

A brief approach to European Portuguese lexical terms connected with the process of knowing: Evidence from children's and adults' oral productions*

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Introduction

As Cognitive Linguistics doubtless covers a wide range of topics when it tries to study language in connection with other domains implied in it and by it – a “movement” which reminds us of the one proposed by H. Sinclair (1969) when she portrays the process of the construction of knowledge considering language/symbolization as an object of knowing and also as a means of reaching and constructing knowledge¹ - we are presenting a paper whose content will perhaps bring a certain contribution to the understanding of language and cognition and more information to a lexical domain which cannot be ignored by linguists working from a cognitive perspective.

Taking as a point of departure a (folk) model defined as “a cognitive schema that is intersubjectively shared by a social group” (D’Andrade, 1987, p. 112²) or as “culturally constructed common sense” (Keesing,

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1 In other words: “The knowing person expresses his ‘knowledge’ in this code. As such, language takes the place of symbolization in the relationship knower-symbolization-known. But this code is itself an object of knowing; as such it takes the place of the ‘known’ in the knower-known relationship” (Sinclair-de Zwart, H. – *A possible theory of language acquisition within the general framework of Piaget’s developmental theory*, in Adams, P. (ed.) – *Language in thinking*. Harmondsworth, Middlesex, England, Penguin Education, A Division of Penguin Books Ltd., 1972, reprinted 1973, p. 364. Excerpt from Elkind, D.; Flavell, J. (eds.) – *Studies in cognitive development*, Oxford, Oxford University Press, 1969, pp. 326-336).

2 D’Andrade, R. - *A folk model of the mind*. In Holland, D.; Quinn, N. (eds.) – *Cultural models in language and thought*. Cambridge, Cambridge University Press, 1987, pp. 112-148. Cited by Schwanenflugel, P. J.; Fabricius, W. V.; Noyes, C. R.; Bigler, K. D. – “The organization of mental verbs and folk theories of knowing”, in *Journal of Memory and Language*, 33, 1994, p. 376.

1987, p. 380³) regarding a domain (“folk theories of mind/knowing”, according to Schwanenflugel et al., 1994, p. 376), we tried to investigate the lexical terms used in European Portuguese oral productions of the kind Schwanenflugel et al. (1994) considered to correspond to the “folk concepts regarding ways of knowing or coming to know something common to adults” (p. 376) in a certain culture.

This research into European Portuguese – based upon adults’ and children’s oral productions - obviously obeyed the necessary adaptations to Portuguese of the (mental) verbs which corresponded to the answers given by the participants in the study of the last mentioned authors.

The lexicon we are working with in this paper is the result of the analysis of the European Portuguese corpus which was put at our disposal and where we found a more representative sample of the cognitive verbs we were looking for. In other words, in our Portuguese study we do not intend either to replicate Schwanenflugel’s et al. (1994) experiment or to present a parallel study. We only intend to show the cognitive verbs we found in the European Portuguese corpus under consideration taking as our point of departure the set of mental verbs given by Schwanenflugel et al. (p. 380). In their study, each member of the set “represents a way that one cognitively knows or comes to know something” (ibidem, p. 379), i. e., the set of verbs which is the result of the method adopted by the authors to organize the semantic domain by means of a multidimensional scale (ibid., pp. 382-384). This means that there will be cases where we did not find the Portuguese verb corresponding to the English one referred to by Schwanenflugel et al., and other cases where the lexical item in Portuguese obliged us to consider a correspondence in terms of mental states/cognitive activities and not in terms of the one-to-one lexical items. Moreover, we are aware of the fact that a simple translation of the verbs obtained by the authors in their study into another language – even if it belongs to a related western culture – may not lead us to ob-

3 Keesing, R. M. – *Models, “folk” and “cultural”: Paradigms regained?* In Holland, D.; Quinn, N. (eds.) – *Cultural models in language and thought*. Cambridge, Cambridge University Press, 1987, pp. 369-393. Cited by Schwanenflugel, P. J.; Fabricius, W. V.; Noyes, C. R.; Bigler, K. D. – “The organization of mental verbs and folk theories of knowing”, in *Journal of Memory and Language*, 33, 1994, p. 376.

tain similar results or allows us to compare data (see the observations made by the authors: *ibid.*, p. 378⁴).

Leaving behind Stern's first studies of child language (see, for instance, Stern C. and W., 1922⁵) and the well known longitudinal works also concerned with language development by Piaget (1923⁶, 1924⁷, 1945⁸) which are extraordinary descriptions of the way children use language, and which were criticized later on by those who were interested in the study of groups of children in order to analyze the results statistically and therefore to obtain other types of interpretation of the data, and not considering other authors who also investigated language acquisition in the 50s and early 60s⁹, we are convinced that the study of language ac-

4 The following quotation will help to emphasise how aware we are of the problem: "Thus, even in related western cultures, there may be subtle, but important differences in theory of mind. Finally, translations of the verbs indicated the inclusion of a large number of verbs with fairly synonymous meanings (e. g., five forms to the verb think). The presence of these synonyms might have had undue influence on the form of the solution obtained" (Schwanenflugel et al., 1994, p. 378).

