Universitat Autònoma de Barcelona

THE ACQUISITION OF THE PASSIVE IN EUROPEAN PORTUGUESE

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There must always be an end in view, and the end must not be final.
— Eliel Saarinen

ABSTRACT

This study assesses the comprehension of verbal passives by children acquiring European Portuguese. Here I present data from three experimental studies designed to test the comprehension of verbal passives by children and to assess contemporary accounts of passive acquisition, namely the Universal Phase Requirement (Wexler, 2004) and the Universal Freezing Hypothesis (Snyder & Hyams, 2015). The results from Experiment 1 replicate the verb type contrast seen in previous studies for English (Maratsos, Fox, Becker, & Chalkley, 1985), Catalan (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018) and Spanish (Oliva & Wexler, 2018), among others. That is, children performed better on passives of actional verbs than on passives of subject experiencer verbs. Children also showed variation between main verbs within the class of subject experiencer verbs, but not within the class of actional verbs. Experiment 2 tested children on their comprehension of actional passives with and without a target-state, in order to assess the assertion that the verb type contrast found in English and Romance languages such as Catalan and Spanish relates to the lack of a result state in the case of subject experiencer verbs. This experiment did not find evidence for this claim. That is, the familiar verb type contrast that was replicated in Experiment 1 cannot be attributed to the lack of a result state. Children showed variation between main verbs only within the class of actional verbs without a target-state: one of these verbs patterned with actional verbs with a target-state, while the other showed some delay. It is argued that the property of affectedness of the internal argument may account for the discrepancies between main predicates seen in Experiments 1 and 2. Finally, the results from Experiment 3 are compatible with the use of an adjectival strategy by young children to comprehend verbal passives (Borer & Wexler, 1987; Gavarró & Parramon, 2017; Hirsch & Wexler, 2006b; Oliva & Wexler, 2018; Wexler, 2004), in particular the fact that children between the ages of 3 and 5 did not appear to distinguish between adjectival and verbal passives.

RESUMEN

Este estudio evalúa la comprensión de la pasiva verbal por parte de los niños hablantes de portugués europeo. En esta disertación presento datos de tres experimentos diseñados para evaluar la comprensión de pasivas verbales y para evaluar dos hipótesis contemporáneas de la adquisición de la pasiva verbal, a saber, el *Universal Phase Requirement* (Wexler, 2004) y la *Universal Freezing Hypothesis* (Snyder & Hyams, 2015). Los resultados del Experimento 1 replican el contraste entre clases de verbos visto en lenguas como el inglés (Maratsos et al., 1985), el catalán (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018) y el español (Oliva & Wexler, 2018), entre otras. Los niños tuvieron un desempeño mejor con pasivas de verbos agentivos que con pasivas de verbos no agentivos. Además, los niños mostraron variación entre verbos principales dentro de la clase de verbos no agentivos, pero no dentro de la clase de verbos agentivos. El experimento 2 probó la comprensión de la pasiva con predicados agentivos con y sin un estado resultante, para evaluar la aserción de que el contraste entre clases de verbos encontrado en inglés y lenguas romances como el catalán y el español se debe a la falta de un estado resultante en el caso de los predicados no agentivos. Este experimento no encontró evidencias para esta aserción. Es decir, el contraste entre clases de verbos replicado por el Experimento 1 no se puede atribuir a la falta de un estado resultante. Los niños mostraron variación entre verbos principales solamente dentro de la clase de los verbos agentivos sin un estado resultante: los resultados con uno de estos verbos son similares a los resultados con los verbos agentivos con un estado resultante, mientras que el otro mostró un cierto retraso. Se argumenta que la propiedad de *affectedness* del argumento interno puede explicar las discrepancias entre verbos principales encontradas en los Experimentos 1 y 2. Finalmente, los resultados del Experimento 3 son compatibles con el uso de una estrategia adjetiva por parte de los niños para comprender la pasivas verbal (Borer & Wexler, 1987; Gavarró & Parramon, 2017; Hirsch & Wexler, 2006b; Oliva & Wexler, 2018; Wexler, 2004), en particular el hecho de que los niños entre los 3 y los 5 años no parecían distinguir entre pasivas verbales y pasivas adjetivas.

