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The acquisition of the verbal passive: The role of verb type

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ABSTRACT

This study examines the comprehension of verbal passives by children acquiring European Portuguese, in particular with respect to the predictions of the Universal Phase Requirement (UPR) and the Universal Freezing Hypothesis (UFH) regarding children's performance with different types of predicates. Both hypotheses entail the prediction that children perform better with passives of predicates that encode a result state, either because they tend to make better adjectival passives or because they have a complex event structure. Moreover, the UPR predicts poorer performance with long passives (i.e., those with a *by*-phrase) than with short passives, to the extent that construing an adjectival interpretation is more difficult when a *by*-phrase is present; the UFH predicts no difference between the two. Portuguese-speaking children between the ages of 3 and 8 years were tested on their comprehension of verbal passives of non-actional predicates and actional predicates with or without a result state, using two sentence-picture matching tasks. The results do not entirely fulfill the predictions of the UPR and the UFH: we replicate the delay seen in English with non-actional predicates, but no effect of the result state is seen in the case of actional predicates. We propose that the relevant aspectual property of the passivized predicate may be affectedness rather than the availability of a result state.

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1. Introduction

Children acquiring languages such as English (Hayhurst 1967; Horgan 1975, 1978; Turner & Rommetveit 1967; Sudhalter & Braine 1985; Hirsch & Wexler 2006; a.o.), Greek (Driva & Terzi 2007), Catalan (Cunill 2012, Gavarró & Parramon 2017), Spanish (Oliva & Wexler 2018), Italian (Volpato et al. 2016), and European Portuguese (Estrela 2013) seem to be delayed in their comprehension of the verbal passive. This delay is modulated by predicate semantics: Maratsos et al. (1985) found that English-speaking children up to school age showed significantly better comprehension of passives of actional verbs, such as *hold* (1a), than passives of non-actional verbs, such as *like* (1b). The examples are from Maratsos et al. (1985:170). In other words, children at the age of 3-4 years seem to comprehend passives of actional verbs, namely physical action verbs, but not passives of non-actional, or psychological, verbs, those in which the underlying object is somehow perceived, cognized, or emotionally experienced by the underlying subject (Maratsos et al. 1985:189).

- (1) a. Grover is held by Ernie.
b. Batman is liked by Superman.

In this paper we consider the acquisition of the passives of European Portuguese, in particular the question of the verb type asymmetry. The contrast in comprehension of the verb types illustrated in (1)

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has been attributed to either syntactic or semantic constraints on the passive in child grammar. Maratsos et al. (1985) proposed that children's passives are restricted to verbs that are high in "semantic transitivity" (Hopper & Thompson 1980). This concept denotes a cluster of properties of the event described by the verb and its arguments: highly transitive verbs have properties such as kinesis, change of state, and intentionality, and highly transitive objects are affected or changed by the event, definite and inanimate, among other properties. A sentence such as (2a) is very high in semantic transitivity; a sentence such as (2b) is lower, but still presents some properties of semantic transitivity, such as an affected object, and definite subject and object; and a sentence such as (2c) is lower still in transitivity, as it does not involve any movement, change, intention, or affectedness of the object. Physical contact verbs, such as *kick* and *bump*, which may not have a lasting effect on the object, nonetheless are high in semantic transitivity, as they involve kinesis and direct contact during the event (2d). If children hypothesize that the English passive is constrained by semantic transitivity, then they will restrict passivization to verbs like *hit* and *wash*, which are highly transitive in this sense, and fail to generalize passivization to verbs like *see* and *remember*.

- (2) a. John broke the glass.
 b. John's mask scared the girl.
 c. John liked the girl.
 d. John kicked the dog.

In the same vein, Pinker et al. (1987) and Pinker (1989, 2013) argued that, given learnability principles, it is reasonable to suggest that children initially assume that the language they are learning allows only passives of actional (Agent-Patient) verbs. Typological work has shown that, if a language has passives, it has passives of typical transitive actional verbs (those with Agent external arguments and Patient internal arguments) without a *by*-phrase (Keenan 1985, Keenan & Dryer, 2007). This seems to be the most unmarked and widespread type of passive, and in some languages it is the only type of passive available. Outside this core of actional verbs, languages vary widely as to the types of predicates that may passivize. Children may initially hypothesize that the language they are acquiring allows verbal passives with a more restricted set of verbs, thus avoiding an overgeneralization from which it would be difficult to retreat, in the absence of negative evidence. In the case of languages such as English and Portuguese, which allow passives of non-actional verbs such as *see* and *hear*, children would then generalize passivization to a wider set of verbs or verb classes, in accordance with positive evidence in the linguistic input.

Two influential accounts of the acquisition of the passive include the Universal Phase Requirement (UPR; Wexler, 2004) and the Universal Freezing Hypothesis (UFH; Hyams & Snyder 2005, Snyder & Hyams 2015). The two accounts have some intricate details that are worth reviewing.

The UPR rests on the assumption that the verbal passive involves v_{def} , which does not select an external argument and does not define a phase, as opposed to the phasal v of transitives and unergatives (Chomsky 1999). Under UPR, children have the adult v^* , a v head that selects an external argument and defines a phase, but they do not have v_{def} , a v head that does not select an external argument and, crucially, does not define a phase. Instead, the child has v^*_{def} , a v head that does not select an external argument but defines a phase, thus, by the Phase Impenetrability Condition, the internal argument is inaccessible to the higher phase and cannot move to T. In this case, the derivation crashes, as T remains with uninterpretable features—its phi-features have not been deleted under Agree with the internal argument and the EPP feature has not been deleted via Move. Hence, under UPR, verbal passives are represented as non-convergent. Around the age of 6, v_{def} becomes available due to maturation, and from that moment on children can interpret verbal passives in an adult manner.

However, English-speaking children perform well with actional passives from the age of 3 years. Wexler (2004), following Borer & Wexler (1987), assumed that this is due to the homophony of these strings with adjectival passives (3). Borer & Wexler (1987) argued that, in general, actional verbs make

good adjectival participles, whereas non-actional verbs do not (cf. Weinberg 1987). They claimed that young English-speaking children interpret passives of actional verbs as adjectival, an option that is not available for passives of non-actional verbs.

- (3) The door was closed.
 a. The door was in a state of being closed.
 b. Someone closed the door.

Hirsch & Wexler (2006), noting that some actional verbs, namely those without a target state (i.e., those that do not encode a state that can be ascribed to the internal argument resulting from an event) make poorer adjectival participles (e.g., *??a held letter*), suggested that children's adjectival passives are resultative (Embick 2004). The predictions are clear: children perform well with passives of actional verbs with a target state, whereas passives of non-actional verbs or actional verbs without a target state elicit poorer performance. Indeed, the authors noted that psychological verbs tend not to involve a target state (Hirsch & Wexler 2006).¹ Subsequent work extended the adjectival interpretation proposal to Catalan (Gavarró & Parramon 2017) and Spanish (Oliva & Wexler 2018), despite the difference observed in those languages in auxiliary selection between verbal and adjectival passives: in both languages, verbal passives take *ser* and adjectival passives take *estar*. In addition, under Oliva & Wexler's (2018) formulation, the UPR predicts poorer performance with long passives than with short passives, to the extent that construing an adjectival interpretation is more difficult when a *by*-phrase is present.

The UFH (Hyams & Snyder 2005, Snyder & Hyams 2015), however, rests on the Semantic Smuggling account of the passive (Gehrke & Grillo 2007, 2009, building on Collins 2005). The external theta-role of the passivized verb is assigned to Spec of *v*P, as in the case of an active structure, whether the *by*-phrase is pronounced or not. In the latter case, the external argument would be a null element (Collins 2005). Hence, in the derivation of a passive, the underlying object must always move across the external argument, which would violate minimality (Chomsky 1995; Rizzi 1990, 2004). Thus, the internal argument is "smuggled" within the phrase containing the main verb (PartP), past the external argument in Spec, *v*P, to a higher position, that is, Spec, VoiceP (Collins 2005). This places the internal argument in a position from which it can move to Spec, TP, an operation that is motivated by Case-checking. Crucially, this proposal relies on the assumption that the Freezing Principle, formulated by Müller (1998:124) as in (4), fails to apply in certain environments.

- (4) *X [Y ... < X > ...] < Y >

Gehrke & Grillo (2007, 2009) modified this proposal with the aim of motivating Smuggling via a semantic requirement, building on Travis' (2020) theory of event structure – a typical actional verb projects a VP₁, which expresses a causing sub-event and introduces the external argument, and a VP₂, which expresses a consequent sub-eventuality and introduces the internal argument. In the passive, the internal argument is "smuggled" within VP₂ past the external argument in VP₁. A semantic requirement, perhaps an *aboutness* feature (Rizzi 2006, Rizzi & Shlonsky 2007), singles out the consequent state and assigns it a feature that triggers movement of VP₂ to Spec of VoiceP, where Voice situates the event time of the clause within the consequent state sub-eventuality. Thus, under this account, passivization verbs are those that involve a BECOME predicate (Dowty 1979), that is, accomplishments and achievements. As noted by Gehrke & Grillo (2009), event types containing BECOME are associated with change-of-state predicates. However, some states may also passivize. These do not involve BECOME, and do not have a complex, decomposable event structure. Gehrke & Grillo (2009) argued that a state can passivize via semantic coercion if it can be re-interpreted as the consequent state of an event, a reading that may be derived by a type shift operation from state to

¹For criticism, see Weinberg (1987) and Crawford (2012, 2014).

achievement, which adds a BECOME component (for a critical discussion of this proposal, see Lima Júnior & Augusto 2015).

Snyder & Hyams (2015) claimed that children differ from adults in that they do not allow any exceptions to the Freezing Principle and therefore do not have recourse to Smuggling, hence the external argument blocks movement of the internal argument to subject position in the verbal passive.² They suggested that Smuggling becomes maturationally available around age 4, and the child then becomes fully adult-like in her ability to comprehend and produce short and long passives of actional verbs, with no difference in performance between the two. The later acquisition of non-actional passives is explained by the need of semantic coercion, which becomes available around age 6, by another maturational event. The child may then smuggle the internal argument of a non-actional verb. At this point, she becomes adult-like in her ability to comprehend and produce short and long passives of non-actional verbs.