5 Stern, C.; Stern, W. – *Die Kindersprache*. 3. Aufl., Leipzig, J. A. Barth, 1922.

6 Piaget, J. – *Le langage et la pensée chez l'enfant*. Neuchâtel et Paris, Delachaux et Niestlé, 1923.

7 Piaget, J. – *Le jugement et le raisonnement chez l'enfant*. Neuchâtel et Paris, Delachaux et Niestlé, 1924.

8 Piaget, J. – *La formation du symbole chez l'enfant*. Neuchâtel-Paris, Delachaux et Niestlé, S. A., 1945.

9 See, for instance, Martin, W. E. – "Quantitative expression in young children", in *Genetic Psychology Monographs*, 44, 1951, pp. 147-219; McCarthy, D. – *Language development in children*, in Carmichael, L. (ed.) – *Manual of child psychology*, Wiley, 1954; Berko, J. – *Development of verbal categories in child language*, Indiana University Research Center Anthrop. Folk, Ling., 1958; Underwood, B. J., Schultz, R. W. (eds.) – *Meaningfulness and verbal learning*, Lippincott, 1960; Brown, R., Fraser, C. – *The acquisition of syntax*, in Cofer, C. N., Musgrave, B. (eds.) – *Verbal behavior and learning: Problems and processes*, McGraw-Hill, 1963; Menyuk, P. – "Syntactic structures in the language of children", in *Journal of Child Development*, 34, 1963; Fraser, C., Bellugi, U.; Brown, R. – "Control of grammar in imitation, comprehension and production", in *Journal of Verbal Learning and Verbal Behaviour*, 2, 1963, pp. 121-135; Menyuk, P. – "A preliminary evaluation of grammatical capacity in children", in *Journal of Verbal Learning and Verbal Behaviour*, 2, 1963, pp. 429-439; Ervin, S. M.; Miller, W. R. – "The Development of grammar in child language", in *Monographs of the Society for Research in Child Development*, 29 (1), The Antioch Press, Ohio, 1964; Jenkins, J., Palermo, D. – "Mediation processes and the acquisition of linguistic structure", in *Monographs of the Society for Research in Child Development*, 29(1), The Antioch Press, Ohio, 1964.

quisition, i. e., the study of certain linguistic subsystems which are intimately connected with the different stages of cognitive development or, in other words, with cognition in childhood, was first accomplished by the scholars of the Piagetian school, especially by those interested in language acquisition from the genetic point of view (Sinclair-De Zwart 1967¹⁰, Sinclair and Ferreiro 1970¹¹, Sinclair and Bronckart 1972¹², Papandropoulou and Sinclair 1974¹³). The conclusions of the investigation undertaken by the Genevan scholars are therefore mainly concerned with the relationship between the cognitive development (pre-operational and concrete operational) according to Piaget and the language terms/structures the child has then available to undertake different tasks of interest from a psycholinguistic perspective. The relationship between language and the operatory and figurative aspects of cognitive functions/thought were also taken into consideration and obviously raised interesting theoretical questions and discussions (Sinclair-De Zwart, 1967, p. 130, p. 165, and Sinclair and Ferreiro, 1970, p. 34).

Other papers published during that period and in the subsequent years were also the result of the interest in the study of the development of language and its connections with the child's cognitive abilities. Topics such as locative and spatial expressions (Clark, 1973¹⁴; Johnston, 1979¹⁵; Johnston and Slobin, 1979¹⁶), causal relations (Corrigan, 1975¹⁷),

10 Sinclair-De Zwart, H. – *Acquisition du langage et développement de la pensée. Sous-systèmes linguistiques et opérations concrètes*. Paris, Dunod, 1967.

11 Sinclair, H.; Ferreiro, E. – “Etude génétique de la compréhension, production et répétition des phrases au mode passif”, in *Archives de Psychologie*, Vol. XL, N° 160, 1970, pp. 1-42.

12 Sinclair, H.; Bronckart, J.-P. – “S. V. O. A linguistic universal? A study in developmental psycholinguistics”, in *Journal of Developmental Child Psychology*, 14, 1972, pp. 329-348.

13 Papandropoulou, I.; Sinclair, H. – “What is a word? Developmental study of children's ideas on grammar”, in *Human Development*, 17, 1974, pp. 241-258.

14 Clark, E. – “Non-linguistic strategies and the acquisition of word-meanings”, in *Cognition*, 2, 1973, pp. 161-182.

15 Johnston, J. – *A study of spatial thought and expression: in back and in front*, Ph.D. Dissertation, Berkeley, University of California.

16 Johnston, J.; Slobin, D. I. – “The development of locative expressions in English, Italian, Serbo-Croatian and Turkish”, in *Journal of Child Language*, 6, 1979, pp. 529-545.

17 Corrigan, R. – “A scalogram analysis of the development of the use and comprehension of “because” in children”, in *Child Development*, 46, 1975, pp. 195-201.

temporal relationships (Ferreiro and Sinclair, 1971¹⁸), and different connectives (Johansson and Sjölin, 1975¹⁹) were not excluded from this field of research.

The understanding of mental processes and the use of terms such as *think*, *know*, and *guess* (Brown, 1973²⁰) as well as the understanding/comprehension of other cognitive verbs such as *think* and *know* (Johnson and Maratsos, 1977²¹), *remember* and *forget* (Wellman and Johnson, 1979²²), *pretend*, *forget*, and *know* (Macnamara et al., 1976²³), *remember*, *know*, and *guess* (Johnson and Wellman, 1980²⁴), *know* and *guess* (Miscione et al., 1978²⁵) were also object of investigation from a developmental point of view. These cognitive words were even taken as a special lexical domain of study. This sort of research, involving mental processes, was undertaken in order to penetrate the child's (rudimentary) theory of mind (Bretherton and Beeghly, 1982²⁶, p. 907) and to reach the discussion around the topic of language use and cognitive competence (Shatz et al., 1983²⁷, p. 304): "one can ask whether there is evidence that children

18 Ferreiro, E.; Sinclair, H. – "Temporal relationships in language", in *International Journal of Psychology*, vol. 6, n° 1, 1971, pp. 39-47.

19 Johansson, B. S.; Sjölin, B. – "Preschool children's understanding of the coordinators "and" and "or"", in *Journal of Experimental Child Psychology*, 19, 1975, pp. 233-240.

20 Brown, R. – *A first language. The early stages*. Cambridge, Mass., Harvard University Press, 1973. Cited by Johnson, C. N.; Maratsos, M. P. – "Early Comprehension of mental verbs: Think and know", in *Child Development*, 48, 1977, p. 1743.

