


Processing non-culminating accomplishments in European Portuguese

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Abstract

This paper investigates the processing and interpretation of non-culmination sentences and subjects' agentivity in European Portuguese. A five-point Likert scale is employed to test the native speaker's judgment regarding the acceptability of five types of non-culminating accomplishment sentences put forward in Guéron and Vogeleer (2021), providing evidence that speakers accept non-culminating accomplishments to a certain extent, albeit acceptance differs depending on the circumstance. Furthermore, while the subject's agentivity does have some bearing on the acceptability rating, it does not appear to be a requirement for non-culminating accomplishments in European Portuguese. A self-paced reading experiment also shows processing differences amongst five types of non-culminating accomplishments and that subject agentivity does not affect processing time.

Keywords: non-culminating accomplishments, aspect, sentence processing, self-paced reading, Likert-scale

1. Introduction

A non-culminating accomplishment is a non-progressive accomplishment that allows an interpretation in which the culmination is absent. This phenomenon of non-culmination, where a predicate that would typically be classified as a change-of-state predicate allows for an interpretation in which the result state indicated by the predicate is not required, is becoming more and more well-studied across typologically unrelated languages (see Martin & Demirdache 2020). Examples of non-culminating accomplishments are provided in (1a) and (1b), where the second clause explicitly affirms the existence of the incomplete part of the event or cancels the result state but does not conflict with the first clause.

- (1) a. St'át'imcets, Bar-El et al. (2005:4)
 ts'áqw-an'-lhkan ti n-kíks-a lhkúnsa ku
 eat-TR-1SG.SU DET 1SG.POSS-cake-DET now DET
 sq'it, t'u7 qelh-cál-lhkan ku k'wík'wena7 t'u natcw
 day but save-ACT-1SG.SU DET few until tomorrow
 'I ate my cake today, but I saved a little for tomorrow.'
- b. Karachay-Balkar, Tatevosov (2008:396)
 kerim ešik-ni ac-xan-di, alaj boša-ma-ɸan-di.
 Kerim door-ACC open-PFV-3SG but finish-NEG-PFV-3SG
 'Kerim opened the door, but didn't finish.'

While St'át'imcets and Karachay-Balkar are languages distinct from European Portuguese (EP), there are reports of non-culmination in Romance languages, namely, Arche (2013) for Spanish and Martin (2015) for French. In addition, there are also observations in Basso (2008) for Brazilian Portuguese. However, although non-culminations above involve a second clause negating the result, there are various types of non-culminations. For example, the second clause in (2a) negates the effect on the patient using a second verb that has a causative relation with the verb in the first clause (*soigner* → *guérir* 'to treat → to cure') (Demirdache & Martin 2015). In (2b), the culmination is negated using the same verb (*kkay* → *kkay* 'break') (Beavers & Lee 2020). In (1b), however, part of the activity is denied by an aspectual verb (*boša-ma-ɸan-di* 'finish').

- (2) a. French, Demirdache & Martin (2015:202)
 Le médecin l'a soigné, mais il
 the doctor him-has treat-PST-3SG but he
 n'est pas guéri du tout.
 NEG.is not cured at all
 'The doctor treated him, but he is not cured at all.'

b. Korean, Beavers & Lee (2020:2)

ku-ka changmwun-ul kkay-ss-ta, haciman
 he-NOM window-ACC break-PST-DECL but
 changmwun-i kkay-ci-ci anh-ass-ta.
 window-NOM break-PASS-COMP NEG-PST-DECL
 ‘He broke the window, but it was not broken.’

Certain types of non-culminating accomplishments are believed to be language specific (Koenig et al. 2017; Martin & Demirdache 2020). This means that potentially, in Romance languages, non-culmination readings of accomplishments might only be acceptable under specific structures. On the other hand, in European Portuguese, in particular, whether non-culminating accomplishments exist is still unclear. To our knowledge, native speakers’ judgment towards non-culminating accomplishments has never been tested in this language. The current study aims to fill this gap.

Previous studies suggest that non-culminating accomplishments can indeed be divided into various types according to the lexical meaning of the verb and its relationship with the result state (Koenig et al. 2017; Martin 2019; Guéron & Vogeleer 2021). We follow the typology of non-culmination in Guéron and Vogeleer (2021) and divide non-culminating accomplishments into five types. We wish to test the acceptability of these types of non-culminating accomplishments in European Portuguese in addition to the intentionality requirement feature also presented in Guéron and Vogeleer (2021). In fact, subject intentionality/agentivity seems to be a standard requirement for non-culminating accomplishments in literature. Guéron and Vogeleer (2021) suggest that four types of non-culminating accomplishments require intentional subjects: *wash verbs*, *transfer verbs*, *transitive psychological verbs* and *incomplete accomplishments*. Demirdache and Martin (2015) also suggest that non-culminating accomplishments need agentive subjects for zero-change readings. In addition, Martin and Schäfer (2015) state that defeasible causatives with agentive subjects are used to denote an act performed with the intention of triggering a certain change of state. Still, this change of state does not have to occur for the sentence to be true. The contrast between intentional/agentive/animate subject and non-intentional/non-agentive/inanimate subject is shown in (3).

(3) a. Guéron & Vogeleer (2021:6)

John washed the shirt, but the shirt is still not clean.

b. Guéron & Vogeleer (2021:7)

The sea washed the shore, #but it is still not clean.

c. French, Demirdache & Martin (2015:186)

Marie lui expliqua le problème en une minute, et pourtant il ne le comprit pas.
 ‘Marie explained the problem to him in one minute, and nevertheless he didn’t understand it.’

d. French, Demirdache & Martin (2015:187)

Ce résultat lui expliqua le problème de l’analyse, #et pourtant il ne le comprit pas.

‘This result made him understand the problem of the analysis, #nevertheless he didn’t understand it.’

The problem of non-culminating accomplishments is even more complex because their boundaries are not perfectly defined for native speakers. In fact, there is a consistent pattern of results in the literature showing that native speakers hold a certain degree of tolerance towards traditionally unacceptable non-culmination interpretations of accomplishments. For example, in Foppolo et al. (2021), 30% of Italian native speakers accept the usage of perfective accomplishments when describing an incomplete event. In Minor et al. (2023), nearly 50% of English native speakers accept the incomplete event to be described using a non-progressive accomplishment. In Kasher and Hacoheh (2023), 81% of Russian native speakers accept non-culminating accomplishments with the structure of Perfective+Cancellation. The aforementioned experiments only test partitive readings of accomplishments. There is also an experiment in Aoki and Nakatani (2013) testing the failed attempt reading in Japanese, with a mean acceptance rate of 3.2/5.

