is not necessarily instantaneous and without a consequent state. The authors mentioned a test for the two events, in which the culminations usually can be combined with a perfect auxiliary, but the point with a perfect auxiliary is “rather odd”, as in (36a) and (36b).

(36).

- a. Harry has reached the top.
- b. # Harry has hiccupped.

Moens and Steedman (1988, p. 16)

The authors explain that (36b) is infelicitous because the perfect auxiliary requires the argument to be a culmination, subject to the limitation of contextual knowledge. However, in the case of (36b), without any contest, the hearer cannot associate any relevant consequent state with the event.

The third aspectual type of an event is called a process, which is the event that (for the speaker) is extended in time and does not have a culmination or conclusion, as in (37a):

(37).

- a. Harry climbed. (process)
- b. Harry climbed to the top. (culminated process)

Moens and Steedman (1988, p. 16)

As the final aspectual type of events, the authors used the term culminated process (accomplishment in Vendler (1957)), as in (37b).

These types of events have characteristics similar to those of the processes, as they also are extended in time but do have a relevant culmination and, with it, a relevant change of state. The difference between a process and a culminated process, as in terms of linguistic tests, is that a process can be combined with a for-adverbial but not with an in-adverbial and a culminated process can be combined with an in-adverbial but not with a for-adverbial, as in (38a) to (38d):

(38).

- a. Harry climbed for 45 minutes.
- b. #Harry climbed in 45 minutes.
- c. Harry climbed to the top in 45 minutes.
- d. #Harry climbed to the top for 45 minutes.

Adapted from Moens and Steedman (1988)

The authors proposed an event structure called nucleus based on the theory of contingency relations. The structure comprises three elements: a preparatory process, a culmination, and a consequent state. The consequent state is connected to the culmination by a contingency relation. Note that when the authors illustrate the event structure, the culmination element does not have an extension; only the preparatory process and the consequent state have one, which means that the culmination cannot be further divided. See (39):

(39).

- a. Culminated process: -----/-----

Preparatory processCulminationConsequent state
- b. Process: -----

Preparatory process
- c. Culmination: -----/

CulminationConsequent state
- d. Point: -----/

Culmination

Moens and Steedman (1988, p. 18)

Each aspectual type has a different event structure. The event structure in (39a) shows an event of a culminated process, composed of 3 full elements; the process only has the

first element (preparatory process); the culmination has the culmination element and the consequent state; and the point only has the culmination, as shown in (39b) to (39d):

The consequent state in the event structure is associated with the culmination element, which means that there cannot be a consequent state without a culmination, but there may or may not be a consequent state if there is a culmination (the point itself is just a culmination). Depending on the context (what the speaker thinks), each of the three elements can be compound or complex events.

Furthermore, according to Moens and Steedman, the culmination element does not have an extension, but this does not necessarily mean that the culmination is always instantaneous, as in (40):

(40). Have you climbed Mt. Everest yet?

Moens and Steedman (1988, p. 19)

The authors argue that the culminated process of “climbed Mt. Everest” is viewed as a whole, which can be answered as (41):

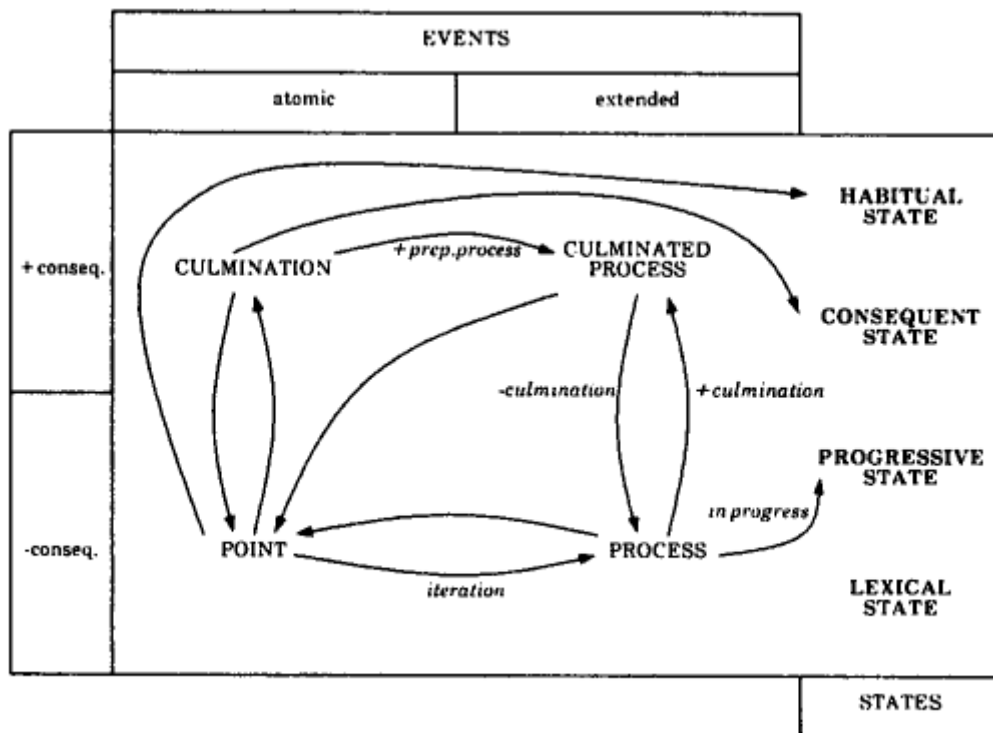
(41). John has climbed Mt. Everest.

The phrase in (41) holds similarities to (36a), as they are all combined with the same perfect auxiliary, but the event of “climbed Mt. Everest” is a culminated process, and the event in (36a), “reached the top”, is a culmination. As stated before, a culmination is (for the speaker) an instantaneous or punctual event and a culminated process is extended in time. The authors suggest that the culminated process first gets transitioned into a point and then into a culmination.

From there, the authors proposed a phenomenon called coercion, that is, phrases associated with an incompatible aspectual type get their type changed in order to be of the required type, causing a change in their meaning. Under the influence of tenses, adverbials and temporal auxiliaries, the aspectual type will change, as in (37b): the addition of the PP “to the top” changes the process to the culminated process, thus

adding a culmination and the relevant consequent state. An illustration of the coercion network is shown below in Figure 2-1:

Figure 2-1- Illustration of the coercion network



(Moens & Steedman, 1988, p. 18)

The changing of an aspectual type is hardcoded within the lexical meaning of each verb. Some of the verbs bear the possibility of changing the aspectual type of the phrase. The verbs in isolation are usually compatible with several aspectual types, but the auxiliaries or adverbials like “has” or “in x minutes” change the sentences to specific aspectual types, as shown in (37b). It is the combination of both the lexical meaning of the verb and the modifications that gives rise to the aspectual type of a sentence. The authors argue that the progressive auxiliary requires the argument to be a process, the perfect auxiliary requires the argument to be a culmination, the “for-adverbial” requires the argument to be a process, and the “in-adverbial” requires the argument to be a culminated process, as shown in Table 2-3:

Table 2-3- Input requirements

Modifiers	Required aspectual type
Progressive	Process
Perfect	Culmination
For-adverbial	Process
In-adverbial	Culminated process

As the authors argue that the progressive auxiliary requires the argument to be a process, a phenomenon that includes the progressive auxiliary and other aspectual types is mentioned, as in (42):

(42).

- a. Harry is reaching the top. (Progressive+ Culmination)
- b. John is hiccupping. (Progressive+ Point)
- c. Roger was running a mile. (Progressive+ Culminated process)

Moens and Steedman (1988, p. 18)

The authors suggested a two-phase transition for the culmination to become a process. First, it needs to be transitioned into a culminated process, which means adding the relevant preparatory process and then taking away the culmination itself and the associated consequent state²⁸. This method is acceptable because, in a phrase like (42a), the culmination is not considered to be a truth condition, as a continuation that denies the culmination is completely felicitous as in (43):

(43). Harry was reaching the top when he slipped and fell to the bottom.

Moens and Steedman (1988, p. 19)

²⁸ The authors also mentioned another possible route of transition: to iterate the culmination.

For the point to be transitioned into a process, the point combines with itself to form an extended time interval (one instance of “hiccup” is treated like “one step” in the process “John ran”). Then, the extended time interval combining several points is interpreted as a process.

For a culminated process to be transitioned into a process, the authors suggest two methods: one is to cancel the culmination element in the nucleus and the associated consequent state, thus having only the preparatory process will turn the culminated process into a process; the other is to make the whole culminated process into a point and to iterate it, making it a process.

Having described how different aspectual types can be transitioned into a process, the authors then proceed to explain how they can be transitioned into a culmination. The authors argue that the perfect auxiliary requires the argument to be a culmination and the reader’s ability to identify a relevant consequent state. The aspectual shifts can be illustrated in (44) and (45):

(44). John has climbed Mt. Everest. (Perfect + Culminated process)

(45). They have married on Friday the 13th! (Perfect + Culminated process)

Moens and Steedman (1988, p. 19)

As mentioned above, the authors argue that for a culminated process to become a culmination, the entire culminated process needs first to become a point and then add the relevant consequent state. The authors only described the possible route for a culminated process to become a culmination. They argue that the perfect auxiliary may be used if a particular situation is a consequent state of an event taking place at a particular time. However, it is possible for a process to be combined with a perfect auxiliary, which does not have a consequent state, as shown in (46) and (47):

(46). John rode a horse. (Process)

(47). John has ridden a horse. (Perfect + Process)

From the aspectual shift illustration (Figure 2-1), the logical route for the process “rode a horse” to be transitioned into a culmination is to turn it into a point and then add the relevant consequent state to make it a culmination.

Moving into the adverbials, because of the nature of the aspectual shift, when combined with a for-adverbial or an in-adverbial, the argument cannot necessarily be determined as a process or a culminated process in the first place, i.e., the linguistic test for the aspectual type could cause the original aspectual type to be transitioned into the corresponding type that the adverbials require, as shown in (48):

(48).

- a. John arrived late at work for several days. (For-adverbial + Culmination)
- b. John ran in four minutes. (In-adverbial + Process)

Moens and Steedman (1988, p. 19)

In a specific context, (48a) has the iterative reading of John arriving late every day, and the reading for (48b) could be, for example, when John habitually runs a particular distance.

The contingency theory, as proposed by Moens and Steedman (1988), has many benefits. First, it focuses on the agencies of the speaker. The consequent state of the nucleus does not depend on the consequences in the real world but on what the speaker infers; it is a convenient method of avoiding considering what is happening in the real world and only considering the speaker's intention. Secondly, the aspectual nucleus demonstrated a primitive of every event type and the possibility of constructing event types using elementary phases of the nucleus. Thirdly, the aspectual transition network serves as a guide to understanding how different tenses, adverbials, and auxiliaries modify each event type into a different type and to the possible route for the transition. However, the purely causative nature of the theory can sometimes be confusing when considering the time interval of each event type, notably the aspectual shift that the authors proposed. One of the transitions shown above is from a culminated process to a culmination. When considering the route that the author suggests, it is not hard to

discover that a culminated process has a necessarily extended time interval, but the point is considered instantaneous (or very short). Through the coercion, a culminated process becomes a point, then becomes a culmination. The time interval in the original culminated process cannot disappear or get “stripped away” when it becomes a point; the disappearance of the time interval is not represented in the nucleus. Another example of an extended time interval to become instantaneous is (47), where the process transitions into a culmination. The “disappearance” of the time interval in the culminated process can lead to the question of whether the transition can really be represented by the nucleus.

Secondly, if a table of aspectual types is made using the criteria of the combinations of the elements of the aspectual nucleus, it will be like in Table 2-4:

Table 2-4- Aspectual types

Nucleus elements	Aspectual Types
Preparatory process	Process
? Preparatory process + Culmination	?
Preparatory process + Culmination + Consequent state	Culminated process
Culmination	Point
Culmination + Consequent state	Culmination

Because of the nature of the culmination element and the consequent state element, the possibility of a preparatory process combined with a culmination rises. Recall that a culmination element can be presented without a consequent state element. So why cannot it then be another aspectual type consisting of only the preparatory process and the culmination? It means the intention of the speaker is to describe an event with an

extended time interval and a culmination of the event, but without considering any consequent state, just like a point.

Thirdly, the authors are not clear on the structure of an accomplishment. According to the event nucleus, the consequent state seems to be included in the denotation of the accomplishment. However, sometimes, in an accomplishment, the consequent state is clearly not included in the denotation; for example, “When they built the bridge, they used the best materials.” Furthermore, the authors argue that the consequent state can include any future event that has a contingent relation with the main event. Does it mean that the consequent state can describe an event temporally adjacent to the main event? As they admitted, the sentence “When the sun set, my car broke down” is strange. Their solution is to include world knowledge in the contingent relation. However, there are consequent states that clearly do not involve world knowledge: in “John crossed the road. → The road is crossed/John has crossed the road.”, they are simply a passive voice or a perfect.

Nevertheless, Moens and Steedman (1988) provide us with a possible structure and definition of accomplishments. The idea of a consequent state following the event inspired the present study.

2.4. Verkuyl (1989)

In Verkuyl (1989), the author argues against the four-way classification in Vendler (1957) and proposes a three-way classification of aspect. His classification of situation types includes states, processes and events. Verkuyl argues that aspectual classes result from the interaction between the V and its complement.

The parameters used in Verkuyl’s classification are associated with verbs and NPs. He argues that a lexical feature of verbs allows one to distinguish events that express a change-of-state and events that are not.

(...) a semantic predicate assigned lexically to verbs expressing change, a going through time of entities involved in the predication (...). this ‘predicate’ is taken

as a lexical feature [+ADD TO] assigned to verbs like *play*, *lift*, *hit*, *walk*, etc. to distinguish them from verbs like *hate*, *believe*, etc.

(Verkuyl, 1989, p. 81)

A [+ADD TO] verb is a dynamic verb, which means that the event will continue to happen in time and turn into a more developed version. For example, *walk* and *play* are dynamic verbs, and *hate* is a stative verb:

(49). John walked.

(50). Peter played the sonata.

(51). Mary hated cooking.

In the event (49) or (50), [+ADD TO] can be understood as "movement". In (49), let's suppose that John's movement is from home to school. Then, if John is walking in front of a shop, where the shop is in the middle of home and school, we can say that John is *adding* some distance measuring unit to the progress from home to school. The same can be said for (50), only this time, the length of the sonata becomes the measuring distance. We can say that Peter is *adding* some distance measuring units in the progress. In (51), however, the lexical feature of the verb is [-ADD TO], which means that there is no measuring unit. If we say Mary hated cooking from 2010 to 2020, there is nothing to be *added* in that time period. Essentially, [+ADD TO] verbs suggest progression in time, while [-ADD TO] verbs suggest fixation in time. The representation of [+ADD TO] is shown below:

[+ADD TO] is to be interpreted as (involving) a function $s: I \rightarrow I$ such that if $i = (a, b)$, then $\exists c(s(i)) = (a, c)$, and if $a, b, c \in T$, then $a < b \leq c$.

(Verkuyl, 1989, p. 84)

Basically, if there is an event with a [+ADD TO] verb in a time period i between two time points a and b , then there will be another time point c in which a more developed version of the event exists. The function s is essentially a temporal function; a [+ADD TO] verb denotes an event with successive phases, where a is the beginning of the event and b or c is some time after a .

Another parameter is to divide nominals into [$\pm$ Specified Quantity (SQA)]. [$\pm$ SQA] is a property of the combination of a noun and its determiner. The noun defines a set in the domain of the discourse, whereas the determiner defines a specified quantity in the set which is involved in the event. See examples below:

(52). A man from Boston lifted four tables.

(53). None of the men lifted tables.

(Verkuyl, 1989, p. 81)

In (52), all NPs are [+SQA], including the subject and direct object. In (53), all NPs are [-SQA]. The “tables” in (52) and (53) refer to sets of entities in the domain of discourse, i.e., “tables” as A , and the determiner in (52) specifies a subset of A , i.e., $A^\#$, where $A^\# \subseteq A$. Furthermore, the verb in the event specifies another set of entities (table) B ; in the case of (52) or (53), it would be “something that is involved in the lifting event”. Then, there would be a specific relation [Det] (A , B) defined on the basis of the meaning of the determiner; this relation refers to how A and B interact. The definitions of [$\pm$ SQA] are shown below:

[+SQA]

An NP of the form Det N , where [N] = A and where [Det] relates a set B to A in a specific model M_i denotes a specified quantity of A in E , $A^\#$, ($A^\# \subseteq A \subseteq E$) iff (i) E is bounded. (ii) $A^\# = A \cap B$. (iii) $|A^\#| > 0$.

[-SQA]

An NP of the form Det N denotes an unspecified quantity of A . (i) if $A \cap B = \emptyset$. (ii) if there is no number given by the definition of the quantifier by which the cardinality of the intersection is bounded.

(Verkuyl, 1989, pp. 82-83)

To explain the definitions, let’s use the examples in (52) and (53). On the one hand, the NP “four tables” in (52) is [+SQA] because (i) “tables that have been lifted” is bounded. (ii) “four tables” is the intersection of “tables” and “the thing that has been lifted”. (iii) “four tables” is not an empty set and can be associated with a natural number. On the

other hand, the NP “tables” in (53) is [-SQA] because (ii) the cardinality of “tables” is not bounded.

Verkuyl suggests that aspectual distinction should be calculated at the VP level, where interactions between the verb and its arguments result in a three-way classification of aspect. He sees achievements as a subset of accomplishments, namely accomplishments whose process or activity stage is so short as to be negligible. He argues that the distinction between accomplishments and achievements only depends on the length of time for the event to be completed. However, the time difference is not so noticeable when considering the examples below:

(54). John drew a circle (using a pencil and a compass).

(55). John drew a circle (by pressing a key on a computer).

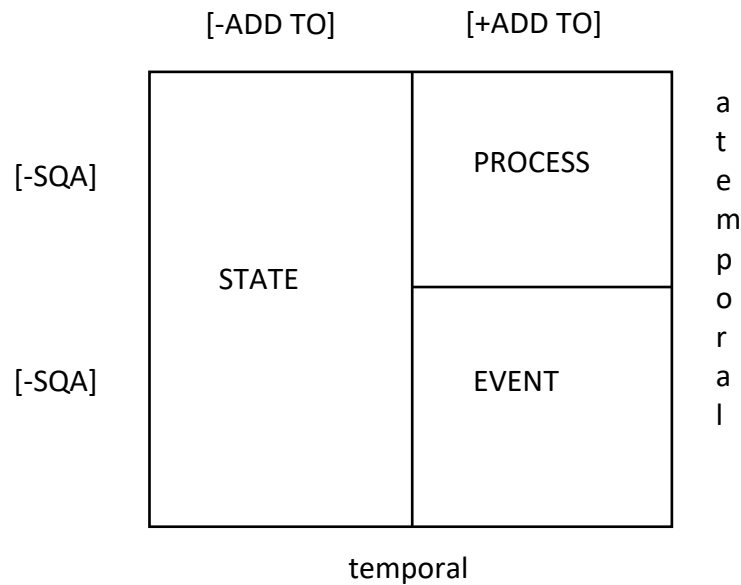
Verkuyl argues that (54) would be understood as the event taking more than a moment. However, if John uses a sophisticated computer and hits a key on the keyboard, the circle can be produced at once. (55) would then be analogous to “reach the top” or “win the race” as an event that would only take a split second.

The meaning of verbs like *draw*, *write*, etc. is rather such that new techniques can be captured by them, indicating that it was accidental up till now that draw a circle pertains only to events taking more than one moment. The length of the event in question does not seem to be of importance at all if an event is conceived of as taking time.

(Verkuyl, 1989, p. 58)

In Verkuyl’s classification (using Vendler’s classification as a reference), accomplishments and achievements are combined into one aspectual class called *events*. States maintained the term as *states*. Activities are called *processes*. Each of them can be distinguished by the two parameters mentioned above. Events are VPs with [+ADD TO] verbs and [+SQA] NPs. Processes are VPs with [+ADD TO] verbs and at least [-SQA] NP. States are VPs with [-ADD TO] verbs. The three classes are illustrated below:

Figure 2-2- Aspectual classification



(Verkuyl, 1993, p. 67)

Verkuyl suggests that only events are terminative (telic), while other configurations are durative (atelic). Moreover, the event types in Figure 2-2 are features of the VP: they are not the same as sentential aspect. The sentential aspect comes from the feature of the VP as well as the subject. A comprehensive list of possible combinations is provided in Verkuyl (1993):

(56). Sentential aspect [NP + (V + NP)]

- a. Judith ate three sandwiches.
[+SQA] + ([+ADD TO] + [+SQA]): event
- b. Judith ate sandwiches.
[+SQA] + ([+ADD TO] + [-SQA]): process
- c. Judith ate no sandwich.
[+SQA] + ([+ADD TO] + [-SQA]): process
- d. Judith wanted nothing.
[+SQA] + ([-ADD TO] + [-SQA]): state
- e. Nobody ate a sandwich.

[-SQA] + ([+ADD TO] + [+SQA]): process

- f. Nobody ate sandwiches.

[-SQA] + ([+ADD TO] + [-SQA]): process

- g. Nobody ate a sandwich.

[-SQA] + ([+ADD TO] + [+SQA]): process

- h. Judith wanted a sandwich.

[+SQA] + ([-ADD TO] + [+SQA]): state

- i. No one wanted a sandwich.

[-SQA] + ([-ADD TO] + [+SQA]): state

(Verkuyl, 1993, p. 20)

Note that there is a redundant sentence in (56); namely, (56e) and (56g) are the same. Apart from that, it seems that there is another possible combination, as shown in (59). However, this does not affect the overall statement of the theory.

- (57). No one wanted sandwiches.

[-SQA] + ([-ADD TO] + [-SQA]): state

Verkuyl argues that VP-aspect differs from sentential aspect, and the subject-NP plays a decisive role in aspect construal. When a terminative VP is combined with a [+SQA] subject-NP, the sentence would be terminative (event). On the other hand, when the VP is durative, no matter the subject, the sentence would always be durative (process or state). Verkuyl states that the terminative aspect (event) originates from both the verb and its arguments. In a VP, when the lexical information of V, labelled [+ADD TO], meets with the structural information of NP, labelled [+SQA], it generates aspectual information of the VP, [+T_{vp}], where [+T_{vp}] represents terminative aspectuality. Then [+T_{vp}] combines with a [+SQA] subject-NP, resulting in a [+T] sentence. On the other hand, if any of the two parameters in a VP is a negative feature, whether it is a [-ADD TO] verb or a [-SQA] NP, the VP would be durative [-T_{vp}]. Furthermore, if any of the features in a sentence is a negative feature, whether the VP is [-T_{vp}] or the subject-NP is [-SQA], the sentence would be durative [-T]. From this observation, Verkuyl suggests

that the terminative aspect can be assigned if and only if all features involved have a plus-value.

Upon closer examination, Verkuyl's classification in Figure 2-2 would address the aspectual information of VPs in four combinations, as shown below.

(58). VP aspect [V NP]

- a. Ate a sandwich
[+ADD TO] [+SQA]:
- b. Ate sandwiches
[+ADD TO] [-SQA]
- c. Wanted a sandwich
[-ADD TO] [+SQA]
- d. Wanted nothing
[-ADD TO] [-SQA]

The aspectual compositions are shown in Verkuyl (1989):

(59). VP-aspect:

- a. ([+ADD TO] + [+SQA]) → [+T]
- b. ([+ADD TO] + [-SQA]) → [-T]
- c. ([-ADD TO] + [+SQA]) → [-T]
- d. ([-ADD TO] + [-SQA]) → [-T]

(60). S-aspect:

- a. ([+SQA] + [+T]) → [+T']
- b. ([+SQA] + [-T]) → [-T']
- c. ([-SQA] + [+T]) → [-T']
- d. ([-SQA] + [-T]) → [-T']

(Verkuyl, 1989, p. 80)

Coming back to Verkuyl's classification, where he combined accomplishments and achievements into one category: events. He argues that the distinction between achievement and accomplishment terms depends on something that has nothing to do

with language itself. Furthermore, Verkuyl argues against various author's criteria to divide achievements and accomplishments into two classes. The first criterion would be Vendler's progressive form; unlike accomplishments, achievements supposedly cannot have a progressive form, as shown below:

(61). Vendler's progressive form distinction:

- a. Achievement: *He was recognizing her.
- b. Accomplishment: He was drawing a circle.

Verkuyl states that the progressive form criterion simply does not work, as many achievement verbs can have a progressive form like "She is winning the game" or "He was reaching the top". Furthermore, the progressive form criterion puts achievements and states in the same category, which, according to Verkuyl, cannot form a natural class because their meanings are entirely different: achievements are incompatible with continuity because of their punctual nature, whereas states are incompatible because their meaning is already continuous.

The second criterion that Verkuyl criticises would be Vendler's entailment criterion. Achievements with a terminative adverbial do not entail that the achievements "are going on" during the time interval, but accomplishments with a terminative adverbial do entail that they "are going on" during that time, as shown below:

(62). Vendler's entailment distinction:

- a. Achievement: John typed the letter *p* in five minutes.
- b. Accomplishment: John typed the business letter in five minutes.

In (62a), the meaning of the terminative adverbial is that "John typed the letter *p* in a split second five minutes later". The sentence does not mean the "typing" of the letter went on during those minutes. On the contrary, the meaning of the terminative adverbial in (62b) is that "John finished the business letter five minutes later, and in those minutes, the typing went on". However, according to Verkuyl, the difference between them boils down to the time the actions take to be completed: (62a) takes only a split second and (62b) could take some moments. If the duration of the action can be

manipulated, then the difference would disappear. There are two scenarios in (62) where the achievement and the accomplishment merge into a single class. Here are the two scenarios provided by Verkuyl:

(63).

- a. The typing of the letter *p* on the screen of a word processor can take a while due to some *Please Wait* command so that it takes time before the *p* has become visible and has been typed out.
- b. The typing of a business letter may take just a moment: if it is standard, it can be produced by hitting one single key.

(Verkuyl, 1989, pp. 56-57)

From this observation, when located in specific contexts, the duration of achievements and accomplishments could be manipulated to match the duration of the other class. In scenario (63a), the entailment of (62a) would be “John finished typing the letter *p* five minutes later, and in those minutes, the typing went on”. In scenario (63b), the entailment of (62b) would be “John typed the business letter in a split second five minutes later”. This ambiguity in duration renders the entailment distinction problematic.

The third criterion that Verkuyl criticises is Dowty’s structural difference between accomplishments and achievements. Recall that in Dowty (1979), the distinction is given its shape by the absence or presence of the operators DO, BECOME, and CAUSE, as shown below:

(64). Dowty’s structural distinction:

- a. Achievements: [BECOME ϕ]
- b. Accomplishments: [[DO ψ] CAUSE [BECOME ϕ]]

As we can see, accomplishments have two more operators: DO and CAUSE. Verkuyl doubts the absence of the operator DO in achievements and states that “any ψ of the form BECOME ϕ can be taken as the second argument of a (DO ψ)-predication.” (Verkuyl, 1989, p. 66)

Consequently, Verkuyl states that there are no decisive criteria for *achievementhood* and no ground for distinguishing achievement terms from accomplishment terms.

However, there are surely differences between achievements and accomplishments, as pointed out by various authors (Piñón, 1997; Rothstein, 2004; Smith, 1991). Let us follow the order of the theories criticised by Verkuyl. The first one is the progressive form. Although achievements can sometimes occur in the progressive, the reading of a progressive achievement differs from that of a progressive accomplishment (Rothstein, 2004). The progressive tense can modify the activity part of the accomplishment, but cannot modify the telic point of the accomplishment; on the contrary, it modifies the telic point of the achievement and not the activity part (if it has any). This feature can be represented by linguistic tests in Rothstein (2004), as shown below:

(65). Progressive achievements cannot be seen as part of a bigger eventuality:

- a. Mary is running to the Netherlands. In fact she is running to Amsterdam.
(The first event is a proper part of the second.)
- b. Mary is arriving in the Netherlands. In fact she is arriving in Amsterdam.
(The second event is a manner of the first.)

(66). Progressive achievements cannot be modified by “halfway through”:

- a. She is halfway through walking to the station.
- b. #She is halfway through arriving at the station.

(67). Progressive achievements can be paraphrased as “about to”:

- a. The train is arriving at the station. → The train is about to arrive at the station.
- b. Jane is building a house. → Jane is about to build a house.

(Rothstein, 2004, pp. 43-45)

Recall that Verkuyl criticises the entailment distinction between accomplishments and achievements by providing a specific context where the duration of the achievements and the accomplishments can be altered. Indeed, with imagination, one can easily think of a context where the duration of the accomplishments is very short, if not instant. For

example, “John built a house” may be an automated task that only takes a push of a button. However, consider other examples of accomplishments like “John wrote a letter” or “Mary climbed a tree”. In these cases, the duration cannot be so easily reduced to an instant: one cannot say that the accomplishments above are true if John brings a letter into being at the snap of a finger or if Mary was suddenly wafted to the top of a tree. (Smith, 1991)

Nevertheless, while the duration of accomplishments could sometimes be modified under specific contexts, that is not the case with achievements. First, let’s take a look at Verkuyl’s scenario (62a), repeated here:

(62a) John typed the letter *p*.

(63a) The typing of the letter *p* on the screen of a word processor can take a while due to some *Please Wait* command so that it takes five minutes before the *p* has become visible and has been typed out.

In this scenario, it is true that the duration for the letter *p* to appear on the screen is five minutes. However, it is strange to think that the whole process of “John typing the letter”, the *waiting* and the *appearance* as a single achievement “type the letter *p*” as the tasks here are carried out by two agents: (i) John and (ii) the computer. The most important linguistic test for distinguishing accomplishments and achievements in Smith (1991) is that achievements are incompatible with *finish*. In this case, we can easily say (68a) after the letter *p* appeared on the screen, but (68b) seems a little strange in this context:

(68). John typed the letter *p* in five minutes.

- a. The computer finished calculating, the letter *p* appeared on the screen.
- b. #John finished typing, the letter *p* appeared on the screen.
- c. John typed the letter *p*, five minutes later, the letter *p* appeared on the screen.
- d. ? The letter *p* appeared on the screen right after John typed the letter *p*.

Furthermore, comparing (68c) and (68d), the more appropriate description of the scenario would be (68c), which shows that even in this specific context, the duration of the *waiting* does not count as the duration of the “type the letter *p*” event. In addition, achievements cannot have their duration extended by adverbials, as shown below:

(69). #John typed the letter *p* slowly.

(70). John typed the business letter slowly/quickly.

Even in scenario (63a), it would be strange to say (69), which further proves that the duration added by Verkuyl does not affect the properties of the achievement. The entailment difference is indeed valid for distinguishing achievements from accomplishments. As noted in Piñón (1997) and Rothstein (2004), the terminative adverbial “in *x* time”, when combined with an achievement, locates the event itself at the end of the time interval because achievements are over as soon as they begin. On the contrary, when “in *x* time” is combined with an accomplishment, it locates the beginning of the event at the beginning of the time interval and the telic point of the event at the end of the time interval.

Another problem in Verkuyl’s theory is that only with all plus features [+SQA] + ([+ADD TO] + [+SQA]) could the sentence have a terminative reading. However, consider the example below:

(71). Soldiers played that sonata.

(Verkuyl, 1989, p. 80)

Verkuyl argues that (71) is durative (atelic) because the bare plural subject is [-SQA]. However, it is perfectly acceptable to say that “Soldiers played that sonata in five minutes”, along with the fact that “Soldiers were playing that sonata” does not entail “Soldiers played that sonata”. It seems that (71) should be a telic event since when people say (71), they usually would have a group of soldiers in mind, like “that group of soldiers at the party”. It is hard to imagine in (71) that the subject is referring to soldiers in general.

On the other hand, there are instances which are ambiguous between a terminative reading and a durative reading, as shown below:

(72). The soup cooled (in five minutes/for five minutes).

(73). John knitted a sweater (in two days/for two days).

Despite the problems mentioned above, Verkuyl's theory has a valid point that the situation aspect not only depends on the verb but also on its arguments. From Verkuyl's theory, we can deduce that the result state of accomplishments also depends heavily on the subject-NP. Verkuyl elaborated on the compositional nature of the situation aspect in a systematic way while also providing evidence showing that the duration of accomplishments can be modified by contexts, which is beneficial for the present study of the relation between accomplishments and their results.

2.5. Rothstein (2004)

In Rothstein (2004), the author follows the Vendlerian four-way classification of aspectual types, focusing on the lexical aspect of the VP rather than the interaction between the lexical aspect and grammatical aspect. As the name suggests, the lexical aspect covers the distinctions between the properties of event types denoted by verbal expressions. Rothstein suggests that the lexical aspect is not affected by grammatical construals or tense.

The author argues that the aspectual types come from the lexical properties of linguistic expressions but not the events in the real world, i.e., the expressions apply to the description of the objects but not to the objects themselves. Opposing Verkuyl (1989), who claims the aspectual types are properties of the VPs, Rothstein (2004) argues that telicity is a property of the VPs, but aspectual classes are properties of verbs. Verbs denote event types that can be modified.

Rothstein (2004) classifies verbs into states, activities, accomplishments, and achievements. For the distinction between the four classes, the author suggests a division using two features, which are [$\pm$ telic] and [$\pm$ stages], as shown in Table 2-5:

Table 2-5- Aspectual types

	[±stages]	[±telic]
States	-	-
Activities	+	-
Achievements	-	+
Accomplishments	+	+

(Rothstein, 2004, p. 12)

For determining whether an event is telic [+telic] or atelic [-telic], the standard test is through the use of temporal modification: a telic VP can be modified with “in x time”, and an atelic VP can be modified with “for x time”, but not the other way around²⁹:

(74).

- a. John knew Mary for years/*in a year. (State)
- b. John danced for hours/*in an hour. (Activity)
- c. John spotted Mary in a few minutes/*for a few minutes. (Achievement)
- d. John built the house in a few weeks/*for a few weeks. (Accomplishment)

(Rothstein, 2004, p. 8)

Telicity is a property that determines whether the event has a natural endpoint. Telic events are movements toward an endpoint or culmination, and the properties of the culmination are determined by the linguistic expression. Atelic events do not have an endpoint determined by the linguistic expression of the event. States and activities are atelic, as in (74a) and (74b), because the events denoted by “knew Mary” or “danced” do not have a culmination. Achievements and accomplishments are telic, as in (74c) and (74d), because the events “spotted Mary” and “built the house”, once they started,

²⁹ There are special cases of VPs that can render this test not so accurate, so it will need more than one test to ensure the telicity of a VP. For example, some accomplishments are compatible with both “in x time” and “for x time”.

cannot go on indefinitely (whether it is over as soon as it starts, or it is over some time after, there is always an endpoint).

The properties of telicity have been discussed by various authors like Krifka (1998) and Tenny (1994). Rothstein proposed a new theory of S-cumulativity, which results in atelicity, i.e., if an event X is S-cumulative, then X is atelic. The formal representation for S-cumulativity is shown in (75):

(75). X is S-cumulative iff:

$$\exists e \exists e' [X(e) \wedge X(e') \wedge \neg e \subseteq e' \wedge \forall e \forall e' [X(e) \wedge X(e') \wedge R(e, e') \rightarrow X^S(e \cup e')]]$$

(Rothstein, 2004, p. 9)

This means that there are events e and e' that are in the denotation of X , and e is not a subevent of e' , and for all e, e' , if they are in the denotation of X , and e establishes relation R with e' , then the union of e and e' is in the denotation of X^S . For example, in (74b), event e is an event that John danced from 5 p.m. to 6 p.m. and event e' is John danced from 6 p.m. to 7 p.m. Events e and e' are in the denotation of “John danced”, and they can form a new singular event that is “John danced from 5 p.m. to 7 p.m.” that is also in the denotation of “John danced”. It can be assumed that the event in (74b) is S-cumulative and, therefore, atelic. On the contrary, in (74d), two events of John building the house cannot be combined into a singular new event that is also in the denotation of “John built the house” because there will be two houses. So, the event in (74d) is not S-cumulative, hence telic.

The author uses S-cumulativity to define the property of atelicity, thus dividing the aspectual classes into two groups. A second test is that some VPs do not occur in progressive (without an aspectual shift³⁰), as shown in (76):

(76).

- a. *John is believing in the afterlife/loving Mary. (State)
- b. *Mary is recognizing John/losing her pen. (Achievement)

³⁰ The author mainly discusses the aspectual shift in two ways. This issue will be demonstrated further.

- c. Mary is running/walking. (Activity)
- d. John is reading a book. (Accomplishment)

(Rothstein, 2004, p. 11)

The author argues that the occurrence of the VPs in progressive asserts that the event is in progress. For example, in (76c), *Mary* is in the middle of the *running* activity. For determining whether an event is [+stages] or [-stages], the author uses the progressive test: if the VP can be modified naturally with progressive, then it will have the property of [+stages]; if the VP cannot be modified naturally with progressive or there is an aspectual shift during the modification, then the property is [-stages].

The property of [$\pm$ stages] is based on the progressive theory of Landman (1992). The progressive is treated as an operator of the VP in Landman (1992), as shown in (77):

(77).

- a. ing (VP) $\rightarrow \lambda x. \lambda e. \text{PROG}(e, \text{VP}(x))$
- b. be building a house $\rightarrow \lambda x. \lambda e'. \text{PROG}(e', \lambda e. \exists y [\text{House}(y) \wedge \text{Build}(e) \wedge \text{Agent}(e) = x \wedge \text{Theme}(e) = y])$

Landman (1992, p. 21)

(77a) means that the progressive form of the VP includes a PROG operator. (77b) suggests that in the progressive operation, there is an event e in progress, which is a stage of e' , where e' is the denotation of the VP: e' is a more developed version of e . (Landman, 1992, p. 23) For example, in (76a), there is no event in the denotation of "John believed in the afterlife" that is a more developed version of "John believed in the afterlife" because the event is a state. In this case, there are no changes in the linguistic expression, i.e., John was always believing in the afterlife. In (76b), the event of "Mary recognised John" also does not have the subevent e in progress that can lead to the denotation of the VP. As for (76c), it can be assumed that there is an event of "Mary running from 5 p.m. to 6 p.m." which is a stage of "Mary running from 5 p.m. to 7 p.m.". In (76d), the event e (in progress) of "John is reading a book" is a stage of e' "John read the book" because, according to Landman (1992), although possibly not in the real world

w, there is a world w' in which e leads to a more developed version e' in the denotation of the VP “John read the book”. Rothstein (2004) argues that achievements are “too short” and states are “too long” for the recognition of a stage.

From this perspective, if the VP can be combined with the progressive operator, then the property of the event is [+stage]. On the contrary, if the VP fails the operation, then the property of the event is [-stage]. Thus, the classification with two features divides the aspectual types into four.

Another property of VPs is homogeneity, which is related to both S-cumulativity and quantization in Krifka (1998). Homogeneity has three levels: very weak homogeneity (78a), weak homogeneity (78b) and strong homogeneity (78c):

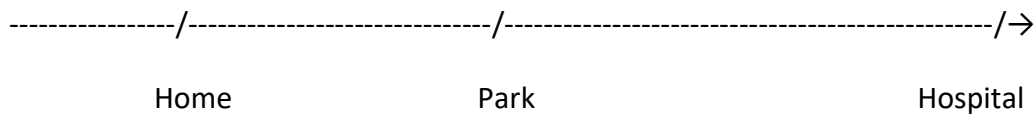
(78).

- a. X is very weakly homogeneous iff: $\exists x[X(x) \rightarrow \exists y[y \subseteq x \wedge \neg y=x \wedge X(y)]$
- b. X is weakly homogeneous iff: $\forall x[X(x) \rightarrow \exists y[y \subseteq x \wedge \neg y=x \wedge X(y)]$
- c. X is strongly homogeneous iff: $\forall x[X(x) \rightarrow \forall y[y \subseteq x \wedge \neg y=x \wedge X(y)]$

(Rothstein, 2004, p. 10)

A very weakly homogeneous event means that there exists an event x such that, if x belongs to X , then there exists an event y such that y is a proper part of x and it is not the case that y is identical to x and y belongs to X . A weakly homogeneous means there for any event x such that, if x belongs to X , then there exists an event y such that y is a proper part of x and it is not the case that y is identical to x and y belongs to X . For example, “run to the hospital” is weakly homogeneous because considering different beginning points of the running event, every subevent of “run to the hospital” all have the endpoint of “at the hospital”. All those subevents have at least one proper subevent that is also “run to the hospital”. See Figure 2-3:

Figure 2-3- Illustration of a weakly homogeneous event



In the event predicate of “run to the hospital” (X), the event of “run from home to the hospital” (x) is a subevent, and there is a proper part “run from the park to the hospital” (y) that is in the denotation of “run to the hospital”.

A predicate X is strongly homogeneous if every subevent y is also in the denotation of X . For example, “John loved Mary” is strongly homogeneous down to instants, which means every subevent of “John loves Mary” is also “John loves Mary”. Thus, the author argues: “If a predicate is (strongly) homogeneous, then x *P-ed* for y time ENTAILS that at any time during y , x *P-ed* was true.” (Rothstein, 2004, p. 14) The homogeneous property of the states can be used to identify the [-stages] property because each instant is identical to each other in the denotation of states, so there is no development for the situation.

Like states, activities are also strongly homogeneous, but in contrast, activities are homogeneous down to small parts of the event. For example, any subevent of “John ran” cannot be down to an instant because there needs to be a time interval big enough for the event to be recognised as “John ran”. Rothstein calls the subevent an atomic minimal activity event: “If a predicate is atomic, then the elements of P have no proper parts which are also elements of P .” (Rothstein, 2004, p. 161). In this case, the subevent could be a *step*. The property of homogeneous down to minimal events of activities can be formulated as: “If x is *P-ing* holds at y , and P is an activity predicate, then at any subinterval of y containing a non-minimal event in P , x *φ-ed* is true.” (Rothstein, 2004, p. 20). This means, for example, if the event of “John running” holds from 6 p.m. to 7 p.m., and the interval of John taking two steps³¹ is two seconds, then in every two-second interval from 6 p.m. to 7 p.m., “John ran” is true. From this perspective, activities can only be homogeneous down to a minimal event. Inside each minimal event, there is a change of state, which is evidence that activities are [+stage].

³¹ The author argues that it is, in many cases, necessary more than two moments to identify an event that has occurred: in this case, I assume that two steps (in motion) is the minimal sequence to identify a running event.

Achievements are thought of as nearly instantaneous changes of state. The author argues that achievements merely describe an event that is the change of state between $\neg\varphi$ to φ . Achievements are instantaneous because, at any moment, either $\neg\varphi$ or φ must hold. They are clearly non-homogeneous and non-cumulative.

2.5.1. Accomplishment structure

The author brings a hypothesis about the structure of accomplishment events, where she argues that a culmination is the final minimal event in an incremental process. Accomplishments consist of an activity event and an achievement type event, which the author calls a BECOME event, and, in the BECOME event, there is the culmination event. According to Rothstein (2004), the BECOME event is an event that “accompanies” the activity event, in the sense that they are two events. The activity event of an accomplishment is inherently non-structured, and homogeneous down to contextually determined intervals; The BECOME event is an incremental process with developmental structure or ordered part structure, in the sense that the parts of the BECOME event are distinguishable as subevents, and each of the subevents has the same beginning point. The accomplishment event is over when the final subevent of the incremental BECOME event is over. The incremental process of the BECOME event forms an incremental chain, as shown in (79):

(79). Incremental chain:

Let e be a BECOME event.

An incremental chain $C(e)$ is a set of parts of e such that:

- a. the smallest event in $C(e)$ is the initial bound of e
- b. for every e_1, e_2 in $C(e)$ $e_1 \subseteq e_2$ or $e_2 \subseteq e_1$
- c. $e \in C(e)$

(Rothstein, 2004, p. 107)

The incremental chain describes the natural order of the BECOME event, which is used to “keep track of” the activity event by mapping the subevents of the BECOME event to

the atomic minimal activity events via an incremental relation. The representation of an accomplishment event is shown in (80):

(80). Accomplishment template

$$\begin{aligned} & \lambda y \lambda e. \exists e1, e2 [e =^S (e1 \cup e2) \\ & \wedge \text{ACTIVITY}_{\langle x \rangle}(e1) \wedge \text{Ag}(e1) = x \wedge \text{Th}(e1) = y \\ & \wedge \text{BECOME}_{\langle y \rangle}(e2) \wedge \text{Arg}(e2) = \text{Th}(e1) \\ & \wedge \text{INCR}(e1, e2, C(e2))] \end{aligned}$$

(Rothstein, 2004, p. 108)

In (80), INCR means there is an incremental relation between the activity event $e1$ and the BECOME event $e2$ with respect to the incremental chain defined on the BECOME event $C(e2)$. For every subevent of the incremental chain, there is a one-to-one counterpart in the activity event, which means that the end of the activity event and the BECOME event are the same, the two events are going on at the same time, and the BECOME event is what is happening to the theme of the activity event.

The author argues that the BECOME event in accomplishments is not the same BECOME event in achievements, as the BECOME event in accomplishments has a temporal interval associated with it. A BECOME event in an accomplishment is an event e such that “at the time immediately preceding the beginning of e , $\neg\varphi$ is the case and at the time immediately following the end of e , φ is the case.” (Rothstein, 2004, p. 107) On the contrary, the BECOME event in achievements, which is shown in (81), is instantaneous:

(81). Achievements $\lambda e. (\text{BECOME}(P)) (e)$

(Rothstein, 2004, p. 35)

For Rothstein (2004), activity events and BECOME events in accomplishments are not linked by a causal relation. She suggests that “culminations are not result states, or the beginnings of result states which are caused by the activity.” (Rothstein, 2004, p. 105) See example (82):

(82).

a. John sang the baby asleep.

- b. Every night the neighbor's dog barks me asleep.

(Rothstein, 2004, p. 90)

The event in (82a) requires that the baby be asleep at the end of John's singing, but does not require John's singing to cause the baby to be asleep. One can say that the event of John singing increases the possibility of the event of "the baby falls asleep". However, (82b) serves as a counterexample. With the incremental relation, the accomplishments in (82a) and (82b) can both be described, as the singing event or the barking event can be related to the falling asleep event. When the final subevent of the incremental process "falling asleep" is over, the culmination is reached, and the accomplishment is over.

2.5.2. Aspectual shift

Rothstein also mentioned two types of aspectual shift. One is the aspectual shift from an activity to an accomplishment when a resultative construction modifies the activity. The author argues that by associating an incremental process via the incremental chain to an activity, the activity event can be turned into an accomplishment, but the lexical meaning of the activity does not determine the associating process; hence, it is felicitous to say (82a) and (82b). In the operation where an activity e gets turned into an accomplishment e' , the important factor is that the shift operation provides the culmination for e' , because when associating the BECOME event, the incremental process has a final minimal event.

Another aspectual shift operation is that from an achievement event to an accomplishment via the modification of the progressive. See, for example, (83):

- (83). Mary is arriving at the station.

(Rothstein, 2004, p. 48)

The author argues that in progressive achievements, the temporal modifier gives the event an accomplishment-like structure, and the culmination is entailed by the original achievement event "Mary arrived at the station". The denotation of the shifted VP is an accomplishment; it consists of an activity event and a BECOME event, with the

culmination derived from the original achievement. The activity event is contextually determined from the culmination, as in for (83) to be true, *Mary* has to do something that satisfies the progressive operation theory in Landman (1992): there is a more developed version of the event that *Mary* does, which is the culmination “arrive at the station”. The BECOME event of the shifted accomplishment is constructed by the speaker: the speaker “must have contextually available evidence as to how the witness event *e* is going to develop into an (abstract) accomplishment *e'* of the right kind” (Rothstein, 2004, p. 141). This means that this is less a linguistic fact than a cognitive fact about the kinds of judgements people tend to make. The BECOME event in progressive achievements is an event that approaches the culmination; in (83), for example, it involves the physical movement towards the station, which will take the event to its culmination.

2.5.3. Semelfactives

Semelfactives (points in Moens and Steedman (1988)) are events that Rothstein (2004) classifies as a “conceptual problem”. The author argues that the two-feature classification of the aspectual types can only have four classes. From this point of view, semelfactives are classified as activities by Rothstein (2004). Semelfactives are VPs used to denote single instances of events typically considered to be activities, like “cough, jump”. The author considered the semelfactives not as an aspectual class but as an atomic minimal use of the activity events. Sentences with semelfactive predicated can be ambiguous, as they can be interpreted as an atomic single action event or an iterative activity event, for example, the jumping event (84):

(84). John jumped in two minutes.

(Rothstein, 2004, p. 187)

The event (84) has two readings: one is the punctual “single jump” reading,³² and the other is a “repeated jump” activity reading. The author states that every activity event

³² The author argues that whether the event actually occurs does not affect the possibility of the reading.

P has a minimal event P_{min} , which is the denotation of P . Whether P has the semelfactive use or not is determined by a natural atomic function: if P has semelfactive uses, the natural atomic function will pick out P_{min} as the semelfactive use of P . When the semelfactive use of a VP is combined with *at x time*, the author argues that the “x time” is located inside the time interval of a semelfactive, as in the beginning of the event is just before x and the end of the event is just after x , this is because semelfactives, no matter how small, have interval structures.

2.5.4. Discussion

The theory of Rothstein (2004) sheds some light on the event structure of aspectual types, especially on accomplishments; a more refined version of the theory of cumulative is proposed, and the theory of atomic minimal events can be beneficial for studying internal structures of aspectual types.

However, some parts of Rothstein (2004) can be problematic. One of them is that the classification of the aspectual class is on verbs, and the classification of telicity is on VPs. However, in Table 5, the author assigns telicity to verbs; for example, “run” is an atelic verb, but it can also form a VP, which is telic: “run to the hospital”. Moreover, the author uses the aspectual class in her book many times to describe an event rather than a verb, for example: “accomplishment event of John eating a sandwich” (Rothstein, 2004, p. 21). It seems that the author thinks the aspectual class is a property of an event as well, but the event does not consist of only the verb or the VP.

Another problem is including semelfactives in activities. The author argues that the semelfactive *jump* and the normal activity *walk* can be distinguished as the atomic minimal event of *walk* can overlap, and that of *jump* cannot. This claim is problematic because the event *walk* comprises one or more minimal events: *step*. Strictly speaking, if John took a step, John did execute the smallest part of *walking*, and the VP *walk* can be applied to the minimal *walking-type* event. In this sense, why do some activity events like the *walk* event not have a semelfactive reading? The question is unanswered by the author.

Rothstein suggests that a causal element is an inherent part of accomplishments. Let us reconsider the problematic examples in (82). In (82a), one can say that John's singing is not really necessary for the baby to be asleep. However, the contribution of the activity event cannot be ignored. In other words, when John is singing, the baby is more likely to fall asleep, which means that although there is no counterfactual causal relation, there could be another type of causal relation in (82a). In (82b), the matter is more complicated. When people say, "The neighbour's dog barked me asleep", what they mean to express is ambiguous. The meaning could be (i) "the dog's barking is helping me fall asleep" or (ii) "the dog's barking is preventing me from falling asleep, but I fell asleep regardless". In my opinion, Rothstein chooses the second interpretation when she suggests the example. While it is acceptable to say (82b) under the second interpretation, it is odd to say something like (85a) or (85b):

(85).

- a. ? The neighbour's dog is barking me asleep.
- b. ? The neighbour's dog barked me asleep last night.

The sentences (85a) and (85b) appear only to accept the (i) "helping" reading, while reading (ii) "preventing" would be contradictory, which means that the acceptability of (82b) would come from the habitual reading of "every night" and the present tense.

Furthermore, at first glance, resultatives like (82) seem to share specific properties with accomplishments, namely their duration and telicity. However, upon close inspection, we see that some resultative APs do not behave like accomplishments. Let us use another example (86) since, as mentioned above, (82b) uses the present tense.

(86). The audience clapped the singer off the stage.

(Rothstein, 2004, p. 104)

Firstly, unlike accomplishments, the AP result phrase (86) appears to be quite strange when adding "stopped" or "finished", as shown below:

(87).

- a. John stopped building the castle.
- b. John finished building the castle.
- c. ? The audience stopped clapping the singer off the stage.
- d. ? The audience finished clapping the singer off the stage.

Secondly, the two subevents in the AP result phrase (86) can have different temporal modifiers³³ (Levin & Rappaport Hovav, 1999):

(88).

- a. # John built the castle for a long time and the castle appeared quickly.
- b. The audience clapped for a long time and the singer got off the stage quickly.

Thirdly, AP result phrases never accept partial interpretations³⁴:

(89).

- a. John built half of the castle.
- b. # The audience clapped the singer half off the stage.

To summarise, some specific resultative phrases in English do not behave like accomplishments. However, even for these sentences, it is not hard to imagine the speaker intends to link the two events via a causative relation, like (85a) and (85b), they only accept the “helping” reading. When people say (86), they must have in mind that the “clapping of the audience” has some positive effect on the result event. In other words, in the description of the event (86), the audience is helping the singer to get off the stage, even if, in the real world, it is not the case. In addition, true resultative phrases are only relevant in Germanic languages since this construction does not exist in Romance languages (Napoli, 1992), so I will not delve further into this case. In further discussion in the study, I will maintain that the relation between the two subevents in

³³ While some accomplishments also accept different temporal modifiers in the two subevents, all non-causative AP result phrases accept them.

³⁴ It could be because the endpoint of the event is strictly included.

accomplishments is a causative relation. Nevertheless, Rothstein provides us with a more comprehensive definition and structure of accomplishment. With those in mind, I will clarify the definition of an accomplishment that I will use in the present study: an accomplishment predicate denotes a time-extended event by default (when not modified by grammatical aspect) and has a natural (whether or not included in the lexical meaning of the verb) end-point.

2.6. Result state

As shown in previous sections, there are typically two subevents associated with an accomplishment: the DO event and the BECOME event in Dowty (1979) and Rothstein (2004), the preparatory process and the culmination point in Moens and Steedman (1988). These two subevents are typically accompanied by a change of state. The unique structure of accomplishments leads authors to believe that having a result is a key feature of verbs that denotes a change-of-state event (Parsons, 1990; Rappaport Hovav & Levin, 1998). Usually, the result state can be represented by a sentence using the participle of the verb in the accomplishment, as shown below:

(90).

- a. Kelly broke the vase. (accomplishment)
- b. The vase has been broken. (result state)
- c. John opened the window. (accomplishment)
- d. The window has been opened. (result state)
- e. Mary ate an apple. (accomplishment)
- f. The apple has been eaten. (result state)
- g. John climbed the mountain. (accomplishment)
- h. The mountain has been climbed. (result state)

The result states in (90) are included in the lexical meaning of the verbs (Levin & Rappaport Hovav, 2013). Typically, this type of result state describes what is happening to the object/patient in the accomplishment, but not the subject. There is, however,

another type of result state that describes the state of the subject after the accomplishment:

(91).

- a. John climbed the mountain. (accomplishment)
- b. John is at the top of the mountain. (result state)
- c. Peter shaved his head. (accomplishment)
- d. Peter is bald. (result state)

This type of result state in (91) is called “consequent state” in Moens and Steedman (1988), which they call “a transition to a new state of the world”. In my opinion, this transition is the transition from the denotation of an accomplishment, which includes the result state in (90), to a consequent state in (91). The consequent state is not included in the denotation of the accomplishment because this state is associated with the culmination and includes further events that have a contingent relation with the culmination.

2.6.1. The problems in Moens and Steedman (1988)

2.6.1.1. Limitations of [present perfect + verb]

As observed in Moens and Steedman (1988), when a reporter is talking to a mountaineer who has just reached the top of Mt. Everest, they are unlikely to ask, “Have you climbed Mt. Everest yet?”. Moens and Steedman use this example to argue that the coercion process exists. In this case, they state that the accomplishment (culminated process) is coerced into an achievement (culmination). However, what is not mentioned by the authors is that it is not unlikely to ask a retired mountaineer the same question. Imagine a conversation like this: “Have you climbed Mt. Everest yet?” “Yes, in my youth.” The referred event does not change between the two questions; they are both “have climbed Mt. Everest”, so how does one question is quite strange, and the other is perfectly normal?

Let us imagine two scenarios. In scenario A, the climbing plan is discussed between the reporter, Mary, and the mountaineer, John, before John sets off. Mary watched John

start climbing the mountain until she could no longer see him. After some time, Mary called John at the same time that John had reached the summit. In this case, it is indeed strange for Mary to ask, "Have you climbed the mountain yet?". Usually, she would ask, "Have you reached the summit yet?".

In scenario *B*, the mountaineer Peter and the reporter Olivia are not acquaintances, nor does Olivia know that Peter planned to climb Mt. Everest. On pure coincidence, Olivia called Peter to do an inquiry of "who has climbed the mountain" type at the same time that Peter had reached the summit. In this case, it is perfectly normal for Olivia to ask: "Have you climbed the mountain yet?" and for Peter to answer: "Yes, in fact, I just did it; I have just climbed Mt. Everest".

The same goes for other accomplishments like "do the homework". On the one hand, it is pretty strange for a mother who knows that her kid is doing the homework to ask the kid: "Have you done the homework yet?" when she should ask, "Have you finished the homework yet?". Imagine scenario *C*, where a mother opens her kids' door, sees the kid doing the homework, and asks, "Have you done your homework yet?". It would be quite strange. On the other hand, it is perfectly normal for a father who does not know what his kid is doing to ask the kid: "Have you done the homework yet." Imagine another scenario *D* where the kid is doing the homework, takes a pause to go to the bathroom, bumps into the father, and the father asks: "Have you done your homework yet?". This question is not strange at all.

As we can see, the crucial difference between scenarios *A* and *B* is the same as between *C* and *D*: if someone knows that the accomplishment has started, that is to say, a part of the preparatory process or the activity has taken place, then it is strange to ask the question about the accomplishment using the present perfect. In scenario *A*, it is strange for the reporter to ask, "Have you climbed the mountain yet?" but not "Have you reached the summit yet?" because the answer to the first question is already partially known to the reporter. Since the reporter knows that the preparatory process part of the event has taken place, it would be redundant to ask about it again. However, what

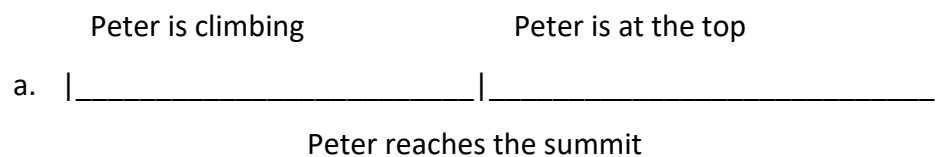
the reporter does not know is whether or not the culmination had taken place; thus, it is normal to ask the second question. I would argue that the limitation of the question of [present perfect + verb] is a pragmatic limitation and not a semantic one.

2.6.1.2. Temporal features of result states

The result state with the structure of [present perfect + verb] seems not to include any time interval after the culmination. This can be shown in scenario *B*, where Peter can say, “I have climbed the mountain” as soon as he reaches the summit.

This shows that the result states “the mountaineer has climbed” or “the kid has done the homework” refers to an event which occupies a time stretch that includes the preparatory process and the culmination; the right boundary is the culmination itself, as illustrated below (using scenario *B* as an example):

(92). The accomplishment: Peter climbed the mountain.



The event that the result state (Peter has climbed the mountain) refers to:



The illustrations in (92) show that if the two subevents are true (Peter is climbing and Peter reached the summit), then the result state is true (Peter has climbed the mountain). On the other hand, if any of the subevents are false, then the result state would be false. That is to say, both the preparatory process and the culmination serve as a requirement for the result state with the structure of [present perfect + verb].

However, the event that a participle refers to is argued to be an event with a point-like temporal feature in Moens and Steedman (1988), like the temporal feature of a

culmination point or telos point and not the whole accomplishment. This argument contradicts our observations above since the truth condition of “have climbed the mountain” depends on the truth condition of both the preparatory process and the culmination: we cannot say that “Peter has climbed the mountain” in a scenario where Peter flew a helicopter to the summit. The duration of the preparatory process also could not be ignored, as shown by the contrast below:

(93).

- a. Peter has solved the problem.
→ Peter took some time solving the problem.
- b. Peter has found the solution.
⇒ Peter took some time solving the problem.

In (93a), the “has solved the problem” result presupposes that there is a durative solving event. However, in (93b), the “has found the solution” result implies that there could be a durative solving event, but it is defeasible. In a case like “Peter found the solution written on a paper when he was unaware of the problem”, we can say that “Peter has found the solution”, but not “Peter has solved the problem”.

Indeed, when someone says, “The window has been broken”, they are only concerned that “the window broke at some *point* in the past” (the culmination), and there is a breaking event that happened in the past. They are not concerned about what happens next; the sentence is true whether the window is repaired. In fact, this result state is likely to be used precisely when the window has been repaired, since if the window is still broken, an English speaker would use the simple resultative construction: “The window is broken” (Croft, 2012, p. 164). The temporal location of the event to which the result state with the structure of [present perfect + verb] refers is thus the same as the accomplishment event itself, without the consequent state, as shown by (92b).

This temporal feature is reinforced in Kratzer (2000), in which the author observed that result states of an event described by the participle that is over by the reference time cannot be modified by “still”. Applying the “still” test to the two types of result states in

(90) and (91), we can see that the result states in (90) are incompatible and those in (91) are compatible, as shown below:

(94).

- a. * The vase has still been broken.
- b. * The window has still been opened.
- c. * The apple has still been eaten.
- d. * The mountain has still been climbed.
- e. John is still at the top of the mountain.
- f. The ball is still on the roof.
- g. Peter is still bald.

This means the event that the result states in (94a), (94b), (94c) and (94d) refers to is over by now. For example, the breaking event in (94a) is located in the past, and when the time reached the point of the culmination (the instance that the vase changed from “not broken” to “broken”), the result in (94a) becomes true, and cannot be modified after: once it is done, it is done for good. In (94e), (94f) and (94g), however, there seems to be no implication of an event at all (Alexiadou & Anagnostopoulou, 2008). See the contrast in (95):

(95).

- a. # The victim has been killed but nobody killed him.
- b. # The apple has been eaten but nobody ate it.
- c. The ball is on the roof but nobody threw it.
- d. Peter is bald but nobody shaved him.

(95a) and (95b) are contradictory since they refer to the accomplishment events, although one could say that we would accept (95a) in some scenarios. For example, in a crime investigation, the police could say something in the line of (95a) to show that the case is hard to solve. However, in this case, there is an implicature of “nobody” is, in fact, “nobody that I am aware of”, according to Grice's (1975) maxim. Also, the victim could commit suicide, and that technically does count as “nobody killed him”. Altogether, although there could be some workarounds to make (95a) or (95b) acceptable, the fact

that the results in (95a) and (95b) require an event to happen is undeniable: "the victim has been killed" is a result of the event "kill the victim", "the apple has been eaten" is a result of the event "eat the apple". Now let us take a look at (95c) and (95d): the *ball* in (95c) could be on the roof from the beginning, and *Peter* could have been bald since he was born; that is to say, they do not presuppose a change-of-state before them.

Coming back to the temporal features, note that the temporal feature of the result state itself and the event that it refers to are different. The relevant examples are repeated here:

(90).

a. Kelly broke the vase. (accomplishment)

b. The vase has been broken. (result state)

(90b) itself occupies the time stretch from the moment of culmination until speech time, and it holds forever after (Parsons, 1990); the event that (90b) refers to is the time stretch of the accomplishment event in (90a), which is until the moment that the vase broke. The "still" test is for testing whether the referred event is over or not:

The resultant state passives...convey that a contextually salient event of the kind described by the participle is over by now, the reference or topic time.

(Kratzer, 2000, p. 386)

Recall that in Moens and Steedman (1988), the consequent state is included in the event nucleus, which means that all result states should be included in *the consequent state* in the nucleus because of the broad definition of the consequent state. However, this seems not to be the case, as admitted in Moens and Steedman (1988):

We capture this fact by making the perfect coerce the culminated process to become a culmination...The perfect then delivers a rather different kind of consequent state.

(Moens & Steedman, 1988, p. 19)

Indeed, there are different types of result states. However, this statement seems to contradict the event nucleus. If the culmination is temporally located between *the consequent state* and the preparatory process, and *the consequent state* includes any “further events that are in the same sequence of contingently related events as the culmination” (Moens & Steedman, 1988, p. 18), how comes that there is a “different kind of consequent state” ([present perfect + verb]) that is referring to the accomplishment event? Does this mean that one type of consequent state is contingently related to the preparatory process and the culmination, and the other is only contingently related to the culmination? Let us take a closer look at the temporal location of the supposedly different consequent states:

- (96). The accomplishment: Peter climbed the mountain.
- | | |
|--|------------------|
| Peter is climbing | Consequent state |
| a. _____ | _____ |
| Peter reaches the summit | |
| State 1: Peter has climbed the mountain: | |
| b. _____ | _____ |
| Culmination | |
| State 2: Peter is at the top: | |
| c. _____ | _____ ____? |
| Culmination | Speech time |

The illustrations in (96) show that the result state 1 in (96b) has the same temporal location as *the consequent state* in the nucleus and that the result state 2 in (96c) is located inside *the consequent state* but does not have the same length. Since state 2, “Peter is at the top”, could hold or not hold after speech time, we cannot make the stretch any longer, unlike state 1, which holds forever after.