21 Johnson, C. N.; Maratsos, M. P. – "Early comprehension of mental verbs: think and know", in *Child Development*, 48, 1977, pp. 1743-1747.

22 Wellman, H. M.; Johnson, C. N. – "Understanding of mental processes: A developmental study of "remember" and "forget"", in *Child Development*, 50, 1979, pp. 79-88.

23 Macnamara, J.; Baker, E.; Olson, C. L. – "Four-year-olds' understanding of pretend, forget, and know: Evidence for propositional operations"", in *Child Development*, 47, 1976, pp. 62-70.

24 Johnson, C. N.; Wellman, H. M. – "Children's developing understanding of mental verbs: remember, know and guess", in *Child Development*, 51, 1980, pp. 1095-1102.

25 Miscione, J. L.; Marvin, R. S.; O'Brien, R. G.; Greenberg, M. T. – "A developmental study of preschool children's understanding of the words "know" and "guess"", in *Child Development*, 49, 1978, pp. 1107-1113.

26 Bretherton, I.; Beeghly, M. – "Talking about internal states: The acquisition of an explicit theory of mind", in *Developmental Psychology*, 18 (6), 1982, pp. 906-921.

27 Shatz, M.; Wellman, H. M.; Silber, S. – "The acquisition of mental verbs: A systematic investigation of the first reference to mental state", in *Cognition*, 14, 1983, pp. 301-321.

might have a concept of mental life but have difficulty with the linguistic forms used to express it, or whether there is evidence that the requisite linguistic skill is available for expressing mental reference before it actually appears” (see, in this respect, Miscione et al., 1978, p. 1107).

Hence, we were interested in the lexical domain – constituted exclusively by verbs – translating “ways of knowing or coming to know something” (Schwanenflugel et al. 1994, p. 376) because we think that there is no better way to attain the lexicon implied by cognition.

Bearing in mind that cognition corresponds to the process of knowing, it is not possible to imagine it without taking into account the different component processes connected with it. Considering an information processing continuum, Schwanenflugel et al. (1994) outlined verbs related to perceptual inputs (verbs such as *see*, *recognize*, *pay attention*, and *observe*), and verbs linked to conceptual and logical outputs (verbs such as *plan*, *reason*, *decide*, *explain*, and *estimate*). Moreover, the authors took into consideration verbs concerned with the degree of certainty implied in the various mental processes (such as *memorize*, *remember*, *understand*, and *know* vs. *question*, *check*, *search*, *choose*, and *guess*), and finally they referred the verbs connected or not with the creativity they may involve (i. e., verbs such as *invent*, *discover*, *explore*, and *figure out* vs. *hear*, *compare*, and *guess*) (ibid., pp. 383, 384)²⁸. As a matter of fact, the above mentioned dimensions comprise cognitive activities such as “recognizing patterns, forming concepts, paying attention, storing and retrieving information, representing ideas through words and/or images and solving problems” (Day, 1980²⁹, p. 95): in fact, that was the way used by Ruth D. Day to define the process of knowing, i. e., cognition.

28 The list of 30 (mental) verbs used by Schwanenflugel et al. in their study corresponded to the verbs “that at least 8 out of 10 experts agreed were representative ways of knowing or coming to know something” (Schwanenflugel et al., 1994, p. 379).

29 Day, R. – *Teaching from notes: Some cognitive consequences*, in McKeachie, W. J. (ed.) – *New directions for teaching and learning: learning, cognition and college teaching*. San Francisco, Jossey-Bass, 1980, pp. 95-112.

To consider cognition from this perspective gives us a view of it which covers a wide range of cognitive activities and consequently of cognitive verbs, or, according to Hall et al. (1987³⁰, p. 308), “internal state words (...) used to represent a continuum of internal processing”. In other words, attention is not only drawn to the higher level of cognitive processes which might be translated into adult speech by verbs such as “remember, think, know and dream” (Shatz, Wellman and Silber, 1983, p. 305).

Ruth S. Day, however, is not the only author who shares this view of cognition. Slobin (1979)³¹ also includes “the study of perception, attention, memory, problem solving, thinking [and even] language” (p. 197) when he outlines in his definition of cognition “the branch of psychology which studies knowing”. Approximately the same cognitive activities are attributed to the term “cognitif” by H. Piéron (1951³², p. 82) in his *Vocabulaire de Psychologie*: “perception, formation de concepts, raisonnement, langage, décision, pensée”.

The above mentioned definitions of cognition include cognitive activities which correspond to the (mental) activities inserted in the perspectives/dimensions outlined by Schwanenflugel et al. (1994) when they try to consider the mental verbs involved in the information processing continuum and the certainty and the creativity they may convey based upon the research they undertook.

The verbs selected to describe the above mentioned cognitive activities were usually “familiar” and “prototypical” to the subjects who took part in Schwanenflugel’s et al. (1994) experiment.

These two factors (familiarity and prototypicality) can certainly be seen as important factors when we study the lexical domain under discussion in oral productions not only of adults but also of children.

From a genetic point of view, research into lexical/semantic development suggests precisely that children acquire terms which are prototypi-

30 Frank, R. E.; Hall, W. S. – “Polysemy and the Acquisition of the Cognitive Internal State Lexicon”, in *Journal of Psycholinguistic Research*, 20(4), 1991, pp. 283-304.