Recent research has further stressed the contribution of the lexical semantic features of the main verb for children's performance with the passive. Nguyen & Pearl (2021) suggested that the acquisition of the verbal passive in English progresses through five different lexical-semantic profiles of verbs, which conglomerate a set of semantic features – indeed, their proposal shares similarities with earlier accounts by Maratsos et al. (1985) and Pinker et al. (1987). Profile 1 verbs are actional, agent-patient verbs denoting volitional actions and with an affected object (e.g., *carry*, *chase* and *fix*). Profile 5 verbs, on the other end, are stative, subject-experiencer verbs denoting non-volitional actions and with an unaffected object (e.g., *hate*). The authors tested English-speaking 4-year-olds on passives of verbs fitting these profiles and found that they performed significantly above-chance for Profile 1, 2 and 3 verbs, but were indeed no different than chance for Profile 4 and 5 verbs.

In an attempt to capture these and previous observations, Aravind & Koring (2023) suggested that the issue lies in the syntax of experiencer constructions. Noting that “most previous accounts of passive acquisition take either the non-actionals or the actionals as the true indicator of competence and attempt to explain away the other” (Aravind & Koring 2023:80), and that the verbs that are latest-acquired in Nguyen & Pearl's (2021) study are those with subject-experiencers, they sought to explain this asymmetry by proposing that children initially misanalyse transitive subject-experiencer constructions as unaccusatives, which cannot passivize. Moreover, they argued against both the UPR and the UFH, as well as against semantic restriction accounts, on conceptual and empirical grounds. We consider that semantic restrictions are not necessarily in conflict with the UPR or the UFH, and may also be compatible with a syntactic misanalysis account such as the one proposed by Aravind & Koring (2023). In other words, the semantics of transitiveness points towards a transitive syntactic account, and young children may employ it when analyzing and interpreting verbal passives. Thus, there would be a facilitating effect of the semantics of transitiveness in the case of highly transitive verbs (e.g., actionality, kinesis, or affectedness of the internal object). In the next section we specify how our experimental work on European Portuguese taps on these issues.

2. Hypotheses and predictions

This study comprises two experiments that compare the comprehension of the verbal passive in Portuguese-speaking children between the ages of 3 and 8 years, controlling for verb type—in the first experiment, actional with a target-state versus non-actional (subject experiencer), and, in the second experiment, actional with a target-state versus actional without a target-state—and presence or absence of the *by*-phrase.

As in Catalan and Spanish, in Portuguese there is no strict homophony between verbal and adjectival passives, as they select for different auxiliaries. In addition, Portuguese presents a morphosyntactic distinction between adjectival passives with resultative and stative participles

²Orfelli (2012) also builds on intervention in her account of delay with raising and passives; for reasons of space, we do not go into her proposal, which shares some features with that of Snyder & Hyams (2015).

(Duarte & Oliveira 2010, building on Embick 2004). That is, Portuguese shows a three-way distinction among verbal and adjectival passives in the form of auxiliary selection, reflecting the tripartite typology of participles proposed for English by Embick (2004): *ser* is associated with verbal (eventive) participles (5a), *ficar* with resultative adjectival participles (5b), and *estar* with stative adjectival participles (5c).

- (5) a. O espelho foi partido (pelo João).
 the mirror Aux.event broken by+the João
 b. O espelho ficou partido.
 the mirror Aux.result broken
 c. O espelho estava partido.
 the mirror Aux.state broken
 "The mirror was broken."

The UPR predicts good performance with short passives of actional verbs with a target-state before the age of 6 years, as these make good adjectival participles. Passive delay is expected with subject experienter verbs and, if we assume Hirsch & Wexler's (2006) account of child passives, with actional verbs without a target-state. Similarly, the UFH predicts poor performance with passives of subject experienter verbs. In addition, if understood in light of an account such as Gehrke & Grillo's (2009), it would predict poor performance with passives of actional verbs without a target-state (since they would require semantic coercion), thus extending the predictions spelled out by Snyder & Hyams (2015) for non-actionals. The same hypothesis predicts good performance with passives of target-state actional verbs from the age of 4 years. The two hypotheses differ with regard to long passives of actional verbs with a target-state: the UFH predicts no significant differences between short and long passives, whereas the UPR allows for poorer performance with long passives, as the *by*-phrase is generally incompatible with the adjectival passive (Oliva & Wexler 2018).

Regarding verb type asymmetries, for the UPR, the relevant contrast is between verbs that form good adjectival participles (telic predicates, i.e., accomplishments and achievements) and verbs that do not (atelic predicates, i.e., states and activities). For the UFH the relevant contrast is between predicates that have a complex, bi-eventive structure with a cause sub-event and a result state sub-eventuality (change-of-state verbs, i.e., accomplishments and achievements) and predicates that have a simple event structure (states and activities).³ In this case, the two hypotheses result in equivalent predictions, even though the motivation is different.

In the present study, two sentence-picture matching tasks were designed to test children's comprehension of the verbal passive. Experiment 1 contrasted typical actional verbs and subject experienter verbs in verbal passives with and without *by*-phrases. Experiment 2 tested the prediction that children obtain better performance on passives of telic actional verbs than on passives of atelic actional verbs. It followed the same design that was used in Experiment 1, except that where Experiment 1 tested non-actional, subject experienter verbs (perception verbs in particular), Experiment 2 tested atelic actional verbs. None of the participants in Experiment 1 were tested on Experiment 2.

3. Experiment 1

3.1. Method

3.1.1. Participants

Experiment 1 was carried out with 152 children between the ages of 3 and 8 years (see Table 1). All the children were monolingual speakers of EP. Following Maratsos et al. (1985) and Hirsch (2011), active sentences were used as attentional controls. In order to be included in the data analysis, the child had to correctly answer at least three out of the four active control items with

³Although Snyder & Hyams (2015) never mention activities, their proposal may naturally be extended to them. We are grateful to Nina Hyams for discussion on this issue.

Table 1. Experiment 1.

Age group	N ^a	Age range (mean)
3-year-olds	38 (14 girls, 24 boys)	3;0.08-3;11.24 (3;6)
4-year-olds	28 (20 girls, 8 boys)	4;0.00-4;11.04 (4;5)
5-year-olds	26 (13 girls, 13 boys)	5;0.11-5;11.14 (5;5)
6-year-olds	26 (13 girls, 13 boys)	6;0.10-6;11.26 (6;6)
7-year-olds	19 (12 girls, 7 boys)	7;0.09-7;9.26 (7;5)
8-year-olds	10 (3 girls, 7 boys)	8;2.18-8;10.07 (8;5)
Adults	20 (12 women, 8 men)	≥ 19

^aParticipants (N = 167).

each predicate type. Five children (four 3-year-olds and one 5-year-old) did not meet this inclusion criterion. We report results for the remaining 147 children. A control group of 20 adults was also tested.

3.1.2. Materials

The experiment followed a factorial design that tested passives crossing predicate type (actional vs. perception) and absence/presence of the *by*-phrase, that is, length (short vs. long passives). This resulted in four conditions testing passives. In addition, and as previously mentioned, active sentences were used as a control condition: there were two conditions testing active structures, one for each predicate type. Each of the resulting six conditions was tested by using two different verbs: each condition comprised four items, two for each verb, for a total of 24 items in the experiment. Two warm up items, actives with the verb *dar* “give,” were presented at the beginning of the task. The conditions and verbs tested in Experiment 1 are summarized in Table 2.

The characters used in the test materials were two siblings (a boy and a girl) and their parents, uncles and grandparents. All the characters were clearly differentiated and were introduced to the child at the beginning of the experiment, using a picture that represented them side by side, as shown in Figure 1.

All long passive, active and warm up items were semantically reversible. In the short passive items, all characters could stand for the Theme or the Agent, in the case of actional verbs, or the Theme and the Experiencer, in the case of perception verbs. Given that EP shows participle agreement in gender and number, we decided that all the characters in each item should have the same gender. Half the items had female characters and the other half had male characters (see Table A1 in the Appendix for the full list of stimulus sentences).

Each item was presented alongside two pictures: the matching picture represented the adult reading, and the mismatching picture the theta-role reversal reading. In the case of short passives, in which the external argument is not expressed, we cannot talk of theta-role reversal, but the two pictures followed the same pattern (see the example in (6) and Figure 2). The pictures included a third character attentive to the action, following the same rationale as in O'Brien et al. (2006): to give an alternative possible agent for the target sentence, thus making the use of the *by*-phrase felicitous in the case of long passives (see the example in (7) and Figure 3). The materials for actional verbs in the experiment were the same as those in the crosslinguistic study of Armon-Lotem et al. (2016).

Table 2. Experiment 1: Conditions.

Condition	Verbs	Tokens
1. Actional actives	<i>Pentear</i> “comb”, <i>pintar</i> “paint”	4 (2 x verb)
2. Perception actives	<i>Ver</i> “see”, <i>ouvir</i> “hear”	4 (2 x verb)
3. Short actional passives	<i>Pentear</i> “comb”, <i>pintar</i> “paint”	4 (2 x verb)
4. Short perception passives	<i>Ver</i> “see”, <i>ouvir</i> “hear”	4 (2 x verb)
5. Long actional passives	<i>Pentear</i> “comb”, <i>pintar</i> “paint”	4 (2 x verb)
6. Long perception passives	<i>Ver</i> “see”, <i>ouvir</i> “hear”	4 (2 x verb)



Figure 1. Characters used in Experiments 1 and 2.



Figure 2. Pictures for Item 11, Condition 3.



Figure 3. Pictures for Item 23, Condition 6.

(6) Item 11, Condition 3 – Short actional passives

Experimenter: Look, it's the girl, the mother and the grandmother. They were getting ready to go out. Benny, what happened?