2.6.1.3. The consequent state

Now, let us compare this observation with Moens and Steedman’s statement. Firstly, if following Moens and Steedman, state 2 in (96c) should not be considered *the*

consequent state of the accomplishment but a part of it. Since *the consequent state* includes events beyond the speech time, only state 2 is insufficient to fill the temporal stretch. Secondly, state 1 also should not be considered the *consequent state* of the accomplishment because state 1 refers not only to the culmination of the event but also to the preparatory process (recall that consequent states are only contingently related to the culmination, not the preparatory processes). It is more likely that state 1 and state 2 are both a part of *the consequent state* of the accomplishment, with the temporal location of state 2 overlapping part of state 1.

In addition, the foundation of this argument is built upon the coercion theory, which has been discussed in section 1.1. Evidence shows that the situation aspect maintains its properties when combined with the viewpoint aspect (coerced if using the term in Moens and Steedman (1988)), meaning that the original accomplishment's event nucleus should stay the same, no matter what modifications we put in.

From the observations above, we can deduce that “the mountaineer has climbed the mountain” should not be considered a “different kind of consequent state” but should be included in *the consequent state* of the original accomplishment. Interestingly, Moens and Steedman seem to favour this assumption themselves in the other examples that they showed:

(97). Two potential event nuclei of “they built the bridge”

they prepare to build	they have built the bridge
a. _____ _____	
they build the bridge	

When *they built the 39th Street bridge*, a local architect drew up the plans.

they build	they have completed the bridge
b. _____ _____	
they complete the bridge	

When *they built the 39th Street bridge*, they used the best materials.

(Moens & Steedman, 1988, p. 23)

The two nuclei here are unlike what is shown in the example before. In the example of “climbed the mountain”, Moens and Steedman use “at the top of the mountain” (96c) to represent the consequent state of the accomplishment “climbed the mountain” (96a). That is to say, the authors accept both the result state with the structure of [present perfect + verb] and the result state with the structure of [simple present + adjective/adverbial] to represent a part of *the consequent state* of the accomplishment.

The purpose of the examples in (97) is such: Moens and Steedman (1988) defend their coercion theory by arguing that the culmination in (97a) is, in fact, the coerced accomplishment “they built the bridge”, with its own nucleus and its own consequent state. On the other hand, (97b) is a “quite different” interpretation of “built the bridge”. However, the examples seem to prove the opposite. As a matter of fact, if we compare the consequent states in the two supposedly different nuclei, “they have built the bridge” and “they have completed the bridge”, we can see that they essentially described the same state, that is “, they did their job”. It is not hard to see that this consequent state, “they did their job”, is included in the consequent state of the original accomplishment “, they built the bridge”. The temporal location of the consequent states in (97a) and (97b) are also the same: they both occupy the time stretch from the point that the last brick of the bridge is placed (or the last nail is hammered in or whatever event that is considered the last step of the construction) until forever after, which is exactly the same time stretch of the consequent state of the original accomplishment “they built the bridge”. Additionally, the temporal locations of the culminations in (97a) and (97b) are also the same: they are both just at the point at which the last activity subevent is finished (the last step of the construction). However, Moens and Steedman argue that in (97b), the event is decomposed into a quite different preparatory process of building and a quite different culmination of completing the bridge. I assume the difference here can only be temporal because not much else can be reflected in the event nucleus. This means that different culminations should occupy

different instances in the nucleus. However, it is difficult to think of two culminations located on the same temporal point in the real world that occupy different instances in the nucleus.

The temporal feature of the culmination in (97a) seems equally problematic. According to Moens and Steedman, the original accomplishment of “built the bridge” loses its duration and becomes a culmination. Nevertheless, it is pretty strange to say something like in (98a), in contrast to the perfectly normal (98b):

(98).

- a. # When they built the bridge at 8 o'clock, a local architect drew up the plans.
- b. When the bell rang at 8 o'clock, I opened the door.

The sentences in (98a) and (98b) are similar, except that in (98a), the first clause includes an accomplishment, and in (98b), the first clause includes an achievement. If Moens and Steedman's suggestion is right and the accomplishment in (98a) becomes a culmination, then we would expect it to have the same behaviour as a true achievement. Unfortunately, this is not the case here; the event in (98a) could not be modified by "at x time, " meaning that the event has not lost its duration. This contrast shows that we cannot treat the accomplishment "they built the bridge" as a culmination (achievement).

From the examples above, there are multiple problems related to the theory of consequent state in Moens and Steedman (1988). Result states with the structure of [present perfect + verb] and result states with the structure of [simple present + adjective/adverbial] should both be a part of *the consequent state* of the accomplishment. What I will follow in Moens and Steedman is that *the consequent state* could be represented by both types of result states: I will call [simple present + adjective/adverbial] as “result state 1” and [present perfect + verb] as “result state 2” for now³⁵.

³⁵ The terms for result states will be updated further.

2.6.2. Different result states

Coming back to the present topic of discussing the differences between (90) and (91), one might argue that the incompatibility of the result states in (90) with “still” boils down to the difference between the present perfect tense in (90) using “have + participle/verbal passive” and simple present tense in (91) using “is + adjective/adverbial”. However, “still” is always incompatible with result states that refer to the accomplishment, even if we change the tense to simple present. See examples below:

(99).

- a. ? The vase is still broken.
- b. * The apple is still eaten.
- c. * The window is still opened.
- d. * The mountain is still climbed.

The sentences in (99b), (99c) and (99d) are clearly unacceptable in any scenario, whereas (99a) is slightly more problematic or ambiguous. In (99a), while it is possible that someone might say, "Why is the vase still broken? I told you to fix it last year", the "broken" used in the question here is functioning as an adjective. Perhaps it is the identical lexical form of the adjective "broken" and the past participle of "break", making (99a) ambiguous³⁶. If we suppose that (90a), "Kelly broke the vase", happened sometime in 2020 and the vase got fixed in 2024, the culmination point of the event and the consequent state of the object in (90a) could both be represented by "The vase was broken", with the sentence both representing the moment that the vase broke (as in "the vase was broken at 8 a.m.") and the state that the vase was in after the breaking event (as in "the vase was broken for a long time). Thus, in 2022, one might ask, "Why is the vase still broken? I told you to fix it last year.". However, the question in 2022 is not asking why the breaking event of the vase is in progress, i.e., not referring to the accomplishment because the breaking event was already finished two years ago. The

³⁶Parsons (1990) makes this observation.

question refers to the consequent state that is temporally located and in effect after the termination of the accomplishment. That is to say, the question is using "broken" as an adjective. The question would be acceptable then because it has the structure of [simple present + adjective]. Comparing (99a) and (99c), we can see that (99c) would be equally problematic (ambiguous) if we use the adjective "open" and not the participle:

(100).

- a) ? The vase is still broken.
- b) ? The window is still open.

The sentences in (100a) and (100b) are of the same type. They are both the result state 1 of the object, which is located after the realisation of the accomplishment.

Another problem in Moens and Steedman (1988) is that the consequent state of "climbed the mountain" is "being at the top" (result state 1). This result state of the type [simple present + adverbial] describes the location of the subject just after the culmination, and could cease to hold after a while. This example of result state is easily replicable for motion verbs that include a fixed destination, like in (101):

(101).

- a. John crossed the street. → John is at the other side of the street.
- b. Peter ran to the hospital. → Peter is at the hospital.
- c. Harry climbed the mountain. → Harry is at the top.

However, the structure of [subject + simple present + location] clearly does not work for other types of accomplishments. For example, in some accomplishments with change in some property of the patient argument like "warm" or "eat" (Beavers & Koontz-Garboden, 2012), the result state can be represented by [*patient* + simple present+ adjective/adverbial] but cannot be represented by the structure of [*agent* + simple present+ adjective/adverbial], as shown below:

(102).

- a. John warmed the soup. → The soup is warm/ on the table (or in the oven).

- b. John warmed the soup. $\nRightarrow$ John is warmed/ happy/ at the kitchen.
- c. Peter ate the apple. $\rightarrow$ The apple is gone/ in John's stomach.
- d. Peter ate the apple. $\nRightarrow$ Peter is eaten/ full/ below the apple tree.
- e. Harry built the house. $\rightarrow$ The house is built.
- f. Harry built the house. $\nRightarrow$ Harry is built/ successful/ in the house.

It is difficult to think of a sentence that can describe the state of the subject that could cease to hold after the realisation of the accomplishments in (102). Perhaps the only state that can be described is something like "John has warmed the soup" or "Peter has eaten the apple" (result state 2). However, as discussed before, this state is temporally located from the culmination to forever after, which differs from the result states in (102). The result states in (102) are only located from the culmination to speech time, and they could cease to hold (or not) after that.

Another contrast between the two types of result states can be demonstrated by adding an "after" adverbial:

(103).

- a. After John crossed the street, he was on the other side.
- b. After Peter ate the apple, the apple was gone.
- c. # After John warmed the soup, the soup has been warmed.
- d. # After Peter ate the apple, the apple has been eaten.

Because result state 2 refers to the preparatory process and the culmination of the accomplishment, (103c) and (103d) would sound like someone is repeating themselves since the accomplishment event is just mentioned in the adverbial clause.

Furthermore, there are some accomplishments for which the result states cannot be described using the structure of result state 2 whatsoever. See the example below:

(104).

- a. John ran a mile. $\rightarrow$ * John is at the end of a mile.
- b. John ran a mile. $\rightarrow$ * A mile is run/running. = * A run/running mile.
- c. Ken played the sonata. $\rightarrow$ * Ken is ?

d. Ken played the sonata. → * The sonata is played. = * A played sonata.

In (104), whether the result state is constructed using the object (patient) or the subject (agent), the result seems to be quite strange. The only plausible result state would be “John has run a mile/ A mile has been run” or “Ken has played the sonata/ The sonata has been played”. I will leave the discussion for which type of accomplishment allows which type of result state until further in this section. For now, I would only argue that the structure of result state 1 is not applicable to all accomplishments.

Moens and Steedman (1988) always use the state of the subject (agent) to represent *the consequent state* in their examples: “*agent* being at the top”, “*agent* having built the bridge”, and “*agent* having completed the bridge”. However, as we discussed, these result states have different temporal features and limitations. If we want to unify the temporal feature of the result state that is representing *the consequent state* as the same one in “being at the top” (result state 1), meaning that the representation of *the consequent state* is always temporally located from the culmination to speech time, we should use the state of the subject of the accomplishment in some cases and the state of the object in other cases. Since some accomplishments (like in (104)) do not allow the result state to be described using the subject in this temporal configuration, does it leave us no choice but to use the object to describe the result state? Or would we use another configuration? Moens and Steedman are not clear on this problem.

On the other hand, if we want the temporal feature of all consequent states to be the same as “have built the bridge” (result state 2), meaning that the representation of *the consequent state* is always temporally located from the culmination to forever after, it seems that the state of the subject (agent) could be used in all of the cases. However, what about the result state of the objects (patient)? Does the state of the object (patient) not count as a result of the accomplishment since Moens and Steedman do not use them?

I doubt that Moens and Steedman intend to limit the result of an accomplishment to be described by the agent. Because *the consequent state* supposedly includes all of the

events that have a contingent relation with the main accomplishment, it should include both temporal configurations and both result states described by the agent and the patient. The third possibility, which I think is the intention of Moens and Steedman, is that *the consequent state* is the denotation of all possible result states.

As of now, we have four distinct types depending on the tense (temporal feature) and the role of the entity of the result state, so the terms for result states should be updated, as shown in the table below:

Table 2-6- Updated terms for result states

	Agent	Patient
Perfect	RS1 (John has built the house)	RS2 (The house has been built)
Simple	RS3 (John is at the summit)	RS4 (The mountain is conquered)

In Table 2-6, the result states (RS1, RS2, RS3 and RS4) are all included in *the consequent state*. RS1 uses the structure of [perfect + verb], and RS2 uses the structure of [perfect + verbal passive], meaning that RS1 and RS2 of an accomplishment are both located after the culmination until forever after. RS1 concerns the agent and RS2 the patient. They are both the result of the accomplishment “John built the house”, and they are both a part of *the consequent state* of the accomplishment. In the same way, RS3 and RS4 use the structure of [simple present + adjective/adverbial]. RS3 concerns the agent and RS4 the patient. They are both the result of the accomplishment “John climbed the mountain”, and they are both a part of *the consequent state* of the accomplishment. Interestingly, certain result states (RS4s) with the structure of [object present + simple + adjective/adverbial] seem to hold forever after, unlike RS3, which only holds until speech time, as shown below:

(105).

- a. John climbed the mountain.
→ The mountain was conquered.

- ⇒ * The mountain was conquered, but now it is not conquered.
 - b. John peeled the orange.
 - The orange was peeled.
 - ⇒ * The orange was peeled, but now it is not peeled.
 - c. John warmed the coffee.
 - The coffee was warm.
 - The coffee was warm, but now it is not warm.
 - d. John convinced Peter to buy the house.
 - Peter was convinced.
 - Peter was convinced, but now he is not convinced.
 - e. John installed the program on the pc.
 - The program was installed on the pc.
 - The program was installed, but now it is not installed on the pc.

The states in (105a) and (105b) are irreversible, but in (105c), (105d) and (105e), they are reversible.

We just discussed that RS3 and RS4 cannot represent the consequent state of specific accomplishments like (104). Now, let us see if RS1 and RS2 can be applied to all accomplishments. Recall that in section 1.1, we discussed the relation between the viewpoint aspect and the situation aspect: adding the viewpoint aspect adds information to the sentence. Applying this theory to the result states, we can see that the information added by the tense is the temporal location of the result state, as shown below:

(106).

- a. The children are washed.³⁷
 - = The result state holds in a time interval that is from the culmination point of the event until speech time (culmination to now).

³⁷ This is unlike the example “The sonata is played” since “washed” here is an adjective; it can be paraphrased as “the washed children”, and it sounds fine. On the contrary, “the played sonata” is strange.

- b. The children have been washed.
= The result state holds in a time interval that is from the culmination point of the event until forever after (culmination to forever after).
- c. The children were washed.
= The result state holds in a time interval that is from the culmination point of the event until some reference time that is before speech time (culmination to before now).

As we can see, there are subtle differences between the result states described in (106). The difference boils down to different time intervals that the result states hold. Moens and Steedman (1988) argue that the present perfect tense (like in 106b) concerns the consequences of the whole accomplishment, and that simple tense (like in 106a) concerns the consequences of the culmination. Parsons (1990) argues that result states using present perfect tense describe a result that cannot cease holding at some later time, but result states using simple tense may or may not last for a long time. Kratzer (2000) argues that another difference between a perfect state (106b) and a result state passive (106a) is that (106a) is compatible with the event of “children having washed themselves”, but (106b) is not. Kratzer (2000) assumes that result states with perfect tense require the presence of an unpronounced agent argument. The assumption in Kratzer (2000) seems to capture the incompatibility issue of specific accomplishments with perfect tense result state, as shown below:

(107).

- a. The children washed themselves. (accomplishment)
⇒ The children are washed. (result state)
≠ The children have been washed.
- b. The river froze. (accomplishment)
⇒ The river is frozen. (result state)
≠ The river has been frozen.
- c. The computer restarted. (accomplishment)
⇒ The computer is restarted. (result state)

⇒ The computer has been restarted.

d. John shaved. (accomplishment)

⇒ John is shaved. (result state)

⇒ John has been shaved.

In (107), the result state of specific accomplishments cannot be described in perfect tense. These accomplishments seem to be similar to the agent/causer and the patient refer to the same entity, including inchoative accomplishments and causative accomplishments with self-inflicting activities. That is to say, there could be another parameter (aside from the description of the agent or the patient) that affects our typology of result states. In these inchoative accomplishments or causative accomplishments with self-inflicting activities, the result state always describes the same entity.

However, upon close inspection of the structure in (107), one can find out that the result states would be ambiguous between a patient interpretation and an agent/causer interpretation. For example, if we only consider the result state of (107d) and not the accomplishment that leads to it, the participle “shaved” could lead to both a patient interpretation, as in “John is shaved by the barber” (RS4) and an agent interpretation as in “John is bald” (RS3). On the one hand, it is impossible to distinguish these two interpretations with the result state sentence alone. On the other hand, the temporal locations of the two interpretations are different, so they cannot be treated as the same result. Regardless, these accomplishments do not allow RS2, but they do allow RS1.

Another potential structure for result states that seems to only apply to human subjects is [subject + noun], in which the noun is the profession/identity of the subject after the change-of-state, but not before. See examples below:

(108).

a) Peter taught Portuguese. → Peter is a teacher.

b) Peter built 10 houses. → Peter is a builder.

c) John killed Peter. → John is a killer.

d) Mary ate a human leg. → Mary is a cannibal.

e) Karen gave birth to a child. → Karen is a mother.

These result states seem to specify certain events of change-of-state that typically include a change of profession, like in (108a) and (108b). However, this structure can also be applied to certain result states, which include change of identity, such as in (108c), (108d), and (108e). In (108), change of profession result states typically require multiple instances of events, while change of identity result states only require one instance of event. See the contrast below:

(109).

a) Although John taught Mary Portuguese, he is not a teacher.

b) Although Peter built his house, he is not a builder.

c) Although Mark ran the marathon, he is not a marathoner.

d) ? Although John killed Peter, he is not a killer.

e) ? Although Mary ate a human leg, she is not a cannibal.

f) ? Although Karen gave birth to a child, she is not a mother.

As we can see, (109a), (109b) and (109c) are felicitous, whereas (109d), (109e) and (109f) are quite strange, although in (109d) and (109e), there could be an *accidental* reading that makes the sentence more acceptable; for example, one can say that “Mary may have inadvertently eaten human flesh, but she is not a cannibal”. The cancellation of the result state in (109d), (109e) and (109f) is not as easy as in (109a), (109b) and (109c). Again, let us update the terms for result states with the observations above.

Table 2-7- Types of result states

Result state	Structure
RS1	[agent + perfect + verb] 'John has built the house'
RS2	[patient + perfect + verbal passive] 'The house has been built'
RS3	[agent + simple present + ADJP/ADVP/PP] 'John is at the top'
RS4	[patient + simple present + ADJP/ADVP] 'The soup is warm'
RS5	[agent/causer/patient + simple present + ADJP/ADVP] 'John is bald'
RS6	[agent/causer/patient + perfect + verb] 'John has shaved'
RS7	[agent + simple present + NP] 'John is a teacher'

Table 2-7 shows the seven structures of result states that we have observed so far. The difference between them can be boiled down to (i) whether the result state describes the state of the agent/causer or patient, (ii) whether the result state holds from the culmination of the accomplishment to speech time, or it holds from the culmination of the accomplishment to forever. In the next section, I will discuss some theories in the literature that concern our typology of result state.

2.6.3. Result state tests

As discussed above, Moens and Steedman's theory has some problems we need to address. With those questions in mind, let us look at another proposal that distinguishes two types of result states. Parsons (1990) suggests there are two notions of result states that a culminated event corresponds to. One is the notion of the "*resultant* state of *e*":

for every event *e* that culminates, there is a corresponding state that holds forever after. This is "the state of *e*'s having culminated", which I call the

“Resultant state of *e*,” or “*e*’s *R*-state”. If Mary eats lunch, then there is a state that holds forever after: the state of Mary’s having eaten lunch.

(Parsons, 1990, p. 234)

The “*resultant state of e*” is a notion similar to RS1. Essentially, a resultant state is an irreversible state of the agent that corresponds to the event’s being over. Parsons proposed the resultant state interpretation as an interpretation of the English perfect construction. Once an event is over, it is over for good. You cannot undo an event that has happened. (Kratzer, 2000)

The other type of state in Parsons (1990) is called a “*target state*”:

if I throw a ball onto the roof, the target state of this event is the ball’s being on the roof, a state that may or may not last for a long time. What I am calling the Resultant state is different; it is the state of my having thrown the ball onto the roof, and it is a state that cannot cease holding at some later time.

(Parsons, 1990, p. 235)

A target state is reversible. It is some set of properties that must hold of the patient at the end of the event and immediately beyond. The “*target state of e*” is a notion similar to RS4.

The distinction between the resultant state and the target state not only boils down to whether the agent or patient is in the description of the state, but it also involves the tense used in them and the temporal feature of the resultant state. Although the example given by Parsons (1990) is limited to the structure of RS1 and RS4, the crucial difference between them is that the target state is a possibly temporary state, but the resultant state is a permanent state. The *still* test can demonstrate this difference (Kratzer, 2000): resultant states are incompatible with the adverb *still*, whereas target states are compatible. This feature could be reinforced by the *again* test (Rappaport Hovav, 2008): sentences with verbs that lexicalise a resultant state are supposed to be

ambiguous with the adverb *again*. Applying the *again* test to our result states (with the temporal features in mind), we can see that result states which are possibly temporary are indeed ambiguous between a “two event” reading and a “one event” reading, as shown below:

Table 2-8- Resultant and target states

RS	Feature	“still” test	“again” test
RS1	Permanent	* A has still built the house.	A has built the house again.
RS2	Permanent	* The house has still been built.	The house has been built again.
RS3	Possibly Temporary	A is still at the top.	A is at the top again. (ambiguous)
RS4	Possibly Temporary	The soup is still warm.	The soup is warm again. (ambiguous)
RS5	Possibly Temporary	The river is still frozen.	The river is frozen again.(ambiguous)
RS6	Permanent	* The river has still frozen.	The river has frozen again.
RS7	Permanent	A is still a killer.	* A is a killer again.

In Table 2-8, we can see a clear pattern. RS1, RS2, RS6 and RS7 belong to the family of permanent result states: they are incompatible with the adverb *still* (except RS7) and are unambiguous with the adverb *again*. Using RS1 as an example, the participle does not form a grammatical sentence when combined with *still*. When combined with *again*, the reading is always “there are two instances of building events”, i.e., there are two complete nuclei of the event “A built the house”. RS3, RS4 and RS5 belong to the family of possibly temporary result states: they are compatible with the adverb *still* and are ambiguous with the adverb *again*. For example, there are two possible readings for the sentence in RS4. One is that the soup had been warm, and someone or something caused the soup to be in this state once more (though we do not know if it had been heated by anyone/anything before). It could be in a scenario where the environment is

hot, and the soup is warm from the beginning; then John puts it in the freezer to cool it; after a while, he takes it out, and, after some time, the soup becomes warm again. The other reading is the one in which there were two soup-warming events. It could be in a scenario where the soup is cold initially, and John warmed it; it cooled down, and he warmed it again. So, one reading includes only one “soup-warming” event with the nucleus of “John warmed the soup” and the other two nuclei.

RS7 is an interesting case. It does not follow this pattern in the *again* test, and this problem could be related to the distinction between stage-level/individual-level predicates. I will leave the discussion on that topic to section 2.7. RS7 also does not follow the pattern in the *still* test, presumably because *still*, in this case, has a different lexical meaning: when combined with another result state, *still* would be similar to *until now*, meaning up to and including the present or the time mentioned; when combined with RS7, the *still* would be similar to *nevertheless*, shown by the contrast below:

(110).

- a) Two hours have passed, the soup is still warm/the river is still frozen.
- b) * Two hours have passed, John is still a killer.
- c) Although John only kills bad guys, he is still a killer.

From the observations above, the result states can be divided into two families using the term in Parsons (1990). I will include RS1, 2, 6 and 7 in resultant states and RS3, 4 and 5 in target states. It is worth noting that there could be a temporary state reading with the structure of RS1, as shown below:

(111).

- a) I have spilled my coffee!
- b) I have done many foolish things in my life—I have spilled my coffee, I have lost my wallet, etc.

(Higginbotham, 2009, p. 159)

In this case, Higginbotham argues that the announcement in (111a) is only in order as long as there is spilled coffee around. However, as admitted, there is always a permanent state reading, as shown by (111b).

Another distinction between resultant states and target states comes from the difference between past participles used as adjectives and other adjectives that are not past participles. Parsons calls adjectives that describe the state at the reference time an *autonomous* adjective, meaning that the state that is described by the adjective is independent of the event before it.

Nobody will confuse 'an open door' with 'an opened door'. The former denotes a door that is in a certain state-it isn't closed. The latter denotes a door that has been opened. If a door is opened and then closed, it is then an opened door but not an open door. Likewise, if the door were built in an open position, then it would be an open door but not an opened door.

(Parsons, 1990, p. 251)

This notion of independence would also capture the difference between resultant states and target states. The difference boils down to whether or not the result state is described by the verb. As we can see in Table 2-8, if the result state is described by a verbal participle, then it would be irreversible. On the contrary, if the result state is described by an adjective or adverbial, then it would be reversible.

As observed in Parsons (1990), sometimes the autonomous adjective and the past participle are homonyms, like “closed” or “broken”. However, there is a difference between “the mirror is broken” (autonomous adjective) and “the mirror is broken” (verbal participle). When using the autonomous adjective, the result state belongs to the types of possibly temporary states, meaning that the state of “broken” is reversible and holds until the mirror gets repaired. On the other hand, when using a verbal participle, the result state belongs to the type of permanent state, meaning that there must be a breaking event; the state of “broken” is irreversible, and it holds even if the mirror gets repaired. Arche et al. (2014) summarise the fundamental distinction

between verbal and adjectival participles: verbs can denote events, and adjectives are meant to denote states. Several tests can be used to differentiate a verbal participle and an adjectival participle, as shown below:

Table 2-9- Distinctions between verbal and adjectival participles.

Verbal participle	Adjectival participle
Appears in verbal contexts	Appears in adjectival contexts, such as complement of verb like <i>seem</i>
No un-prefixation	Accept un-prefixation
Accept agentive by-phrases and aspectual-temporal modifiers	Reject by-phrases
The constituent externalized does not need to get a theta role from the verb	The constituent externalized must get a theta role from the verb
Accept the progressive form	Reject the progressive form

(Arche et al., 2014, p. 102)

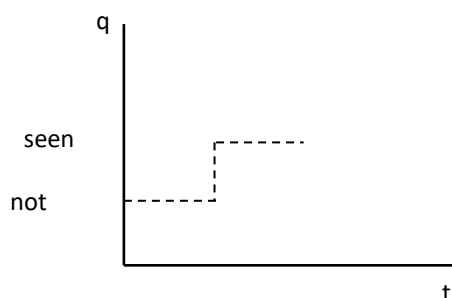
Table 2-9 shows the distinction between verbal and adjectival participles in English. I will discuss different types of participles in European Portuguese in section 2.7.

Parsons's theory (1990) has confirmed that there are different types of result states; it answers why result states have different temporal features, structures, and limitations. Nevertheless, there is a particular type of result state (RS7) that is not mentioned, and it does not follow any of the tests mentioned above.

2.6.4. Permanent and transitory result state

Another proposal that does not divide result states in two types but into three types can be found in Croft (2012). Croft argues that events are represented in two dimensions: time (*t*) and qualitative states (*q*). In his framework, the aspectual structure can be represented by the geometric features in a coordinate plane, as shown below:

Figure 2-4- The two-dimensional representation of a seeing event



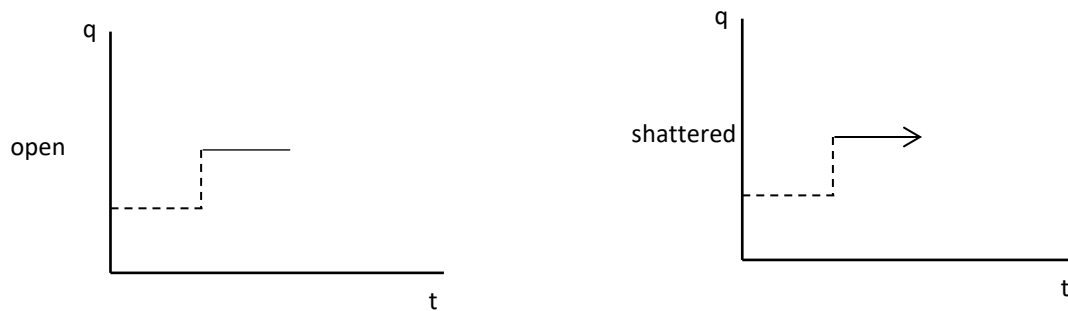
(Croft, 2012, p. 53)

According to Croft, the x axis is the time dimension (t), and the y axis is the qualitative state dimension (q). The time dimension is continuous. The qualitative state dimension may or may not be continuous, depending on what qualitative states are defined for the event (which depends on how the lexical item construes the event). In Figure 2-4, the dotted line represents the development of a seeing event over time. The event has at least three phases: not seeing something; transitioning from not seeing something to seeing it; and seeing that thing. So, there are two states and one *transition* phase: the states include a *rest* state (not seen) and a *result* state (seen); the *transition* phase, in this case, is construed conceptually as an instantaneous jump from one state to the other (the transition is represented by a vertical line in the geometric representation only for visual convenience).

Applying this representation to change-of-state events, the *result* state³⁸ can have three geometric features, as shown below:

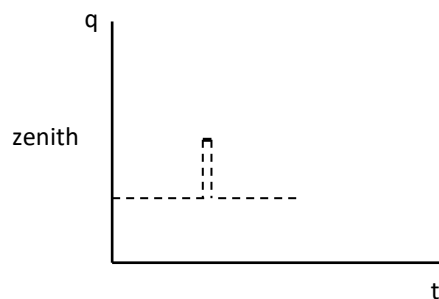
³⁸ There is another state in Croft (2012) called inherent state, which is not included here because it cannot change over time. Hence, it is not a *result*. Inherent states are represented by a pointed line, which are true of the entity for its entire lifetime (for example: “She is French.”).

Figure 2-5- Three result states



a. The door is open. (Transitory).

b. The window is shattered. (Acquired).



c. The sun is at its zenith. (Point).

(Croft, 2012, p. 58)

Transitory states have a start and may have an end, and the ending of the transitory state is before the end of the time dimension. They are represented by the solid line in Figure 2-5a. Acquired states are true of the entity for its entire lifetime once the state has been acquired. The end time of the acquired state is the same as the end of the time dimension. They are represented by the arrowed line in Figure 2-5b. Point states, in Figure 2-5c, last only a point in time. The point state entails the reversion to the rest state.

Figure 2-5 shows that transitory and acquired states are durative, and point states are punctual. However, the temporal features are only to a degree of precision that is relevant to the interlocutors' goals in the discourse:

the t dimension construes the lifetime of the entity as going beyond biological life and physical integrity for at least some relevant period of time. The acquired permanent state lasts for that period of time. But the period of time is limited. It is odd to say *King Sargon II of Akkad is dead* (he died in 705 bc); the death must be recent and relevant in some way to the present (e.g., *My grandparents are dead* is OK, but *My great-great-great grandparents are dead* is odd). Also, describing the acquired permanent state of a destroyed object as a present state tends not to be acceptable after the remnants are removed, scattered, thrown away, etc. Thus *The window is shattered* would not be appropriate once I have swept up the shards and thrown them in the garbage can.

(Croft, 2012, p. 59)

Croft admits that the description of the acquired state is subject to the discourse, as shown above. That is to say, the t dimension in the coordinate plane does not represent the entity's actual lifetime but its relevant lifetime. I will argue that this relevant lifetime is the actual lifetime of the entity plus the period of time that the entity is recognisable in the discourse. For example, in "John killed Mary", the acquired result state "Mary is dead" is true as long as the object entity is recognisable in the discourse as *Mary*. Even if *Mary* gets incinerated, we could still call the ash *Mary*, but if the ash gets lost or spilled into the sea, there would not be any entity to be recognised as *Mary* anymore. The same goes when no one remembers to whom that ash belongs. The relevant lifetime of the entity in the discourse is then at the end, as well as the t dimension. If the speech time is located inside the t dimension (the relevant lifetime of the entity), then we can use the present tense in the description of the state (Mary is dead/Mary is killed/Mary has been killed). On the contrary, if the speech time is located beyond the t dimension, we must use the past tense (Mary was dead/Mary was killed/Peter said Mary had been killed).

Let us see another example. In "John broke the window", the acquired state "The window is broken" is only true if the entity could be recognised in the discourse as "the

window”. After the remnants are removed, scattered, thrown away, etc., the result state could not be described in the present tense. This theory could solve the problem of the “spilled coffee”. Recall that in (112), RS1 could have a temporary reading - the examples are repeated here:

(112).

- a) I have spilled my coffee!
- b) I have done many foolish things in my life—I have spilled my coffee, I have lost my wallet, etc.

The announcement in (112a) is only in order as long as there is spilled coffee around. From this observation, Higginbotham (2009) argues that it is because there is another type of state which is temporary inside the structure of RS1. I argue here that it is because the relevant lifetime in the discourse of the entity *coffee* ended when the spillage on the ground got cleaned up. This is why the sentence is true without the spillage around when we change the discourse to (112b). The entity changed from “the cup of coffee at that specific time” in (112a) to “my coffee in general” in (112b). Thus, the relevant lifetime of the entity also changed: in (112b), there would be an entity recognised as “my coffee” as long as the entity *I* is relevant to the discourse.

Coming back to the discussion of the three states. Point states are punctual, and their punctuality depends on how precise one wants to be in the discourse.

In *It is 5 o'clock*, depending on how precise one wants to be, the point in time may last 60 seconds (from 5:00:00 to 5:00:59), before which it was 4:59 and after which it will be 5:01. But at a minute-sized level of precision, the 60 seconds is construed as a point in time. Punctual events in general are punctual only to a degree of precision that is relevant to the interlocutors’ goals in the discourse.

(Croft, 2012, p. 59)

According to Croft, this relevant punctuality applies not only to time but also to the quantity of the state. This punctuality is also relevant to the speakers’ goal in the discourse. The difference between the three states is their extension on the *t* dimension:

transitory states are intervals that do not extend to the whole relevant lifetime of the entity, acquired states are intervals that extend to the whole relevant lifetime, and point states are points in the t dimension.

As we can see in Figure 2-5, the reversion to the rest state is entailed because of the punctual nature of the point state. Croft argues that there are two entailed phases after the point state. Using Figure 2-5c as an example, when the sun reaches its zenith, it automatically goes into the transition phase from “at its zenith” to “not at its zenith” as time advances, then it automatically goes into the *rest* state of “not at its zenith”. The structure of a point state thus includes five phases instead of the three phases in a transitory or acquired state. Furthermore, a point state entails transitioning to a rest state and the rest state itself, whereas transitory and acquired states do not. In transitory and acquired states, no phases beyond the profiled result state phase are included in the semantic frame because no change to the result states is entailed.

Note that point states differ from very short transitory states: the transition from the result state to the rest state is not entailed in an event consisting of repeating subevents or an atomic subevent (Rothstein, 2004) in an accomplishment:

such as “The light is on!” uttered at just the right moment of a *flashing light*—that utterance does not necessarily entail that the light will go off, whereas “The sun is at its zenith” does entail that it will no longer be at its zenith after that point in time.

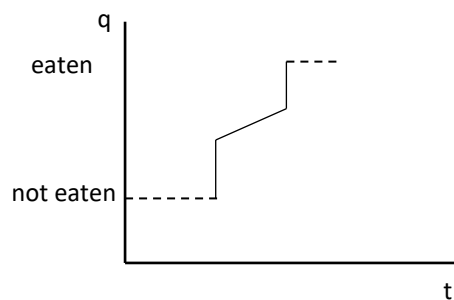
(Croft, 2012, p. 2012)

Croft states that point states can only be result states of achievements, whereas transitory and acquired states can be result states of achievements and accomplishments. Croft calls the type of achievement with a point result state “cyclic achievement”, whereas, in other theories (Comrie, 1976; Rothstein, 2004; Smith, 1991), it is called “semelfactive”. It consists of a transition phase from the rest state to the result state. For example, in “the mouse squeaked”, what is profiled is the transition from silence to squeak. The same goes for other types of achievements. The

achievement describes the transition from the rest state to the result state, and the result state is temporally located after the transition.

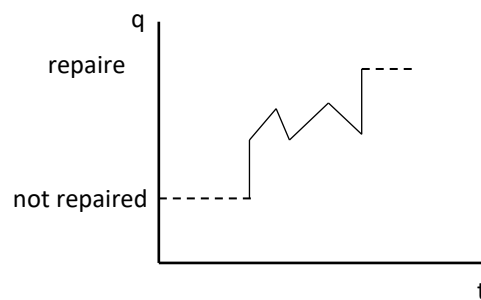
Croft argues that accomplishments differ from achievements in that three phases are profiled: the inception phase, the change phase and the completion phase. The inception phase is the transition from the initial rest state to the beginning of the change phase; the change phase is the durative activity middle phase; and the completion phase is the transition from the end of the change phase to the result state. The profiled phases of accomplishments are illustrated below:

Figure 2-6- Accomplishments



a. I ate an apple pancake.

(Incremental)



b. Harry repaired the computer.

(Non-incremental)

(Croft, 2012, p. 62)

In Figure 2-6, the solid lines are the profiled phases of the accomplishment, and the dotted lines are the implied phases (the rest state and the result state). Croft states that the result state of an accomplishment may be a transitory state or a permanent one:

Mowing the lawn has a transitory result state: the grass will grow back, and it can be mowed again. A destructive transformation event such as grinding a stone into grit has a permanent result state: the stone can't be reconstituted. Repairing a computer is a non-incremental accomplishment that has a transitory result

state: the computer can break again. Dying has a permanent result state, at least under the cultural assumption that we only live once.

(Croft, 2012, p. 64)

From the observations above, we can deduce whether the result state is temporary or permanent not only depends on the tense (perfect/simple present) and usage of the participle (verbal/adjectival), but also the lexical meaning of the verb. For example, the result state of “John mowed the lawn” could be temporary, as in “The lawn is mowed” (RS4, adj.) or permanent, as in “The lawn has been mowed” (RS2, verb.). On the contrary, the result state of “John killed Peter” is always permanent, whether we use “Peter has been killed” (RS2, verb) or “Peter is dead” (RS4, adj.). That is to say, the possibility of the target state getting reversed depends on the lexical meaning of the verb. I will call verbs that lexically permit the result state to be reversible (mow the lawn again, repair the computer again) as *reversible verbs*, and verbs that lexically require the result state to be permanent (*dye again, *destroy the house again) *irreversible verbs*³⁹.

Let us update our typology of result states accordingly.

³⁹ Similar observations can be found in Talmy (1985), where he calls verbs like *die* or *kill* non-resettable verbs and verbs like *fall* or *drop* resettable verbs. Talmy suggests that resettable verbs permit iterative expressions: *He fell three times*, while non-resettable verbs do not: **He died three times*.

Table 2-10- Result state typology

Type	Structure	Example	State
RS1	[agent + perfect + verbal passive]	A has built the house.	P
RS2, ADJP	[patient + perfect + ADJP]	The door has been open.	PT
RS2, verb	[patient + perfect + verbal passive]	The door has been opened.	P
RS3	[agent + simple present + ADJP/ADVP/PP]	A is at the top.	PT
RS4, ADJP	[patient + simple present + ADJP/ADVP]	The soup is warm.	PT
RS4, verb	[patient + simple present + verbal passive]	The soup is warmed.	P
RS5	[agent/causer/patient + simple present + ADJP/ADVP]	John is bald.	PT
RS6	[agent/causer/patient + perfect + verbal passive]	John has shaved.	P
RS7	[agent + simple present + NP]	A is a killer.	P

P: permanent states; PT: possibly temporary states

As we can see, possibly temporary states with reversible verbs (*repair, mow*) would be transitory states (Figure 2-5a). On the other hand, permanent states and possibly temporary states with irreversible verbs (*kill, eat*) would be acquired states (Figure 2-5b). In these states, the *t* dimension depends on the relevant lifetime of the entity; that is why some acquired states are not truly permanent.

The theory in Croft (2012) clearly illustrates the temporal feature of the result states. Furthermore, it answers why some supposedly permanent states do not truly hold forever. In addition, it shows that result states should not include any observed state in the *middle* of the event: result states are only relevant after the accomplishment event terminates. More importantly, the theory of relevant entity gives some insight into why some accomplishments only allow certain types of result states.

If we observe all of the examples mentioned in this section, it is not hard to notice that different types of accomplishments would have different sets of result states. See examples below:

(113).

- a. John ate the apple. →
 - i. John has eaten the apple. RS1
 - ii. The apple has been eaten. RS2, verb
 - iii. The apple is eaten. RS4
- b. John crossed the street. →
 - i. John has crossed the street. RS1
 - ii. The street has been crossed. RS2, verb
 - iii. John is at the other side of the street. RS3
- c. John shaved. →
 - i. John is bald. RS5
 - ii. John has shaved. RS6
- d. John killed Peter. →
 - i. John has killed Peter. RS1
 - ii. Peter has been dead. RS2, adj.
 - iii. Peter has been killed. RS2, verb
 - iv. Peter is dead. RS4, adj.
 - v. Peter is killed. RS4, verb
 - vi. John is a killer. RS7
- e. John gave the book to Peter. →
 - i. John has given the book to Peter. RS1
 - ii. The book has been given to Peter. RS2, verb
 - iii. The book is given to Peter. RS4, verb
 - iv. Peter is the owner of the book. RS7

As we can see in (113), all of the accomplishments could have a result state that is basically the same as the accomplishment sentence (RS1 or RS6). In this case, the only difference between the result state sentence and the accomplishment sentence is the tense: simple past vs. present perfect. Other result states, however, would depend more on the lexical meaning of the change of state: physical dislocation, self-inflicted action, change of profession/identity, change of possession and potentially more.

2.6.5. Summary

In this section, the nature of the result states is discussed. I have proposed seven types of result states according to their structure, each with its unique features. The difference between them depends on the temporal locations, the relevant lifetime of the entity, the usage of the participle and the lexical meaning of the verb.

In addition, I argue that all seven types of result states count as a part of the *consequent state* of the accomplishment, and the *consequent state* is only relevant after the realisation or termination of the accomplishment. This typology of result states does not rely on the coercion theory and could cover most of the types of accomplishments. Furthermore, I will follow the theory of Croft (2012) and argue that the denotation of an accomplishment does not include the *consequent state*. Instead, the *consequent state* is a set of implied result states, and it can only be temporally located after the realization or termination of the accomplishment.

2.7. Accomplishments and result states in European Portuguese

I have discussed various theories about accomplishments and result states in previous sections. However, some interesting topics in this section are worth mentioning for European Portuguese.

2.7.1. The present perfect

In my analysis of result states, the discussion often leads to the question of the present perfect: I have assumed that all accomplishments can have a result state in the present perfect. In European Portuguese, the tense would be *pretérito perfeito composto*.

However, this tense, when combined with events, would typically introduce an iterative reading⁴⁰, and the duration of the situation would be prolonged to be an interval which begins in the past, includes the speech time and can continue beyond speech time (Oliveira, 2013; Campos, 1984, 1987; Oliveira & Leal, 2018). This potentially means that in European Portuguese, a result state cannot be expressed in *pretérito perfeito composto* because the result state shown in previous sections does not include this iterative meaning. See the contrast below:

a. English

Manuel did the math exercises. →

Manuel has done the math exercises. (single-action)

b. European Portuguese

O Manuel fez os exercícios de matemática. →

‘Manuel did the math exercises’

O Manuel tem feito os exercícios de matemática. (iterative)

‘Manuel has done the math exercises’

In European Portuguese, the state represents that *Manuel* did multiple times of the exercises. The state sentence could be true when he does it every day, but false when he only did it once.

Grisot (2018) observes that, compared to other Romance languages, European Portuguese often uses simple past (*pretérito perfeito*) in place of compound past (*pretérito perfeito composto*). Another interesting observation is in De Swart et al. (2022). In their study of a parallel corpus of the French novel *L'Étranger* and their translations, instances of the *passé composé* in French are mostly translated to *pretérito perfeito* in Portuguese. European Portuguese is the only language that resists the usage of the present perfect in the narrative. See examples below:

(114).

⁴⁰ Squartini and Bertinetto (2000) pointed out that some exceptional cases like *tenho dito* ‘I have said’ exist.

- a. *J'ai bien agi* avec toi et tu me le rends mal. [French]
- b. *M-am purtat* bine cu tine și tu te porți urât cu mine. [Romanian]
- c. Io *ho agito* bene con te e tu mi ricambi male. [Italian]
- d. Jo m'he *portat* bé amb tu, i tu no em correspons. [Catalan]
- e. Me *he portado* bien contigo y tú no me lo agradeces. [Spanish]
- f. *I've been* fair with you and now you're being unfair with me. [English]
- g. *Portei-me* bem contigo e tu não me pagas na mesma moeda.
[Portuguese]

(De Swart et al., 2022, p. 9)

In (115), only Portuguese uses the *pretérito perfeito* (simple past) tense, while other Romance languages and English use present perfect. The authors suggest that *pretérito perfeito composto* cannot be used here because this tense in Portuguese has a pluractional semantics (Laca, 2010; Schmit, 2001). Oliveira and Leal (2018) suggest that *pretérito perfeito composto* typically exhibits a multiple eventuality reading; however, the single-eventuality reading is also possible in some cases: they argue that the two readings originate from the homogeneity property in *pretérito perfeito composto* in European Portuguese.

Altogether, the iterative nature of *pretérito perfeito composto* means that it is unfit for the usage of result states in European Portuguese. Since Portuguese often uses *pretérito perfeito* to represent perfective situations (Oliveira, 2013), excluding result states with present perfect structures is better when analysing this language.

2.7.2. Types of participles

Another topic worth discussing in European Portuguese is the types of participles. In analysing result states, I have shown the distinction between an adjective participle and a verbal passive. For example, the event of “John opened the door” could have two distinct result states: (i) “The door is open”, and (ii) “The door is opened”. In European Portuguese, however, it is believed that there are three types instead of two types of participles (Duarte & Oliveira, 2010).

Embick initially proposed the three-way typology of participles (2004). He suggests that although participles in English could only have two distinct lexical forms (*open* vs. *opened*), there are three meanings. See example below:

(115). Types of participles

- a. The door was opened. (eventive passive)
'Someone opened the door.'
- b. The door was opened. (resultative)
'The door was in a state of having become open.' (requires state resulting from an event)
- c. The door was open. (stative)
'The door was in a simple state'

(Embick, 2004, p. 356)

Embick states that although in this case of "open the door", the resultative reading and the stative reading have different forms, it is not always the case. The author proposes several tests to distinguish the three types of participles. Later, Alexiadou and Anagnostopoulou (2008) show that this typology is valid for Modern Greek.

Duarte and Oliveira (2010) apply the diagnostic in Embick (2004) and Alexiadou and Anagnostopoulou (2008) to European Portuguese and find that three different kinds of participles could be distinguished in this language. See examples below:

(116). Participles in Portuguese

- a. *O exemplo foi corrigido por um falante nativo.*
'The example was corrected by a native speaker'
- b. *O exemplo ficou/está corrigido (depois de ter sido revisto).*
'The example was corrected (after having been reviewed)'
- c. *O exemplo está correcto.*

‘The example is correct’

(Duarte & Oliveira, 2010, p. 401)

(116a) illustrates eventive participles, (116b) illustrates resultative participles and (116c) illustrates stative participles. The first distinction is that eventive participles involve the notion of agency, while resultative participles do not. Thus, (116b) cannot have a passive agent: “**O exemplo ficou corrigido por um falante nativo* (the example was corrected by a native speaker)”. The second distinction is that eventive participles can be complements of certain change of state verbs, whereas resultative participles cannot: “*O pai pôs-se descalço na relva.* (Father stood barefoot on the grass)”; “**O pai pôs-se descalçado na relva.* (*Father stood barefoot on the grass)”. The third distinction is that negation prefixes *i(n/m)-* can only be added to stative participles in Portuguese. See Table 2-11.

Table 2-11- Participles with negation prefixes

Stative participle	Resultative participle
<i>inato</i>	* <i>inascido</i>
<i>incompleto</i>	* <i>incompletado</i>
<i>incorrecto</i>	* <i>incorrigido</i>
<i>inculto</i>	* <i>incultivado</i>
<i>indissoluto</i>	* <i>indissolvido</i>
<i>indistinto</i>	* <i>indistinguido</i>
<i>ingrato</i>	* <i>inagradecido</i>
<i>impoluto</i>	* <i>impoluído</i>

(Duarte & Oliveira, 2010, p. 402)

As we can see in Table 2-11, resultative participles are not compatible with negation prefixes in European Portuguese.

2.7.3. Stage-level and individual-level predicates

In the examples of participles in Portuguese (116), there are three verbs: *ser*, *estar* and *ficar*. Let us see the first two verbs. The difference between *ser* and *estar* is believed to relate to the difference between individual-level predicates and stage-level predicates: constructions involving *ser* would refer to individual-level predicates. In contrast, constructions involving *estar* would refer to stage-level predicates (Cunha, 2004, p. 123). In literature, individual-level predicates essentially express permanent or stable properties, while stage-level predicates essentially express transitory or episodic properties (Carlson, 1977; Dowty, 1979; Kratzer, 1995).

According to Duarte and Oliveira (2010), participles in European Portuguese can be eventive, resultative and stative. See examples below:

(117).

- a. *O pódio da corrida de ontem foi completado com mais uma presença de um português.* (eventive)
'Yesterday's podium was completed by another Portuguese driver.'
- b. *O conjunto polinucleado deverá ficar completado em finais de 1993.* (resultative)
'The polynucleated complex should be completed by the end of 1993.'
- c. *Está completada a primeira ronda das provas de singulares masculinos.* (stative)
'The first round of the men's singles is complete.'

Eventive participles combine an event component with an agentive component and are only compatible with *ser*. Resultative participles include only an event component and are compatible with *ficar* and *estar*. Stative participles include a stative component. Stative participles of stage-level predicates are only compatible with *estar*, while stative participles of individual-level predicates occur exclusively with *ser*. See examples below:

(118).

- a. *O poste está caído.*

- b. * *O poste é caído.*

‘The post is fallen’

(119).

- a. *A Maria é amada.*

- b. * *A Maria está amada.*

‘Mary is loved’

(Duarte & Oliveira, 2010, p. 402)

(118) represents a stative participle included in a stage-level predicate. It expresses the transitory state of “the post being fallen”. (119) represents an eventive participle included in an individual-level predicate. It expresses the permanent state of “Mary being loved”.

In addition, Duarte and Oliveira suggest that resultative participles are compatible with both *estar* and *ficar*. See example (120).

(120).

- a. *O espelho ficou partido.*

- b. *O espelho já está partido.*

‘The mirror is broken’

- c. *A cidade ficou destruída.*

- d. *A cidade já está destruída.*

‘The city is destroyed’

(Duarte & Oliveira, 2010, p. 403)

Using *estar* and *ficar* in (120) is equally acceptable with resultative participles. Interestingly, in the examples, (120a) and (120c) use *ficar* in *pretérito perfeito* while (120b) and (120d) use *estar* in *presente*⁴¹.

⁴¹ The temporal features of (122a) and (122b) are potentially different; the *pretérito perfeito* expresses a situation that is located before speech time, and the *presente* expresses a situation that is located at speech time. In addition, the *presente* can have a habitual reading. (Oliveira, 2013).

Some verbs in Portuguese have two different forms of participles: (i) morphologically irregular form (*ganho, preso, extinto* ‘earned, arrested, extinguished’) and (ii) regular form with a suffix *-do* (*ganhado, prendido, extinguido*) (Marquilhas, 2013). Eventive participles, resultative participles and stative participles can have different forms when the verb has these double participles. Stative participles with *ser* can only use the irregular form, while eventive and resultative participles do not have this limitation, as shown in (121) and (122).

(121).

- a. *O teste é correcto.*
 - b. **O teste é corrigido.*
- ‘The test is correct’

(122).

- a. *O exemplo está/ficou correcto.*
 - b. *O exemplo está/ficou corrigido.*
- ‘The example is corrected’

(Duarte & Oliveira, 2010, pp. 401-403)

(121) represents a stative participle; it only accepts the irregular form of the verb *corrigir*→*correcto*. (122) represents resultative participles and eventive participles; they accept both forms: *corrigir*→*correcto* and *corrigir*→*corrigido*.

The difference between stage-level and individual-level predicates can explain at least some differences between participles in European Portuguese. In addition, the distinction could potentially address some problems in change of profession/identity result states. Recall that change of profession/identity result states do not follow the rules in the *still* test and the *again* test. See the tests in Portuguese below:

(123). *O João matou o Pedro. → O João é um assassino.*

‘John killed Peter → John is a killer’

** O João ainda é um assassino.*

‘*John still is a killer’

* *O João é um assassino outra vez.*

‘*John is a killer again’

(124). *O João subiu a montanha. → O João está/ficou no cimo.*

‘John climbed the mountain → John is at the top’

O João ainda está/ficou no cimo.

‘John is still at the top’

O João está/ficou no cimo outra vez.

‘John is at the top again’

(125). *O João construiu a casa. → A casa está/ficou contruida.*

‘John constructed the house → The house is constructed’

* *A casa ainda está/ficou contruida.*

‘* The house is still constructed’

A casa está/ficou contruida outra vez.

‘The house is constructed again’

(124) and (125) behave the same way as their English counterpart. However, as we can see, the result states in (124) and (125) use the verb *estar/ficar*, while the result state in (123) uses the verb *ser*. This means that the result state in (123) is an individual-level predicate, and the result states in (124) and (125) are stage-level predicates. Since individual-level predicates express permanent or stable properties, it is expected that (123) is not compatible with *ainda*⁴² (still). Also, the result state in (123) is not compatible with *outra vez* (again), unlike in (124). This is because the result state in (124) is a stage-level predicate that is not truly permanent⁴³.

2.7.4. Summary

I have discussed several relevant topics in this subsection. Result states in European Portuguese differ from those in English because of various factors. Firstly, we cannot use

⁴² Like English still, *ainda* in European Portuguese also means “although” or “nevertheless”. However, as mentioned in section 2.6.3, it is not supposed to use this meaning in the test.

⁴³ The rule of permanent resultant states in Parsons (1990) may not apply in this case because we cannot use present perfect in European Portuguese to describe a result state.

present perfect in European Portuguese to describe a result state because *pretérito perfeito composto* typically involves the notion of iteration. Secondly, there is a distinction between the verbs *ser* and *estar*; the former expresses individual-level, and the latter expresses stage-level predicates. Thirdly, some verbs in Portuguese have two different forms of participles: the irregular form and the regular form with a suffix *-do*. Moreover, it is believed that European Portuguese has three types of participles: eventive participles, resultative participles and stative participles. A table of different types of result states in European Portuguese is shown below:

Table 2-12- Result states in European Portuguese

Type	Structure	Example
1	[patient + <i>ser</i> + irregular participle]	<i>O João corrigiu o exemplo.</i> → <i>O exemplo é correto.</i>
2	[patient + <i>estar/ficar</i> ⁴⁴ + irregular participle]	<i>O João corrigiu o exemplo.</i> → <i>O exemplo está/ficou correto.</i>
3	[patient + <i>estar/ficar</i> + regular participle]	<i>O João corrigiu o exemplo.</i> → <i>O exemplo está/ficou corrigido.</i>
4	[patient + <i>estar/ficar</i> + ADJP]	<i>O João aqueceu a sopa.</i> → <i>A sopa está/ficou quente.</i>
5	[patient + <i>estar/ficar</i> + ADVP/PP]	<i>O João empurrou o Pedro.</i> → <i>O Pedro está/ficou no chão.</i>
6	[agent + <i>estar/fica</i> + ADVP/PP]	<i>O João subiu a monte.</i> → <i>O João está/ficou no cimo.</i>
7	[agent + <i>ser</i> + NP]	<i>A Maria deu à luz uma criança.</i> → <i>A Maria é uma mãe.</i>

⁴⁴ *Ficar* and a participle cannot also represent the culmination of the event. Since the culmination of an accomplishment is instantaneous, it should be compatible with a punctual adverbial; this is not always the case with *ficar*, as shown by example (i).

(i) **O guarda-sol ficou no jardim às 5 da tarde.*
'The parasol was in the garden at 5 p.m.'

(Cunha, 2004, p. 136)

Table 2-12 shows the seven possible types of result states in European Portuguese. The result states in type 1 and type 7 are individual-level predicates, and those in types 2, 3, 4, 5 and 6 are stage-level predicates. Note that the table here does not include accomplishments with causer subjects and inchoative accomplishments. This is because the result state of those accomplishments would be the same as those in the table. See examples below:

(126). Causer subject

O fogo destruiu a aldeia. →

‘The fire destroyed the village.’

A aldeia está/ficou destruída. (type 3)

‘The village is destroyed’

(127). Inchoative

O rio congelou. →

‘The river froze’

O rio está/ficou congelado. (type 3)

‘The river is frozen

Also, there could be some overlaps between type 2 and type 4 because irregular participle forms are recategorised as adjectives in European Portuguese (Veloso & Paiva Raposo, 2013).

2.8. Conclusion

In this chapter, I have discussed the relevant theories about accomplishments and their result states. I have shown several problematic points in each theory and tried to answer them. With the theories in mind, I have introduced the definition and the structure of accomplishments:

- An accomplishment is a category for events and not verbs, and it depends on the lexical meaning of the verb and its arguments.

- An accomplishment denotes time-extended events by default (when not modified by grammatical aspect) and has a natural (whether or not included in the lexical meaning of the verb) endpoint.
- An accomplishment includes an activity subevent and a culmination. The activity subevent can have an incremental relation with the affecting entity. The time stretch of an accomplishment begins when the activity subevent begins and ends when it reaches the culmination.

In sections 2.1 to 2.5, I have shown the theories about event types and aspectual classes in Vendler (1957), Dowty (1979), Moens and Steedman (1988), Verkuyl (1989) and Rothstein (2004). Vendler (1957) proposes a complete four-way classification of activities, achievements, accomplishments and states. Vendler's observations provide a foundation for an event category called accomplishment. Dowty (1979) provides a theory that includes causative relations in studying accomplishments. In addition, a more comprehensive list of linguistic tests is proposed, which can serve as a starting point when real world data is introduced in chapter 4. Moens and Steedman (1988) introduce the consequent state and event nucleus theory. The idea of a consequent state following the accomplishment inspired the present study. Verkuyl (1989) elaborated on the compositional nature of situation aspect in a systematic way while also providing evidence showing that the duration of accomplishments can be modified by contexts, which is beneficial for the present study of the relation between accomplishments and their consequences. From Verkuyl's theory, we can deduce that the result-state of accomplishments also depends heavily on the subject-NP, leading to the definition of result state in section 2.6. Rothstein (2004) proposed a more refined version of the theory of event structure. The theory of atomic minimal events can be beneficial for studying the internal structures of accomplishments, especially accomplishments with incremental themes.

In section 2.6, I have discussed the idea of result states in Moens and Steedman (1988), Parsons (1990) and Croft (2012). The theory of consequent state in Moens and

Steedman (1988) is the foundation of the present study, as the observations in the theory are the starting of our definition of result states. Parsons (1990) divides result states into two subtypes: resultant states and target states, each with its own temporal features. Later on, we found out that the temporal feature turns out to be the most important distinction between different types of result states. Croft (2012) provides us with a different, although similar, approach. He suggests an explicit representation of change-of-state events illustrated in a coordinate plane. The geometric feature in the plane differentiates three types of result states; it answers the question that some supposedly permanent states do not truly hold forever, and that result states should not include any observed state in the middle of the event.

Furthermore, the theory of relevant entity gives some insight into why some accomplishments only allow certain types of result states. In section 2.7, I have discussed some features in European Portuguese relevant to the representations of result states. With those theories in mind, I have proposed a typology for result states:

- A result state of an accomplishment is the state implied by the accomplishment. Result states are only relevant after the accomplishment event terminates or is realised.
- There are seven types of result states in European Portuguese, shown in Table 12, section 2.7.4. The difference between them depends on the temporal locations, the relevant lifetime of the entity, the usage of the participle and the lexical meaning of the verb. All seven types of result states count as a part of *the consequent state* of the accomplishment, but the denotation of an accomplishment does not include *the consequent state*.

To summarise, this chapter discusses the general idea of accomplishments and result states. The definitions of accomplishments and result states are proposed, as well as the rules of interaction between them.

Note that the distinction between strict and flexible accomplishments has not been considered. There could be specific rules that only apply to strict accomplishments and

others that only apply to flexible accomplishments. I will continue the discussion of accomplishments in the next chapter.

3. Non-culminating accomplishment

The phenomenon of non-culminating accomplishments is that specific accomplishments describe situations considered to be telic, but in which it cannot be inferred that they have reached their end. Take the following examples:

(1). John studied Philology in Lisbon, but he didn't finish the course.

(2). *Yuehan shao le ta-de shu, dan genben mei shao-zhao.* (Mandarin)

“Yuehan burned his book, but it didn’t get burnt at all.”

The examples (1) and (2) are two types of non-culminating accomplishments. As we can see, accomplishments do not always imply that the event has reached its culmination, which justifies the grammaticality of their continuations with adversative clauses, which deny that same culmination. This type of situation occurs in many languages, with different typological characteristics, which is why this type of accomplishment has received increasing attention in the literature.

It is necessary to discuss non-culminating accomplishments in the study about the relation between accomplishments and their consequences/results. Unlike normal accomplishments, a non-culminating accomplishment *e* does not entail successor events to hold the property of the culmination of *e*. In this section, I discuss the possible source of the phenomenon using causation theories, namely, the usage of the causal relation and the meaning of the perfective in such eventualities. Furthermore, I will discuss typologies and explanations offered in the literature. Finally, I aim to arrange a theory more suited to the psycholinguistic tasks described in the next chapter.

This chapter is organised as follows. Section 3.1 and 3.2 are the introduction of two theoretical foundations of non-culminating accomplishments. Section 3.1. introduces theories of causation and tries to account for the defeasible nature of the causal relation in non-culminating accomplishments. In section 3.2, I propose a theory of maximality that addresses the definition of perfective for some types of non-culminating accomplishments. Section 3.3. reviews various typologies and explanations in the literature, organised chronologically. In section 3.4, I will discuss contradicting opinions

in the literature and seek a more suited theory for the present study. Section 3.5 is dedicated to experimental works in recent years that are relevant to the question of non-culmination. Section 3.6 concludes the chapter.

3.1. Causation

Before delving into the theories of non-culminating accomplishments, some concepts need to be discussed, including causation. Causation is a concept in accomplishments since Dowty's (1979) aspectual calculus for accomplishments: for agentive accomplishments, it is DO-CAUSE-BECOME, and for non-agentive accomplishments, it is BECOME-CAUSE-BECOME. Also, in Moens and Steedman (1988), the culminated processes (accomplishments) have the activity part and the consequent state part of the accomplishment linked by a contingent relation. Although the contingent relation is not exactly a causative relation, it holds similar properties. Contingent relation involves two events in a sequence that are "planned, predicted, intended or otherwise governed by agencies of one kind or another" (Moens & Steedman, 1988, p. 16). These theories of accomplishments showed that not only the activity part and the result state part of an accomplishment are linked by spatial and temporal bounds, but they also involve human's understanding of the world. Similarly, as Davidson (1969) pointed out, it is not sufficient to determine the uniqueness of an event by place and time alone; its cause and effect also play an important role. Davidson gives an example of a metal ball, which becomes warmer during a certain minute and, during the same minute, rotates through 35 degrees. The two accomplishments, "The ball warmed up" and "The ball rotates through 35 degrees", occupy the same space and time, yet these are different events because their cause and effects are different. This proposal is a foundation for why causative relations exist in accomplishments: people know how to distinguish accomplishments with identical spatial and temporal locations.

The relation CAUSE in linguistic theories mentioned in chapter two (Dowty, 1979; Moens & Steedman, 1988; Rothstein, 2004) about aspect is merely a primitive relation and is usually referred to as the causation theory in Lewis (1973). On the other hand,

philosophers have long been accustomed to distinguishing between the relation of cause and effect on the one hand and the relation of action and goal on the other: the first is factual and empirical, the second is conceptual and logical. The first relation (cause and effect) seems like the proper relation when discussing the causative relation in linguistics.⁴⁵ This section will discuss which type of causative relation can be used in linguistic theories, especially in the structure of accomplishments. But first, let us examine the perspectives on causality theories in philosophy.

3.1.1. Causation theories in philosophy

This subsection aims to draw a rough outline of the causation theories in philosophy and to see if each perspective can be applied to linguistic phenomena. Firstly, I will talk about the definition of causation. Secondly, I will talk about the categorisation of causation theories. Following Wolff (2007), the theories are divided into two categories: dependency and production.

3.1.1.1. What is causation?

For philosophers, the categorisation of causative relations usually faces some questions, such as whether the causal relata are token-level (causality concerns only a single occasion), as in “John’s smoking caused him cancer”, or type-level (causality concerns multiple occasions), as in “Smoking causes cancer”. The first example focuses on John himself and one instance of *cancer*; the second example represents “smoking” as a general type of cause, and there would be multiple instances of *cancer* for this causal relation to hold.

There are many subdivisions in causation theories depending on what parameter is used. Causation can be *individual-level*, as in “viral infection causes an immune response,” or *population-level*, as in “an increase in wealth inequality in Britain in 2007 caused a reduction in happiness”. The relation between cause and effect can be *physical* or *mental*, *objective* (if two agents disagree as to causal relationships, at least one of

⁴⁵ However, the second relation (action and goal) is used in some authors’ theories, for example, Guéron and Volgeleer (2021), so I will discuss this issue in later sections.

them must be wrong), or *subjective* (admitting a degree of personal choice) (Williamson, 2009). Philosophers have studied the questions of causality, which are still up for debate. Because there are such subdivisions in causal relations (individual/population, physical/mental, objective/subjective), and clearly, there are differences between them, it would suggest that causation is not merely a primitive relation and should not be used as one in linguistic theories.