31 Slobin, D. I. – *Psycholinguistics*. 2nd edition, Glenview, Illinois, Scott, Foresman and Company, 1979.

32 Piéron, H. – *Vocabulaire de la Psychologie*. Paris, P.U.F., 5^{ème} édition, 1973.

cal and familiar before the unfamiliar and atypical ones (*ibid.*, p. 378). In fact, this may be the result of being exposed to this kind of lexicon, which means, in other words, that this sort of vocabulary might also be more frequent and hence more familiar and prototypical in adults' speech (cf. Naigles and Hoff-Ginsburg, 1998³³). From a developmental perspective, it is not surprising that word meanings are acquired progressively (Booth et al., 1997, p. 582). For instance, to give just two examples from the literature, E. Clark (1973³⁴) tries to explain how children acquire word meanings based upon semantic knowledge (partial and full semantics hypothesis) and A. Karmiloff-Smith (1979)³⁵ gives us an overview of the acquisition of the plurifunctionality of determiners. Cognitive words (and, in special, those which are polysemous or at least considered more polysemous (*know, see, want*, etc. – see Booth et al., 1997, p. 582) will certainly be an excellent field to study not only for the order of acquisition of the different meanings of the same word, but also the words within the domain which are employed earlier in the acquisition process, as the result of the cognitive background necessary to their use and as the result of the linguistic model to which the child is exposed (Hall et al., 1987, p. 291; Frank and Hall, 1991, pp. 283-284).

Nevertheless, it would be interesting to observe which levels of meaning in the interior of certain mental verbs (polysemous cognitive internal state words) are used more frequently in everyday speech (Frank and Hall, 1991, pp. 286-ff.) and therefore refer to prototypical meanings in that context (Frank and Hall, 1991, p. 302; Hall et al., 1987, p. 294).

33 Naigles, L. R.; Hoff-Ginsburg, E. – “Why are some verbs learned before other verbs? Effects of input frequency and structure on children's early verb use”, in *Journal of Child Language*, 25(1), 1998, pp. 95-120.

34 See Clark, E. – “Non-linguistic strategies and the acquisition of word meanings” in *Cognition*, 2, 1973, pp. 161-182, and also Clark, E. – “On the child's acquisition of antonyms in two semantic fields”, in *Journal of Verbal Learning and Verbal Behaviour*, 11, 1972, pp. 750-758, and Clark, E. – “Here's the top: Nonlinguistic strategies in the acquisition of orientational terms”, in *Child Development*, 51, 1980, pp. 329-338.

35 Karmiloff-Smith, A. – *A functional approach to child language. A study of determiners and reference*. Cambridge Studies in Linguistics, 24, Cambridge, Cambridge University Press.

It would also be of interest to analyze the types of use (semantic and pragmatic) which are more frequent in the cognitive verbs employed when children and adults are talking.

Frank and Hall (1991, p. 285), based upon Hall and Nagy's (1986)³⁶ hierarchical model of internal state words, proposed that word meanings linked to cognition denoted six levels of internal processes (six levels of meaning – see Hall et al., 1987³⁷, p. 294: perception, recognition, recall, understanding, metacognition and evaluation). At the same time, this did not exclude the hypothesis according to which words with polysemous meanings like *know* would be acquired from the simplest to the most complex levels of meaning (Hughes, 1985³⁸). When Booth et al. (1997³⁹, p. 582) consider the cognitive internal state words, they consider not only the above mentioned *know* but also *see* and *want* polysemous cognitive words. The verb *think* has also been included in this group (Frank and Hall, 1991, p. 288). Nevertheless, the assumption that the (hierarchical) organization of meaning levels within cognitive words might be considered in the entire lexical domain rather than in individual members of the set was also suggested (*ibid.*, p. 303).

The way the above mentioned levels of meaning are employed by children and adults was also an object of study (*ibid.*, 1991, p. 293). It is no wonder that the two types of subjects (children and adults) use the lower levels in the hierarchy proposed (*ibid.*, p. 293), both cognitively and lexically, in a greater proportion than the most complex levels.

36 Hall, W. S.; Nagy, W. E. – *Theoretical issues in the investigation of words of internal report* in Gopnik, I.; Gopnik, M. (eds.) – *From models to modules: Studies in cognitive Science from the McGill workshops*. Norwood, NJ, Ablex Publishing Corp., 1986, pp. 25-65. Cited by Frank and Hall (1991).

37 Hall, W. S.; Scholnick, E. K.; Hughes, A. T. – “Contextual constraints on usage of cognitive words”, in *Journal of Psycholinguistic Research*, 16(4), 1987, pp. 289-310.

38 Hughes, A. T. – *Comprehension and production of cognitive words*. Unpublished master's thesis, University of Maryland, College Park, Maryland, 1985. Cited by Frank and Hall, 1991, p. 285.

39 Booth, J. R.; Hall, W. S.; Robison, G. C.; Kim, S. Y. – “Acquisition of the mental state verb *know* by 2- to 5-year-old children”, in *Journal of Psycholinguistic Research*, 26(6), 1997, pp. 581-603.

Hall and Nagy (1986) (see Hall et al., 1987, p. 305) also took into account the two uses of internal state words: the semantic use concerning the direct reference of the word to the current internal processes, and the pragmatic use concerning the indirect relation of the word to internal experience.

On the one hand, the meaning levels outlined above apply semantic usages (Frank and Hall, 1991, p. 289); on the other hand, pragmatic usages were more concerned with conversational devices, rhetorical questions, exam questions (ibid., pp. 289-290). Booth et al. (1997, p. 588) also refer to these two usages (semantic and pragmatic) of cognitive words and consider the following types of pragmatic usages: conversational devices, indirect requests and suggestions, rhetorical questions, hedges, opinion questions, attentional devices.

Frank and Hall (1991, p. 283) call attention to the fact that at the beginning cognitive words are not frequent and serve pragmatic functions. Gradually, they acquire their semantic functions.

Other aspects mentioned by the authors who study this lexical domain are concerned with the factual and counterfactual verbs (Wang and Scholnick, 1986, p. 384), the certainty implied in some cognitive words (compare, for instance, *know* and *think* – see Johnson and Maratsos, 1977; Moore, Bryant and Furrow, 1989⁴⁰) and with the use of cognitive words to refer to *self* and to *other* (1997, p. 588, pp. 596-597). The last aspect is to be found in Piaget as is the egocentrism in children (Piaget, 1923 and 1962/1979⁴¹).