Benny: Então ... A mãe foi penteada.

then the mother was combed

Experimenter: Which image shows what Benny said?

(7) *Item 23, Condition 6 – Long perception passives*

Experimenter: Look, it's the boy, the father and the grandfather. They were in the living room. The boy and the grandfather were playing blind man's buff. Look, there was cheating! Benny, what happened?

Benny: Então ... O menino foi visto pelo avô.

Then the boy was seen by+the grandfather

Experimenter: Which image shows what Benny said?

Choice of verbs was largely determined by their imageability, thus excluding verbs such as *esquecer* “forget” and *amar* “love”. Perception verbs such as *ouvir* “hear” and *ver* “see” are more easily represented than cognition and emotion verbs, without recourse to thought bubbles. For this reason, and because the range of passivizable subject experiencer verbs in EP is highly constrained, *ouvir* was selected despite the fact that experiments on English passives show poor performance with *hear* (e.g., Maratsos et al. 1985, O'Brien et al. 2006). Although in EP these two perception verbs may also be used to convey an activity (“listen” and “watch,” respectively), rather than an experience (“hear” and “see,” respectively), they uniformly lack a target state and can only form coerced adjectival passives with a “job done” or “that's over” interpretation, provided there is a supporting context (see Kratzer 2000). Both the actional verbs *pentear* “comb” and *pintar* “paint” and the perception verbs *ver* ‘see’ and *ouvir* ‘hear’ were selected from those listed as part of children's productions in the CEPLEXicon—Lexicon of Child European Portuguese (Santos, Freitas, et al. 2014), which is based on two corpora of child speech, the Santos corpus (Santos 2006, 2009; Santos, Génereux, et al. 2014) and the Freitas corpus (Freitas 1997). These two corpora include the speech produced by seven monolingual Portuguese children between the ages of 1;02.00 and 3;11.12.

All test items in Experiment 1 were in the Perfect. The use of the Present in EP verbal passives is uncommon and often infelicitous or marginal, given that it has a habitual interpretation, not an ongoing one. Moreover, the progressive in the standard dialect of EP involves a more complex structure, with the addition of the aspectual auxiliary *estar a* before the main verb, in an active sentence, or before the passive auxiliary *ser*, in a verbal passive. The use of the Perfect allowed us to avoid these problems.

3.1.3. Procedure

The experiment was presented to children by telling them that Benny, a puppet that was introduced to them prior to testing, needs help to choose pictures for a children's book about a family. The children were asked to listen to short vignettes about the family, listen to what Benny says at the end of each vignette, and point to the picture that shows what he said.

The order of presentation of the test items was pseudo-randomized so that items belonging to the same condition or with the same verb were not tested twice in a row. Two different orders of presentation, one the reverse of the other, were given to an equal number of participants within the same age group, to ensure that responses to the last items were not skewed due to fatigue, especially in the case of the younger age groups.

The picture pairs were presented to the participants using PowerPoint. The position of the target and theta-role reversal pictures was balanced across conditions, for each verb tested and throughout the whole experiment. The PowerPoint presentation was shown to the participants on a 9.7” tablet.

Testing sessions took place in a quiet room in the various schools attended by the children and lasted between 10 and 15 minutes. All sessions were recorded using a sound recorder, and responses from participants (matching vs. mismatching picture) were annotated using an answer registry sheet.

3.1.4. Data analysis

The statistical analysis was obtained using IBM SPSS Statistics 28 (IBM Corp, released 2021). The dependent variable was choice of the matching picture. A Generalized Linear Mixed Model (GLMM)

including the effects of *Age group* (3-, 4-, 5-, 6-, 7- and 8-year-olds, and adults), *Length* (short, long) and *Verb type* (actional, perception) was built for all the data obtained in the conditions testing passive sentences. Also included in the model was a random effect for subject. A second GLMM was built considering the hypothesis that the observed differences between verb types are due to lexical effects. In this case, this GLMM included the effects of *Age group* (3-, 4-, 5-, 6-, 7- and 8-year-olds, and adults), *Length* (short, long) and *Main verb* (*pentear* “comb”, *pintar* “paint”, *ouvir* “hear” and *ver* “see”), as well as a random effect for subject.

3.2. Results

Figure 4 shows the percentages of correct responses children and adults gave on short and long passives with actional and perception verbs. The adult group performed at ceiling on all four conditions. All groups, including the 3-year-olds, effectively scored at ceiling (>90% correct responses) with short passives of actional verbs. Children did not perform at ceiling with long actional passives before the age of 6. Performance with passives of perception verbs was much poorer: 7-year-old children obtained an accuracy rate of 86.8% with short passives, and 73.7% with long passives. These results suggest that the verb type contrast seen in English and other languages is, again, replicated for EP, and that the presence or absence of the *by*-phrase has an impact on children’s comprehension of the passive.

The GLMM applied to these data showed main effects of *Age Group* ($F(6, 2663) = 22,840$; $p < .0001$), *Length* ($F(1, 2663) = 62,635$; $p < .001$), and *Verb Type* ($F(1, 2663) = 304,340$; $p < .0001$). There were significant differences ($p \leq .05$) between 3-year-olds and all other age groups. Moreover, there were significant differences between 4-year-olds and 7-year-olds ($t = -3.528$), 8-year-olds ($t = -5.034$) and adults ($t = -6.038$); between 5-year-olds and 7-year-olds ($t = -3.203$), 8-year-olds ($t = -4.704$) and adults ($t = -5.700$); between 6-year-olds and 8-year-olds ($t = -3.254$) and adults ($t = -4.728$); and between 7-year-olds and adults ($t = -3.535$). Finally, there were significant differences between short and long passives ($t = 6.432$) and actional and perception predicates ($t = 10.190$).

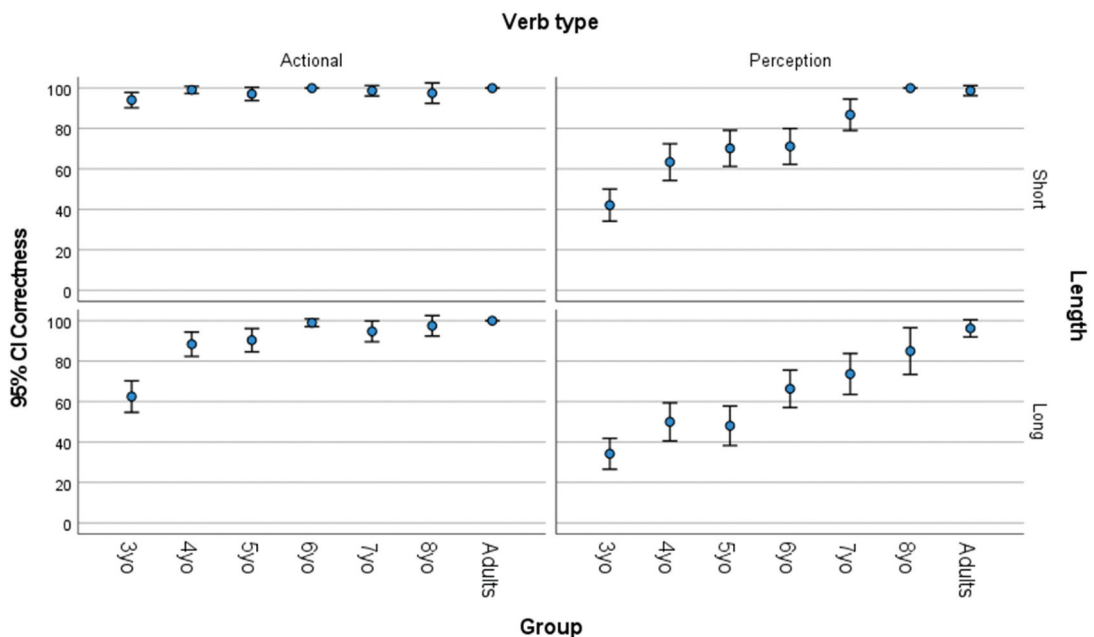


Figure 4. Experiment 1: Rates of correct responses for each age group by verb type and length.

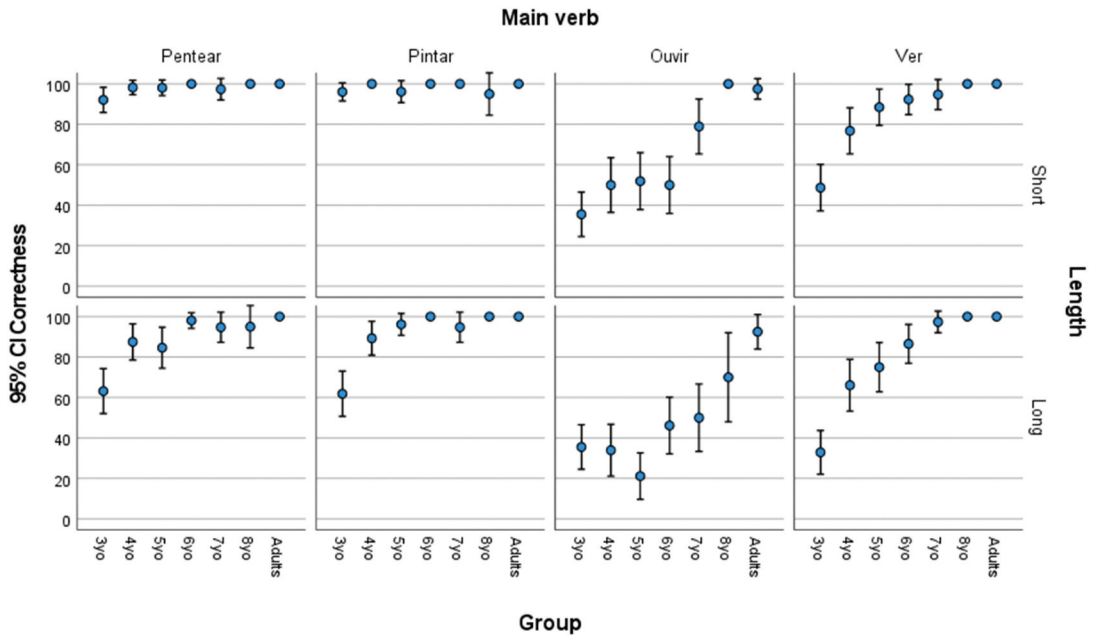


Figure 5. Experiment 1: Rates of correct responses for each age group by main verb.