Although there are various paths to categorise theories of causation, for the purpose of discussing linguistic theories, because of the nature of the operator CAUSE, it must include both individual (one instance of cause and one instance of effect) and generic theories (multiple instances of cause and effect). Using “smoking and cancer”, for example, individual causation would concern only a single occasion, and so either obtains or fails to obtain in the example “John’s smoking caused him cancer”. On the contrary, in generic causation, causes and effects can obtain and fail to obtain on different occasions in the example “Smoking causes cancer”. Imagine an instance where John smokes and has cancer, but Mary also smokes, and she does not have cancer. In this sense, the causal relation holds on the generic but not the individual level. Furthermore, the eventualities in linguistics, such as accomplishments, are the speaker’s intuition toward what happened in the physical world, which means that eventualities are mental representations. Therefore, the causative relation in accomplishments could be a mental relation that can be affected by personal opinion.

Altogether, the categorisation of causation is emphasised into two categories: dependency theories and production theories (Copley & Wolff, 2014). Dependency theories primarily include counterfactual theories and probabilistic theories.

3.1.1.2. Counterfactual theories

Broadly speaking, counterfactual theories suggest that (i) a cause is a factor without which the effect would not have occurred and that (ii) if the cause occurred, then the effect would have occurred. Clearly, without modifications, these theories do not work well in linguistic theories, especially not in accomplishments, for example:

- (3). John built the bridge. - accomplishment
- (4). John was building (the bridge). - activity
- (5). The bridge was built. - result state

According to linguistic theories, there is a causative relation between (4) and (5). However, John is not the only person who can construct the bridge, which means one can say, "Maria built the bridge," and (5) would also be true. This means that the activity of "John building" is not a determining factor for the effect of "the bridge was built". Imagine a scenario where John is the regular worker, and Maria is the backup worker; when John is absent, Maria steps in and does the work. The bridge can be built even in the absence of John, which violates the first requirement of counterfactual theory.

Furthermore, one can say, "John was building the bridge, then he had to leave the country, and the bridge was never finished." Thus, the second requirement of the counterfactual theory is also not met since the cause "John building" occurred, but the effect "the bridge was built" did not occur. Lewis (2000) attempts to address the first problem by altering the requirement of his theory, and he calls the relation between (4) and (5) counterfactual dependency. He states that counterfactual dependency has a pattern of alterations of the effect upon alterations of the cause:

Where C and E are distinct actual events, let us say that C influences E if and only if there is a substantial range C1, C2...of different not-too-distant alterations of C (including the actual alteration of C) and there is a range E1, E2...of alterations of E, at least some of which differ, such that if C1 had occurred, E1 would have occurred, and if C2 had occurred, E2 would have occurred, and so on.

(Lewis, 2000, p. 190)

The citation means that counterfactual dependency exists when alterations in the cause lead to alterations in the effect. So, in (4), if there exists a slight alteration in the manner or time of John building the bridge, then there would be a slight alteration in the manner or time of the bridge being built. His theory addresses the problem of the requirement that "the bridge can only be built by John." However, it cannot explain the second

problem, that of the defeasibility of the event, because in these theories, if the cause had occurred, the effect would have occurred.

3.1.1.3. Probabilistic theories

Another approach to the causative relation is the probabilistic theory. These theories are motivated by the following central intuitions: (i) changing a cause makes a difference in its effects, and (ii) this difference-making shows up in probabilistic dependencies between cause and effect (Williamson, 2009). This means that if A causes B, then the probability of B with the variable A is higher than B without the variable A. Using (3) as the example, the probability of the bridge being built is higher when John is building it than without John building it. The challenge of counterfactual/result-entailing theories—that causes are not always followed by their effects—would be resolved by probabilistic theories (the cases that violate the second requirement in counterfactual theories). In linguistics, it could be called defeasibility or defeasible causatives (cf. Martin and Schäfer (2012)). For example:

- (6). John was building the bridge, then he had to leave the country, and the bridge was never finished.

In (6), the event is an individual-level event⁴⁶, which means that the causative relation only concerns the single occasion of cause and effect. In this case, the cause “John was building the bridge” is not followed by the effect “the bridge was built.” In probabilistic theories, there can be a causal relation without the occurrence of the effect because the observation of the probability of the effect can be done at a generic level (the cause and the effect concern multiple occasions, like “smoking causes cancer”), and the effect can be absent at the individual level. Again, using (4) as an example, the generic level cause event would be “someone was building the bridge,” and the effect would be “the bridge

⁴⁶ This is not to be confused with individual level/stage level in semantics, which means that the state the adjective points to has a temporal limit. The individual event here is meant to capture the feature that causative relation only concerns a single occasion.

was built.” At the generic level, the probability of the effect is higher with the cause than without the cause.

While probabilistic theories can solve the issues with defeasible causatives in linguistics, they (probabilistic theories) have their own limitations. For instance, in the example of Copley and Wolff (2014):

Seeing a spoon raises the probability of seeing a fork; not because spoons cause forks, but rather because there is some overlap between the causes of seeing a spoon and the causes of seeing a fork.

(Copley & Wolff, 2014, p. 17)

Reichenbach (1956) tries to address this problem in his *principle of common cause*:

If coincidence of two events A and B occur more frequently than would correspond to their independent occurrence, that is, if the event satisfy relation $P(A.B) > P(A).P(B).$, then there exists a common cause C for these events such that ACB is conjunctive, that is, satisfies relations:

- (i) $P(C, A.B) = P(C, A).P(C, B),$
- (ii) $P(\bar{C}, A.B) = P(\bar{C}, A).P(\bar{C}, B),$
- (iii) $P(C, A) > P(\bar{C}, A),$
- (iv) $P(C, B) > P(\bar{C}, B).$

(Reichenbach, 1956, p. 159)

Here, P stands for probability, which means that A and B are probabilistically independent, but C is the common cause for A and B . If there is more than one possible kind of common cause, in this case, $\bar{C}$, then the common cause with greater probability is the true common cause. Going back to the example of seeing a fork and a spoon, the common cause C should be like “opening the kitchen cabinet”, and “seeing the spoon” and “seeing the fork” are A and B ; $\bar{C}$ could be “opening the fridge”. This example could be used to explain the *principle of common cause*: firstly, the probability of seeing a spoon and a fork is higher than the mathematical multiplication of the probability of

seeing a spoon individually and the probability of seeing a fork individually. Then (i) would mean that the probability of “opening the kitchen cabinet” occurring along with “seeing a spoon and a fork at the same time” is equivalent to the multiplication of the probability of “opening the kitchen cabinet and seeing the spoon” and the probability of “opening the kitchen cabinet and seeing the fork”. Similarly, (ii) would mean that the probability of “opening the fridge” occurring along with “seeing a spoon and a fork at the same time” is equivalent to the multiplication of the probability of “opening the fridge and seeing the spoon” and the probability of “opening the fridge and seeing the fork”. In addition, the common cause of “seeing a spoon” and “seeing a fork” is “opening the kitchen cabinet” and not “opening the fridge” because (iii) and (iv), where the probability of “opening the kitchen cabinet and seeing a spoon” is higher than the probability of “opening the fridge and seeing a spoon”; the same can be applied to “seeing the fork”. To be clearer, let us suppose that the probability P is a percentage number. In this case, suppose that $P(C, A) = P(C, B) = 50\%$, the probability of opening a kitchen cabinet and seeing a spoon is 50%, and the probability of opening a kitchen cabinet and seeing a fork is also 50%. Then, the *principle of common cause* ensures that the probability of opening a kitchen cabinet and seeing a spoon and a fork at the same time $P(C, A.B)$ is $50\% \times 50\% = 25\%$. The same would apply to opening the fridge. However, this time, the probability would be lower (because kitchenware usually stays in the cabinet, but there are cases where people put it in the fridge). Let us suppose the probabilities $P(\bar{C}, A) = P(\bar{C}, B) = 10\%$, then $P(\bar{C}, A.B)$ would be $10\% \times 10\% = 1\%$.

However, the *principle of common cause* (PCC) could not account for all the probabilistic relations. As Williamson (2004) points out:

The Principle of the Common Cause asserts that any probabilistic dependence must have a causal explanation... In fact probabilistic dependencies arise not only via causal connections, but also accidentally or because the variables are related through meaning, through logical connections, through mathematical

connections, because they are related by (non-causal) physical laws, or because they are constrained by local laws or boundary conditions.

(Williamson, 2004, p. 52)

This means there are probabilistic dependencies that do not have a causal relation or a common cause. So, one cannot say that if there is a probabilistic relation, then there is a cause. For example, in Sober (1987):

Consider, for example, the relationship that exists between the cost of bread in England and the sea level in Venice during the past two centuries. Since both these quantities have monotonically increased, they are positively correlated.

(Sober, 1987, p. 465)

The probability of both the cost of bread increasing in England and the sea level rising in Venice is indeed higher than the multiplication of the individual probabilities. However, there is no causal relation between them nor a common cause.

Another problem of probabilistic theory can be shown by the example of Hall (2004):

Suzy and Billy, our expert rock-throwers, are engaged in a competition to see who can shatter a target bottle first. They both pick up rocks and throw them at the bottle, but Suzy throws hers a split second before Billy. Consequently, Suzy's rock gets there first, shattering the bottle.

(Hall, 2004, p. 6)

This case is called late pre-emption. One can say that Suzy's throw caused the bottle to be shattered, but not Billy's, but Billy's throw indeed raises the probability of the bottle being shattered if Suzy's throw had been missed. Thus, probability raising on its own seems to be insufficient for causation.

Despite the problems above, for linguistic theories, probabilistic theories seem to appeal to the cases of defeasible causatives. However, as Copley and Wolff (2014) point out, probabilistic theories do not easily specify whether the likelihood of an outcome is due

to internal or external factors, so they are not well suited for capturing the idea that the disposition is due to properties that hold of an entity. This means that probabilistic theories cannot explain the difference between a defeasible causative with an intentional subject and an unintentional subject, as shown below:

(7). Marie incited Jean to vengeance, but in vain.

(8). #His brother's murder incited Jean to vengeance, but in vain.

(Guéron & Vogeleer, 2021, p. 10)

The example in (7) includes a defeasible causative relation. However, the causative relation is not defeasible in (8). The difference between these examples is the property of the subject (between "Marie" and "His brother's murder"). Probabilistic theories cannot explain this difference because they both raise the probability of the effect, since at the generic level, when someone/something incites another person to vengeance, the receiver *usually* can have the feeling of vengeance (the effects should be the same), but on the individual level, the cause can *always* fail to have the effect.

3.1.1.4. Transference theories

Another type of theory is called production theory, which links causation with force and energy, time and space. Theories that characterise causation in terms of concepts such as force and energy view causation as a production. The production may involve the transmission of conserved quantities (energy, momentum, or mass). (Copley & Wolff, 2014). Authors like Kistler (2007) suggest that a causal relation consists of the transference of an amount of a conserved quantity:

Two events *c* and *e* are related as cause and effect if and only if there is at least one conserved quantity *P*, subject to a conservation law and exemplified in *c* and *e*, a determinate amount of which is transferred between *c* and *e*. An amount *A* is said to be transferred between *c* and *e*, if and only if this very amount is present in both events.

(Kistler, 2007, p. 26)

The transference theory of Kistler (2007) could work with previous examples (4) and (5), where the conserved quantity P is, for example, a piece of brick that is transferred between two events. Furthermore, this theory can distinguish between intentional subjects and non-intentional ones because it specifies the time and manner of the transference. For example, (7) and (8) have different manners of transference, so the effect would be different. Contrary to probabilistic theories, which predict that (7) and (8) would both be defeasible, transference theory predicts that neither is defeasible. Although the effects of (7) and (8) are different under transference theory, the effect cannot be “non-existence”.

In addition, another limitation of the transference theory is that it cannot explain causal relations without any conserved quantities like (9):

(9). Lack of sleep caused him to go to the doctor.

Sentences like (9) are problematic because there is no transmission from absence. Furthermore, this also seems to affect the linguistic theories about accomplishments; if we turn (9) into an accomplishment in European Portuguese, it would be:

(10). *A falta de sono motivou-o a ir ao médico.*

‘Lack of sleep motivated him to go to the doctor.’

Here, the cause becomes “lack of sleep motivating him”, and the effect would be “he was motivated”. It is hard to tell what exactly conserved quantity is being transferred here.

3.1.1.5. Prototype theory

Perhaps through the metaphor of something in the physical world, we can understand the abstract quantity being transferred in examples like (10); that is to say, the conserved quantity P is to be understood as an abstract concept. In (10), P would be the mental energy that had built up in the person's mind in the description. This abstract

concept is metaphorical according to the prototype theory⁴⁷. Lakoff and Johnson (1999) view causation as a prototype concept at the centre of a category in which there are many members but no commonality across all of the members. That is to say, the category of causation includes various kinds of causation. The central concept of causation is object manipulation: the volitional, direct application of physical force to an object that results in a change in it. This is called the prototype of causation. Various kinds of causation originate from this central prototype. There are literal variations of the central prototype to *indirect causation* or *enabling causation*; there are metaphorical variations of the prototype (where physical force is salient) to cases in which *abstract causation* is conceptualised metaphorically in terms of physical force via the primary metaphor that Causes Are Forces and other metaphorical extensions. For example, in (10), mental energy is conceptualised as a physical force that can be applied to an object via metaphor.

According to prototype theory, causation has a minimal skeletal structure called the causal prototype.

The causal reasoning comes from two sources: a causal prototype and a wide variety of metaphors for causation.

The abstract causations are the extension of the prototype (where physical force is salient) which are conceptualized metaphorically in terms of physical force. Metaphorical extensions of the central prototype are based on common correlations within the central prototype.

(Lakoff & Johnson, 1999, pp. 160-162)

From this point of view, the abstract causation in (10) can be understood by linking it with a causal prototype. However, according to the experiment by Wolff (2014), no evidence supports the conjuncture. According to Lakoff and Johnson (1999), a cause is

⁴⁷ Causal relation as a prototype notion and can be applied to any relation similar enough to the prototype: the abstract mental energy is similar to a physical force that can be applied to an object; thus, it forms a causal relation with the receiver.

a determining factor for a situation. Given a lack of such cause and a lack of any other knowledge, we lack a justification for concluding anything. This is very similar to the counterfactual theory that is mentioned above. That is to say, the idea of the prototype theory is essentially based on dependency theories. It also comes with the weakness of dependency theories: it cannot explain defeasibility. In addition, the prototype theory cannot distinguish the degree of the PREVENT relation related to negative CAUSE and ALLOW relations: $\neg A$ allows B, A allows $\neg B$, $\neg A$ causes B, and A causes $\neg B$ are all implying the PREVENT relation that is A prevents B. In fact, Lakoff and Johnson (1999) do not distinguish between ALLOW and CAUSE at all; they call events with these relations “events-causal sequences”, and PREVENT is simply “their negations”.

This means that people should categorise the degree to which negated CAUSE relations or ALLOW relations are related to PREVENT relations as the same. That is to say, if one follows the prototype theory, “not taking medication causes him to die” should be equal to “not taking medication allows him to die” and “taking medication prevents him from dying” by the same degree. However, if we take a closer look at these causal relations, in the ALLOW and CAUSE relation, the “energy” of the action is clearly stronger in the CAUSE relation. In addition, the result⁴⁸ of the experiment by Wolff (2014) shows that there are indeed differences when people perceive CAUSE, ALLOW, and PREVENT.

If we combine the transference and prototype theories, the abstract causation problem would be explained. However, they are both result-entailing, which means they cannot explain the defeasibility in linguistic theories, for example, in (7). It is worth noting that if we use dependency theories to address the abstract causation problem, it can be solved easily since they do not require anything to be transferred to form a causal relation. For example, in (9), if probabilistic theories are used, the probability of the effect “he goes to the doctor” increases with the cause of “lack of sleep”.

⁴⁸ This will be further discussed later in detail.

3.1.1.6. Causal pluralism

To summarise, some problems cannot be solved under dependency theories but can be solved under production theories, such as the difference between intentional and non-intentional subjects. Other problems cannot be solved under production theories but can be solved under dependency theories, such as the problem of abstract causations. To solve this problem, authors like Hall (2004) use the concept of CAUSAL PLURALISM: causal understanding is based on both dependency and production causation. Hall (2004) argues that people's causal understanding sometimes uses dependency theories and other times uses production theories:

Let us finally consider an arena—causal explanation—in which both dependence and production play a role; what we'll find is that these roles are interestingly different... Dependence and Omissions are true of the first of these causal relations; Transitivity, Locality, and Intrinsicness are true of the second.

(Hall, 2004, p. 29)

Causal pluralism is a powerful theory as it combines two types of theories to explain possible problems with each of them: if one does not work with the problem, the other would have worked. A causal pluralism account seems to provide a better explanation of causation. However, when the range of the causal phenomena is widened, some problems arise that cannot be explained by both dependency and production theories. The main problem for causal pluralism is that it cannot explain the difference between a CAUSE relation and an ENABLE relation:

(11).

- a. A cold wind caused him to close the window.
- b. A crank enabled him to close the window.
- c. # A cold wind enabled him to close the window.
- d. # A crank caused him to close the window.

(Wolff, 2007, p. 3)

The examples in (11a) and (11b) are acceptable, but when we change the verb from *cause* to *enable* and *enable* to *cause*, then the sentences (11c) and (11d) sound strange. This means that there is a difference between the meaning of CAUSE and ENABLE. In addition, causal pluralism theory has a hard time explaining negation in causation⁴⁹ (causation by omission); dependency theories consider that the CAUSE by omission is synonymous with PREVENT. As pointed out by Walsh and Sloman (2011):

Counterfactual theory treats double prevention as a case of causation, in other words, if A prevents B and B prevents C then people should say that A causes C... That is to say, we might argue that Billy prevented the window from breaking provided that if he hadn't caught the ball, the window would have broken. Hence, make-a-difference (dependency) theories assume that 'prevent' means the same as 'cause not'.

(Walsh & Sloman, 2011, p. 25)

Furthermore, production theories are ill-suited for explaining causal relations in which no physical connection exists between the cause and the effect, for example, (9) and (10). As Wolff (2007) admitted, it is not enough for a production theory to account for PREVENT relations single-handedly.

Two pairs of PREVENT and CAUSE by omission are shown in (12).

(12).

- a. Green tea prevents Alzheimer's.
- b. Lack of green tea causes Alzheimer's.
- c. Lack of wind in the room allowed the dust to settle.
- d. Presence of wind in the room prevents the dust from settling.

(Wolff, 2014, p. 106)

⁴⁹ Note that the negation here is not "A not cause B" but " $\neg$ A causes B" or "A causes $\neg$ B".

The examples in (12a) and (12b) are not synonyms, unlike (12c) and (12d). If we use causal pluralism to address the difference between the two pairs, it is clear that both production and dependency theories would have a hard time.

Wolff (2007) argues that we need a new theory to represent causation to distinguish between CAUSE, ENABLE, and PREVENT since neither dependency nor production theories can explain the difference in (12).

3.1.1.7. Force theory

Wolff (2007) suggests a force-dynamic approach to causation, which is based on Talmy (1988); the author calls it *the force theory*⁵⁰. The idea of Talmy (1988) is that abstract conceptual content is derived from representations of the physical world and that complex patterns are constructed by assembling various simple force-dynamic relations. The simplest form of a force-dynamic relation includes two forces. These two forces are emitted from two entities; the tendency and strength of each force will affect the result of the combination of the forces. For example:

(13). The ball kept rolling because of the wind blowing it.

(Talmy, 1988, p. 58)

In Talmy's model, the example in (13) would be the result of the two forces of the ball and the wind: the force of the ball has a tendency toward rest, and the force of the wind has a tendency toward action; the wind's strength overpowers the ball's. To be clearer, in a force-dynamic-relation, there is an Agonist (the causee) and an Antagonist (the causer). An Agonist is the receiver of the forces, which is the focus of the interaction of forces. An Antagonist is considered for the effect that it has on the Agonist. In the case of (13), the ball is the Agonist, and the wind is the Antagonist. The tendency of the Agonist is toward rest; that is to say, if there is no Antagonist mentioned, the ball would not have kept rolling (not have the effect/result). The tendency of the Antagonist is

⁵⁰ Wolff (2007) considers the force theory to be categorized as a production theory but goes beyond the simple transmission of energy. With the force theory, there is no need for causal pluralism because it can address problems that transmission theories cannot answer.

toward action, i.e., the force acts on the ball to make it roll. Once we have determined the two forces' tendency, we calculate their strength. There would be two types of results: one is that the force of the Agonist (the ball) is stronger, and the other is that the force of the Antagonist (the wind) is stronger. In the case of (13), the force of the wind is stronger. Thus, the combination of forces has a tendency that is the same as the force of the wind, that is, toward action. For Talmy, causative relations are the interaction of forces; people represent individual causal interactions in terms of configurations of forces.

The configuration of A CAUSE B in (11a) is repeated here:

(11a) A cold wind caused him to close the window.

In (11a), the relation would be defined as such: the force of "him" has the tendency toward the opposite of the end-state B, "him closing the window"; the force of A, "a cold wind," has the tendency toward the end-state B. The force of A overpowers the forces of "him," and the result of the combination of the forces would be toward B. Thus, the causation can be explained by the force theory.

To solve the problem of distinguishing CAUSE, ENABLE, and PREVENT, Wolff (2007) suggests that causal relationships can be combined into a new structure. The dynamic model for CAUSE, ENABLE, and PREVENT can be captured by three dimensions:

- (a) The tendency of the patient to the end-state.
- (b) Affecter-patient concordance.
- (c) Progress toward the end-state.

(Wolff, 2007, p. 7)

In the model, the affector is the causer (or Antagonist) and the patient is the causee (or Agonist). Again, using (11a) as an example, (a) would mean whether "him" in the first place wanted or not to "close the window." Because the end-state is "him closing the window," if "him" wanted to "close the window" on his own (without being affected by the cold wind), then (a) would be "the patient has a tendency for the end-state." On the contrary, if "him" does not want to "close the window", then (a) would be "the patient

does not have a tendency for the end-state.” (b) concerns the tendency of the affector and the patient, essentially, whether “him” and “the wind” have the same goal in the beginning. (c) is another determining factor for the relation; in (11a), although “him” in the first place did not want to close the window, the force of “the wind” overpowers the force of “him” so that there is progress made toward the end-state⁵¹, which is “closing the window.”

Different configurations of these three dimensions allow for different categories of causal relationships: a CAUSE involves that the patient does not have the tendency to the end-state, but the affector’s force, which is stronger than the patient’s, moves it to the end-state; a PREVENT involves that the patient has the tendency to the end-state, but the affector’s force, which is stronger than the patient’s, moves it away from the end-state; an ENABLE involves that the patient has the tendency to the end-state, and the affector’s force has the same tendency, so the combination of two forces moves the patient to the end-state.

To explain the difference between a CAUSE and an ENABLE, Wolff et al. (2010) state that the ENABLE (or ALLOW)⁵² relation is based on double prevention. ENABLE relations include a causal chain; to be more precise, an ENABLE relation involves removing a force that was initially preventing the effect from happening. See (11b), repeated here:

(11b) A crank enabled him to close the window.

In this sentence, there are two causal relations (or one double prevention). The first causal relation is a PREVENT. It could be because there is friction that is too strong for “him” to close the window by hand (imagine a window that is designed to be only able to be opened and closed by a crank; if not using the crank, then there would be strong friction between parts), which can be described as “the friction prevents him from closing the window.” Let us suppose the friction is force A and the force coming from

⁵¹Note that the end-state here is not the same as the result state in an accomplishment, but it represents the effect on the patient/causee/agonist.

⁵² Wolff et al. (2010) state that the ENABLE relation is like ALLOW or HELP.

“him” is force B. The tendencies (or direction) of A and B are opposite. This first relation has a combined force, which tends to go away from the effect of “closing the window.” The combined force then should be C, which is calculated from A and B: $(-C) = (-B) + (A)$ (I am using negatives to represent the opposite tendency with the effect). The second causal relation is also a PREVENT. The force of the crank would be force D, which is toward the effect, and what D acts on is the combination force C; these two forces, C and D, also have opposite tendencies. Then there is the second combination force of C and D; let us call it force E. The direction of E is the same as the effect; thus, (11b) came out as an ENABLE relation.

In other words, “the crank” is what helps “him” (B) overcome force A. The forces C and D are included in the second causal relation, and A and B are included in the first. “Him moving the crank” prevents the first causal relation (from A and B) from having an effect. Thus, a double prevention becomes an ENABLE relationship. According to the experiments in Wolff et al. (2010), the ALLOW relation is a *virtual force*, which means that the first prevent relation is threatened and not actualised. Using (11b) as an example again, the calculation of the force C requires both A and B. However, when the crank is used, A and B would not exist in the first place: A and B only exist because of the event of “him trying to close the window by hand,” and this scenario may or may not have existed in the real world. We accept the scenario where these two forces (A and B) are anticipated but unrealized because they do not actually have to be physically realized in order for them to be considered components of a causal chain and enter into the process of relation composition. Note that, as admitted by Wolff et al. (2010), virtual forces can only be realised in causal chains beginning with PREVENT relations, and there should be enough actual forces for the virtual force to be anticipated in the people’s causal judgements. For example, we need to know the rough strength of A and B to anticipate that “without a crank, the person will be unable to open the window.”

Going back to how force theory can solve problems of causation, another problem it can address is the phenomenon of causation by omission, like in (12b), repeated here:

(12b) Lack of green tea causes Alzheimer's.

Force theory views causations like (12b) as involving the removal of a specific force. Like the example in (11b), (12b) also suggests a causal chain of double prevention. In (12b), the first prevention relation is that green tea prevents Alzheimer's, and the second prevention relation is the removal of the combined force in the first relation.

While both causation by omission and ENABLE suggest double prevention, causation by omission, like in (12b), is not equal to an ENABLE relation, like in (11b). In an ENABLE relation, there is the tendency of the patient to the end-state, which means that, in (11b), the patient "him" has the force toward the end-state "window closed." However, in a structure of causation by omission, this is not the case. For example, in (12b), the patient "people" as in "lack of green tea causes (people) Alzheimer's" does not have the force toward the end-state "Alzheimer's."

Another problem of causal pluralism (as mentioned before) is that in both dependency theories and production theories, there are no asymmetries in the degree to which negated CAUSE relations or ALLOW relations are related to PREVENT relations: the four relations "¬A causes B," "A causes ¬B," "¬A allows B," and "A allows ¬B" all imply or entail that "A prevents B" to the same degree (Wolff, 2014). However, in the experiment of predictions by Wolff et al. (2010), the results show that "¬A allows B" and "A allows ¬B" have different behaviours in people's mental representation. Namely, people find that "A prevents B" is more closely tied to "¬A allows B" than "¬A causes B"⁵³. The force theory predicts this result correctly, as other theories have failed.

On the one hand, force theory appears to be able to get past most of the obstacles that other theories cannot. On the other hand, force theory is developed in such a way that it seems only to involve physical objects. Now, the question arises: If force theory is to be incorporated into the present study, how can it address abstract causations?

⁵³ In the result of the synonyms test in Wolff (2010), when people were presented with A prevents B, they chose A causes ¬B (36%) and ¬A allows B (34%) more often than they chose ¬A causes B (15%) and A allows ¬B (5%).

According to Talmy (1988), force dynamic theory can also represent psychological relations as a metaphoric extension:

Its concepts and distinctions are extended by languages to their semantic treatment of *psychological* elements and interactions. This linguistic *psychodynamics* thus generalizes notions of physical pushing, blocking, and the like to the framing of such concepts as wanting and refraining.

(Talmy, 1988, p. 69)

He argues that the verb “wanting” also has an imaginary force that has the tendency toward action. In addition, other verbs that are used in physical force relations can also be used in mental representations, as example (14) shows:

(14).

- a. The new dam resisted the pressure of the water behind it.
- b. The man resisted the pressure of the crowd against him.

(Talmy, 1988, p. 71)

In Talmy's theory, the dam in (14a) could resist the water pressure because the dam's physical sturdiness surpasses the water's strength. However, if only considering physical sturdiness, the man in (14b) cannot resist the pressure of the whole crowd, which is much stronger than a man. Talmy's idea is to incorporate a psychological element into physical activity, which gives the man the ability to endure crowd pressure. This component not only serves as an amplifier of the strength of physical activity but also can affect the tendency of the force:

It accomplishes this by *maintaining the expenditure of effort*, that is, by a continuously renewed *exertion*, in which a goal-oriented part of the psyche overcomes a repose-oriented part so as to generate the output of energy.

(Talmy, 1988, p. 71)

From this point of view, mental energy can serve as a force that affects the tendency and magnitude of a physical causer. However, we need to consider other possibilities

for some causal relations that are purely abstract without a physical causer. Wolff (2014) shows that although the present force theory cannot explain abstract causal relations, the force theory can successfully predict the asymmetries of people's intuition about PREVENT sentences, specifically how *A prevents B* was related to *A causes ¬B*, *¬A causes B*, *A allows ¬B*, and *¬A allows B*. The asymmetries exist not only in physical causal relations but also in abstract causal relations.

Altogether, dependency theories fail to predict people's intuition about abstract causal relations; transference theories cannot explain abstract causal relations; and force theory, although it cannot give a clear explanation, can predict people's intuition about abstract causal relations. So, it seems that force theory is more suited for this type of problem since Talmy's theory mentions forces that are combinations of physical energy and mental energy. What remains to be explained is the abstract causal relations that include purely mental forces, like "Emotional insecurity causes inattention" or "Lack of education causes poverty." The prototype theory in Lakoff and Johnson (1999) suggests that abstract concepts are largely metaphorical. That is to say, for people to understand abstract concepts, the concept should be able to map onto the world: abstract entities onto real-world individuals, sets of abstract concepts onto properties of real-world entities.

3.1.1.8. Type/token theory

A similar explanation for abstract concepts can be found in Dodd (2007). The author suggests a type/token⁵⁴ theory: for an abstract type, there is a real-world token that functions as the physical counterpart.

The idea of the type/token theory is that, for example, music is an abstract type (non-spatial oriented) for musical works, and the concrete sound pattern it produces is the token. Traditionally, the abstract type is causally inert because it is not located in space; hence, music can play no part in a concrete causal process that ends with an auditory

⁵⁴ The terms *type* and *token* were introduced by Peirce (1906). It distinguishes abstract objects (such as the word "the") and their concrete physical instance.

process. However, Dodd (2007) states that because the token of the type “music” can enter into a causal relationship, the abstract type can also be causally relevant:

A work of music, thus construed, can enter into causal relations derivatively by virtue of being a type of sound-event: a type whose token events can feature as relata of causal relations.

(Dodd, 2007, p. 16)

This theory explains why a work of music, although abstract, can be heard. Returning to our problems with abstract causal relations, if following the type/token theory, an abstract entity can enter into a causal chain through its physical token, then the abstract causal relation can be explained by adding force to the physical token.

Thus, there is a way to explain the abstract causal relation like in (15):

(15). Emotional insecurity causes inattention.

As an abstract concept, the affector "emotional insecurity" would have its concrete token, for example, "the way a person talks or acts", which we can associate a force with. The same goes for "inattention". Thus, the example in (15) becomes like (16):

(16). The hostility in John's voice causes Mary to end the conversation.

Here, we now have sentient entities, John and Mary. Following the force theory of Talmy (1988), the psychological force of a sentient entity is also a force. Thus, the tendency of the patient's force is not to end the conversation, and the tendency of the affector is to end it. Hence, two forces compete with each other, and the magnitude of the affector's force overpowers the patient's.

Furthermore, we can now explain a more complex causal relation like in (9), repeated below as (17):

(17). Lack of sleep caused him to go to the doctor.

The example includes both an abstract concept and an omission. First, it needs to be divided into two PREVENT events: the first being “sleep prevents him from going to the doctor” and the second being the removal of the first force: “something prevents him

to sleep”. Then, we should be able to change the abstract concept of “sleep” with its concrete token, for example, “him lying in bed.” Here, we have entities with physical movements, so the rest fits with the force theory.

3.1.1.9. Summary

To summarise, in this subsection, I have discussed five causation theories: counterfactual theory by Lewis (2000), probabilistic theory by Reichenbach (1956), transference theory by Kistler (2007), prototype theory by Lakoff and Johnson (1999) and force theory by Wolff (2014). Each theory has its own definition of causation, with different strengths and weaknesses. The distinctions are shown in Table 3-1. below:

Table 3-1- Causation theories

Theory	Definition	Strength	Weakness
Counterfactual	If there is a cause, there is an effect. If there is no cause, there is no effect.	Can explain both physical and abstract causation.	Cannot explain defeasibility. Cannot distinguish CAUSE and ENABLE. Cannot explain causal pre-emption.
Probabilistic	The cause raises the probability of the effect.	Can explain both physical and abstract causation. Accept defeasible causation.	Cannot explain why different causes have different effects. Cannot distinguish CAUSE and ENABLE. Cannot explain causal pre-emption.
Transference	There is a conserved quantity ⁵⁵ being transferred between cause and effect.	Can explain why different causes have different effects. Can explain causal pre-emption.	Cannot explain defeasibility. Cannot explain abstract causation. Cannot distinguish CAUSE and ENABLE.
Prototype	There is a concept of prototypical causation in a counterfactual relation. There are other types of causation that are similar to the prototype.	Can explain both physical and abstract causation. Can explain why different causes have different effects.	Cannot explain defeasibility. Cannot explain causal pre-emption. Cannot distinguish CAUSE and ENABLE.
Force	Cause and effect are the result of two opposite forces competing with each other.	Can explain causal pre-emption. Can explain defeasibility. Can distinguish CAUSE and ENABLE.	Cannot explain abstract causation.

In addition, I have discussed the possibility of solving the problem of abstract causations under force theory. I introduced the type/token theory in Dodd (2007) because it comprehensively explains how abstract concepts can exist in a causal chain. In addition, the way Dodd links physical entities and abstract concepts is similar to the prototype

⁵⁵ For example, energy, momentum, or electric charge.

theory in Lakoff and Johnson (1999), so the type/token theory can be easily incorporated into other causation theories.

3.1.2. Application of causation theories

In the previous subsection, I have briefly shown various causation theories in philosophy. In this subsection, I aim to discuss each causation theory with linguistic theories in mind. Specifically, following Copley and Wolff (2014), the three most important features in linguistic theories that concern causation theories are considered here: defeasibility, intentionality, and the representation of the causal chain in syntax and the lexicon. The primary focus of this subsection will be on defeasibility because this chapter is dedicated to non-culminating accomplishments. Recall that the purposes for discussing causation theories here are the following.

(i) There are causal relations in the structure of accomplishments, namely, the activity part (or preparatory process) of an accomplishment is a cause, and the result state is an effect. So, it is essential to understand causation to better understand the relation between the result state and the accomplishment.

(ii) The phenomenon of non-culminating accomplishments introduces the idea of defeasibility in the causal relation in accomplishments, which means that result states can be absent.

The objective is to better capture the nature of non-culminating accomplishments and result states through discussing causation theories.

Firstly, what needs to be discussed is that in linguistic theories, a situation, for example, an accomplishment, is only concerned with the description of what happened, but not about the real world itself. The structures of accomplishments should be attempts to capture specific properties of how we see the world, not attempts to describe the world how it is. (Krifka, 1998) That is to say, a causal relation that exists in the structure of an accomplishment should be the mental representation of the interaction between the causer and the causee, but not about the interaction in the real world:

The study of language's relation to a mental representation of causation by definition has only to do with how causation is represented in the mind, not with the actual nature or metaphysics of causation.

(Copley & Wolff, 2014, p. 29)

According to Copley and Wolff (2014), three features in linguistic theory need to be tested by causation theories:

- Defeasibility
- Intentionality
- Representation of causal chains

The first feature, defeasibility, is represented by the causal relations in accomplishments. The two subparts of the event, activity and result (or preparatory process and consequent state), are linked by a causal relation. However, this causal relation can be defeasible by the means of progressive or non-culminating accomplishments.

Counterfactual theory does not work well with this feature because of the result-entailing nature of the theory; defeasibility is not allowed. Dowty (1979)⁵⁶ argues that in these cases, the result still occurs, but in an "inertia" world. So, this could be a possible solution.

Transference theories are equally problematic because they cannot explain non-culminating accomplishments like (7), repeated here as (18):

(18). Marie incited Jean to vengeance, but in vain.

Although the result of the causal relation is cancelled, the accomplishment remains an accomplishment. Thus, the causal relation remains. As mentioned in 3.1.1.4, the transmission of the energy/quantity entails the result; a causal relation exists if and only if there is a transmission of energy/quantity.

The probabilistic theory could work with this feature since it is not result-entailing. Recall that in probabilistic theory, a causal relation is formed if the probability of the effect

⁵⁶ See section 2.2.

occurring is higher when the cause is present than when the cause is absent. This means that in (18), the causal relation remains. This is because the causal relation in (18) would be interpreted as “In this event kind, Jean is more likely to have the feeling of vengeance with Marie’s incentive than without.” Note that the probability of the event is calculated at the event kind level, not the individual event.

Another causation theory that could work with defeasibility is the force theory. The force theory does not specify whether or not the event has to be culminated. Suppose that in an event, the force of the patient has the same or more magnitude than the agent, but their forces have opposite tendencies. Then, there would not be a result. For example, John is closing the window, but the wind outside is so strong that he can barely hold the window, so the result would not be reached. This is a typical case of the two forces counteracting each other. To explain (18), it would be the two forces: Marie’s psychological force is weaker than Jean’s psychological force, and Marie’s tendency is toward the end result, while Jean’s tendency is toward the opposite of the end result.

The second feature, intentionality, is another problematic characteristic of non-culminating accomplishments. With some accomplishment events, the intentionality of the subject can determine if the culmination could be cancelled or not, as shown below:

(19).

- a. Marie incited Jean to vengeance, but in vain.
- b. His brother’s murder incited Jean to vengeance, #but in vain.
- c. Masha taught Russian to John, but he learned nothing.
- d. Life taught John humility, #but he learned nothing.

(Guéron & Vogeleer, 2021, p. 8)

The contrast between (19a) and (19b) (or 19c and 19d) suggests that for particular accomplishments, intentionality is required for non-culmination, which means that there is a clear difference between intentional and non-intentional subjects in causative relations. This difference should be addressed by theories of causation that would be

used in the case of accomplishments if we wish to maintain the causative relation in accomplishments.

Dependency theories do not distinguish between intentional and non-intentional subjects, so they will be excluded. What is left are two production theories: transference and force.

Transference theory does recognise a difference between the transmission of internal and external energy:

Such theories can specify whether a conserved quantity emerged from forces internal (e.g. a car's engine) or external (e.g. a leaf falling and being blown about by the wind) to an entity. However, while transmission theories are certainly able to distinguish internal from external influences, they do not provide a motivation for why making such a distinction might be of value.

(Copley & Wolff, 2014, p. 48)

As suggested by Copley and Wolff (2014), transference theories could work with the intentionality feature of accomplishments: the intentional subject in (19a) would be an external influence, while the non-intentional subject in (19b) would be an internal influence.

Force theories also provide a solution to this problem. According to Ebisch et al. (2008), humans tend to “resonate” more with an intentional agent than a non-intentional moving object (whether an agent or an accidental causer). Wolff and Shepard (2013) state that the mental representation of force would happen through observation. Thus, when people observe an intentional agent, the mental representation of the force should have more features⁵⁷ than when people observe a non-intentional one. That is to say, it would be easier for people to calculate the strength and the tendency of the

⁵⁷ The features here mean possible outcomes: one is that the combined force moves away from the *intended* result, and the other is that the combined force move toward the *intended* result.

force emitted by an agent, thus allowing the combined force to be perceived as moving away from the intended result.

Following the discussion above, force theories should account for the intentionality distinction in linguistic theories. Furthermore, they could explain the phenomenon of defeasible causatives like in (19): for specific accomplishments, intentional subjects can lead to both culminated and non-culminated readings, whereas non-intentional subjects can only lead to culminated readings. This phenomenon means that for those accomplishments with intentional subjects, the mental representation of the physical world has more features (which are the two possible outcomes) than those with non-intentional subjects. According to force theories, the observation of force leads to the mental representation of force. When intentionality is assumed by the observer, there is an automatic simulation of the proprioceptive aspect related to the observed action (the observer would think of him/herself as the agent)⁵⁸. (Ebisch et al., 2008, p. 1621) As a result, the mental representation becomes more “complex” in the sense that the culmination of the event could be defeasible.

Nevertheless, there are problems with force theories as well. Copley and Wolff (2014) criticise the explanation provided by force theories, stating that:

It is hard to see how a theory of force dynamics can provide a basis for the intensional⁵⁹ nature of dispositions. Desires and physical dispositions are intensional while physical forces are not.

(Copley & Wolff, 2014, p. 49)

This argument is against Talmy’s theory of treating desires and physical forces as the same. Copley and Wolff (2014) provide a solution to this problem by using the notion of

⁵⁸ Studies of social cognition also beckon this, as people observe other’s actions to grasp the intention of others. The motor system automatically infers a forthcoming goal when observing an action in a given context. (Iacoboni et al., 2005)

⁵⁹ Intension, with an “s,” refers to a kind of meaning. It is the collection of properties we use to identify something as an example of that word, which is contrary to extension. Intention (with a “t”) is an aim or outcome that someone sets out to achieve.

proposition from dependency theories. While physical forces are to be understood as functions from situations to truth values, psychological forces are to be understood as functions from situations to propositions. Then, according to the Law of Rational Action⁶⁰ in Copley and Harley (2014), the proposition leads to truth values. In such a way, linking psychological forces to defeasibility is possible. That is to say, not only can physical forces be defeasible, but psychological forces can also be, albeit through a more complicated route.

The other feature of linguistic theories is the representation of causal chains in syntax and the lexicon. The causal chain is the combination of two or more causal relations; for example, if A causes B, and B causes C, then people can say that A causes C. What will be discussed here is how languages represent this causal chain and which causation theories can address the representation.

See examples (20) below:

(20).

- a. John turned the baby.
- b. John made the baby turn.

(Copley & Wolff, 2014, p. 50)

The representation in (20a) suggests that there is only one causal relation (direct causation), in which "John" is the agent and "the baby" is the patient; "John" caused "the baby" to turn. However, in (20b), there are two causal relations that can be observed from the representation. One has "John" as the agent, and "John" caused "A" to happen (perhaps John pushed a button). The other has "A" (the button being pushed) as the causer that caused "the baby" to turn (indirect causation, perhaps the baby was sitting on a chair that the button can control), which is, as described before, a causal chain. This means that a causal chain can and will be represented in grammar. The "A"

⁶⁰ Law of Rational Action: If an individual x has a net desire for p in a situation s, x is the source of a force which has a later situation with property p, as long as nothing prevents x from being the source of such a force. (Copley and Harley, 2014)

is an intermediate agent. This agent, as stated by Copley and Wolff (2014), must have teleological capabilities, which are "the inherent qualities and abilities of the entity (in this case, the button/machine) to participate in the eventuality denoted by the predicate." In this case, "the button/machine" can make the baby turn.

Counterfactual theories do not work well with the feature of causal chain, because of their problem with late pre-emption. Recall the case of Suzy and Billy:

Suzy and Billy, our expert rock-throwers, are engaged in a competition to see who can shatter a target bottle first. They both pick up rocks and throw them at the bottle, but Suzy throws hers a split second before Billy. Consequently, Suzy's rock gets there first, shattering the bottle.

(Hall, 2004, p. 6)

In this scenario, we would say that "Suzy caused the bottle to break," which places "Suzy" and "the bottle shattering" in a causal relation. However, as mentioned before, there are no counterfactual dependencies between the two entities. Now, let us consider the causal chain that involves Suzy, Billy, and Billy's rock. The first causal relation is that "Suzy caused the bottle to break," and the second is "the bottle already broken caused Billy's rock to hit somewhere else." However, since there is no counterfactual dependence between them (the first and the second causal relation), this causal chain cannot be formed under counterfactual theories.

As mentioned before, probabilistic theory also faces the same problem in late pre-emption. Another possibility for dependency theory is to use a causal network to represent the causal chain: this means that Suzy's throw not only causes the bottle to shatter but also prevents Billy's throw from being a causer. However, Copley and Wolff (2014) suggest that causal network theory brings more complications to the conceptual representation of language because the causal network is a branching network, unlike causal chains encoded in language.

As mentioned before, production theories handle the problem of late pre-emption well. However, Copley and Wolff (2014) state that production theories use entities as causal

relata, unlike causal chains in syntax, which use events as causal relata. According to Copley and Harley (2014), a potential solution for this is to use a more abstract notion of force that acts on situations rather than entities. Although the authors do not elaborate on this, the idea is to link the entities with situations somehow.

Since we have already been discussing causal chains, it would make sense to further break down the situations that form a causal chain in syntax. That is to say, to break down the situation as another causal relation between entities. For example, in (19b), “His brother’s murder” is an event, but can also be viewed as another causal chain with two entities as “The causer A caused the brother to die.” However, this solution could have difficulties breaking down result states, like “the house is built.”

3.1.3. Summary

The discussion on causation and accomplishments has provided some insights. Following Copley and Wolff (2014), some causation theories are more suited to specific linguistic data sets, namely, the cases of non-culminating accomplishments. Causation theories in philosophy could help us understand the cognitive part of language processing. Furthermore, the causative relation that is simply a primitive in various linguistic theories (Dowty, 1979; Moens & Steedman, 1988) has been proven to have a more complex structure.

By comparing various causation theories, including counterfactual theory, probabilistic theory, prototype theory, and force theory, it was shown that force theory has a better effect on explaining various problems in linguistic data. In this section, in addition to discussing causation theories in the literature, I have proposed that the type/token theory in ontology by Dodd (2007) could help to explain the phenomenon of abstract causation. That is, the physical manifestation of an entity could be projected onto the abstract concept that represents such an entity in the conceptual structure of a causal relation. For example, when we hear the words “poverty” or “happiness,” we can imagine various physical representations of such concepts. In addition, I have suggested

the possibility of breaking down a situation into a causal relation for a better understanding of causal chains.

In this chapter about non-culminating accomplishments, selecting a causation theory that is better suited to the problems is necessary. The distinction between causation theories could significantly affect the explanation of the phenomenon of non-culminating accomplishments. I will address more of the force theory in the next section when I discuss maximality, since it seems to be the least problematic one in explaining the most important feature of defeasibility.

3.2. Maximality

The concept that an accomplishment must have a telos or culmination is the main idea in many traditional linguistic theories (cf. Dowty (1979), Moens and Steedman (1988), Rothstein (2004), Verkuyl (1993)). However, cross-linguistically, it is not always the case. In various Asian languages and Slavic languages, an accomplishment could satisfy its denotation when VP-event culminates or ceases to develop in the actual world. (cf. Koenig and Muansuwan (2000), Filip (2000), Soh and Gao (2006)) For example, in Chinese, it is not guaranteed that the end-point or culmination is reached when the event is classified as an accomplishment, as shown in (21):

- (21). *Wo zuotian xie-le gei Zhangsan de xin,*
 I yesterday write-LE to Zhangsan DE letter
keshi mei xie-wan.
 but not write-finish
 'I wrote a letter to Zhangsan yesterday, but I didn't finish it.'

The perfective marker *-le* in (21) does not force the accomplishment to culminate; instead, it allows both a "culminate" reading and a "terminate" reading. By "culminate," I mean the event reaches the natural endpoint; in (21), it would be that *the letter is finished*. By "terminate," I mean the event ended without reaching the natural endpoint; that is, *I stopped writing the letter while the letter was still not finished*. The event could have terminated without reaching the inherent endpoint. Under normal circumstances,

according to the definition in Martin (2019), when a perfect operator existentially quantifies an event *e*, the perfect operator entails that the event *e* falls under the respective predicate *P*, and *e* is complete with respect to *P*. This means that the perfect operator entails event completion, which is not the case in the abovementioned languages.

In this section. I will discuss the maximality theory in Koenig and Muansuwan (2000), Martin (2019) and Altshuler (2014). In addition, I will discuss the possibility of linking maximality theory and causation theory.

3.2.1. Maximality theories

Koenig and Muansuwan (2000) suggest that in the Thai language, accomplishment stems are always “imperfective” as they do not refer to complete eventualities but subparts of inherently bounded eventualities. They argue that bare Thai accomplishments are similar to sentences with imperfective markers or English progressives in the sense that they all describe subparts of eventualities, as shown in (22):

- (22). *Surii téen klɔɔn.*
 Surri compose poem.
 ‘Surii is composing/was composing/composes (habitually)/will compose/composed a/the poem.’

(Koenig & Muansuwan, 2000, p. 163)

Interestingly, bare sentences of Thai accomplishments are ambiguous aspectually and temporally as they can describe both bounded and unbounded eventualities that hold at present, past or future time intervals. However, when adding a perfective aspectual marker, *maa*, the accomplishment becomes temporally unambiguous but not aspectually, as shown in (23):

- (23). *Surii téen klɔɔn maa.*

Surri compose poem come.

Surri has composed/ has been composing a/ the poem.

(Koenig & Muansuwan, 2000, p. 160)

With the perfective marker *maa*, the sentence remains ambiguous between bounded and unbounded eventuality. However, this is not the same as another perfective marker in Thai, *k^hwn*, as shown in (24):

(24). *Surri téen klɔɔn k^hwn.*

Surri compose poem ascend.

Surri composed/ will compose a/ the poem.

(Koenig & Muansuwan, 2000, p. 167)

Muansuwan (2000) argue that there are similarities and differences between the two events (23) and (24). The same semantics of (23) and (24) is that there is an eventuality *ev* (that is the event described in (23) or (24)) which is a subpart of an eventuality *e'* such that in 'inertia' worlds, *e'* is an event of *Surri composing a poem* (the event culminated). The difference between the two perfective markers is that in (23), *ev* must be in the past, and *ev* entails a result state present at the time of utterance. In (24), there is no entailment of the result state; rather, in the 'real' world, there is no *e''* of which *ev* is a proper subpart and which is a subpart of *e'*, which means that the event described in (24) represents a maximal subpart of the supposedly culminated event.

Koenig and Muansuwan (2000) distinguish the two markers as “perfective marker”, as in (23), *maa*, and “semi-perfective marker”, as in (24), *k^hwn*. They argue that the semi-perfective marker *k^hwn* encodes semi-perfectivity parallel to the Chinese semi-perfective marker *-le*, as they denote event maximality:

The referent of a discourse marker *e* satisfies the predicative condition *Max (e, ϕ)* if and only if *e* is the largest eventuality which satisfies *ϕ*, that is, if there is no eventuality *e''* such that *e ⊂ e''* which satisfies the eventuality description *ϕ*.

(Koenig & Muansuwan, 2000, p. 167)

The perfective marker in Thai also denotes event maximality, like the semi-perfective marker. The perfective marker in Thai entails a result state at the time of utterance, but this result does not represent the culmination of the event, i.e., the marker marks that the event ended and, therefore, had a result. This result could be the culminated “John finished the letter” or the terminated “John wrote some words, but he did not finish the letter.” For example, in (22), the poem of *Surri* could never be finished, but she has the experience of composing. This experience counts as the result of the perfective marker. The perfective marker *maa* in Koenig and Muansuwan (2000) behaves more like an experiential marker in Smith (1997), where the event could be discontinued, but the experience holds until the time of utterance.

The maximality theory could explain why some event descriptions can be used to describe both the event itself and a subpart of the event. For example, in Chinese, “*wo chi-le pingguo*” (I ate the apple) could be used to describe the event where “I ate the whole apple” or the subpart of that event, “I took a bite.” A similar point can be found in Landman (1992) in the analyses of progressive accomplishments. The author argues that sentences like (25) can be understood as a subpart of the culminated event:

(25). Mary was building a house.

(Landman, 1992, p. 22)

The event description (25) is a stage (non-final interval) of the culminated event. The stage could continue to develop (to culmination) or cease to develop in the real world, but that is irrelevant to the event description. Landman (1992) argues that (25) is true as long as the stage continues to develop in a certain inertia world. This feature is similar to that of a maximal event like in (21), repeated below, as the event can cease to develop in the real world, as shown by the negating clause, “but I did not finish it.” The description is true as long as “I did finish the letter” is true in a certain inertia world.

(21) *Wo zuotian xie-le gei Zhangsan de xin, keshi mei xie-wan.*

‘I wrote a letter to Zhangsan yesterday, but I didn’t finish it.’

Altshuler (2014), following the theory of maximality, suggests that Hindi simple perfectives fit the description of the requirement of event maximality but also involve another maximal stage requirement:

If e'' properly contains the VP event part denoted by e' and is at least a sub-part of the VP-event denoted by e , then e'' does not satisfy the description denoted by the VP in the real world.

(Altshuler, 2014, p. 761)

Altshuler states that e' is the possible continuation of e . Using (24) as an example, e is a sub-part of e' , which fits the event description, and e' is the culminated event of “Surri composed the poem.” The maximal stage requirement ensures that no “smaller” events like e'' could fit the description of e' , which means that e (the event description, *Surri composed the poem*) is the largest event. In other words, perfective markers in Hindi require the event to culminate or cease to develop in the real world.

From here, Altshuler (2014) suggests two types of partitive operators that could describe an event’s culmination: imperfective operators and perfective operators.

An operator is *perfective* if it requires a maximal stage of an event in the extension of the VP that it combines with. An operator is *imperfective* if it requires a part of an event in the extension of the VP that it combines with, but this part need not be maximal.

(Altshuler, 2014, p. 763)

He suggests that perfective operators originate from maximal stage requirement, which means that the two markers in Koenig and Muansuwan (2000), whether perfective or semi-perfective, all denote event maximality and not telicity. Although merely a hypothesis, event maximality clearly plays an important role in non-culminating accomplishments.

Coming back to semi-perfective markers, Martin (2019) argues that weak perfective operators denote event maximality but not event completion. These operators have

been found in Thai, Chinese, and Hindi, which include the perfective and semi-perfective markers in Koenig and Muansuwan (2000) and the perfective and experiential markers in Smith (1997). Perfective operators (or strong perfective operators) denote event maximality and event completion. These operators are found in English, French, and Russian. I will use the term weak and strong perfective operators from now on to avoid ambiguity.

For languages that have strong perfective operators, sometimes an accomplishment can still refer to a sub-part of the culminated event, like in (26):

(26). I mowed the lawn, but not all of it.

(Rappaport Hovav, 2008, p. 27)

Rappaport Hovav (2008) calls verbs like in (26) *multipoint scale verbs*, which entail some change along the scale in the past tense but not the maximal change. This means that the accomplishment “I mowed the lawn” is a maximal event without a weak perfective operator. Martin (2019) proposed a solution to this problem by incorporating the granularity shifting theory in Sassoon and Zevakhina (2012). They suggest that total adjectives⁶¹ without modifiers like “clean” are vague and presuppose a coarse granularity level, and total adjectives with a maximized modifier like “fully clean” presuppose a finer granularity level. If extended to the DP domain, in the example in (26), “the lawn” presupposes a coarse granularity level, and in the second clause, “all of the lawn” presupposes a finer granularity level, which means that the second clause is not negating the first clause at all. Again, this satisfies the requirements of a maximal event because the event ceases to develop toward the *e'* “mowed all of the lawn,” and there is no *e''* larger than the event description in the real world.

Event maximality could answer two problems related to the phenomenon of non-culminating accomplishments. The first one is that in languages with weak perfective

⁶¹ The more familiar term would be *closed-scaled adjectives*. Sassoon and Zevakhina follow Kennedy's theory but use a different term. According to Kennedy (2008), adjectives can be divided into *open-scaled* (lacks a minimum or a maximum value or both) and *closed-scaled* (has a minimum and maximum value).

operators where accomplishments have imperfective readings, an accomplishment could refer to (i) the culminated event or (ii) the maximal event denoted by the VP, i.e., a telic VP could refer to the do-component of the process without entailing the change-of-state of the object. For example, in (21), “*Wo zuotian xie-le gei Zhangsan de xin* (‘I wrote a letter to *Zhangsan* yesterday’),” the maximal event would occupy the time stretch from “I was writing” to “I stopped writing.” On the other hand, the culminated event would occupy the time stretch from “I was writing” to “the letter is finished.” The second one is that for languages with strong perfective operators where bare accomplishments have perfective readings, accomplishments with multipoint scale verbs could refer to the culminating event down to a coarse granularity level, i.e., the event does not reach the final scale.

3.2.2. Another solution for maximality

Recall that the possible world theory of Dowty (1979) results from the counterfactual theory of causation because it cannot answer the defeasibility problem on its own. However, in 3.1, it is shown that counterfactual theories have several problems, even when adding the possible world theory to them. Now, let us see if we can address the maximality theory not using counterfactual theories but the force theory.

Copley and Harley (2014) suggest a force-theoretic framework to address the phenomenon of non-culminating accomplishments. They view the change-of-state situation as a combination of two forces: one force is the particular input of energy into some initial situation, the force that can change the initial position of the entity in the initial situation into another position, and the other force is the energy that keeps this change from happening. Using (26) as an example, the “I mowed the lawn” event can be divided into two causal relations. In the first causal relation, the first force is the energy that the speaker puts into the scythe or the mowing machine, and the second force is the energy that prevents the scythe or the mowing machine from moving, whether it is gravity or friction. In the second causal relation, the first force is the

momentum of the scythe or the mowing machine, and the second one is the friction between the machine and the grass, which prevents the grass from being cut.

In every causal relation, there is an initial position and a final position. Whether the final position is reached depends on the opposing force. If the opposing force has a lesser magnitude than the force of the agent or causer, then the final position will be reached. If the opposing force has a greater magnitude than the force of the agent or causer, then the final position will not be reached. Applying it to non-culminating accomplishments, Copley and Harley (2014) suggest that events would ordinarily be expected to happen if some other forces had not intervened. They define it as the '*ceteris paribus* ('all else being equal') final situation'— the situation that would be obtained in the case that is just like the actual case, but in which there is no stronger external opposing force. (Copley & Harley, 2014, p. 121) This allows for the possibility that all else may not be equal, leading to the lack of causative entailment. Their definition of force is as follows:

- Definition of Force:

A force f is a function from an initial situation to the *ceteris paribus* final situation, i.e., it is of type $\langle s \text{ (initial situation)}, s \text{ (normal final situation)} \rangle$.

(Copley & Harley, 2014, p. 123)

The normal situation is the result, which includes all the individuals and properties that give rise to the net force. A net force is a combination of all relevant forces affecting one situation, i.e., gravity, momentum, or psychological forces. If calculated correctly, the final situation could not have variations because of the deterministic nature of physics. However, when people represent a causal chain consisting of several forces, the mental representation could be incomplete or imprecise. According to Copley and Harley (2014), there could be at least three ways that the mental representation could fail to capture the affair happening in the real world:

- underspecification of the magnitudes of relevant forces.
- incomplete knowledge of the identity of the relevant forces.

- incomplete knowledge of the individuals and/or properties from which forces arise.

(Copley & Harley, 2014, p. 125)

From here, the mental representation of the event could have branching features, i.e., two or more readings, because of incomplete knowledge. This captures the nature of non-culminating accomplishments well, as non-culminating accomplishments often have a culminated reading and a non-culminated reading without the second, negating, or affirming clause like “I mowed the lawn” from example (26). The final situation of a causal chain depends on the mental representation of the speaker and the speaker’s claim about what forces are in play, together with the specifics of the forces.

Theories of physics claim that where there is gravity and an object with mass, the object would have a tendency, whether it is the tendency toward action or the tendency toward rest (Talmy, 1988). Copley and Harley (2014) view the intrinsic force tendency of an object as a more abstract analogue of gravity; they call it “the normal field.” In a normal field, with the appropriate object, the object would have a tendency toward the final situation; if there are no opposing forces strong enough, the net force would guide the object to the final situation. For example, the intrinsic force tendency of a raindrop is to drop indefinitely; the normal field here is gravity. Forces from other properties could be the friction between the raindrop and the air. However, the friction is not strong enough, so the net force would be toward the ground. When the raindrop hits the ground, the force of the ground is strong enough to prevent the raindrop from falling further, so the raindrop stops. Another example comes from Copley and Harley (2014), who argue that any physical change could be represented as a function from one situation to another. Like gravitational force, a fruit has the tendency to ripen in a normal field; the fruit will ripen unless it is frozen or eaten while it is still green.

In addition to physical forces, psychological forces are also counted as forces that act from one situation to another, i.e., the desire of one individual affects one’s physical actions. Psychological forces also count as a tendency in normal fields like gravity. As

mentioned in 3.1.2, Copley and Harley (2014) proposed a Law of Rational Action that describes psychological desires, repeated below:

Law of Rational Action: If an individual *x* has a net desire for *p* in a situation *s*, *x* is the source of a force which *has* a later situation with property *p*, as long as nothing prevents *x* from being the source of such a force.

(Copley & Harley, 2014, p. 134)

The force theory suggests it can address non-culminating accomplishments as events without the entailment of the culmination, rather than first generating the entailment and later cancelling it. Copley and Harley (2014) argue that in languages where accomplishments have culmination entailments, there is a presupposition that the initial situation is *efficacious*, which means that there are no opposing forces strong enough to cancel the force of the initial situation, and the *ceteris paribus* end-state will be reached. In languages where accomplishments do not have culmination entailments, there is no presupposition that the initial situation is *efficacious*, which results in the culmination entailment not occurring: the culminating readings of such accomplishments would be conversational implicatures. They also state that culmination entailments emerge from an additional component (presuppositions) in languages that have them (like English) and that the absence of the entailment is the basic form.

Back to the discussion on maximality. The proposal of Copley and Harley (2014) holds some similarities to the maximality theories mentioned above.

Firstly, presuppositions in Copley and Harley correspond to strong perfective operators and weak perfective operators in the maximality theory in Martin (2019). A strong perfective operator should presuppose the reaching of the end-state. A weak perfective operator does not presuppose the reaching of the end-state.

Secondly, Koenig and Muansuwan (2000) state that the imperfective reading is the default in bare Thai accomplishments (without markers). This statement fits the proposal in Copley and Harley (2014). Because the basic form of an accomplishment

comes from the absence of presupposition, the imperfective reading, where culmination is not reached, would be the default reading.

Thirdly, Copley and Harley (2014) suggest that accomplishments with markers would have implied (or entailed) the reaching of the end-state because the marker introduces the possibility of the culmination. Thus, according to Gricean's maxims of conversation, if the speaker does not want to introduce the possibility, it is unnecessary to use the marker. Similarly, in Altshuler (2014), the author suggests that the culmination implicature in Hindi imperfective sentences could come from pragmatic properties. Altshuler finds that culmination implicature often arises when speakers compare the imperfective sentence with the perfective counterpart. That is to say, when there is an aspectual marker in the sentence, the speaker will often compare the imperfective marker with the perfective one and deliberately choose not use the meaning of the perfective one.

3.2.3. Maximality in imperfective accomplishments

Since we do not want to use the inertia world theory that originates from counterfactual causations, we could adjust the definition of maximality using the force theory. The inertia world theory mainly addresses the problem of the effect being absent sometimes. In counterfactual causation, the effect must exist for the relation to be causal. However, as mentioned before, defeasibility is an important feature in accomplishments. Since there must be an effect for the causal relation to work, and certainly no effect exists in the real world, Dowty (1979) proposed that the effect must exist in an imaginary inertia world. For example, in the non-culminating accomplishment, "John washed the shirt, but the shirt is not clean.", the cause would be the event *e* "wash," and the effect would be the state *s* "the shirt is clean." However, *s* does not exist in the real world. In the real world, there is only *s*' "shirt is not clean." In Dowty's theory, *s* must exist only in the inertia world and not in the real world because he uses counterfactual causation. However, if counterfactual theories are the answer for bare (unmarked or without aspectual markers) accomplishments mentioned above,

like in Mandarin or Thai, it would be strange that the default reading for the bare accomplishments is imperfective since there is no morphosyntactic evidence for the cancellation of the effect. In other words, the unmarked accomplishments also include a causal relation. However, their default reading is that the effect is absent (like an activity). This means there should not be an effect even in the inertia world.

On the other hand, force theories provide a solution to the default reading in unmarked accomplishment in languages like Mandarin or Thai. Unlike counterfactual theories, a causal relation can exist without an effect in force theories. It only requires two opposing forces to compete with each other.

I propose that the definition of maximal event as event e , which is the largest eventuality that satisfies the event description ϕ . e is the largest eventuality if and only if the net force of the causal chain of e includes all forces that have a tendency towards the *ceteris paribus* final situation. This definition is very much like the one in Koenig and Muansuwan (2000), except that I have used net force in the causal chain instead of events in the inertia world. In an accomplishment, e could occupy the time stretch from the beginning of the activity to when the event culminates, or e could occupy the time stretch from the beginning of the activity to when the event is terminated. In both cases, there is an initial situation, which is before the beginning of the activity, and a final situation, which is the state after the accomplishment. Furthermore, there is a *ceteris paribus* final situation when the sentence has aspectual markers (imperfective or perfective). The causee (or patient) will be in the *ceteris paribus* final situation if no other stronger opposing forces prevent the initial situation from developing⁶². For example, in “John repaired his car, but it is still broken because he did a bad job.”, the initial situation could be “the car is broken and John has the intention of fixing it”, the *ceteris paribus* final situation could be “the car is fixed”, but because the forces in “he did a bad job” intervene the normal repair process, the *ceteris paribus* final situation is not reached.

⁶² Copley & Harley (2014) admit that this *ceteris paribus* final situation has some inertia properties. However, they state that the process of calculating the final situation depends on cognitive functions, which do not involve semantic operators.

Following this theory, the difference between culminating and non-culminating accomplishment depends on the presuppositions attached to the vP. See (21), repeated below:

(21) *Wo zuotian xie-le gei Zhangsan de xin, keshi mei xie-wan.*

‘I wrote a letter to Zhangsan yesterday, but I didn’t finish it.’