The variety of mental state structures will also be considered. We will observe the types of sentences: simple and complex (see Shatz et al., 1998, p. 309) used by our two groups when they employ cognitive verbs. Complexity linked to mental verb structures will be the object of discussion (see Johnson and Maratsos, 1977, p. 1743, who refer to Brown (1973) and Shatz et al., 1983, p. 313).

40 Moore, C.; Bryant, D.; Furrow, D. – “Mental terms and the development of certainty”, in *Child Development*, 60, 1989, pp. 167-171.

41 Piaget, J. – *Le langage et la pensée chez l'enfant*. Delachaux et Niestlé, 1923; Piaget, J. – *Comments on Vygotsky's critical remarks*, in Vygotsky, L. S. – *Thought and language*. The MIT Press, 1962, reprinted in *Archives de Psychologie*, XLVII, 18, 1979, pp. 27-249.

METHOD

General presentation

The data presented in this paper were extracted from the corpus analyzed by Moura (1996)⁴² in her study of the codability in Portuguese-speaking children's concept definitions.

Data collection

This corpus results from the participation of 225 children and 88 adults in a TV show context, which consisted of children describing concepts (such as "Fax" ("Fax"), "Santa Claus" ("Pai Natal"), "Uncle" ("Tio") or "Spy" ("Espião"), for instance). The rule of thumb of these children's definitions was never to mention the word to be defined.

The total corpus comprises 115 definitions distributed over 25 sessions of the show (Moura, 1996).

Adults were then asked to "guess" the concepts children had defined first, based upon the videotaped definitions. In each session 2 teams of 2 adults each participated.

Therefore, this corpus was not obtained by elicitation or by questionnaires.

Subjects

The 115 definitions of the corpus were given by 225 children (106 girls + 119 boys), aged from 4 to 10 years old⁴³ (average: 7,52 years old, SD=1,42). Table 1 shows the distribution of all these children according to age⁴⁴. As can be seen, about 40% of our children are under 8 years of age.

42 Moura, M. J. P. de – *Da verbalização de conceitos à sua identificação. Contributos para o estudo da codabilidade num contexto criança-adulto*. Porto, Faculdade de Letras da Universidade do Porto, 1996. Unpublished master-dissertation.

43 These data do not coincide exactly with those included in Moura (1996): in her dissertation, the author took into consideration 219 children only (see Moura, 1996, pp. 69 and ff.). For the purpose of the present study, the original total number of child subjects who produced the corpus of Moura's study was considered.

44 This table differs from the one included in Moura (1996, p. 75) for the reasons explained in footnote 43.

The adults were 88 participants in the TV show. In this number the host of the show is included; he took part in all the 25 sessions taken into consideration. Out of the 87 other subjects, some of them participated in more than one session.

TABLE 1 – Number (N) and percentage (P) in relation to the total number of children by age group in years and number of adults

	Age (years)							Adults
	4	5	6	7	8	9	10	
N	5	21	33	32	63	70	1	88
P	2%	9%	15%	14%	28%	31%	1%	

RESULTS AND DISCUSSION

First of all it is important to say that the variety of cognitive verbs we found and their distribution over the two groups of subjects of our experiment may reveal the characteristics of the corpus.

The corpus we used corresponded to an experiment which involves two groups of subjects: the children who try to describe a certain concept/category; and the adults who are supposed to guess – through the descriptions given by children – the target word/concept. In other words, it is a task which implies *codability*. Taking into account the words employed to describe the color continuum, Lantz and Steffire (1964, p. 472)⁴⁵ define codability as “the efficiency with which a color can be transmitted in a given language”. We think that this definition may be applied to the task inherent to the corpus we studied.

The fact of expecting agreement on the target word constrains and implies different cognitive skills from the adults and from the children taking part in the process. Children go from the known and try to describe it as best they can, and the adults have to reach the unknown and try to

⁴⁵ Lantz, D.; Steffire, V. – “Language and Cognition Revisited”, in *Journal of Abnormal and Social Psychology*, 69(5), 1964, pp. 472-481.

guess/to deduce the target word based upon the description given by the children. These two tasks are certainly going to influence the kind of cognitive lexicon used by each group of subjects. It is no wonder that verbs concerned with conceptual and logical outputs, according to Schwanenflugel et al. (1994), are used in a greater proportion by the group who is supposed to guess the target word described, i. e., adults, and the verbs concerned with perceptual inputs are more frequent among children (see Table 2). The dimension of certainty may also play a certain role in this side of the process. The descriptions will probably translate other cognitive perspectives and are therefore expressed by another kind of verb.

In other words, in this study we are not dealing with the types of productions mentioned in the literature about the cognitive verbs. We are not studying conversations with young children. Our study concerns the oral production of children from 4 to 10 years of age who have been asked to describe certain concepts and the oral production of adults who are supposed to guess the name which corresponds to the children's descriptions.

*Total number of structures and types of structures found in the corpus*⁴⁶

The experimental conditions of our study are obviously going to have a particular effect on the different topics we want to discuss, and hence the results we obtained may not be in agreement with those presented by the various authors who have investigated the cognitive verbs and their implications from a genetic perspective.

As far as the numbers of structures in the corpus is concerned, we found, according to the analysis based upon Girolami-Boulinier's (1984)⁴⁷ methodology, a total number of 2369 structures: 480 (=20,26% of the total corpus) were produced by adults, and 1889 (=79,74% of the total corpus) by children. The difference between both groups is statistically significant: children produced a significantly higher number of

46 All the statistical decisions were based on a previous exploratory data analysis where the shape of the distribution as well as the homogeneity of variance were analyzed.

47 Girolami-Boulinier, A. – *Les niveaux actuels dans la pratique du langage oral et écrit*. Paris, Masson, 1984.

structures than adults (Mean Rank_{Children}=197,40, Mean Rank_{Adults}=53,70; $z=-12,68$, $p<0,01$). This difference obviously corresponds, once more, to the type of oral productions in the experiment.