We assume that our experiment would have a similar results to those of Foppolo et al. (2021) in the overall acceptability rate of partial result reading of non-culminating accomplishments, since Italian and European Portuguese are both Romance languages. However, we are more interested in the possible difference in acceptability rating across the five types and the two subject agentivity/intentionality conditions. This is because the general acceptability of non-culminating accomplishments may not reflect the acceptability of a particular type. So, to obtain a more comprehensive result, we examine the acceptability of each type of non-culminating accomplishments in European Portuguese.

The paper is organized as follows. Section 2 discusses questions concerning non-culminating accomplishments and reviews prior experiments on the topic. Section 3 presents data about the acceptability of non-culminating accomplishments in European Portuguese. Section 4 discusses the results of our experiment, and Section 5 concludes the paper.

2. Previous Studies

2.1. Non-culminating accomplishments theories

Before discussing the experiments, it is necessary to briefly examine the typologies of non-culminations since authors use the term differently to some extent. The term “non-culminating accomplishments” first appears in Bar-El et al. (2005), where they use it to describe the implicative nature of the culmination of accomplishments in Salish languages. Tatevosov (2008) uses the term to describe accomplishments that accept both a measure adverbial “for x time” and a time span adverbial “in x time”. In turn, Demirdache and Martin (2015) use the term to describe only perfective accomplishments compatible with a subsequent clause denying the occurrence of the expected change of state, and Martin (2019) uses the term to describe an accomplishment predicate that defeasibly implies the event has fully culminated.

Non-culminating accomplishments have been studied in various languages (e.g., Singh 1998; Koenig & Muansuwan 2000 on Thai; Bar-El et al. 2005 on Salish languages; Soh & Kuo 2005; Koenig & Chief 2008 on Mandarin Chinese; Arunachalam & Kothari 2011 on Hindi; Paul et al. 2020 on Malagasy; Beavers & Lee 2020 on Korean; Persohn 2022 on Bantu languages). In the present study, we use the

term *non-culminating accomplishments* to describe accomplishments predicates without temporal adverbials¹ in a non-progressive tense that can fail to culminate with the help of a second clause. In 2.2, we will briefly discuss the conditions that we used in the experiment.

2.1.1. Lexical distinctions between types of non-culminating accomplishments

To better understand non-culminating accomplishments and their typologies, two key distinctions are worth mentioning. The first distinction is between transitive causative and non-causative verbs (Levin 1999; Folli & Harley 2005; Martin & Schäfer 2014; Alexiadou et al. 2017). Transitive causative verbs share a behavioral property; they have the same causative event structure of [[ACT] CAUSE [BECOME]], which means that they are expected to entail the existence of a result (Levin 1999). Non-causative verbs, on the other hand, are not expected to entail the existence of a result (for example, manner verbs have the event structure of [ACT<MANNER>]). However, some transitive manner verbs, such as *wash*, can imply a result state (Talmy 1991; Martin & Schäfer 2014; Alexiadou et al. 2017; Gyarmathy & Altshuler 2018). When combined with a causer subject, these transitive manner verbs - or optionally causative manner verbs (OCMV) in Alexiadou et al. (2017) - tend to entail a result state that obtains when the event described is successful (Martin & Schäfer 2014). According to Alexiadou et al. (2017), OCMVs do not form anticausatives in English and French; it seems also to be the case in European Portuguese².

The second distinction is between neutral causative verbs and defeasible causative verbs (Martin & Schäfer 2013). The subject, whether as an agent or a causer, can alter the interpretation of defeasible causative verbs. With agentive subjects, they typically imply a specific result. However, the same verbs entail said result with causer subjects. The result of a neutral causative verb should always be entailed. According to Martin and Schäfer (2013), defeasible causative verbs in French or German include some verbs in the following classes: *psych verbs*, *verbs of communication*, *action inducing verbs*, *verbs of caused perception*, *verbs of caused possession*, and *epistemic verbs*. However, these classes include both neutral causative verbs and defeasible causative verbs. Previous research predicts that the result inference is stronger with defeasible causative verbs than with neutral causative verbs of the same class.

2.1.2. Types of non-culminating accomplishments

Tatevosov (2008) introduces two types of non-culminating accomplishments according to their interpretations: *failed attempt* interpretations and *partial success* interpretations. In the *failed attempt* interpretations, no changes occur in the theme that

¹ It is not always the case that studies on the topic have excluded temporal adverbials from the definition of a non-culminating accomplishment (see Tatevosov 2008; Martin 2019).

² There is, however, one OCMV, *agitar* ‘to shake’, used in the present study that allows anticausative versions with some non-intentional/nonagentive/inanimate subjects, but not with others. See the contrast below:

- (i) A Luana agitou o cocktail, mas o cocktail não está misturado.
‘Luana shook the cocktail, but the cocktail is not mixed’.
- (ii) ? O cocktail agitou-se.
? ‘The cocktail shook.’
- (iii) As árvores agitaram-se.
‘The trees shook.’

could be towards the result state denoted by the predicate. On the other hand, while some changes in the theme occur in the *partial success* interpretations, the event described is still incomplete in relation to the predicate.

Later, Martin (2019) adds another type into the category: *incompletive atelic predicates*. In this type, the accomplishment predicates would be modified by a durative adverbial and thus receive partitive interpretations.

Guéron and Vogeleer (2021) divide non-culminating accomplishments into five types. They consider only accomplishment predicates without temporal adverbials in non-progressive tenses as potential candidates for non-culminating accomplishments. The five types are illustrated in (4): (4a) belongs to the group *wash verbs*; (4b) belongs to the group *transfer verbs*; (4c) belongs to the group *transitive psychological verbs*; (4d) belongs to the group *incomplete accomplishments*; and (2b), repeated here as (4e), belongs to the group *failed attempts*.

- (4) a. *wash verbs* Guéron & Vogeleer (2021:6)
John washed the shirt, but the shirt is still not clean.
- b. *transfer verbs* Guéron & Vogeleer (2021:8)
Masha taught Russian to John, but he learned nothing.
- c. *transitive psychological verbs* Guéron & Vogeleer (2021:10)
Marie incited Jean to vengeance, but in vain.
- d. *incomplete accomplishments* Guéron & Vogeleer (2021:11)
The river froze but not completely.
- e. *failed attempts* Korean, Beavers & Lee (2020:2):
ku-ka changmwun-ul kkay-ss-ta, haciman
he-NOM window-ACC break-PST-DECL but
changmwun-i kkay-ci-ci anh-ass-ta.
window-NOM break-PASS-COMP NEG-PST-DECL
'He broke the window, but it was not broken.'