RESUM

Aquest estudi avalua la comprensió de la passiva verbal per part dels nens parlants de portuguès europeu. En aquesta dissertació presento dades de tres experiments dissenyats per avaluar la comprensió de passives verbals i per avaluar dues hipòtesis contemporànies de l'adquisició de la passiva verbal, el *Universal Phase Requirement* (Wexler, 2004) i la *Universal Freezing Hypothesis* (Snyder & Hyams, 2015). Els resultats de l'Experiment 1 repliquen el contrast entre classes de verbs vist en llengües com l'anglès (Maratsos et al., 1985), el català (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018) i l'espanyol (Oliva & Wexler, 2018), entre d'altres. Els nens van tenir un millors resultats amb passives de verbs agentius que amb passives de verbs no agentius. A més, els nens van mostrar variació entre verbs principals dins de la classe de verbs no agentius, però no dins de la classe de verbs agentius. L'experiment 2 va provar la comprensió de la passiva amb predicats agentius amb i sense un estat resultant, per avaluar l'asserció que el contrast entre classes de verbs trobat en anglès i llengües romàniques com el català i l'espanyol es deu a la falta d'un estat resultant en el cas dels predicats no agentius. Aquest experiment no va trobar evidències per a aquesta asserció. És a dir, el contrast entre classes de verbs replicat per l'Experiment 1 no es pot atribuir a la manca d'un estat resultant. Els nens van mostrar variació entre verbs principals solament dins de la classe dels verbs agentius sense un estat resultant: els resultats amb un d'aquests verbs són similars als resultats amb els verbs agentius amb un estat resultant, mentre que l'altre va mostrar algun retard. S'argumenta que la propietat d'*affectedness* de l'argument intern pot explicar les discrepàncies entre verbs principals trobades en els Experiments 1 i 2. Finalment, els resultats de l'Experiment 3 són compatibles amb l'ús d'una estratègia adjectiva per part dels nens per comprendre la passiva verbal (Borer & Wexler, 1987; Gavarró & Parramon, 2017; Hirsch & Wexler, 2006b; Oliva & Wexler, 2018; Wexler, 2004), en particular el fet que els nens de 3 a 5 anys no semblen distingir entre passives verbals i passives adjectives.

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ACRONYMS AND ABBREVIATIONS

ACDH A-Chain Deficit Hypothesis

AIH Argument Intervention Hypothesis

AIS Adjectival Interpretation Strategy

APF Adjectival Passive Formation

CHILDES Child Language Data Exchange System

DM Distributed Morphology

EARH External Argument Requirement Hypothesis

GB Government and Binding

GLMM Generalized Linear Mixed Model

LUP Lexicon Uniformity Principle

MLC Minimal Link Condition

PIC Prepositional Infinitival Construction

PMH Pure Minimality Hypothesis

RM Relativized Minimality

SCG Sole Complement Generalization

THC Thematic Hierarchy Condition

TVJ Truth-Value Judgment

UFH Universal Freezing Hypothesis

UPR Universal Phase Requirement

UTAH Uniformity of Theta Assignment Hypothesis

1 INTRODUCTION

1.1 THE PASSIVE IN PORTUGUESE

As in other Romance languages and in English, the Portuguese verbal passive (also known as the periphrastic, canonical or eventive passive) promotes the internal argument of the active verb to subject position. At the same time, it demotes the external argument of the active verb to the complement of an optional PP, headed by the preposition *por* "by". As can be observed in (1-b), in Portuguese the verbal passive takes the auxiliary *ser*, in the same mood and tense as the main verb of the corresponding active (1-a). This auxiliary is followed by a participial form of the main verb of the active, which agrees in gender and number with the derived subject.

(1) a. O menino aleijou o cão.
the boy hurt the dog
"The boy hurt the dog."
b. O cão foi aleijado (pelo menino).
the dog Aux.event hurt by+the boy
"The dog was hurt (by the boy)."

Portuguese morphosyntactically distinguishes between the verbal passive and two subtypes of the adjectival passive, the stative and the resultative (see Embick, 2004).[1] Thus, where verbal passives take the auxiliary *ser* (1-b), statives take the auxiliary *estar* (2-a) and resultatives take the auxiliary *ficar* (2-b) (Duarte & Oliveira, 2010a, 2010b; Lima Júnior & Augusto, 2015, 2017).

(2) a. O cão estava aleijado.
the dog Aux.state hurt
"The boy hurt the dog."
b. O cão ficou aleijado.
the dog Aux.result hurt
"The dog was hurt."

1 I employ the term *adjectival passive* throughout this dissertation because this is the name traditionally given to these forms, not due to any theoretical assumptions regarding their analysis.

Thus, Portuguese differs both from English, in which there is no distinction between verbal passives and adjectival passives with regard to auxiliary selection, and from Catalan and Spanish, which have one auxiliary for verbal passives (*ser*) and another for adjectival passives (*estar*) —see the Catalan examples in (3), from Gavarró and Parramon (2017, 18-19).

(3) a. La nena és pentinada.
the girl Aux combed.Fem.S
"The girl is combed." *Verbal passive*

b. La nena està pentinada.
the girl Aux combed.Fem.S
"The girl is combed." *Adjectival passive*

The fact that Portuguese has three auxiliaries, which, according to Duarte and Oliveira (2010a, 2010b), reflect the distinction between stative, resultative and eventive participles, makes it particularly interesting for the study of passive acquisition. Namely, it allows us to test predictions about how young children interpret verbal passives, in particular the idea that early passives are always adjectival (Borer & Wexler, 1987; Gavarró & Parramon, 2017; Hirsch & Wexler, 2006b; Oliva & Wexler, 2018).