In (21), the basic form “write a letter” (in Chinese) has two readings, culminated and non-culminated. Because the vP has no presupposition that shows the efficaciousness of the force in the initial situation (*writing*), the basic form does not have a culmination entailment nor implicature. When adding the weak perfective operator “-le,” the vP turns into a maximal event, which means that it describes the event with the greatest magnitude of the net force in the initial situation (*writing*). To be more precise, let us suppose the net force of writing consists of two types of forces. The first type of force is the psychological force, which is “my desire to write the letter,” which makes the tendency of the normal field toward the final situation. The second type is the physical force of “me pushing the pen against the paper,” which could be divided into several individual forces if “I wrote several words”, because one does not apply forces to the paper in the intervals of words. In this case, the psychological and physical forces combine into a net force that tends toward the final situation.

It is important to understand that there are multiple forces affecting an object; the event of writing a letter not only includes the force of lateral pushing. Another example is the vertical force that holds the ink up in the pen, which competes with the gravitational force that pulls the ink down, to account for situations like “I wrote the letter, but the pen leaked ink (so the letter is ruined). “Another force in play is the frictional force between the ballpoint and the ball-bearing race at the tip of the ballpoint pen. If this friction is too strong, then the ink could be stuck. For example, *I wrote the letter, but the pen stopped working (so the letter is not finished)*. Which force is included in the net force of the initial situation depends on the mental representation of the speaker; the net force will only include forces that the speaker thinks are relevant to the event, with

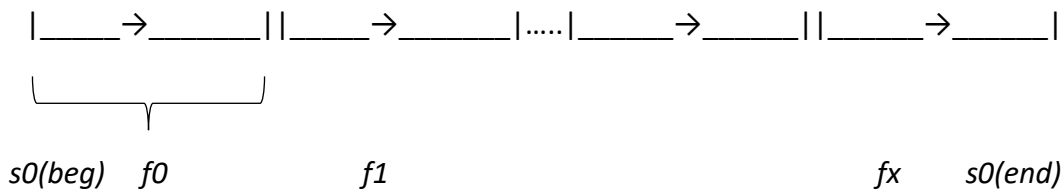
a relative magnitude. The choice of the net force in the initial situation could be mistaken or poorly calculated, leading to different readings.

The net force then competes with the other forces, physical or psychological, like the friction between the pen and the paper or the sudden urge to destroy the letter out of frustration because perhaps “I wrote the wrong word,” whichever force the speaker thinks is relevant to the eventuality. In typical cases, there is no presupposition that the net force in the initial situation is *efficacious*, which means there is no culmination entailment.

When adding the weak perfective operator “-le”, the description of the event turns into a maximal event. The weak perfective operator does not presuppose that the initial situation is *efficacious*. However, it limits the magnitude of the net force in the causal chain. For example, in the unmarked accomplishment event “*xie feng xin*” (write a letter), the default reading is like an activity in English, like “run.” That is to say, there is no determined direction for the net force in the initial situation. On the contrary, in the accomplishment marked with a weak perfective operator “*xie-le feng xin*” (write-LE a letter), it then has a *ceteris paribus final situation*, which is “a letter is finished.” However, this situation is not guaranteed to be reached; the marker only provides a direction for the net force. In addition, the accomplishment turned into a maximal event, which means that no net force from the causal chain has a greater magnitude than the net force of the causal chain of the event and that any proper part in the causal chain can fit the description of the event. I will provide a representation of a causal chain later. The *magnitude* is the determining factor of the end of a situation.

I propose that when a speaker describes an event with a weak perfective operator, the mental representation of the situation is the event with the net force that has the greatest magnitude. The magnitude of a net force is not the raw physical strength that one uses to push the paper when writing a letter. Instead, imagine it as the combination of the forces working toward the same goal. The magnitude is represented by the length of the net force. I present here my version of the representation of a net force:

Figure 3-1- Representation of a net force in a culminated event



In Figure 3-1, each space with an arrow represents a force f . The magnitude of one force f is represented by the length, and the tendency is represented by the arrow. A force f is calculated by subtracting the weaker force from its greater counterforce in the same time interval. The calculation is conceptual rather than literal. Imagine John and Mary pulling a rope: John pulls to the north, and Mary pulls to the south. Because John is stronger than Mary, in ten seconds, the centre of the rope moved toward John by one meter. The magnitude of force f would then be the strength of John minus the strength of Mary; it shows how much John is stronger than Mary. The tendency of force f would be like the direction that John pulls.

A net force is the combination of various forces. That is to say, many factors could determine the end of a situation. In a culminated event that only includes one causal relation, only one net force affects the initial situation. For example, in "John ate an apple," the initial situation would be "the apple is not eaten." Then comes the first situation ($s0$: John eating), where various forces affect the initial situation, moving the situation toward the final situation ($s1$: the apple is eaten). In addition, because accomplishments are durative, each force in the net force represents a step in time. For example, in "write a letter," $f0$ could represent the writing of the first word. In this case, perhaps it is the lateral pushing force of the pen minus the friction between the pen and the paper. On the other hand, $f0$ could also represent making up one's mind to write. In this case, perhaps it is the force of the psychological desire to write minus the desire not to write it. Although the forces in the net force follow the direction of time ($f0$ to $f1$ to $f2$, etc.), the magnitude of a force does not always occupy a different time interval. For example, one can write several words while still not being determined to write the

letter. That is to say, f_0 and f_1 or f_2 can happen at the same time, but f_1 cannot happen before f_0 .

The magnitude of the net force is represented by the length of the situation (from the beginning of s to the ending of s). Because the magnitude of each force is not a time interval, the magnitude of the net force is also not representing a time interval.

The direction in the net force represents the tendency of the calculated force, which is toward the end (to the right) when the force that the agent or causer applied in the description of the event (write) has a greater magnitude than the opposing force (friction), and the arrow would be toward the beginning (to the left) when the opposing force has a greater magnitude than the force that the agent or causer applied. Using “write a letter” as an example, the beginning $s_0(beg)$ would be before writing the first word, followed by several calculated forces. The net force goes on until it reaches the end of the situation, whether the culmination or the termination of the “write the letter” event. Let us suppose that the final force that the speaker observed is f_x (the x th word in the letter). When the speaker describes the event with a weak perfective operator, the event in the description includes the net force from f_0 to f_x , and only the net force from f_0 to f_x will fit the description; any shortage of one force would result in a contradiction. However, because the weak perfective operator is not a presupposition, the efficaciousness of the initial situations is not determined. This means that the event could reach the *ceteris paribus* final situation (letter entirely written in this case), or the event could terminate because of some other forces intervening with the forces in the net force. In other words, f_x could be the last word that the writer intends to write, making the writing event a culminating accomplishment, or f_x could be a termination point of the event without the culmination, making the writing event a non-culminating accomplishment.

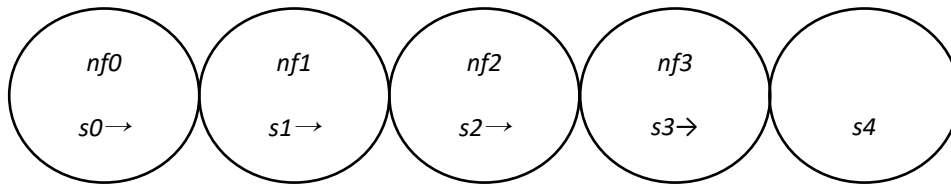
The net force of a terminated event would have a final calculated force with a tendency toward the initial situation. A terminated situation is shown below:

$$\begin{array}{ccccccc} | \_\_\_\_\_\_ \rightarrow \_\_\_\_\_\_ & || & \_\_\_\_\_\_ \rightarrow \_\_\_\_\_\_ & | & \dots & | & \_\_\_\_\_\_ \rightarrow \_\_\_\_\_\_ || \_\_\_\_\_\_ \leftarrow \_\_\_\_\_\_ | \\ s0(beg) & f0 & & f1 & & & fx \quad s0(ter) \end{array}$$

Note that in Figures 3-1 and 3-2, I am not using the *ceteris paribus* final situation in Copley and Harley (2014) to describe the end of the net force. This is because the net force in s_0 (which figures 3-1 and 3-2 represent) could lead to another situation, for example, s_1 , and it could result in another situation, s_2 , etc. Each net force represents a causal relation. In the case of writing the letter, we could assume the event only includes one causal relation. Other events like “The earthquake killed 27 people” would include more than one causal relation. In the case of the earthquake, the net force in s_0 could be represented as in Figure 3-1 with $s_0(end)$ being the houses collapsed, which results in a net force of s_1 , ending with the houses burying 27 people, then results in a net force of s_2 , finally ending with the 27 dead. To represent the causal chain using force theory, Copley and Harley (2014) use bubble diagrams as shown below:

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Figure 3-3- Representation of a causal chain



(Copley & Harley, 2014)

In Figure 3-3, the *nf* represents a net force in situation *s*. *nf0* includes all of the forces in the situation *s0*, which can be represented in Figure 3-1. Every situation in a causal chain has its own beginning point and ending point, with a unique tendency and magnitude of forces. In cases like “the earthquake killed 27 people”, the mental representation of the event would be that of a causal chain, as in Figure 3-3, which includes multiple situations. According to Copley and Harley (2014), the speaker’s choice would affect the tendency and the magnitude of the net force in *s0*, then *s0* leads to a successor situation *s1*, which leads to *s2*, etc. Finally, the last situation is a stative situation with no force represented and no implication of any successor, which is *s4* in Figure 3-3. Note that this does not mean there is no force at all in the final situation in the physical world because that would not be possible; what counts here is the mental representation of the speaker. All the forces the speaker considers causally unnecessary do not enter into the representation of the causal chain. Using “the earthquake” example, the net force of the *s0* could be the lateral forces of the earthquake that apply horizontal loads to the buildings when the earthquake is happening, and the final situation would be that the people are dead.

Copley and Harley (2014) suggest that accomplishments in languages like English presuppose that the initial situation is *efficacious*, which means that the successor and final situations would be reached. In languages where bare accomplishments have imperfective readings, there is no such presupposition, which means that the successor and final situations could be reached or not; it depends on linguistic operators (weak or strong) and the speaker’s choice of the net force in the initial situation.

However, what Copley and Harley (2014) do not comment on is that only considering the speaker's choice of the net force in the initial situation would not be enough. See, for example, (27).

(27). Mandarin

a. *Zhāngsān shāo-le nèi-ben shu kě shū méi quán shāo-zháo.*

‘Zhangsan burnt that book, but the book didn’t get burnt completely’

b. *Zhāngsān shāo-le nèi-ben shu kě shū gēn běn méi shāo-zháo.*

‘Zhangsan burnt that book, but the book didn’t get burnt at all’

(Martin & Demirdache, 2020)

Although in (27), there is a weak perfective operator "-le", which makes the event a maximal event, there is clearly more than one situation with net forces in play. Even when trying to minimise the causal relation in the event, there has to be one as the situation where Zhangsan's action lights up the book and the other as the book burning. If following the theory of Copley and Harley (2014), wherein in events like this, the culmination depends on the speaker's choice of the net force in the initial event, it would be that the situation of "lighting up the book" caused the culmination to not be reached. However, it seems not to be the case in (27a). If the book lights up, then the initial net force plays no part in terminating the situation where the book continues to burn. If the book does not light up, then the second clause would be "the book did not get burnt at all"; in fact, it is a felicitous sentence in Mandarin, as shown in (27b). To solve the contrast between (27a) and (27b), where (27a) terminated at some point in the successor situation *s1* and (27b) terminated at some point in *s0*, let us see the net forces in each of the events, using both bubble diagrams and the representation of net force.

Figure 3-4- Representation of the event in (27a)

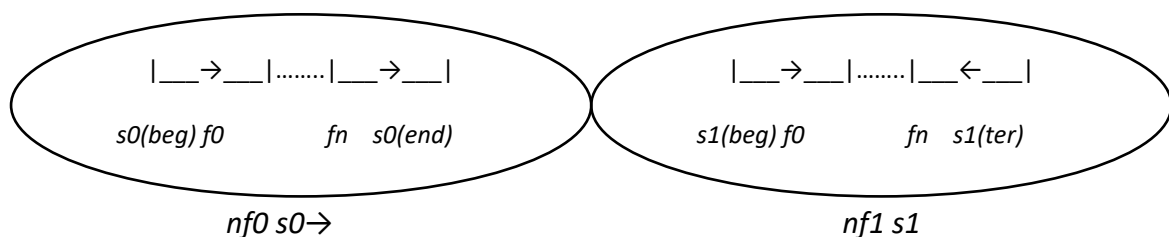
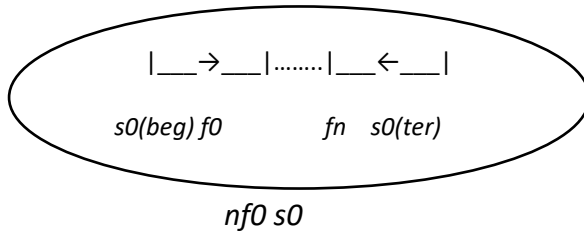


Figure 3-5- Representation of the event in (27b)



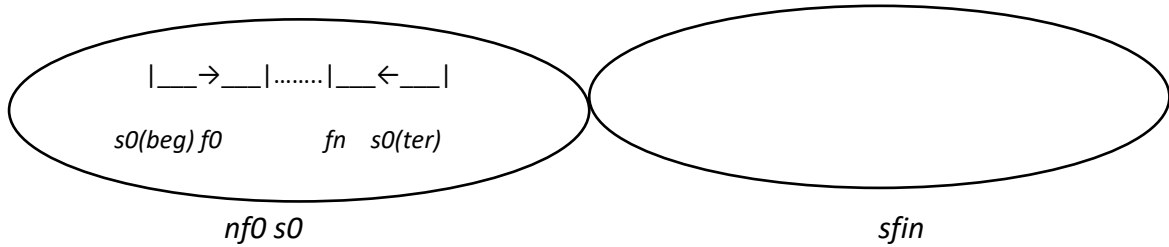
In figure 3-4, if we consider the minimal causal chain in the event (27a), we can at least draw up two bubbles, with one being the bubble of situation 0 – the initial situation, which is "Zhangsan lighting up the book," the other being the bubble of situation 1 – the successor situation, which is "the book burning." The situation did not reach the *ceteris paribus* final situation on account of situation *s1* terminated without reaching its natural endpoint because of one opposing force at the end of the net force that breaks the tendency of *nf1*. The overpowering of the force happened at *fn* in situation 1. To be more precise, let us divide the book into several parts, from part 0 to part *n*. It could be that the book has a wet spot in part *n* or somewhere in between parts 0 and *n* of the book. When the fire reaches the wet spot, the force of the fire is overpowered by the force of the wet spot, leaving the rest part of the book not burnt.

The minimal causal chain in the event (27b) could be just one event, which is represented in Figure 3-5. "The book did not get burnt at all" presupposes that there never was a successor event where the fire was burning the book, which means that the "lighting up the book" situation was unsuccessful. The *s0* "Zhangsan lighting up the book" does not reach its natural endpoint (the book is lit) and thus has no successor situations. The event could happen, for example, as follows: "Zhangsan was holding a match against the book which has a fireproof coating." In this case, the forces in the net force 0 would be the fire of the match. The match gets shorter and shorter; in the end, the final force in the net force is where the match runs out.

Note that although the situations did not reach the *ceteris paribus* final situation in Figures 3-4 and 3-5, there is indeed a final stative situation, which is the denotation of the second clause, the final state after the event. The final stative situation of the

maximal event includes both the object's physical state and the agent's psychological state. If we want to represent this stative situation, it would be like in figure 3-6.

Figure 3-6- Another representation of the event in (27b)



The final mental representation of the maximal event in (27b) would be Figure 3-6. Because there is a specified final situation⁶⁴, that is, “the book did not get burnt at all,” there would be a bubble that represents this defined result state.

As we can see in examples (27a) and (27b), the overpowering of the force could happen in the initial situation or its successor situation. In (27a), if following the definition of Copley and Harley (2014), the initial situation is indeed efficacious. However, it does not lead to realising the *ceteris paribus* final situation. Instead, it leads to a terminated successor situation. In events that include a causal chain, the definition of *efficacious* of situations changes to:

A situation *sn* is efficacious just in case its normal *ceteris paribus* successor *sn+1* actually obtains.

(Copley & Harley, 2014, p. 17)

The first clause in (27a) describes a maximal event with a weak perfective operator. I suggest, in these cases, against Copley and Harley (2014), that the speaker has control over not only the net force of the initial situation but all of the net forces and their components in a causal chain. The choice of the terminating force is indicated by the

⁶⁴ In this case, *sfin* could be effectively the (external) negation of the state corresponding to *ceteris paribus*.

negating clause. Before the terminating force, all calculated forces tend to the *ceteris paribus* final situation, or we can say that they tend to the normal field (from the psychological desire of the agent or the gravity-like force of the causer). Because the first clause in (27a) and the first clause in (27b) are the same, the determining factor is the second clause. That is to say, the second clause determines whether the event includes only one or two causal relations. This choice comes from the speaker. In the case of (27a), the speaker considers the event to include a causal chain and that *s0* is efficacious. In addition, there is also a *s1* that the speaker considers to be not efficacious. On the contrary, in the case of (27b), the speaker considers the event only to include one causal relation and that *s0* is not efficacious.

3.2.4. Maximality in perfective accomplishments

Applying the force theory to languages like English or Portuguese could be challenging because there are no weak perfective operators to help address the two readings. See (28):

(28). I mowed the lawn, but not all of it.

(Rappaport Hovav, 2008, p. 27)

Recall that the solution in Rappaport Hovav (2008) is that the reading depends on the lexical meaning of the verb, which means that there is a maximality feature in the lexical meaning of the verb. These are called verbs with a multi-point scale (volume/extent scale, gradable property, incremental path). In the past tense use of the verb, unless something in the context specifies otherwise, some change along the scale is entailed. However, change along the entire scale is only inferred by conversational implicature, governed heavily by pragmatic conditions. The multi-point scale verbs are in contrast to the two-point scale verbs. Two-point scale verbs are verbs that lexically entail the full change, like the verb “reach” in (29):

(29). I reached the summit.

(Rappaport Hovav, 2008, p. 28)

However, what is not mentioned by Rappaport Hovav (2008) is that the difference between two-point scale verbs and multi-point scale verbs could depend on the judgment of the speaker. Consider the examples below:

(30).

- a. #I ate the sandwich but didn't finish.
- b. I read the newspaper, but never finished.

(Rappaport Hovav, 2008)

(31). Mary ate the sandwich, but as usual she left a few bites.

(Hay et al., 1999, p. 13)

If following Rappaport Hovav (2008), verbs of consumption like “eat” are two-point scale verbs, which entail the full change; thus, the culmination could not be cancelled. However, the felicitousness of (31) shows the contrary. Furthermore, cancelling the culmination of accomplishments with multi-point scale verbs can be done with a “not finished” clause, as shown in (30b). Thus, if we follow the theory of Rappaport Hovav (2008), the contrast between (30a) and (30b) could not be explained since there are only two types of verbs: two-point scale and multi-point scale. If the verb “eat” in (30a) and (31) could represent both a multi-point scale verb and a two-point scale verb, then the difference between them would depend on the negating clause that followed it. However, the nature of the scale theory of Rappaport Hovav (2008) would not allow the negating clause to affect the acceptability of the accomplishment because the reading depends on the “*real lexical difference*” between the two types of verbs.

Martin (2019) and Guéron and Vogeleer (2021) state that this type of non-culminating reading originates from the DP's granularity level. Again, using (31) as an example, the DP in the event "ate the sandwich" represents a coarse granularity level, which means that the event behaves like "ate enough of the sandwich." Furthermore, the negating clause negates the result state at the finer granularity level, not the event itself; thus, it should not be contradictory to say (31). Since the two clauses are not opposition to each

other, the "but" connecting the two is a denial of expectation⁶⁵ (Lakoff, 1971). In (30a), however, there is no granularity change of the DP when adding "finish" to the event: the "not finish" clause negates the event "ate the sandwich" itself, thus rendering it contradictory.

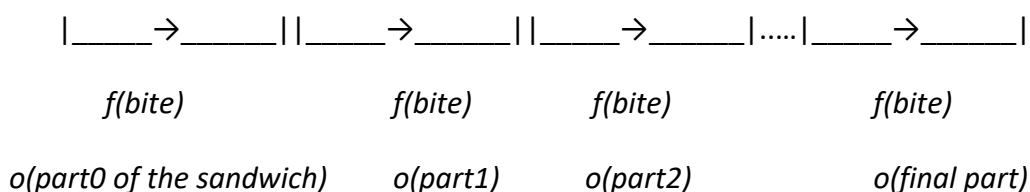
The event "Mary ate the sandwich" in (31) would be true on a coarse granularity level but false on a finer granularity level. (31) is similar to when adding modifiers like "completely" or "whole": it changes the DP to represent the finer granularity level of the object or theme. In addition, when considering events, this type of non-culminating accomplishment holds a remarkable resemblance to maximal events like in (27) with a weak perfective operator: both denote a perfective event with the possibility to culminate or not culminate. However, in languages like English, there are no weak perfective operators. Then how can we account for the contrast between (32) and (33), where (32) behaves as a maximal event and (33) does not?

(32). Mary ate the sandwich. (but not completely) (she left a few bites)

(33). Mary repaired the radio. (#but not completely) (#she left a few screws)

A maximal event can be represented by a causal relation or a causal chain, so it would be helpful to analyse them if we can also represent (32) and (33) via a causal relation. Now, let us see the net forces of the events in (32) and (33). In (32), suppose the event culminates: the spatial boundary of the sandwich is what defines the culmination, and from the initial situation to the final situation, there are multiple "bite" forces that have the same tendency and magnitude, which can be represented below:

Figure 3-7- Representation of the net force of "eat the sandwich"

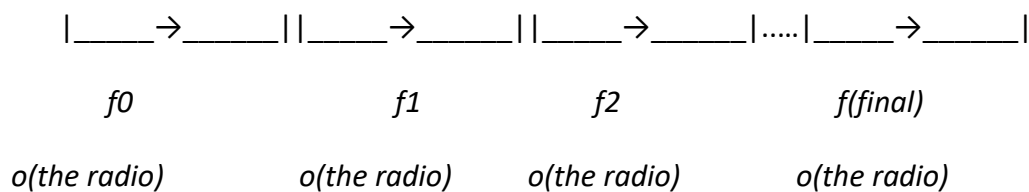


⁶⁵ In fact, most of the non-culminating accomplishments are of the denial of expectation type, but a small group does not fit. I will talk about this contrast in 3.4.

Let us suppose that the event of “eat the sandwich” only includes one causal relation; then, the net force between the initial situation and the final could be illustrated in Figure 3-7. As we can see, the forces affect unique objects (different parts of the sandwich). What defines the culmination is the spatial boundary of the sandwich. The forces of bites have the same magnitude and tendency, which means that it is like a small event happening over and over again with different objects, and these objects are small portions of the larger object, which is the patient in the causal relation. A similar approach is in Rothstein (2004), where she defines an accomplishment as a pluralisation of atomic events. For example, “run to the hospital” is considered various “steps toward the hospital.”

Now let us see the net force of the event in (33), which is illustrated in Figure 3-8:

Figure 3-8- Representation of the net force of “repair the radio”



Let us also suppose that the event of “fix the radio” only includes one causal relation. Then, the net force between the initial situation and the final could be illustrated in Figure 3-8. Unlike in Figure 3-7, the final situation of the event “fix the radio” is defined by the lexical meaning of the verb. In addition, the forces in this event are not repeating forces. In other words, the forces in Figure 3-8 represent different small events that happen to the same object. The object that the forces are affecting is the same radio and cannot be divided further, i.e., the patient of the net force cannot be divided into unique objects. The VP is atomic since there is no proper part of itself that is also the denotation of “fix the radio.” (Rothstein, 2004) In this case, the granularity level of the DP cannot be shifted.

The contrast between Figures 3-7 and 3-8 shows that only accomplishments with atomic subevents can have their granularity of the DP shifted and thus receive a non-culminated reading. I propose that granularity shifting can only happen if and only if there are different unique objects with the same repeating forces in a net force; the sum of all of the unique objects (every bite of an apple) is the patient (the apple) of the net force.

One problematic example in Rappaport Hovav (2008) is (34)⁶⁶: although it seems that there are repeating forces affecting unique objects in the net force, the event is not subject to granularity shift.

(34). #I memorized the list, but not all of it.

(Rappaport Hovav, 2008, p. 27)

However, if we compare (34) with (32), the repeating force of “memorize” is not always the same, unlike the repeating force of “bite.” Recall that the forces in the net force are calculated conceptually. In the case of eating the sandwich, because of the more uniform magnitude of the opposing force, the calculated forces should stay relatively uniform. Let us suppose it is the compression of the bite versus the normal force of the sandwich. Generally, the normal force should be the same for each bite of the sandwich. Thus, the $f(\text{bite})$ should be considered a repeating force in the net force. In the case of memorizing the list, although the patient could be divided into small fragments, there is no presupposition that the small fragments require the same amount of force to be memorized. Instead, in a typical scenario, to memorize a list, each fragment of the list takes different efforts to memorize: some are easy to memorize, and some are hard, making the forces in the net force non-repeating.⁶⁷

⁶⁶ This is also pointed out in Martin (2019), but no concrete solution is provided.

⁶⁷ There are counterexamples to this: a meat sandwich containing pieces of vein will have parts that are more difficult to chew than others, and a list of numbers formed with the same number of digits will be uniformly difficult to memorize. However, I consider these to be exceptional cases of events. When we think of the event “eat the sandwich,” the forces ($f_1, f_2...$) in our conceptual representation would *generally* have a uniform magnitude; when we think of the event “memorize the list,” the forces in our conceptual representation would *generally* be not so identical. I admit that the granularity shifting may be affected by the “consistency” of the event: “I memorized the list, but not all of it” may be less

The illustrations of the net force show that in languages with strong perfective operators, maximal events come from repeating forces applied to unique objects in a net force. The *but* clause could trigger a granularity shift when adding total adjective modifiers. Therefore, the non-culminating reading in these cases is a denial of expectation.

3.2.5. Summary

Through examples, we found that maximality is not only a concept in languages with weak perfective operators but can also apply to some cases in languages with strong perfective operators. In this section, I used force theory as a tool to illustrate different behaviours of maximal events. I discussed how the inertia world theory could not explain the problem of the default readings of maximal events. I added the net force representation to the force theory and enhanced the speaker's role in choosing non-culminated and culminated readings. Using the illustration of causal chain and net forces, I have suggested that the maximal reading of events in the two types of languages has different origins. The maximal reading of languages with weak perfective operators comes from the speaker's choice of the components in the net forces, and the maximal reading of languages with strong perfective operators comes from the granularity shift operation, which could only happen if the speaker considers the forces affecting unique objects in the net force are not repeating forces.

I will discuss various theories in the literature concerning non-culminating accomplishments in section 3.3.

3.3. Non-culminating accomplishment theories

Non-culminating accomplishments are originally discovered in Salish languages (Bar-el et al., 2005) but later widely attested across typologically unrelated languages (Altshuler 2014; Koenig & Muansuwan, 2000; Koenig & Chief, 2008; Tatevosov, 2008). In this

grammatical than the event "I memorized the list of numbers formed with the same number of digits, but not all of it," but this question would require a dedicated study of its own.

section, I will review theories in the literature about the phenomenon of non-culminating accomplishments.

3.3.1. Tatevosov (2008)

In Tatevosov (2008), the author considers that a three-component decomposition theory can address the problem of non-culminating accomplishments in specific languages. These three components are the agent's activity, the process in the theme, and the result state of the theme. He argues that three-component decomposition theories (cf. (Moens & Steedman, 1988)) can distinguish between two types of non-culminating accomplishments, whereas two-component theories cannot (cf. (Rothstein, 2004)).

To introduce the phenomenon of non-culminating accomplishments, the author first mentioned that accomplishments in Karachay-Balkar can accept both a time-span adverbial (*in x time*) and a measure adverbial (*for x time*), as shown below:

(35). Karachay-Balkar

- a. *Kerim eki minut-xa ešik-ni ac-xan-di.*
 Kerim two minute-DAT door-ACC open-PFCT-3SG
 'Kerim opened the door in two minutes.'
- b. *Kerim eki savat ešik-ni ac-xan-di.*
 Kerim two hour door-ACC open-PFCT-3SG
 'Kerim tried to open the door for two hours'
 (lit. 'Kerim opened the door for two hours.')

(Tatevosov, 2008, p. 395)

The author states that, unlike English, accomplishments in Karachay-Balkar can terminate before reaching the event's culmination. In addition, accomplishments in Karachay-Balkar are positive concerning any other tests indicating explicitly that the culmination is not attained, like with a "not finished" second clause. Furthermore, these accomplishments do not imply imperfective grammatical aspect. Instead, clauses

containing verbs in the Perfect form are perfective regardless of whether eventualities referred to culminate or not.

To support the hypothesis that accomplishments in Karachay-Balkar are perfective, Tatevosov (2008) uses examples of accomplishments with temporal sequencing of events, as shown below:

(36). Karachay-Balkar

<i>men</i>	<i>kel-gen-de</i>	<i>kerim</i>	<i>(on</i>	<i>minut-xa)</i>	<i>eşik-ni</i>
I	come-PFCT_TEMP	Kerim	ten	minute-DAT	door-ACC
<i>ac-xan-di.</i>					
open-PFCT-3SG.					

a. 'When I came, Kerim opened the door (in ten minutes).'

b. '# When I came, Kerim was opening the door'

(Tatevosov, 2008, p. 396)

Tatevosov argues that the interpretation (36b) is not acceptable because the running time of the "opening the door" event does not include that of the coming event "I came" referred to by the adverbial clause.

The author divides non-culmination readings into two groups: one is that of the failed attempt reading (FA), and the other is that of the partial success reading (PS). Some non-culminating accomplishments could have only the PS reading, and some could have both PS and FA reading.

The readings depend on the change of state of the theme. If there is no change in the theme, it is a failed attempt. Like the event of opening the door, if, in the end, the door is still closed, it is a failed attempt. If there are at least some changes, it would be a partial success; for example, if the door is partially open at the end of the event. Tatevosov (2008) distinguishes the two readings by associating them with the verbs: one type is called failed attempt verbs, and the other is called partial success verbs. He suggests that failed attempt verbs only accept the normal culminated reading and the failed attempt reading. In contrast, partial success verbs accept the normal culminated

reading, and both failed attempt reading and partial success reading (in the non-culminated scenarios). See examples below:

(37). Karachay-Balkar

<i>Fatima</i>	<i>eki</i>	<i>minut</i>	<i>xali-ni</i>	<i>zirt-xan-di.</i>
Fatima	two	minute	thread-ACC	tear-PFCT-3SG

‘Fatima tried to tear a thread for two minutes.’

(lit. ‘Fatima tore a thread for two minutes.’)

- a. Failed attempt: For two minutes, Fatima was trying to tear a thread, but the thread was so firm that she was unable to tear it.
- b. *Partial success: For two minutes, Fatima was tearing a thread, so when she stopped, the thread was partly torn.

(Tatevosov, 2008, p. 398)

The partial success interpretation in (37b) is not felicitous because it does not correspond to the tearing event. Only the failed attempt reading (37a) is accepted by speakers, marking the verb “*zirt*” in Karachay-Balkar an FA verb. There is another example of PS verb in (38):

(38). Karachay-Balkar

<i>išci</i>	<i>eki</i>	<i>kün</i>	<i>üj-nü</i>	<i>oj-Ɂan-di.</i>
worker	two	day	house-ACC	demolish-PFCT-3SG

‘The worker was involved in taking down the house for two days.’

(lit. ‘The worker took down the house for two days.’)

- a. Failed attempt: For two days, the worker was trying to take down the house, but the house was so firm that he gave up, not being able to remove a single brick.
- b. Partial success: For two days, the worker was taking down the house; he removed the roof and one of the walls, but then he was asked to stop.

(Tatevosov, 2008, p. 398)

The partial success reading and the failed attempt reading are both felicitous in this case, marking the verb “*oj*” a PS verb. Tatevosov states that the selection of the two readings (FA or PS) depends on the context, i.e., accomplishments with PS verbs would have both readings available. If the context suggests that it is more likely for the FA reading, the reader will get the FA reading (for example, the worker working on a big medieval house with only a pickaxe). If the context favours the PS reading, for example, the worker is equipped with a pneumatic chipper and working on a small shack, then the reader would get the PS reading. On the contrary, FA verbs could not get a PS reading, no matter the context.

Tatevosov (2008) suggests that theories of predicate decomposition can explain the difference between PS and FA verbs. Predicate decomposition is a way of decomposing an event into several subevents. Take “build the house,” for example. The event can be divided into three components: the first is the agent's activity, “building,” the second is the process in the theme, “the house forming,” and the third is the result state, “the house built.” Tatevosov argues that in cases of FA readings, the agent's activity exists but not the rest of the subevents. On the other hand, in PS readings, the agent's activity and the process in the theme both exist, but not the result state. The difference can be represented as below:

Table 3-2- Difference between FA and PS accomplishments

Accomplishments	Activity	Process	Result
Failed attempt	Exist	Not exists	Not exist
Partial success	Exist	Exist /Not exist	Not exist

Table 3-2 is a summarised version of Tatevosov’s informal outline of the difference between PS and FA accomplishments. Note that PS and FA accomplishments can have a “normal” accomplishment reading where all three components exist. Table 3-2 only considers the non-culminating reading of these accomplishments. In this table, failed

attempt accomplishments only include the FA reading. Partial success accomplishments include both the PS reading and the FA reading. Consequently, the Process subevent of the PS accomplishments could exist (in the PS reading) or not exist (in the FA reading).

Overall, Tatevosov suggests that PS and FA accomplishments can have an FA reading. In the FA reading, the activity exists but has no effect. On the other hand, PS accomplishments can have a PS reading, which FA accomplishments cannot. In the PS reading, the activity and the process exist, but the process would have no result.

The author states that there are similarities between non-culminating accomplishments and progressives. Following Dowty (1979), he suggests that, like the progressives, non-culminating accomplishments have their culminations reached in the inertia world, that is, in all worlds which are exactly like the given world but where the future course of events develops in ways most compatible with the past course of events. However, Tatevosov argues that Dowty's decomposition of accomplishments into two subevents would not be sufficient to capture the difference between the PS and the FA readings in non-culminating accomplishments. For example, if Dowty's theory were used for both the PS and the FA accomplishments, the DO event would exist in the real world in both readings, and the BECOME event would not exist in the real world in both readings. In non-decompositional theories, like in Koenig and Muansuwan (2000), PS accomplishments and FA accomplishments are also treated as equal; for example, the FA accomplishment in (37) and the PS accomplishment in (38) would be represented as below:

(39). Karachay-Balkar

- a. *Fatima eki minut xalı-nı zırt-xan-dı.* (Fatima teared the thread.)
 $= \lambda e. \text{Impfv}(e, \lambda e' [\text{tear}(e') \wedge \text{agent}(\text{Fatima})(e') \wedge \text{theme}(\text{thread})(e')])$
- b. *işci eki kün üj-nü oj-ıan-dı.* (The worker took down the house.)
 $= \lambda e. \text{Impfv}(e, \lambda e' [\text{demolish}(e') \wedge \text{agent}(\text{worker})(e') \wedge \text{theme}(\text{house})(e')])$

(Tatevosov, 2008, p. 403)

As we can see, the representations in (39a) and (39b) are identical. This means that the non-decompositional analysis also could not capture the differences between the two accomplishments, as it does not separate the activity performed by the external argument and the change of state undergone by the internal argument. As a result, in (39b), it cannot distinguish between the "gradual change in the theme" and the "instant change in the theme." The crucial problem is that although in (39b) there could be the two readings regarding the change to the theme, they are not available for (39a). No PS reading exists in (39a) because (39a) is a FA accomplishment. This shows that the theory of non-decomposition could not capture the difference between PS and FA accomplishments. Tatevosov suggests that PS and FA accomplishments cannot be treated on a par. However, neither non-decompositional nor two-way decompositional theories could address this problem because the event structure mentioned before is insufficient.

To capture the difference between the two non-culminating readings, Tatevosov divides an accomplishment into three subevents. From there, the difference between the culminated reading, the FA reading, and the PS reading becomes clear, as shown below:

Table 3-3- Culminating and non-culminating readings

	Culminating	Non-culminating (Partial success)	Non-culminating (Failed attempt)
Agent's activity	Actual world	Actual world	Actual world
Process in the theme	Actual world	Actual world ⁶⁸	<i>Inertia world</i>
Result state	Actual world	<i>Inertia world</i>	<i>Inertia world</i>

(Tatevosov, 2008, p. 402)

⁶⁸ There is a difference between PS/FA readings and PS/FA verb accomplishments. In table 3-3, the top horizontal row represents the readings. PS verb accomplishments can have three readings (the second, third, and fourth vertical columns). FA verb accomplishments can only have two readings, the culminating reading and the FA reading (the second and the fourth columns).

As shown in Table 3-3, the difference between the two non-culminating readings comes from the process involving the theme in the real world. On the non-culminating interpretation, uninflected vPs based on FA-verbs can only denote events that do not cause any process involving the theme in the actual world. In contrast, vPs containing PS-verbs could denote events that do not cause any process involving the theme in the actual world or events that cause some process involving the theme in the actual world. The two types of accomplishments can be represented below as (40) and (41):

(40). *išci üj oj-* ('worker take down the house')

a. Failed attempt

$$[i\check{s}ci\ \ddot{u}j\ oj-] = \lambda e [\text{agent}(\text{worker})(e) \text{ in } w \wedge \text{demolish}_A(e) \text{ in } w \wedge \forall w' [w' \text{ is an i-world for } w \text{ w.r.t. } e \rightarrow \exists e' \exists e'' \exists s [\text{demolish}_P(\text{house})(e'') \text{ in } w' \wedge \text{cause}(e'')(e') \text{ in } w' \wedge e < e' \text{ in } w' \wedge \text{demolish}_R(\text{house})(s) \text{ in } w' \wedge \text{cause}(s)(e'') \text{ in } w']]]$$

b. Partial success

$$[i\check{s}ci\ \ddot{u}j\ oj-] = \lambda e \exists e' [\text{agent}(\text{worker})(e) \text{ in } w \wedge \text{demolish}_A(e) \text{ in } w \wedge \text{demolish}_P(\text{house})(e') \text{ in } w \wedge \text{cause}(e')(e) \text{ in } w \wedge \forall w' [w' \text{ is an i-world for } w \text{ w.r.t. } e' \rightarrow \exists e'' \exists s [\text{demolish}_S(\text{house})(s) \text{ in } w' \wedge \text{cause}(s)(e'') \text{ in } w' \wedge e' < e'' \text{ in } w']]]$$

where demolish_A , demolish_P , and demolish_S denote demolishing activities, processes of getting demolished, and states of being demolished, respectively. $<$ represents a proper part relation.

(41). *Fatima xalı zirt-* ('Fatima tear the thread')

a. Failed attempt

$$[Fatima\ xalı\ zirt-] = \lambda e [\text{agent}(\text{fatima})(e) \text{ in } w \wedge \text{tear}_A(e) \text{ in } w \wedge \forall w' [w' \text{ is an i-world for } w \text{ w.r.t. } e \rightarrow \exists e' \exists e'' \exists s [\text{tear}_P(\text{thread})(e'') \text{ in } w' \wedge \text{cause}(e'')(e') \text{ in } w' \wedge e < e' \text{ in } w' \wedge \text{tear}_R(\text{thread})(s) \text{ in } w' \wedge \text{cause}(s)(e'') \text{ in } w']]]$$

b. #Partial success: not available

$$[\textit{Fatima xali zirt-}] = \lambda e \exists e' [\text{agent}(\textit{fatima})(e) \text{ in } w \wedge \text{tear}_A(e) \text{ in } w \wedge \text{tear}_P(\text{thread})(e') \text{ in } w \wedge \text{cause}(e)(e') \text{ in } w \wedge \forall w' [w' \text{ is an i-world for } w \text{ w.r.t. } e' \rightarrow \exists e'' \exists s [\text{tear}_S(\text{thread})(s) \text{ in } w' \wedge \text{cause}(s)(e'') \text{ in } w' \wedge e' < e'' \text{ in } w']]]$$

(Tatevosov, 2008, pp. 406-407)

(40a) means that the agent's demolishing activity e occurs in the actual world w . In all inertia worlds w' , e' is a proper part of e , e' causes e'' – the demolishing process in the theme in w' ; e'' causes the result state in w' . (40b) means that the agent's demolishing activity e and the demolishing process in the theme e' occur in the actual world w ; e causes e' in the actual world w . In all inertia worlds w' , e'' is a proper part of e' , e'' causes s – the result state in the inertial world w' .

In (40) and (41), the Agent's activity, the Process in the theme, and the Result state are in a causal chain: the Agent's activity causes the Process in the theme, and the Process in the theme causes the Result state. In (40a) and (41a), only the Agent's activity is in the actual world; in (40b) and (41b), both the Agent's activity and the Process in the theme are in the actual world.

Using a three-way decomposition, (40) and (41) represent the readings of FA and PS accomplishments, respectively. The difference is whether or not the process sub-event occurs in the actual world. FA-verbs are only associated with the FA readings. PS verbs are associated with the FA readings and the PS readings. In FA readings, the process does not occur in the actual world, whereas in PS readings, the process occurs in the actual world.

In addition, Tatevosov (2008) extends the theory of First Phase Syntax in Ramchand (2008) to incorporate non-culminating eventive heads, forming a syntactic representation for the two types of non-culminating accomplishments. An event structure in Ramchand (2008) includes v - an initiation/activity subevent, V - a process induced by that activity, and R - the result state brought about by the process. The two types of non-culminating accomplishments thus could be represented as below:

(42). Non-culminating accomplishments readings

- a. Failed attempt readings: $[v_{inertia}, V_i, R_i]$
- b. Partial success readings: $[v, V_{i,inertia}, R_i]$

The coindexation of the heads in (42a) and (42b) means that they share the same participant: for example, in (42a), the process and the result share the same object. The “inertia” means that the subevent is non-culminating:

The denotation of non-culminating $v_{inertia}$ involves the agent’s activity occurring in the actual world, while the rest of the eventuality only exists in inertia worlds; in this way, the failed attempt interpretation obtains. $V_{inertia}$ introduces the process occurring in the actual world, the result state only being “moved” to inertia worlds.

(Tatevosov, 2008, p. 410)

According to the event structure that Tatevosov constructed, the difference between culminating accomplishments, FA accomplishments, and PS accomplishments boils down to different configurations of culminating and non-culminating eventive heads, shown in table 3-4:

Table 3-4- Difference between PS and FA readings

	Culminating	Non-culminating (Partial success)	Non-culminating (Failed attempt)
Agent’s activity	Actual world	Actual world	Actual world
Process in the theme	Actual world	Actual world	<i>Inertia world</i>
Result state	Actual world	<i>Inertia world</i>	<i>Inertia world</i>
Event structure	$[v, V_i, R_i]$	$[v, V_{i,inertia}, R_i]$	$[v_{inertia}, V_i, R_i]$

(Tatevosov, 2008, p. 411)

Tatevosov suggests that under this theory, languages with non-culminating accomplishments (e.g., Karachay-Balkar) differ from those without non-culminating

accomplishments (e.g., English) as to the vocabulary of eventive heads. This means that the differences are rooted at the level of the denotation of event predicates, not at the higher level of aspectual and temporal structure, i.e., the origin of non-culminating readings in languages like Karachay-Balkar comes from the semantics of the VP.

Furthermore, an accomplishment (in Karachay-Balkar) would have the type of non-culminating reading selected by its verb. Tatevosov argues that PS verbs like *oj* in (38) have the lexical specification of $[v_{(\pm\text{inertia})}, V_{i(\pm\text{inertia})}, R_i]$, and FA verbs like *zirt* in (37) have the lexical specification of $[v_{(\pm\text{inertia})}, V_{i(-\text{inertia})}, R_i]$. Consequently, *oj* has two possible sources of non-culmination, v_{inertia} and V_{inertia} . For *zirt*, v_{inertia} is the only available source.

Tatevosov (2008) states that the aspectual forms of the vP do not change its reading because the aspectual operator only maps time onto the event. Perfectives denote times that include the running time of an event, and imperfectives denote times that are included in the running time of the event. As a result, imperfective vPs in Karachay-Balkar would have the same two non-culminating readings as the perfective ones, as shown in the examples below:

(43). Karachay-Balkar

(1). *iŕci* *üj-nü* *oj-a-di.*

worker house-ACC demolish-IPFV-3SG

‘The worker is taking down the house.’

Partial success: He has already removed the roof.

Failed attempt: He is striking the wall with a pick-axe but has not yet removed a single brick.

(2). *Fatima* *eki* *minut* *xalı-nı* *zirt-a-di.*

Fatima two minute thread-ACC tear-IPFV-3SG

‘Fatima is tearing a thread.’

Partial success: not available

Failed attempt: She is tugging the thread but has not yet succeeded.

(Tatevosov, 2008, p. 413)

The contrast between (43) and (37)/(38) is that in (41), the events are imperfective, and in (37)/(38), the events are perfective. However, the result scenarios are of the same types of non-culminating accomplishments: two readings are available for the PS verb and only one for the FA verb. These examples seem to prove Tatevosov's hypothesis that aspectual operators do not affect non-culminating readings.

Tatevosov also observes that the [+inertia] specification is not available for certain lexical items. For example, $v_{inertia}$ is not compatible with incremental verbs like “write,” “read” or “plow.” These verbs have their activity subevent and process subevent coincide in time and have a one-to-one mapping between them. Using *sür* (‘plow’ in Karachay-Balkar) as an example, it is necessary that for any part e' of the process e of getting plowed, there be a corresponding piece of activity f that brings e' about and that the running time of e' and f be identical. Accomplishments with these verbs can only provide partial success readings and not failed attempt readings because if the process does not exist in the real world, so does the activity, as shown below:

(44). Karachay-Balkar

(48). Culminating:

Alim eki saɣ-xa baxca-ni sür-gen-di.

“Alim plowed a/ the field in two hours.”

(49). Non-culminating:

Alim eki saɣ baxca-ni sür-gen-di.

PS: “Alim was involved in plowing the field for two hours.”

FA: not available

(Tatevosov, 2008, p. 414)

The verb in (44) does not allow a failed attempt reading but allows the normal culminating reading and the partial success reading. According to Tatevosov, the relation between activity and process subevents is a mapping to subordinate subevents with temporal coincidence. However, some subevents in the activity part could not coincide temporally with the process part, for example, adjusting the equipment when

plowing the field. Tatevosov suggests a contextually salient function μ , which picks out the subevents in the activity irrelevant to the process, leaving only activities associated with a corresponding part of the process.

Another incompatibility issue arises from V_{inertia} of the partial success reading. Tatevosov shows that V_{inertia} is incompatible with near-punctual eventualities, like “cough” or “open.” He suggests that the incompatibility comes from the temporal duration of the event. Because of the near-instantaneous character of the process and the non-observability of its internal structure, there could be no partial success interpretations.

Tatevosov’s (2008) theory about non-culminating accomplishments shows that accomplishments in languages where accomplishment predicates do not entail culmination (like Karachay-Balkar) could have three readings: one is the normal culminating reading, the second is the failed attempt reading, and the third is the partial success reading. The author points out that the difference between failed attempt readings and partial success readings depends on the lexical specifications of the verb through a three-way decomposition theory. Namely, verbs with the $[V_{+\text{inertia}}]$ feature could have both PS and FA readings, verbs with $[V_{-\text{inertia}}]$ feature could only have FA readings. The theory is beneficial because it provides insight into the non-culmination phenomenon at different subparts of the accomplishment, supporting three-way decomposition theories like those in Moens and Steedman (1988).

However, there are some points in the theory that require further investigation. Firstly, the three-way decomposition theory can only apply to accomplishments and no other aspectual classes. However, in the article, Tatevosov uses perfective accomplishments with temporal adverbials as examples for FA or PS readings. Adding the durative adverbial (for example, “for two days”) could affect the perfective accomplishment. (Moens and Steedman (1988), Rothstein (2004)) The durative adverbial “for two days” presupposes that the predicate is atelic, meaning that the generalisation in Tatevosov (2008) is only tested in atelic accomplishment predicates, not bare accomplishments.

In addition, Tatevosov suggests that the incompatibility of the near-punctual events with partial success readings comes from the temporal duration of the event. However, recall that the three-way decomposition theory only works for accomplishments, and near-punctual events (like “cough”) are not accomplishments but rather achievements or semelfactives (Rothstein, 2004), which makes the application of the $V_{inertia}$ questionable because there is no “process in the theme” subevents in near punctual eventualities.

3.3.2. Wright (2014)

In the experimental work of Wright (2014), the author considers the accomplishment aspectual class to have two subclasses: strict accomplishments and flexible accomplishments.

The author finds that the traditional tests with time adverbials for accomplishments have some flaws, namely, the for-adverbial and the in-adverbial tests. In the classic tests (Dowty, 1979), accomplishments are not compatible with the for-adverbial but only with the in-adverbial. However, there are many accomplishments compatible with both, as shown in (45):

(45).

- a. Jay ate a sandwich in a few minutes.
- b. Jay ate a sandwich for a few moments, but realized he didn't like it.
- c. Dylan knitted a sweater in a few days.
- d. Dylan knitted a sweater for a few hours, but gave up in frustration.

(Wright, 2014, p. 46)

The compatibility of specific accomplishments with both in-adverbials and for-adverbials marks a new class of accomplishments. The author defines flexible accomplishments as durative telic predicates that permit either an endpoint-inclusive or non-endpoint-inclusive reading and strict accomplishments as “unambiguously endpoint-inclusive.”

For the present study, Wright's (2014) theory is relevant because the nature of flexible accomplishments and strict accomplishments matches the two types of accomplishments in question. The non-endpoint-inclusive reading of a flexible

accomplishment does not require event completion. Thus, the result state of such accomplishments would be an inference rather than an entailment, as shown in (46):

(46).

- a. Jay ate a sandwich.
- b. The sandwich was eaten. (100% eaten)
- c. The sandwich was partially eaten. (1-99% eaten)
- d. ? The sandwich was not eaten. (0% eaten)

If one follows Wright's theory (2014), from flexible accomplishment (46a), there could be three possible consequent states: (46b), (46c), and (46d). The result state (46b) is acquired when no additional information or world knowledge is provided. According to Wright, the completion conversational implicature is based on the Gricean maxim of quantity (Grice, 1975). When addressees hear sentence (46a) without additional information, they expect speakers to have been as informative as possible about the trajectory of the event and the extent of its progress toward its natural limit. Since the relevant sentences include quantized internal arguments, which are naturally assumed to refer to whole objects, not incomplete ones, the hearers infer that the endpoint of the event has been reached. However, according to Gyarmathy and Altshuler (2020), culmination inference is not a conversational implicature because the reinforcement test shows mixed results. This question will be discussed in further sections.

The consequent state (46c) would be acquired if additional information is attached, whether with a *for*-adverbial or denying event culmination in the subsequent discourse. The exact percentage range of the consequent state depends on whether it has an incomplete reading or a non-maximal reading (Martin, 2019): non-maximal readings typically only tolerate situations where a substantial part of the event is realized, but incomplete readings can be true of a situation where the event is only realized 5% (Jay only ate 5% of the sandwich)⁶⁹.

⁶⁹ It is still unclear how much of an event should be realized for the non-maximal reading to be true. The non-maximal reading could be true when an event is realized by more than 50%, or it could only be true if the event is realized by more than 70%.

(46d) can only be relevant when the accomplishment is a non-culminating accomplishment that permits a zero-change (Martin & Demirdache, 2020) or failed attempt (Tatevosov, 2008) reading. This type of accomplishment is believed not to exist in Germanic and Romance languages. However, as it is not studied in Portuguese, it will be discussed further in the experiment chapter.

Strict accomplishments are traditional accomplishments and entail event culmination, as shown in (47):

(47).

- a. Karla repaired the watch.
- b. The watch was repaired. (100%)
- c. # The watch was not repaired. (0%)

The possible result state of the strict accomplishment (47a) is (47b). Some authors consider that the nature of the strict accomplishment comes from whether the predicate is gradable, i.e., if a gradual change occurs alongside time *t*. Since “repaired the watch” is ungradable, the consequent state would always be 100%. (Piñón, 2008) Apart from the time adverbial difference between flexible accomplishments (permit for-adverbial and in-adverbial) and strict accomplishments (only permit in-adverbial), Wright (2014) also observed that there are differences between them in terms of *While-coordination, Pauses and Continuations of Action* and whether they can contain atomic minimal events.

When combined with a while-subordinate, flexible accomplishments do not elicit a completive interpretation, as in (48a):

(48).

- a. Lynn read a novel while Jack napped on the sofa.
- b. Leon solved the problem while others were panicking.

(Wright, 2014, p. 47)

The reading most likely for (48a) is that Lynn might not have finished the novel while Jack was sleeping. In contrast, strict accomplishments do not have this property; that is

to say, the endpoint-inclusion of strict accomplishments is always mandatory, as shown in (48b) - the event reaches its final point before the end of the interval denoted by the while-clause.

The author argues that flexible accomplishments allow interruptions or pauses, while strict accomplishments do not, as shown in (49):

(49).

- a. Jay played a sonata, paused to take a sip of water, and resumed playing it.
- b. #Karla repaired the watch, took a lunch break, then repaired it some more.

(Wright, 2014, p. 48)

The pause in (49a) means that in the case of flexible accomplishments, the predicate can be used to describe a part of the event, while strict accomplishments cannot.

The author's solution for the English data is based on the notion of atomic minimal event. The ambiguity of flexible accomplishments is linked to the fact that they may contain repeated atomic minimal events (Rothstein, 2004), while strict accomplishments do not. Recall the definition of atomic minimal events: "If a predicate is atomic then the elements of P have no proper parts which are also elements of P " (Rothstein, 2004, p. 161). Wright (2014) distinguishes between flexible accomplishments comprising atomic minimal events and strict accomplishments not comprising repeated atomic events. For instance, eating a sandwich involves repeatedly biting and chewing. For this sort of accomplishment, once a whole atomic minimal event (one bite) has been perceived, the speaker can safely assume that the predicate applies. However, as mentioned above, the exact percentage range differs between incomplete and non-maximal readings. Furthermore, the author admits that some accomplishments allow an incomplete reading, but do not consist of repeated atomic minimal predicates. In accomplishments like "eat a sandwich" or "sew the dress," the predicate P denotes an event e , and e comprises one or more instances of the given atomic minimal event type t . In accomplishments like "organise a meeting" or "build a house," the event e is not composed of repeated events of type t .

Wright (2014) argues that the acceptability of the predicate “build the house” could be influenced by the salience of the perceived result of the event, i.e., the predicate can only be true if there is enough evidence that suggests the house is built. The house can be without a window or door for the predicate to be true, but it will be false with only the foundation of the house presented. Wright suggests that “build a house” could be a strict accomplishment, and the incomplete reading arises when people link the truth condition of the predicate with the partially-created entity in the world (larger entity in the world = more people will consider P true).

The diagnostics for flexible vs strict accomplishments are shown in Table 3-5 (adapted from (Wright, 2014, p. 162)):

Table 3-5- Features of flexible and strict accomplishments

	Flexible accomplishments	Strict accomplishments
For-adverbial	Yes	No
In-adverbial	Yes	Yes
While-continuations relax telicity	Yes	No
Pauses and continuations	Yes	No
Can be atomic minimal- eventive	Yes	No

Wright's theory (2014) shows the difference between accomplishments that are endpoint-inclusive and accomplishments that can have several types of result states. The observation of the features of two subclasses of accomplishments provides insight into the nature of the relationship between result states and accomplishments. The author also provides new linguistic tests to distinguish the two subclasses, which are essential for studying accomplishments.

However, the result states of flexible accomplishments need to be further divided into incomplete and non-maximal readings. For example, if following Wright, there would be a gradual acceptability scale for flexible accomplishments. In “John ate the sandwich,” the acceptability of the predicate would gradually go up after each atomic event. However, in the first few bites, the event is considered incomplete; what is considered is that “John did affect something by eating, and that thing he affected was a sandwich.” This means that the acceptability of the predicate (in the first few bites) may not be related to each atomic event in the beginning. On the other hand, upon reaching a certain threshold, the event would be considered complete but non-maximal: what is considered then would be “John did eat the sandwich but not completely.”

The acceptability of the predicate also depends on the threshold that divides the two readings, which the author does not explicitly explain. The theory that flexible accomplishments consist of atomic events, as admitted by the author, could not cover all of the cases of incompleteness scenarios. However, it gives an account using semantics rather than pragmatics.

3.3.3. Gyarmathy and Altshuler (2020)

In order to explain culmination implicature, Gyarmathy and Altshuler (2020) employ two distinct kinds of predicates as examples, namely, the simple perfective in Hindi (PFVH) and the imperfective in Russian (IPFR). In PFVH, it is possible to describe perfective accomplishments while acknowledging that the event has not yet reached its conclusion. The phenomenon can be shown by the Hindi example in (50) from Singh (1998): the perfective *khaayaa* (‘eat’) is used here. Nevertheless, as seen by the follow-up in parentheses, the perfective description is compatible with the eating event not having culminated.

(50). Hindi

<i>maĩne</i>	<i>aaj</i>	<i>apnaa kek</i>	<i>khaayaa</i>	<i>(aur baakii</i>
I.ERG	today	mine	cake	eat.PFV and remaining
<i>Kal khaũũgaa)</i>				

tomorrow eat.FUT

‘I ate my cake today (and I will eat the remaining part tomorrow).’

(Gyarmathy & Altshuler, 2020, p. 2)

Even without the subsequent parenthetical sequence, the perfective predicate may not require culmination in PFVH, yet it still constitutes an accomplishment⁷⁰. In addition, the authors argue that IPFV also contains a defeasible inference of culmination. The Russian example in (51) from Grønn (2008) can describe both culminated and non-culminated events:

(51). Russian

<i>Kto</i>	<i>čital</i>	<i>“Vojnu i</i>	<i>Mir”?</i>
who	read.PST.IPF	“War	and Peace”
‘Who has read “War and Peace”?’			

(Gyarmathy & Altshuler, 2020, p. 2)

A non-culminated reading event is compatible with the question in (51), which means that (51) could be a question about a proper part of the accomplishment. In this reading, (51) can be reformulated as “Who was engaged in the activity of reading “War and Peace”?”. Another reading in (51) is the “normal” culminated one. In this reading, (51) concerns not only the activity part of the reading event but also whether the event culminated.

The authors adopt the maximality hypothesis to explain the culmination implicature of PFVH and IPFR. Following Koenig and Muansuwan (2000), the authors distinguish between two types of perfective predicates: maximal events and culminated events. Culminated events are those under the category that an event *e* has culminated with respect to event predicate *P* iff *P* (*e*) holds, which means that event *e* indeed happens in

⁷⁰ In this case, the perfective *khaayaa* (‘eat’) is used to describe a culminated eating event. The authors state that in a normal context, the predicate tends to describe a culminated event but also can have a non-culminating reading. That is to say, the possibility of a culminated reading is higher than the non-culminated reading, but both are available when there is no additional information (second clause).

the actual world. A maximal event is $Max(P)(e)$, an event e is maximal (in the inertia world in the sense of Dowty (1979), or possible world in Landman (1992)) with respect to event predicate P iff:

- for some possible e' of which e is a part, $P(e')$ holds.
- there is no event e'' in the world of evaluation such that:
 - e is a proper part of e''
 - there is some possible e' of which e'' is a part, such that $P(e')$ holds.

$Max(P)(e)$ iff:

- $\exists_{\diamond} e' [e \sqsubseteq e' \wedge P(e')] \wedge \neg \exists_{@} e'' [e \sqsubset e'' \wedge \exists_{\diamond} e' (e'' \sqsubseteq e' \wedge P(e'))]$

(Gyarmathy & Altshuler, 2020, p. 13)

In $Max(P)(e)$, “ $\diamond$ ” means the event exists in the inertia world, and “ $@$ ” means it actually exists in the real world. So, in example (50), under the maximal event reading, the event e “I ate my cake today” would be a part of the event e' in the inertia world. e' is a complete eating event, and there is not an event e'' existing in the actual world, so that e'' is in the denotation of “ate my cake” and is a part of e' and that e (I ate my cake today) is a proper part of e'' . This means that event e “I ate my cake today” is the largest or maximal event that exists in the real world that satisfies the event description, i.e., in the denotation of “ate my cake,” there is no e'' larger than e that satisfies the event description.

This suggestion contrasts with culminated events (or telic events) in Krifka (1998). Telic events are associated with telicity: “telicity as the property of an event predicate X that applies to events e such that all parts of e that fall under X are initial and final parts of e .” (Krifka, 1998, p. 9) If e is a telic event, then e itself is the only e that satisfy the event description. However, if e is a maximal event, there could be an event e'' that is a proper part of e and satisfies the event description.

The relation of proper part is a strict partial ordering, which means that the event e cannot be in the denotation of P if e is a proper part of an event e' which is in the denotation of P . The relation can be illustrated below:

$$\text{PRPART} (P) (e) \text{ iff } \exists \Diamond e' (e \sqsubset e' \wedge P(e'))$$

(Gyarmathy & Altshuler, 2020, p. 14)

In the relation above, e is an event in the actual world, e' is the event in the inertia world, and e' is the denotation of P . Then e is a proper part of P if and only if there is an event e' which e is a proper part of. For example, English progressive predicates like (52) describe a proper part relation:

(52). Max is crossing a street.

Because there is a possible e' in the inertia world in which the event “cross the street” is complete, the progressive event e “is crossing a street” is a proper part of the event predicate P “crossed the street.” As a result, e' is in the denotation of P “crossed the street” and e is not.

As seen below, the part relation is a non-strict relation of part-or-equal. That is to say, e in the real world can be a proper part of e' in the inertia world or e can be equal to e' :

$$\text{PART} (P) (e) \text{ iff } \exists \Diamond e' (e \sqsubseteq e' \wedge P(e')).$$

(Gyarmathy & Altshuler, 2020, p. 14)

e is a part of P if e overlaps with e' or if e is a proper part of e' . Therefore, the culminated potential event e' in the inertia world can be described by the imperfective that characterises a part relation.

For Gyarmathy and Altshuler (2020), this is the concept for maximal events and culminated events: perfective predicates that allow non-culminating construals like PFVH describe maximal events; perfective predicates that do not allow such construals describe culminated events.

After discussing the perfectives in Hindi, the authors continue to discuss the imperfectives in Russian. Following Filip (1999), the authors assume that there are also two types of imperfectives: one is the imperfective form that describes a part of an event, and the other is the imperfective form that describes a proper part of an event.

According to the authors, IPFR predicates, such as in (51), can have both a culminated and a non-culminated reading since they represent a part relation. The event “read *War and Peace*” in (51) is a part of the event description *P* “(completely) read *War and Peace*,” and *e*’ corresponds to the event “(completely) read *War and Peace*.” As a result, the event in (51) receives a culminated reading when *e* overlaps with *e*’, indicating that the event is complete, and a non-culminated reading when *e* is a proper part of *e*’, indicating that the event is not complete.

Gyarmathy and Altshuler (2020) suggest abduction, or abductive reasoning, as a novel solution to the culminating inference problem. In abductive reasoning, the antecedent of a conditional statement is inferred based on the observation of the consequence. In other words, if we witness *O* and our theory *T* indicates that $E \rightarrow O$, we abduce *E* since, in conjunction with the theory, this entails what we observe. (Gyarmathy & Altshuler, 2020, p. 9). Abductive reasoning is an inference that proceeds backwards from the consequence to the possible factor (or antecedent). Several factors may contribute to the occurrence of the consequence, and the likelihood that any of them will be regarded as the cause of the circumstance depends on background information and world knowledge. For example, we observed that the street was wet, and we know that if it rained or if a water cart passed by, the street would be wet. The inference procedure using abductive reasoning will look like this:

- E1: It rained.
- E2: The water cart passed by.
- T: Something made the street wet, whether $E1 \text{ or } E2 \rightarrow O$.
- O: The street is wet.

In this instance, the likelihood of inferring *E1* and *E2* is the same if no additional contextual information is taken into account, but if there is contextual information provided as:

- C: A watercart only passes by once a month, and the street is in an area that frequently experiences rain.

Then E1 becomes the most likely explanation as its likelihood increases. By using abductive reasoning, the observation O—"The street is wet"—can be used to infer E1; it is the rain that caused the street to be wet.

According to the authors, perfective predicates can be used to describe maximal events with non-culminated readings or culminated events with culminated readings. Imperfective predicates that describe a proper part of an event can only have non-culminated readings. However, imperfective predicates that describe a part of an event can have both culminated and non-culminated readings. Based on this, the authors developed four "theories" in abductive reasoning, T1 to T4, which are as follows:

$$(T1). \quad \exists_{@e} (P(e)) \rightarrow \exists_{@e} (PART(P)(e))$$

According to the IPFR example (51), if there is an event e in the denotation of P in the actual world, then e could have a part relation with the event predicate P .

$$(T2). \quad \exists_{@e} (P(e)) \rightarrow \exists_{@e} (MAX(P)(e))$$

According to the PFVH example (50), if there is an event e in the denotation of P in the actual world, then e might be a maximal event in the denotation of P .

$$(T3). \quad \exists_{@e} (PRPART(P)(e)) \rightarrow \exists_{@e} (PART(P)(e))$$

The logic of $PART(P)(e)$ and $PRPART(P)(e)$ states that if an event e in the actual world has a proper part relation with the event predicate P , then event e can have a part relation with the event predicate P .

$$(T4). \quad \exists_{@e} (PRPART(P)(e)) \rightarrow \exists_{@e} (MAX(P)(e))$$

Based on the logic in $PART(P)(e)$, $PRPART(P)(e)$, and $Max(P)(e)$, an event e may be a maximal event in the denotation of P if it exists in the actual world and specifies a proper part relation with the event predicate P .