The simple observation of the proportion of correct answers per verb (see Figure 5) also leads us to identify a lexical contrast which affects only the class of perception verbs: children obtained poorer scores with *ouvir* “hear” than with *ver* “see”. Children at the age of 3 show poor performance with both perception verbs, but their performance with *ver* “see” improves rapidly from the age of 4, while it remains poor with *ouvir* “hear.”

As previously mentioned, a second GLMM was set up to test the hypothesis that the results are due to the individual verbs tested. This GLMM showed main effects of *Age Group* ($F(6, 2661) = 22,964$; $p < .0001$), of *Length* ($F(1, 2661) = 67,668$; $p < .001$), and *Main verb* ($F(3, 2661) = 133,334$; $p < .0001$). The model identified significant differences ($p \leq .05$) between short and long passives ($t = 6.367$). Finally, there were significant differences between *pentear* and *ouvir* ($t = 10.709$), and *pentear* and *ver* ($t = 5.887$), as well as between *pintar* and *ouvir* ($t = 10.768$) and *pintar* and *ver* ($t = 6.204$), but not between *pentear* and *pintar* ($t = -1.195$). Crucially, there were also significant differences between *ouvir* and *ver* ($t = -9.122$). These results indicate a main verb contrast only within the class of perception verbs, but show that a verb type contrast between actional verbs and perception verbs is generally maintained.

4. Experiment 2

4.1. Method

4.1.1. Participants

Experiment 2 was carried out with 127 children between the ages of 3 and 8 (see Table 3). All the children were monolingual speakers of EP. As in Experiment 1, the child had to correctly answer at least three out of the four active control items with each verb type to be included in the study. One 3-year-old did not meet this inclusion criterion. We report results for the remaining 126 children. A control group of 20 adults was also tested.

Table 3. Experiment 2.

Age group	N ^a	Age range (mean)
3-year-olds	20 (10 girls, 10 boys)	3;3.11-3;11.13 (3;8)
4-year-olds	20 (11 girls, 9 boys)	4;0.02-4;11.22 (4;5)
5-year-olds	20 (13 girls, 7 boys)	5;0.02-5;11.28 (5;5)
6-year-olds	24 (8 girls, 16 boys)	6;0.13-6;11.28 (6;6)
7-year-olds	20 (14 girls, 6 boys)	7;0.05-7;11.17 (7;5)
8-year-olds	22 (12 girls, 10 boys)	8;2.04-8;11.25 (8;7)
Adults	20 (13 women, 7 men)	≥ 19

^aParticipants (N = 146)**Table 4.** Experiment 2: Conditions.

Condition	Verbs	Tokens
1. Resultative actives	<i>Pentear</i> "comb", <i>pintar</i> "paint"	4 (2 x verb)
2. Non-resultative actives	<i>Empurrar</i> "push", <i>procurar</i> "look for"	4 (2 x verb)
3. Short resultative passives	<i>Pentear</i> "comb", <i>pintar</i> "paint"	4 (2 x verb)
4. Short non-resultative passives	<i>Empurrar</i> "push", <i>procurar</i> "look for"	4 (2 x verb)
5. Long resultative passives	<i>Pentear</i> "comb", <i>pintar</i> "paint"	4 (2 x verb)
6. Long non-resultative passives	<i>Empurrar</i> "push", <i>procurar</i> "look for"	4 (2 x verb)

4.1.2. Materials

Similar to Experiment 1, Experiment 2 followed a factorial design that crossed predicate type (actional predicates with a target-state vs. actional predicates without a target-state, i.e., resultative vs. non-resultative) and absence/presence of the *by*-phrase, that is, length (short vs. long passive). Two conditions testing active sentences with both types of predicates acted as control items. Each of the resulting six conditions comprised four items with two different verbs, for a total of 24 items—the resultative verbs correspond to the actional verbs tested in Experiment 1. Two warm up items, identical to those used in Experiment 1, were presented at the beginning of the task. The conditions and verbs tested in Experiment 2 are summarized in Table 4.

The materials were similar to those used in Experiment 1 to test actional verbs—see the example items in (8)-(9), and the picture pairs in Figures 6 and 7. Please refer Table A2 in the Appendix for the full list of stimulus sentences.

**Figure 6.** Pictures for Item 24, Condition 6.

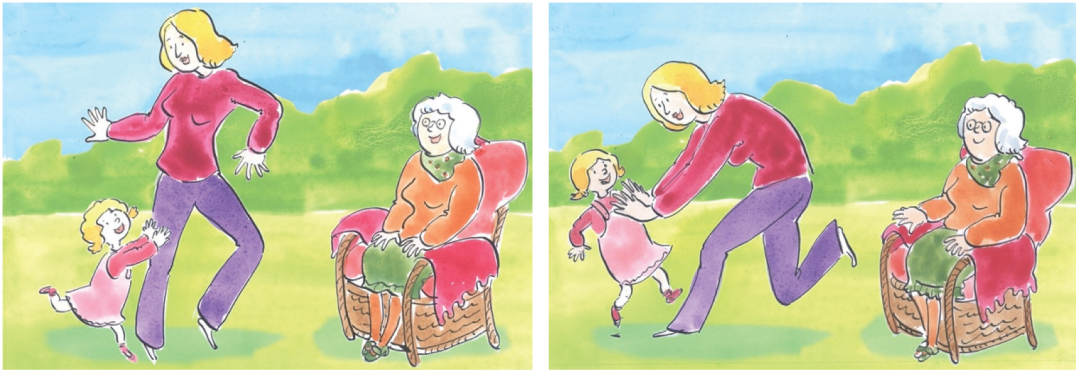


Figure 7. Pictures for Item 13, Condition 4.

(8) Item 24, Condition 6 – long non-resultative passives

Experimenter: Look, it's the uncle, the father and the boy. The boy and the father were playing hide-and-seek. Benny, what happened?

Benny: Então ... O pai foi procurado pelo menino.

Then the father was looked for by+the boy

Experimenter: Which image shows what Benny said?

(9) Item 13, Condition 4 – Short non-resultative passives

Experimenter: Look, it's the girl, the mother and the grandmother. They were playing in the garden. Benny, what happened?

Benny: Então ... A mãe foi empurrada.

Then ... The mother was pushed

Experimenter: Which image shows what Benny said?

Choice of verbs was again largely determined by their imageability. Like *pentear* and *pintar*, the verb *procurar* “look for” is listed in the CEPLEXicon — Lexicon of Child European Portuguese (Santos, Freitas, et al. 2014).⁴ The verb *empurrar* “push” was used in previous experiments on the acquisition of relative clauses in EP (Costa et al. 2011). Diagnostics targeting inner aspect (Dowty 1979; Moens 1987; Moens & Steedman 1998; Vendler 1957, 1967) were used to ascertain the aspectual class of these verbs, which allowed us to determine that *empurrar* and *procurar*, when combined with a definite internal argument, are activities, whereas *pentear* “comb” and *pintar* “paint,” in the contexts used in this experiment, are accomplishments. Accomplishments and achievements (employing Vendler’s terminology) are telic, and thus may be associated with a target state, whereas activities, like states, are atelic. As shown in (9), both *empurrar* “push” and *procurar* “look for” are compatible with *durante x tempo* (for x time) temporal adverbials and incompatible with *em x tempo* (in x time) temporal adverbials.

(9) a. A Maria empurrou a Clara durante/*em 5 minutos.

the Maria pushed the Clara for/*in 5 minutes

“Maria pushed Clara for/in 5 minutes.”

b. A Maria procurou a Clara durante/*em 5 minutos.

the Maria looked for the Clara for/*in 5 minutes

“Maria looked for Clara for/in 5 minutes.”

⁴While *procurar* may also, in some contexts, be employed in the sense of “try”, the vignettes and pictures used in this experiment unambiguously employed it in its basic sense of “look for.”

Pentear “comb” and *pintar* “paint”, when combined with a non-generic DP, are compatible with *em x tempo* (*in x time*) temporal adjuncts (10).

- (10) a. A Maria penteou uma cliente durante/em duas horas.
 the Maria combed a client for/in two hours.
 “Maria combed a client for/in two hours.”
 b. A Maria pintou uma parede durante/em duas horas.
 the Maria painted a wall for/in two hours.
 “Maria painted a wall for/in hours.”

Moreover, both sentences in (10) are clearly associated with a target state: the client having her hair combed (10a) and the wall having a new coat of paint (10b). The fact that these predicates are also compatible with *durante x tempo* (*for x time*) adverbials is due to aspectual coercion: accomplishments may be coerced into activities via elimination of the culmination (the transition between the preparatory process and the consequent state), which is triggered by the temporal adverbial (Moens & Steedman 1998). This does not entail that predicates such as *pentear uma cliente* “comb a client” and *pintar uma parede* “paint a wall” are not accomplishments, as it is a known property of predicates belonging to this aspectual class that they may be coerced into activities when combined with *for x time* adverbials.⁵

Moreover, neither *empurrar* “push” nor *procurar* “look for” may occur in adjectival passives, with the auxiliaries *estar/ficar*. This also constitutes an indication that these verbs do not encode a target-state, unlike *pentear* “comb” and *pintar* “paint.”

- (11) a. *A Ana está/ficou empurrada.
 the Ana Aux.state/Aux.result pushed
 b. *A Clara está/ficou procurada.
 the Clara Aux.state/Aux.result looked for
 (12) a. A Ana está/ficou penteada.
 the Ana Aux.state/Aux.result combed
 b. A parede está/ficou pintada.
 the wall Aux.state/Aux.result painted

It must be acknowledged that the pictures and the scenarios for the items with *empurrar* “push” do not make it clear whether in this context the predicate is an activity or an achievement, that is, a punctual event. While this is a limitation of the study, in either case the pictures and scenarios for this verb do not point towards a change-of-state in the internal argument.