1.2 PREVIOUS ACQUISITION STUDIES AND ACCOUNTS

The verbal passive is a longstanding research topic in acquisition studies. An early observation was that the production and comprehension of the English verbal passive is delayed with regard to actives (see Baldie, 1976; Hayhurst, 1967; Horgan, 1975, 1978; D. Slobin, 1968; D. I. Slobin, 1966; Turner & Rommetveit, 1967, among others). This delay has been replicated for other languages, namely German (Bartke, 2004; Mills, 1985), Dutch (Verrips, 1996), French (Sinclair, Sinclair, & DeMarcellus, 1971), Spanish (Oliva & Wexler, 2018; Pierce, 1992), Catalan (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018; Parramon, 2015), Greek (Driva & Terzi, 2007; Terzi & Wexler, 2002), Russian (Babyonyshev & Brun, 2003) and Serbian (Djurkovic, 2007; Perovic, Vuksanovic, Petrovic, & Abramovic-Ilic, 2014). In addition to this, early production studies showed that, when children produce passives, they show a marked tendency to omit the *by*-phrase (e.g., Horgan, 1975, 1978). Crucially, verb type plays an important role in the comprehension of verbal passives by English-speaking chil-

dren. In a seminal study, Maratsos et al. (1985) found an asymmetry between actional and subject experiencer verbs: children performed significantly better with passives of actional verbs (e.g., *kick*, *comb*) than with passives of subject experiencer verbs (e.g., *love*, *see*). This result has been consistently replicated for English in subsequent studies (Gordon & Chafetz, 1990; Hirsch, 2011; Hirsch & Wexler, 2006b; Sudhalter & Braine, 1985, among others), as well as for languages such as Catalan (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018; Parramon, 2015), Spanish (Oliva & Wexler, 2018) and Italian (Volpato, Verin, & Cardinaletti, 2016), and constitutes a robust finding. According to Hirsch and Wexler (2006b), while English-speaking children at the age of 4 already seem to comprehend passives of actional verbs, they do not comprehend passives of subject experiencer verbs until the age of 6 or 7.[2]

These basic findings have been interpreted as evidence that the verbal passive is understood late, that is, that passive grammar is delayed until school age, as seen with subject experiencer verbs (Borer & Wexler, 1987; Wexler, 2004). According to the A-Chain Deficit Hypothesis (ACDH), proposed by Borer and Wexler (1987), A-chains are subject to a maturational timeline, and hence are not available at early stages, rendering young children unable to derive the verbal passive. Due to developments in grammatical theory, namely the VP-internal subject hypothesis (see Koopman & Sportiche, 1991), and evidence that children do not have problems with these A-chains (Stromswold, 1996), the ACDH was abandoned in favour of more recent formulations of early restrictions on movement. Of particular interest to this study is the Universal Phase Requirement (UPR), proposed by Wexler (2004), which has been prominent in recent studies on the acquisition of the passive. The fundamental claim of the UPR is that young children take v to always define a phase. That is, they do not have non-phasal defective v (v_{def}). They have the adult phasal v and a non-adult,

2 A minority of studies has found early acquisition of the verbal passive (e.g., Demuth, 1989, for Sesotho; Allen & Crago, 1996, for Inuktitut; Suzman, 1985, for Zulu; Crain, Thornton, & Murasugi, 2009; O'Brien, Grolla, & Lillo-Martin, 2006; Pinker, Lebeaux, & Frost, 1987, for English). Pinker et al. (1987) argued that English-speaking children have productive grammatical knowledge of the verbal passive and produce passives that have an eventive interpretation. O'Brien et al. (2006), Crain and Fodor (1993) and Crain et al. (2009) argued that children's errors in studies showing passive delay in English are due to pragmatically infelicitous experimental settings. Finally, Demuth (1989) and Allen and Crago (1996) claimed that children acquiring Sesotho and Inuktitut, respectively, show early production of verbal passives.

phasal v^*_{def}, that is, a v that does not project a Spec but nonetheless defines a phase. The adult, non-phasal v_{def} becomes maturationally available around age 6-7, as seen with passives of subject experiencer verbs. In this view, children are delayed for all verbal passives, but this delay is not visible with actional passives given that these sentences, in English, are ambiguous between a verbal passive and an adjectival passive reading, in particular when the *by*-phrase is omitted —see the example in (4), from Gavarró and Parramon (2017, 12). Under the assumption that the adjectival passive is available from early stages, motivated by data from children's productions, English-speaking children may analyze actional verbal passives as adjectival passives. In fact, this is the only reading available to them. Subject experiencer verbs, however, tend to make poorer adjectives than actional verbs (e.g., ?*a loved doll* vs. *a combed doll*), hence an adjectival analysis is not available for passives of subject experiencer verbs (Borer & Wexler, 1987; Hirsch & Wexler, 2006b; Wexler, 2004). Recent iterations of this proposal, which has been termed the Adjectival Interpretation Strategy (AIS) by Oliva and Wexler (2018), claim that young children interpret intended verbal passives as resultative adjectival passives (Hirsch & Wexler, 2006b; Oliva & Wexler, 2018).