The structures were not of the same type and we thought it would be useful to consider the structures without a main verb separately. The structures without a main verb are called “phrases” (N) by Girolami-Boulinier and we may call them “incomplete sentences” when compared with the other types of structures (SV, il, ce) (Girolami-Boulinier, 1984, pp. 14-20). The number of incomplete sentences corresponded to 260 (=10,98% of the total number of structures). Adults produced 194 structures of this type (=74,62% of the incomplete structures), and children 66 (=25,38% of the incomplete structures). Comparing both groups, we found, once again, that the differences are significant: adults produced incomplete structures in a higher proportion than children (Mean Rank_{Adults}=233,82, Mean Rank_{Children}=126,95; $z=11,37$, $p<0,01$). We think that the type of verbal task under consideration justifies once more the difference between the frequency of incomplete structures obtained in adults and in children.

We also found that it was important to separate the complete structures from the incomplete ones because we are going to study cognitive verbs, and they only appear either as main verbs or as predicates of complementizers; in short, they only appear in complete sentences.

Cognitive verb forms found in the corpus: absolute values and associated syntactic structures

Using the list of 30 mental verbs proposed by Schwanenflugel et al. (1994), we selected from the children’s and adults’ productions the Portuguese terms which corresponded to the mental states translated by the verbs referred to by those authors. We are aware that we are not establishing a parallel study between Portuguese and English based on Schwanenflugel et al.’s (1994) data.

In the total number of structures, we found 255 cognitive verb forms, i.e., 255 mental verb structures⁴⁸. Children produced 149 mental verb

48 This corresponds to a percentage of 10,76% of the total corpus (compare with the study of Shatz et al., 1983, p. 310, concerning another type of corpus: 1% and 8%).

sentences (=58,43% of the total number of cognitive verb forms) and adults produced 106 mental verb structures (=41,57% of the total number of cognitive verb forms). The difference between the use of cognitive verb forms in adults vs. children was not significant (Mean Rank_{Children}=155,07, Mean Rank_{Adults}=161,93; $z=-0,70$, n.s.).

In 1973, Roger Brown noticed that cognitive verbs, such as *think*, *know* and *guess*, were used in complex syntax (Johnson and Maratsos, 1977, p. 1743). Therefore, we decided to see how many structures corresponded to complex sentences with predicate complements in child and adult productions (Shatz et al., 1983, p. 309; Booth et al., 1997, p. 598).

On the one hand, the children produced 149 mental verb structures: 32 were complex structures, with complements which are subordinate verb groups (Girolami-Boulinier, 1984), and 117 were simple structures (Shatz et al., 1983, p. 309). Adults, on the other hand, out of the 106 mental verb structures, produced 44 complex structures, and 62 simple structures. As far as the use of cognitive verbs with complex syntax is concerned, the difference between the two groups was found to be significant: adults showed a greater proportion of cognitive verbs with complex syntax than children (Mean Rank_{Adults}=179,63, Mean Rank_{Children}=148,15; $z=-4,49$, $p<0,01$).

The type of task may again reveal a certain difference between our results and the idea, according to Shatz et al. (1983, p. 309), that “mental verb use often occurs in complex sentences with predicate complements”.

Qualitative analysis of the cognitive verbs found in the corpus

If we consider the most frequent mental verbs found in our corpus, we may say, with authors such as Shatz et al. (1983, p. 310), Bretherton et al. (1982, p. 915), Booth et al. (1997, pp. 583, 597), that the mental states which correspond to the English verbs *know* and *think* are in a certain way the most common in our corpus. They may therefore be considered as the most familiar and prototypical instances of this lexical domain in Portuguese. We said “in a certain way” because verbs such as *ver* and *ouvir* are among the five most frequent mental verbs existing in our corpus. A comparison of both groups of subjects shows that the verbs *ver* and *ouvir* are especially used by children. Verbs such as *saber*, *achar* and

The type of task constrains once more the variety of the mental verbs employed: the children are describing the target word and the adults are guessing it.

When we take into account the age of the children who produced mental verb sentences and the variety of verbs used by each age group, we can only agree with Booth et al. (1997, p. 596) when they say that “the cognitive lexicons of children become more differentiated with age”. In short, from a developmental point of view, we verify that the distinctions the child makes at the level of the mental states are linked to a greater variety of cognitive words. This may constitute a form of observing the step-by-step acquisition of a “theory of mind” (see Bretherton and Beeghly, 1982, p.906; Moore et al., 1989, p. 167) if we also consider the role played by other variables which are also outlined in this study.

Table 3 allows us to make a more precise idea of this lexical differentiation according to age, since it shows, for each age group of subjects, the most frequent verbs listed in a decreasing order of frequency⁴⁹.

TABLE 3 – Cognitive verbs used by each age group of children in decreasing order of frequency

		Age (years)				
4	5	6	7	8	9	10
(N=5)	(N=21)	(N=33)	(N=32)	(N=63)	(N=70)	(N=1)
—	ver	ver	ver	ver	ver	ver
	achar	achar	saber	achar	achar	
	conhecer	ler	ouvir	perceber	saber	
	decidir	ouvir	achar	saber	pensar	
		lembrar-se	pensar	ouvir	inventar	
			aprender	olhar	ler	
			estar atento	conhecer	notar	
			imaginar	inventar	adivinhar	
			olhar	ter na cabeça	aprender	
			perceber	descobrir	descobrir	
			vigiar	entender	lembrar-se	
				pensar	ouvir	
				ter atenção	ter a certeza	

49 This table gives us only a general impression of the lexical differentiation with age: in fact, it does not allow us any definite, statistically rigorous conclusion, for no means of controlling the different numbers of subjects in each age group and the different numbers of productions of each subject were taken into account.