4.1.3. Procedure

Experiment 2 followed the same procedure as Experiment 1, and was carried out with children at pre-schools and primary schools in Lisbon.

4.1.4. Data analysis

The statistical analysis was obtained using IBM SPSS Statistics 28 (IBM Corp, released 2021). The outcome variable was choice of the matching picture. A GLMM that evaluated the effects of *Age group* (3-, 4-, 5-, 6-, 7-, and 8-year-olds), *Length* (short, long) and *Verb type* (resultative, non-resultative), as well as a random effect for subject, was applied to all the data from the conditions testing passive sentences. A second GLMM was set up to test the hypothesis that the observed differences between verb types are

⁵We are grateful to Rui Marques for discussion on these issues.

due to lexical effects. This GLMM evaluated the effects of *Age group* (3-, 4-, 5-, 6-, 7-, and 8-year-olds), *Length* (short, long) and *Main verb* (*pentear* “comb,” *pintar* “paint,” *empurrar* “push,” and *procurar* “look for”), as well as a random effect for subject. The adult group was not included in either model as it showed no variability, which compromised their convergence.

4.2. Results

Figure 8 shows the percentages of correct responses children and adults obtained on short and long passives of resultative and non-resultative predicates. Children’s results with passives of actional verbs were similar to those obtained in Experiment 1. Three-year-olds showed poorer performance on short non-resultative passives (73.8%), but by age 4 children achieved a score of 93.8%. The 5-year-olds presented 88.8% correct responses with long passives of both predicate types.

The GLMM found main effects of *Age group* ($F(5, 2008) = 7.803$; $p < .001$), *Length* ($F(1, 2008) = 62.895$; $p < .001$), and *Verb type* ($F(1, 2008) = 19.030$; $p < .001$). Significant differences ($p \leq .05$) were found between 3-year-olds and 5-year-olds ($t = -3.129$), 6-year-olds ($t = -3.400$), 7-year-olds ($t = -3.514$) and 8-year-olds ($t = -3.701$). No other significant differences between age groups were found. Moreover, pairwise contrasts showed significant differences between short and long passives ($t = 6.134$), as well as between resultative and non-resultative predicates ($t = 3.905$).

We now turn to the discussion of differences between the verbs and to the fact that a lexical contrast within the class of non-resultative actional predicates was found in the results: between the ages of 3 and 5 years, children obtained poorer scores with *procurar* “look for” than with *empurrar* “push” (see Figure 9).

As previously mentioned, a second GLMM was used to test the hypothesis that the results are due to the individual predicates tested. This GLMM found main effects of *Age group* ($F(5, 2006) = 7.768$; $p < 0.001$), *Length* ($F(1, 2006) = 66.530$; $p < 0.001$), and *Verb* ($F(1, 2006) = 26.086$; $p < 0.001$). There are significant differences ($p \leq .05$) between verbs, with *procurar* “look for” presenting significantly lower results than all the other verbs: *procurar* “look for” versus *pentear* “comb” ($t = -4.599$), *pintar* “paint” ($t = -5.285$) and *empurrar* “push” ($t = -5.327$). No other significant differences between verbs were found. These results suggest that there was no distinction along the lines of predicate type in children’s

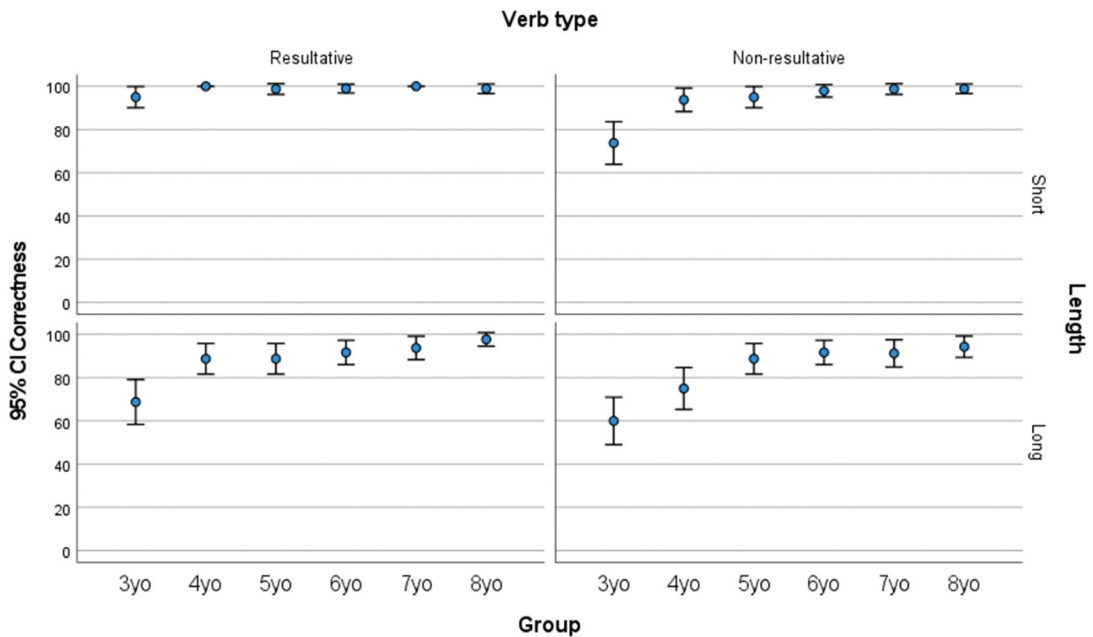


Figure 8. Experiment 2: Rates of correct responses for each age group by verb type and length.

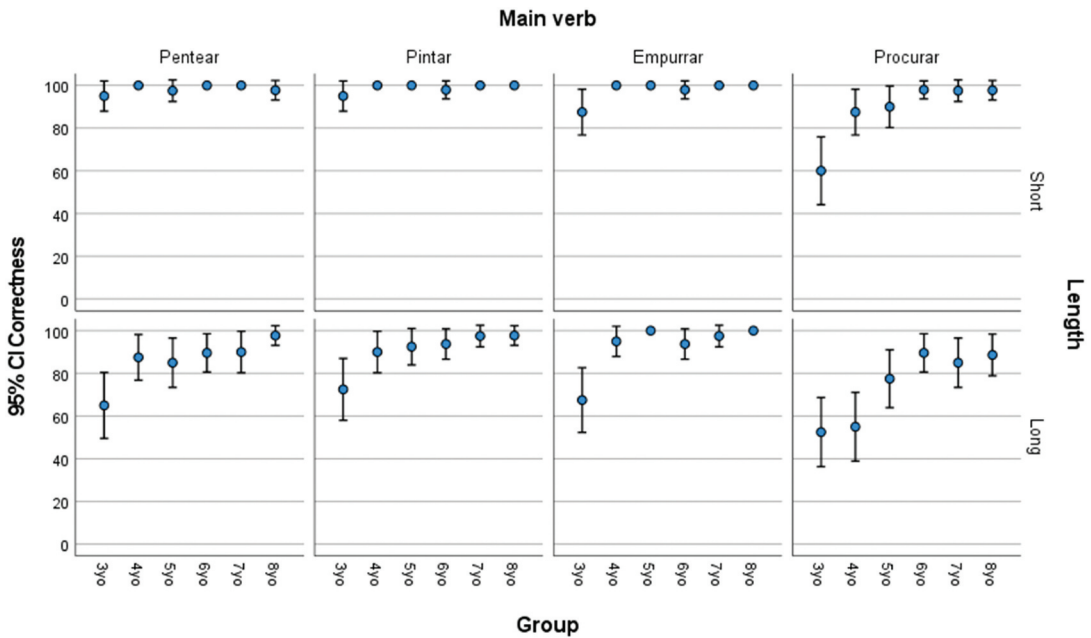


Figure 9. Experiment 2: Rates of correct responses for each age group by main verb.

performance with passives in Experiment 2. In fact, non-resultative passives with *empurrar* patterned with resultative passives of *pentear* and *pintar*. Only non-resultative passives with *procurar* differed from all other passives. As expected and identified in the previous model, there are significant differences between short and long passives ($t = 5.770$). Finally, there were significant differences between 3-year-olds and 5-year-olds ($t = -2.977$), 6-year-olds ($t = -3.191$), 7-year-olds ($t = -3.282$) and 8-year-olds ($t = -3.420$).

5. Discussion

Experiment 1 aimed to replicate the verb type contrast between passives of actional and non-actional verbs, first found for English (Maratsos et al. 1985). Using a sentence-picture matching task, this verb type contrast is replicated for EP: Portuguese-speaking children at the age of 6 show near-perfect comprehension accuracy with passives of typical actional verbs (*pentear* “comb” and *pintar* “paint”), but perform significantly worse with passives of non-actional verbs (*ver* “see” and *ouvir* “hear”), despite the fact that these perception verbs are actional in some contexts, and despite the fact that they may be used in result state adjectival passives (Kratzer 2000) provided there is a supporting context. As shown in the analysis of the results of Experiment 1, this effect does not reduce to asymmetries between main verbs. While significant differences between the two perception verbs were found, with *ver* eliciting better performance than *ouvir*, performance on the two actional verbs was homogeneous. The results show a verb type contrast between actional and perception verbs. In this regard, as is the case for research on the acquisition of passives in other Romance languages, such as Catalan (Gavarró & Parramon 2017), Spanish (Oliva & Wexler 2018) and Italian (Volpato et al. 2016), and previous research on EP (Estrela 2013), the results show the familiar pattern previously found in languages in which auxiliary selection does not disambiguate between verbal and adjectival passives.