(4) The door was closed.
   a. Someone was closing the door.
   b. The door was in a closed state.

Alternatively, it has been proposed that children show knowledge of passive grammar by age 4, but verbal passives of some verbs require further development. The Universal Freezing Hypothesis (UFH), proposed by Hyams and Snyder (2005) and Snyder and Hyams (2015), posits that Smuggling (Collins, 2005a, 2005b; Gehrke & Grillo, 2007, 2009a, 2009b) is not available until the age of 4 years, when it becomes maturationally available. At this point, children are able to derive passives of actional verbs, as these typically have a complex, bi-eventive structure with a cause sub-event and a result state sub-eventuality —under Gehrke and Grillo's version of Smuggling in the passive, which may be referred to as Semantic Smuggling, passivizable verbs are defined by this type of event structure. Passives of subject experiencer verbs are acquired later because these verbs typically do not have a complex, bi-eventive structure, i.e., these are stative verbs. For this reason, these predicates require semantic coercion in order to passivize —the state must be understood as a result state. Under the UFH, se-

mantic coercion becomes maturationally available around age 6. At this point, children are able to derive passives of subject experiencer verbs as well as passives of actional verbs. The idea that semantic coercion is necessary for the passivization of some predicates may be naturally extended to actional predicates that do not have a target-state (e.g., *push*), that is, to activities (Vendler, 1957), which also have a simple event structure.

1.3 ACQUISITION OF THE PASSIVE IN PORTUGUESE

There have been few studies on the acquisition of the verbal passive in European Portuguese (EP) and Brazilian Portuguese (BP). Spontaneous production data has shown that passives are infrequent in the speech of both children and adults, in both EP (Estrela, 2016) and BP (Pesirani, 2009 and Perotino, 1995, both referenced in Lima Júnior, Corrêa, & Augusto, 2018). Regarding elicited production, the experiments with BP-speaking children reported in Gabriel (2001) provide the only results available for this language: the children she tested, who were between the ages of 3 and 6 years, produced few passives even when the prompt was oriented towards the non-agent argument of a transitive action (7% for 3- and 4-year-olds and 11% for 5– and 6-year-olds). In fact, the non-target responses showed that BP-speaking children tended to resort to structures such as topic constructions (e.g., *O porco, o gato levou ele* "The pig, the cat took him") and sentences with verbs that allow non-agent subjects (e.g., *ganhar* "gain", *sentir* "feel", *receber* "receive", etc.). More recently, Lima Júnior, Augusto, and Corrêa (2018) assessed BP-speaking children's ability to discriminate between verbal passives and adjectival passives, and found adult-like performance with stative and resultative passives, while Lima Júnior, Corrêa, and Augusto (2018) focused on the impact of favourable and unfavourable conditions for the production of verbal passives by children.

Regarding the comprehension of verbal passives by children acquiring EP, Sim-Sim (2006), cited in Estrela (2015), presented partial results on reversible passives (e.g., *The cat was bitten by the dog* vs. *The dog was bitten by the cat*) and non-reversible passives (e.g., *The bone was bitten by the dog* vs. *The dog was bitten by the bone*). While non-reversible passives were understood by children at age 4 (94% correct responses), it was only by age 9 that children understood reversible passives (77% correct responses).

To the best of my knowledge, the acquisition of the verbal passive in EP has been studied more thoroughly only by Estrela (2013). Estrela's study replicated the passive delay and verb type asymmetry found in English: the results of her second experiment, which tested 3-, 4- and 5-year-old children on passives of actional and subject experiencer verbs, showed that children from the age of 4 years were at adult level with passives of actional verbs (79% correct responses, above the 75% cut-off Estrela used to define adult level), whereas with passives of subject experiencer verbs 5-year-old children still had not reached adult level (64% correct responses).

Estrela (2013) also tested children's ability to distinguish between verbal, stative and resultative passives, using a grammaticality judgment task. Her results indicate that 6-year-olds are able to distinguish between eventive and stative passives, and, to a lesser extent, between resultative and stative passives, but not between eventive and resultative passives. Children at the age of 5, on the other hand, did not show evidence for a distinction between any of these sentence types.