The authors then apply the abductive reasoning to PFVH. According to the authors, the observation O is that PFVH describes maximal events; hence, O is defined. However,

there are two theories (rules) T2 and T4 and two explanations E2 and E4, as illustrated below (H means Hindi):

- $O_H: \exists @e (MAX(P)(e))$
- $T2: \exists @e (P(e)) \rightarrow \exists @e (MAX(P)(e))$
- $T4: \exists @e (PRPART(P)(e)) \rightarrow \exists @e (MAX(P)(e))$
- $E2: \exists @e (P(e))$
- $E4: \exists @e (PRPART(P)(e))$

(Gyarmathy & Altshuler, 2020, p. 16)

The authors state that the better coverage and more specificity of E2 are the factors that make E2 the correct explanation. Since achievements, as opposed to accomplishments, lack proper parts, the theory T4 cannot be applied to both accomplishments and achievements. As a result, T2 has greater coverage than T4. Additionally, they take into account that E2 entails E4 (according to T1 and T3) when the event has proper parts, but the opposite is not true, making E2 more specific. E2 is the best explanation because PFVH achievements describe culminated events and are not cancelable because they lack proper parts; on the other hand, PFVH accomplishments imply culminated events by themselves but are cancelable. However, future research is necessary to determine the precise criteria for choosing the best explanation because, as the authors admit, contextual knowledge, world knowledge, and meta-level information can all impact the process of choosing the best explanation in abductive reasoning.

The authors contend that a different set of theories is applied when using abductive reasoning to the IPFR since the event observation differs from that in PFVH. Observation O is that IPFR describes an event that is a part of the predicate, and there are two theories, T1 and T3, and two explanations, E1 and E3, as illustrated below (R means Russian):

- $O_R: \exists @e (PART(P)(e))$
- $T1: \exists @e (P(e)) \rightarrow \exists @e (PART(P)(e))$
- $T3: \exists @e (PRPART(P)(e)) \rightarrow \exists @e (MAX(P)(e))$

- E1: $\exists_{@e} (P(e))$
- E3: $\exists_{@e} (\text{PRPART}(P)(e))$

(Gyarmathy & Altshuler, 2020, p. 19)

The authors contend that E1 is the ideal explanation for O due to its greater coverage and specificity, just like in the case of PFVH. In addition, because additional context can alter the selection process, the authors use the term “minimal contexts” to refer to the process of choosing the best explanation, meaning that the observed events are just the events themselves without any further context. See (53):

(53). *Včera ja čítal “Vojnu i Mir”.*
 yesterday I read.PST.IPF “War and Peace”
 ‘Yesterday I was reading “War and Peace”.’

The IPFR event is identical to that in (51) but has the temporal modifier “yesterday” added this time. Since the extra information is provided in (53), the selection procedure will shift in favour of explanation E3, as the event’s assertion time is less than what is thought to be its typical duration. In other words, as illustrated below, the temporal modifier transforms the observation O into a different kind.

- O: $\exists_{@e} (\text{PART}(P)(e) \wedge \tau(e) \leq 1 \text{ day})$

The “ $\tau(e) \leq 1 \text{ day}$ ” means that the time trace for the event e takes less than one day as the temporal modifier is “yesterday.” Since O is different, the potential theory T and explanation E differ from the one for (51). According to this perspective, choosing the optimal explanation for abduction reasoning depends on the external component. Regarding IPFR, the authors suggest that the corresponding PFVR also serves as an external component like “ $\tau(e) \leq 1 \text{ day}$ ”.

“Taking into account facts of conversation, the best explanation for hearing/uttering a Russian sentence with IPFR will include the fact that the

corresponding PFVR would have been more misleading in conveying the relevant facts of the world.”

(Gyarmathy & Altshuler, 2020, p. 24)

See the contrast in (54a) and (54b):

(54).

- a. *Ja otkry-l okno.*
 I PFV.open-PST window
 ‘I (have) opened the window.’
- b. *Ja otkr-yva-l okno.*
 I open-IPF-PST window
 ‘I (have) opened the window.’

Note that (54a) is a Russian perfect predicate (PFVR), and (54b) is an IPFR one. The authors argue that the perfect predicate in (54a) only has a resultative perfect interpretation and that (54a) has the additional inference that the window is open at the speech time. On the other hand, (54b) describes a part of the culminated event, and it does not have additional inferences about the state of the window at speech time.

Thus, to describe that the window has been opened while it is now closed, the predicate in (54a) is not the best option. Then, the speaker selects the IPFR in (54b) to describe the scenario mentioned above, even though IPFR is neutral between a culmination reading and a non-culmination reading. Moreover, the authors contend that the event will have a culmination implicature since the IPFR will not receive the non-culmination reading in this situation due to the rejection of PFVR. Also, when the PFVR is not rejected (contrary to the window case), the IPFR will have a non-culmination implicature. This is because the culmination reading is already “occupied” by PFVR.

The authors claim that although the English progressive and the Russian imperfect are similar, their semantics differ. English progressive describes a proper part of the event; the observation O_E is not the same as O_R . The proper part relation cannot be a consequence of the culminated event P , as shown below:

- $\#T_E: \exists @e(P(e)) \rightarrow \exists @e(\text{PRPART}(P)(e))$

This theory T_E is false because the rule here does not work with achievements. This theory T_E is unacceptable since achievements are culminated events without proper parts. Therefore, no culminating inference can be expected in English progressives since observing a proper part relation cannot be used to infer a culminated event.

Gyarmathy and Altshuler (2020) suggest that the culmination inference exhibits fixed behaviours from a pragmatic standpoint. In particular, there is a difference between a presupposition and an implicature. According to Gyarmathy (2015), a conversational implicature is located inside the structure of the event. A presupposition, on the other hand, is located outside of the structure of the event.

For example, the process event that achievements infer is a presupposition and not a conversational implicature because the process event is not the main event. For example, the “moving toward the station” event inferred by the achievement “arrive at the station” can be cancelled: in a specific context, one can arrive at the station without moving. However, the cancelable “moving” event is not at-issue relative to the structure of the event; the achievement only includes the “arrive” event but not the “moving” event. According to the authors, culminating inferences in accomplishments do not act like presuppositions. See example (55):

(55). *Možet byt' Ivan čital poslednie stročki*
 May be Ivan read.IPF.PST last lines
pis'ma.
 letter

‘Ivan may have read the last lines of the letter.’

(Gyarmathy & Altshuler, 2020)

The culmination inference in (55) does not project in the way presuppositions do: what is implied here is the event of “reading the last lines of the letter.” This inference is about a part of the event structure, unlike the presupposition in “John may have reached the

summit" → "John climbed the mountain" (not about a part of the event structure). This feature makes the inference in (55) behave more like a conversational implicature than a presupposition.

However, the authors observe that culminating inferences yield inconsistent results when tested for conversational implicatures. See examples in (56):

(56).

- a. *Ja čital poslednie stročki pis'ma.*
 I read.IPF.PST last lines letter
Čital ix do konca.
 read.IPF.PST them until end
 'I read the last lines of the letter. I read them fully.'
- b. *Ty čital 'Vojnu i mir'?*
 you read.IPF.PST 'War and peace'
#Čital do konca?
 read.IPF.PST until end
 'Have you read 'War and peace'? #Have you read it completely?'

(Gyarmathy & Altshuler, 2020)

The reinforcement test can check if the inference is a conversational implicature; unlike entailments or presuppositions, conversational implicatures can be reinforced by adding a reinforced discourse. The IPFR has no trouble inserting the reinforced discourse in (56a) but cannot in (56b). The authors conclude that culmination inferences could be another type of implicit content rather than presuppositions or conversational implicatures.

The authors also demonstrate how defeasible and non-defeasible causatives can be distinguished via abductive reasoning. Defeasible causatives in Martin and Schäfer (2012) are conceived as follows:

"With agentive subjects, these verbs are used to denote an act performed with the intention of triggering a certain result, but this result does not have to occur

for the sentence to be true. With causer subjects, the same verbs entail the occurrence of the result.”

(Martin & Schäfer, 2012, p. 248)

An example illustrating the distinction between an agentive subject and a causer subject can be found in (57):

(57).

- a. *Pierre lui enseignera le russe. Mais évidemment, il ne l'apprendra pas.*
'Pierre will teach him Russian. But obviously, he will not learn it...'
- b. *Ce voyage lui enseignera le russe, # mais, évidemment, il ne l'apprendra pas.'*
'This trip will teach him Russian. #But obviously, he will not learn it...'

(Martin & Schäfer, 2012, p. 248)

Gyarmathy and Altshuler (2020) argue that, while not impossible, defeasible causality is far more challenging to establish with a causer subject than with an agent subject. According to the theory of abductive reasoning, external factors like lexical, syntactic, and contextual elements could make (57b) unacceptable. (58) is an example of a defeasible causative with a causer subject that the authors consider acceptable.

(58). Living in a large city offered you a number of advantages, you just didn't take them. [Causer]

(Gyarmathy & Altshuler, 2020, p. 32)

Defeasible causativity with agentive subjects is easier to achieve because agentive subjects are highly indicative of the associated change as its result. (Martin, 2015) So, there will be a single explanation E for the observation Oa, and Ea will be inferred by abductive reasoning and is cancellable. However, with causer subjects, which are not indicative of the associated change as its result, there could be many explanations Ec for

a single Oc. For instance, multiple Russian-language learning resources may be available on the trip in (57b), and none of them seems to be a better explanation for the observed O than the others. As a result, the explanation E would be difficult to deduce.

At least in Hindi and Russian, the endpoint (culmination) inclusion of accomplishments must be an inference rather than an entailment for the abduction theory to be effective. This perspective differs from the conventional aspectual classification, which usually uses culmination entailments as a diagnostic criterion to define accomplishments. The nature of (non-)culminating accomplishment inferences, whether they are presuppositions or conversational implicatures, is ultimately called into question by the authors. They use a semantic contrast between maximality and telicity to explain why the phenomenon occurs.

Abductive reasoning offers several advantages as a convenient and practical tool for examining non-culminating accomplishments. However, because the authors only employ two distinct predicate types in two languages, the theory of culminating inference may be considered overly specific. Additionally, when comparing PFVR with IPFR, the authors contend that the IPFR cannot draw a non-culmination inference because the rejected PFVR lacks this reading; nevertheless, recent research suggests that these claims may be questionable. Specifically, in Kasher and Hachohen (2023), the authors demonstrate that most native speakers of Russian accept the non-culmination reading of PFVR: they accept both the IPFR and PFVR non-culmination readings, as shown in (59):

(59).

- a. *Malčik narisoval zvezdu, no odnovo*
 boy draw.PFV.PST star-acc but one
 lučika ne xvataet.
 ray not sufficient.
 ‘The boy drew a/the star, but one point is missing.’
- b. *Malčik risoval zvezdu.*

boy draw.IPF.PST star.
'The boy was drawing a/the star.'

(Kasher & Hachohen, 2023, p. 5)

The fact that both readings in example (59) are nearly equally acceptable to native Russian speakers indicates that PFVR may also have a non-culmination inference. These findings may result in a more thorough investigation into IPFR's external factors.

3.3.4. Martin (2019)

On the classifications of non-culminating accomplishments, there are different typologies from various authors who differ in using the term "non-culminating accomplishment." According to Martin, non-culminating accomplishments are durative telic predicates that permit non-endpoint inclusive readings with or without additional modifications.

The author calls these types of accomplishments "partitive interpretations of accomplishments" (Martin & Demirdache, 2020). Partitive interpretations of accomplishments can be divided into three subclasses: flexible accomplishments, non-culminating accomplishments, and non-maximal accomplishments.

Flexible accomplishments can have an atelic, cumulative meaning in the appropriate context once modified by a durative adverbial, as shown in (60):

(60). John ate a pizza for ten minutes.

(Martin, 2019, p. 7)

The distinctive characteristics of flexible accomplishments in Martin (2019) are:

- Are acceptable with durative adverbials measuring the event duration with appropriate contextual support, as shown in (60).
- Are compatible with adverbials of completion when modified with durative adverbials, as in (61).
- Have defeasible inference of non-culmination when combined with durative adverbials.

- Get a telic reading when not modified by durative adverbials.

(61). John ate a pizza for ten minutes—and completely, in fact.

(Martin, 2019, p. 7)

According to Martin (2019), the nature of flexible accomplishments comes from the gradable characteristic of the predicate. Flexible accomplishments have a degree argument *d*, which measures the degree of the event completion⁷¹ (Piñón, 2008). When combined with “stop” and “for x time,” there is an unspecified degree of change, which yields an atelic and cumulative interpretation. In this case, the degree argument *d* is existentially quantified by the positive degree binding operator, which restricts its value to greater than 0 but not necessarily to the maximum degree 1. When not modified by durative adverbials, there is a preference for the telic reading because of the Gricean principle of informativeness⁷². The telic reading should have the strongest meaning and be preferred unless it is overridden before the clause boundary. Therefore, the nature of flexible accomplishments is that of semantics and pragmatics.

The second type is non-culminating accomplishments. This subclass classifies event fragments in terms of predicates of complete events. In other words, the predicates refer to a proper part of the complete event. See (62) and (63):

(62). Mandarin

Wǒ zuótiān xiě-le gěi Zhangsan de xìn.
 I yesterday write-PFV to Zhangsan DE letter.
 ‘I wrote a letter to Zhangsan yesterday.’

(63). French

Pierre lui a expliqué le problème.

⁷¹ Piñón employed the notion of degree to analyze verbs with incremental themes. Verbs with incremental themes denote four-place relations between individuals *x*, descriptions *O*, degrees *d*, and events *e*. For example, the verb “eat” denotes the degree *d* to which individual *x* as type *O* is eaten in event *e*. The degree *d* is a rational number between 0 to 1, where *d*=0 means in the very beginning of the event, *x* as type *O* is affected to degree 0, and *d*=1 means *x* as type *O* is fully affected in *e*. *d*= 1 can happen when *O* is cumulative; thus *d* becomes ungradable. For example, any applesauce eaten would qualify the event “eat applesauce” to be fulfilled.

⁷² A speaker must be as informative as possible and provide as much information as necessary, not more or less.

Pierre her explain-PFV-3SG the problem.

‘Pierre explained the problem to her.’

(Martin, 2019, p. 4)

The characteristics of non-culminating accomplishments are:

1. Are compatible with an incomplete event interpretation in non-progressive sentences.
2. Have a defeasible inference of culmination concerning a result property encoded by a causative predicate.
3. Get a telic reading when not modified.

Furthermore, it is possible to add two types of second clauses to a non-culminating accomplishment, and depending on which type of second clause is acceptable, non-culminating accomplishments are further divided into two subclasses with two different readings.

One is the zero-change reading: this reading is obtained when non-culminating accomplishments are compatible with a second clause that denies the whole consequent state, as shown in (64):

(64). Mandarin

Zhāngsān shāo-le nèi-běn shū, dàn gēnběn mei
Zhangsan burn-PFV that-CL book but at-all NEG-PFV
shāo-zháo.
burn-ignite.

‘Zhangsan burned that book, but it didn’t get burnt at all.’

(Martin & Demirdache, 2020, p. 1200)

The other is the partial-change reading, which is obtained when non-culminating accomplishments are compatible with a second clause that denies a part of the change developing to the consequent state denoted by the VP, as shown in (65):

(65). Mandarin

Lùlu shāo-le nèi-běn shū, kěshì shū mei

Lulu burn-PFV that-CL book but book NEG.PFV
wánquán shāo-huǐ.
 completely burn-destroy.

‘Lulu burned that book, but the book didn’t burn completely.’

(Martin & Demirdache, 2020, p. 1204)

As shown in (64) and (65), some VPs can be compatible with zero- and partial-change readings. However, this is not the case for all non-culminating accomplishments: according to Martin, only causative accomplishments can allow a zero-change reading.

Furthermore, the author states that under a zero-change reading, although there is no change in the theme toward the consequent state, there must be a part of the event satisfying the property encoded by the VP, not just a purely mental action.⁷³ Under the partial-change reading, the theme endures a change toward the consequent state, and this change can be minimal: for example, 5% of the book was burnt in (65).

Martin (2019) argues that non-culminating accomplishments have two sources. Different languages have different sources, and in languages like Mandarin and Hindi, the source comes from the tense/aspect morphology. In these languages, the perfective does not encode event culmination but event maximality. Event maximality⁷⁴ is encoded in the *Max* operator:

The referent of a discourse marker *e* satisfies the predicative condition *Max* (*e*, ϕ) if and only if *e* is the largest eventuality which satisfies ϕ , that is, if there is no eventuality *e'* such that $e \subset e'$ which satisfies the eventuality description ϕ .

(Koenig & Muansuwan, 2000, p. 167)

⁷³ For example, the event in (64), “Zhangsan burn the book, but the book did not get burnt at all,” has a zero-change reading. It is not the same as “Zhangsan tried to burn the book, but the book did not get burnt at all.” The former event requires at least some action, but the latter only requires minimal mental preparation. If “Zhangsan planned the burning event in his head” is true, then the zero-change reading is false, but the “try” event is true.

⁷⁴ Although the author does not define the term, it has to refer to this definition of maximality since Koenig and Muansuwan (2000) are the first to propose this idea.

This means that perfectives in these languages can refer to a part of an event that ceases to develop toward the end result.

On the contrary, perfectives in languages like French, English, and German require event culmination. In other words, the truth condition for perfectives in these languages depends upon whether the culmination point is reached. These perfectives cannot refer to a proper part of an event. For example, the perfective “John burned the book” would be false in English if only part of the event was realised. The culmination for this perfective is that the book is burnt, so if the book is not burnt, the perfective would be false - the perfective is true only if the culmination is reached (the book is burnt). However, in languages like Mandarin or Hindi, if there are some actions going toward the end result (the book is burnt), like holding the book on top of a flame, the perfective “John burned the book” would also be true.

The other source for non-culminating accomplishments is that it is licensed by a modal operator, either by sublexical modal verbs or modal morphemes. In languages like French, English, or German, verbs like “repair” or “teach” are called sublexical modal verbs. These verbs are compatible with the zero-change reading because the lexical result state of these verbs is implied rather than entailed in the world of evaluation (or actual world). See (66):

(66). French

Le service technique a réparé mon iPhone, mais il ne fonctionne toujours pas du tout.

‘The technical department repaired my iPhone, but it still isn’t working at all.’

(Martin, 2019, p. 19)

In languages in which perfectives require both event culmination and event maximality, the modal component of the verbs ensures that the event performed in the evaluation world has to be completed with respect to the manner predicate⁷⁵. However, the result

⁷⁵ “Manner predicates” denote activities that might, but need not be used to bring about changes of state, like “hit, kick, pour, shake”; “result predicates” denote change of states, like “break, crack, fill, empty” (Levin & Rappaport Hovav, 2013)

state does not have to be included in the evaluation world, only the world in the modal base.⁷⁶ Nevertheless, in languages where perfectives do not require event culmination but only event maximality ⁷⁷, it only requires the event performed in the evaluation world to be a proper part of the predicate. Thus, a perfective can be true even with only an initial part of the manner predicate realised.

The modal operator is not always encoded in the verb root itself. For example, the control transitivizer morpheme in Salish languages also acts as a modal operator. In Salish, predicates with modal morphemes can be true when the event is only realised mentally, so the event in (67) is considered true even if only a mental preparation of “fix” is done.

(67). Squamish

<i>na</i>	<i>p’ayak-ant-as</i>		<i>ta</i>	<i>John</i>	<i>ta</i>	<i>snexwilh-s</i>
RL	heal-TR.CTRL-3ERG		DET	John	DET	canoe-3POSS
<i>welh</i>	<i>haw</i>	<i>k-as</i>	<i>i</i>	<i>huy-nexw-as.</i>		
CONJ	NEG	IRR-3CNJ	PART	finish-TR.LC-3ERG		

‘He fixed his canoe but he didn’t finish (fixing it).’

(Bar-El, 2005, p. 4)

The two sources for non-culminating accomplishments, whether the tense/aspect morphology or the modal operator, are explained using semantic theories.

⁷⁶ The sublexical modality theory was introduced by Koenig and Davis (2001). They argue that the lexical meaning of a verb contains a sublexical modality component that evaluates a relationship among participants in a situation and a subset of circumstances. A modal base is a set of worlds that modality operates in, and it is determined contextually. For example, the modal base for “need” is determined by the subject’s referent’s desires. The sublexical modality component of the verb “teach” selects a set of worlds in which the action of teaching and the result state “the recipient received the knowledge” are entailed. However, the evaluation world is not necessarily included in the modal base. Thus, in the actual world, the event “Mary taught John English, but he did not learn anything” can be true.

⁷⁷ Portuguese, as a Romance language, holds similarities to languages like French, thus requiring event culmination. This question will be discussed in further chapters.

The third type of partitive accomplishments in Martin (2019) is called non-maximal accomplishments. When interpreted imprecisely, these accomplishments can describe events that are not completely culminated. See example (68):

(68).

- a. I mowed the lawn.
- b. # I mowed the lawn, but I didn't finish mowing it.

In (68a), the event is true if a little patch of grass is left behind. This condition exists because the predicate is considered imprecisely, vaguely, or relative to a coarse granularity level. The characteristics of non-maximal accomplishments are:

1. Do not encode the modal operator.
2. Entail culmination relative to a coarse granularity level but not a finer granularity level.
3. Have a defeasible inference of culmination, no matter the level of granularity.
4. Cannot be denied in the subsequent clause via *not finish* VP (shown in (68b)).

Martin (2019) argues that the non-maximal accomplishments come from the definite description introducing the theme argument. The incomplete reading comes from a granularity shift: unmodified DPs are interpreted relative to a coarse granularity level, but when in the presence of maximising modifiers like “completely,” the DP undergoes a granularity shift to a fine granularity level. This means that the unmodified non-maximal accomplishment entails event culmination. Adding a second clause like “but not completely” does not deny the first clause; it only changes the granularity level.

The author states that non-maximal accomplishments do not allow only the initial event to be realised; the event could only be a slight deviation from the completed event for it to be true. Unlike the partial-change reading of non-culminating accomplishments, non-maximal accomplishments like (68a) do not allow small event fragments; for example, if 5% of the lawn is mowed, (68a) will be false, but if 95% of the lawn is mowed,

(68a) will be true. The percentage constraint comes from the weakened version of the maxim of quality, which says:

A sentence may be used to describe a situation in which it is not literally true as long as that situation does not differ from one in which it would be true in a way that matters for current purposes.

(Križ, 2016, p. 34)

The non-maximal accomplishments, therefore, are an interplay between semantic properties and certain pragmatic principles.

Using semantic theories and pragmatic principles, Martin (2019) proposed a three-way typology for the phenomena of partitive accomplishments across various languages. The three-way typology of Martin (2019) gives insight into the non-culminating accomplishment phenomenon across various languages and gives criteria for each type. Clearly distinguishing the three types of partitive accomplishments is beneficial for the present study of the Portuguese language because, with linguistic tests, one can easily determine if a specific accomplishment belongs to a certain type. For example, "*O João descascou a batata, mas a batata não estava completamente descascada.*" ('John peeled the potato, but it was not completely peeled') should be a non-maximal accomplishment.

The author also shows that there are different sources concerning different types of partitive accomplishment, which is relevant to studying the nature of such a phenomenon.

However, there are characteristics of this typology that are less desirable. One is that the characteristics of flexible and non-maximal accomplishments seem to overlap. For example, "John ate the pizza" is a flexible accomplishment but also could be a non-maximal accomplishment. The author only states the difference between *an incomplete atelic predicate* (which is a flexible accomplishment with a durative adverbial) and *a non-maximal accomplishment*. However, when it comes to flexible accomplishment itself, the distinguishing feature is not clear. Furthermore, the predicate "ate a pizza" appears

both in the example for flexible accomplishment and non-maximal accomplishment, which is confusing for a typology. Secondly, there are differences inside the non-culminating accomplishment type, which includes both (62) and (63), repeated below:

(62). Mandarin

Wǒ zuótiān xiě-le gěi Zhangsan de xìn.

‘I wrote a letter to Zhangsan yesterday.’

(63). French

Pierre lui a expliqué le problème.

‘Pierre explained the problem to her.’

(69). Mandarin

Wǒ zuótiān xiě-le gěi Zhangsan de xìn, dan méi xiě-wán.

‘I wrote a letter to Zhangsan yesterday, but the letter is not finished.’

(70). French

Pierre lui a expliqué le problème, mais elle n'a pas compris.

‘Pierre explained the problem to her, but she did not understand.’

If we add a negating clause to (62) and (63), the sentences will become (69) and (70) respectively. Conceptually, both second clauses in (69) and (70) negate the consequent state, but strictly speaking, the consequent states negated in the two examples are of different natures. In (69), the consequent state “*xiě-wán* (‘write-finished’)” includes the original verb “*xiě*” (‘write’). On the other hand, the consequent state “*elle a compris* (‘she understood’)” in (70) is composed of a different verb “*comprendre* (‘understand’),” which has a causal relation with the original verb “*expliquer* (‘explain’).” Thirdly, when it comes to the tests for flexible and non-maximal accomplishments, the exact percentage range for the event to be considered true is unclear. The author mentioned a slight deviation of 10% or 5%, but it is unclear if 15% or 20 % counts as a slight deviation. In addition, the percentage could be subject to personal preference. For example, “John

mowed the lawn”: one person could consider that sentence to be true if 80% of the lawn is mowed, but to another person, it could be no less than 95%.

3.3.5. Guéron and Vogeleer (2021)

In Guéron and Vogeleer (2021), the authors explain the phenomenon of non-culminating accomplishment using specific conceptual configurations, which involve a goal-directed trajectory (GDT) initiated by an intentional (human) subject targeting the change-of-state of an object and the notion of Point of View (PoV) associated with human entities.

The GDT comes from causal representations, which, in the literature, are “some hard-wired representations that automatically specify that particular types of events lead to other events” (Gopnik et al., 2004, p. 5), i.e., the meaning of some logical concepts like cause is given to us by way of functional properties of the nervous system. However, as Von Wright (1971) points out, there are two types of causal relations: one is true causal effects as determined by physical laws, and the other is the interplay between human actions guided by intentions, assumptions, and social norms: “the first is factual and empirical, the second conceptual and logical.” (Von Wright, 1971, p. 34)

The second causal relation is the action-goal relation. This relation has been discussed in the field of neurocognition:

“The action representation is interlinked with a perceptual schema. Activation of the representation of the motor act leads to the pre-activation of the perceptual goal schema, which provides a mechanism for forward prediction of action-related perceptions.”

(Pulvermüller, 2018, p. 5)

The forward prediction of the action-goal relation requires a human action (intentional action) and its perceived immediate effect in the world. Incidental consequences and accidental co-occurrences of a percept would be ineffective in mapping a causal neuronal link in the brain because there are no good correlations between them.

(Pulvermüller, 2018) Guéron and Vogeleer (2021) then argue that non-culminating accomplishments are based on the intentional action-goal conceptual relation, which they call the goal-directed trajectory (GDT).

The action-goal relation is not really causal but rather an “interplay between intentions, actions, and assumptions about their result, which allows humans to map actions onto their consequences.” (Guéron & Vogeleer, 2021, p. 5) This means that action-goal relations are different from non-intentional causal relations in the sense that the former requires an intentional subject and the latter does not. These characteristics seem to satisfy the phenomenon of non-culminating accomplishment, as shown in (71):

(71). French

- a. *Le docteur Li m’a soigné, mais je n’ai pas guéri du tout.*

‘Doctor Li treated me, but I didn’t get better at all.’

- b. *Ce séjour chez ma sœur m’a soigné, ?? mais je n’ai pas guéri du tout.*

‘That stay at my sister’s treated me, ?? but I didn’t get better at all.’

(Martin, 2015)

The example in (71) shows that when combined with an intentional subject, the culmination of the accomplishment can be cancelled, but not with a non-intentional subject. This phenomenon, in Demirdache and Martin (2015), is associated with an “agent control hypothesis,” which is

“Whenever an accomplishment (and particularly a causative accomplishment) admits a non-culminating construal, this is the case only if we can ascribe agenthood to the subject.”

(Demirdache & Martin, 2015, p. 187)

However, Guéron and Vogeleer (2021) argue against this proposal of agent control, claiming that what is crucial for the non-culminating reading is not the function of the agent’s control of her own action, but the agent’s intention to change the state of the

patient entity by performing a specific action, i.e., the restriction of non-culminating accomplishments does not depend on agency, but intention:

“a human (or at least animated) subject⁷⁸ is an agent at the vP level, the level of the event description, his agency lasts as long as he is “causally producing” his action, i.e. from the first to the last point of the event. By contrast, the intention to carry out the action is ascribed to the subject before the onset of the event, in the pre-event domain, that is, not on the vP level but on the TP level, located above vP and below CP, the speaker’s level.”

(Guéron & Vogeleer, 2021, p. 19)

The non-culminating construal can only be at the TP level or higher because for the accomplishment to be an event type, it must always culminate in the event description at the vP level, and non-culminating accomplishments can only be identified by the speaker’s *but*-clause. When non-culminating accomplishments are not followed by a *but*-clause, they are simply accomplishments that infer event culminations.

The GDT is triggered by the interaction between the lexical meaning and the morphosyntax at the level of the sentence structure. When it is triggered, the conceptual configuration holds when it is described retrospectively by the speaker, which is the case of accomplishments in sentences with perfective aspect, as shown in (72):

(72).

a. Mary is painting a castle.

b. Mary painted a castle.

In (72a), the perception of the action (Mary painting the castle) triggers the GDT that includes its typical goal (making the castle painted). In (72b), when described in the

⁷⁸ According to Guéron and Volgeleer (2021), subjects interpreted as instruments/machines manipulated by a hidden human with a specific intent/ design could also count as agents.

perfective, it can also trigger the GDT with the same action and goal (Mary painting the castle is the action, and the castle being painted is the goal).

The GDT is a forward-oriented process; it can only go from perceiving the action to predicting the goal. However, the cause-effect conceptual configuration, which includes a non-intentional subject, is backward-oriented. The causal relation goes from perceiving the effects to their (presumed) cause, as shown in (73):

(73). The fire destroyed the forest.

(Guéron & Vogeleer, 2021, p. 4)

According to the authors, the event in (73) is not a GDT but a counterfactual causal relation associated with the result-state template due to the speaker's perspective, i.e., the speaker associates the effect (the forest destroyed) with the presumed cause (the fire). The term "cause" is counterfactual: something is a cause iff there are some effects. Cancelling (negating) the effects entails cancelling the cause. (Pulvermüller, 2018)

The authors argue that non-culminating accomplishments need to activate these two conceptual configurations from two perspectives: one is the GDT from the perspective of the intentional subject, and the other is the causal relation from the perspective of the speaker.

In Guéron and Vogeleer (2021), types of non-culmination readings are classified into five groups according to the lexical meaning of the verb and its relationship with the result state negated in the *but*-clause. The authors call them "*wash* verbs," "transfer verbs," "transitive psychological verbs," "incomplete accomplishments," and "failed attempt accomplishments."

The non-culmination readings of *wash* verbs are shown in (74) from Talmy (1991), in which he argues that the expected results are nothing but a pragmatic implicature.

(74). John washed/ ironed the shirt/ wiped the table/ treated the patient, but the shirt is still not clean/ not smooth/ the table is not dry/ the patient is not getting better.

(Guéron & Vogeleer, 2021, p. 6)

The authors state that these verbs are atelic, but unlike traditional activity vP, they are assigned a GDT:

“activating a complete situation template available in the comprehender’s mind in which the subject’s action is motivated by the previous (unsatisfactory) state of the shirt/table/patient and is performed with intent to achieve a certain aimed state of the theme entity.”

(Guéron & Vogeleer, 2021, p. 7)

However, the change of state of the theme entity is not included in the lexical meaning of the verb, and the temporal duration of these activities is not limited by the spatial extension of the theme, although the theme may undergo some gradual changes.

The non-culmination reading of this type is not that of an incremental theme accomplishment. Instead, the reading comes from an activity verb that can be associated with a goal and a *but*-clause. However, they do trigger GDT, only that the negative clause does not negate the existence of effects but only their expected degree.

The non-culmination readings of transfer verbs, or “defeasible causative verbs” in Martin and Schäfer (2012), as shown in (75), come from the activation of a conceptual configuration of the recipient (the authors consider transfer verbs to be ditransitive, thus must have a recipient):

(75). French

- a. *Macha a enseigné à Jean le russe, mais il n’a rien appris.*
‘Masha taught Russian to Jean, but he learned nothing.’
- b. *La vie a enseigné à Jean l’humilité, #mais il n’a rien appris.*
‘Life taught Jean humility, #but he learned nothing.’

(Guéron & Vogeleer, 2021, p. 8)

The examples in (75) show that in the case of transfer verbs, non-culmination does not involve the theme entity change of state but the recipient's (failed) change of state. The authors propose that, like *wash* verbs, the change of state of the theme entity is not included in the lexical meaning of the transfer verb. However, they do activate a conceptual configuration of the recipient, which is called responsive recipient-internal process, i.e., the verb *teach* activates the process of *learning*, and the verb *explain* activates the process of *understanding*. The goal of the GDT of transfer verbs is the responsive recipient-internal process. Thus, sentences with transfer verbs and intentional subjects activate two conceptual processes: one is the GDT on the part of the subject, and the other is the responsive recipient-internal process on the part of the recipient.

When the subject of transfer verbs is non-intentional, the conceptual process of GDT of the subject cannot be activated. Instead, the cause-effect relation is necessarily described from the external viewpoint of the speaker. Note that in specific contexts, the speaker intervenes to dissociate himself from the recipient. In such cases, the effect on the recipient can be cancelled because cancelling the effects on the intended recipient does not entail cancelling effects for the speaker. That is to say, when the subject is non-intentional, the speaker considers him/herself as the recipient under certain contexts. See (76):

(76). French

Clairement, cette situation leur a bel et bien montré le problème! C'est fou qu'ils ne l'aient pas vu!

'Clearly, this situation well and truly showed them the problem! It is crazy that they didn't see it!'

The example in (76) is the case of the speaker distinguishing himself from the recipient. The effect (*see*) is cancelled for the recipient but not for the speaker; thus, the cause-effect relation still holds. When there is no such intervention, there is no dissociation

between the speaker's perspective and the recipient's viewpoint. In this case, the effect on the recipient cannot be cancelled, as shown in (77):

(77). *Cette situation leur a montré le problème, #mais ils ne l'ont pas vu.*

'This situation showed them the problem, but they didn't see it.'

(Guéron & Vogeleer, 2021, p. 9)

As the transfer verbs do not include the change of state of the theme, they are not incremental theme accomplishments either, but they differentiate themselves from "wash verbs" by activating an additional conceptual schema relative to a recipient-internal process.

The transitive psychological verbs like "*inciter* ('incite')" is another type of verb that allow non-culmination readings, as shown in (78):

(78). French

a. *Marie a incité Jean à la vengeance (mais en vain)*⁷⁹.

'Marie incited Jean to vengeance (but in vain).'

b. *Le meurtre de son frère a incité Jean à la vengeance (#mais en vain).*

'His brother's murder incited Jean to vengeance (but in vain).'

(Guéron & Vogeleer, 2021, p. 10)

Like the "wash verbs" and the "transfer verbs," transitive psychological verbs are associated with the GDT. For the vP argument, *Jean*, to be assigned a theme role (an event participant targeted by the subject's activity but without change of state), the verb reading must be atelic. However, as the verbs are associated with a goal-directed intentional trajectory, the reading is not exactly atelic. Furthermore, unlike *wash* verbs

⁷⁹ The main clause, *Marie incited Jean to vengeance*, could have two results: one is that Jean had the inspired feeling, and the other is that Jean did the revenge. The result *had the inspired feeling* could be the true goal of the agent *Marie*, and the result *did the revenge* could have a causal relation with the situation. However, it is unclear how we can represent it in the accomplishment (if we follow Moens and Steedman, 1988). In this case, *Marie incited Jean to vengeance, but he did not get revenge* could be more like *Marie ate an apple, but she is still hungry.*, which does not negate the accomplishment.

and transfer verbs, the intended goal of a transitive psychological verb is inscribed in the lexical meaning of the verb; for example, in (78a), for Jean to have the inspired feelings is inscribed in the lexical meaning of *inciter*.

The authors argue that the thematic role of the vP argument *Jean* could be theme or experiencer depending on the subject. When the subject is +intentional, like (78a), the event triggers the GDT and thus puts the argument *Jean* in a position of change of state, activating the theme role with the reading of the event being about the subject (Marie) achieving the change of state goal. However, when the described event is not a GDT but a causal relation, for example (78b), due to the speaker's retrospective perspective, or the subject is -intentional, the only option that *Jean* has is to be an experiencer. From here, following Jackendoff (2007), the authors argue that the thematic role assignment process is involved in the early stages of syntactic processing.

With three types of non-culmination readings associated with GDT explained, the fourth type of non-culmination reading is that of incomplete accomplishments, or “partial change” in Martin and Demirdache (2020) and “partial success” in Tatevosov (2008), as shown in (79):

(79).

- a. John painted the wall, but not completely.
- b. The fire destroyed the village, but fortunately not completely.
- c. John accidentally painted the wall, but fortunately not completely.
- d. French:

La rivière a gelé, mais pas complètement.

‘The river froze but not completely.’

(Guéron & Vogeleer, 2021, p. 11)

The events in (79) are accomplishments with incremental themes, and they do not follow the intentionality requirements of the GDT theory of the authors. They argue that this is because the goal of these events is not defined by any conceptual configurations (GDT or causal relation) but is determined externally, typically by the spatial extension

of the object (+SQA in Verkuyl (1989)); thus, these incomplete accomplishments do not follow the intentionality requirements. The authors argue that the main feature of the incomplete accomplishments is that the process of the patient's change of state begins and ceases at the same time as the agent's activity or as the causal event, unlike the cases before where the agent's action may continue after the change of state of the patient.

The incomplete accomplishments are true at the coarse granularity level but false at a finer granularity level (Martin, 2019), meaning that the first clause describes the event in a vague, imprecise level. For example, in (79a), the wall can have one little spot of imperfection and still be considered painted. However, when adding "completely," the event undergoes a granularity shift to a state of "if there is a single spot of imperfection, the wall is not painted completely." Thus, the *but*-clause negates the finer granularity level but not the coarse one.

The crucial difference between incomplete accomplishments and other non-culmination readings is the granularity shift caused by "completely." When considering the sentence without the "but not completely" clause, the sentences do trigger GDT with +intentional subjects (79a) or causal relation with -intentional subjects (79b). When adding the "but not completely" clause, because of the granularity shift, the second clause and the first clause, in fact, describe two different events; thus, the goal or the effect of the first clause is indeed reached and not negated. This is why incomplete accomplishments with -intentional subjects can only be felicitous under the "but not completely" clause. See (80):

(80). The fire destroyed the village, #but it did not finish destroying it.

The contrast between (79b) and (80) shows that in (80), "finish"⁸⁰ does not trigger a granularity shift.

⁸⁰ Guéron and Vogelee (2021) suggest that *finish* implies intentionality and triggers a GDT. Thus, non-intentional subjects are incompatible with a *not-finish* vP in the but-clause. However, if we change the subject to intentional, the sentence is also unacceptable: "John destroyed the village, #but he did not finish destroying it."

The final type of non-culmination is called the “failed attempt” in Tatevosov (2008) or “zero-change” in Martin and Demirdache (2020). The nature of these events is that the verbs seem to lexicalise culmination in an achievement-like way, yet the sentence is still compatible with a negative *but*-clause, as shown in (81):

(81). Mandarin

*wǒ shā le tā dàn-shì méi shā sǐ.*⁸¹

I kill PFV him but-not PST kill die

‘I killed him but he was not dead.’

(Talmy, 1991, p. 516)

The authors argue that in languages with this type of non-culmination accomplishment, the perfective marker does not necessarily entail culmination but terminativity. This means that the culmination of the failed attempt accomplishments is just an inference so that it can be cancelled. From there, the authors proposed that when the verb is transitive, the non-culmination reading of this type of event depends on whether the VP can refer to a process of the accomplishment without entailing the change of state of the object. In languages like English and French, sentences with accomplishment verbs like “John opened the door” do entail culmination, so it is impossible to have a failed attempt reading. Similarly, in languages like Mandarin, when an accomplishment is expressed in the form of a resultative verb compound “*shā sǐ* (‘kill die’),” it cannot be followed by an assertion that the event is not complete, as in (82):

(82). Mandarin

Wǒ shā sǐ le tā #dàn-shì méi shā sǐ.

I kill die PFV him but-not PST kill die

‘I killed him #but he was not dead.’

⁸¹ For this specific case, the intuitions of native speakers of Mandarin vary as some suggest that “*shā le tā* (‘killed him’)” cannot be negated, unlike what is stated in Talmy (1991) and Guéron & Vogeleer (2021).

Whether an accomplishment is expressed in the form of a verb compound or not, the authors argue, these accomplishments that permit failed attempt readings clearly differ from the canonical incremental theme accomplishments in that their culmination is not defined by the extension of the object but is, rather, lexicalised by the verb. More importantly, all of them require the agent to be +intentional, as without the intentional agent, the non-culmination reading is either incoherent or contradictory. The authors then propose that all types of non-culmination readings except the incomplete accomplishments require the agent to be +intentional.

The authors proposed a theory that is called goal-directed trajectory, or GDT. GDT is a conceptual pattern in the mind that emerges whenever an intentional subject or a goal is triggered in syntax. Whether the accomplishment gets a culminating reading or a non-culminating reading is determined when the conceptual configuration interacts with the syntax. In the conceptual configuration, the intention of the subject originates at the TP level; the subject introduces a trajectory from the intention to the change of state goal, but the subject cannot know during the event if the goal will be reached. However, from the speaker's point of view at the CP level, the speaker, although he cannot initiate the event, can assert the successful culmination of the event (and the result state that follows from it) or the failure of the culmination.

The authors describe a non-culminating accomplishment as a palimpsest: it embeds an event description presented from the limited perspective (point of view) of an intentional subject in TP, and the intention is acquired within an assertion presented from the speaker's point of view in CP. The two points of view are simultaneously construed, and the speaker's point of view dominates the subject's point of view. This is the reason why all of the non-culmination events can also be culminating events.

Overall, in Guéron and Vogeleeer (2021), non-culminating accomplishments are classified into five groups according to the lexical meaning of the verb and its relationship with the result state negated in the *but*-clause. A more comprehensive classification is shown below:

Wash verbs:

Example: John washed the shirt, but the shirt is still not clean.

- The agent's goal is not included in the lexical meaning of the verb.
- The event is not quantized and may undergo some gradual changes.
- The negative clause does not negate the existence of effects (on the theme) but only their expected degree.
- The event is not an incremental theme accomplishment.
- The non-culminating reading requires an intentional subject.

Transfer verbs:

Example: Masha taught Russian to John, but he learned nothing.

- The agent's goal is not included in the lexical meaning of the verb.
- The verbs are ditransitive (or indirect-object verbs).
- The agent has no access to the recipient's change.
- Non-culmination does not involve the theme entity change of state but the recipient's (failed) change of state.
- The event is not an incremental theme accomplishment.
- The non-culminating reading requires an intentional subject.

Transitive psychological verbs:

Example: French:

Marie a incité Jean à la vengeance (mais en vain).

'Marie incited Jean to vengeance (but in vain).'

- The agent's goal is included in the lexical meaning of the verb.
- The agent has no access to the theme's change.
- The negative clause negates the existence of effects on the theme.
- The object can be both a theme and an experiencer, depending on the subject.
- The event is not an incremental theme accomplishment.

- The non-culminating reading requires an intentional subject.

Incomplete accomplishments:

Example: John painted the wall, but not completely.

- The event is an incremental theme accomplishment.
- The process of the patient's change of state starts and ceases at the same time as the agent's activity. (The agent has access to the theme's change.)
- The culmination is not given by the agent's goal but by the incremental theme.
- The negative clause negates the finer granularity level (*completely*) of the event.
- The non-culminating reading does not require an intentional subject.

"Failed attempt" accomplishments:

Example: Mandarin:

wǒ shā le tā dàn-shì méi shā sǐ.

I kill PFV him but-not PST kill die

'I killed him but he was not dead.'

- The VP can refer to the activity component of the accomplishment without entailing the change of state of the theme.
- The event is not an incremental theme accomplishment; the culmination is determined by the lexical meaning of the verb.
- The non-culminating reading requires an intentional subject.

The authors propose a theory of non-culmination readings using syntactic structures and conceptual configurations. The theory has some benefits: it links neurobiological observations with the linguistic phenomena of non-culmination; it explains why the intentional subject and unintentional subject can cause different readings in the same sentence. Furthermore, this theory can be applied cross-linguistically. The authors used this theory to justify the possibility of five types of non-culmination readings in several languages, such as English, French, Russian, Chinese, and Hindi. Using syntactic structure can also explain why non-culmination readings require the *but*-clause.

However, European Portuguese do not seem to follow certain rules mentioned above. In the *wash* verbs type, if following the GDT theory, non-culminating readings require intentional subjects. This requirement does not seem to apply to European Portuguese, as shown below:

(83). European Portuguese

- a. *O João lavou a camisa, mas a camisa ainda não estava limpa.*

‘John washed the shirt, but the shirt was still not clean.’

- b. *A chuva lavou a camisa, mas a camisa ainda não estava limpa.*

‘The rain washed the shirt, but the shirt was still not clean.’

(83a) and (83b) are both acceptable to native European Portuguese speakers, so the requirement of the intentional subject could be questionable.

Furthermore, the authors argue that the theme is not quantized in the category of *wash* verbs. However, the themes in (74) are quantized (the shirt/the table). Though not explicitly stated, the authors' intuition could be that the predicate (*wash the shirt*) is not quantized.

When it comes to the typology itself, the naming of the five types is a bit confusing: three out of the five classes are named after ontological domains of events (transfer-, wash- and psych events), and the two remaining ones are named after the type of non-culminating reading (incomplete and failed attempt).

Regarding telicity, the theory suggests that all events that trigger GDT are not atelic, but the authors do not clearly define pseudo-telicity. If an atelic event can also be assigned a telic conceptual representation (as in *wash* verbs), then whether the final product becomes telic or remains atelic is still a question to be answered.

3.4. Discussion

From previous sections, we can see that non-culminating accomplishments originate primarily from two sources: one is the defeasible nature of the causal relation in the

eventuality; the other is the difference between the denotation of perfective in different languages. Now, let us discuss some of the important points from previous sections.

Firstly, in some East and South Asian languages, the default readings of accomplishments without markers are imperfective. (Koenig & Muansuwan, 2000) This means that in those languages, there is a causal relation in accomplishments, yet the effect is, by default, not realised. When applying to these languages, theories using the inertia world proposal in Dowty (1979) would be problematic. Unlike progressives, which have the PROG operator to express a different truth condition, bare accomplishments do not have similar operators that lead to a default atelic reading.

The inertia world theory in Dowty (1979) suggests that when events proceed normally, there would be a final caused event in the real world and that when the events are not proceeding normally, the final situation gets moved to the inertia world. The problem with this theory is that in languages like Thai or Mandarin, if we define “events proceed normally” as there is no linguistic marker that specifies the interruption of the event, accomplishments should have their final results realised in the real world by default. However, this is not the case. Dowty’s theory comes from a modified version of counterfactual dependency causative theory in Lewis (1973). As discussed in section 3.1, dependency theories cannot explain why the default reading of certain causal relations is non-culminating since the occurrence of the effect would depend on the occurrence of the cause. If we still want to maintain that there is a causal relation in the structure of accomplishments cross-linguistically, we must choose a theory of non-culminating accomplishment that does not use dependency causation theories as the theoretical foundation.

Secondly, from the literature, two types of languages could have non-culminating accomplishments. One is languages like Thai, Mandarin, Hindi, or Russian. In these languages, accomplishments have an imperfective reading by default. This means that accomplishments without second clauses can have a non-culminating reading. The other is languages like English or French: in these languages, accomplishments do not have an

imperfective reading by default. This means that accomplishments can have a non-culminating reading only with a second negating clause.

Regarding the first type of language, which I shall call imperfective languages, some authors like Gyarmathy and Altshuler (2020) and Koenig and Muansuwan (2000) consider the culmination of an accomplishment to be a conversational implicature. Others, like Copley and Harley (2014), suggest it is a presupposition. Recall that the distinction between implicature and presupposition is that conversational implicature can be cancelled in unembedded contexts (Beaver, 2011; Gyarmathy, 2015), and presuppositions cannot. This means that if the culmination inference is a conversational implicature, the culmination of the accomplishment could be absent without any operators. However, Gyarmathy (2015) argues that cancellation is also possible for some presuppositions; namely, *extra soft presuppositions* can be cancelled when unembedded⁸². According to Gyarmathy (2015), presupposition triggers are strong scalar items, as opposed to scalar implicatures. In addition, the conjunction of the implied and asserted content (in this order) with *and (in fact)* is admissible for presuppositions but odd for scalar implicatures (Gyarmathy, 2015, p. 172), as shown in examples below:

(84).

- a. Jane came and (in fact) **John came, too**.
- b. John participated and (in fact) **won**.
- c. ?? John didn't eat all of the cookies and (in fact) **he ate some of the cookies**.

(Gyarmathy, 2015, p. 172)

Let us first divide the examples in (84) into presuppositions and implicatures. (84a) and (84b) are presuppositions because the trigger/asserted content (*came too* or *won*) are stronger scalar items than the inferred item/implied content (*came* or *participate*). On

⁸² Gyarmathy suggests that extra soft presuppositions behave like conversational implicatures: they can be canceled even without a negation, a question, or the antecedent of a conditional. An example of extra soft presupposition is the activity-implication of culminations (achievements). For example, the inference of the “moving to the station” event in the achievement “John reached the station.”

the other hand, (84c) is an implicature because the trigger (*some*) is a weaker scalar item than the implied content (*all*). Now, let us see the conjunctions. In examples (81a) and (84b), the conjunction of the implied and asserted content is admissible in that order. In (81c), it is odd.

Now, let us consider non-culminating accomplishments like in (85):

(85). John studied Philology in Lisbon, but he didn't finish the course.

In (85), unlike the achievements mentioned above, the culmination is the implied content. Thus, the behaviour would be more like a conversational implicature since the implied content (*finished the course*) is the weaker scalar item, and the asserted content (*studied*) is the stronger one. In addition, the conjunction of the implied and asserted content (in this order) with *and* (*in fact*) is odd⁸³, as shown in (86):

(86). ? John finished the course and (in fact) he studied Philosophy in Lisbon.

Although there are still some questions regarding the nature of the implicature (for example, Gyarmathy and Altshuler (2020) argue that certain culmination implicatures cannot pass the reinforcement test), I will consider the culmination in non-culminating accomplishments a conversational implicature, as the exact nature of the implicature does not affect the present study.

Thirdly, as Gyarmathy (2015) pointed out, the conjunction (81c) would be felicitous if we change the *and* to *but*. Gyarmathy argues that the contrast between the two conjunctions is purely a pragmatic one, with *but* being often used exactly in cases where the use of *and* would be pragmatically odd. Indeed, in some cases, the two conjunctions could substitute for each other. However, their functions vary in different languages (Malchukov, 2004). In addition, *but* could have at least three different usages depending on the lexical items, syntactic structure, or context. (Hye-Kyung, 2002) See the examples below:

⁸³ This also seems to apply to European Portuguese. For example, “*O chão ainda não estava limpo e (de facto) o João varreu-o.*” (‘The floor was not clean and (in fact) John swept it’) is strange.

(87).

- a. Tom is tall but Bill is short. (semantic opposition)

Tom is tall and Bill is short.

- b. John is tall, but he's no good at basketball. (denial of expectation)

John is tall, and he's no good at basketball.

? John is tall. John's no good at basketball.

- c. He is not an economist, but a businessman. (corrective)

#He is not an economist, and a businessman.

He is not an economist. He is a businessman.

As we can see, the semantic opposition expressed by *but*, like in (87a), can be substituted by *and*, while denial of expectations, like in (87b), and correctives, like in (87c), cannot. Now let us see how a non-culminating accomplishment in Portuguese behaves:

(88). European Portuguese

- a. *O João lavou a camisa, mas a camisa não estava limpa.*

'John washed the shirt, but the shirt was not clean.'

- b. # *O João lavou a camisa, e a camisa não estava limpa.*

'# John washed the shirt, and the shirt was not clean.'

- c. ? *O João lavou a camisa. A camisa não estava limpa.*

'? John washed the shirt. The shirt was not clean.'

The behaviour of certain non-culminating accomplishments in Portuguese matches that of denial of expectation. However, that is not all of the cases of non-culminating accomplishments; namely, accomplishments with transfer verbs behave differently in this case:

(89). European Portuguese

- a. *O Francisco explicou o sentido da vida ao Pedro, mas o Pedro não compreendeu nada.*

‘Francis explained the meaning of life to Peter, but Peter didn’t understand a thing.’

- b. *O Francisco explicou o sentido da vida ao Pedro, e o Pedro não compreendeu nada.*

‘Francis explained the meaning of life to Peter, and Peter didn’t understand a thing.’

- c. *O Francisco explicou o sentido da vida ao Pedro. O Pedro não compreendeu nada.*

‘Francis explained the meaning of life to Peter. Peter didn’t understand a thing.’

The contrast in (88) and (89) shows that the inference in different types of non-culminating accomplishments could behave differently. In a non-culminating accomplishment with the verb “*lavar* (‘wash’)” in (88b), the conjunction with *and* is strange. However, the conjunction is not so strange in a non-culminating accomplishment with a transfer verb in (89b). Nevertheless, the usage of *but* in a conjunction with non-culminating accomplishments seems to be some type of negation of an inference rather than semantic opposition.

To summarise, the phenomenon of non-culminating accomplishment is a cross-linguistic problem. Therefore, we need a theory that can account for various classes in both types of languages (imperfective and perfective languages). Furthermore, the theory should not be using inertia worlds as its foundation. On account of this, I will use the typology in Guéron and Vogeleer (2021) for the psycholinguistic tasks in the next chapter because of the more comprehensive dissection of the non-culmination readings in various languages. As mentioned in 3.3.5, the five-way typology in Guéron and Vogeleer (2021) is not strictly a linguistic typology of non-culminating accomplishment but depends on the cognitive side; thus, the naming can be confusing. Furthermore, there is a distinction between transitive causative and non-causative verbs, and a distinction between neutral

causative verbs and defeasible causative verbs; however, they are not incorporated into the experiment due to the scope of the present study.

The experiment in the present study will, however, address the two non-culminating readings in each ontological event type.

3.5. Prior experimental works

In the next chapter, I will present the results of the psycholinguistic tasks employed in the present study, aiming to test the processing and judgement of non-culminating accomplishments in European Portuguese. But first, let us see some prior experimental works related to the topic of non-culmination. There is a fair amount of experimental work to test the acceptability of non-culminating accomplishments in various languages. The experimental works mainly focus on different verbs with different themes, but the effect of the subject on the acceptability of non-culminating accomplishments is rarely tested.

3.5.1. Foppolo et al. (2021)

Foppolo et al. (2021) test Italian native speakers' judgements concerning how the culmination inference of telic predicates arises during processing. An offline acceptability judgement task used as a pre-test for the main experiments is the most relevant to the present study. In pre-test 1, Italian participants (N = 37) are asked to evaluate the appropriateness of a past perfective sentence against a single picture that shows a non-culminated event. This test is meant to assess the suitability of using a past perfective verb in describing a situation in which a non-culminated event was shown. In the acceptability judgement test (pre-test 1), overall, Italian speakers reject the description in the perfective form when associated with an almost completed event about 70% of the time, with some variability across items. This means that Italian speakers accept perfective telic sentences as descriptions of incomplete events at around 30%, which is a significant number.

In pre-test 2, Italian participants (N = 28) hear sentences while looking at a visual display in which two events at different degrees of completion were shown. The authors divide the degree of completion into eight stages, where stage 0 to stage 4 correspond to 0% completion to 50% completion, and stage 5 to stage 7 correspond to more than 50% completion to 100% completion. At the same time, they listen to a sentence in the perfective form and are asked to select the corresponding picture, the “both” option, or the “none” option. This test evaluates the degree to which Italian speakers select a non-culminated event when hearing sentences in the perfective form. The results of the picture-selection study (pre-test 2) show that Italian participants select the “none” option around 60% of the time in the case of the 0–4 stage combination (the degree of completion is below 50%), and they select the completed event picture in the case of the 6–7 stage (the degree of completion is around 70-100%) about 80% of the time. These results support the hypothesis that verbs in the perfective form trigger an inference of culmination in Italian.

In the proper experiments 1 and 2, the eye movements of the participants are recorded. In experiment 1, they test three conditions. The first one is called the *telic-critical* condition. In this condition, the participants must choose the image corresponding to the perfective durative predicate. One of the two pictures associated with the sentence depicts the event denoted by the predicate affecting the object mentioned in the sentence to 100 degrees; the other picture depicts a different object with the event performed only halfway through. This condition tests if the culmination inference is derived incrementally. The culminated (or non-culminated) interpretation of the durative telic verb should be triggered when the verb is heard in the perfective form if the culminating inference is incrementally derived by exploiting the verb's morphological cues. The second condition is called the *telic-control* condition. In this condition, the participants must choose the image corresponding to the perfective non-durative predicate. The visual scene associated with these sentences presented two pictures with the same object in different states. One picture shows the object in the result state of the event, while the other shows the object in the state before the event.

In this condition, the telic event denoted by the punctual verb is lexically compatible only with one of the two pictures. As a result, this could cause anticipatory glances at the target picture throughout the verb and before the final noun even appears. Comparing it with the *telic-critical* condition, the *telic-control* condition tests if the culmination inference is delayed in the case of durative predicates in which the verb itself does not lexically trigger the inference. The third condition is called the *late-control* condition. The sentences in this condition contain non-eventive predicates denoting states. The visual scene associated with these sentences consists of two pictures showing the same states with different objects: one object was compatible with the predicate, while the other was not. Before the final noun unfolds, there should not be any preemptive glances at the target picture. This condition tests if telicity inference is derived incrementally.

The results of experiment 1 show that in the *telic-control* condition, there is a relatively rapid and early increase in looks to the target, starting at the end of the verb and continuing into the post-verbal NP. This is followed by the *telic-critical* condition, where participants glance at the target picture later than in the *telic-control* condition but sooner than in the *late-control* condition. In the *late-control* condition, convergence on the target only starts after the onset of the post-verbal NP. These results indicate that the culminating inference associated with the perfective aspect is more difficult or takes longer to derive in durative predicates than in non-durative ones, where the lexical level explicitly triggers the telicity inference.

To exclude the factor that a more complex visual context could lead to a greater response time, in experiment 2, the authors change the objects of the *telic-critical* condition to be identical. That is to say, in the *telic-critical* condition in experiment 2, the participants have to choose the image that corresponds to the perfective durative predicate. One of the two pictures associated with the sentence depicts the event denoted by the predicate affecting the object mentioned in the sentence to 100 degrees; the other picture depicts the same object with the event performed only halfway through. The participants (N = 35) in experiment 2 are also different from those in

experiment 1. The results of experiment 2 show that participants are much faster at directing their gaze to the target picture in the two telic conditions compared to the *late-control* condition, with a slight advantage in the telic-control condition. This advantage of the telic-control condition is not as significant as in experiment 1, showing that the more complex visual context is a factor in response time. Furthermore, there is no difference between the two telic conditions in the odds of a target glance in the verb region.

The combination of the results from experiment 1 and experiment 2 shows that the auxiliary + past participle in Italian can trigger the inference of culmination in accomplishments, and that this linguistic cue is used incrementally during sentence processing. The culmination inference in accomplishments is different from the telicity inference in achievements. The prior inference is triggered by the perfective aspectual morphology, and the latter is triggered by the lexical meaning of the predicate. Furthermore, when two images of the same object at varying stages of completion are shown on the visual display, the integration of durative predicates occurs more quickly than when the two images show different objects. This difference in the time course of the culmination inference in the *telic-critical* conditions in experiment 1 and experiment 2 shows that when the visual context is more complex, the process of conceptualisation takes longer. The authors suggest that two steps are required in *telic-critical* conditions in the first experiment to conceptualise the event, and only one is required in the second experiment. In both experiments, the same step is to identify the stages at which the predicate influenced the corresponding object, leading to the culmination inference. However, in experiment 1, another inevitable step is integrating the predicate with its corresponding object NP, which is required to draw the telicity inference.

The experiments in Foppolo et al. (2021) show that speakers accept non-culminating events described by auxiliary + past participle in Italian to a certain extent. This means that non-culminating accomplishments could be accepted in other similar languages, especially in European Portuguese.

3.5.2. Bott et al. (2024)

Bott et al. (2024) test the processing and interpretation of non-culminating accomplishments in English and German. The primary concern in that case is aspectual coercion, but it also includes some self-paced reading tests that are relevant to the present study. The experiments include two offline interpretation tasks, four self-paced reading tasks, and one *stops-making-sense* task. The tasks can be divided into two identical groups for English and German. The material in the German tasks consists of translations of the items in the English tasks. The first two experiments assess the interpretation of the English and German accomplishment items. In the English offline interpretation task, there are five conditions of the same accomplishment predicate, which include simple past, past progressive, simple past + *in*-adverbial (coerce condition), simple past + *for*-adverbial (control condition), and past progressive + *for*-adverbial (progressive control condition). Each condition is accompanied by a culmination inference. The participants are asked whether the sentence implies that the incremental theme argument is complete. The participants need to provide a rating with a slider with values ranging from 1 for *no, definitely not*, to 100 for *yes, definitely*. In the German offline interpretation task, there are instead three conditions, which include two conditions with adverbials (a control condition and a coerce condition) and a baseline condition without adverbials. The participants are native English speakers for offline task 1 (N=31) and native German speakers for offline task 2 (N=30). The results of the two offline interpretation tasks share some similarities. In the English task, according to the ratings, accomplishments in the simple past that have not been altered are given a complete event interpretation. With ratings that fall somewhere in the middle of the scale, the interpretation of the past progressive condition, on the other hand, is open to whether the event is completed. The control conditions in English tasks with *in*-adverbials are interpreted as telic. However, the ratings of the coercion condition with *for*-adverbials are lower than the baseline simple past condition, showing evidence that the *for*-adverbial can affect the culmination inference. Interestingly, there are no reliable differences between the rating of the control condition with *in*-adverbials

and the simple past baseline condition. The same goes for the coerce condition with *for*-adverbials and the progressive control condition: there are no reliable differences between them. In German, the ratings of the coercion condition are also lower than the baseline simple past condition. However, the difference between the control and coerced conditions is smaller than in English, and the baseline condition can be clearly distinguished from the coerced and control conditions. This implies that whereas German accomplishments in the unaltered past form are often interpreted as telic, they can occasionally be interpreted as non-telic.

Experiments 3 and 4 are self-paced reading tasks that use the same items as experiments 1 and 2. Experiment 3 tests English conditions, and experiment 4 tests German conditions. The participants are in a different group than in experiments 1 and 2, and the number is higher for each language (N=51 English native speakers and N=50 German native speakers). These two self-paced reading tasks aim to compare reading times in different regions under each condition. The regions are: ROI-1 subject phrase, ROI-2 verb, ROI-3 object phrase, and ROI-4 critical adverbial region. The results of experiment 3 (English conditions) and experiment 4 (German conditions) show no significant processing differences between the conditions. That is to say, there are no significant differences in the reading time for each region in each condition in experiments 3 and 4. The only reading time where conditions differed was the ROI-2 verb of Exp. 3, which is probably due to length differences between past progressive and simple past forms, and is expected by the author. This reading difference does not originate from the processing of the items' semantics, but rather from the items' length, and cannot be used as evidence for anything. Based on this observation, the authors propose that subtractive coercion of accomplishments into activity readings is not taxing during online processing, either in English or German.

Experiments 5 and 6 are also self-paced reading tasks. However, this time, the items are nested inside specific discourses. The accomplishments predicate used in experiments 5 and 6 are the same ones as before, but this time, there is additional information related to the culmination of the accomplishments. Each experiment has four conditions:

coercion neg, *control neg*, *coercion for*, and *control for*. The *coercion neg* condition consists of a simple past accomplishment followed by a second sentence that explicitly negates the culmination. The *control neg* condition consists of a progressive *begin* accomplishment followed by a second sentence that explicitly negates the culmination. The *coercion for* condition consists of a simple past accomplishment followed by a second sentence that implicitly cancels the culmination using a *for*-type adverbial. The *control for* condition consists of a progressive *begin* accomplishment followed by a second sentence that implicitly cancels the culmination using a *for*-type adverbial. Examples are shown below:

- *coercion neg*
The architect | built | the monument | ... He could | not complete it, however, ...
- *control neg*
The architect | began building | the monument... He could | not complete it, however, ...
- *coercion for*
The architect | built | the monument | ... He did this | for more than two years, | until | ...
- *control for*
The architect | began building | the monument ... He did this | for more than two years, | until | ...

(Bott et al., 2024, p. 3323)

The above list shows the English examples in experiment 5. The German items in experiment 6 are translations of the English counterparts.

These two self-paced reading tasks mainly aim to investigate the effects of cancelling a culmination inference in subsequent discourse. The number of participants is greater, including 82 native English speakers for experiment 5 and 81 native German speakers for experiment 6. The results of these experiments show identical features with experiments 3 and 4; that is, there is no evidence of coercion affecting reading time in

English or German. The reading times for each region in *coercion neg* condition and *control neg* condition are statistically identical. The same goes for *coercion for* condition and *control for* condition: the reading times are statistically identical. This means that there are no processing difficulties in both English and German, whether the culmination is negated explicitly using a *not-complete* sentence or implicitly using a *for*-adverbial. The authors suggest that non-culminating accomplishments did not lead to measurable disruption during reading, even if the culmination was cancelled in subsequent discourse.