Experiment 2, a second sentence-picture matching task similar to Experiment 1, aimed to test the prediction that children perform worse on passives of actional predicates without a target-state than on passives of actional predicates with a target-state, which follows from both the UFH (Hyams & Snyder 2005, Snyder & Hyams 2015), if we extend their predictions for non-actional predicates, and

the UPR (Wexler 2004), if we assume Hirsch & Wexler's (2006) view of child passives as resultative adjectival passives. This prediction failed to obtain. There was an apparent difference in performance between the two types of actional predicates, but a second analysis considering the different verbs has shown that the difference reduces to a lexical effect: *procurar* "look for" elicited worse performance from young children than the other three verbs (*pentear* "comb", *pintar* "paint" and *empurrar* "push"), all of which patterned together. Therefore, the data from Experiment 2 do not constitute evidence for a divide between resultative and non-resultative actional predicates comparable to the one between actional and perception verbs seen in Experiment 1. The results from our experiments suggest that the unavailability of a target-state is not the main underlying cause of the delay children showed in their comprehension of verbal passives with perception verbs. Hence, the predictions of the UPR and the UFH, with regard to children's performance with passives of actional verbs with or without a target-state, are not fulfilled. Indeed, in this regard, neither of the hypotheses predicts the behavior we have found. Nevertheless, we acknowledge that passives of *procurar* "look for" are not as protracted as seen with passives of perception verbs: the statistical analysis of the results from Experiment 2 suggests that children from the age of 4 years generally performed well with passives of all four actional predicates.

Moreover, in both Experiment 1 and Experiment 2 there was an effect of the presence vs. absence of the *by*-phrase, which is predicted by the UPR -this is because, as argued by Oliva & Wexler (2018), when the *by*-phrase is present, children must ignore a cue to the verbal passive, in addition to auxiliary selection, which, as we have seen, varies across verbal and adjectival passives in languages such as Catalan, Spanish and Portuguese. The UFH, however, assumes that there is a minimality violation if Smuggling is unavailable, whether the *by*-phrase is pronounced or not. For this reason, children are predicted to show similar performance on short and long passives, within each class of predicates. As we have seen, this prediction was not borne out by the results from Experiment 1. However, it must be noted that the contrast between short and long passives has not been consistently replicated across comprehension studies, as some studies have found only a small, statistically non-significant advantage of short passives over long passives (e.g., Hirsch & Wexler 2006, Orfitelli 2012).

The variation among perception verbs seen in Experiment 1 is in line with previous research for English, which showed that *hear* is more poorly understood than *see* and other subject experienter verbs (Maratsos et al. 1985, O'Brien et al. 2006).⁶ Regarding the lexical effect found in Experiment 2, there are some distinctions between the two non-resultative verbs that may factor into an explanation of these results. While *empurrar* "push" involves surface contact, *procurar* "look for" does not, and the child must be able to take into account the Agent's intention of finding something or someone (that is, his state of mind) in order to interpret the verb and the pictures, and not just the physical actions depicted. However, as in the case of *ouvir* "hear" in Experiment 1, it is unlikely that children's poorer comprehension of passives of *procurar* is due to a misunderstanding of the verb's meaning, the scenarios or the pictures, as all the children included in the results showed good performance on the active controls, and very few were excluded on the basis of the active items.

We would like to suggest that the results from Experiments 1 and 2 allow us to hypothesize that, with regard to perception verbs and non-resultative actional verbs, the property that distinguishes predicates that elicit better performance from children is that they may be construed as having a highly affected internal argument. Previous acquisition studies suggested that affectedness of the internal argument may facilitate passivization for young children (Maratsos et al. 1985, Pinker et al. 1987). The property of affectedness, which may be briefly described as "a persistent change in or impingement of an event participant" (Beavers 2011:335) has been found to be operative in several grammatical structures, namely nominal passives (e.g., *the city's destruction by the Romans*) and the middle (e.g., *this book reads easily*) (see Anderson 2017; Beavers 2011, 2013; Egerland 1998; Lehmann 1991 and references therein).

⁶Snyder & Hyams (2015) attributed this contrast to the polysemy of the verb *see*, as it may also have an interpretation akin to "discover" or "verify," as is also the case of the Portuguese *ver*. That is, the contrast between *see* and *hear* seen in these studies may be due to the availability of these actional, non-perception meanings. Nonetheless, children's performance with passives of *see* is more similar to their performance with passives of other subject experienter verbs.

Regarding *ver* “see” vs. *ouvir* “hear”, the extent to which an event may be construed as involving an affected internal argument may account for the intuition that sentences such as (13a) and (13b) become more felicitous if a supporting context establishes that *Pedro* or *o aluno* “the student” are in some way affected by having been seen or heard (Ambridge et al. 2016). For instance, if *Pedro* declared that he was too sick to come into the office, but a colleague saw him in the street that day, the derived subject may be construed as being adversely affected by the event of being seen (13a). Likewise, if the student was picking on a classmate, but one of the janitors heard him and as a consequence intervened, the derived subject may be construed as being adversely affected by the event of being heard (13b).

- (13) a. O Pedro foi visto na rua pelo Paulo.
 the Pedro was seen in+the street by+the Paulo
 “Pedro was seen in the street by Paulo.”
 b. O aluno foi ouvido por um dos contínuos.
 the student was heard by one of+the janitors
 “The student was heard by one of the janitors.”

In line with this, and reconsidering the materials used in Experiment 1, it may be the case that, in this experiment, the materials used to test the verb *ver* “see” favored a reading in which the internal argument is more affected than in the case of the materials used to test the verb *ouvir* “hear.” In the scenarios used to test passives of *ver*, which involved the “blind man’s buff” game, the character that is seen may be interpreted as having been negatively affected, as being seen entails being found and losing the game. The scenarios with *ouvir*, on the other hand, did not allow this construal, as they involved only a context in which one character hears another sing along to a song, with no negative consequences to the character being heard. Thus, the materials used for *ver*, while making the use of the passive more felicitous, may have offered more favorable conditions for the comprehension of the passive than those used for *ouvir*.

This point is reinforced by the results from Experiment 2, which suggest that the (un)availability of a target state has little or no bearing on children’s performance with the passive: the small and short-lived predicate type effect seen in this experiment was driven solely by the verb *procurar* “look for,” as children’s performance with *empurrar* “push” did not differ significantly from their performance with *pentear* “comb” and *pintar* “paint.” Crucially, the verb *empurrar* “push” has a more affected internal argument than *procurar* “look for,” as it is a physical contact verb (Beavers 2011, 2013).

In short, the combined results from Experiments 1 and 2 suggest that the property of affectedness promotes better performance with the passive—thus predicates with a target-state are predicted to elicit better performance from children, as they are, by definition, high in affectedness of the internal argument, and predicates that do not have a target-state may vary to the extent that the internal argument may be construed as being affected. Indeed, if we adopt Beavers’ (2011, 2013) account of affectedness, we may posit that children move through an affectedness hierarchy, defined by the degree of change undergone by the theme, with telic verbs on one end (i.e., accomplishments and achievements), followed by verbs that entail a non-specific result (i.e., degree achievements) and verbs that entail the potential for change (surface contact/impact verbs), and finally verbs that do not specify a change in the theme on the other end (i.e., some activities and states). Moreover, some work suggests that adults have a bias towards passivization of verbs with highly affected internal arguments, in detriment of passivization of verbs with less affected internal arguments, such as subject experiencer verbs (Ambridge et al. 2016; Ferreira 1994, 2003; cf. Paolazzi et al. 2019). More generally, the present results suggest the need to consider lexical semantics when explaining developmental effects in the acquisition of the passive (along these lines, see also the meta-analysis by Nguyen & Pearl 2021).

6. Concluding remarks

Using two sentence-picture matching tasks, we tested the predictions of the UPR and the UFH, two current theories of the acquisition of the passive, for different types of verbs—actional (with and without a target

state) and non-actional—in a language featuring different auxiliaries for verbal and adjectival passives (i.e., without ambiguity between verbal and adjectival passives in adult grammar). The results point towards a role of semantic features, namely affectedness, in determining children’s performance with the verbal passive. This does not exclude other sources of difficulty for children in the case of passive, such as the syntax of subject experiencers, as recently proposed by Aravind & Koring (2023). Our claim is that affectedness is relevant in the acquisition of passives, an issue that seems to cut through the actional versus non-actional distinction.

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Data availability statement

The data will be made available in the Universitat Autònoma de Barcelona data repository.

Disclosure statement


No potential conflicts of interest are reported by the authors(s).

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References

- Agostinho, Celina. 2020. *The acquisition of the passive in European Portuguese*. Bellaterra, Spain: Universitat Autònoma de Barcelona dissertation.
- Ambridge, Ben, Amy Bidgood, Julian M. Pine, Caroline F. Rowland, & Daniel Freudenthal. 2016. Is passive syntax semantically constrained? Evidence from adult grammaticality judgment and comprehension studies. *Cognitive Science* 40. 1435–1459. <https://doi.org/10.1111/cogs.12277>
- Anderson, Mona. 2017. Affectedness. In M. Everaert & H. C. Van Riemsdijk (eds.) *The Blackwell companion to syntax*, 2nd edition, 121–140. Hoboken, NJ: John Wiley & Sons, Inc. <https://doi.org/10.1002/9781118358733.wbsyncom003>
- Aravind, Athulya & Loes Koring. 2023. Experiencer troubles: A reappraisal of the predicate-based asymmetry in child passives. *Language Acquisition* 30(1). 76–100. <https://doi.org/10.1080/10489223.2022.2115373>
- Armon-Lotem, S., E. Haman, K. Jensen de López, M. Smoczyńska, K. Yatsushiro, M. Szczerbinsky, A. van Hout, I. Dabašinskienė, A. Gavarró, E. Hobbs, L. Kamandulytė-Merfeldienė, N. Katsos, S. Kunnari, C. Nitsiou, L. Sundahl Olsen, X. Parramon, U. Sauerland, R. Torn-Leesik & H. van der Lely (2016) ‘A large scale crosslinguistic investigation of the acquisition of passive.’ *Language Acquisition*, 23(1): 27–56. doi: 10.1080/10489223.2015.1047095.
- Beavers, John. 2011. On affectedness. *Natural Language & Linguistic Theory* 29(2). 335–370. <https://doi.org/10.1007/s11049-011-9124-6>