According to Guéron and Vogeleer (2021), the non-culmination reading of *wash verbs* comes from the activity verb that can be associated with a goal and a *but* clause. In the case of *transfer verbs*, non-culmination does not involve the change of state of the theme entity but the (failed) change of state of the recipient. The authors propose that the lexical meaning of *transfer verbs* activates a conceptual configuration of the recipient (the verb *teach* activates the process of *learn*, and the verb *explain* activates the process of *understand*). Unlike *wash verbs* and *transfer verbs*, the intended goal of a *transitive psychological verb* is inscribed in the lexical meaning of the verb (e.g., in (4c), for Jean to have the inspired feelings is inscribed in the lexical meaning of *incite*). *Incomplete accomplishments*, the fourth type, are accomplishments with incremental themes, and they do not follow the intentionality requirement: 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. The *incomplete accomplishments* are true at the coarse granularity level but false at a finer granularity level (cf. Martin 2019), so a *but* clause added to an *incomplete accomplishment* only negates the finer granularity level, not the coarse granularity level. Finally, *failed attempts* come in languages where the perfective marker does not necessarily entail culmination but maximality. The nature of these events is that the verbs seem to lexicalize culmination, yet the sentence is still compatible with a negative *but* clause.

The types in Guéron & Vogeleer's typology, however, might be confusing at first sight (an observation made by one anonymous reviewer³). Three classes are named after types of verbs (*transfer*, *wash* and *psych verbs*), and the two remaining ones are named after the type of non-culminating readings (failed attempt and partial result). Those are two distinct criteria; in fact, the types of *transfer*, *wash*, and *psych* could include both a failed attempt reading and a partial success reading, and the types *failed attempts* and *incomplete accomplishments* should only include physical causative verbs. Furthermore, the failed attempt reading and the partial result reading should be analyzed separately to account for the hypothesis of agentivity requirement.

Despite these aspects, we chose the proposal by Guéron and Vogeleer (2021) because it contemplates a set of criteria to identify verb types that can be used to identify these same types in EP (a language about which there are scarce studies on semantic verb types). In addition, because the types are classified according to the lexical meaning of the verbs and their relationship with the result states, the boundaries of each type do not depend on the interpretation of the accomplishment predicates (that is, identifying verb types does not depend on determining, a priori, whether or not the verbs allow non-culminative readings: this was an aspect we wanted to test with native speakers). The use of this typology also allows us to test in the future the underlying psycholinguistic hypothesis in Guéron and Vogeleer (2021), which considers non-culminative accomplishments to be a kind of 'palimpsest'. For these reasons, we used Guéron & Vogeleer's typology in this experimental study.

2.1.3. Types of Subjects

Various studies have shown that the subject plays an important role in interpreting non-culminating accomplishments (Demirdache & Martin 2015; Beavers & Lee 2020; Guéron & Vogeleer 2021). For example, Demirdache and Martin (2015) suggest that accomplishments can only have a *failed attempt* interpretation when the subject is animate (can be ascribed to agenthood). Examples (5) show the contrast between an animate subject and an inanimate subject: (5a) has an animate subject, *Pierre*, and is felicitous with the second clause denying the effect on the patient. On the contrary, (5b) has an inanimate subject, *voyage*, and is infelicitous.

³ It is suggested by the reviewer that we rename the types as below to avoid confusion.

- (i) Failed-attempt/zero-result readings of causative verbs
 - a. with physical causative verbs (= failed attempts)
 - b. with abstract causative verbs (= transfer verbs)
 - c. with psych-causative verbs (= psych verbs)
- (ii) Partial-result readings of causative verbs
 - a. with physical causative verbs (= incomplete accomplishments)
 - b. with abstract causative verbs (= transfer verbs)
 - c. with psych-causative verbs (= psych verbs)
- (iii) Failed-attempt and partial-result readings of transitive manner verbs (=wash verbs)

Nevertheless, due to the scope of the present study, a new typology and the separate analysis of the data are left for future research.

- (5) French, Demirdache & Martin (2015:187)
- a. Pierre lui enseigna les rudiments du russe,
 Pierre him teach.PST.3SG the basics of Russian
 et pourtant il n'apprit rien du tout.
 and nevertheless he NEG.learn-PST-3SG nothing at all
 'Pierre taught him the basics of Russian, but he nevertheless didn't learn anything.'
- b. *Ce voyage lui enseigna les rudiments du
 this trip him teach.PST.3SG the basics of
 russe, et pourtant il n'apprit rien
 Russian and nevertheless he NEG.learn-PST-3SG nothing
 du tout.
 at all
 '*This trip taught him the basics of Russian, but he nevertheless didn't learn anything.'

Beavers and Lee (2020) observe that in Korean, the contrast illustrated above is related not to animacy but to the intentionality of the subject: accomplishments in Korean cannot have *failed attempt* interpretations with non-intentional animate subjects. Example (6a) is set under a scenario where Julia intended to break the window, but her friend had no such intention: in this scenario, (6a) would be unacceptable. In comparison, (6b) is perfectly acceptable.

- (6) Korean, Beavers & Lee (2020:14)
- a. *Julia-uy chinkwu-ka changmwun-ul kkay-ss-ciman,
 Julia-GEN friend-NOM window-ACC break-PST-but
 changmwun-i kkay-ci-ci anh-ass-ta.
 window-NOM break-PASS-COMPNEG-PST-DECL
 'Julia's friend broke the window, but it was not broken.'
- b. ku-ka changmwun-ul kkay-ss-ta,
 he-NOM window-ACC break-PST-DECL
 haciman changmwun-i kkay-ci-ci anh-ass-ta.
 but window-NOM break-PASS-COMP NEG-PST-DECL
 'He broke the window, but it was not broken.'

Guéron and Vogeleer (2021) take a step further and suggest that four of their five types of non-culminating accomplishments require intentional subjects for the sentence to be felicitous: *wash verbs*, *transfer verbs*, *transitive psychological verbs* and *failed attempts*. On the other hand, *incomplete accomplishments* do not require intentional subjects. The contrast between accomplishments with intentional subjects and accomplishments with non-intentional subjects is illustrated below: (7a) and (7b) are *wash verbs*; (8a) and (8b) are *transfer verbs*; (9a) and (9b) are *transitive psychological verbs*; (10a) and (10b) are *incomplete accomplishments*; (11a) and (11b) belong to *failed attempts*.