However, Estrela's experiments present some flaws that may have negatively impacted children's performance. Namely, in her first experiment, which tested passives of actional verbs, some of the sentences were odd (e.g., *O rapaz está a ser puxado/divertido*, "The boy is being pulled/amused"), while some of the verbs may not be known by younger children (*perseguir* "chase", *examinar* "examine"), and some actions that are usually described using a complex predicate with a light verb were described using a full verb (*dar um abraço* "give a hug" vs. *abraçar* "hug", *dar um beijo* "give a kiss" vs. *beijar* "kiss"). Moreover, the test items were in the Present, which is infelicitous in EP when describing ongoing situations, as was the case in the scenarios employed by Estrela (2013). In her second experiment, which tested passives of actional and subject experiencer verbs, the images she used were disparate in drawing style, and seemed to belong to different experiments. There is the possibility that some images were easier to interpret or more attractive than others for the children. Finally, the paradigm used in her third experiment, a grammaticality judgment task, is arguably too demanding for young children, and may have dampened their performance.

1.4 AIMS OF THIS STUDY

The present study aims to assess the acquisition path of the verbal passive in EP-speaking children, to test some of the factors that may underlie children's reported delay with the verbal passive, and to evaluate competing contemporary hypotheses on passive delay, namely the UFH (Hyams & Snyder, 2005; Snyder & Hyams, 2015) and the UPR (Hirsch & Wexler, 2006b; Oliva & Wexler, 2018; Wexler, 2004). In particular, this study seeks to evaluate the impact of the availability of a result state in children's comprehension of the passive, which is relevant for both the UPR and the UFH. In addition to this, this study aims to evaluate children's ability to distinguish between eventive and resultative passives.

Three experiments were designed to achieve these goals. Experiment 1 tested passives of actional and subject experiencer verbs, with and without *by*-phrases, using a two-choice sentence-picture matching task. Hence, this experiment followed a familiar design in studies on this subject, in order to obtain more comparable results. This experiment aimed to replicate the verb type contrast previously found for English (Maratsos et al., 1985; Maratsos, Kuczaj, Fox, & Chalkley, 1979) and for Romance languages such as Italian (Volpato et al., 2016), Catalan (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018; Parramon, 2015) and Spanish (Oliva & Wexler, 2018), as well as for Portuguese (Estrela, 2013). It also sought to improve on the study by Estrela (2013), namely with regard to choice of verbs. The research questions underlying Experiment 1 were:

1. Do EP-speaking children show delayed acquisition of the verbal passive?
2. Do EP-speaking children show a contrast between actional and subject experiencer verbs in the verbal passive?
3. Do EP-speaking children show a contrast between passives with and without *by*-phrases?

Experiment 2, also a two-choice sentence-picture matching task, tested passives of actional predicates with and without a target-state, with and without *by*-phrases. This experiment aimed to test a prediction made by both the UPR and the UFH: passives of predicates with a target-state (i.e., those predicates that may more easily form resultative adjectival passives, or those that have a bi-eventive structure with

a cause sub-event and a result state sub-eventuality) will elicit better performance from young children than passives of predicates of verbs without a target-state. The research questions underlying Experiment 2 were:

1. Do EP-speaking children show a contrast between actional predicates with and without a target-state?
2. If EP-speaking children show a delay with passives of subject experiencer verbs, is that delay due to the unavailability of a target-state?

Finally, Experiment 3 aimed to assess whether children interpret short verbal passives as resultative adjectival passives, as has been claimed for English (Hirsch & Wexler, 2006b), Catalan (Gavarró & Parramon, 2017) and Spanish (Oliva & Wexler, 2018). As pointed out above, unlike English, Portuguese shows a morphosyntactic distinction between eventive, stative and resultative passives, in the form of auxiliary selection: eventive passives take the auxiliary *ser*, stative passive the auxiliary *estar* and resultative passives the auxiliary *ficar*. This also sets Portuguese apart from Spanish and Catalan, which do not show a morphosyntactic distinction between the two subclasses of adjectival passives. As recent versions of the AIS state that children initially interpret verbal passives as resultative adjectival passives, this experiment tested passives with the auxiliaries *ser* and *ficar*. Young children were tested on eventive and stative readings of these two sentence types, using a two-choice sentence-picture matching task similar to the one originally designed for Catalan by Gavarró and Parramon (2017) and adapted to Spanish by Oliva and Wexler (2018). The research questions underlying Experiment 3 were:

1. Do EP-speaking children distinguish between verbal passives, with the auxiliary *ser*, and resultative adjectival passives, with the auxiliary *ficar*?
2. Do EP-speaking children interpret verbal passives as resultative adjectival passives, that is, as stative?

1.5 STRUCTURE OF THIS DISSERTATION

This dissertation is divided into two parts. Part I is dedicated to background theoretical and empirical studies, and comprises two chapters.