- Beavers, John. 2013. Aspectual classes and scales of change. *Linguistics* 51(4). 681–706. <https://doi.org/10.1515/ling-2013-0024>
- Borer, Hagit & Kenneth Wexler. 1987. The maturation of syntax. In Tom Roeper & Edwin Williams (eds.), *Parameter setting*, 123–172. Dordrecht: D. Reidel Publishing Company.
- Chomsky, Noam. 1995. *The minimalist program*. Cambridge, MA: MIT Press.
- Chomsky, Noam. 1999. *Derivation by phase*. Unpublished ms.
- Collins, Chris. 2005. A smuggling approach to the passive in English. *Syntax* 8(2). 81–120. <https://doi.org/10.1111/j.1467-9612.2005.00076.x>
- Costa, João, Maria Lobo, & Carolina Silva. 2011. Subject–object asymmetries in the acquisition of Portuguese relative clauses: Adults vs. children. *Lingua* 121. 1083–1100. <https://doi.org/10.1016/j.lingua.2011.02.001>
- Crawford, J. 2012. *Developmental Perspectives on the Acquisition of the Passive*. University of Connecticut dissertation. Publication No. 3529444. ProQuest Dissertations Publishing.
- Crawford, J. 2014. Adult-like passives in child English: Evidence from judgments of purpose phrases. In Chia-Ying Chu, Caitlin E. Coughlin, Beatriz Lopez Prego, Utako Minai, & Annie Tremblay (eds.), *Selected Proceedings of the 5th Conference on Generative Approaches to Language Acquisition North America (GALANA 2012)*, 42–50. Somerville, MA: Cascadilla Proceedings Project.
- Cunill, Arnau. 2012. *The acquisition of passives in Catalan*. London, UK: University College London master's thesis.
- Dowty, David R. 1979. *Word meaning and Montague grammar. The semantics of verbs and times in generative semantics and in Montague's PTQ*. Dordrecht: D. Reidel Publishing Company.
- Driva, Evangelia & Arhonto Terzi. 2007. Children's passives and the theory of grammar. In Anna Gavarró & Maria João Freitas (eds.), *Language Acquisition and Development: Proceedings of GALA 2007*, 188–198. Newcastle upon Tyne: Cambridge Scholars Publishing.
- Duarte, Inês & Fátima Oliveira. 2010. Participios resultativos. In *Textos seleccionados, XXV Encontro Nacional da Associação Portuguesa de Linguística*, 397–408. Porto: APL.
- Egerland, Verner. 1998. The affectedness constraint and AspP. *Studia Linguistica* 52(1). 19–47. <https://doi.org/10.1111/1467-9582.00028>
- Embick, David. 2004. On the structure of resultative predicates in English. *Linguistic Inquiry* 35(3). 355–392. <https://doi.org/10.1162/0024389041402634>
- Estrela, Antónia. 2013. *A aquisição da estrutura passiva em Português Europeu* [The acquisition of the passive structure in European Portuguese]. Lisbon, Portugal: NOVA University Lisbon.
- Ferreira, Fernanda. 1994. Choice of passive voice is affected by verb type and animacy. *Journal of Memory and Language* 33. 715–736. <https://doi.org/10.1006/jmla.1994.1034>
- Ferreira, Fernanda. 2003. The misinterpretation of noncanonical sentences. *Cognitive Psychology* 47. 164–203. [https://doi.org/10.1016/S0010-0285\(03\)00005-7](https://doi.org/10.1016/S0010-0285(03)00005-7)
- Freitas, Maria João. 1997. *Aquisição da estrutura silábica do Português Europeu* [Acquisition of the syllabic structure of European Portuguese]. Lisbon, Portugal: University of Lisbon.
- Gavarró, Anna, & Xavier Parramon. 2017. On the adjectival interpretation of passives in acquisition. *Lingua* 185. 11–24. <https://doi.org/10.1016/j.lingua.2016.07.003>
- Gehrke, Berit & Nino Grillo. 2007. Aspects on passives. In Sylvia Blaho, Luis Vicente & Erik Schoorlemmer (eds.), *Proceedings of ConSOLE XIV*, 121–141. Leiden: SOLE.
- Gehrke, Berit & Nino Grillo. 2009. How to become passive. In Kleantes K. Grohmann (ed.), *Explorations of phase theory: Features, arguments, and interpretation at the interfaces*, 231–268. Berlin: De Gruyter Mouton.
- Gordon, Peter, & Jill Chafetz. 1990. Verb-based versus class-based accounts of actionality effects in children's comprehension of passives. *Cognition*, 36 (3), 227–254. [https://doi.org/10.1016/0010-0277\(90\)90058-R](https://doi.org/10.1016/0010-0277(90)90058-R)
- Hayhurst, Hazel. 1967. Some errors of young children in producing passive sentences. *Journal of Verbal Learning and Verbal Behavior* 6(4). 634–639. [https://doi.org/10.1016/S0022-5371\(67\)80028-8](https://doi.org/10.1016/S0022-5371(67)80028-8)
- Hirsch, Christopher. 2011. *The acquisition of raising*. Doctoral dissertation, MIT. MIT Repository.
- Hirsch, Christopher & Kenneth Wexler. 2006. Children's passives and their resulting interpretation. In K. Deen, J. Nomura, B. Schulz, & B. Schwartz (eds.), *The Proceedings of the Inaugural Conference on Generative Approaches to Language Acquisition-North America*, vol. 1, 125–136. Storrs, CT: University of Connecticut.
- Hopper, Paul J., & Sandra A. Thompson. 1980. Transitivity in grammar and discourse. *Language* 56. 251–299. <https://doi.org/10.2307/413757>
- Horgan, Dianne. 1975. *Language development: A cross-methodological study*. Doctoral Dissertation, University of Michigan. Publication No. 7529246, ProQuest Dissertations & Theses Global.
- Horgan, Dianne. 1978. The development of the full passive. *Journal of Child Language* 5(1). 65–80. <https://doi.org/10.1017/S030500090000194X>
- Hyams, Nina & William Snyder. 2005. *Young children never smuggle: Reflexive clitics and the Universal Freezing Hypothesis*. Handout presented at the 30th Annual Boston University Conference on Language Development, November 4–6, Boston, MA.
- IBM Corp. Released 2021. *IBM SPSS Statistics for Windows, Version 28.0*. Armonk, NY: IBM Corp.

- Keenan, Edward L. 1985. Passive in the world's languages. In Timothy Shopen (ed.), *Language typology and syntactic description. Vol. I: Clause structure*, 1st ed., 243–281. Cambridge, UK: Cambridge University Press.
- Keenan, Edward L. & Matthew S. Dryer. 2007. Passive in the world's languages. In Timothy Shopen (ed.), *Language typology and syntactic description. Vol. I: Clause structure*, 2nd ed., 325–361. Cambridge, UK: Cambridge University Press.
- Kiparsky, Paul. 2013. Towards a null theory of the passive. *Lingua*, 25, 7–33. <https://doi.org/10.1016/j.lingua.2012.09.003>
- Kratzer, Angelika. 2000. Building statives. In L. J. Conathan, J. Good, D. Kavitskaya, A. B. Wulf, & A. C. Yu (eds.), *Proceedings of the 26th Annual Meeting of the Berkeley Linguistic Society*, 385–399. Berkeley, CA: Berkeley Linguistic Society.
- Lehmann, Christian. 1991. Predicate classes and PARTICIPATION. In Hansjakob Seiler & Waldfried Premper (Eds.), *PARTIZIPATION. Das sprachliche Erfassen von Sachverhalten*, 183–239. Tübingen: Gunter Narr.
- Lima Júnior, João C. & Marina R. A. Augusto. 2015. Is 'smuggling' really necessary? the most recent analyses of passive sentences reconsidered in terms of phasehood and cyclic movement. *ReVEL* 9. 62–91.
- Maratsos, Michael P., Dana E.C. Fox, Judith A. Becker, & Mary Anne Chalkley. 1985. Semantic restrictions on children's passives. *Cognition* 19. 167–191. [https://doi.org/10.1016/0010-0277\(85\)90017-4](https://doi.org/10.1016/0010-0277(85)90017-4)
- Moens, Marc. 1987. *Tense, aspect and temporal reference*. Edinburgh, UK: University of Edinburgh dissertation.
- Moens, Marc & Mark Steedman. 1998. Temporal ontology and temporal reference. *Computational Linguistics* 14(2). 15–28.
- Müller, Gereon. 1998. *Incomplete category fronting: A derivational approach to remnant movement in German*. Dordrecht: Kluwer Academic Publishers.
- Nguyen, Emma & Lisa Pearl. 2021. The link between lexical semantic features and children's comprehension of English verbal *be*-passives. *Language Acquisition* 28(4). 433–450, <https://doi.org/10.1080/10489223.2021.1939354>
- O'Brien, Karen, Elaine Grolla, & Diane Lillo-Martin. 2006. Non-actional passives are understood by young children. In *Proceedings of the 30th Boston University Conference on Language Development*, 441–451. Somerville, MA: Cascadia Press.
- Oliveira, Jesus & Kenneth Wexler. 2018. The acquisition of Spanish passives: The comparison between subject experiencer versus actional verbs and direct aspectual semantic evidence for the adjectival interpretation. In Anna Gavarró (ed.), *On the acquisition of the syntax of Romance*, 57–89. Amsterdam: John Benjamins.
- Orfittelli, Robyn. 2012. *Argument intervention in the acquisition of A-movement*. University of California, Los Angeles dissertation. Publication No. 3502994, ProQuest Dissertations Publishing.
- Paolazzi, Caterina Laura, Nino Grillo, Artemis Alexiadou, & Andrea Santi. 2019. Passives are not hard to interpret but hard to remember: evidence from online and offline studies. *Language, Cognition and Neuroscience* 34(8). 991–1015, <https://doi.org/10.1080/23273798.2019.1602733>
- Pinker, Steven. 1989. *Learnability and cognition: The acquisition of argument structure*. Cambridge, MA: MIT Press.
- Pinker, Steven. 2013. *Learnability and cognition: The acquisition of argument structure* (New ed.). Cambridge, MA: MIT Press.
- Pinker, Steven, David S. Lebeaux, & Loren Ann Frost. (1987). Productivity and constraints in the acquisition of the passive. *Cognition* 26. 195–267. [https://doi.org/10.1016/S0010-0277\(87\)80001-X](https://doi.org/10.1016/S0010-0277(87)80001-X)
- Rizzi, Luigi. 1990. *Relativized minimality*. Cambridge, MA: MIT Press.
- Rizzi, Luigi. 2004. Locality and left periphery. In A. Belletti (ed.), *Structures and beyond: The Cartography of syntactic structures*, vol. 3. Oxford: Oxford University Press.
- Rizzi, Luigi. 2006. On the form of chains: Criterial positions and ECP effects. In Lisa Lai-Shen Cheng & Norbert Corver (eds.), *Wh-movement: Moving on*. Cambridge, MA: MIT Press. <https://doi.org/10.7551/mitpress/7197.003.0010>
- Rizzi, Luigi & Ur Shlonsky. 2007. Strategies of subject extraction. In Uli Sauerland & Hans-Martin Gärtner (eds.), *Interfaces + Recursion = Language? Chomsky's minimalism and the view from syntax-semantics*, 115–160. Berlin: Mouton de Gruyter.
- Santos, Ana Lúcia. 2006. *Minimal answers: Ellipsis, syntax and discourse in the acquisition of European Portuguese*. Lisbon, Portugal: University of Lisbon dissertation.
- Santos, Ana Lúcia. 2009. *Minimal answers: Ellipsis, syntax and discourse in the acquisition of European Portuguese*. Amsterdam: John Benjamins.
- Santos, Ana Lúcia, Michel Génèreux, Aida Cardoso, Celina Agostinho, & Silvana Abalada. 2014. A corpus of European Portuguese child and child-directed speech. In Nicoletta Calzolari, Khalid Choukri, Thierry Declerck, Hrafn Loftsson, Bente Maegaard, Joseph Mariani, Asuncion Moreno, Jan Odijk, & Stelios Piperidis (eds.), *Proceedings of the Ninth International Conference on Language Resources and Evaluation (LREC'14)*, 1488–1491. Reykjavik, Iceland: European Language Resources Association (ELRA). http://www.lrec-conf.org/proceedings/lrec2014/pdf/514_Paper.pdf
- Santos, Ana Lúcia, Maria João Freitas, & Aida Cardoso. 2014. *CEPLEXicon - A Lexicon of Child European Portuguese*. ELRA ID: ELRA-L0094.
- Snyder, William & Nina Hyams. 2015. Minimality effects in children's passives. In Elisa Di Domenico, Cornelia Hamann, & Simona Matteini (eds.), *Structures, strategies and beyond: Studies in honour of Adriana Belletti*, 343–368. Amsterdam: John Benjamins.
- Sudhalter, Vicki, & Martin D. S. Braine. 1985. How does comprehension of passives develop? A comparison of actional and experiential verbs. *Journal of Child Language* 12(2). 455–70. <https://doi.org/10.1017/S0305000900006541>
- Travis, Lisa. (2000). Event structure in syntax. In Carol Tenny & James Pustejovsky (eds.), *Events as grammatical objects: The converging perspectives of lexical semantics and syntax*, 145–185. Stanford, CA: CSLI Publications.
- Turner, Elizabeth Ann & Ragnar Rommetveit. 1967. Experimental manipulation of the production of active and passive voice in children. *Language and Speech* 10(3). 169–180. <https://doi.org/10.1177/002383096701000303>