Semantic vs Pragmatic usage

The verbal task we analyzed may be responsible again for the results. Authors such as Booth et al. (1997, p. 591) say “that young children use internal state words more for pragmatic purposes than for semantic communication”. In our corpus, the children revealed 146 cases of semantic usage (=98% of the total number of the children’s cognitive verb forms) and 3 cases of pragmatic usage (=2% of the total number of the children’s cognitive verb forms) if we take into account the total number of mental state structures the children produced. Adults reveal 93 cases of semantic usage (=87,7% of the total number of adults’ cognitive verbs) vs. 13 cases of pragmatic usage (=12,3% of the total number of cognitive verbs) if we consider the total number of adult mental state structures.

If we compare the semantic uses of cognitive verbs between children and adults, we find that there are no significant differences among the two groups in relation to this specific matter (Mean Rank_{Children}=155,90, Mean Rank_{Adults}=159,80; $z=-0,40$, n.s.). However, as far as the pragmatic uses are concerned, a significant difference is noticed between the two groups: adults present pragmatic uses of this lexicon much more often than children (Mean Rank_{Adults}=164,87, Mean Rank_{Children}=153,92; $z=-3,32$, $p<0,01$).

We should not forget that, in this corpus, the adults’ productions may present conversational devices which are intimately linked to pragmatics. Children, on the other hand, are not engaged in a conversational frame. The age of children may also explain the percentage of the semantic usage of the cognitive verbs (cf. Frank and Hall, 1991, p. 283).

Self-reference vs Other-reference

As far as the references to self and other are concerned, the age of the children may also explain the mastering of both cognitive states (self and other). On the other hand, the type of verbal task favoured the use of self-initiated sentences by the adults (see, for a detailed discussion on the topic: Johnson and Wellman, 1980, p. 1102; Bretherton and Beeghly, 1982, pp. 915, 919, 920; Shatz et al., 1983, p. 313; Booth et al., 1997, pp. 588-596, 596-597). Therefore, we found 76 cases of references to self (=71,7% of adult cognitive verb forms) and 30 cases of references to other (=28,3% of adult cognitive verb forms) in adults; in children’s pro-

ductions, 45 cases of reference to self (30,2% of child cognitive verb forms) and 104 cases of reference to other (=69,8% of child cognitive verb forms) are found.

Significant differences have been found in this respect between adults and children: adults used cognitive verbs in self-reference more often (Mean Rank_{Adults}=194,89, Mean Rank_{Children}=142,18; $z=-6,35$, $p<0,01$), whereas children used this lexicon in referring to others more than adults did (Mean Rank_{Children}=166,04, Mean Rank_{Adults}=133,89; $z=-4,17$, $p<0,01$).

These results show, once more, the influence of the verbal task under consideration on our subjects' productions.

Levels of meaning

The distribution of the cognitive verbs over the 6 levels of meaning according to, among others, Frank and Hall (1991, p. 285) – perception, recognition, recall, understanding, metacognition and evaluation – raises some problems, eventually connected with the semantics of each verb. Moreover, the problem may be even enhanced by this specific corpus and by the characteristics of European Portuguese.

Schwanenflugel et al. (1994) drew attention to the difficulty which the translation of the verb *think* from one language to another represents and to the probable existence of important differences in theory of mind among cultures (Schwanenflugel et al., 1994, p. 378). In order to judge the eventual adaptation to Portuguese of the above mentioned levels of meaning, we have chosen the verbs *saber*, *perceber* and *ver*. This does not mean that we had no problem in inserting the various occurrences of these verbs in the respective level. We feel that in the hierarchical model under consideration some levels are missing in Portuguese, at least when we consider the specificity of our corpus. Here are examples of occurrences of the verb *saber* to which we could find a correspondence at 2 of the referred levels of meaning. This correspondence is obviously subject to discussion.

RECALL

Não sei o nome dele.

I do not know his name.

METACOGNITION

Eu não sabia que ele sabia o que era o Adamastor.
*I did not know that he knew what Adamastor was.*⁵⁰

As far as the verb *saber* is concerned, we think that most of occurrences in speech are related to memory in general (see Schwanenflugel et al., 1994, p. 385; Frank and Hall, 1991, p. 293).

The verbs *perceber* and *ver* may also be considered polysemous. The following levels were observed.

PERCEPTION/UNDERSTANDING (?)

Não se percebe quase nada do que eles dizem.
We can hardly understand what they say.

PERCEPTION

Os americanos vêem isso na televisão.
Americans see it on TV.

UNDERSTANDING

Não percebi absolutamente nada.
I did not understand anything at all.

Faço questão que ouçamos este depoimento até para verem como ...
I insist on hearing this statement, even to see how...

We have already seen that it is a means of sending messages.

METACOGNITION

Percebes por que não sei quem é este gordinho.
Do you understand why I do not know who this fat guy is.

⁵⁰ Adamastor is a mythical character of Portuguese epic literature.

The semantics/knowledge of cognitive verbs, according to the literature, “becomes more differentiated with development”, as we have seen (Booth et al., 1997, p. 584). Unfortunately, the way we have analyzed this corpus so far does not offer enough evidence for us to arrive at the same conclusion. Nevertheless, we already have the feeling that these verbs contain a special hierarchy of meanings which should be evaluated more deeply and using different coders in order to get a more precise view of this topic. Moreover, the model of the levels of meaning we have been considering so far seems, in a certain way, less appropriate to this Portuguese lexicon than the proposal of Schwanenflugel et al. (1994).

FINAL REMARKS

In spite of the fact that, in this study, we have been dealing with a very special corpus, we think that it has given us the opportunity to observe the use of cognitive verbs from a different point of view, and that it has brought a modest contribution to a possible elaboration of a theory of mind/knowing in European Portuguese.