Chapter 2 describes the verbal passive and the adjectival passive in EP, as well as the relevant accounts of the passive within Government and Binding (GB) and Minimalism. Chapter 3 surveys the main findings on the acquisition of the verbal passive, namely with regard to contrasts between verb types (actional vs. subject experiencer) and between passives with and without *by*-phrases, which are conventionally referred to as "short" and "long" passives, respectively. Subsequently, this chapter surveys accounts of passive delay and of the contrast between actional and subject experiencer verbs, in particular early accounts in terms of semantic properties of predicates (Maratsos et al., 1985; Pinker et al., 1987), the UPR (Wexler, 2004) and the UFH (Hyams & Snyder, 2005; Snyder & Hyams, 2015). This chapter also briefly surveys some studies showing early acquisition of the passive, as well as previous studies on the acquisition of the passive in Portuguese.

Part II is dedicated to the predictions underlying this study, the experiments and the results they obtained, and comprises four chapters. Chapter 4 lays out in detail the predictions made by the UPR and the UFH for the acquisition of the passive in EP, as well as the rationale of this study. Chapter 5, Chapter 6 and Chapter 7 describe the methodology used in Experiments 1, 2 and 3, respectively, the experimental data and its statistical analysis, and the conclusions that may be drawn from each study. Finally, Chapter 8 discusses the results obtained by this study with regard to the predictions made by the UPR and the UFH and previous studies, and concludes the dissertation.

Part I

EMPIRICAL AND THEORETICAL BACKGROUND

2

THE PASSIVE

Passive and other non-active voice phenomena encompass a great variety of constructions across languages. Besides verbal passives (1-a) and adjectival passives (1-b), Romance languages such as EP comprise the pronominal or *se* passive (1-c) and the middle construction (1-d), which have motivated a large body of work (Belletti, 1982; Chomsky, 1981; Cinque, 1988; Dobrovie-Sorin, 1999; Keyser & Roeper, 1984; Martins, 2003; Martins & Nunes, 2016; Mendikoetxea, 1999b; Raposo & Uriagereka, 1996; Roberts, 1986; Stroik, 1992, 1999; Zribi-Hertz, 1993, among others). In addition to this, *tough*-constructions in EP (1-e) have been argued to be passive constructions (Peres & Móia, 1995).

(1) a. Os textos de apoio foram deixados na
the texts of support Aux.pass left in+the
reprografia.
photocopy shop
"The supporting texts were left in the photocopy shop."

b. A assembleia está cercada de manifestantes.
The assembly Aux.state surrounded of protesters
"The assembly is surrounded by protesters."

c. Seleccionaram-se novos manuais de matemática.
selected.3P+cl.3S new manuals of mathematics
"New mathematics manuals were selected."

d. Este livro lê-se bem.
this book read.3S+cl.3S well
"This book reads well."

e. Estas situações são difíceis de prever.
these situations are difficult of predict.Inf
"These situations are difficult to predict."

The non-active constructions exemplified in (1-c)-(1-e) are outside the scope of this study. The discussion in this chapter is restricted to those passive structures that are of direct interest to this study, namely verbal and adjectival passives. EP passives are similar to English in that they are composed of an auxiliary and a participial form of the main verb. A major difference, however, is that EP has different auxiliaries

for verbal and adjectival passives —compare (1-a) and (1-b). Moreover, EP passive and adjectival participles show gender and number agreement with the subject.

The derivation of verbal and adjectival passives continues to be intensely debated (see Boeckx, 1998, Collins, 2005b, Lima Júnior & Augusto, 2015, 2017, Embick, 2004, Duarte & Oliveira, 2010b, McIntyre, 2013, Bruening, 2014, Meltzer-Asscher, 2011, among others; for a brief overview of the analysis of passives in English, see Hallman & Kallulli, 2013). In this chapter, I expand only on those analyses that informed contemporary accounts of passive acquisition and this study, namely Embick's (2004) proposal of a tripartite typology of participles, which has been adapted to EP by Duarte and Oliveira (2010b).

Section 2.1 and Section 2.2 describe the main properties of verbal and adjectival passives, respectively. Section 2.3 briefly describes the standard GB approach to verbal and adjectival passives, and Section 2.4 surveys the contemporary accounts of verbal and adjectival passives most relevant for this research and for the analysis of Portuguese passives.

2.1 VERBAL PASSIVES

The verbal passive in EP, as in other Romance languages and in English, promotes the internal argument of the active verb to subject position. At the same time, it demotes the external argument of the active verb to the complement of an optional PP, headed by the preposition *por* "by". As can be observed in (2-b), in EP the verbal passive takes the auxiliary *ser*, in the same mood and tense as the main verb of the corresponding active (2-a). This auxiliary is followed by a participial form of the main verb of the active, which agrees in gender and number with the derived subject.

(2) a. O menino aleijou o cão.
the boy hurt the dog
"The boy hurt the dog."

b. O cão foi aleijado (pelo menino).
the dog Aux hurt by+the boy
"The dog was hurt (by the boy)."