Experiment 7 is specifically for English. It is a self-paced reading task with a judgment task asking the participants which region of the sentence is stopping to make sense. The items are identical to experiment 3 with a new group of English native speaker participants (N=39). The participants are shown the items region by region in a window presentation. For each region, participants must decide whether to read on or reject the sentence as nonsensical, aborting a trial. The rejection rates for each condition are 21.6% in the coercion conditions, 17.8% in the simple control, and 18.9% in the progressive control conditions. This means that the items used in experiment 3 are all acceptable sentences and that there are no statistical differences in the acceptability of coercion items, simple past items, and progressive control items. Note that these sentences are normal accomplishment predicates without a second negating clause. Because coercion does not affect the processing time in all the self-paced reading tasks, the authors add another parameter: experiment 7. However, the results of experiment 7 also do not show that the coercion conditions have any significant differences in reading time compared to the control conditions. That is to say, the reading times in each region under coercion conditions, simple control conditions, and progressive control conditions are statistically identical.

The overall result of the seven experiments by Bott et al. (2024) indicates that there are no processing difficulties in either English or German when it comes to non-culminating accomplishments or coercions. This experiment replicates the experiments in Bott and Hamm (2014) but with greater statistical power, including larger groups of participants

and items. Interestingly, the replicated experiments in Bott et al. (2024) yield results opposite to those in Bott and Hamm (2014), presumably due to the improvement of the methods used in the experiments. In the first two offline experiments, the ratings for culminating inference are surprisingly high for all conditions, both in German and English. The mean inference rating for coercion conditions and control progressive conditions ranges from 60% to 75%, while the mean inference rating for control conditions and simple base conditions exceeds 75% (as indicated in the result figures). Examples of English experiments are shown below:

Offline experiment 1 in Bott et al. (2024):

- Coercion condition:
The architect built the monument for two years...
- Control progressive condition
The architect was building the monument for two years...
- Control condition
The architect built the monument in two years...
- Simple base condition
The architect built the monument...

Participants consider the first two conditions to have culmination inferences since the rating exceeds 60%. This observation contradicts the theory in Martin (2019) because the inference should be non-culmination according to Martin's incomplete accomplishment theory. The inference rating for control conditions and simple base conditions is expected since they are both in perfective form.

Both in German and English, the self-paced reading tests 3 and 4 demonstrated that a *for*-adverbial change does not cause reading pace disruptions. In the original study by Bott and Hamm (2014), the authors hypothesise that when accomplishments are accompanied by a *for*-adverbial, the modification coerces the accomplishment into an atelic activity interpretation, and that this coercion process requires significant processing power, which can be represented in slower reading times. However, in the

replicated study by Bott et al. (2024), there are no differences in reading time when a for-adverbial accompanies accomplishments. The reading time for the conditions tested in experiments 3 and 4 is statistically identical. The conditions are shown below:

Experiment 3 in Bott et al. (2024):

- Coercion condition:
The architect built the monument for two years...
- Control progressive condition
The architect was building the monument for two years...
- Control condition
The architect built the monument in two years...

There are no significant differences in the reading times for the critical regions in the three conditions. The critical region is the adverbial region, for example: “for two years” and “in two years.”

What is more interesting for the present study in the results by Bott et al. (2024) is that in experiments 5 and 6, the reading times for the coercion and control conditions are statistically identical. This potentially means that there could be no additional processing in non-culminating accomplishments with simple past + negating second clause compared to *begin*-progressive accomplishments + negating second clause. Examples are repeated below:

- Simple past + negating second clause:
The architect built the monument... He could not complete it...
- *Begin*-progressive accomplishment + negating second clause:
The architect began building the monument... He could not complete it...

(Bott et al., 2024, p. 3323)

In the first sentence, the accomplishments predicate is in the perfective form, which means that the inference of event completion is the default interpretation. In the second sentence, however, the accomplishment predicate is in the progressive form, which means there is no inference regarding culmination. (Martin, 2019) In theory, the

contrast between the two accomplishment predicates should be observable in reading times because the culmination inference in the first sentence is cancelled in the second clause. However, that is not the case in the results of Bott et al. (2024). Even if we consider the second clause in the simple past accomplishment sentence with a shifted granularity level (Sassoon & Zevakhina, 2012) because of the verb *complete*, there should be a longer processing time when the granularity level shifted from the coarse one (the architect built the monument) to the finer one (the architect completely built the monument). On the other hand, there is no cancellation in the second sentence because there is no contradiction between the two clauses. In the *begin*-progressive accomplishment clause, the described event is only the activity part of the accomplishment. Thus, it does not have inferences of culmination. The second clause serves as a continuation of the first clause rather than a cancellation of the inference.

The experiments in Bott et al. (2024) demonstrate that there is no difference in the processing of a non-culminating accomplishment and that of a progressive sentence.

There could be two possible explanations for the lack of differences in reading times between the two conditions. The first point is that there is indeed a process involved in the cancellation of the culmination inference or the change in granularity level; however, this process is so fast that it cannot be captured in self-paced reading tasks. The other one is that there is no cancellation of the culmination and no contradiction between the two clauses in the simple past accomplishment sentence: the perfective accomplishment refers to an ongoing, incomplete event, the same as the *begin*-progressive accomplishment predicate.

3.5.3. Minor et al. (2023)

Minor et al. (2023) test the processing of grammatical aspect (perfective vs. imperfective) in accomplishments in Russian, Spanish, and English. The experiments are conducted in three groups, one for each of the three languages, each with a unique set of items and participants. For each group, there are 24 accomplishment items consisting of a visual display and an audio stimulus. 11 of the 24 items are shared items, meaning that the

same 11 pictures are used in all three languages. The visual display consisted of two pictures presented side by side on a screen, representing two stages of the same event. One picture represented an ongoing event, while the other represented the corresponding completed event. The participants must select one of the two pictures that corresponds to the audio stimulus they hear. The experiment's goal can be boiled down to test the native speaker's judgement on perfective or progressive accomplishments: which can represent an ongoing event, and which can represent a complete event? The number of participants varies in the three groups: the Russian experiment has 124 Russian speaker participants, the Spanish experiment has 32 Argentinian Spanish speaker participants, and the English experiment has 124 English speaker participants (it is not explicitly mentioned whether they are native speakers or not).

The pictures (or events) in the three experiments are identical, with the audio stimuli in different languages. The audio stimuli included a preamble and a test sentence. The preamble is to provide a context for the event. The test sentences are divided into those with perfective aspect and those with imperfective aspect. In the Russian experiment, the aspectual distinction is encoded in a prefix for half of the items and a suffix for the other half. In the Spanish experiment, this distinction is marked with the inflection *-aba* in the imperfect form and *-ó* in the preterit form. In the English experiment, the imperfective version of the test sentences involves a verb in the Past Progressive form, while the perfective version involves a verb in the Simple Past form. The examples are shown below:

Experiments in Minor et al. (2023):

- Russian prefix

<i>Devoŭcka</i>	<i>risova-la</i>	<i>tonkuju</i>	<i>vazu.</i>
girl	draw.IMP-PST.F.SG	thin	vase
'The girl was drawing a thin vase.'			
<i>Devoŭcka</i>	<i>na-risova-la</i>	<i>tonkuju</i>	<i>vazu.</i>

girl PFV-draw-PST.F.SG thin vase

‘The girl drew a thin vase.’

- Russian suffix

Devočka ot-kry-va-la krasivyj podarok.

girl PFV-dig-IMP-PST.F.SG beautiful present

‘The girl was opening a beautiful present.’

Devočka ot-kry-la krasivyj podarok.

girl PFV-dig-PST.F.SG beautiful present

‘The girl opened a beautiful present.’

- Spanish

Una nena dibujaba un florero delgado.

a girl draw-3S.IMP a thin vase

‘The girl drew a thin vase.’

Una nena dibujó un florero delgado.

a girl draw-3S.PRET a thin vase

‘The girl was drawing a thin vase.’

- English

The girl was drawing a slender vase.

The girl drew a slender vase.

(Minor et al., 2023, pp. 5-6)

The overall offline responses have some variations. For imperfective conditions, participants in the Russian, Spanish, and English tests show similar behaviours. 98% of the participants select the ongoing picture in the Russian experiment, 97% in the Spanish experiment, and 96% in the English experiment. This means that participants exhibit an at-ceiling preference for the ongoing picture in the imperfective condition in all three languages. For perfective conditions, participants in the Russian and Spanish experiments show similar behaviours, whereas the result in the English experiment stands out. In the Russian experiment, 95% of the participants selected the complete picture, 84% in the Spanish experiment, and 54% in the English experiment. Although

the accuracy of the result in the Spanish experiment for perfective conditions is slightly lower than that for imperfective conditions, it is still significantly above chance in both aspectual conditions. What is interesting is the result of the English experiment, where only 54% of the participants select the complete picture, while the other 46% select the ongoing event picture. This means that the participants do not show a strong preference for either picture when they hear the perfective simple past accomplishment. For imperfective conditions, the probability for the participant to glance at the ongoing event picture is significantly higher than the chance in all three languages. However, for perfective conditions, participants in the Russian and Spanish experiments glance more often at the complete event picture than at the ongoing event picture. In contrast, participants in English experiments do not have a preference for either picture, i.e., the probability for participants in English experiments to glance at the ongoing event picture and the complete event picture is statistically identical.

For cross-lingual comparison, the authors analyse another set of results with only the 11 shared items, and the proportions are identical, confirming that differences in the selection of items do not cause the difference between the experiments. The difference in the three experiments is mainly in the perfective conditions. Russian speakers consider perfective accomplishments (whether prefix or suffix) to correspond to the complete event; Spanish speakers also consider perfective accomplishments to correspond to the complete event but with a significantly lower accuracy; English speakers, on the other hand, consider perfective accomplishments in simple past tense could correspond to ongoing events or complete events. In Russian experiments, the preference for the ongoing event when the participants hear the imperfective conditions and for the complete event when they hear the perfective conditions are both at-ceiling (98% and 95%). This could mean that the distinction between the imperfective and perfective aspect in Russian is the clearest and that there is no variation in the selection process (at least in the context the authors provide). In Spanish experiments, the preference for complete events when the participants hear perfective conditions is not quite at the ceiling (84%) and is significantly weaker than the opposite

preference in the imperfective condition (97%). Furthermore, this percentage is significantly lower than in Russian experiments, indicating that perfective preterit accomplishments in Spanish may sometimes represent an ongoing event, specifically the activity part of the accomplishment. The authors hypothesise that Russian perfective predicates semantically entail that the event reached completion. In contrast, the corresponding predicates in the preterit form in Spanish only entail the existence of a final boundary, with event completion arising as a cancellable pragmatic implicature.

The most striking result is in English experiments, where there is no preference at all when the participants hear the perfective accomplishment conditions. In the English experiment, only around half of the participants select the complete event picture when they hear a simple past accomplishment. This percentage is significantly lower than in the Russian or Spanish experiments. Similarly, the participants' gaze patterns show an equal preference for the complete and ongoing event pictures. These findings demonstrate that, even with telic predicates, the simple past form in English does not exhibit a preference for either the action part of an event or its result state, unlike the auxiliary-based perfect. The authors suggest that the English simple past may be a non-aspectual tense form, rather than a perfective form, on par with perfectives in Russian and Spanish. To confirm this hypothesis, the authors compare the progressive with the perfect in both past and present tense conditions in a follow-up experiment. The result of the follow-up experiment shows that the present perfect in English does indeed highlight the result state of a telic event in a way that the simple past does not.

The findings in Minor et al. (2023) could potentially affect the result state part of the present study, since I have included both simple past and present perfect forms as a result state of accomplishment in section 2.6. However, the result in Minor et al. (2023) only shows the difference between simple past and present perfect when used in an event; it is unclear whether there are differences concerning culmination when the two forms are used in states. Furthermore, this significant difference in participants' preferences seems to apply only to English; this issue is not considered in the current study for European Portuguese.

3.5.4. Kasher and Hachohen (2023)

Kasher and Hachohen (2023) test Russian speakers' judgements toward non-culminating accomplishments: they evaluate the availability of Russian non-culminating interpretations of perfective accomplishments. The experiment includes one offline judgement task. Eight Russian accomplishments, composed of an incremental transitive verb followed by a singular count noun object DP, are included in the experiment. The verbs consist of 4 of creation, 2 of consumption, and 2 of destruction. Each accomplishment appears in three conditions: perfective, perfective followed by a cancellation phrase, and imperfective. The examples are shown below:

Experiment in Kasher and Hachohen (2023):

- Perfective condition:

Malčik narisoval zvezdu.

boy pfv-drew star-acc

'The boy drew a/the star.'

- Perfective + cancellation condition:

Malčik narisoval zvezdu,

boy pfv-drew star-acc

no odnovo lučika ne xvataet.

but one ray not sufficient

'The boy drew a/the star, but one point is missing.'

- Imperfective condition:

Malčik risoval zvezdu.

boy imp-drew star-acc

'The boy was drawing a/the star.'

(Kasher & Hachohen, 2023, p. 5)

Each accomplishment has an associated video depicting a human character performing the event denoted by the accomplishment. The scenarios depict in the clips unfold naturally toward their intended endpoint, but they all terminate at around 80% event

completion before reaching their goal. The participants are presented with the accomplishments in each condition in Russian, accompanied by the associated video, and their task is to evaluate how likely it would be for a native speaker to produce such a sentence. Response choices were recorded using a 4-point rating system. The options are 1 for 'not a chance', 2 for 'not likely', 3 for 'possible but slightly off', and 4 for 'highly likely'. The experiments essentially test two issues: one is the acceptability of the non-culminating accomplishment (perfective + cancellation condition) in Russian; the other is the judgment of native speakers of which condition can describe a non-complete event, i.e., whether the Russian perfective can describe an event with only 80% completion. The results show that around 65% of the participants select negatively and around 34% positively in the first condition (perfective), with 25% choosing option 1, 40% choosing option 2, 25% choosing option 3, and 9% choosing option 4. In the second condition (perfective + cancellation), only around 18% select negatively, while around 81% select positively. Specifically, 6% select option 1, 12% select option 2, 32% select option 3, and 49% select option 4. In the third condition (imperfective), approximately 18% select negatively, while around 82% select positively. Specifically, 7% choose option 1, 11% choose option 2, 27% choose option 3, and 55% choose option 4. In the first condition, a significant percentage of participants select positively. That is to say, Russian speakers could consider using a perfective accomplishment to describe an ongoing event, for example, using “*Malčik narisoval zvezdu* (The boy drew a/the star)” to describe an incomplete drawing event. This could mean that, unlike the widely accepted view in the literature (Comrie, 1976; Filip, 2020), Russian perfectives could sometimes represent incomplete events. More interestingly, in the second condition, the percentage of positive responses is a striking 81%, with only 18% negative responses. This means that, firstly, non-culminating accomplishments consist of perfective accomplishments, and a second clause explicitly negating part of the result state (denoting partial completion and not a scope or granularity level change) is perfectly acceptable for Russian native speakers. Secondly, it is highly acceptable that Russian native speakers use non-culminating accomplishments to describe ongoing events even

when the perfective in Russian is considered to have a culmination entailment (Filip, 2000). In the third condition, the percentage of each option is statistically identical to that in the second condition. This could mean that Russian speakers consider the perfective + cancellation condition to have the same semantics (at least when considering only the eight accomplishments tested) as the imperfective condition, which is not predicted to carry any inference of culmination. The response distribution across verb types also shows similar results: there are no significant differences between verb types. The authors demonstrate that response distributions are essentially identical, regardless of verb type, and that the percentage of acceptability is consistent across the three verb types.

The results of Kasher and Hachohen (2023) contradict the theory of Filip (2000) and Martin (2019). In the literature, the culmination inference is not cancellable in Russian perfectives, and perfective telic accomplishments in Russian are only allowed as descriptions of fully completed events. Sentences in which a perfective telic accomplishment is followed by a cancellation phrase are supposed to result in a contradiction. However, the results of the experiments show that Russian speakers permit a considerable degree of non-culminating interpretations of perfective telic accomplishments; Russian perfective telic accomplishments followed by a negating clause do not necessarily result in a contradiction. Furthermore, the similarity of the responses in the perfective + cancellation conditions and the imperfective conditions shows that the distinction between perfective and imperfective in Russian is not as huge as shown in Minor et al. (2023). This suggests that even in Russian perfective telic accomplishments, which are traditionally believed to entail culmination and result states, non-culmination is accepted by speakers.

3.5.5. Kaplan et al. (2021)

Kaplan et al. (2021) test non-culminating accomplishments in English using eye-tracking. The experiment includes only a passive viewing task, where the participants sit before a screen and watch a video. The videos consist of a visual stimulus of four images with an

accompanying auditory stimulus sentence conveying an event description that relates to one of the images. The experiment includes four conditions. The first condition is the perfective full completion condition. The auditory stimuli convey an event in perfective form using a present perfect accomplishment. In addition, one of the four images depicts a referent that indicates the event had not taken place at all; another image depicts a referent that indicates the event had completed its natural culmination point; and the other two images are irrelevant. The second condition is the progressive full completion condition. It has the same images as the perfective one, but the audio stimuli convey the same event in progressive form using past progressive. The third one is the perfective partial completion condition. The auditory stimuli convey an event in the perfective form. One of the four images depicts a referent that indicates the event has not taken place at all; another image depicts a referent that indicates the referent has been partially affected to around 75%; the other two images are irrelevant. The fourth condition is the progressive partial completion condition. It has the same images as the perfective partial completion condition, except the audio stimuli convey the same event in progressive form. The examples are shown below:

Experiments in Kaplan et al. (2021):

- Perfective Full Completion condition
Audio: The girl has eaten the cookie.
Visual: 1. a whole cookie on a plate; 2. a pencil; 3. a flower; 4. a plate with a few cookie crumbs on it (target picture)
- Progressive Full Completion condition
Audio: The girl was eating the cookie.
Visual: 1. a whole cookie on a plate; 2. a pencil; 3. a flower; 4. a plate with a few cookie crumbs on it (target picture)
- Perfective Partial Completion condition
Audio: The girl has eaten the cookie.
Visual: 1. a whole cookie on a plate; 2. a pencil; 3. a flower; 4. part of a cookie on a plate (target picture)

- Progressive Partial Completion condition

Audio: The girl was eating the cookie.

Visual: 1. a whole cookie on a plate; 2. a pencil; 3. a flower; 4. part of a cookie on a plate (target picture)

(Kaplan et al., 2021, p. 122)

The target picture of each condition is determined by the denotation of the sentence. The participants are monolingual native English speakers (N=52). They have to watch the video with no additional tasks. The experiment's goal is to test whether English speakers permit non-culminating construals of event descriptions and whether partial completion interpretations are formed when the verb is uttered in real-time. That is to say, if English speakers permit partial completion interpretations, the process of such interpretation could be when the verb is uttered (partial completion interpretations are compatible with the aspectual information available in the English perfect verbal form) or after the NP (the interpretation requires extra processing). For this purpose, the eye movements of the participants are recorded when they watch the whole video, and there are two critical regions in the results.

The first region is the verb window, including the auxiliary and verb until the onset of the determiner in the direct object. The second region is the post-utterance window, including one second beginning at the offset of the entire utterance. In all conditions, the results show that the participants glance at the target picture more as time goes on: the mean target advantage (looks to the target minus looks to the competitor) in the verb region is around 30%, and in the post-utterance region is around 60%. In the perfect conditions, there is a significant difference in experiments in which the participants watch a fully vs. a partially affected referent. There is a notable impact of condition during the verb window: the participants glance more at the target picture in the perfective full completion condition than in the perfective partial completion condition. During the post-utterance window, the results are more interesting. There is a one-second spike in which the participants glance more at the target picture in the perfective partial completion condition than in the perfective full completion condition. Then, the

difference gradually disappears, leaving an identical target advantage rate after that one second in both conditions. The progressive conditions show a different pattern, with no significant differences in target advantage in the verb window. In the post-utterance window, however, the participants glance more at the target picture in the progressive partial completion condition than in the progressive full completion condition.

The experiment by Kaplan et al. (2021) is inspired by the fact that English speakers sometimes accept partial completion interpretations of telic predicates with perfect verb forms. The results confirm this fact: in the perfective partial completion condition, the participants glance at the completed picture more than the picture indicating the event has not happened at all. A difference between full and partial completion conditions emerged during the verb window for perfect conditions. During the verb window involving the auxiliary and the verb, participants glance more at the fully affected referent in the full completion condition than at the partially affected referent in the partial completion condition. This means that the process of partial completion interpretation for a perfect form is not immediately finished when the verb is uttered, since participants do not prefer the partial completion picture as strongly as in the perfective full completion conditions. Participants seemed to reconsider their original interpretations in the perfective partial completion conditions within a small window of time when the sentences ended and chose the partially complete referent. There is no difference between the partial and full completion conditions starting one second after the utterance's offset, suggesting that participants eventually arrived at the intended interpretation in both. This means that participants focused equally on the partially affected referent in the partial completion conditions and on the fully affected referents in the full completion conditions after the end of the sentence. The results in the perfective conditions show that a partial completion interpretation for a perfect form requires extra processing after the utterance is finished (offline) and not at the time of the utterance of the verb (online); that is why there is a one-second spike in the rating when the sentences end. The authors suggest that the interpretation process would be pragmatic because non-culminating accomplishments in English are relatively rare. For

progressive forms, the authors state that the difference in target advantage is not significant and that the participants do not have a strong early target preference. At the end of the utterance, the participants tend to favour the partial completion picture more. This is expected since the partial completion picture can better represent an ongoing event. The authors state that the progressive conditions served as control conditions with no noticeable results.

The experiment by Kaplan et al. (2021) shows that the present perfect form in English can represent an ongoing event. Native English speakers will use this form to describe the result state of a non-culminating accomplishment. This suggests that, at least in English, the second clause of the non-culminating accomplishment can use the present perfect form.

3.5.6. Fritz-Huechante et al. (2020)

Fritz-Huechante et al. (2020) investigate the impact of an agentive interpretation of the subject on the cancellation of the state in object experiencers in Spanish and Korean transitive psychological predicates. The authors refer to verbs like annoy, bore, and frighten as transitive experiencer object verbs (EO verbs). They test the agent control hypothesis in Demirdache and Martin (2015): non-culminating accomplishment can only get a zero-change reading with an agentive causer.

The experiment includes two tests. In the first test, the authors design two separate acceptability studies, one for Spanish and one for Korean. The conditions in each study are the agentivity of the subject and the verbal aspectual type. The authors divide EO verb predicates into punctual causatives (the eventive and agentive readings of the transitive psych verbs) and inchoative state causatives (refer to the starting of the state in the experiencer (Fábregas & Marín, 2015; Marín & McNally, 2011)). They also distinguish between animate subjects and inanimate subjects in Spanish. The study about Korean roughly follows the same parameters, except that Korean has pure state causatives (they describe a property without referring to an inherent transition or

change) and inchoative state causatives (Choi, 2015). The materials in the first test are shown in the examples below:

Spanish

- inchoative state causative, animate subject
Manuel divirt-ió a Laura, pero ella no se dio cuenta y sigu-ió indiferente.
‘Manuel entertained Laura, but she didn’t realize it and remained indifferent.’
- inchoative state causative, inanimate subject
La película divirt-ió a Laura, pero ella no se dio cuenta y sigu-ió indiferente.
‘The movie entertained Laura, but she didn’t realize it and remained indifferent.’
- punctual causative, animate subject
Manuel sorprend-ió a Laura, pero ella no se dio cuenta y sigu-ió indiferente.
‘Manuel entertained Laura, but she didn’t realize it and remained indifferent.’
- punctual causative, inanimate subject
La película sorprend-ió a Laura, pero ella no se dio cuenta y sigu-ió indiferente.
‘The movie entertained Laura, but she didn’t realize it and remained indifferent.’

Korean

- pure state causative, animate subject
Mina-ka Minho-lul culkep-key hay-ess-ciman, ku-nun ku-kes-ul alachay-ci mos hay-ess-ta.
‘Mina made Minho pleased, but he didn’t realize it.’
- pure state causative, inanimate subject
ku yenghwa-ka Minho-lul culkep-key hay-ess-ciman, ku-nun ku-kes-ul alachay-ci mos hay-ess-ta.
‘The movie made Minho pleased, but he didn’t realize it.’
- inchoative state causative, animate subject
Mina-ka Minho-lul nolla-key hay-ess-ciman, ku-nun ku-kes-ul alachay-ci mos hay-ess-ta.
‘Mina made Minho get surprised, but he didn’t realize it’

- inchoative state causative, inanimate subject

ku yenghwa-ka Minho-lul nolla-key hay-ess-ciman, ku-nun ku-kes-ul alachay-ci mos hay-ess-ta.

‘The movie made Minho get surprised, but he didn’t realize it’

The materials used in the test include 10 different verbs for each verbal aspectual type, resulting in 20 verbs in Spanish and 20 verbs in Korean.

Note that the authors consider the Spanish verbs (*sorprender* ‘surprise,’ *asustar* ‘frighten,’ *impresionar* ‘impress,’ or *ofender* ‘offend’) as punctual causative verbs. However, they also admit that punctual verbs in Spanish can have a “slow motion” reading under certain circumstances. The authors argue that both inchoative state causatives and punctual causatives differ from canonical bi-eventive causative accomplishment predicates in that they lack a clear change of state component as part of the causing event, i.e., they do not refer to a process undergone by the experiencer prior to (the onset of) the state.

The Spanish and Korean studies are done separately: 32 native Spanish speakers aged from 21 to 76 (8 females, 24 males, age $M = 34,57$) participate in the Spanish study, and 32 native Korean speakers with an age range from 27 to 54 (15 females, 17 males, age $M = 36,32$) participate in the Korean study. Participants are presented with the target sentences and are instructed to estimate their well-formedness on a 1–7 Likert scale (1 = very bad, 7 = very good).

The results of the study show that zero-change readings are significantly more acceptable with animate subjects than with inanimate subjects in both languages. However, in Spanish, zero-change interpretations are more readily accepted with animate subjects than with inanimate subjects for inchoative state causatives, but less so for punctual ones. The authors suggest that Spanish punctual causative EO verbs do not belong to the class of accomplishments: they are achievements. Moreover, since achievements entail their culmination, there would be no zero-change readings, and the animacy of the subject would take no effect.

Fritz-Huechante et al. (2020) then proceed to the second test. In this test, the authors aim to examine the possibility of the verbs used in the zero-state studies to accommodate an agentive reading. The materials are shown below:

- Spanish

El cajero decid-ió molestar a Karen.

‘The cashier decided to bother Karen.’

- Korean

kwahakca-ka Cinho-lul nolla-key ha-lyeko kyelsimhay-ss-ta.

‘The scientist decided to make Cinho get surprised.’

If the acceptability of the sentence is high, it means that the verb can be used in an agentive predicate. The verbs used in the second test are the same as in the first test, and the Spanish and Korean studies are separated as before. This time, 29 Spanish native speakers (13 females, 16 males; age range: 13–62, M: 34,34) and 29 Korean native speakers (11 females, 18 males; age range: 15–65, M: 35,55) participate in the test. The authors aim to establish some correlation between the acceptability of the sentences in the first test and the acceptability of the sentences in the second test.

The results of the second test show that agentivity means obtained for those EO verbs encoding pure state causatives (Korean) and inchoative state causatives (Spanish and Korean) correlate with the acceptability of cancelling the experiential state (cf. the zero-state test). This means that a sentence using the same verb in the second test will be more acceptable if it is more acceptable in the first test, except for punctual causatives in Spanish.

The results from the experiment by Fritz-Huechante et al. (2020) indicate that there are two types of transitive psychological verbs in Spanish: punctual causative verbs and inchoative causative verbs. Although the results could mean that for this type of non-culminating accomplishment, predicates with animate subjects are more acceptable than those with inanimate subjects, the mean rating for inanimate subject conditions remains relatively high.

The experiment in Fritz-Huenchante et al. (2020) suggests that although EO verbs with inanimate subjects in zero-change readings are less acceptable, agenthood may not be a prerequisite for non-culminating readings because the mean acceptability ratings for animate subjects (3.17) and inanimate subjects (2.56) all fall somewhere in the middle of the 1-7 scale. In addition, there are potentially two types of transitive psychological verbs also in European Portuguese, and only the inchoative causative verbs can have a non-culminating reading.

3.5.7. Summary

The results of the experiments mentioned above show that languages generally have some degree of tolerance toward non-culminating accomplishments. Whether it is a Slavic, Germanic, or Romance language, native speakers consider that perfective telic accomplishments can sometimes describe an ongoing event. Although the acceptability rating varies between languages, non-culminating accomplishments seem to be a universal feature.

However, the materials used in the experiments mentioned above could only test the possibility of certain types of non-culminating accomplishment. Furthermore, the accomplishments tested in most of the experiments (Bott et al., 2024; Choi, 2015; Foppolo et al., 2021; Kaplan et al., 2021; Kashner & Hachon, 2023; Minor et al., 2023) seem to be incremental theme accomplishments, which means that the action by the agent and the effect on the theme have a one-to-one mapping. However, there are other types of non-culminating accomplishments: for example, where the action part is complete, but there are no effects on the theme, or there is no action at all. What native speakers will consider when shown those types of non-culminating accomplishments is not entirely clear. As discussed in previous sections, the subject could be an important factor in processing non-culminating accomplishments. The experiment by Fritz-Huenchante et al. (2020) appears to be the most relevant to the present study, as Spanish

and European Portuguese are closely related languages, and they investigated the animacy of the subject. However, they also tested only one type of non-culminating accomplishment: the transitive psychological verbs. In addition, the phenomenon of non-culminating accomplishments has never been systematically tested in European Portuguese, which leads to the topic of the next chapter.

3.6. Non-culminating accomplishment in European Portuguese

Before the experimental chapter, discussing some hypotheses about non-culminating accomplishments in European Portuguese is convenient.

Although, to my knowledge, there are no studies dedicated to non-culminating accomplishments in European Portuguese, there are various studies about the phenomenon in other Portuguese varieties and Romance languages, namely, Martin (2015) for French, Arche (2013) for Spanish, and Basso (2008) for Brazilian Portuguese. See examples below:

(90). Brazilian Portuguese

- a. João leu o livro hoje, mas só vai terminar amanhã.
'John read the book today, but he is only finishing it tomorrow.'
- b. João pintou o quadro a manhã inteira, mas ainda falta um pedaço.
'John painted the room all morning, but there is still a piece missing.'
- c. João construiu a casa até acabar o dinheiro da poupança.
'John built the house until he ran out of his savings'

(Basso, 2008, p. 21)

The examples in (90) show that it is possible in Brazilian Portuguese to have non-culminating accomplishments. I assume that it is also possible in European Portuguese. In the next chapter, I aim to test the process and acceptability of non-culminating accomplishments in European Portuguese, as the existing corpora (e.g., CETEMPúblico (Rocha & Santos, 2000)) do not provide sufficient valuable information to analyse non-culminating accomplishments. For the experiment, it is preferable to create a list of

sentences in European Portuguese that accurately describe the different types of non-culminating accomplishments. This way, I will be able to control the different variables at stake. However, it is important to establish some conditions in the created sentences.

3.6.1. The second clause

As discussed in section 3.3, accomplishments generally require a second clause to have a non-culminating reading. The second clause typically negates the culmination and/or the result state, expressed in two forms: either the second clause is a negating clause, or it is an affirming clause. See the examples below:

(91). Hindi

mañne aaj apnaa kek khaayaa (aur baakii Kal khaũũgaa)

‘I ate my cake today (and I will eat the remaining part tomorrow).’

(Gyarmathy & Altshuler, 2020, p. 2)

(92). French

Le service technique a réparé mon iPhone, mais il ne fonctionne toujours pas du tout.

‘The technical department repaired my iPhone, but it still isn’t working at all.’

(Martin, 2019, p. 19)

The second clause in (91) affirms that the accomplishment event did not culminate, while the second clause in (92) negates that the accomplishment event culminated. This means that there would potentially be non-culminating accomplishments in European Portuguese that contain affirming second clauses and negating second clauses.

Another problem in the second clause is the tense. As discussed in section 2.7, result states in European Portuguese typically use the verb *ser*, *estar*, and *ficar*. Let us see the three tenses in result states: *presente*, *pretérito perfeito* and *pretérito imperfeito*.

(93). European Portuguese

a. *O João corrigiu o exemplo, mas*

‘John corrected the example, but’

- b. *o exemplo não está corrigido. (presente)*
‘the example is not corrected’
- c. **o exemplo não esteve corrigido. (pretérito perfeito)*
‘the example was not corrected’
- d. *o exemplo não estava corrigido. (pretérito imperfeito)*
‘The example was not corrected’

(93c) is infelicitous because European Portuguese typically does not use *estar* or *ter* in *pretérito perfeito* to describe a result state (Oliveira, 2013), and thus it leaves only two options, (93b) and (93d).

In (93), if we want to cancel the result state of (93a) with a second clause, we need to consider the temporal features of the two tenses in (93b) and (93d). In European Portuguese, the *presente* tense describes a particular situation whose time overlaps with the speech time; when combined with stative predicates, the speech time is located inside the interval of the state. The *pretérito imperfeito* tense locates the situation in an interval that overlaps with the reference time that is before speech time. However, *pretérito imperfeito* does not entail the state ends before speech time; it only implies the state ends. (Cunha, 2004, 2013) The tense used in (93a) is *pretérito perfeito*; that is to say, the accomplishment event is located before speech time. However, we do not know (under the culminated reading) how long the result state would last. Recall that in section 2.6, some result states are temporary, and those result states could be false at speech time.

In cases like in (94), it would be problematic to use *presente* in the second clause since we want the second clause to negate the result state of the accomplishment, not inserting new events after the original accomplishment.

- (94). *O João lavou a camisa, mas a camisa não está limpa (porque a camisa caiu no chão quando ele a estava a pendurar).*
‘John washed the shirt, but the shirt isn't clean (because the shirt fell on the floor when he was hanging it).’

The second clause in (94), because it is in *presente*, allows the interpretation of “the culmination is not cancelled, but there is a new event that leads to the state at speech time”. This interpretation technically is not a non-culminating reading, so it would be better if we do not use *presente* tense in the second clause.

The second states in (93) are negating clauses. Let us see how these two tenses work in affirming clauses. See examples below:

(95). European Portuguese

- a. *O João corrigiu o exemplo, mas*
‘John corrected the example, but’
- b. *o exemplo ainda tem erros. (presente)*
‘the example still has mistakes’
- c. *o exemplo ainda tinha erros. (pretérito imperfeito)*
‘the example still had mistakes’

Similar to the negating clauses, in (95b), because the verb is in *presente*, it allows the interpretation of “the culmination is not cancelled, but there is a new event that leads to the state at speech time”. This means that if we use *presente* in the second affirming clause, there could be a reading that introduces a new event. See example below:

- (96). *O João lavou a camisa, mas a camisa ainda tem manchas (porque voltou a sujar-se).*
‘John washed the shirt, but the shirt still has stains (because he got it dirty again).’

(96) shows that the second clause introduces a new event.

From the observations above, it seems that *pretérito imperfeito* could be the better choice to use in the second clause, whether in negating the result state of an accomplishment or in affirming that the accomplishment event does not culminate.

In the second clause, sometimes we can simply add a negation adverb *não* ‘no’ to the result state with *estar* to express the negation of the result. However, in other cases, it

is better to use another verb to express the negation of the desired result. For example, in “Matilda taught Peter Russian”, we cannot follow it with “*o Pedro não estava ensinado (Peter was not taught)” in European Portuguese, but only “o Pedro não aprendeu (Peter did not learn)”. This means that for some accomplishments in European Portuguese, the result state cannot be expressed by any of the structures in section 2.7. The result states can only be described by a verb that has a causal relation with the verb in the original accomplishment. In the following subsection, I will discuss the topic of causal chains in different types of non-culminating accomplishments.

3.6.2. The causal chain

Hypothetically, there could exist four types of non-culminating accomplishments in European Portuguese according to the theory in Guéron and Vogeleer (2021) and the observations in other Romance languages (Arche, 2013; Beavers & Lee, 2020; Koenig et al., 2017; Martin & Demirdache, 2020; Minor et al., 2023). The four types are *wash* verbs, transfer verbs, transitive psychological verbs, and incomplete accomplishments. Failed attempt accomplishments are believed not to exist in Romance languages (Guéron & Vogeleer, 2021; Martin & Demirdache, 2020; Tatevosov, 2020). I assume this is also the case in European Portuguese. See examples below:

(97). European Portuguese

- a. *João lavou a camisa, mas a camisa não estava limpa.*

‘John washed the shirt, but the shirt was not clean.’

- b. *A Matilde ensinou o hino nacional ao Pedro, mas o Pedro não aprendeu nada.*

‘Matilda taught Peter the national anthem, but Pedro didn’t learn anything.’

- c. *O Luís incitou o Pedro à vingança, mas o Pedro não se sentiu incitado.*

‘Luis incited Peter to revenge, but Peter didn’t feel incited.’

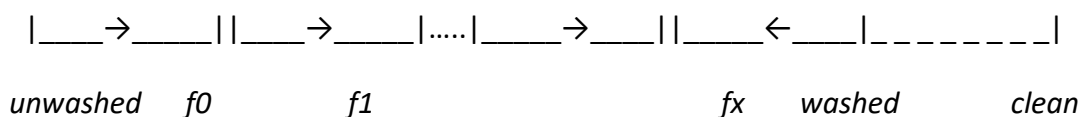
d. *O Manuel destruiu a aldeia ontem, mas a aldeia não ficou completamente destruída.*

‘Manuel destroyed the village yesterday, but the village wasn’t completely destroyed.’

The sentences in (97) illustrate the four types: *wash* verbs, transfer verbs, transitive psychological verbs, and incomplete accomplishments, respectively. If inspected closely, we can see that the second clauses in (97a), (97b), and (97c) do not negate the standard result states (*estar/ficar*). However, they all potentially describe a situation that has a causal relation with the activity part of the accomplishments in the first clauses (*lavar* → *limpa* ‘wash → clean’, *ensinar* → *aprender* ‘teach → learn’, *inciter* → *sentir* ‘incite → feel’). The second clause in (97d), on the other hand, negates the standard result state of the accomplishment (*destruir* → *destruída* ‘destroy → destroyed’).

Firstly, let us see the sentences in (97a). In section 1.4, I have discussed the possibility of accomplishments with verbs like *wash* to involve the notion of maximality. That is to say, the result does not have to reach the desired degree for the accomplishment to be true. In European Portuguese, verbs like *lavar* behave the same as the English verb *wash*. In (97a), “*O João lavou a camisa* (John washed the shirt)” is true, “*a camisa estava lavada* (the shirt was washed)” is also true; however, the desired degree of “*a camisa estava limpa* (the shirt was clean)” could be false. To be more precise, let us see the illustration of the causal relation in “*lavar a camisa* (wash the shirt).” See the illustration below:

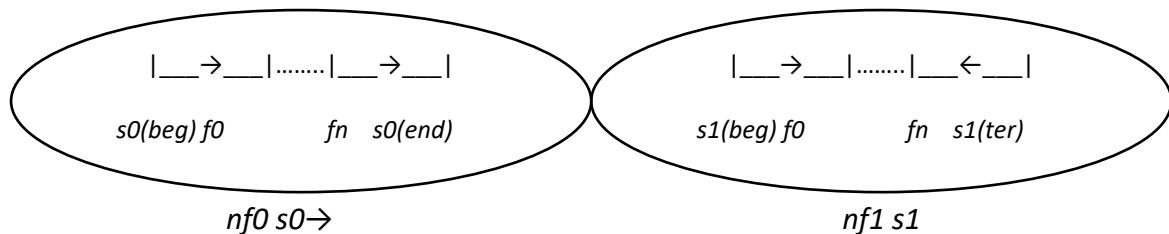
Figure 3-9- Force in “*lavar a camisa* (wash the shirt)”



As we can see in Figure 3-9, the shirt would be considered “*lavada* (washed)” when the washing activity stopped (when the opposing force is stronger than the force of the agent/causer).

Now, let us examine (97b) and (97c). These cases differ from (97a) because they introduce another causal relation in the second clause, “*O Pedro aprendeu o hino nacional* (Peter learned the national anthem)” is an event on its own. In section 3.2, I have suggested that specific accomplishments include a causal chain containing at least two causal relations: the activity of the agent/causer contains one causal relation, and the activity of the patient contains another causal relation. It seems that (97b) and (97c) could be represented in this manner. The causal chain in (97b) and (97c) can be illustrated below:

Figure 3-10- Representation of the event in (97b) and (97c)



In Figure 3-10, $s0$ would represent the first causal relation in the accomplishment; $s1$ would represent the second one. Using (97c) as an example, the first clause “*O Luís incitou o Pedro à vingança* (Luis incited Peter to revenge)” marks the beginning of $s0$ to the end of $s0$. Then, the situation would enter the following causal relation in the causal chain, represented by $s1$. However, the whole situation of $s1$ could not come to fruition because of the second clause. In this case, the suppression (the arrow toward left) of the force of the agent/cause by the opposing force could happen as soon as $s1$ begins or in the middle of $s1$. For example, we could say that “*o Peter nem sequer começou a sentir-se incitado* (Peter didn’t even begin to feel incited)” or “*o Peter começou a sentir-se incitado, mas esse sentimento desvaneceu-se* (Peter started to feel excited, but that feeling subsided)”. The same goes for (97b): we can say that “*o Pedro não aprendeu nada* (Peter learned nothing)” or “*o Pedro só aprendeu parte do hino nacional* (Peter only learned part of the national anthem).”

Finally, (97d) represents a case of granularity shift. I hypothesised in section 3.2 that the causal relation in these accomplishments includes repeated forces affecting unique

objects. In (97d), the denotation of the DP in the second clause is not the same as in the first clause. Thus, the negation would not generate a contradiction. In these cases, European Portuguese should behave similarly to other languages.

3.6.3. The intention of subjects

Guéron and Vogeleer (2021) suggest that three types of non-culminating accomplishments require intentional subjects: *wash* verbs, transfer verbs, and transitive psychological verbs. Demirdache and Martin (2015) also suggest that non-culminating accomplishments need agentive subjects to have the zero-change reading. However, it does not seem to apply to European Portuguese. See examples below:

(98). *O João lavou a camisa, mas a camisa não estava limpa.*

‘John washed the shirt, but the shirt was not clean.’

(99). *A chuva lavou a camisa, mas a camisa não estava limpa.*

‘The rain washed the shirt, but the shirt was not clean.’

The non-culminating accomplishments in (98) and (99) seem equally acceptable. However, this needs to be verified in chapter 4. Folli and Harley (2008) suggest that causers (inanimate, non-intentional) may also trigger the initiation of an event but do not exercise control over its unfolding. This perspective differs from that of Guéron and Vogeleer (2021), in which the authors suggest that only an intentional subject could lead to the onset of the activity. The theory of Folli and Harley (2008) could address the problem in (98) and (99). The causer “*a chuva* (the rain)” initiates the washing event, and then the progress is controlled by the speaker. Since the speaker inserts the second clause that specifies the progress of the activity did not reach the desired result, the sentences in (99) could be acceptable.

3.6.4. Summary

In this section, I have discussed the potential features of non-culminating accomplishments in European Portuguese. Firstly, the second clause of a non-culminating accomplishment could be in *pretérito perfeito* or *pretérito imperfeito*. Secondly, not all second clauses in non-culminating accomplishment use the standard

form of result states (*estar, ficar, ser*); specific second clauses use different verbs that have a causal relation with the main verb in the accomplishment (*ensinar* → *aprender* ‘teach → learn’). Thirdly, there are potentially four types of non-culminating accomplishments in European Portuguese. Finally, the intentional subject may not be a requirement for non-culminating accomplishments in European Portuguese. Considering these features, a list of sentences of non-culminating accomplishments in European Portuguese was created for the experiment described in chapter 4.

3.7. Conclusion

In this chapter, I have discussed the phenomenon of non-culminating accomplishments. Firstly, I have discussed two important theoretical backgrounds frequently mentioned in theories concerning non-culminating accomplishments. In Section 3.1, I have discussed causation and presented various causation theories from the literature, including those by Lewis (1973), Kistler (2007), Reichenbach (1956), Talmy (1988), and Wolff (2014), among others. I have compared their insights with linguistic data concerning non-culminating accomplishments. To study non-culminating accomplishments - the events that include a causal relation without the presence of the effect - it is necessary to understand the nature of the causal relation itself. For this purpose, I have discussed phenomena like defeasibility and abstract causation in causation theories. In addition, I have incorporated the type/token theory in ontology and the force theory in philosophy to address the problems that are important for the study of non-culminating accomplishments. Furthermore, theories of causation have shown that causal relations should not be considered simply primitive, as the relation can be further decomposed, and various types of causal relations could exist.

In section 3.2, I have discussed maximality. I have presented some theories that address the phenomenon, including those by Altshuler (2014), Koenig and Muansuwan (2000), Rappaport and Hovav (2008), and Martin (2019). I have discussed the strengths and weaknesses of each theory. In addition, following Copley and Harley (2014), I have employed the force theory in causation to address the problems of other maximality

theories. In 3.2.3. and 3.2.4., I have proposed a new approach to maximality. I used the force theory instead of the counterfactual causation theory to represent maximality, and I have provided an explanation and illustration of maximality in two types of languages. I enhanced the speaker's role in choosing the causal chain to account for different scenarios of non-culminated and culminated readings. I hypothesise that the maximal reading of languages with weak perfective operators comes from the speaker's choice of the components in the net forces. The maximal reading of languages with strong perfective operators comes from the granularity shift operation, which could only happen if the speaker considers the forces affecting unique objects in the net force are not repeating forces.

In sections 3.3.1 to 3.3.5, I present five different theories from the literature on non-culminating accomplishments: Tatevosov (2008) in section 3.3.1, Wright (2014) in section 3.3.2, Martin (2019) in section 3.3.3, Gyarmathy and Altshuler (2020) in section 3.3.4, and Guéron and Vogeleer (2021) in section 3.3.5. In section 3.4, I have discussed some of the important points from previous sections and attempted to address some of the problems in the theories mentioned above. I have demonstrated that the theory presented in Guéron and Vogeleer (2021) is most suitable for the current study's psycholinguistic tasks and that the intentionality feature in Guéron and Vogeleer (2021) aligns with the discussion in causation theories. Furthermore, I have also considered the nature of culminating/non-culminating inferences in section 3.4. Although the discussion does not reach a conclusion, it will help interpret some of the results of the psycholinguistic tasks presented in chapter four. Section 3.5 is dedicated to prior psycholinguistic experiments in other languages that are relevant to the present study. The language includes English, Russian, Spanish, Italian, and German. Although there are no experiments for European Portuguese, other Romance languages that I assume share similarities with it. In section 3.6, I discussed the potential features of non-culminating accomplishments in European Portuguese, which led to the creation of a list of sentences of non-culminating accomplishments. The features of non-culminating accomplishments are to be tested in the next chapter.

4. The Experiment

In this chapter, I will report on the results of an experiment involving the judgments of native European Portuguese speakers regarding the grammaticality/ungrammaticality of non-culminating accomplishments (NCA). Five types of non-culminating accomplishments in Guéron and Vogeleer (2021) are tested, including (i) NCA with *wash* verbs, (ii) NCA with transfer verbs, (iii) NCA with transitive psychological verbs, (iv) incomplete accomplishments, and (v) failed attempt accomplishments. The experiment is conducted in the form of a self-paced reading task followed by an offline judgment task. This experiment aims to determine if native speakers of European Portuguese judge non-culminating accomplishments as acceptable and if there are differences in processing time between conditions.

As discussed in chapter three, the state of accomplishments can be divided into two categories: the effect on the agent/causer (the agent has performed the action) and the effect on the theme/causee (the theme is affected). In the standard view, the culmination inference of accomplishments leads to both effects. However, in a non-culmination interpretation, there could be no effect on the causee or no effect on both the causer and the causee. In addition, the existence of non-culminating accomplishments could potentially mean that the result states of specific accomplishments are cancellable in European Portuguese. Thus, an experiment is necessary for the present study in European Portuguese to better understand the result states of accomplishments. The motivation for the psycholinguistic experiments is as follows: firstly, it is unclear whether native speakers of European Portuguese accept non-culminating accomplishments. Secondly, there is a difference between the effect on the causer and the effect on the cause in the result state of an accomplishment; thus, there are multiple types of non-culminating accomplishment with different predicates and different negating clauses. It is necessary to test native speakers' intuitions toward all types of non-culminating accomplishments rather than only one, as in previous experiments. Thirdly, subjects could play an important role in certain non-culminating

accomplishment structures in other languages; therefore, an experiment is needed to test the potential similarities and differences between European Portuguese and these other languages studied in the literature.

This chapter includes four sections. Section 4.1 lays out the research questions. In section 4.2, I will discuss the methods used in the experiment, including participants, materials, procedures, and data analysis. Section 4.3 will discuss the results of the experiment. Section 4.4 is the conclusion of this chapter.

4.1. Research questions

The research questions that are explored in the experiment are as follows:

- Are non-culminating accomplishments acceptable for native speakers in European Portuguese?
- Which type of non-culminating accomplishment exists in European Portuguese?
- Are intentional subjects a requirement for non-culminating readings?
- Could different forms of the second clause affect the acceptability and processing of non-culminating accomplishments?
- Are there any difficulties when processing different types of non-culminating accomplishments?

These questions are investigated using a self-paced reading experiment, and participants are asked to rate the acceptability of each sentence. The non-culminating accomplishments used in the experiment include five types of non-culminating accomplishments, as identified by Guéron and Vogeleer (2021). The existence of each type in European Portuguese can be represented by the acceptability rating, which varies depending on whether the rating is high or low. The third research question can be answered by another parameter in the experiment, which is the intentional and non-intentional subject condition. This question also depends on the acceptability rating of each condition. In the five types of non-culminating accomplishments, some of the negating can be further modified to negate the effect on the causer or negate the effect on the cause. Furthermore, the degree of cancellation in the negating clause is also a

parameter in certain types of non-culminating accomplishment tested here. Finally, the last question is answered by comparing the reading time of participants in each region. In this study, I employed a self-paced reading task in conjunction with an offline judgment task to investigate the intuition of native speakers of European Portuguese regarding the phenomenon of non-culminating accomplishment. The combined result of an online task and an offline task would yield a more precise result, indicating whether native speakers consider the non-culminating accomplishment a grammatical structure. I hypothesise that if certain conditions are ungrammatical, there would be a processing difficulty in the online task, and the response to the offline task would be negative. On the other hand, if certain conditions are grammatical, then there would be no processing difficulties in the online task and the response to the offline task would be positive. Also, we expect the processing difficulty to be in the region of the negating clause. This is because our items are constructed as sentences of two clauses: the first is the accomplishment, which is perfectly grammatical on its own, and the second is a negating clause. If the sentence is considered ungrammatical, that means the problem would be the negating clause. I assume that in this case, the negating clause would be contradicting the first one, leading to processing difficulties.

4.2. Methods

This section will show the participants, materials and procedures of the experiment.

4.2.1. Participants

The study focuses on adult native speakers of European Portuguese. Sixty-one native European Portuguese speakers participated in the experiment. The mean age of the participants is 20,5, including 49 female and 12 male participants, 48 of them are university graduates, 2 of them are undergraduate students, and 1 is a master's graduate. All participants had normal or corrected-to-normal vision. Informed consent was obtained from all participants prior to participation. Participation was voluntary, and no compensation was offered. All participants came from Portugal and declared that European Portuguese was their primary language from birth (L1). Participants took

part in the experiment using their own computers via the internet in a self-paced reading paradigm designed by the researcher, utilising the Penn Controller for Ixex (Zehr & Schwarz, 2018). The data is collected between July and October 2024.

4.2.2. Materials

The items in the experiment were constructed in five main conditions following the five types of non-culminating accomplishment in Guéron and Vogelee (2021), see Appendix 1 for a complete list of the experiment items. The first condition is called *wash verbs*; there are five main verbs in this condition: *lavar* (wash), *tratar* (treat), *agitar* (stir), *varrer* (sweep), and *amassar* (knead). For each verb, two types of subjects are utilised: one is the intentional type, and the other is the non-intentional type. I used animate subjects (John, Michael) to represent intentionality, and inanimate subjects (the wind, the fire) or abstract concepts (parenthood, tax reduction) to represent the non-intentional type. In addition, there are three types of negating clauses used in *wash verb* condition, one negating the culmination using the past participle of the verb in the *Pretérito* form, another negating the desired result state of the event in the *Pretérito* form and the final one affirming the existence of the incomplete part of the event⁸⁴. This means that we have 30 items in the first condition. For the purpose of a self-paced reading task, each sentence is segmented into regions of interest for moving window presentation as follows: ROI-1 subject phrase, ROI-2 verb, ROI-3 object phrase 1, ROI-4 conjunction, ROI-5 subject phrase 2, ROI-6 negation adverb, ROI-7 verb 2, and ROI-8 adjective. Additionally, a spillover region, ROI-9, was added to obtain a cleaner reading time for ROI-8. ROI-9 is always a sentence adverb *infelizmente* (unfortunately) or *felizmente* (fortunately); this region is not of interest and does not interfere with the meaning of non-culminating accomplishment and should not affect acceptability.

⁸⁴ The typology in Guéron and Vogelee (2021) does not include the two non-culminating readings in the ontological types (wash, transfer and psych). It makes sense to divide them here in the experiment in the present study. The item with the negation of the culmination would have a failed attempt (zero-change) reading, and the item with the affirmation of the existence of the incomplete part of the event/negation of the desired result state of the event would have an incomplete (partial-change) reading.

An example of sentences using the verb *lavar* is shown below:

First condition, verb *lavar* (wash):

- Intentional subject + negating culmination:

O_João/ lavou/ a_camisa, / mas/ a_camisa/
John| wash-3SG-PRET| the shirt, | but| the shirt|
ainda_não/ estava/ lavada, / infelizmente.
still_NEG| be-3SG-IMP| wash-PPRT| unfortunately.
'John washed the shirt, but the shirt was still not washed, unfortunately'

- Intentional subject + negating desired result:

O_João/ lavou/ a_camisa, / mas/ a_camisa/
John| wash-3SG-PRET| the shirt, | but| the shirt|
ainda_não/ estava/ limpa, / infelizmente.
still_NEG| be-3SG-IMP| clean| unfortunately.
'John washed the shirt, but the shirt was still not clean, unfortunately'

- Intentional subject + affirming incompletion:

O_João/ lavou/ a_camisa, / mas/ a_camisa/
John| wash-3SG-PRET| the shirt, | but| the shirt|
ainda/ tinha/ manchas, / infelizmente.
still| have-3SG-IMP| stains, | unfortunately.
'John washed the shirt, but the shirt still had stains, unfortunately'

- Non-intentional subject + negating culmination:

A_chuva/ lavou/ a_camisa, / mas/ a_camisa/
the rain| wash-3SG-PRET| the shirt, | but| the shirt|
ainda_não/ estava/ lavada, / infelizmente.
still_NEG| be-3SG-IMP| wash-PPRT| unfortunately.
'The rain washed the shirt, but the shirt was still not washed, unfortunately'

- Non-intentional subject + negating desired result:

A_chuva/ lavou/ a_camisa, / mas/ a_camisa/

the rain| wash-3SG-PRET| the shirt, | but| the shirt|
ainda_não| estava| limpa, | infelizmente.
 still_NEG| be-3SG-IMP| clean| unfortunately.
 ‘The rain washed the shirt, but the shirt was still not clean, unfortunately’

- Non-intentional subject + affirming incompleteness:

A_chuva| lavou| a_camisa, | mas| a_camisa|
 the rain| wash-3SG-PRET| the shirt, | but| the shirt|
ainda| tinha| manchas, | infelizmente.
 still| have-3SG-IMP| stains, | unfortunately.
 ‘The rain washed the shirt, but the shirt still had stains, unfortunately’

In the examples, words in the same region are connected with an underscore, and different regions are divided by vertical lines.

The second condition is called *transfer verbs*; there are eight main verbs in this condition: *ensinar* (teach), *explicar* (explain), *mostrar* (show), *oferecer* (offer), *atribuir* (assign), *dar* (give), *fornecer* (supply), and *devolver* (return). Like the previous condition, two types of subjects are utilised for each verb: the intentional type and the non-intentional type. In addition, there are two types of negating clauses used in the *transfer verb* condition: one negating all of the desired outcome on the patient using a verb in the *Pretérito* form that describes the action of the patient, and another affirming that the desired outcome on the patient only partially appeared. We have a total of 32 items in the second condition. Each sentence is segmented into nine regions; however, the arrangements are slightly different due to the unique structure of this type of non-culminating accomplishment. The regions are as follows: ROI-1 subject phrase, ROI-2 verb, ROI-3 object phrase, ROI-4 prepositional phrase, ROI-5 conjunction, ROI-6 subject phrase 2, ROI-7 negated verb phrase 2, and ROI-8 object phrase 2. The spillover region ROI-9 is always a sentence adverb *infelizmente* (unfortunately) or *felizmente* (fortunately).

An example of sentences using the verb *ensinar* (teach) is shown below:

Second condition, verb *ensinar* (teach):

- Intentional subject + negating desired result:

A_Matilde/ ensinou/ o_hino_nacinal/ ao_Pedro, | mas/

Matilda | taught | the national anthem | to Pedro, | but |

o_Pedro/ não_aprendeu/ nada, | infelizmente.

Pedro | NEG.learn.3SG.PRET | nothing, | unfortunately.

‘Matilda taught Pedro the national anthem, but Pedro didn’t learn anything, unfortunately’

- Intentional subject + affirming partial result:

A_Matilde/ ensinou/ o_hino_nacinal/ ao_Pedro, | mas/

Matilda | taught | the national anthem | to Pedro, | but |

o_Pedro/ só_aprendeu/ parte, | infelizmente.

Pedro | only learn.3SG.PRET | part, | unfortunately.

‘Matilda taught Pedro the national anthem, but Pedro only learned it partially, unfortunately’

- Non-intentional subject + negating desired result:

A_vida_militar/ ensinou/ o_hino_nacinal/ ao_Pedro, | mas/

military life | taught | the national anthem | to Pedro, | but |

o_Pedro/ não_aprendeu/ nada, | infelizmente.

Pedro | NEG.learn.3SG.PRET | nothing, | unfortunately.

‘Military life taught Pedro the national anthem, but Pedro didn’t learn anything, unfortunately’

- Non-intentional subject + affirming partial result:

A_vida_militar/ ensinou/ o_hino_nacinal/ ao_Pedro, | mas/

military life | taught | the national anthem | to Pedro, | but |

o_Pedro/ só_aprendeu/ parte, | infelizmente.

Pedro | only learn.3SG.PRET | part, | unfortunately.

‘Military life taught Pedro the national anthem, but Pedro only learned partially, unfortunately’

The third condition is called the transitive psychological verbs, psych verbs condition in short. There are a total of thirteen main verbs in this condition: *incitar* (incite), *encorajar* (encourage), *tranquilizar* (reassure), *entediar* (bore), *assustar* (frighten), *maravilhar* (amaze), *irritar* (irritate), *desapontar* (disappoint), *surpreender* (surprise), *emocionar* (thrill), *provocar* (provoke), and *acalmar* (calm).

Like the previous condition, two types of subjects are utilized for each verb: the intentional type and the non-intentional type. In addition, two types of negating clauses are used in the transfer verb condition. However, unlike the second condition, both negate all of the desired outcomes, one using the past participle of the main verb and the other using a similar adjective/adverbial phrase, but without any morphological relation with the main verb. We have a total of 52 items in the third condition. Again, each sentence is segmented into nine regions. The regions are as follows: ROI-1 subject phrase, ROI-2 verb, ROI-3 object phrase, ROI-4 preposition phrase, ROI-5 conjunction, ROI-6 subject phrase 2, ROI-7 negated verb phrase 2, and ROI-8 adjective. The spillover region ROI-9 is always a sentence adverb *infelizmente* (unfortunately) or *felizmente* (fortunately). ROI-7 is always the verb phrase *não se sentiu* (didn’t feel).

An example of sentences using the verb *encorajar* (encourage) is shown below:

Third condition, verb *encorajar* (encourage):

- Intentional subject + participle:

<i>A_Camila/</i>	<i>encorajou/</i>	<i>o_Pedro</i>	<i>a_inscriver-se</i>
Camila	encourage. 3SG. PRET	Peter	to inscribe.R
<i>em</i>	<i>Turismo, /</i>	<i>mas/</i>	<i>o_Pedro</i>
in	tourism	but	Peter
<i>encorajado, /</i>	<i>infelizmente.</i>	<i>não</i>	<i>se_sentiu/</i>
encourage.PPRT	unfortunately.	NEG	R. feel. 3SG. PRET

‘Camila encouraged Peter to sign up for tourism, but Peter didn’t feel encouraged, unfortunately’

- Intentional subject + adjective/adverbial phrase:

<i>A_Camila/</i>	<i>encorajou/</i>	<i>o_Pedro</i>	<i>a_inscriver-se</i>
Camila	encourage. 3SG. PRET	Peter	to inscribe.R
<i>em Turismo, /</i>	<i>mas/</i>	<i>o_Pedro</i>	<i>não se_sentiu/</i>
in tourism	but Peter	NEG	R. feel. 3SG. PRET
<i>com_vontade, /</i>	<i>infelizmente.</i>		
with desire	unfortunately.		

‘Camila encouraged Peter to sign up for tourism, but Peter didn’t feel like it, unfortunately’

- Non-intentional subject + participle:

<i>A_viagem/</i>	<i>encorajou/</i>	<i>o_Pedro</i>	<i>a_inscriver-se</i>
the trip	encourage. 3SG. PRET	Peter	to inscribe.R
<i>em Turismo, /</i>	<i>mas/</i>	<i>o_Pedro</i>	<i>não se_sentiu/</i>
in tourism	but Peter	NEG	R. feel. 3SG. PRET
<i>encorajado, /</i>	<i>infelizmente.</i>		
encourage.PPRT	unfortunately.		

‘The trip encouraged Peter to sign up for tourism, but Peter didn’t feel encouraged, unfortunately’

- Non-intentional subject + adjective/adverbial phrase:

<i>A_viagem/</i>	<i>encorajou/</i>	<i>o_Pedro</i>	<i>a_inscriver-se</i>
the trip	encourage. 3SG. PRET	Peter	to inscribe.R
<i>em Turismo, /</i>	<i>mas/</i>	<i>o_Pedro</i>	<i>não se_sentiu/</i>
in tourism	but Peter	NEG	R. feel. 3SG. PRET
<i>com_vontade, /</i>	<i>infelizmente.</i>		
with desire	unfortunately.		

‘The trip encouraged Peter to sign up for tourism, but Peter didn’t feel like it, unfortunately’

The fourth condition is called incomplete accomplishments, or “incomplete” in short. The choice of verbs is not as specific as the first three conditions: the only requirement is that the accomplishments are incremental. There are six main verbs in this condition: *pintar* (paint), *lavar* (plow), *destruir* (destroy), *montar* (assemble), *descascar* (peel), and *derreter* (melt). Like other conditions, two types of subjects are used for each verb: the intentional type and the non-intentional type. There are no further parameters in this condition because the negating clause of this particular type of non-culminating accomplishment is fixed to some extent. The negation is always “effect on the theme + not completely”. Again, each sentence is segmented into nine regions. The regions are as follows: ROI-1 subject phrase, ROI-2 verb, ROI-3 object phrase, ROI-4 filler region, ROI-5 conjunction, ROI-6 subject phrase 2, ROI-7 negated verb phrase 2, ROI-8 adverbial, and ROI-9 adjective. The filler region is always a temporal statement “ontem (yesterday)”, and it is located in ROI-4 because I want a more uniformed length in each clause, i.e., to maintain the fact that the first clause in each condition is roughly the same length (all have four regions) and that the second clause in each condition is also roughly the same length (all have five regions). The manipulation of the length of the sentence is because I hypothesise that the major reading difficulty would come from the second clause. To compare the reading time between conditions, the participants (theoretically) should finish reading the first clause and begin reading the second clause at the same time in each condition.