The age of the children who belonged to the child group of our study cannot however bring any information on the emergence/appearance of a theory of mind. In addition, the fact that most of children who produced our corpus and used cognitive verbs were 7, 8 and 9 years old does not allow us to observe the evolution of the use of cognitive words to refer to self and to other. The concepts of self and other seem to have already been mastered by our subjects. Therefore, *egocentrism*, in the sense of Piaget (1962), does not seem a relevant topic as far as our child population is concerned. As a matter of fact, the children of our study already seem able to take another person’s point of view as well as their own point of view; they can already look at a certain object/situation from different angles (Bretherton et al., 1982, pp. 906, 919). In short, they reveal the same behavior as the adults who master both the actions which are self-initiated and the others equally well. This kind of task may not bring evidence linked to the primitives of “theory of mind” (Moore et al., 1989, p. 167), but it may show what “theory of mind” looks like in children of the ages we studied.

Pragmatic and semantic usages reflect once more the specificity of the corpus. We cannot say that pragmatic usages are preponderant in the

children of this study, once again because our subjects were older than those of studies concerned with earlier stages of cognitive word development. We must say that the oral production framework and the ages of the children constrain the pragmatic and semantic usage.

Our corpus is effectively different from the ones occurring in the literature on the topic (see bibliographical references to the study from a developmental perspective) and only to a certain extent is a good example of the way the mental verb as a cognitive word lexicon become more differentiated with age (Booth et al., 1997, p. 596). We could not discover therefore when mental verbs begin to appear (Shatz et al., 1983, p. 317) and we could not follow, as we had wished, the evolution of their meanings as polysemous words (Booth et al., 1997, p. 596). If we could, it would be interesting to observe how “children do not automatically acquire adult word meanings, but gradually refine their word meanings” (Booth et al., 1997, p. 582).

Unfortunately, our corpus does not allow us either to discuss the relationship between the early stages of acquisition of the cognitive word lexicon and the cognitive background it involves. It does not help either to show the role played by the cognitive background in the first productions of that lexicon (Miscione et al., 1978, p. 1107; Bretherton and Beeghly, 1982, pp. 915-916; Hall et al., 1987; Moore et al., 1989, p. 167; Frank and Hall, 1991; Booth et al., 1997). In 1972, Eve Clark, in a paper entitled “On the child’s acquisition of antonyms in two semantic fields”, shows how cognitive background and language are related in the following terms: “The meanings of some words are consistently learnt by children before others. This could be put down to differences in linguistic complexity, but linguistic complexity itself is probably based on cognitive factors” (Clark, 1972, p. 751).

Mental verbs constitute a very important domain where this relationship should be taken into account. However, we should not forget that the production of mental verbs (and even of other types of words) does not always correspond to well-defined notions of their meanings. When Johnson and Wellman (1980) studied children’s developing understanding of the mental verbs *remember*, *know* and *guess*, they wrote before the concluding remarks: “Certainly, young children can selectively use mental verbs quite appropriately, even while having ill-defined notions of their meaning” (Johnson and Wellman, 1980, p. 1102).

The characteristics of our corpus obviously explain our limitations concerning the discussion of the relationship between language and cognition in the early stages of development. Nevertheless, we are also aware of the relationship between language and the figurative aspects of thought (Sinclair-De Zwart, 1967, p. 130).

However, we may add that the cognitive verbs we found in our corpus are, without doubt, important contributions to a theory of mind/knowing, because, as Booth et al. (1997, p. 583) say, “cognitive words (...) «convey shades of meaning which adds succinctness and precision to the lexicon» and supply us with «a greater capacity for description and definition»”, with all the implications in terms of reasoning and learning in school this involves (Hall et al., 1987, p. 290; Booth et al., 1997, p. 582).

Finally, we would like to outline the way our corpus reveals in the two groups the influence of the context/situation task on the selection of cognitive words out of the mental verb lexicon when we consider the wide range of cognitive activities which corresponds to the mental verb list considered by Schwanenflugel et al. (1994).

It is important to stress that the mental verb lexicon of Schwanenflugel et al. (1994) has the advantage of being large enough to comprehend the activities implied in the process of knowing as a whole, i. e., in cognition.

We share this view of the cognitive words because we think that cognitive terms should cover the way of knowing or coming to know something, i. e., should cover a range which goes from perceptual inputs to logical/conceptual outputs in the terminology of Schwanenflugel et al. (1994). We also have not forgotten to take into account the degrees of certainty and creativity they may involve, from perception to evaluation, through recognition, recall, understanding and metacognition: the six levels of meaning outlined by Hall et al. (1987), Frank and Hall (1991) and Booth et al. (1997). Moreover, Booth et al. (1997, p. 584), when referring to this hierarchical model of cognitive verbs, mention how it has been supported by studies such as those of Schwanenflugel et al. (1994), and compare both perspectives.

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APPENDIX

English translations of the Portuguese verbs included in the text

Bearing in mind Schwanenflugel et al.'s (1994) words on the difficulty of translating the cognitive verbs from one language/culture to another, we have only proposed a rough translation of the European Portuguese cognitive verbs found in our study. Our target lexicon is the one proposed by the authors.

English translations of the Portuguese cognitive verbs found in our corpus

ver	<i>see</i>
achar	<i>think</i>
saber	<i>know</i>
ouvir	<i>hear</i>
pensar	<i>think</i>
ler	<i>read</i>
perceber	<i>understand</i>
olhar	<i>see</i>
inventar	<i>invent</i>
conhecer	<i>know</i>
descobrir	<i>discover</i>
lembrar-se	<i>remember</i>
aprender	<i>learn</i>
notar	<i>notice</i>
ter na cabeça	<i>know</i>
entender	<i>understand</i>
estar atento	<i>attend</i>
ter a certeza	<i>know</i>
adivinhar	<i>guess</i>
decidir	<i>decide</i>
imaginar	<i>imagine</i>
ter atenção	<i>attend</i>
vigiar	<i>observe</i>

arriscar	<i>guess</i>
não fazer a mínima ideia	<i>(not) know</i>
perceber	<i>understand</i>
julgar	<i>think</i>
apostar	<i>guess</i>
deduzir	<i>deduce</i>
ter a impressão	<i>think</i>