- (7) Guéron & Vogeleer (2021: 6-12)
 a. John washed the shirt, but the shirt is still not clean.⁴
 b. The sea washed the shore ?? but it is still not clean.
- (8) French, Guéron & Vogeleer (2021: 6-12)
 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.'
- (9) French, Guéron & Vogeleer (2021: 6-12)
 a. Marie a incité Jean à la vengeance (mais en vain).
 '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).'
- (10) a. John painted the wall, but not completely.
 b. John accidentally painted the wall, but fortunately not completely.
- (11) Mandarin, Demirdache & Martin (2015:187-188)
 a. Yuēhàn shāo le tā-de shu,
 Yuēhàn burn-PERF 3SG-DE book
 dàn méi shāo-zháo.
 but NEG burn-touch
 'Yuēhàn burned his book, but it didn't get burnt at all'
 b. Huǒ shāo le tā-de shu,
 fire burn-PERF 3SG-DE book
 #dàn méi shāo-zháo.
 but NEG burn-touch
 'The fire burned his book, but it didn't get burnt at all'

Since we already employ the typology in Guéron and Vogeleer (2021), we also aim to test the agentivity/intentionality⁵ requirement on these five types of non-culminating accomplishments.

⁴ The example goes back to Martin and Schäfer (2014). We thank a reviewer for pointing this out.

⁵ We used proper names (*João, Pedro*) to represent the intentional type and common nouns (*vento* 'wind', *paternidade* 'parenthood') to represent the non-intentional type. The other method would be to use proper names with adverbials to represent (non) intentionality, for example, *O João acidentalmente* 'John accidentally' or *O Pedro deliberadamente* 'Peter deliberately'. We didn't choose this method because some predicates we used in the experiment seem odd with these adverbials. See (i).

- (i) Portuguese
 ? O Miguel acidentalmente surpreendeu o Pedro.
 The-Miguel accidentally surprised the-Pedro
 '? Miguel accidentally surprised Peter.'

2.1.4. Accomplishments in European Portuguese

Accomplishments in European Portuguese are believed to typically include their culminations (e.g., Leal 2009; Cunha 2013; Oliveira & Leal 2015). Nonetheless, similar to other Romance languages, European Portuguese may have accomplishments compatible with a second clause denying the culmination or the result state. For example, the sentences in (12) do not sound contradictory.

- (12) European Portuguese
- a. O João lavou a camisa,
The-John wash-PST-3SG the shirt
mas a camisa não estava limpa.
but the shirt NEG was clean.
'John washed the shirt, but the shirt was not clean.'
- b. A Matilde ensinou o hino nacional ao Pedro,
The-Matilde teach-PST-3SG the anthem national to-the Peter
mas o Pedro não aprendeu nada.
but the-Peter NEG learn-PST-3SG nothing
'Matilda taught Peter the national anthem, but Pedro didn't learn anything.'

The events in (12) could be instances of non-culminating accomplishments with a transitive manner verb (12a) and a defeasible causative verb (12b). However, to our knowledge, native speakers' judgment towards this phenomenon has never been tested in European Portuguese.

Basso (2008) observed this behavior in Brazilian Portuguese. See examples below.

- (13) Brazilian Portuguese, Basso (2008:21)
- 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.'

(13) shows that there are non-culminating accomplishments in Brazilian Portuguese. So, hypothetically, there could exist four types of non-culminating accomplishments in (European and Brazilian) Portuguese according to the theory in Guéron and Vogeleer (2021) and the observations in other Romance languages (Arche 2014; Koenig et al. 2017; Beavers & Lee 2020; Martin & Demirdache 2020; Minor et

According to Folli and Harley (2005), some verbs (in English and Italian) require that the Agent be intentional, but the Causer does not have to be. We assume this is the case with the European Portuguese verb *surpreender*, i.e., when the verb *surpreender* is accompanied by an Agent, the intentional feature already exists. In addition, according to Beavers and Lee (2020), when adding adverbials like *accidentally*, there is a possible interpretation of mistaken identity (the subject intended to perform a specific action but mistakenly performed a different action). We choose to utilize the safer alternative and leave the distinction between intentionality and agentivity for future research because we aim to prevent distractions in the acceptability judgements.

al. 2023): *wash verbs*, *transfer verbs*, *transitive psychological verbs* and *incomplete accomplishments*. (12a) belongs to the type of *wash verbs*, and (12b) belongs to the type of *transfer verbs*. Examples of the other three types were also created for the experiment. See (14).

(14) European Portuguese

a. A Camila encorajou o Pedro a inscrever-se
The-Camila encourage-3SG-PRET the-Peter to inscribe-R
em Turismo, mas o Pedro não se sentiu
in tourism but the-Peter NEG R-feel-3SG-PRET
encorajado.

encourage-PPRT

‘Camila encouraged Peter to sign up for Tourism, but Peter didn’t feel encouraged.’

b. O João derreteu o gelo,
The-John melt-3SG-PRET the ice
mas o gelo não estava completamente derretido.
but the ice NEG be-3SG-IMP completely melt-PPRT

‘John melted the ice, but the ice wasn’t completely melted.’

c. O João queimou o livro, mas
The-John burn-3SG-PRET the book but
o livro não estava queimado.
the book NEG be-3SG-IMP burn-PPRT

‘John burned the book, but the book wasn’t burnt.’

(14a) belongs to the type of *transitive psychological verbs*, (14b) to the type of *incomplete accomplishments* and (14c) to the type of *failed attempts*. We hypothesize that *failed attempts* do not exist in European Portuguese because they are believed to not exist in Romance languages (Martin & Demirdache 2020; Tatevosov 2020; Guéron & Vogeleer 2021). In addition, we can see that the second clauses in (12a), (12b) and (14a) are not negating the culmination, but a desired result state which has a causal relation with the activity part of the accomplishments in the first clauses (*lavar* → *limpa* ‘wash → clean’, *ensinar* → *aprender* ‘teach → learn’, *encorajar* → *sentir* ‘encourage → feel’). In (14c), however, the negation in the second clause is about the culmination of the event. Thus, *failed attempts* should be the hardest type for the speakers to accept and process. The second clause in (14b) negates the finer granularity level of the DP with *completamente* ‘completely’ (Martin 2019). Thus, it does not conflict with the first clause.

2.2. Non-culminating accomplishments experiments

Numerous languages have undergone extensive experimental testing to determine whether perfective telic sentences can be used as descriptions of incomplete events. However, few studies have explicitly tested the acceptability of non-culminating accomplishments (see Aoki & Nakatani 2013 for Japanese; Chen 2018 for Mandarin), and even fewer examined the subject’s impact on the acceptability of non-culminating accomplishments.

For Romance languages in particular, Fritz-Huechante et al. (2020) investigated the impact of the agentive interpretation of the subject on the cancellation of the result state with object experiencers in Spanish and Korean *transitive psychological* predicates. One experiment uses a gradable acceptability task to test Spanish native speakers' judgments (N=32) towards the effect of verbal Aspect and animacy of subjects on *transitive psychological* non-culminating accomplishments. The result shows that the mean acceptability rating for *transitive psychological* non-culminating accomplishments in Spanish is around 2.86 (on a scale of 1-7) and that the mean rating for animate subject conditions (around 3.17) is significantly higher than the mean rating for inanimate subject conditions (around 2.56). In addition, the acceptability rating for inchoative state causatives (3.53) is significantly higher than that for punctual causatives (2.81).