An example of sentences using the verb *derreter* (melt) is shown below:

Fourth condition, verb *derreter* (melt):

- Intentional subject:

<i>O_João </i>	<i>derreteu </i>	<i>o_gelo </i>	<i>ontem, </i>
John	melt.3SG.PRET	the ice	yesterday
<i>mas o_gelo </i>	<i>não estava </i>	<i>completamente </i>	
but the ice	NEG be.3SG.IMP	completely	
<i>derretido.</i>			

melt.PPRT

‘John melted the ice yesterday, but the ice wasn't completely melted’

- Non-intentional subject:

<i>O_fogo/</i>	<i>derreteu/</i>	<i>o_gelo/</i>	<i>ontem, /</i>
the fire	melt.3SG.PRET	the ice	yesterday

<i>mas/</i>	<i>o_gelo/</i>	<i>não estava/</i>	<i>completamente/</i>

but	the ice	NEG	be.3SG.IMP	completely

derretido.

melt.PPRT

‘The fire melted the ice yesterday, but the ice wasn't completely melted’

The fifth and final condition is the failed attempt accomplishment, or “failed” in short. I attempted to replicate the structure of failed attempts in languages that use it, namely, they typically employ forms of the main verb in the negating clause. In the present study of Portuguese, I use the past participle of the main verb in the negating clause to represent the cancellation of the lexical meaning of the main verb in the event. In addition, I have used sentences that are translations of existing failed attempts in other languages, like Chinese or Hindi. This is because I want to ensure that the specific meanings of certain predicates do not influence the acceptability of failed attempt accomplishments. Like the incomplete accomplishment conditions, for each verb, two types of subjects are utilised: the intentional type, and the non-intentional type. There are no further parameters in this condition. There are seven main verbs used in this condition, giving us a total of 14 items. The verbs are: *matar* (kill), *fechar* (close), *partir* (break), *abrir* (open), *envenenar* (poison), *queimar* (burn) and *enterrar* (bury). Sentences in this condition are also divided into nine regions, including ROI-1 subject phrase, ROI-2 verb, ROI-3 object phrase, ROI-4 filler region, ROI-5 conjunction, ROI-6 subject phrase 2, ROI-7 negated verb phrase 2, ROI-8 adverbial, and ROI-9 filler region 2. As mentioned in previous conditions, the filler regions serve the purpose of manipulating the length of each condition. In this case, we had to add two filler regions to match the overall length of the sentences, including the first and second clauses. Like

the incomplete condition, ROI-4 is always “*ontem* (yesterday)”. However, unlike the first three conditions, the last region, ROI-9 filler region 2, is not always “*infelizmente* (unfortunately)”, but a combination of “*infelizmente* (unfortunately)” and “*felizmente* (fortunately)”. This is because in some accomplishments, such as “John killed Peter”, adding a negating clause describes a scenario where Peter was not dead. In this scenario, it would be strange to say that the event is unfortunate. To avoid this possible interpretation affecting the acceptability judgment of the non-culminating accomplishment, I changed the filler region to match the event description. In this manner, we would eliminate the possibility that a participant selects the acceptability judgement negatively because they find the ROI-9 contradictory to the event, which is undesirable in the present study.

An example of sentences using the verb “*queimar*” (burn) is shown below:

Fifth condition, verb “*queimar*” (burn):

- Intentional subject:

<i>O_João/</i>	<i>queimou/</i>	<i>o_livro/</i>	<i>ontem, /</i>	<i>mas/</i>
John	burn.3SG.PRET	the book	yesterday,	but
<i>o_livro/</i>	<i>não_estava/</i>	<i>queimado, /</i>	<i>felizmente.</i>	
the book	NEG be.3SG.IMP	burn.PPRT	fortunately.	

‘John burned the book yesterday, but the book wasn’t burnt, fortunately’

- Non-intentional subject:

<i>O_fogo/</i>	<i>queimou/</i>	<i>o_livro/</i>	<i>ontem, /</i>	<i>mas/</i>
the fire	burn.3SG.PRET	the book	yesterday,	but
<i>o_livro/</i>	<i>não_estava/</i>	<i>queimado, /</i>	<i>felizmente.</i>	
the book	NEG be.3SG.IMP	burn.PPRT	fortunately.	

‘The fire burned the book yesterday, but the book wasn’t burnt, fortunately’

An identical parameter in the first clause of all the items is the subject's intentionality. For each verb, I constructed at least two sentences: one with an intentional subject and the other with an unintentional one. The design is shown below:

Table 4-1- Parameter in the first clause

First clause	
Intentional subject	Non-intentional subject

The decision for this design is based on our desire to highlight the possibility that the subject's intentionality affects the acceptability of non-culminating accomplishments. In addition, I aim to test the theories presented in Guéron and Vogeleer (2021) that intentionality is a requirement for non-culminating reading in the majority of non-culminating accomplishments, as well as the Agent Control Hypothesis in Demirdache and Martin (2015) to some extent. However, our choice to represent a non-intentional subject is more complicated. According to Guéron and Vogeleer (2021), the non-intentionality can be represented in two ways: one is a non-animated non-agentive subject like “the water” or “the fire”, the other is an animated subject with an adverbial that modifies specifically the intentionality of the subject, like “John accidentally did something”. Although the second method of representing non-intentional subjects could make a more explicit distinction between intentional and non-intentional subjects, and this distinction would not be based on agentivity, I ultimately used the first method. That is because our primary goal is to test the acceptability of non-culminating accomplishments in European Portuguese, which means that we want our items to be as straightforward as possible, in the structure of “John did something, but the thing is not done”. I want the first clause in our items to be an accomplishment without any specific context or additional information, to maintain the processing time at the most basic level and avoid the possibility of distraction from further processing during the first clause. That is to say, I want the participants to have the most basic interpretation of the accomplishment event after they finish the first clause. If we used the second method of representing non-intentional subjects, we would run into several problems. Firstly, the adverbial modifier “*acidentalmente* (accidentally)” has too many syllables for us to be freely added in a region. Comparing “John” and “John accidentally”, the latter

would undoubtedly require more processing time. Then it would be difficult for us to understand whether this difference in processing time is due to the subject's non-intentionality or simply caused by the increased length of the region. Secondly, suppose we try to avoid the reading time problem and also add an adverbial modifier to the base accomplishment, like “*O João intencionalmente* (John intentionally)” vs. “*O João acidentalmente* (John accidentally)”. In that case, it will lead to another problem. Some verbs in European Portuguese that I used in this study appear to have intentionality lexically encoded when used with an animated subject. See example (1):

(1).

- a. *O Miguel tratou o doente ontem.*
‘Miguel treated the patient yesterday’
- b. *? O Miguel intencionalmente tratou o doente ontem.*
‘? Miguel intentionally treated the patient yesterday’
- c. *? O Miguel acidentalmente tratou o doente ontem.*
‘? Miguel accidentally treated the patient yesterday’

According to some consulted Portuguese native speakers, when using a human subject, the verb “*tratar* (treat)” would already have the intentionality (of the subject) feature on its own. When adding another adverbial modifier, the sentences in (1b) and (1c) would sound a little strange or redundant without further context. Then, the participants' judgment can be influenced by this part of the first clause, which can alter the overall acceptability rate for non-culminating accomplishments. In addition, as mentioned before, there could be processes beyond the normal accomplishment reading in (1a) compared to the modified accomplishments (1b) and (1c), since the latter two sentences introduce another variable into the field, which is not in the scope of the present study. To have a more precise result of the judgment for the acceptability of non-culminating accomplishments in European Portuguese, it is better if we avoid such distractions.

In this case, I used unanimated subjects to represent the non-intentionality of the subject, like “*o fogo* (the fire)”, “*o vento* (the wind)”, or “*a vida* (the life)”. I also try to

avoid unanimated subjects with metaphorical uses or that can be related to animated subjects, like “*a empresa* (the company)” or “*a chamada* (the phone call)”. This is because these subjects can involve human agents: the company may have human agents operating them, and the phone call may have human agents speaking. The company or the phone call may not have an intention. However, there is a possibility that the participants consider that the human agent behind such subjects may have their intention indirectly included in the event. To prevent this possible interpretation, I only use inanimate subjects that do not have intentions themselves and do not have any possible intentional agents behind them.

Since I only want to test the acceptability of non-culminating accomplishments, not the base accomplishment itself, I constructed the base accomplishments in all items as naturally as possible. This means I want the first clause in all the items to be judged as perfectly acceptable by the participants. In the intentional subject part, I used human agents as subjects. However, in the non-intentional subject part, the choice of subject is more difficult because, at the same time, we need to consider the length of the region and whether the subject can be related to an intentional agent. See example (2):

(2).

a. Intentional:

O João/ lavrou o campo ontem, mas o campo não ficou completamente lavrado.

‘John plowed the field yesterday, but the field wasn't completely plowed’

b. Intentional/ non-intentional:

O arado/ lavrou o campo ontem, mas o campo não ficou completamente lavrado.

‘The plough plowed the field yesterday, but the field wasn't completely plowed’

c. Non-intentional:

A passagem dos búfalos/ lavrou o campo ontem, mas o campo não ficou completamente lavrado.

'The buffalo's passage plowed the field yesterday, but the field wasn't completely plowed'

(2a) is used as an intentional subject item in the incomplete condition. If we wanted to maintain the length of the first region, which is "*o João* (John)" in (2a), we would use (2b) as the non-intentional counterpart. However, the subject in (2b) "*o arado* (the plough)" is a farming tool used by a human agent; I assume that the intention of the human agent would transfer through the subject, making the intentionality of the subject in the event imprecise. That is to say, there is the possibility that the participants consider the subject "*o arado* (the plough)" as an intentional subject. In (2c), when using the unambiguous subject "*A passagem dos búfalos* (the buffalo's passage)", the problem of including a human agent would be solved. However, another problem would arise: the length of the region. Comparing the first subject region in (2a) and (2c), the difference between them is noticeable, which is undesirable for our self-paced reading task, as the significant length difference in the region will be reflected in reading time differences. However, in cases like this, I could not find a proper way to shrink the size of the region without making it sound strange. That is why we have several non-intentional items with a longer first region. In these cases, I prioritised the authenticity of the event in the first clause (the accomplishment to be always perfectly acceptable) and the unambiguousness of the subject (the subject to always have the intentional interpretation in the intentional type and to always have the non-intentional interpretation in the non-intentional type). This is because these two features can affect our result in a more damaging way than the length of the region. As for the length of the region, I attempted to maintain consistency with the intentional subject, as seen in (2a) "*O João* (John)", by making the non-intentional subject as short as possible. However, this is simply impossible without affecting the two features mentioned above. To maintain the authenticity of the first clause, I use (2c) as the non-intentional subject item in this case.

There are several cases like this one, not only in the region of the subject, but in other regions in the first clause. For example, in psych conditions, some sentences do not sound natural if we force the structure of the first clause to be identical to other sentences. See example (3):

(3).

a. *Tranquilizar* + intentional + participle

O Afonso tranquilizou o Pedro| ontem, | mas o Pedro não se sentiu tranquilizado, infelizmente.

‘Afonso reassured Pedro yesterday, but Pedro didn't feel reassured, unfortunately’

b. ? *Encorajar* + intentional + participle

? *A Camila encorajou o Pedro| ontem, | mas o Pedro não se sentiu encorajado, infelizmente.*

? ‘Camila encouraged Pedro yesterday, but Pedro didn't feel encouraged, unfortunately’

c. *Encorajar* + intentional + participle

A Camila encorajou o Pedro| a inscrever-se em Turismo, | mas o Pedro não se sentiu encorajado, infelizmente.

‘Camila encouraged Pedro to sign up for Tourism, but Pedro didn't feel encouraged, unfortunately’

(3a) is the structure of the intentional subject + participle item in the psych condition that I aim to maintain in this condition. (3a) sounds natural in European Portuguese; however, it is not the same with (3b). Suppose we only focus on the first clause in (3b). In that case, it is a little strange in European Portuguese to say only that “*A Camila encorajou o Pedro ontem*. (Camila encouraged Pedro yesterday)” without saying what Pedro is encouraged to do. Again, to avoid affecting the overall acceptability, we modified the region ROI-4 in verbs like “*encorajar* (encourage)” in psych conditions to provide the sentence with a more natural interpretation (in this case, by providing the complement of the verb). In addition, because of the lexical meaning of the verbs in

psych conditions, the ROI-4 in this condition is not as uniform as in other conditions. See example below:

(4).

a. *Entediar* + intentional + participle

O João entediou o Pedro /com um discurso chato, / mas o Pedro não se sentiu entediado, felizmente.

‘John bored Peter with a boring speech, but Peter didn't feel bored, fortunately’

b. *Entediar* + non-intentional + participle

O livro entediou o Pedro /devido à sua temática, / mas o Pedro não se sentiu entediado, felizmente.

‘The book bored Pedro because of its theme, but Pedro didn't feel bored, fortunately’

c. *Desapontar* + intentional + participle

A Maria desapontou o Pedro /ontem, / mas o Pedro não se sentiu desiludido, felizmente.

‘Maria disappointed Pedro yesterday, but Pedro didn't feel let down, fortunately’

d. *Desapontar* + intentional + participle

O livro desapontou o Pedro /devido à sua temática, / mas o Pedro não se sentiu desiludido, felizmente.

‘The book disappointed Pedro because of its theme, but Pedro didn't feel let down, fortunately’

We have four different phrases in ROI-4 as shown in (4). (4c) is the structure that I wish to replicate. However, because of the lexical meaning of the verb “*desapontar* (disappoint)” in (4d), when using a non-intentional subject like “*o livro* (the book)”, the event needs a context that mentions the reason for the disappointment for the sentence to sound natural. That is to say, we could not simply use the same temporal statement “*ontem* (yesterday)” in (4d). The temporal statement in (4c) acts as a filler region to

maintain the same number of regions across the conditions. In (4a) and (4b), however, the requirement of the context that mentions the reasons in the event applies to both non-intentional subject items and intentional subject items. In this case, with the verb “*entediar* (bore)”, I change the ROI-4 in both non-intentional subject items and intentional subject items to adverbial phrases to avoid the potential interferences with the acceptability of the accomplishment.

Another feature worth mentioning is that regions in five conditions are not always identical; however, the overall number of regions for each item remains the same, i.e., they all have nine regions. Because the five conditions have different structures, it is difficult to force all items into a specific configuration without affecting the interpretation of the item. To improve consistency, I add filler regions to specific parts of the original sentence. My goal is to manipulate the sentences so that participants finish and begin each region at roughly the same time, and finish reading the first clause of the sentences at roughly the same time. However, due to the abovementioned limitations, there are items where the length of certain regions exceeds that of the same region in other items.

In addition, although we maintain consistency across regions in each condition, there are variations when comparing conditions. See example below:

Table 4-2- Regions in the first clause of each condition

Conditions	Regions in the first clause			
Wash verbs	<u>O João</u>	<i>lavou</i>	<i>a camisa,</i>	
Transfer verbs	<u>A Matilde</u>	<i>ensinou</i>	<i>o hino nacional</i>	<i>ao Pedro,</i>
Psych verbs	<u>A Camila</u>	<i>incitou</i>	<i>o Pedro</i>	<i>à vingança,</i>
Incomplete	<u>O João</u>	<i>pintou</i>	<i>a parede</i>	<u>ontem,</u>
Failed	<u>O João</u>	<i>matou</i>	<i>o Pedro</i>	<u>ontem,</u>

Table 4-3- Regions in the second clause in each condition

Conditions	Regions in the second clause					
Wash verbs	<i>mas</i>	<i>a camisa</i>	<u><i>ainda não</i></u>	<u><i>estava</i></u>	<u><i>lavada,</i></u>	<u><i>infelizmente.</i></u>
Transfer verbs		<i>mas</i>	<i>o Pedro</i>	<u><i>não aprendeu</i></u>	<u><i>nada,</i></u>	<u><i>infelizmente.</i></u>
Psych verbs		<i>mas</i>	<i>o Pedro</i>	<i>não se sentiu</i>	<u><i>incitado,</i></u>	<u><i>infelizmente.</i></u>
Incomplete		<i>mas</i>	<i>a parede</i>	<i>não estava</i>	<i>completamente</i>	<i>pintada.</i>
Failed		<i>mas</i>	<i>o Pedro</i>	<i>não estava</i>	<i>morto,</i>	<u><i>felizmente.</i></u>

The regions with full underlines are filler regions; they are added after we have constructed the original non-culminating accomplishments. The regions with dashed underlines indicate regions that contain variables, i.e., the region includes a parameter for the sentence. For example, in the *wash* verbs condition example, in ROI-6, there is not only “*ainda não* (still not)” but also “*ainda* (still)”, in ROI-7, there are “*estava* (was)” and “*tinha* (had)”, in ROI-8, there are “*lavada* (washed)” and “*limpa* (clean)”.

As shown in tables 4-2 and 4-3, the *wash* verbs condition is distinct from others because there is one less region in the first clause and one more region in the second clause. The reason for this is that, firstly, we want to maintain the same number of regions across all the conditions, that is, nine regions in each item. Secondly, we must add a filler region after ROI-8 in the *wash* verbs condition. Typically, when a participant finishes a sentence, the reading time of the last region of the sentence is considered to be accompanied by a processing of the entire sentence; that is to say, the reading time of the last region cannot be used for comparison purposes. Because of this, the region with

variables we need to compare the reading times has to be at least the second-to-last region. In addition, ROI-6, ROI-7, and ROI-8 are all regions with variables, so we cannot easily merge them with other regions. Thus, the second clause of the *wash* verb condition already has six regions, which means we cannot add a filler region, for example, “*ontem* (yesterday)” at the end of the first clause, because the first clause already has three regions.

The same principle for filler regions also applies to *transfer* and *psych* verbs conditions: since ROI-8 is a region with variables, a filler region after that is mandatory. In incomplete and failed conditions, however, the filler regions in regions 4 and 9 are purely for manipulating the overall number of regions in the sentence.

In total, we have 136 target items in the experiment, including 30 items in the *wash* verbs condition, 32 in the *transfer* verbs condition, 48 in the *psych* verbs condition, 12 in the *incomplete* condition, and 14 in the *failed* condition. The items in the last two conditions appear lower in number because the sentences in the first three conditions have more regions with variables, giving us more possible combinations. The target items are separated into four groups in the experiment so that the participants do not have to spend too much time on the experiment. The items in each condition are equally divided into the four groups so that each group has some items in each condition. Item group A includes seven items in the *wash* verbs condition, eight in the *transfer* verbs condition, 12 in the *psych* verbs condition, three in the *incomplete* condition, and three in the *failed* condition. Item group B includes seven items in the *wash* verbs condition, eight in the *transfer* verbs condition, 12 in the *psych* verbs condition, three in the *incomplete* condition, and three in the *failed* condition. Item group C includes seven items in the *wash* verbs condition, eight in the *transfer* verbs condition, 12 in the *psych* verbs condition, three in the *incomplete* condition, and four in the *failed* condition. And finally, item group D includes nine items in the *wash* verbs condition, eight in the *transfer* verbs condition, 12 in the *psych* verbs condition, three in the *incomplete* condition, and four in the *failed* condition. The items in each group are selected randomly in each condition, and there are no identical items in the four groups.

Additionally, 54 filler items are included in the experiment as distractors, see Appendix 2 for a complete list of the filler items. The distractors include 11 grammatically correct sentences, 11 grammatically incorrect sentences, 16 with invalid objects, and 16 with invalid subjects. The first two types of filler items are constructed in various structures, and the last two types of filler items are constructed while mimicking the structure of non-culminating accomplishments. See example below:

(5). Filler items:

a. correct

O detido, que apresentou a queixa, estava na cena do crime.

'The detainee, who filed the complaint, was at the scene of the crime'

b. incorrect

** A atitude vendeu-se mais dura durante as negociações.*

* 'The attitude sell itself tougher during the negotiations'

c. invalid object

** O governo tocou um pato, mas o pato não foi tocado.*

* 'The government touched a duck, but the duck wasn't touched'

d. invalid subject

** O telhado recebeu um telefonema, mas não sabia sequer quem era.*

* 'The roof received a phone call, but didn't even know who it was'

The same 54 filler items are added to each group of target items. That is, item group A includes 33 target items and 54 filler items. Item group B includes 33 target items and 54 filler items. Item group C includes 34 target items and 54 filler items. Item group D includes 36 target items and 54 filler items.

4.2.3. Procedure

The experiment employed online segment-by-segment self-paced reading tasks with moving window presentations and offline judgement tasks. It was implemented and conducted online using the Penn Controller for Ibex (Zehr & Schwarz, 2018). A typical experimental session had a median time on task of approximately 30 minutes.

When a participant participates in the experiment, an item group is randomly assigned to them (item groups A, B, C, or D). This procedure is controlled by a program in the Penn Controller for Ibx (Zehr & Schwarz, 2018), and we ensured that each item group is equally distributed among the participants. For example, we have 52 participants, so each item group is assigned to 13 participants. After the distribution, participants are shown an informed consent form stating that all personal data will be kept confidential, responses are anonymous, and will not be disclosed individually. The participants are unaware of the study's objective and are only aware that the experiment they are participating in involves sentence processing. Before beginning the experiment, participants' personal information is requested, including their name, contact information, age, whether they are native speakers of European Portuguese, education level, and laterality. Additionally, participants are shown the experiment instructions and undergo a training procedure. The training procedure includes seven predetermined sentences, as shown below:

(6). Training sentences:

- a. *A_Pilar tocou uma_canção inteira no_piano, mas o_público não gostou muito do_concerto.*
'Pilar played an entire song on the piano, but the audience didn't like the concert very much'
- b. *O_António teve um_encontro com_a_alma, mas a_alma não foi encontrada ontem.*
'Antonio had a meeting with the soul, but the soul wasn't found yesterday'
- c. *O_José estava a_falar com_o_Marco sobre as_férias quando começou a_chover.*
'Jose was talking to Marco about his vacation when it started to rain'
- d. *A_Fátima encontrou o_Carlos a_vestir o_filho para_a_escola, mas o filho ainda não estava pronto.*

‘Fatima found Carlos dressing his son for school, but his son wasn't ready yet’

- e. *A_Lucinda ajudou a_Teodora a_carregar as_malas, mas nem todas as_malas foram carregadas.*

‘Lucinda helped Teodora load the bags, but not all the bags were loaded’

- f. *A_Camila viu o_Carlos a_lavar a_roupa antes_de ir_almoçar.*

‘Camila saw Carlos washing his clothes before lunch’

- g. *O_sol entrou na_piscina enquanto ainda havia neve na_relva.*

‘The sun entered the pool while there was still snow on the grass’

Although the outcome of the training sentences is not included in the experiment's results, the inclusion of the training method is intended to aid participants in understanding the experiment's instructions. Additionally, the training phrases do not quite adhere to the format of the target items. Five of them do, however, contain a second negating clause. After the training procedure, the participants are shown an instruction that allows them to begin the proper experiment.

In the self-paced reading tasks, participants are asked to read sentences that are presented in a segment-by-segment fashion. The participant reveals the next segment by pressing a button. In the moving-window SPR experiment, the sentence is first displayed as a series of dashes on the screen, with each dash representing a segment in the sentence. Using the item in (7a) “*O João matou o Pedro ontem, mas o Pedro não estava morto, felizmente* (John killed Pedro yesterday, but Pedro was not dead, fortunately)” as an example. The sentence would first be shown as nine dashes, as shown in (7b):

(7). Example of a self-paced reading task:

- a. *O João matou o Pedro ontem, mas o Pedro não estava morto, felizmente.*

(this is not shown to the participants)

- b. _____

- c. *O João* _____

- d. _____ *matou* _____
- e. _____ *o Pedro* _____
- f. _____ *ontem,* _____
- g. _____ *mas* _____
- h. _____ *o Pedro* _____
- i. _____ *não* _____
- j. _____ *estava morto* _____
- k. _____ *felizmente.*

For the words to appear on the screen, the participants are asked to press the SPACE key on their keyboard to begin the self-paced reading task. After they press the SPACE key, the first segment of the sentence appears on the screen, as shown in (7c). Subsequent button presses cause the previous segment to be replaced by dashes while the current segment is shown. Only one segment is visible at any given time, thus creating the impression of a moving window of words on the screen. That is to say, the first press of the SPACE key turns the content on the screen from (7b) to (7c), the second press turns it to (7d), the third press turns it to (7e), the fourth press turns it to (7f) etc., all the way to (7k), with the last segment of the sentence appears on the screen. Reading time is measured from the presentation of a segment to the button-press. After (7k), the participants can press the button again to end the self-paced reading task for this sentence and begin the offline judgement task.

When the participants press the SPACE key while (7k) is on the screen, a scale appears on the screen, asking the participant to rate the acceptability of the sentence they just read (which is 7a in this example) on a scale of 1 to 5. Icons representing the scales are also presented at the top of the selection box to help the participants better understand the meaning of the scale. To select the degree of acceptability, participants must use their mouse to check the selection box on the screen. The selections are: 1. totally unacceptable, 2. somewhat unacceptable, 3. reasonably acceptable, 4. quite acceptable, or 5. totally acceptable. An example of the offline judgement task is shown below:

(8). Offline judgement task:

No universo de frases aceitáveis, como você classifica a frase que você acabou de ler?

Sendo 1 totalmente inaceitável e 5 totalmente aceitável, escolha abaixo:

Figure 4-1- Offline judgement task

totalmente inaceitável ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 totalmente 5 aceitável

The first line in (8) asks the participants: "In the universe of acceptable sentences, how would you classify the sentence you have just read?" The second line means: "With 1 being totally unacceptable and 5 being totally acceptable, choose below:" The participants would check the box of the degree of acceptability based on their judgment after processing the given sentence, without the sentence on the screen. We used a gradable paradigm rather than a binary judgment task because we do not want to constrain the participants' choices artificially. According to Kasher and Hacoheh (2023), the gradable paradigm has proven better for reflecting the nature of the acceptability judgements of the participants when investigating the availability of non-culmination. However, unlike in Kasher and Hacoheh (2023), we used a 5-point scale with a midpoint (labelled 3, reasonably acceptable) rather than a 4-point scale, because we are trying to avoid the possibility of adding restrictions on the judgment of the participants. We consider that forcing the participants to choose either a positive or a negative answer could be an artificial manipulation of the result.

After the participant selects the degree of acceptability, the judgment task for this sentence automatically ends, and the self-paced reading task for the following item

begins: the screen turns to a series of dashes representing the following sentence, like in (7b). From here, the procedure repeats until all items in the given item group are tested, and the experiment ends.

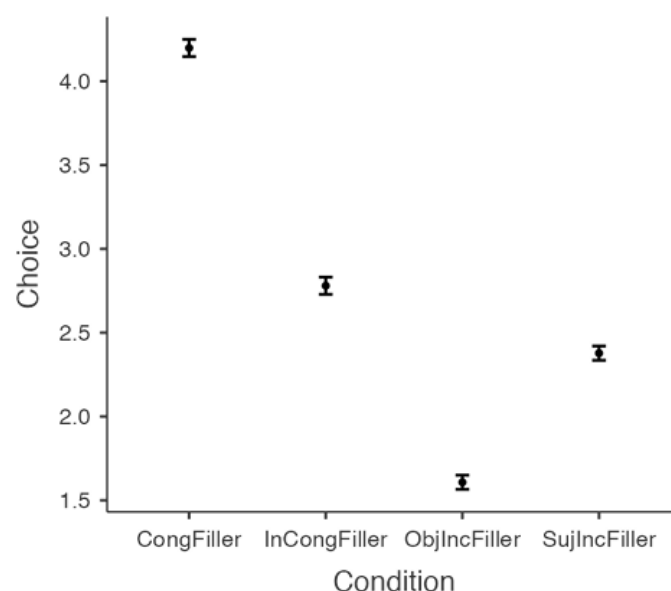
4.2.4. Data Analysis

In this section, I will first discuss the results of the offline judgement task, from the overall judgement to each condition (*wash* verbs condition vs. transfer verbs condition, etc.) and each variable (intentionality, negating clause, participle vs. adjective) within the conditions. Secondly, I will discuss the reading times of the self-paced reading tasks, ranging from general results to more specific ones. I will show the results of the fillers first.

4.2.4.1. Offline judgement

Figure 4-2 shows the mean acceptability ratings for four types of fillers.

Figure 4-2- Acceptability ratings of filler items



As we can see, the acceptability of different types of filler items is vastly different ($p < 0.001$), indicating that our participants are able to distinguish between the four types of

filler items and correctly judge the sentences. The participants consider our correct filler items very acceptable, while the incorrect fillers are not so acceptable.

Figure 4-3 shows the mean acceptability ratings for five types of non-culminating accomplishments.

Figure 4-3- Mean rate of acceptability

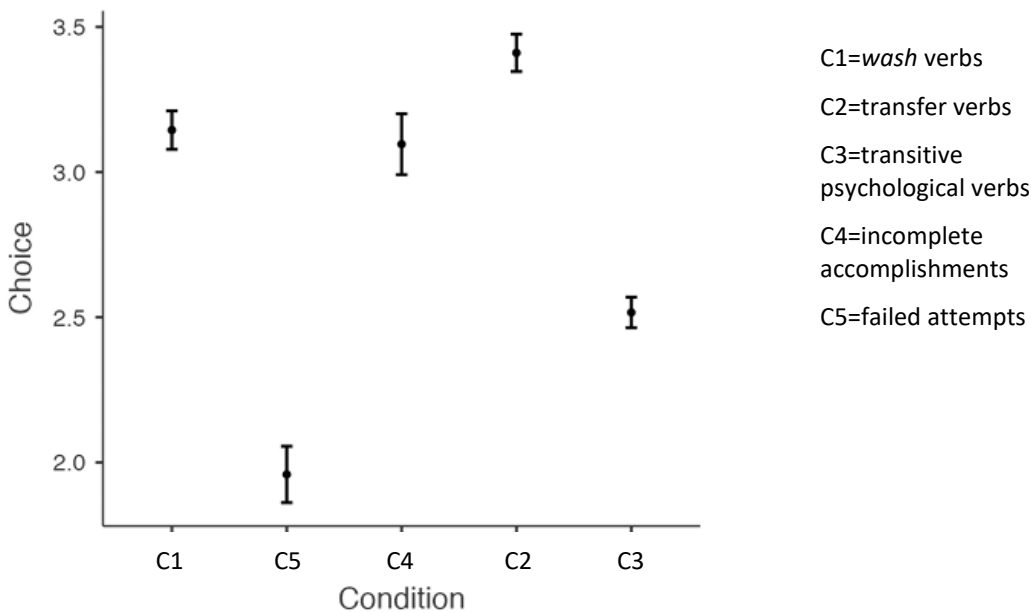


Figure 4-3 shows the mean acceptability rating in general. As can be seen, the acceptability of the failed condition distinguishes itself from the other four conditions, with a mean degree of acceptability of 1.95, which is below the midpoint of the Likert scale used in the experiment. Although the ratings of the other four conditions remain different, all remain above the midpoint of the Likert scale. We can infer a clear pattern from figure 4-3, that is (from least acceptable to most acceptable): failed attempt condition with a mean acceptability rating of around 1.95, transitive psychological verbs condition with a mean acceptability rating of around 2.53, *wash* verbs condition with a mean acceptability rating of around 3.15, incomplete accomplishments condition with a mean acceptability rating of around 3.12 and transfer verbs condition with a mean

acceptability rating of around 3.41. The results indicate that the 'failed attempt' condition is the least acceptable type of non-culminating accomplishment, while the 'transfer verbs' condition is the most acceptable type in European Portuguese.

In addition to the mean acceptability ratings, comparing the acceptability ratings across the five types is equally important. Table 4-4 compares failed attempt conditions and the other four conditions.

Table 4-4- Failed attempts comparison

Model Coefficients - Choice					
Predictor	Estimate	SE	t	p	
Intercept ^a	2.825	0.0182	155.57	<.001	
Condition:					
Incomplete_accomplishments – Failed_attempt_accomplishments	1.137	0.0729	15.60	<.001	
Transfer_verbs – Failed_attempt_accomplishments	1.452	0.0594	24.45	<.001	
Transitive_psychological_verbs – Failed_attempt_accomplishments	0.558	0.0563	9.91	<.001	
Wash_verbs – Failed_attempt_accomplishments	1.186	0.0600	19.77	<.001	
Type:					
Naolnten – Inten	-0.482	0.0318	-15.15	<.001	

^a Represents grand mean

As we can see, failed attempts are significantly different from all four other conditions. The acceptability of failed attempts differs from that of *wash* verbs ($p < 0.001$), transfer verbs ($p < 0.001$), incomplete accomplishments ($p < 0.001$), and transitive psychological verbs ($p < 0.001$). Table 4-5 compares incomplete accomplishment conditions and the other four conditions.

Table 4-5- Incomplete accomplishments comparison

Model Coefficients - Choice					
Predictor		Estimate	SE	t	p
Intercept ^a		2.8253	0.0182	155.567	<.001
Condition:					
Failed_attempt_accomplishments – Incomplete_accomplishments		-1.1372	0.0729	-15.602	<.001
Transfer_verbs – Incomplete_accomplishments		0.3144	0.0627	5.014	<.001
Transitive_psychological_verbs – Incomplete_accomplishments		-0.5794	0.0598	-9.690	<.001
Wash_verbs – Incomplete_accomplishments		0.0485	0.0633	0.767	0.443
Type:					
Naolnten – Inten		-0.4816	0.0318	-15.155	<.001
^a Represents grand mean					

As we can see, failed attempts are significantly different from the other three conditions. The acceptability of incomplete accomplishments is different from failed attempts ($p < 0.001$), transfer verbs ($p < 0.001$), and transitive psychological verbs ($p < 0.001$). However, the difference between the acceptability of incomplete accomplishments and the acceptability of *wash* verbs is not statistically significant ($p = 0.443$), meaning that those two types are generally rated the same. Table 4-6 compares transfer verbs conditions and the other four conditions.

Table 4-6- Transfer verbs comparison

Model Coefficients - Choice					
Predictor		Estimate	SE	t	p
Intercept ^a		2.825	0.0182	155.57	<.001
Condition:					
Failed_attempt_accomplishments – Transfer_verbs		-1.452	0.0594	-24.45	<.001
Incomplete_accomplishments – Transfer_verbs		-0.314	0.0627	-5.01	<.001
Transitive_psychological_verbs – Transfer_verbs		-0.894	0.0423	-21.14	<.001
Wash_verbs – Transfer_verbs		-0.266	0.0471	-5.65	<.001
Type:					
Naolnten – Inten		-0.482	0.0318	-15.15	<.001
^a Represents grand mean					

In Table 4-6, the transfer verbs condition differs from all four other conditions. The acceptability of transfer verbs is different from *wash* verbs ($p < 0.001$), failed attempts ($p < 0.001$), incomplete accomplishments ($p < 0.001$), and transitive psychological verbs

($p < 0.001$). Table 4-7 compares the transitive psychological verb condition and the other four conditions.

Table 4-7- Transitive psychological verbs comparison

Model Coefficients - Choice				
Predictor	Estimate	SE	t	p
Intercept ^a	2.825	0.0182	155.57	<.001
Condition:				
Failed_attempt_accomplishments – Transitive_psychological_verbs	-0.558	0.0563	-9.91	<.001
Incomplete_accomplishments – Transitive_psychological_verbs	0.579	0.0598	9.69	<.001
Transfer_verbs – Transitive_psychological_verbs	0.894	0.0423	21.14	<.001
Wash_verbs – Transitive_psychological_verbs	0.628	0.0431	14.56	<.001
Type:				
Naolnten – Inten	-0.482	0.0318	-15.15	<.001

^a Represents grand mean

The transitive psychological verb condition is different from all four other conditions. The acceptability of transitive psychological verbs is different from *wash* verbs ($p < 0.001$), failed attempts ($p < 0.001$), incomplete accomplishments ($p < 0.001$), and transfer verbs ($p < 0.001$). Table 4-8 compares the *wash* verbs condition and the other four conditions.

Table 4-8- Wash verbs comparison

Model Coefficients - Choice				
Predictor	Estimate	SE	t	p
Intercept ^a	2.8253	0.0182	155.567	<.001
Condition:				
Failed_attempt_accomplishments – Wash_verbs	-1.1857	0.0600	-19.770	<.001
Incomplete_accomplishments – Wash_verbs	-0.0485	0.0633	-0.767	0.443
Transfer_verbs – Wash_verbs	0.2659	0.0471	5.646	<.001
Transitive_psychological_verbs – Wash_verbs	-0.6280	0.0431	-14.560	<.001
Type:				
Naolnten – Inten	-0.4816	0.0318	-15.155	<.001

^a Represents grand mean

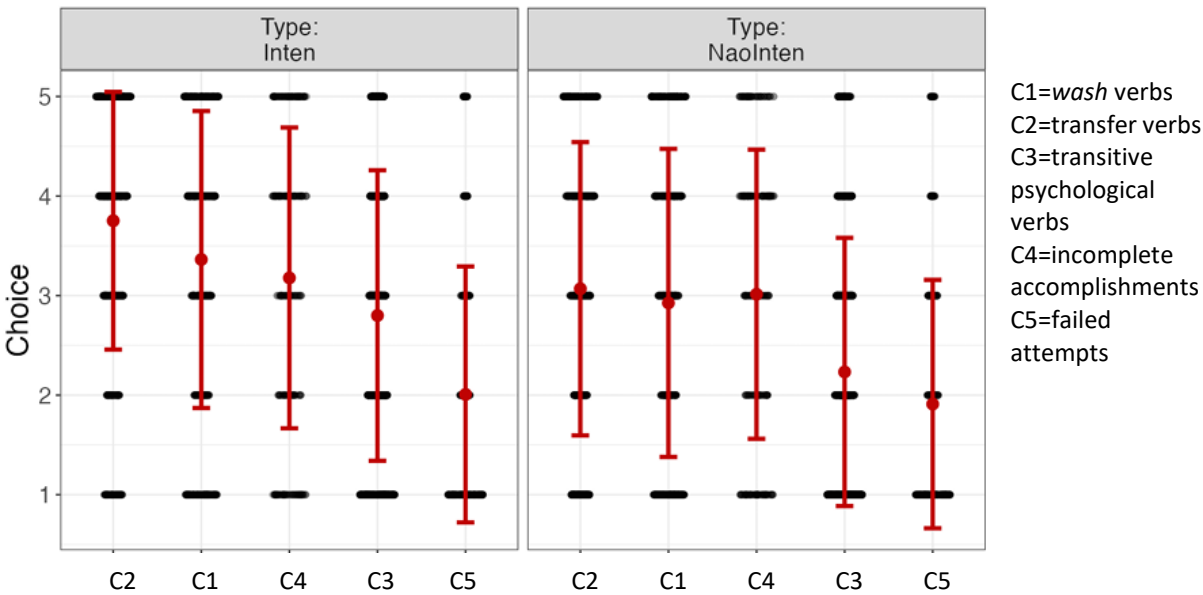
As mentioned above, the only similar condition to the *wash* verbs condition is incomplete accomplishments ($p = 0.443$). There are significant differences between

wash verbs and failed attempts ($p < 0.001$), incomplete accomplishments ($p < 0.001$), and transitive psychological verbs ($p < 0.001$).

As we can see, acceptability ratings vary under different conditions. This means that the five-way distinction method in Guéron and Vogeleeer (2021) is reflected in the judgment of native speakers of European Portuguese. The overall relatively low acceptance rate of *failed* conditions - in fact, it is lower than the acceptability of grammatically incorrect fillers (cf. “*A atitude vendeu-se mais dura durante as negociações*. (The attitude sell itself tougher during the negotiations)”), but higher than the acceptability of invalid object fillers (cf. “*O governo tocou um pato, mas o pato não foi tocado*. (The government touched a duck, but the duck wasn't touched)”) - also confirms the hypothesis that there is probably no failed attempt type of non-culminating accomplishment in European Portuguese, as in other Romance languages. Thus, I will focus on the results for the other four types of non-culminating accomplishments in the analysis below.

Now let us see if the first variable in each condition, the intentionality of the subject, has any effect on the judgment of the participants. Figure 4-4 shows the mean acceptability rating for the five conditions in two subject intentionality.

Figure 4-4- Mean rate of acceptability in two internationalities



The point on the line marks the mean rating for each condition. In Figure 4-4, the five conditions are further divided into intentional and non-intentional subjects. The left figure shows the conditions with intentional subjects, and the right figure shows those with non-intentional subjects. In the intentional figure, the differences between types of non-culminating accomplishments are significant ($p < 0.001$); however, in the non-intentional figure, the rating for transfer verbs condition and incomplete accomplishments conditions are statistically equivalent ($p = 0.536$). See table 4-9 below.

Table 4-9- Differences between conditions

Simple effects of Condition : Parameter estimates									
Moderator levels		95% Exp(B) Confidence Interval							
Type	contrast	Estimate	SE	exp(B)	Lower	Upper	df	t	p
Inten	Failed_attempt - Incomplete_accomp	-1.1707	0.1029	0.310	0.254	0.379	8013	-11.380	<.001
	Incomplete_accomp - Transfer_verbs	-0.5742	0.0885	0.563	0.473	0.670	8013	-6.486	<.001
	Transfer_verbs - Trans_psych	0.9520	0.0597	2.591	2.305	2.912	8013	15.952	<.001
	Trans_psych - Wash_verbs	-0.5626	0.0609	0.570	0.506	0.642	8013	-9.244	<.001
NaolInten	Failed_attempt - Incomplete_accomp	-1.1037	0.1029	0.332	0.271	0.406	8013	-10.729	<.001
	Incomplete_accomp - Transfer_verbs	-0.0547	0.0885	0.947	0.796	1.126	8013	-0.618	0.536
	Transfer_verbs - Trans_psych	0.8358	0.0597	2.307	2.052	2.593	8013	14.005	<.001
	Trans_psych - Wash_verbs	-0.6934	0.0609	0.500	0.444	0.563	8013	-11.390	<.001

Table 4-9 shows no differences between ratings for the *transfer verbs* condition and the *incomplete accomplishments* condition in the non-intentional type.

In figure 4-4, from left to right, it shows the *transfer verbs* condition with intentional subjects with a mean acceptability rating of 3.75; the *transfer verbs* condition with non-intentional subjects with a mean acceptability rating of 3.07; the *wash verbs* condition with intentional subjects with a mean acceptability rating of 3.36; the *wash verbs* condition with non-intentional subjects with a mean acceptability rating of 2.93; the *incomplete accomplishments* condition with intentional subjects with a mean acceptability rating of 3.18; the *incomplete accomplishments* condition with non-intentional subjects with a mean acceptability rating of 3.01; the *psych verbs* condition with intentional subjects with a mean acceptability rating of 2.80; the *psych verbs* condition with non-intentional subjects with a mean acceptability rating of 2.23; the *failed attempt* condition with intentional subjects with a mean acceptability rating of 2.01; the *failed attempt* condition with non-intentional subjects with a mean

acceptability rating of 1.91. The data shows that in all conditions: *incomplete* condition ($p < 0.001$), *transfer* verbs condition ($p < 0.001$), *psych* verbs condition ($p < 0.001$), *failed attempt* condition ($p < 0.001$) and *wash* verbs condition ($p < 0.001$), the intentionality of the subject does affect the acceptability of the non-culminating accomplishment. The non-culminating accomplishment with an intentional subject is consistently rated more positively than the non-culminating accomplishment with a non-intentional subject. However, the acceptance rate of non-culminating accomplishments with non-intentional subject in *psych* verb condition, *wash* verbs condition, and *transfer* verbs condition is relatively high. There is also a significant difference between items with intentional subjects and items with non-intentional subjects in the *failed* condition. This shows that even in not-so-accepted *failed* conditions, the intentionality of the subject can affect the offline judgment of the speaker to a certain degree. This is unexpected because the *failed* condition would always be unacceptable with any type of subject intentionality if it does not exist in European Portuguese. In this case, participants would always respond negatively to items in the *failed* condition, no matter what other variables are in the item.

If we combine the two figures, we can find out that the acceptance rate of the items forms a pattern. See Figure 4-5.

Figure 4-5- Pattern of acceptability in intentional vs non intentional

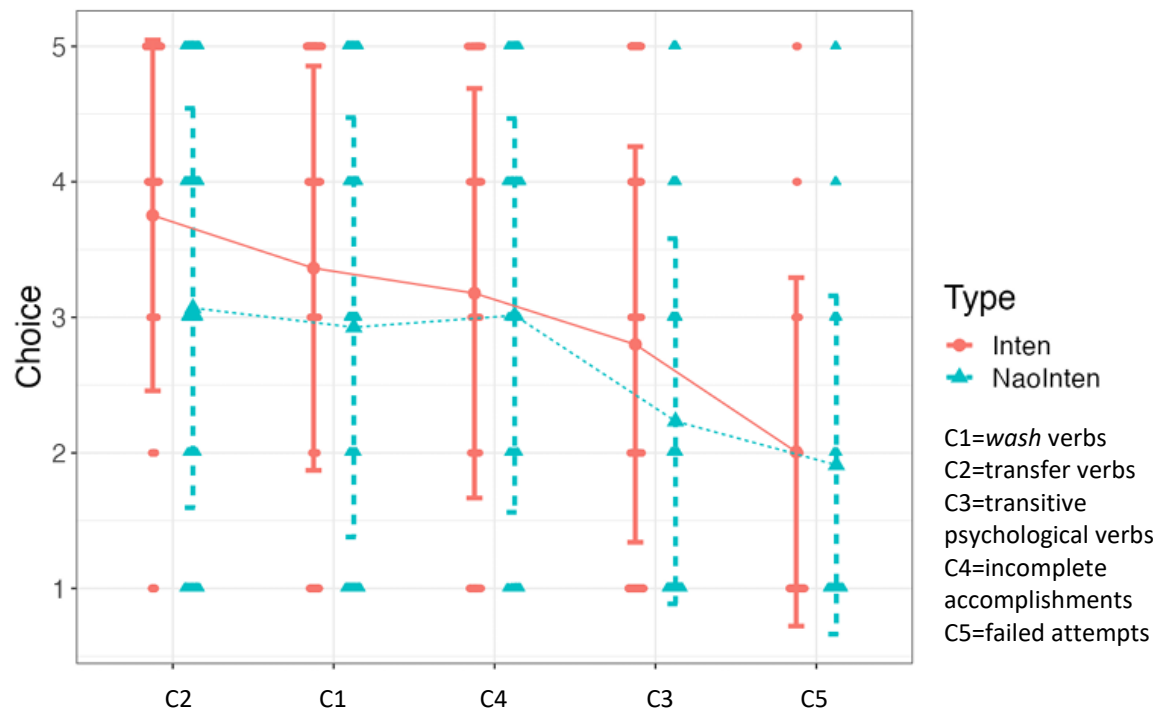
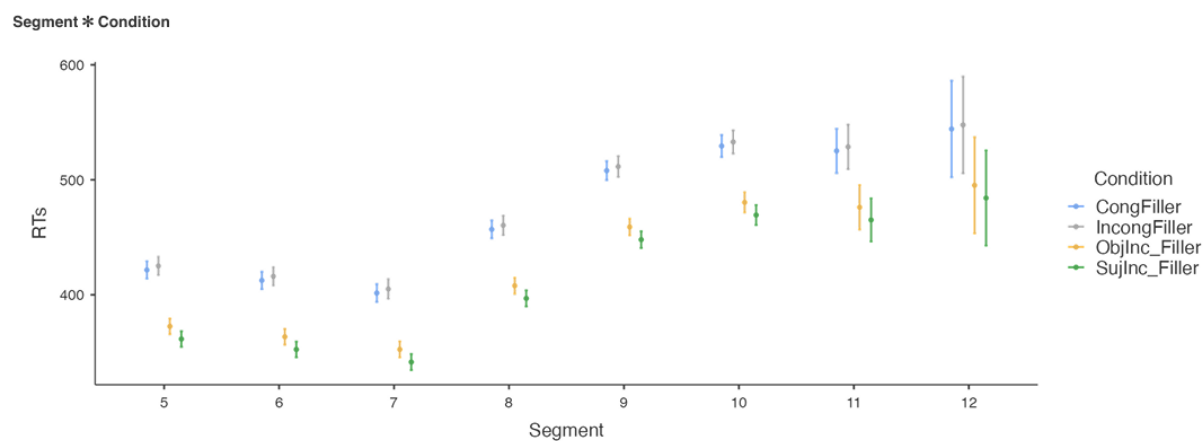


Figure 4-5 shows that items with non-intentional subjects are consistently rated lower than those with intentional subjects. The mean rating of items with non-intentional subjects roughly follows the order of the mean rating of items with intentional subjects, except for the *wash verbs* condition, which is rated lower than the *incomplete accomplishments* condition.

4.2.4.2. Online processing

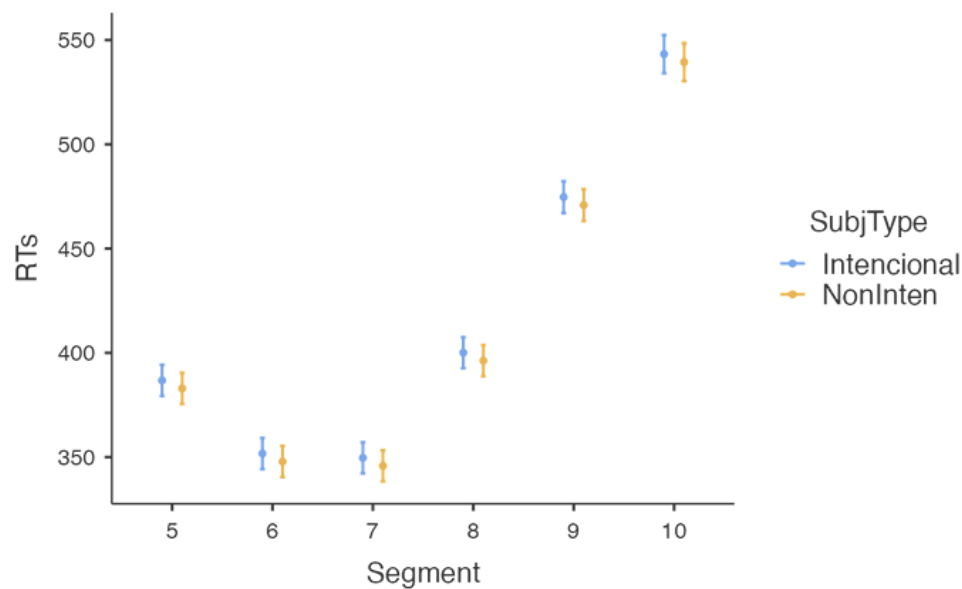
Figure 4-6 shows the mean processing time in segments 5-12 of the filler items.

Figure 4-6- Processing of fillers



There are significant differences between correct filler and invalid subject fillers ($p < 0.001$) and invalid object fillers ($p < 0.001$). This indicates that our participants can distinguish between valid and invalid items during online processing. Figure 4-7 shows the mean processing time of the experimental items in segments 5-10.

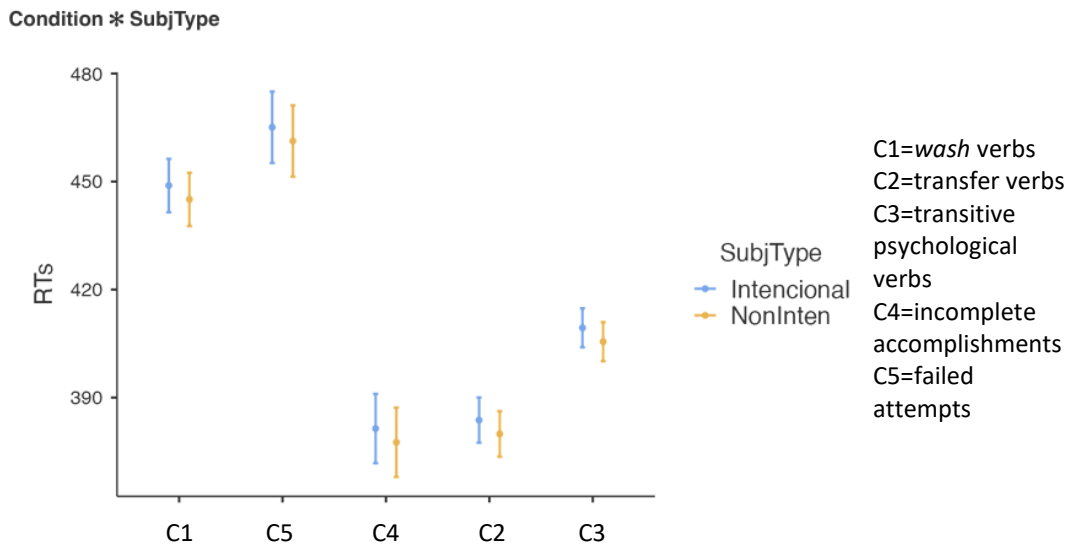
Figure 4-7- Processing time of experimental items



As we can see, the processing times of the filler items and the experimental items follow the same pattern, with segment 7 having the shortest reading time and the last segment

having the longest reading time. This shows that our filler items have the same structure as the experimental items. In addition, the overall reading time of segments 5-10 is not affected by the intentionality of the subject ($p = 0.185$). Now, let us examine the reading times for different types of conditions. Figure 4-8 shows the processing time in each type of non-culminating accomplishment.

Figure 4-8- Processing time of each condition



In Figure 4-8, we can see that the mean processing time of each condition is also not affected by the subject's intentionality. The results show that native speakers of European Portuguese have the most difficulty processing failed attempts (C5) and have the least difficulty processing *incomplete accomplishments* (C4). This figure also shows that the processing times of conditions with intentional subjects and those with non-intentional subjects are statistically equal. According to the mean processing time, there could be three distinct groups: *wash verbs* (around 450) and *failed attempts* (around 460) have the longest processing time; *transitive psychological verbs* (around 400) are in the middle; *transfer verbs* (around 360) and *incomplete accomplishments* (around 350) have the least processing time. Additionally, there are differences in processing times among the types of non-culminating accomplishments. See table 4-10 below.

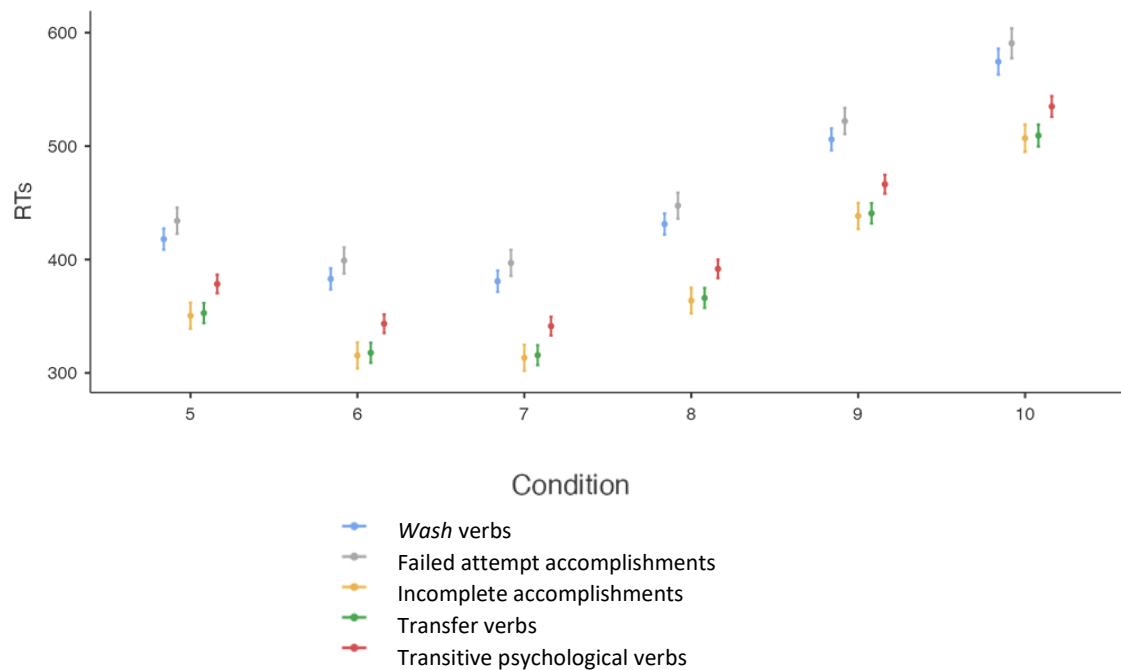
Table 4-10- Processing differences between conditions

Model Coefficients - RTs				
Predictor	Estimate	SE	t	p
Intercept ^a	415.78	1.71	243.83	<.001
Segment:				
6 – 5	-35.06	4.86	-7.21	<.001
7 – 5	-37.14	4.87	-7.63	<.001
8 – 5	13.29	4.86	2.73	0.006
9 – 5	87.88	4.94	17.78	<.001
10 – 5	156.45	5.49	28.49	<.001
Condition:				
Failed_attempt_accomplishments – Wash_verbs	16.19	5.88	2.75	0.006
Incomplete_accomplishments – Wash_verbs	-67.49	5.86	-11.52	<.001
Transfer_verbs – Wash_verbs	-65.16	4.53	-14.38	<.001
Transitive_psychological_verbs – Wash_verbs	-39.52	4.22	-9.37	<.001
SubjType:				
NonInten – Intencional	-3.84	2.90	-1.33	0.185

^a Represents grand mean

Table 4-10 shows that the mean processing times are different between *failed attempts* ($p = 0.006$) and *wash verbs*; *incomplete accomplishments* ($p < 0.001$) and *wash verbs*; *transfer verbs* ($p < 0.001$) and *wash verbs*; *transitive psychological verbs* ($p < 0.001$) and *wash verbs*. Notably, the table also shows no significant differences between intentional and non-intentional subjects ($p = 0.185$). Figure 4-9 shows the processing times of segments 5-10 in each type.

Figure 4-9- Processing times

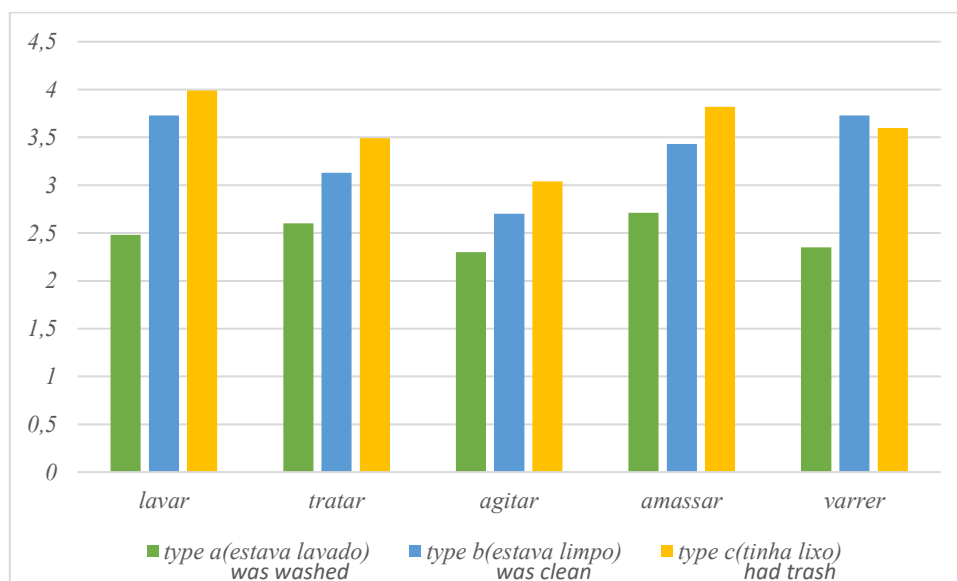


In Figure 4-9, the processing in each segment is presented in the following order: from left to right, *wash verbs*; *failed attempt accomplishments*; *incomplete accomplishments*; *transfer verbs* and *transitive psychological verbs*. The pattern in Figure 4-9 is clearly the same as in Figures 4-7 and 4-8. From the longest to the shortest processing time, the order is: *failed attempts*, *wash verbs*, *transitive psychological verbs*, *transfer verbs* and *incomplete accomplishments*.

4.2.4.3. Judgement on specific variables

Recall that we also have other variables in three types of non-culminating accomplishments: *wash verbs*, *transfer verbs*, and *transitive psychological verbs*. In *wash verbs*, there are three types of negating clause, one (type *a*) negating the culmination using the past participle of the verb in the *Pretérito* form, another (type *b*) negating the desired result state of the event in the *Pretérito* form and the final one (type *c*) affirming the existence of the incomplete part of the event. Figure 4-10 shows the differences in acceptability of the three types of negating clauses.

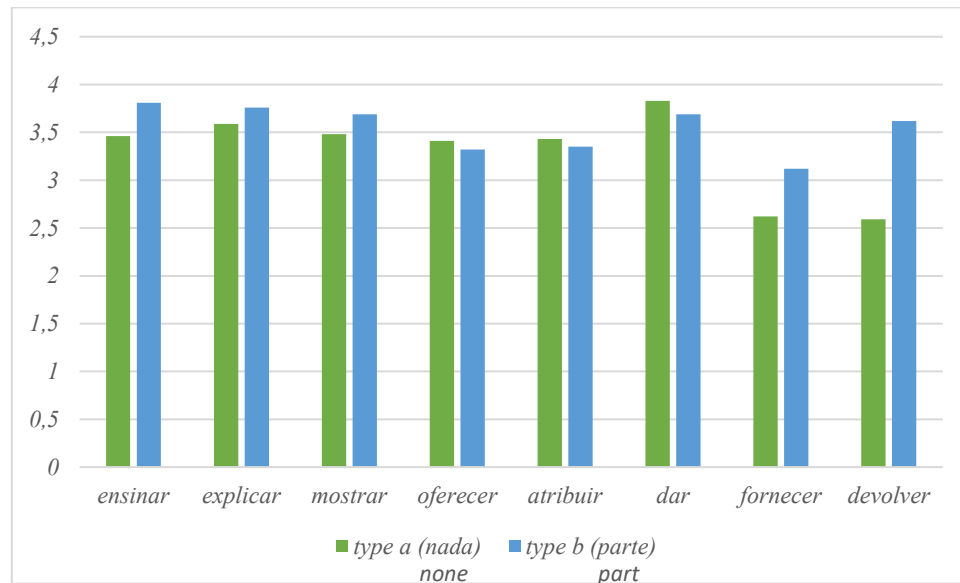
Figure 4-10- Acceptability of variables in *wash* verbs



As we can see in Figure 4-10, the acceptability of each verb follows a pattern. The ratings of negating the culmination using the past participle of the verb in the *Pretérito* form are always the lowest (mean rating = 2.488), the ratings of negating the desired result state of the event in the *Pretérito* form stay in the middle (mean rating = 3.344). The ratings of affirming the existence of the incomplete part of the event are the highest of the three (mean rating = 3.588).

In *transfer verbs*, there are two types of negating clauses used in the transfer verb condition, one (type *a*) negating all of the desired outcome on the patient using a verb in the *Pretérito* form that describes the action of the patient, and another (type *b*) affirming that the desired outcome on the patient only partially appeared. Figure 4-11 shows the results of the offline judgement task of those variables.

Figure 4-11- Acceptability of variables in transfer verbs



The pattern in Figure 4-11 is not so clear; there are cases where the whole negation is more acceptable, but there are also cases where the partial negation is more acceptable. However, the overall mean acceptance rate of partial negation is 3.545, which is higher than the mean rating of whole negation (3.30).

In *transitive psychological verbs*, the variable is that type *a* uses the past participle of the main verb in the second clause, and type *b* uses a similar adjective/adverbial phrase but has no morphological relation with the main verb. Figure 4-12 shows the differences between them in each verb.

Figure 4-12- Acceptability of variables in transitive psychological verbs

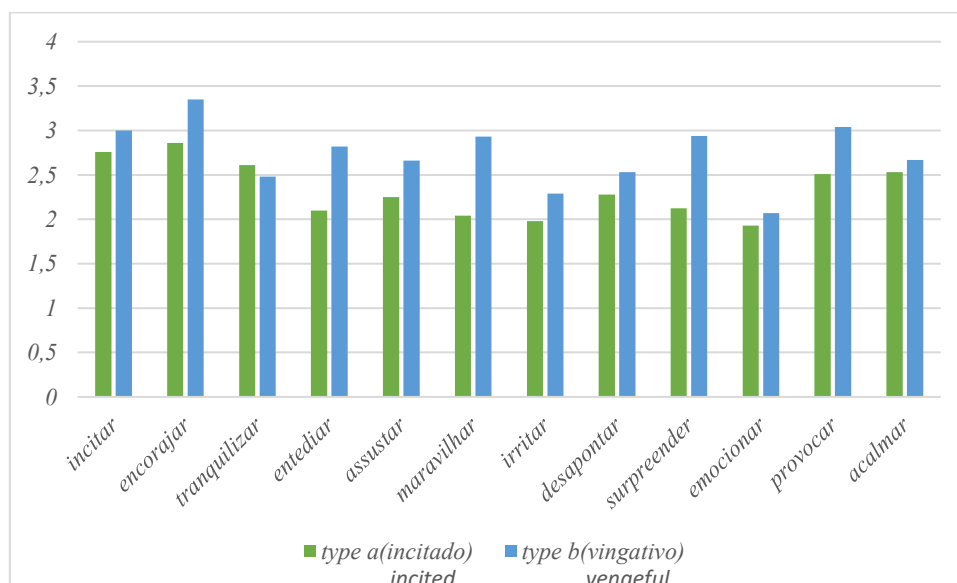


Figure 4-12 shows that in these cases, type *b* is generally always better accepted than type *a* (except for one verb *tranquilizar* (tranquillise)). The mean rating for the past participle of the main verb in the second clause is 2.33, whereas the mean rating for a similar adjective/adverbial phrase is 2.73.

4.3. Discussion

The experiment confirms our hypothesis that four types of non-culminating accomplishment exist in European Portuguese: *wash* verbs, transfer verbs, transitive psychological verbs, and incomplete accomplishments. We observed that processing time and acceptability depend on the type of non-culminating accomplishment, confirming the five-way typology of non-culminating accomplishments. The difference in processing time and rating for each type suggests that native speakers of European Portuguese are aware of the distinctions between them.

4.3.1. Offline

In the offline judgement task, the results show significant differences in conditions. The conditions include: (i) different types of non-culminating accomplishment, (ii) intentional subject vs. non-intentional subject, and (iii) different forms of second clause.

4.3.1.1. Different types of non-culminating accomplishment

The results of the offline judgement (acceptability) task confirm our hypothesis in section 3.6. Accomplishments in European Portuguese do not have an imperfective reading by default; the culmination of an accomplishment is not implied but included in the denotation of the accomplishment. The acceptability rating of *failed attempt accomplishments* is extremely low, indicating that such accomplishments may not exist in European Portuguese. The reason for this is that a *failed attempt* requires the culmination of the accomplishment to be a conversational implicature. This is not the case in European Portuguese, since the culmination is entailed by accomplishments in European Portuguese. For example, “*A Maria enterrou o osso* (Mary buried the bone)” entails the bone’s change of state (culmination of the event): “*o osso estava enterrado* (the bone was buried)”.