Passive sentences lack a direct object, despite the fact that in EP, as in English, the main verb of a passive must be transitive. In fact, the passive participle cannot assign accusative Case to its internal argument,

as shown by cliticization tests (3) —the following examples, adapted from Martins and Nunes (2016, 322), illustrate this point. Note that the ungrammaticality of (3-b) cannot be attributed only to a ban on enclisis to passive participles in EP. If a dative clitic undergoes climbing and attaches to the auxiliary verb, the sentence is grammatical (3-d). However, clitic climbing cannot rescue a passive sentence with an accusative clitic (3-c). Thus, a passivized verb is similar to an unaccusative verb, insofar as it is unable to assign accusative Case to its internal argument.

(3) a. As flores foram plantadas ontem.
the flowers BE.pass planted yesterday
"The flowers were planted yesterday."

b. *Foram plantadas-as ontem.
BE.pass planted+Acc.3P yesterday
"Theey were planted yesterday."

c. *Foram-nas plantadas ontem.
BE.pass+Acc.3P planted yesterday
"They were planted yesterday."

d. As flores foram-me oferecidas ontem.
The flowers BE.pass+Dat.3P offered yesterday
"The flowers were offered to me yesterday."

In some form or another, it has been recognized since the early stages of linguistic grammatical theory that there is a close relationship between the active and the passive (see Hallman & Kallulli, 2013, and references therein). Jespersen (1949 [first appeared 1927], 299) stated this relationship in the following terms: "what in the active is an object, is made the subject in the passive". The passive subject bears the same θ-role as the active object, and the *by*-phrase, when present, bears the same θ-role as the active subject. Consider the example in (4), with an actional verb, and the example in (5), with a subject experiencer verb.

(4) a. A Ana já entrevistou os candidatos.
the Ana already interviewed the candidates
"Ana has already interviewed the candidates."

b. Os candidatos já foram entrevistados pela Ana.
the candidate already Aux interviewed by+the Ana
"The candidate has already been interviewed by Ana."

(5) a. A vizinha ouviu o embate.
the neighbour heard the clash

"The neighbour heard the clash."

b. O embate foi ouvido pela vizinha.
the clash Aux heard by+the neighbour
"The clash was heard by the neighbour."

In (4) the DP *a Maria* "Maria" bears an Agent θ-role, and the DP *os candidatos* "the candidates" a Theme θ-role, in both the active and the passive. Likewise, in (5) the DP *a vizinha* "the neighbour" bears an Experiencer θ-role, and the DP *o embate* "the clash" a Stimulus θ-role, in both the active and the passive.

The θ-role of the complement of *by* is always the external θ-role categorized by the main verb of the corresponding active, and any θ-role that may be assigned to the subject of the active may be assigned to the complement of *by* in the verbal passive (Marantz, 1984).

(6) a. A Filipa foi empurrada pela Ana.
the Filipa Aux pushed by+the Ana.
"Filipa was pushed by Ana." *Agent*

b. O acidente foi visto pelo lojista.
the crash Aux seen by+the shopkeeper
"The crash was seen by the shopkeeper." *Experiencer*

c. A encomenda foi recebida hoje pela Ana.
the package Aux received today by+the Ana
"The package was received today by Ana." *Goal*

d. A carta foi enviada pela Maria.
the letter Aux sent by+the Maria
"The letter was sent by Maria." *Source*

Thus, the passive *by*-phrase differs from PPs headed by *por* "by" within NPs/DPs and deverbal adjectives (Jaeggli, 1986). In these cases, only an Agent/Cause or a Theme may be introduced by the preposition *por* "by". See the contrasts in (7)-(9), from Duarte (2003, 525).

(7) a. [O professor]$_{\text{AGENT}}$ classificou [os testes]$_{\text{THEME}}$
the teacher marked the tests

b. a classificação dos testes pelo professor
the marking of+the tests by+the teacher

c. os testes classificáveis pelo professor
the tests markable by+the teacher

(8) a. [Os miúdos]$_{\text{EXPERIENCER}}$ temem [o escuro]$_{\text{THEME}}$
the kids fear the dark

b. *o temor do escuro pelos miúdos
the fear of+the dark by+the kids
c. *o escuro temível pelos miúdos
the dark fearsome by+the kids

(9) a. [Os miúdos]$_{\text{EXPERIENCER}}$ admiram [os heróis]$_{\text{THEME}}$
the kids admire the heroes
b. a admiração dos miúdos pelos heróis
the admiration of+the kids by+the heroes
c. *os heróis admiráveis pelos miúdos
the heroes admiráveis by+the kids

Verbal passives in EP, as in other Romance languages, vary with regard to the position of the derived subject. All the examples of passives so far had the subject in pre-verbal position, that is, they were all instances of the personal passive (*passiva pessoal*). The subject of the passive may also occur in post-verbal position, especially if it is an indefinite (10-a) or a bare noun (10-b). In that case, the construction is an impersonal passive (*passiva impessoal*). The examples below are from Duarte (2013, 439).