- Vendler, Zeno. 1957. Verbs and times. *The Philosophical Review* 66(2). 143–160. <https://doi.org/10.2307/2182371>
- Vendler, Zeno. 1967. *Linguistics in philosophy*. Ithaca, NY: Cornell University Press.
- Volpato, Francesca, Laura Verin, & Anna Cardinaletti. 2016. The comprehension and production of verbal passives by Italian preschool-age children. *Applied Psycholinguistics* 37. 901–931, <https://doi.org/10.1017/S0142716415000302>
- Weinberg, Amy. 1987. Comments on Borer and Wexler. In Tom Roeper & Edwin Williams (eds.), *Parameter setting*, 173–187. Dordrecht: D. Reidel Publishing Company.
- Wexler, Kenneth. 2004. Theory of phasal development: Perfection in child grammar. In Aniko Csirmaz, Andrea Gualmini, & Andrew Nevins (eds.) *MIT Working Papers in Linguistics* 48. 159–209. Cambridge, MA: MIT Press.

Appendix. Stimulus sentences

Table A1. Experiment 1: Stimulus sentences.

Condition	Main verb	No	Test sentence
1. Actional actives	Pentear “comb”	1	A avó penteou a mãe. “The grandmother combed the mother.”
1. Actional actives	Pintar “paint”	2	A menina pintou a mãe. “The girl painted the mother.”
1. Actional actives	Pentear “comb”	3	O pai penteou o menino. “The father combed the boy.”
1. Actional actives	Pintar “paint”	4	O tio pintou o menino. “The uncle painted the boy.”
2. Perception actives	Ver “see”	5	O menino viu o tio. “The boy saw the uncle.”
2. Perception actives	Ouvir “hear”	6	O avô ouviu o menino. “The grandfather heard the boy.”
2. Perception actives	Ver “see”	7	A menina viu a avó. “The girl saw the grandmother.”
2. Perception actives	Ouvir “hear”	8	A tia ouviu a menina. “The aunt heard the girl.”
3. Short actional passives	Pentear “comb”	9	O menino foi penteado. “The boy was combed.”
3. Short actional passives	Pintar “paint”	10	A menina foi pintada. “The girl was painted.”
3. Short actional passives	Pentear “comb”	11	A mãe foi penteada. “The mother was combed.”
3. Short actional passives	Pintar “paint”	12	O pai foi pintado. “The father was painted.”
4. Short perception passives	Ver “see”	13	A menina foi vista. “The girl was seen.”
4. Short perception passives	Ouvir “hear”	14	A tia foi ouvida. “The aunt was heard.”
4. Short perception passives	Ver “see”	15	O pai foi visto. “The father was seen.”
4. Short perception passives	Ouvir “hear”	16	O menino foi ouvido. “The boy was heard.”
5. Long actional passives	Pentear “comb”	17	A menina foi penteada pela avó. “The girl was combed by the grandmother.”
5. Long actional passives	Pintar “paint”	18	O avô foi pintado pelo menino. “The grandfather was painted by the boy.”
5. Long actional passives	Pentear “comb”	19	O avô foi penteado pelo pai. “The grandfather was combed by the father.”
5. Long actional passives	Pintar “paint”	20	A menina foi pintada pela tia. “The girl was painted by the aunt.”
6. Long perception passives	Ver “see”	21	A mãe foi vista pela menina. “The mother was seen by the girl.”
6. Long perception passives	Ouvir “hear”	22	A menina foi ouvida pela mãe. “The girl was heard by the mother.”
6. Long perception passives	Ver “see”	23	O menino foi visto pelo avô. “The boy was seen by the grandfather.”
6. Long perception passives	Ouvir “hear”	24	O tio foi ouvido pelo menino. “The uncle was heard by the boy.”

Table A2. Experiment 2: Stimulus sentences.

Condition	Main verb	No	Test sentence
1. Resultative actives	Pentear "comb"	1	A avó penteou a mãe. "The grandmother combed the mother."
1. Resultative actives	Pentear "comb"	2	O pai penteou o menino. "The father combed the boy."
1. Resultative actives	Pintar "paint"	3	A menina pintou a mãe. "The girl painted the mother."
1. Resultative actives	Pintar "paint"	4	O tio pintou o menino. "The uncle painted the boy."
2. Non-resultative actives	Empurrar "push"	5	A avó empurrou a menina. "The grandmother pushed the girl."
2. Non-resultative actives	Empurrar "push"	6	O menino empurrou o pai. "The boy pushed the father."
2. Non-resultative actives	Procurar "look for"	7	A menina procurou a tia. "The girl looked for the aunt."
2. Non-resultative actives	Procurar "look for"	8	O avô procurou o menino. "The grandfather looked for the boy."
3. Short resultative passives	Pentear "comb"	9	A mãe foi penteada. "The mother was combed."
3. Short resultative passives	Pentear "comb"	10	O menino foi penteado. "The boy was combed."
3. Short resultative passives	Pintar "paint"	11	A menina foi pintada. "The girl was painted."
3. Short resultative passives	Pintar "paint"	12	O pai foi pintado. "The father was painted."
4. Short non-resultative passives	Empurrar "push"	13	A mãe foi empurrada. "The mother was pushed."
4. Short non-resultative passives	Empurrar "push"	14	O menino foi empurrado. "The boy was pushed."
4. Short non-resultative passives	Procurar "look for"	15	A avó foi procurada. "The grandmother was looked for."
4. Short non-resultative passives	Procurar "look for"	16	O menino foi procurado. "The boy was looked for."
5. Long resultative passives	Pentear "comb"	17	A menina foi penteada pela avó. "The girl was combed by the grandmother."
5. Long resultative passives	Pentear "comb"	18	O avô foi penteado pelo pai. "The grandfather was combed by the father."
5. Long resultative passives	Pintar "paint"	19	A menina foi pintada pela tia. "The girl was painted by the aunt."
5. Long resultative passives	Pintar "paint"	20	O avô foi pintado pelo menino. "The grandfather was painted by the boy."
6. Long non-resultative passives	Empurrar "push"	21	A menina foi empurrada pela tia. "The girl was pushed by the aunt."
6. Long non-resultative passives	Empurrar "push"	22	O tio foi empurrado pelo menino. "The uncle was pushed by the boy."
6. Long non-resultative passives	Procurar "look for"	23	A menina foi procurada pela mãe. "The girl was looked for the mother."
6. Long non-resultative passives	Procurar "look for"	24	O pai foi procurado pelo menino. "The father was looked for by the boy."