Martin (2020) tested the acceptability of causative sentences followed by a denial of causal efficacy with two French predicates, *soigner* 'treat/cure' and *enseigner* 'teach' under three conditions: Agent, Instrument and Causer subjects (N=19). The results are similar to the ones in Fritz-Huechante et al. (2020): while animate subjects boost the acceptability by a significant amount, speakers nevertheless tolerate inanimate subjects to a certain degree (mean rating of inanimate subject is around 2.0 on a scale of 1-5).

The experiments above demonstrate that the acceptability of non-culminating accomplishments may vary depending on the subject's animacy or intentionality and the sort of predicates used. The exact conditions used in our experiment will be shown in section 3.

2.3. Hypotheses and predictions in the experiment

Following the previous research mentioned in section 2.1. and 2.2, non-culminating accomplishments in European Portuguese should behave similarly to those in other Romance languages, such as French or Spanish. Partial result readings should be available in the class of defeasible causative verbs (certain items in *transfer verbs* and *psych verbs*) and OCMVs (*wash verbs*). *Incomplete accomplishments* should also be available. *Failed attempts*⁶, on the other hand, should be difficult for the speakers to process.

Furthermore, since we included both defeasible causative verbs and neutral causative verbs in the *transfer verbs and psych verbs* type, it is expected that certain items in those types will be harder to process among others.

3. The experiment

3.1. Participants

The study focuses on adult native speakers of European Portuguese. 52 native European Portuguese speakers participated in the experiment (11 males and 41

⁶ To construct *failed attempts* in European Portuguese, we used translations of *failed attempts* found in other languages, like Chinese or Korean. However, this could result in the second clause negating the event itself.

females, mean age = 20.5; 49 undergraduate students, two master's candidates, and one master's degree holder). Informed consent was obtained from all participants before participation. Participation was voluntary and no compensation was offered. Participants took part in both offline (a 5-point Likert scale) and online experiments (a self-paced reading) using their computers via the internet in a paradigm designed by the researchers using the Penn Controller for Ixbs, PC Ixbs (Zehr & Schwarz 2018).

3.2. Design and Material

We designed an experimental corpus with a total of 136 sentences in the five categories of non-culminating accomplishments following Guéron and Vogeleer's (2021) classification: *wash verbs* (C1), *transfer verbs* (C2), *transitive psychological verbs* (C3), *incomplete accomplishments* (C4) and *failed attempts* (C5). In addition, we crossed two types of subjects' agentivity/intentionality: agentive *versus* non-agentive subjects.

The list of verbs for each type was created based on the characterization proposed in Guéron and Vogeleer (2021). EP native speakers searched for verbs that matched these characteristics, but the number obtained for each type was small. Therefore, to have an equal number of verbs for each kind, the option would be to reduce the number of verbs in groups with more verbs. As this would result in an even smaller number of verbs across all types, we opted to maintain the initially obtained number, despite it not being the same for all verb types.

Materials included 136 experimental items and 136 fillers in a 5x2 design, such as below:

Table 1. Materials

(C1) <i>wash verbs</i> - agentive x non-agentive subjects								
<i>O João</i>	<i>lavou</i>	<i>a camisa,</i>	<i>mas</i>	<i>a camisa</i>	<i>ainda</i>	<i>não</i>	<i>estava limpa,</i>	<i>infeliz-mente.</i>
<i>A chuva.</i>								
<i>{John / The rain} washed the shirt, but the shirt wasn't cleaned yet, unfortunately.</i>								
(C2) <i>transfer verbs</i> - agentive x non-agentive subjects								
<i>A Matilde</i>	<i>ensinou</i>	<i>o hino nacional</i>	<i>ao Pedro,</i>	<i>mas</i>	<i>o Pedro</i>	<i>não aprendeu</i>	<i>nada</i>	<i>infelizmente.</i>
<i>A vida militar</i>								
<i>{Matilda/ Military life} taught the national hymn to Peter, but Peter didn't learn anything, unfortunately.</i>								
(C3) <i>transitive psychological verbs</i> - agentive x non-agentive subjects								
<i>O Luís</i>	<i>incitou</i>	<i>o Pedro</i>	<i>à vingança,</i>	<i>mas</i>	<i>o Pedro</i>	<i>não se sentiu</i>	<i>incitado,</i>	<i>infelizmente.</i>
<i>O genocídio</i>								
<i>{Luis/ The genocide} incited Peter to revenge, but Peter didn't feel incited, unfortunately.</i>								
(C4) <i>incomplete accomplishments</i> - agentive x non-agentive subjects								
<i>O Manuel</i>	<i>destruiu</i>	<i>a aldeia</i>	<i>ontem,</i>	<i>mas</i>	<i>a aldeia</i>	<i>não ficou</i>	<i>completamente</i>	<i>destruída.</i>
<i>O fogo</i>								
<i>{Manuel/ The fire} destroyed the village yesterday, but the village wasn't completely destroyed.</i>								
(C5) <i>failed attempts</i> - agentive x non-agentive subjects								
<i>O Miguel</i>	<i>partiu</i>	<i>a janela</i>	<i>ontem,</i>	<i>mas</i>	<i>a janela</i>	<i>não estava</i>	<i>partida,</i>	<i>felizmente.</i>
<i>O vento</i>								
<i>{Miguel/ The wind} broke the window yesterday, but the window wasn't broken, fortunately.</i>								

Note that half of the stimuli in conditions *wash verbs* (C1), *transfer verbs* (C2) and *transitive psychological verbs* (C3) were created using the second clause negating the culmination (represented by the participle of the main verb; *washed the shirt, but the shirt was not washed*) and half with the second clause negating the expected degree (*washed the shirt, but the shirt was not clean*). In *incomplete accomplishments* (C4), all second clauses negate the effect using *completely*. In *failed attempts* (C5), all second clauses negate the culmination (participle of the main verb).

Fillers were created in 4 types. See Table 2.