The most acceptable type of non-culminating accomplishment is the *transfer verbs*. As discussed in section 3.6, this type of accomplishment typically represents a causal chain with two causal relations. A *transfer verb accomplishment* could include a denoted event and an implied event. For example, “*O João devolveu o dinheiro ao Pedro* (John returned the money to Peter)” includes one event consisting of “activity of John returning the money + culmination of John returned the money” and another implied event of “activity of Peter receiving the money + culmination of Peter received the money”. In our list of non-culminating accomplishments with *transfer verbs*, the negated event is always the implied event: “*mas o Pedro não recebeu* (but Peter did not receive)”. This implied event is easily cancellable since it is technically not included in the denotation of the accomplishment.

Two additional types of non-culminating accomplishments are equally acceptable: the *wash verbs* and the *incomplete accomplishments*. The similarity in acceptability ratings could be related to the similarity of the causal relations in both types. I have discussed in previous chapters that *wash verb accomplishments* may involve the notion of maximality. That is to say, the result does not have to reach the desired degree for the

accomplishment to be true. Similarly, *incomplete accomplishments* also involve the notion of degree. I have suggested using causation theories to explain maximality in section 3.2. In this case, the *wash verb accomplishment* “o João lavou a camisa, mas a camisa não estava limpa (John washed the shirt, but the shirt was not clean)” and the *incomplete accomplishment* “o João destruiu a aldeia, mas a aldeia não ficou completamente destruída (John destroyed the village, but the village was not completely destroyed)” both involve a ‘*ceteris paribus* (all else being equal) degree’ that represents the desired degree of outcome. For example, if John washed the shirt, the desired result would be “the shirt was (completely) clean”; if John destroyed the village, the desired result would be “the village was completely destroyed”. In the second clause of both sentences, we negate the possibility of this desired degree of result. However, we do not negate the event itself. To be more precise, see the illustrations below:

Figure 4-13- O João lavou a camisa, mas a camisa não estava limpa. ‘John washed the shirt, but the shirt was not clean’

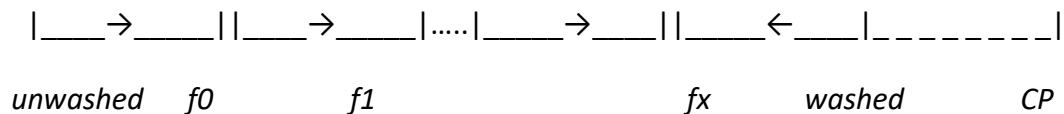
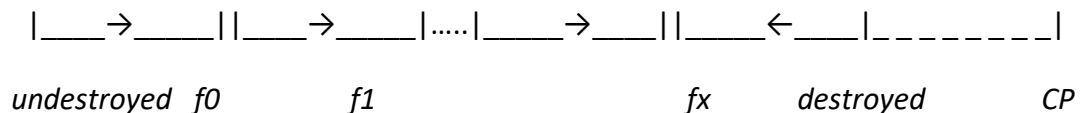


Figure 4-14- O João destruiu a aldeia, mas a aldeia não ficou completamente destruída. ‘John destroyed the village, but the village was not completely destroyed’



Figures 4-13 and 4-14 represent the forces in a *wash verb accomplishment* and an *incomplete accomplishment*, respectively. Figure 4-13 represents the force in the situation of “washed the shirt”; if there are no second clauses, the force would lead to the CP of the situation, that is, “the shirt is clean”. However, with the second clause, the speaker specifies that the force in the situation does not have enough magnitude to reach the CP. Similarly, the CP in Figure 4-14 would be “village completely destroyed”. Nevertheless, the CPs of the two situations are not the culmination of the

accomplishments for different reasons. In *wash verbs*, the CP is represented by an adverbial that is not the participle of the main verb (washed $\neq$ clean); in incomplete accomplishments, the CP is represented by a participle that goes through a granularity shift operation (destroyed $\neq$ completely destroyed).

The acceptability rating of *transitive psychological verbs* is in fourth place; it falls somewhere in the middle of the scale. This is likely because this category includes punctual causative verbs (Fritz-Huechante et al., 2020); including those verbs would significantly lower the mean acceptability rating for the group. This could mean that, like in Spanish, European Portuguese also has two types of *transitive psychological verbs*. For example, “*O Miguel surpreendeu o Pedro* (Miguel surprised Peter)” would be a punctual causative predicate, or achievement. The item “*O Miguel surpreendeu o Pedro, mas o Pedro não se sentiu surpreendido*. (Miguel surprised Peter, but Peter did not feel surprised.)” could have a significantly lower acceptability rating if it were a punctual causative predicate. However, this seems not to be the case, since from Figure 4-12 in section 4.2.4, we can see that the ratings are not significantly different. At least in the results of the present study, the differences in *transitive psychological verbs* are not confirmed.

4.3.1.2. Intentional subject vs. non-intentional subject

As for the subject's intentionality, we observed that it has no significant effect on the judgment of *failed attempt accomplishments* and *incomplete accomplishments*. As mentioned above, we assume that *failed attempt accomplishments* do not exist in European Portuguese. On the other hand, subject intentionality/animacy is reported to have no consequence in *incomplete accomplishments* because it is not under a zero-change reading. Our results suggest that this is also the case in European Portuguese.

The results show that non-culminating accomplishments with intentional/animate subjects are always more acceptable than those with non-intentional/inanimate subjects. However, the acceptance rate of non-culminating accomplishments with inanimate subjects in *wash verbs* (2.93) and *transfer verbs* (3.07) is relatively high. The

mean acceptability rating of *wash* and *transfer verbs* with inanimate subjects is so high that they fall in the upper half of the 1-5 scale. Does this mean that an animate subject is not a prerequisite for non-culminating accomplishments in European Portuguese? A potential clue to the problem mentioned above is found in Folli and Harley (2008). The authors suggest that an inanimate causer can also initiate an event, like agents; however, the internal constitution of the causer must be related to the types of events it can initiate. See examples below:

(128). Italian

a. *#Il temporale ha rotto la finestra*

‘The storm broke the window’

b. *?Il vento/Il colpo di vento ha rotto la finestra*

‘?The wind/The gust of wind broke the window’

c. *Il ramo ha rotto la finestra*

‘The branch broke the window’

In (19a), the storm could not be a direct causer of the broken window, although the windows might have broken due to the storm’s winds. In (19b), the winds themselves can be said to break the window, as long as they do so directly, e.g., with a sudden gust. In (19c), the branch could undoubtedly be the direct causer of the broken window. This means that an inanimate causer could initiate the *break* event when the speaker relates the causer to the effect in a direct way. The authors suggest that an inanimate causer could initiate the event when the causer has teleological capability: the inherent qualities and abilities of the entity to participate in the eventuality denoted by the predicate (Higginbotham, 1998).

In addition, the authors state that the teleological capability of a causer varies across different languages, with specific languages being more restrictive than others. It could be the case that in European Portuguese, speakers consider inanimate causers more teleologically capable, i.e., speakers can directly relate an inanimate causer and the

effect more easily. As long as the inanimate causer can initiate the event, the rest of the non-culminating accomplishment would behave in the same way as an accomplishment with an animate causer. However, even if speakers of European Portuguese consider inanimate causers more teleologically capable, it may not reach the same level of teleological capability as an animate causer/agent. This could explain that non-culminating accomplishments with intentional/animate subjects are always better accepted than those with non-intentional/inanimate subjects.

4.3.1.3. Different forms of the second clause

From the judgments on specific variables in *wash verbs*, *transfer verbs*, and *transitive psychological verbs*, we observed that certain forms of the second clause are generally better accepted in all those types of non-culminating accomplishments. For example, in *wash verbs*, affirming the existence of the incomplete part of the event is preferable to negating the desired result state of the event in the *Pretérito* form, and it is also preferable to negating the culmination using the past participle of the verb in the *Pretérito* form. See examples below.

(129). European Portuguese

- a. *João lavou a camisa, mas a camisa não estava lavada.* (worst)
'John washed the shirt, but the shirt was not washed'
- b. *João lavou a camisa, mas a camisa não estava limpa.* (better)
'John washed the shirt, but the shirt was not clean'
- c. *João lavou a camisa, mas a camisa ainda tinha manchas.* (best)
'John washed the shirt, but the shirt still had stains'

(20a) represents the worst accepted form of the sentence, (20b) is better accepted, and (20c) is the best accepted form. This result confirms our hypothesis that the main verb in the *Pretérito form* can represent the culmination or the action of the causer of the event and is the most difficult to cancel. In addition, there is only one causal relation in (20a), namely "wash → washed". However, at least two causal relations exist in the causal chains of (20b) and (20c). In (20b), there is a second causal relation that is inferred

from the first causal relation “wash → washed”; the second causal relation could be “washed → clean”. In (20c), there is a potential third causal relation that is inferred from the second one in (20b), it could be “clean → not have stains”. Let us now see the examples in the other two types of non-culminating accomplishments. In *transfer verbs*, although not as prominent as in *wash verbs*, negating the whole desired result is harder (less acceptable) than negating the partial desired result. See example below.

(130). European Portuguese

a. *A Matilde ensinou o hino nacional ao Pedro, mas o Pedro não aprendeu nada.* (worse)

‘Matilde taught Peter the national anthem, but Peter learnt nothing’

b. *A Matilde ensinou o hino nacional ao Pedro, mas o Pedro só aprendeu parte.* (better)

‘Matilde taught Peter the national anthem, but Peter only learnt part of it’

(21a) and (21b) both involve a causal chain containing at least two causal relations: the first one would be “teach → taught” and the second one could be “taught → learn”. However, in (21a), the event is presumably less developed than the event in (21b), and the less developed version is less acceptable than the better-developed version of the event.

In *transitive psychological verbs*, like *wash verbs*, the use of past participles of the main verb in the second clause is less accepted than using a similar adjective/adverbial phrase with no morphological relation with the main verb. Like in *wash verbs*, the *Pretérito* form of the main verb could represent the culmination or the action of the causer of the event, and is the hardest to cancel.

If we examine the causal relations in the non-culminating accomplishments above, it is not difficult to notice a pattern. The negation of the action of the causer is the least acceptable; it is better to negate the effect on the causee. Our results also suggest that it is easier for speakers to accept non-culmination when the causal relation in the

description of the first and the second clause is more complicated (when it includes more than one causal relation or the event is more developed).

4.3.2. Online

The results of the online processing in the present study show a different pattern from those of the offline judgement. Let us first look at the order of processing times. *Failed attempts* take the longest for the speaker to process; this matches the result in the offline judgement. The long processing time could mean the sentence is very odd. This suggests again that there may not be any *failed attempts* in European Portuguese. *Transfer verbs* and *incomplete accomplishments* take the shortest processing times; the offline results also show that those two are the most acceptable types. The processing time of *transitive psychological verbs* falls in the middle. Finally, the online processing time of *wash verbs* is almost as long as *failed attempts*, but the judgments on them are generally not as bad.

In the part of the intentionality/animacy of the subject, the results show no impact on the processing time of the participants. However, the intentionality/animacy of the subject can indeed affect the offline judgement, as shown in the previous subsection. This asymmetry could mean that speakers do not have to process additional information for the offline judgements of non-culminating accomplishments; it could also mean that the processing of the subject's intentionality is not taxing for the speakers. This observation could go in the opposite direction of the theory presented in Guéron and Vogeleer (2021), as the authors suggest a cognitive function when speakers hear non-culminating accomplishments. The cognitive function would intuitively be reflected in the processing time of different types of non-culminating accomplishments.

4.4. Conclusion

In this chapter, I have presented the results of an experiment on non-culminating accomplishments in European Portuguese. To answer the questions in section 4.1, we employed a self-paced reading study, including an online processing task and an offline judgement task.

I have outlined the methods of the present experiment in section 4.2. We have 61 native European Portuguese speakers participating in the present experiment. The material used in the experiment is created according to the parameters of the five types of non-culminating accomplishments in Guéron and Vogeleer (2021). In addition to the distinctions between the five types, we also tested the potential difference in intentionality of the subject and different forms of the second clause. A total of 136 items were used in the present experiment. In section 4.2, I have shown the analysis of the results of both offline judgment and online processing tasks. In section 4.3, I have discussed the results of the experiment. According to the experiment's results, native speakers of European Portuguese accept non-culminating accomplishments in four types, from most acceptable to least acceptable: *transfer verbs*, *incomplete accomplishments*, *transitive psychological verbs*, and *wash verbs*.

Accomplishments in European Portuguese may not have an imperfective reading by default, meaning that the culmination of an accomplishment is not implied but included in the denotation of the accomplishment. In the most accepted type, *transfer verbs*, the accomplishment could include a denoted event and an implied event; the implied event is easily denied since it involves another causal relation not included in the event description.

The types of *wash verbs* and *incomplete accomplishments* could both involve the notion of maximality; the result does not have to reach the maximal degree for the accomplishment to be true. However, in *wash verbs*, the maximal degree is represented by an adjective, not the participle of the main verb (washed $\neq$ clean); in *incomplete accomplishments*, the maximal degree is represented by a modified participle that represents a finer granularity level (destroyed $\neq$ completely destroyed).

In addition, the results show that *failed attempts* may not exist in European Portuguese because of the extremely low acceptability ratings.

Non-culminating accomplishments with intentional/animate subjects are always better accepted than those with non-intentional/inanimate subjects. However, speakers

accept non-culminating accomplishments with inanimate subjects to a certain extent. I have suggested that animate/intentional subjects may not be a requirement for non-culminating accomplishments in European Portuguese, potentially because the teleological capability of a causer varies in different languages. In European Portuguese, speakers may consider inanimate causers to have sufficient teleological capability to initiate the event (and generate a non-culmination reading), but not as capable as an animate subject.

I have discussed the differences between the five types of non-culminating accomplishments and the differences between types of negating clauses utilising causal relations. Specific non-culminating accomplishments (with the second clause negating the desired results and not the culmination) could include a causal chain that involves two or more causal relations. Furthermore, the result of our experiment shows that the second clause does affect the acceptability of the non-culminating accomplishment; the negation of the action of the causer is the least acceptable, and the negation of the effect on the causee is better accepted. I hypothesise that it is easier for speakers to accept non-culminating accomplishments when the second clause involves more than one causal relation with the first clause. For example, “wash→ washed” should be harder to deny than “teach→ taught→ learn”.

The results of the online processing task are interesting, as they do not always coincide with the results of the offline judgement task, except for *failed attempts*. The processing time for *failed attempts* is very long, confirming that this type of non-culminating accomplishment may not exist in European Portuguese. The results demonstrate that subject intentionality may not affect the processing of non-culminating accomplishment of any type in European Portuguese. Nevertheless, subject intentionality does affect the offline judgement of non-culminating accomplishments.

Through this experiment, the answers to the research questions are explored, as shown below:

- Four types of non-culminating accomplishments are acceptable for native speakers of European Portuguese.

- The types are *wash verbs*, *transfer verbs*, *transitive psychological verbs*, and *incomplete accomplishments*.
- Intentional subjects can affect the acceptability of the non-culminating accomplishments; however, the acceptance ratings for non-intentional subjects are also significant.
- Different second clauses can affect the acceptability of the non-culminating accomplishments; the sentences are generally better accepted when the event is developed further.
- The difficulties of processing non-culminating accomplishments in European Portuguese seem limited only to failed attempts; however, this type is believed not to exist. There appear to be no difficulties processing other types of non-culminating accomplishments, and there certainly are no differences in processing intentional versus non-intentional subjects.

Conclusion

The general objective of the present work is to study the relation between accomplishments and their result states. For this purpose, the present study comprises both theoretical and experimental parts.

The work is divided into four chapters. Chapter one is dedicated to aspect, chapter two talks about aspectual classes and in particular, accomplishments, chapter three discusses non-culminating accomplishments extensively, and chapter four is the experimental chapter.

In Chapter One, I discussed properties related to aspect. Aspect can be divided into grammatical aspect and lexical aspect. Grammatical aspect are often determined by grammatical morphemes in different languages, like simple past and progressive in English, or perfect and imperfect in Portuguese. Lexical aspect, on the other hand, is typically understood as the inherent temporal structure of a situation; it can be used to describe different classes of predicates. My focus in this chapter is on the lexical aspect, as the present study is dedicated to accomplishments, a type of lexical aspect. Five lexical aspectual types are proven to exist independently in European Portuguese. The difference between the types of lexical aspect depends on their properties, including dynamism, durativity, and telicity. Dynamism is a property that concerns the change in a situation. A dynamic situation can be divided into stages, allowing it to evolve over time. The durativity of a situation has to do with whether or not the situation lasts for a certain period of time. The last parameter, telicity, is more complicated; some situations can continue indefinitely, and others must, of ontological necessity, cease at some natural point. The first kind of situation is an atelic situation, and the second kind is a telic situation.

In addition to the three parameters of lexical aspect, I also mentioned the two semantic categories typically associated with aspect: tense and modality. Aspect concentrates on the internal temporal structure of the situation, while tense concentrates on the external temporal structure of the situation in relation to the time of speech or

reference. On the other hand, modality is not concerned with how situations are placed in time, but whether something is possible or necessary.

Chapter one also serves as an introduction to the present study; it introduces the concept of accomplishment and the properties of accomplishments.

Chapter two is dedicated to aspectual classes and accomplishments. There are five types of situations in European Portuguese; the most important one for the present study is accomplishment. I discussed the relevant theories about accomplishments in the literature. With the theories in mind, I introduced the definition of accomplishments that I have used in the present study:

- Accomplishment is a category for events and not verbs, and it depends on the lexical meaning of the verb and its arguments.
- An accomplishment is an event that denotes time-extended events by default (when not modified by grammatical aspect) and has a natural (whether or not included in the lexical meaning of the verb) endpoint.
- An accomplishment includes an activity subevent and a culmination. The activity subevent can or may not have an incremental relation with the affecting entity. The time span of an accomplishment begins when the activity subevent starts and ends when it reaches its culmination.

Accomplishments typically involve a change of state, that is to say, there is a result state that is being changed into after the accomplishment. In the second half of chapter two, I discussed the result states of accomplishments in the literature and collected evidence for a typology of result states. In section 2.6, I argued against Moens and Steedman by showing various problems in their theory, and I introduced a different idea of result state and *consequent state*. I proposed that result states differ from *consequent states*: the *consequent state* is a universal concept that includes all the possible result states. All types of result states count as a part of the *consequent state* of the accomplishment, and the *consequent state* is only relevant after the realization or termination of the accomplishment. In addition, I proposed a typology of result states that does not rely on

the coercion theory and could cover most of the types of accomplishments. Furthermore, I argued that the denotation of an accomplishment does not include the *consequent state*. Instead, the *consequent state* is a set of implied *result states*, and it can only be temporally located after the realization or termination of the accomplishment.

Importantly, some features in European Portuguese relevant to the representation of result states differ from those in English. I also proposed a typology for result states in European Portuguese:

Table 1- Result states in European Portuguese

Type	Structure	Example
1	[patient + <i>ser</i> + irregular participle]	<i>O João corrigiu o exemplo.</i> 'John corrected the example' → <i>O exemplo é correto.</i> 'The example is correct'
2	[patient + <i>estar/ficar</i> + irregular participle]	<i>O João corrigiu o exemplo.</i> 'John corrected the example' → <i>O exemplo está/ficou correto.</i> 'The example is/was correct'
3	[patient + <i>estar/ficar</i> + regular participle]	<i>O João corrigiu o exemplo.</i> 'John corrected the example' → <i>O exemplo está/ficou corrigido.</i> 'The example is/was corrected'
4	[patient + <i>estar/ficar</i> + ADJP]	<i>O João aqueceu a sopa.</i> 'John heated the soup' → <i>A sopa está/ficou quente.</i> 'The soup is/was hot'
5	[patient + <i>estar/ficar</i> + ADVP/PP]	<i>O João empurrou o Pedro.</i> 'John pushed Peter' → <i>O Pedro está/ficou no chão.</i> 'Peter is/was on the floor'
6	[agent/actor + <i>estar/ficar</i> + ADVP/PP]	<i>O João subiu o monte.</i> 'John climbed the mountain' → <i>O João está/ficou no cimo (do monte).</i> 'John is/was at the top (of the mountain)'
7	[agent + <i>ser</i> + NP]	<i>A Maria deu à luz uma criança.</i> 'Mary gave birth to a child' → <i>A Maria é uma mãe.</i> 'Mary is a mother'

In chapter three, I discussed non-culminating accomplishments, particular accomplishments describing situations considered to be telic, but in which it cannot be inferred that they have reached their end. This phenomenon is becoming increasingly well-studied across typologically unrelated languages, but not in European Portuguese. A non-culminating accomplishment is a non-progressive accomplishment that allows an interpretation in which the culmination is absent. The non-culmination interpretation is typically realised with the help of a second clause. See example below.

(1). European Portuguese

O João lavou a camisa, mas a camisa não está limpa (porque o detergente não funciona bem).

‘John washed the shirt, but the shirt isn't clean (because the detergent doesn't work properly)’

In a non-culminating accomplishment, the predicate allows for an interpretation in which the result state indicated by the predicate is not required.

In chapter three, I first discussed two important theoretical backgrounds frequently mentioned in theories concerning non-culminating accomplishments: causation and maximality. It is believed that there are causal relations involved in accomplishments; however, the causal relation could have no effect since the result state of particular accomplishments could be negated. Causation theories in philosophy may help us understand the phenomenon of non-culmination; thus, I discussed various causation theories in the literature, including counterfactual, probabilistic, prototype, and force theories. Traditionally, linguistic theories of accomplishment typically use the counterfactual causation theory. I have argued that the force theory is better suited to the problem of non-culminating accomplishments.

In addition, I proposed that the type/token theory in ontology in Dodd (2007) could help to explain the phenomenon of abstract causation. That is, the physical manifestation of an entity could be projected onto the abstract concept that represents such an entity in the conceptual structure of a causal relation. I introduced the type/token theory in

ontology in Dodd (2007) because the force theory has some problems with abstract causations, and I have proposed that combining the force theory with the type/token theory can address the majority of the cases of causation.

The second theoretical background is maximality. In specific languages, maximality is used to determine the truth value of an accomplishment situation instead of telicity. I observed that maximality is also similar to the construal in non-culminating accomplishments in English or Portuguese. In addition, I proposed using the representation of force theory in causation to illustrate the properties of an accomplishment situation better. I proposed a new approach to maximality. I used the force theory instead of the counterfactual causation theory to represent maximality, and I provided explanations and illustrations of maximality in two types of languages. The idea is that situations have net forces, and whether the situation continues to develop depends on the net force acting upon it. Importantly, the properties of non-culminating accomplishment depend heavily on the speaker's perspective and interpretation of the situation. I proposed that the maximal reading of languages with weak perfective operators comes from the speaker's choice of the components in the net forces. The maximal reading of languages with strong perfective operators comes from the granularity shift operation, which could only happen if the speaker considers that the forces affecting unique objects in the net force are not repeating forces.

Further in the chapter, I discussed the theories of non-culminating accomplishments and several recent experimental works on this subject. Theories and experiments have been developed in other Romance languages, Germanic languages, and Slavic languages, but there is no extensive study on European Portuguese. In the final part of chapter three, I talked about the potential existence of non-culminating accomplishments in European Portuguese and their potential features, including the role of the subject and the difference in the second clause. I proposed in section 3.6 a brief explanation of non-culminating accomplishment in European Portuguese using the force theory.

In chapter four, I conducted an experiment on native speakers of European Portuguese to confirm the existence of non-culminating accomplishments and their features. I used the parameters in the literature to create a list of potentially valid non-culminating accomplishments in European Portuguese. The experiment employed online segment-by-segment self-paced reading tasks with moving window presentations and offline judgment tasks. Through this experiment, properties of non-culminating accomplishments in European Portuguese are explored, as shown below:

- Four types of non-culminating accomplishments are acceptable for native speakers in European Portuguese.
- The types are *wash verbs*, *transfer verbs*, *transitive psychological verbs*, and *incomplete accomplishments*.
- Intentional subjects can affect the acceptability of the non-culminating accomplishments; however, the acceptance ratings for non-intentional subjects are also significant.
- Different second clauses can affect the acceptability of the non-culminating accomplishments; the sentences are generally better accepted when the event is developed further.
- The difficulties of processing non-culminating accomplishments in European Portuguese seem limited only to failed attempts; however, this type is believed not to exist. There seems to be no difficulties processing other types of non-culminating accomplishments, and there certainly are no differences in processing intentional vs. non-intentional subjects.

The experiment confirms that there are non-culminating accomplishments in European Portuguese, that is to say, the result states of an accomplishment in European Portuguese are not always reached. However, specific result states that I have proposed in chapter two are very difficult to negate according to the results of the experiment. Those result states are represented by the participle of the main verb in the accomplishment.

The following list summarises the main “accomplishments” of this work:

This study:

- Proposes the features of the result states and the *consequent state*.
- Provides a typology of result states in English and European Portuguese.
- Combines the force and the type/token theories to address causal relations in accomplishments.
- Introduces a new approach to maximality using the force theory, explaining and illustrating maximality in two types of languages.
- Explains maximality in languages with weak perfective operators and the maximal reading in languages with strong perfective operators using a modified version of the illustration of net forces.
- Accounts for the features of non-culminating accomplishments in European Portuguese using the force theory.
- Tests and analyzes the properties of non-culminating accomplishments in European Portuguese.

A potential limitation of the present study is that I did not distinguish between intentionality and agentivity in the experiment. In addition, the material used in the experiments is still limited. For example, the influence of the second clause (result state) in each condition is analysed only with 4 or 5 sentences in each type of non-culminating accomplishment, and I did not use all the possible result states in European Portuguese. Recall in section 2.7, I have listed seven possible result states in European Portuguese. In those possible result states, there are further distinctions of the usage of *ser*, *estar*, and *ficar*; the usage of ADJPs, ADVPs, PPs, and NPs, and the possible influence of tense are not all tested in the experiment.

Furthermore, although I have conducted an experiment to test the phenomenon of non-culminating accomplishments in European Portuguese, the cross-linguistic application of the study is still limited. The relation between the result state and the

accomplishment depends heavily on the lexical meaning of the verb, which means that there could be many differences when it comes to other languages.

For future research, the differences among intentional agents, non-intentional agents, and instruments/causers in the processing of non-culminating accomplishments would be an interesting topic.

Another fascinating discovery in section 2.6 is the result state with NP. Recall that I have discussed the distinction between a profession's result state and an identity's result state. If John killed Peter, then we could say that "John is a killer"; if Mary ate a human leg, then we could say that "Mary is a cannibal". However, to what extent does the activity have to develop for a person to be considered a cannibal? For example, consider a situation where Mary was starving to death and had eaten a small piece of human meat. Is she a cannibal? Or does she have to enjoy the activity of eating human flesh, for instance? A similar question can be asked about a profession: if John built his own house, is John a builder? Or does he have to build at least ten houses to be considered a builder? It seems that when it comes to profession, the more iterations of one accomplishment (for example, John built one house, Peter ran one marathon), the more likely the result state with NP is true. However, we can also say that "John is a born diplomat" or "Peter is a born teacher".

These questions could be somehow connected to the question of Minimal Part Constraint in Martin and Demirdache (2020). That is to say, how much must the activity proceed to satisfy the property encoded by the VP? If "*Fàxíngshī gěi tā rǎn le tóufa, kěshì méi rǎn-shang*" (Mandarin: The hairdresser dyed her hair but did not manage to dye it)" is true, how much does the activity have to proceed? Does the hairdresser have to finish preparing the dye, or does the brush have to touch the hair physically? In addition, if "John ate a pizza" is true on a coarse granularity level, how little can the pizza be left untouched? These are certainly topics for future research.

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APPENDICES

Appendix 1. Experiment items

Failed_attempt_accomplishments:

- (1). "O_Martim abriu a_porta ontem, mas a_porta não estava_aberta, infelizmente."
'Martin opened the door yesterday, but it wasn't_open, unfortunately.'
- (2). "O_vento abriu a_porta ontem, mas a_porta não estava_aberta, infelizmente."
'The_wind opened the_door yesterday, but the_door wasn't_open, unfortunately.'
- (3). "A_Maria enterrou o_osso ontem, mas o_osso não estava_enterrado, felizmente."
'Mary buried the bone yesterday, but the bone wasn't_buried, fortunately.'
- (4). "O_terramoto enterrou o_osso ontem, mas o_osso não estava_enterrado, felizmente."
'The_earthquake buried the_bone yesterday, but the_bone wasn't_buried, fortunately.'
- (5). "O_Tómas envenenou o_Vasco ontem, mas o_Vasco não estava_envenenada, felizmente."
'Tomas poisoned the_Vasco yesterday, but the_Vasco wasn't_poisoned, fortunately.'
- (6). "O_trabalho_na_mina envenenou o_Lourenço ontem, mas o_Lourenço não estava_envenenada, felizmente."
'The_work_in_the_mine poisoned_Lourenço yesterday, but_Lourenço wasn't_poisoned, fortunately.'
- (7). "O_Francisco fechou a_porta ontem, mas a_porta não estava_fechada, infelizmente."
'Francisco closed the_door yesterday, but the_door wasn't_closed, unfortunately.'

(8). "O_vento fechou a_porta ontem, mas a_porta não estava_fechada, infelizmente."

'The_wind closed the_door yesterday, but the_door wasn't_closed, unfortunately.'

(9). "A_Beatriz matou a_Clara ontem, mas a_Clara não estava_morto, felizmente."

'Beatriz killed_Clara yesterday, but_Clara wasn't_dead, fortunately.'

(10). "A_tempestade matou o_Lucas ontem, mas o_Lucas não estava_morto, felizmente."

'The_storm killed_Lucas yesterday, but_Lucas wasn't_dead, fortunately.'

(11). "O_Miguel partiu a_janela ontem, mas a_janela não estava_partida, felizmente."

'Miguel broke the_window yesterday, but the_window wasn't_broken, fortunately.'

(12). "O_vento partiu a_janela ontem, mas a_janela não estava_partida, felizmente."

'The_wind broke the_window yesterday, but the_window wasn't_broken, fortunately.'

(13). "O_João queimou o_livro ontem, mas o_livro não estava_queimado, felizmente."

'John burned the_book yesterday, but the_book wasn't_burned, fortunately'

(14). "O_fogo queimou o_livro ontem, mas o_livro não estava_queimado, felizmente."

'The_fire burnt the book yesterday, but the book wasn't burnt, fortunately.'

Incomplete_accomplishments:

(15). "O_Henrique derreteu o_gelo ontem, mas o_gelo não estava_completamente derretido."

'Henrique melted the ice yesterday, but the ice wasn't completely melted.'

(16). "O_fogo derreteu o_gelo ontem, mas o_gelo não estava_completamente derretido."

- 'The_fire melted the ice yesterday, but the ice wasn't completely melted.'*
- (17). "O_Gabriel descascou a_batata ontem, mas a_batata não estava completamente descascada."
- 'Gabriel peeled the potato yesterday, but the potato wasn't completely peeled.'*
- (18). "A_máquina descascou a_batata ontem, mas a_batata não estava completamente descascada."
- 'The_machine peeled the_potato yesterday, but the_potato wasn't completely peeled.'*
- (19). "O_Manuel destruir a_aldeia ontem, mas a_aldeia não ficou completamente destruída."
- 'Manuel destroyed the_village yesterday, but the_village wasn't completely destroyed.'*
- (20). "O_fogo destruir a_aldeia ontem, mas a_aldeia não estava completamente destruída."
- 'The_fire destroyed the_village yesterday, but the_village wasn't completely destroyed.'*
- (21). "O_João lavrou o_campo ontem, mas o_campo não ficou completamente lavrado."
- 'John plowed the field yesterday, but the field wasn't completely plowed.'*
- (22). "A_passagem_da_manada_de_búfalos lavrou o_campo ontem, mas o_campo não ficou completamente lavrado."
- 'The_passage_of_the_buffalo_herd plowed the_field yesterday, but the_field wasn't completely plowed.'*
- (23). "O_Eduardo desmontou o_t telescópio ontem, mas o_t telescópio não estava completamente desmontado."
- 'Eduardo dismantled the telescope yesterday, but the telescope wasn't completely dismantled.'*
- (24). "O_terramoto desmontou o_t telescópio ontem, mas o_t telescópio não estava completamente desmontado."

'The_earthquake dismantled the_telescope yesterday, but the_telescope wasn't completely dismantled.'

(25). *"O_Martim pintou a_parede ontem, mas a_parede não ficou completamente pintada."*

'Martin painted the wall yesterday, but the wall wasn't completely painted.'

(26). *"A_explosão_de_uma_lata_de_tinta pintou a_parede ontem, mas a_parede não ficou completamente pintada."*

'The_explosion_of_a_can_painted_the_wall_yesterday_but_the_wall_wasn't_completely_painted.'

Transfer_verbs:

(27). *"A_Camila atribuiu a_tarefa ao_Gustavo, mas o_Gustavo não assumiu nada, infelizmente."*

'Camila assigned the task to Gustavo, but Gustavo didn't take over anything, unfortunately.'

(28). *"A_Camila atribuiu a_tarefa ao_Rafael, mas o_Rafael só assumiu parte, infelizmente."*

'Camila assigned the task to_Rafael, but_Rafael only took on part of it, unfortunately.'

(29). *"O_acaso atribuiu a_tarefa ao_Henrique, mas o_Henrique não assumiu nada, infelizmente."*

'Chance assigned the task to_Henrique, but_Henrique didn't take on anything, unfortunately.'

(30). *"O_acaso atribuiu a_tarefa ao_Gabriel, mas o_Gabriel só assumiu parte, infelizmente."*

'Chance assigned the task to_Gabriel, but_Gabriel only took on part of it, unfortunately.'

(31). *"A_Leonor deu uma_oportunidade ao_Guilherme, mas o_Guilherme não aproveitou nada, infelizmente."*

- 'Leonor gave_Guilherme an_opportunity, but_Guilherme didn't take any of it, unfortunately.'*
- (32). *"A_Leonor deu uma_oportunidade ao_Duarte, mas o_Duarte só aproveitou parte, infelizmente."*
- 'Leonor gave_Duarte an_opportunity, but_Duarte only took part of it, unfortunately.'*
- (33). *"O_acaso deu uma_oportunidade ao_Luís, mas o_Luís só aproveitou parte, infelizmente."*
- 'Chance gave_Luís an_opportunity, but_Luís only took part of it, unfortunately.'*
- (34). *"O_acaso deu uma_oportunidade ao_Tomás, mas o_Tomás não aproveitou nada, infelizmente."*
- 'Chance gave_Tomás an_opportunity, but_Tomás didn't take any of it, unfortunately.'*
- (35). *"O_Afonso devolveu o_dinheiro ao_Alexandre, mas o_Alexandre só recebeu parte, infelizmente."*
- 'Afonso returned the money to Alexandre, but Alexandre only got part of it, unfortunately.'*
- (36). *"O_Bruno devolveu o_dinheiro ao_Artur, mas o_Artur não recebeu nada, infelizmente."*
- 'Bruno returned the money to Arthur, but Arthur didn't get anything, unfortunately.'*
- (37). *"A_redução_do_imposto devolveu o_dinheiro ao_Diogo, mas o_Diogo não recebeu nada, infelizmente."*
- 'The_tax_reduction returned the money to_Diogo, but_Diogo received nothing, unfortunately.'*
- (38). *"A_redução_do_imposto devolveu o_dinheiro ao_Pedro, mas o_Pedro só recebeu parte, infelizmente."*
- 'The tax_reduction returned the money to_Pedro, but_Pedro only received part of it, unfortunately.'*

(39). "A_Matilde ensinou o_hino_nacinal ao_Simão, mas o_Simão não aprendeu nada, infelizmente."

'Matilde taught the_national_hymn to_Simão, but_Simão didn't learn anything, unfortunately.'

(40). "A_Matilde ensinou o_hino_nacinal ao_Lucas, mas o_Lucas só aprendeu parte, infelizmente."

'Matilde taught the_nacinal_hymn to_Lucas, but_Lucas only learned part of it, unfortunately.'

(41). "A_vida_militar ensinou o_hino_nacinal ao_Mateus, mas o_Mateus não aprendeu nada, infelizmente."

'Military_life taught the_national_hymn to_Matthew, but_Matthew didn't learn anything, unfortunately.'

(42). "A_vida_militar ensinou o_hino_nacinal ao_Lucas, mas o_Lucas só aprendeu parte, infelizmente."

'Military_life taught the_national_hymn to_Lucas, but_Lucas only learned part of it, unfortunately.'

(43). "O_Vicente explicou o_sentido_da_vida ao_Simão, mas o_Simão não compreendeu nada, infelizmente."

'Vicente explained the meaning of life to Simon, but Simon didn't understand anything, unfortunately.'

(44). "O_Rafael explicou o_sentido_da_vida ao_Diogo, mas o_Diogo só compreendeu parte, infelizmente."

'Rafael explained the meaning of life to Diogo, but Diogo only understood part of it, unfortunately.'

(45). "A_paternidade explicou o_sentido_da_vida ao_Eduardo, mas o_Eduardo só compreendeu parte, infelizmente."

'Parenthood explained the meaning of life to_Eduardo, but_Eduardo only understood part of it, unfortunately.'

(46). "A_paternidade explicou o_sentido_da_vida ao_David, mas o_David não

compreendeu nada, infelizmente."

'Parenthood explained the meaning of life to_David, but_David didn't understand anything, unfortunately.'

(47). *"O_José forneceu a_comida ao_Miguel, mas o_Miguel não recebeu nada, infelizmente."*

'José provided_Miguel with food, but_Miguel didn't receive anything, unfortunately.'

(48). *"O_Raúl forneceu a_comida ao_Carlos, mas o_Carlos só recebeu parte, infelizmente."*

'Raúl provided_Carlos with food, but Carlos only got part of it, unfortunately.'

(49). *"O_acaso forneceu a_comida ao_Bernardo, mas o_Bernardo não recebeu nada, infelizmente."*

'Chance provided_Bernardo with food, but_Bernardo didn't receive anything, unfortunately.'

(50). *"O_acaso forneceu a_comida ao_Mateus, mas o_Mateus só recebeu parte, infelizmente."*

'Chance provided_Mateus with food, but_Mateus only received part of it, unfortunately.'

(51). *"O_Vicente mostrou o_problema ao_Simão, mas o_Simão não viu nada, infelizmente."*

'Vicente showed_Simão the problem, but_Simão didn't see anything, unfortunately.'

(52). *"A_Vitória mostrou o_problema ao_Lourenço, mas o_Lourenço só viu parte, infelizmente."*

'Victoria showed the problem to Lawrence, but Lawrence only saw part of it, unfortunately.'

(53). *"O_vídeo mostrou o_problema ao_André, mas o_André não viu nada, infelizmente."*

'The_video showed the_problem to_André, but_André didn't see anything, unfortunately.'

(54). *"O_vídeo mostrou o_problema ao_Luís, mas o_Luís só viu parte, infelizmente."*

'The_video showed the_problem to_Luís, but_Luís only saw part of it, unfortunately.'

(55). *"O_Manuel ofereceu o_prémio ao_Vasco, mas o_Vasco só aceitou parte, infelizmente."*

'Manuel offered the prize to Vasco, but_Vasco only accepted part of it, unfortunately.'

(56). *"O_Manuel ofereceu o_prémio ao_Pedro, mas o_Pedro não aceitou nada, infelizmente."*

'Manuel offered the prize to Peter, but Peter didn't accept anything, unfortunately.'

(57). *"O_acaso ofereceu o_prémio ao_Henrique, mas o_Henrique não aceitou nada, infelizmente."*

'Chance offered the prize to_Henrique, but_Henrique didn't accept anything, unfortunately.'

(58). *"O_acaso ofereceu o_prémio ao_Rodrigo, mas o_Rodrigo só aceitou parte, infelizmente."*

'Chance offered the prize to_Rodrigo, but_Rodrigo only accepted part of it, unfortunately.'

Transitive_psychological_verbs:

(59). *"A_Benedita acalmou o_Rúben ontem, mas o_Rúben não se_sentiu acalmado, infelizmente."*

'Benedita calmed Reuben down yesterday, but Reuben didn't feel calmed down, unfortunately.'

(60). *"A_Isabel acalmou o_Paulo ontem, mas o_Paulo não se_sentiu tranquilo, infelizmente."*

'Isabel calmed down Paul yesterday, but Paul didn't feel calm, unfortunately.'

(61). "A_música acalmou o_Filipe ontem, mas o_Filipe não se_sentiu tranquilo, infelizmente."

'The music calmed_Filipe down yesterday, but_Filipe didn't feel calm, unfortunately.'

(62). "A_música acalmou o_Tomás ontem, mas o_Tomás não se_sentiu acalmado, infelizmente."

'The music calmed Thomas down yesterday, but Thomas didn't feel calmed down, unfortunately.'

(63). "O_Vicente assustou o_Enzo ontem, mas o_Enzo não se_sentiu amedrontado, felizmente."

'Vicente frightened Enzo yesterday, but Enzo didn't feel scared, fortunately.'

(64). "O_Duarte assustou o_Salvador ontem, mas o_Salvador não se_sentiu assustado, felizmente."

'The_Duarte frightened the_Salvador yesterday, but the_Salvador didn't feel frightened, fortunately.'

(65). "Os_gritos assustaram a_Sofia ontem, mas a_Sofia não se_sentiu amedrontado, felizmente."

'The screams frightened_Sofia yesterday, but_Sofia didn't feel scared, fortunately.'

(66). "Os_gritos assustaram o_Rui ontem, mas o_Rui não se_sentiu assustado, felizmente."

'The screams frightened_Rui yesterday, but_Rui didn't feel frightened, fortunately.'

(67). "A_Maria desapontou o_Dinis ontem, mas o_Dinis não se_sentiu desapontado, felizmente."

'Mary disappointed Denis yesterday, but Denis didn't feel disappointed, fortunately.'

(68). "A_Maria desapontou o_Tiago ontem, mas o_Tiago não se_sentiu desiludido, felizmente."

'Mary disappointed James yesterday, but James didn't feel disappointed, fortunately.'

(69). "O_livro desapontou o_Gustavo devido_à_sua_temática, mas o_Gustavo não se_sentiu desiludido, felizmente."

'The book disappointed Rita because of its thematics, but Rita didn't feel disappointed, fortunately.'

(70). "O_livro desapontou a_Rita devido_à_sua_temática, mas a_Rita não se_sentiu desapontado, felizmente."

(71). "O_João emocionou o_Gonçalo ontem, mas o_Gonçalo não se_sentiu tocado, infelizmente."

'John moved Gonçalo yesterday, but Gonçalo didn't feel touched, unfortunately.'

(72). "O_Tiago emocionou o_Dinis ontem, mas o_Dinis não se_sentiu emocionado, infelizmente."

'James moved Denis yesterday, but Denis didn't feel moved, unfortunately.'

(73). "A_atuação_musical emocionou o_Filipe ontem, mas o_Filipe não se_sentiu emocionado, infelizmente."

'The_musical_performance moved_Filipe yesterday, but_Filipe didn't feel moved, unfortunately.'

(74). "A_atuação_musical emocionou a_Jéssica ontem, mas a_Jéssica não se_sentiu tocado, infelizmente."

'The musical_performance moved Jessica yesterday, but Jessica didn't feel touched, unfortunately.'

(75). "A_Alice encorajou o_Tiago a_inscriver-se_em_Turismo, mas o_Tiago não se_sentiu encorajado, infelizmente."

'Alice encouraged James to sign up for tourism, but James wasn't encouraged, unfortunately.'

(76). "A_Camila encorajou a_Lara a_inscriver-se_em_Turismo, mas a_Lara não se_sentiu com_vontade, infelizmente."

- 'Camila encouraged_Lara to sign up for tourism, but_Lara didn't feel like it, unfortunately.'*
- (77). *"A_viagem encorajou o_David a_inscriver-se_em_Turismo, mas o_David não se_sentiu com_vontade, infelizmente."*
- 'The trip encouraged_David to sign up for tourism, but_David didn't feel like it, unfortunately.'*
- (78). *"A_viagem encorajou o_Mateus a_inscriver-se_em_Turismo, mas o_Mateus não se_sentiu encorajado, infelizmente."*
- 'The trip encouraged_Matthew to sign up for tourism, but_Matthew didn't feel encouraged, unfortunately.'*
- (79). *"O_Tiago entediou o_Gonçalo com_um_discurso_chato, mas o_Gonçalo não se_sentiu aborrecido, felizmente."*
- 'James bored Gonçalo with a boring speech, but Gonçalo didn't feel annoyed, fortunately.'*
- (80). *"O_Diego entediou o_Vasco com_um_discurso_chato, mas o_Vasco não se_sentiu entediado, felizmente."*
- 'Diego bored Vasco with a boring_speech, but Vasco didn't feel bored, fortunately.'*
- (81). *"O_livro entediou o_Daniel com_um_discurso_chato, mas o_Daniel não se_sentiu entediado, felizmente."*
- 'The_book bored_Daniel with_a_boring_discourse, but_Daniel didn't feel bored, fortunately.'*
- (82). *"O_livro entediou o_José com_um_discurso_chato, mas o_José não se_sentiu aborrecido, felizmente."*
- 'The_book bored_José with_a_boring_discourse, but_José didn't feel bored, fortunately.'*
- (83). *"O_Francisco incitou o_Gabriel à_vingança, mas o_Gabriel não se_sentiu incitado, infelizmente."*
- 'Francis incited Gabriel to revenge, but Gabriel didn't feel incited, unfortunately.'*

(84). "O_Afonso incitou o_Leonardo à_vingança, mas o_Leonardo não se_sentiu vingativo, infelizmente."

'Alfonso incited Leonardo to revenge, but Leonardo didn't feel vengeful, unfortunately.'

(85). "O_genocídio incitou o_Afonso à_vingança, mas o_Afonso não se_sentiu incitado, infelizmente."

'The_genocide incited_Afonso to_vengeance, but_Afonso didn't feel incited, unfortunately.'

(86). "O_genocídio incitou o_José à_vingança, mas o_José não se_sentiu vingativo, infelizmente."

'The_genocide incited_José to revenge, but_José didn't feel vengeful, unfortunately.'

(87). "O_Gustavo irritou o_David ontem, mas o_David não se_sentiu incomodado, felizmente."

'Gustavo annoyed_David yesterday, but_David didn't feel annoyed, fortunately.'

(88). "O_Cristiano irritou o_Nuno ontem, mas o_Nuno não se_sentiu irritado, felizmente."

'Cristiano annoyed_Nuno yesterday, but_Nuno didn't feel annoyed, fortunately.'

(89). "A_música irritou o_Salvador ontem, mas o_Salvador não se_sentiu incomodado, felizmente."

'The music annoyed_Salvador yesterday, but_Salvador didn't feel annoyed, fortunately.'

(90). "A_música irritou o_Xavier ontem, mas o_Xavier não se_sentiu irritado, felizmente."

'The music annoyed_Xavier yesterday, but_Xavier didn't feel annoyed, fortunately.'

(91). "A_Carolina maravilhou o_André ontem, mas o_André não se_sentiu feliz, infelizmente."

'Carolina amazed André yesterday, but André wasn't happy, unfortunately.'

(92). "A_Matilde maravilhou o_Pedro ontem, mas o_Pedro não se_sentiu maravilhado, infelizmente."

'Matilde amazed_Pedro yesterday, but_Pedro didn't feel amazed, unfortunately.'

(93). "A_comida maravilhou o_Leonardo ontem, mas o_Leonardo não se_sentiu maravilhado, infelizmente."

'The food amazed_Leonardo yesterday, but_Leonardo didn't feel amazed, unfortunately.'

(94). "A_comida maravilhou o_Ricardo ontem, mas o_Ricardo não se_sentiu feliz, infelizmente."

'The food amazed Ricardo yesterday, but_Ricardo wasn't happy, unfortunately.'

(95). "A_Ana provocou o_Salvador ontem, mas o_Salvador não se_sentiu incomodado, felizmente."

'Anna teased Savior yesterday, but Savior wasn't bothered, fortunately.'

(96). "A_Inês provocou o_Luís ontem, mas o_Luís não se_sentiu provocado, felizmente."

'Inês teased_Luís yesterday, but_Luís didn't feel teased, fortunately.'

(97). "A_imagem_insultuosa provocou o_Daniel devido_à_sua_temática, mas o_Daniel não se_sentiu incomodado, felizmente."

'The_insulting_image provoked_Daniel because of_its_theme, but_Daniel wasn't bothered, fortunately.'

(98). "A_imagem_insultuosa provocou o_Pedro devido_à_sua_temática, mas o_Pedro não se_sentiu provocado, felizmente."

'The_insulting_image provoked_Pedro because of_its_theme, but_Pedro didn't feel provoked, fortunately.'

(99). "A_Madalena surpreendeu o_José ontem, mas o_José não se_sentiu espantado, infelizmente."

'Madalena surprised José yesterday, but José wasn't surprised, unfortunately.'

(100). "O_Miguel surpreendeu o_José ontem, mas o_José não se_sentiu surpreendido, infelizmente."

- 'Miguel surprised José yesterday, but José wasn't surprised, unfortunately.'*
- (101). "A_festa surpreendeu o_Lucas ontem, mas o_Lucas não se_sentiu espantado, infelizmente."
- 'The_party surprised_Lucas yesterday, but_Lucas wasn't amazed, unfortunately.'*
- (102). "A_festa surpreendeu o_André ontem, mas o_André não se_sentiu surpreendido, infelizmente."
- 'The_party surprised_André yesterday, but_André wasn't surprised, unfortunately.'*
- (103). "O_Gonçalo tranquilizou o_Guilherme ontem, mas o_Guilherme não se_sentiu tranquilizado, infelizmente."
- 'Gonçalo reassured William yesterday, but William didn't feel reassured, unfortunately.'*
- (104). "O_Afonso tranquilizou o_Daniel ontem, mas o_Daniel não se_sentiu calmo, infelizmente."
- 'Afonso reassured Daniel yesterday, but Daniel didn't feel calm, unfortunately.'*
- (105). "A_música tranquilizou o_Pedro ontem, mas o_Pedro não se_sentiu tranquilizado, infelizmente."
- 'The music reassured_Pedro yesterday, but_Pedro didn't feel reassured, unfortunately.'*
- (106). "A_música tranquilizou o_Dinis ontem, mas o_Dinis não se_sentiu calmo, infelizmente."
- 'The music reassured_Dinis yesterday, but_Dinis didn't feel calm, unfortunately.'*

Wash_verbs:

- (107). "A_Sandra agitou a_massa, mas a_massa ainda tinha_grumos, infelizmente."
- 'Sandra stirred the dough, but it was still had_lumps, unfortunately.'*
- (108). "A_Inês agitou o_cocktail, mas o_cocktail ainda não estava_agitado, infelizmente."
- 'Inês stirred the_cocktail, but the_cocktail wasn't_shaken yet, unfortunately.'*
- (109). "A_Luana agitou o_cocktail, mas o_cocktail ainda não estava_misturado,

infelizmente."

'Luana stirred the_cocktail, but the_cocktail wasn't_mixed yet, unfortunately.'

(110). "O_terramoto agitou o_cocktail, mas o_cocktail ainda não estava_misturado, *infelizmente."*

'The earthquake stirred the_cocktail, but the_cocktail wasn't_mixed yet, unfortunately.'

(111). "O_terramoto agitou o_cocktail, mas o_cocktail ainda tinha_grumos, *infelizmente."*

'The earthquake stirred the_cocktail, but the_cocktail still had_lumps, unfortunately.'

(112). "O_terramoto agitou a_massa, mas a_massa ainda não estava_agitada, *infelizmente."*

'The earthquake stirred the_pasta, but the_pasta wasn't_stirred yet, unfortunately'

(113). "O_Rodrigo amassou a_farinha, mas a_farinha ainda não estava_consistente, *infelizmente."*

'Rodrigo kneaded the flour, but the flour wasn't_consistent yet, unfortunately.'

(114). "O_Rodrigo amassou a_farinha, mas a_farinha ainda tinha_grumos, *infelizmente."*

'Rodrigo kneaded the flour, but the flour still had lumps, unfortunately.'

(115). "O_Sérgio amassou a_farinha, mas a_farinha ainda não estava_amassada, *infelizmente."*

'Sergio kneaded the flour, but the flour wasn't_kneaded yet, unfortunately.'

(116). "A_máquina amassou a_massa, mas a_massa ainda tinha_grumos, *infelizmente."*

'The_machine kneaded the_dough, but the_dough still had lumps, unfortunately.'

(117). "A_máquina amassou a_farinha, mas a_farinha ainda não estava_amassada, *infelizmente."*

- 'The machine kneaded the flour, but the flour wasn't crumpled yet, unfortunately.'*
- (118). "A_máquina amassou a_farinha, mas a_farinha ainda não estava_consistente, infelizmente."
- 'The machine kneaded the flour, but the flour wasn't_consistent yet, unfortunately.'*
- (119). "O_João lavou a_camisa, mas a_camisa ainda não estava_lavada, infelizmente."
- 'John washed the shirt, but the shirt wasn't_washed yet, unfortunately.'*
- (120). "O_Martim lavou a_camisa, mas a_camisa ainda não estava_limpa, infelizmente."
- 'Martin washed the shirt, but it wasn't_clean yet, unfortunately.'*
- (121). "O_Francisco lavou a_camisa, mas a_camisa ainda tinha_manchas, infelizmente."
- 'Francisco washed the shirt, but it still had stains on it, unfortunately.'*
- (122). "A_chuva lavou o_carro, mas o_carro ainda tinha_manchas, infelizmente."
- 'The_rain washed the_car, but the_car still had_stains, unfortunately.'*
- (123). "A_chuva lavou o_carro, mas o_carro ainda não estava_limpo, infelizmente."
- 'The_rain washed the_car, but the_car still wasn't_clean, unfortunately.'*
- (124). "A_chuva lavou a_camisa, mas a_camisa ainda não estava_lavada, infelizmente."
- 'The_rain washed the_jacket, but the_jacket wasn't_washed yet, unfortunately.'*
- (125). "A_Maria tratou o_doente, mas o_doente ainda não estava_tratado, infelizmente."
- 'Maria treated the_patient, but the_patient wasn't_treated yet, unfortunately.'*
- (126). "A_Maria tratou o_doente, mas o_doente ainda não estava_curado, infelizmente."
- 'Maria treated the_patient, but the_patient wasn't_healed yet, unfortunately.'*
- (127). "A_Bianca tratou o_doente, mas o_doente ainda tinha_sintomas,

infelizmente."

'Bianca treated the_patient, but the_patient still had_symptoms, unfortunately.'

(128). *"As_termas trataram o_doente, mas o_doente ainda tinha_sintomas, infelizmente."*

'The spa treated the_patient, but the_patient still had_symptoms, unfortunately.'

(129). *"As_termas trataram a_doente, mas a_doente ainda não estava_tratada, infelizmente."*

'The spa treated the_patient, but the_patient wasn't_treated yet, unfortunately.'

(130). *"As_termas trataram a_enferma, mas a_enferma ainda não estava_curada, infelizmente."*

'The spa treated the_wound, but the_wound wasn't_healed yet, unfortunately.'

(131). *"A_Ester varreu a_casa, mas a_casa ainda não estava_limpa, infelizmente."*

'Ester swept the_house, but the_house wasn't_clean yet, unfortunately.'

(132). *"A_Ana varreu o_chão, mas o_chão ainda não estava_varrido, infelizmente."*

'Anna swept the_floor, but the_floor wasn't_clean yet, unfortunately.'

(133). *"A_Eleonor varreu a_casa, mas a_casa ainda tinha_lixo, infelizmente."*

'Eleonor swept the_house, but the_house still had_garbage, unfortunately.'

(134). *"O_vento varreu o_chão, mas o_chão ainda não estava_varrido, infelizmente."*

'The_wind swept the_floor, but the_floor wasn't_swept yet, unfortunately.'

(135). *"O_vento varreu o_chão, mas o_chão ainda não estava_limpo, infelizmente."*

'The_wind swept the_floor, but the_floor wasn't_clean yet, unfortunately.'

(136). *"O_vento varreu o_chão, mas o_chão ainda tinha_lixo, infelizmente."*

'The_wind swept the_floor, but the_floor still had_trash, unfortunately.'

Appendix 2. Filler items

Dist_Correct:

- (1). "O_detido, que apresentou a_queixa, estava na cena do_crime."
'The detainee, who filed the complaint, was at the scene of the crime.'
- (2). "A_Alice, que vive em_França, esteve no Festival_de_Friburgo. "
'Alice, who lives in France, was at the Freiburg Festival.'
- (3). "Os_moradores, que participaram na_reunião, estiveram novamente na_Câmara, infelizmente. "
'The_residents, who took part in the_meeting, were unfortunately in the_chamber again.'
- (4). "O_arquiteto, que concebeu a_torre, esteve em_Lisboa para contar a_experiência. "
'The architect who designed the tower was in Lisbon to tell us about the experience.'
- (5). "Os_advogados, que tentaram inocentá-lo, estiveram de_facto directamente implicados nos_crimes. "
'The lawyers who tried to exonerate him were in fact directly involved in the crimes.'
- (6). "O_investigador, que é especialista da_área_experimental, esteve em_Portugal. "
'The_investigator, who is an expert in the_experimental field, was in_Portugal.'
- (7). "A_menina, que vive na_Alemanha, esteve aqui no_Porto ontem pela_manhã. "
'The_girl, who lives in_Germany, was here in_Porto yesterday morning.'
- (8). "O_juíz, que lavrou o_caso, esteve no_fórum ao_final de_sexta-feira. "
'The judge who dealt with the case was in the forum at the end of Friday.'
- (9). "O_Marco, que trabalhou na_Bélgica, esteve exilado até ao 25_de_abril. "
'Marco, who worked in Belgium, was in exile until April 25th.'
- (10). "O_Mário, o_criativo desta_equipa, esteve na_escola de_tarde."

'Mario, the creative member of this team, was at the school in the afternoon.'

(11). "O_Victor, que é deputado, esteve ausente depois das_eleições. "

'Victor, who is a member of parliament, was absent after the elections.'

Dist_Incorrect:

(12). "A_nuvem dirigiu com muita cautela pela_estrada nova durante a_tempestade de_verão."

'The cloud drove very cautiously along the new road during the summer storm.'

(13). "O_Afonso escreveu a_carta e depois saiu de_casa, infelizmente."

'Alfonso wrote the letter and then left home, unfortunately.'

(14). "Portugal foi, durante_muito_tempo, aliado do_Reino_Unido, infelizmente."

Portugal was, for_a_long_time, an ally of the_United_Kingdom, unfortunately.'

(15). "A_atitude vendeu-se mais dura durante as_negociações."

'The attitude sell tougher during the negotiations.'

(16). "O_prazo para entrega de ordens de venda decorrerá durante 30_moedas."

'The deadline for delivery of sales orders will run for 30_coins.'

(17). "Os_policiais encontram matrículas_falsas e objetos pertencentes às_vítimas, infelizmente."

'The_police found fake license plates and objects belonging to the_victims, unfortunately.'

(18). "O_menino jogou durante um_cargo os_arremessos no_comércio."

'The_boy played for a_charge the_throws in the_trade.'

(19). "A_alma do_papel esteve em chamas durante o_dia todo."

'The_soul of the_paper was on fire all day.'

(20). "A_Pilar recebeu uma_encomenda no_circuito e depois desapareceu, infelizmente."

'Pilar received an_order on the_circuit and then disappeared, unfortunately.'

(21). "O_Mário reabriu a_discussão sobre o_projeto e debateu durante três horas, infelizmente."

'Mário reopened the_discussion on the_project and debated for three hours, unfortunately.'

(22). *"O_livro ocupou o_carro todo durante o_último_passeio."*

'The_book took up the whole_car during the_last_ride.'

Dist_Obj_Inc:

(23). *"O_governo tocou um_pato, mas o_pato não foi tocado. "*

'The_government touched a_duck, but the_duck wasn't touched.'

(24). *"A_senhora apanhou a_sombra, mas a_música não foi apanhada. "*

'The_lady caught the_shadow, but the_music wasn't caught.'

(25). *"A_Vera entrou o_medo, mas o_edifício não foi entrado. "*

'Vera entered the_fear, but the_building was not entered.'

(26). *"A_imagem introduziu o_novo_conceito, mas o_conceito não foi introduzido. "*

'The_image introduced the_new_concept, but the_concept was not introduced.'

(27). *"A_Sofia cozinhou a_balada ontem, mas a_balada não foi cozinhada. "*

'Sofia cooked the_party yesterday, but the_party wasn't cooked.'

(28). *"O_fogo invadiu a_casa, mas a_casa não foi invadida. "*

'The fire broke into the house, but the house wasn't broken into.'

(29). *"A_secretária comeu uma_mesa de_madeira, mas a_mesa não foi comida. "*

'The secretary ate a wooden table, but the table wasn't eaten.'

(30). *"A_música esvaziou a_entrada da_garagem, mas a_entrada não foi esvaziada. "*

"

'The_music emptied the_garage entrance, but the_entrance wasn't emptied.'

(31). *"A_emoção espalhou o_inseticida na_sala, mas o_inseticida não foi espalhado. "*

"

'The_emotion spread the_insecticide in the_room, but the_insecticide wasn't spread.'

(32). *"A_máquina correu para a_casa mas a_casa não foi corrida. "*

'The_machine ran into the_house but the_house wasn't run into.'

(33). *"O_terramoto feriu um_homen em_Cabeceiras mas o_homen não foi ferido. "*

- 'The_earthquake injured a_man in_Cabeceiras but the_man wasn't hurt.*
- (34). *"O_João submeteu o_aeroporto, mas o_artigo não foi submetido. "*
- 'John submitted the_airport, but the_airport was not submitted.'*
- (35). *"O_João fugiu para Sonora mas Sonora não foi fugida. "*
- 'John fled to Sonora but Sonora was not fled.'*
- (36). *"O_João desmobilizou as_pessoas ontem mas as_pessoas não foram desmobilizadas. "*
- 'John demobilized the people yesterday but the people weren't demobilized.'*
- (37). *"O_Pedro subiu a_terra ontem, mas a_terra não foi subida. "*
- 'Peter climbed the_ground yesterday, but the_ground wasn't climbed.'*
- (38). *"A_Maria interrompeu o_susto, mas o_email não foi interrompido. "*
- 'Maria interrupted the_scare, but the_email wasn't interrupted.'*

Dist_Suj_Inc:

- (39). *"As_janelas tinham razão no_plano, mas não eram solução para os problemas."*
- 'The_windows were right in the_plan, but they weren't the solution to the problems.'*
- (40). *"O_chapéu faltou ontem, mas deve ter_sido por esquecimento dele."*
- 'The hat was missing yesterday, but it must have been because he forgot.'*
- (41). *"O_projeto deu entrada_na_Câmara ontem, mas o_executivo_municipal foi adiando a_sua_apreciação."*
- 'The_project entered_the_board yesterday, but the_municipal_executive_has been postponing its_appraisal.'*
- (42). *"O_telhado recebeu um_telefonema, mas não sabia sequer quem era."*
- 'The roofer received a phone call, but he didn't even know who it was.'*
- (43). *"A_indigestão marcou menos do_que_a_fome, mas também matou milhares de pessoas."*
- 'The_indigestion took its toll less than_the_famine, but it also killed thousands of people.'*

- (44). "Os_camiões falaram à_noite, mas os_operários não perceberam nada."
'The_truckers spoke at night, but the_workers didn't understand a thing.'
- (45). "A_cadeira recitou um_poema ontem, mas ninguém prestou atenção na_brilhante apresentação."
'The_chair recited a_poem yesterday, but nobody paid attention to the_brilliant presentation.'
- (46). "Os_lápis apareceram na_masma altura, mas o_Ministério nega agora a_sua paternidade."
'The_pencils appeared at the same time, but the_Ministry now denies their paternity.'
- (47). "O_nariz tentou retirar os_espehos do_gabinete, mas o_resultado foi apenas um_monte de_cacos."
'The_nose tried to remove the_mirrors from the_office, but the_result was just a_mountain of_shards.'
- (48). "A_nuvem recolheu um_documento, mas isso significa esteja a_investigar suspeitos."
'The_cloud collected a_document, but that means it's_investigating suspects.'
- (49). "O_dente nomeou-lo para_um_novo_cargo ontem, mas não adiantou que tipo_de_cargo irá_ocupar."
'The_tooth appointed you to_a_new_job yesterday, but didn't say what kind of_job it would be.'
- (50). "A_medida encontrou dos_interesses da classe médica, mas o_diploma ainda continha várias ilegalidades."
'The_measure met the interests of the medical profession, but the_diploma still contained several illegalities.'
- (51). "A_decisão aplicou apenas o_Manuel mas todos os_cidadãos tinham um_problema idêntico."
'The_decision applied only to_Manuel but all_citizens had an identical_problem.'
- (52). "Os_jogos levam preocupações, mas não querem dar a_impressão

de_estar_confiantes."

'The_games carry concerns, but they don't want to give the_impression of_being_confident.'

(53). *"As_câmaras criaram estruturas ontem, mas não há médicos interessados em_lá_trabalhar."*

'The_chambers set up structures yesterday, but there are no doctors interested in_working there.'

(54). *"O_fantasma procedeu as_buscas ontem, mas o_corpo não foi encontrado aqui."*

'The_ghost carried out the_searches yesterday, but the_body wasn't found here.'