Table 2. Fillers

(F1) Filler acceptable							
<i>A Alice,</i>	<i>que</i>	<i>vive</i>	<i>em França,</i>	<i>esteve</i>	<i>no</i>	<i>Festival de Friburgo</i>	
<i>Alice, who lives in France, was at the Freiburg Festival.</i>							
(F2) Filler unacceptable							
<i>O menino</i>	<i>jogou</i>	<i>durante</i>	<i>um</i>	<i>cargo</i>	<i>os arremessos</i>	<i>no</i>	<i>comércio.</i>
<i>*The boy threw during a job the throws to the trade.</i>							
(F3) Filler unacceptable (subject)							
<i>O governo</i>	<i>tocou</i>	<i>num pato,</i>	<i>mas</i>	<i>o pato</i>	<i>não</i>	<i>foi</i>	<i>tocado.</i>
<i>*The government touched a duck, but the duck wasn't touched.</i>							
(F4) Filler unacceptable (object)							
<i>A Maria</i>	<i>interrompeu</i>	<i>o susto,</i>	<i>mas</i>	<i>o email</i>	<i>não</i>	<i>foi</i>	<i>interrompido.</i>
<i>*Maria interrupted the scare, but the email wasn't interrupted.</i>							

One hundred thirty-six items were distributed to experimental lists in a Latin Square design, minimizing fatigue and habituation effects (Pollatsek & Well 1995). The experimental materials were organized into four counterbalanced lists. There were 33 items in List A, 33 in List B, 34 in List C, and 36 in List D. A total of 54 fillers were added to the experimental items in each list: 11 valid fillers, 11 invalid fillers, 16 invalid subject fillers, and 16 invalid object fillers. Following established procedures for minimizing order and repetition effects, items were randomized within each list, with at least one filler between every two experimental items, ensuring variation and reducing predictability. Each participant was randomly assigned to one of the four lists, and the presentation order within lists was randomized by the PennController for the Ixet platform (Zehr & Schwarz 2018). These measures substantially reduce⁷ the likelihood of systematic fatigue or habituation effects, as participants were continually exposed to varied and unpredictable input.

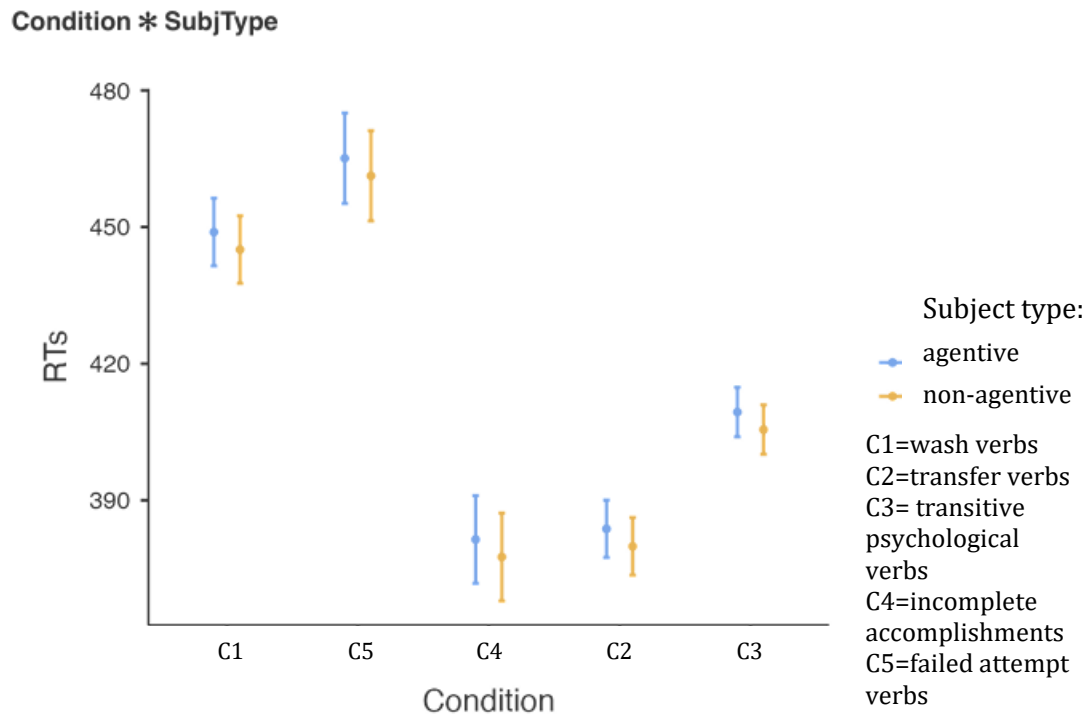
⁷ We would like to thank a reviewer for the thoughtful comments. In line with these comments, we conducted an additional analysis comparing reaction times (RTs) and acceptability ratings (choice) between the first and last quartiles of the experiment. No significant differences were observed, suggesting no evidence of fatigue or disengagement across conditions.

3.3. Procedure

Our experiment employed an offline acceptability task and an online self-paced reading task with moving windows task. It was implemented and conducted online using the Penn Controller for Ixet (Zehr & Schwarz 2018). The instructions and seven practice trials with explicit feedback were presented before the beginning of the experiment to familiarize each participant with the task. Then the experiment was followed in a single block without any feedback and with no time pressure. Each trial begins with a self-paced reading sentence, and then participants had to provide a rating on the sentence read. Responses were noted on a 5-point Likert scale, with 1 being ‘totally unacceptable’ (*totalmente inaceitável*) to 5 being ‘totally acceptable’ (*totalmente aceitável*). A typical experimental session had a median time of approximately 30 minutes, which included detailed written instructions, the trial phase, and the main experimental session (approximately 20 minutes). This total duration falls within the standard range for self-paced reading (SPR) and acceptability rating studies in psycholinguistic literature (e.g., Witzel et al. 2012; Dillon et al. 2013; Lago et al. 2015; Bott et al. 2024).

3.4. Results and analysis

The mean reaction times (RTs) are shown in Figure 1, with the blue lines representing processing times of the five types of non-culminating accomplishments with agentive subjects and the yellow lines representing processing times with non-agentive subjects. The results show a consistent pattern: native speakers have the most difficulty processing *failed attempts* (C5) and have the least difficulty processing *incomplete accomplishments* (C4). Importantly, there are no significant differences ($p=0.185$) in the processing time of conditions with agentive subjects and the processing time of conditions with non-agentive subjects, i.e., subject agentivity/intentionality may not affect the processing of non-culminating accomplishments in European Portuguese. In addition, there are significant differences in processing times between each type of non-culminating accomplishment. There are three distinct groups: *wash verbs* (C1) and *failed attempts* (C5) have the longest processing times, *transitive psychological verbs* (C3) are in the middle, *transfer verbs* (C2) and *incomplete accomplishments* (C4) have the shortest processing times.

Figure 1. Processing time (agentive subject vs. non-agentive subject)

The mean acceptability rating is shown in Figure 2. The results of the grammaticality judgment show that acceptability depends on the type of accomplishment. We can infer a clear pattern from the least acceptable to the most acceptable: *failed attempts* (C5), *transitive psychological verbs* (C3), *wash verbs* (C1), *incomplete accomplishments* (C4) and *transfer verbs* (C2). These results suggest that there are possibly no *failed attempts* (C5) accomplishments in EP, whereas there are possibly the other four types of non-culminating accomplishments.

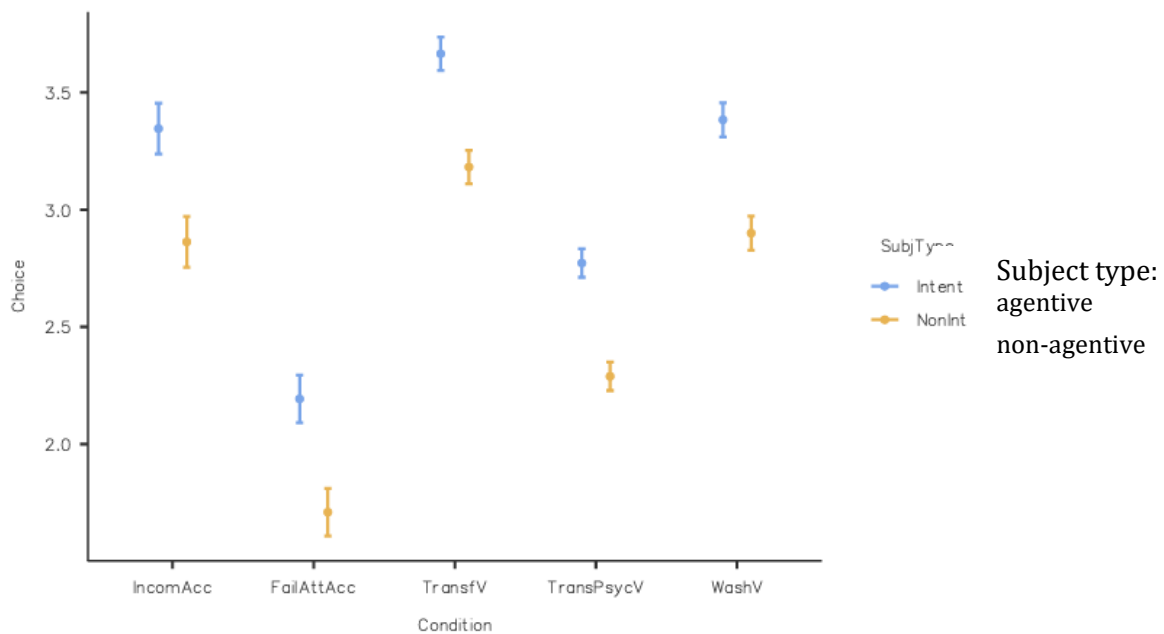


Figure 2. Mean acceptability ratings

The circle on the line marks the mean rating for each condition. As shown in Figure 2, the agentivity/intentionality of the subject plays an important role in the acceptability judgment of all types of accomplishments (the yellow lines are always much lower than the blue lines). The average judgments for acceptability are: 2.01/5 for *failed attempts* (C5) with agentive subject; 1.91/5 for *failed attempts* (C5) with non-agentive subject; 2.80/5 for *transitive psychological verbs* (C3) with agentive subject; 2.23/5 for *transitive psychological verbs* (C3) with non-agentive subject; 3.36/5 for *wash verbs* (C1) with agentive subject; 2.93/5 for *wash verbs* (C1) with non-agentive subject; 3.18/5 for *incomplete accomplishments* (C4) with agentive subject; 3.01/5 for *incomplete accomplishments* (C4) with non-agentive subject; 3.75/5 for *transfer verbs* (C2) with agentive subject; 3.07/5 for *transfer verbs* (C2) with non-agentive subject. These results show that non-culminating accomplishments with agentive subjects are always better accepted than non-culminating accomplishments with non-agentive subjects.

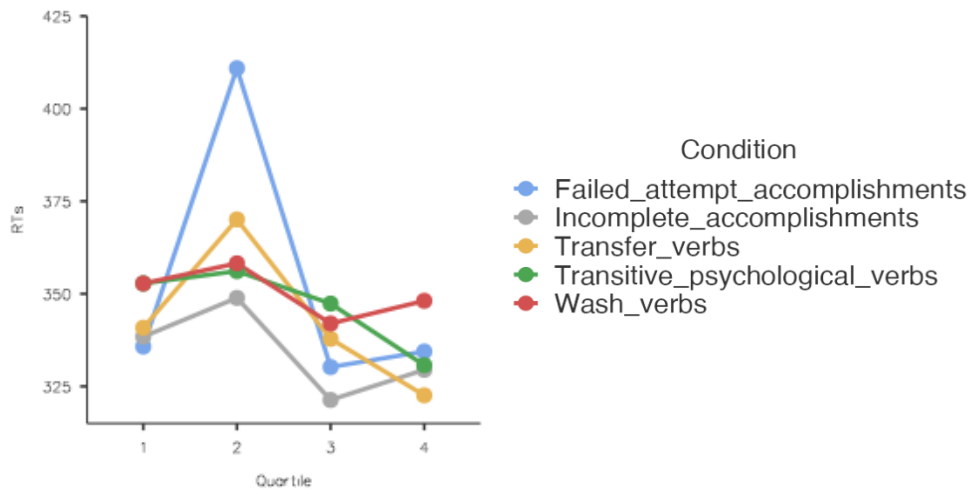
However, the acceptance rate of non-culminating accomplishments with non-agentive subjects in *wash verbs* (C1) and *transfer verbs* (C2) remains relatively high, which is unexpected. We initially assumed that the acceptance rate of non-culminating accomplishments with non-agentive subjects would be extremely low in European Portuguese since this is the case in prior studies on French and Spanish mentioned in 2.2.

Also, there is no significant difference between items with agentive subjects and items with non-agentive subjects in *failed attempts* (C5). This is expected because *failed attempts* (C5) would always be unacceptable with any type of subject agentivity if it does not exist in European Portuguese. In this case, participants would always respond negatively to items in *failed attempts* (C5) no matter what other variables are in the item.

Another observation in the results is that there are no significant acceptability differences between defeasible causative verbs and neutral causative verbs in terms of

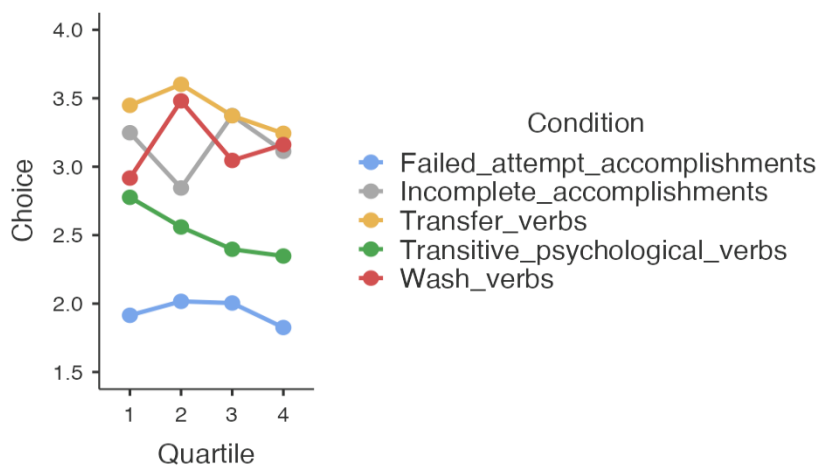
the types of *transitive psychological verbs* and *transfer verbs*, contrary to our prediction in section 2.3. Moreover, to check for potential fatigue or habituation effects, we compared RTs and acceptability ratings between the first and last quartiles of the experiment using a linear mixed-effects model (GAMLj). RTs did not differ significantly between Q1 ($M = 445$ ms, $SE = 8.76$, $df = 6868$) and Q4 ($M = 432$ ms, $SE = 8.63$, $df = 6868$), $t(6868) = 1.512$, $p = 0.430$.

Figure 3. Reaction times across quartiles



Similarly, acceptability ratings showed no significant difference between Q1 ($M = 3.18$, $SE = 13.9$, $df = 6868$) and Q4 ($M = 3.01$, $SE = 16.1$, $df = 6868$), $t(6868) = 1.20$, $p = 1.00$ (the reader can check all the results at <https://osf.io/r476t>).

Figure 4. Acceptability ratings across quartiles



These results suggest that there was no evidence of fatigue or disengagement over the course of the task.

4. General Discussion

According to the results of the experiment, native speakers of European Portuguese accept non-culminating accomplishments in four types put forward by Guéron and Vogeleer (2021): *wash verbs* (C1), *transfer verbs* (C2), *transitive psychological verbs* (C3) and *incomplete accomplishments* (C4). We observed that processing times and acceptability depend on the type of non-culminating accomplishment, which confirms the five-way typology of non-culminating accomplishments in Guéron and Vogeleer (2021). The difference in processing times and the rating of each type suggests that native speakers of European Portuguese are aware of the distinctions between them.

On the side of agentive subjects, we observed that it has no significant effect on the judgment of *failed attempts* and *incomplete accomplishments*. As mentioned above, we assume that one factor responsible for this is that *failed attempts* may not exist in European Portuguese. The non-existence of *failed attempts* is further confirmed by the fact that native speakers have the most trouble processing them. This could also mean that the verbal perfective morphology in European Portuguese probably has a standard perfective semantics, different from Mandarin *le*, which has been claimed to be a weak perfective (Koenig & Muansuwan 2000; Soh & Kuo 2005).

On the other hand, subject agentivity/intentionality is reported to be of no consequence in *incomplete accomplishments* in the theories mentioned above (Demirdache & Martin 2015; Beavers & Lee 2020; Guéron & Vogeleer 2021). Our result suggests that this is also the case in European Portuguese. In addition, the outcomes of the self-paced reading task demonstrate that subject agentivity/intentionality may not affect the processing of non-culminating accomplishments of any type in European Portuguese. Nevertheless, subject agentivity does affect the offline judgment in three types of non-culminating accomplishment: *wash verbs* (C1), *transfer verbs* (C2), and *transitive psychological verbs* (C3).

Furthermore, we noticed that the acceptance rates of non-culminating accomplishments with non-agentive subjects in C1 and C2 remain relatively high. The highest among them is *transfer verbs* (C2), with a mean rating of 3.07/5. This rating is in the upper range of the 1-5 scale, which is significantly different from the experiment on the French *transfer verb enseigner* ‘teach’ (mean rating=2.3/5 with a Causer subject) in Martin (2020). We assume this difference could come from the difference in statistical power⁸. However, the rating for *transitive psychological verbs* (C3) with non-agentive subjects is in the middle range of the 1-5 scale (2.23/5), which is in line with the experiment on Spanish *transitive psychological verbs* in Fritz-Huechante et al. (2020).

The acceptability judgments are not in perfect accordance with the ones in Guéron and Vogeleer (2021). These authors suggest that accomplishments (except *incomplete accomplishments*) require intentional subjects to have non-culminating readings. The results show that *incomplete accomplishments* indeed do not require agentive subjects. In other types, although a non-agentive subject could make a non-culminating accomplishment less acceptable than the one with an agentive subject, it cannot make the sentence unacceptable (from the high acceptance rate in *transfer verbs* and *wash verbs* with non-agentive subjects).

⁸ We tested eight verbs with 52 participants. Martin (2015) has only one verb and 19 participants.

In sum, we carried out an experiment to test the processing and acceptability of non-culminating accomplishments in European Portuguese. Our study suggests that (i) native speakers recognize four types of non-culminating accomplishments in European Portuguese: *wash verbs*, *transfer verbs*, *transitive psychological verbs* and *incomplete accomplishments*; *failed attempts* may not exist in European Portuguese; (ii) non-culminating accomplishments with agentive subjects get a higher acceptability rating than those with non-agentive subjects; (iii) agentive subjects might not be a hard requirement for the licensing of non-culminating accomplishments in European Portuguese; (iv) subject agentivity may not have an impact on the processing of non-culminating accomplishments.

5. Conclusion

This paper investigates the processing and interpretation of non-culminating predicates and subjects' agentivity in European Portuguese.

Our study shows that native speakers recognize four types of non-culminating accomplishments, rating them from the least acceptable to the most acceptable: *transitive psychological verbs*, *wash verbs*, *incomplete accomplishments*, and *transfer verbs*. On the other hand, *failed attempts* may not exist in European Portuguese. Although non-culminating accomplishments with agentive subjects generally received a higher acceptability rating than those with non-agentive subjects, our results show that agentive/intentional subjects might not be required for non-culminating readings. In addition, we tested the processing time of non-culminating accomplishments. The results confirm the differences between each type and show that subject agentivity does not affect the online processing of non-culminating accomplishments. Our study adds European Portuguese to the list of languages that attest to the presence of non-culminating accomplishments, which supports a crosslinguistic approach to event semantics. In addition, our study suggests that in contrast to linguistic theories (Demirdache & Martin 2015; Guéron & Vogeleeer 2021), native speakers of European Portuguese exhibit a much higher degree of tolerance regarding subject agentivity⁹.

Furthermore, our study shows that the type of subject does not affect the online processing time. Still, it can interfere with the offline judgment of the acceptability of the experimental conditions.

A potential limitation of the present study is that we did not distinguish intentionality and agentivity. The differences among intentional agents, non-intentional agents and instruments/causers in processing non-culminating accomplishments would be an interesting topic for future research. The analysis of data according to other typologies will also be left for future work.

Acknowledgments

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⁹ As pointed out by a reviewer, this could result from the inanimate entity understood as an Effector (rather than a Cause), thus follows the weak Agent Control Hypothesis.

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