(10) a. Foram recebidas duas reclamações.
Aux received two complaints
"Two complaints were received."
b. Foram encontrados cisnes mortos na Escócia.
Aux found swans dead in+the Scotland
"Dead swans were found in Scotland."

Personal and impersonal passives differ in the ability of the derived subject to control the null subject of a non-finite embedded clause (11)-(13) (Perlmutter, 1983). The examples are from Duarte (2013, 439).

(11) a. O menino foi obrigado a arrumar o jogo.
the boy Aux obligated Prep put away the game
b. *Foi obrigado o menino a arrumar o jogo.
Aux obligated the boy Prep put away the game
"The boy was made to put away the game."

(12) a. Tendo arrumado o jogo, o menino foi
having put away the game the boy Aux
felicitado.
congratulated

b. *Tendo arrumado o jogo, foi felicitado o
having put away the game Aux congratulated the
menino.
boy
"Having put away the game, the boy was congratulated."

(13) a. Arrumado o jogo, o menino foi felicitado.
put away the game the boy Aux congratulated
b. *Arrumado o jogo, foi felicitado o menino.
put away the game Aux congratulated the boy
"Once the game was put away, the boy was congratulated."

Because they involve the same lexical items (with the exception of the passive auxiliary and the preposition *por* "by") and θ-role relations, actives and verbal passives with overt *by*-phrases (or long passives) have the same propositional content and are truth-conditionally equivalent.[1] Verbal passives without *by*-phrases (or short passives), on the other hand, are not fully synonymous with their active counterparts. As the external argument is omitted, its reference is undetermined, in the absence of a discursive and situational context allowing the hearer to recover this information. The implicit argument is then similar in

1 Sentences with quantificational phrases constitute an exception to this general observation, due to quantifier scope effects. Compare the sentences in (i-a) and (i-b), adapted to EP from Chomsky (1965, 224):

(i) a. Todos aqui falam pelo menos duas línguas.
all here speak Prep+Det least two languages
"Everyone here speaks at least two languages."
b. Pelo menos duas línguas são faladas por todos aqui.
Prep+Det least two languages Aux spoken by all here
"At least two languages are spoken by everyone here."

The sentences in (i-a) and (i-b) do not have the same interpretation. In fact, (i-a) may be paraphrased as in (ii-a), and (i-b) as in (ii-b).

(ii) a. Para cada pessoa aqui, há pelo menos duas línguas que
for each person here there are Prep+Det least two languages that
ela fala.
she speaks
"For each person here, there are at least two languages that they speak."
b. Há pelo menos duas línguas que todos aqui falam.
there are Prep+Det least two languages that all here speak
"There are at least two languages that everyone here speaks."

interpretation to the QP *alguém* "someone". Compare the long passive in (4-b) with the short passive in (14).

(14) Os candidatos já foram entrevistados.
the candidates already Aux interviewed
"The candidates have already been interviewed."

Some interpretive and syntactic evidence has favoured the idea that the verb's external argument in short passives is syntactically represented, despite not being overtly expressed (but see counterarguments from Bhatt & Pancheva, 2006). First, short passives show the disjoint reference effect, that is, they disallow co-reference between the derived subject and the understood Agent (Baker, Johnson, & Roberts, 1989; Lees & Klima, 1963; Postal, 1971; Williams, 1987; Zubizarreta, 1985). In other words, in short passives the subject may not be both the Agent and the Theme of a potentially reflexive predicate (Kratzer, 2000). Hence, the sentence in (15-a) cannot be interpreted as in (15-b), and the implicit Agent cannot be realized as a reflexive anaphor in a *by*-phrase (15-c). The examples below were adapted to EP from Baker et al. (1989, 224-227).

(15) a. O João foi barbeado.
the João Aux shaved
"João was shaved."
b. O João barbeou-se.
the João shaved+cl.refl
"João shaved himself."
c. *O João foi barbeado por si mesmo.
the João Aux shaved by himself
"João was shaved by himself."

Second, short passives allow anaphors with arbitrary interpretation (Baker et al., 1989; Guasti, 2002). In (16), the anaphoric expression *si mesmo* "oneself" must be bound in accordance with Principle A of the binding theory. The example below was adapted to EP from Guasti (2002, 247).

(16) A comida nunca deve ser servida apenas para
the food never should Aux served only for
si mesmo.
oneself
"Food should never be served only for oneself."

Thirdly, short passives allow agent-oriented adverbs (17), control into purpose clauses (18) and instrumental PPs (19) (Burzio, 1981; Jackendoff, 1972; Manzini, 1980, 1983; Marantz, 1984, among others).[2] In this respect, short passives differ from unaccusative constructions, which do not have an agentive component —see the contrasts below.

(17) a. O navio foi afundado propositadamente.
the ship Aux sunk on purpose
"The ship was sunk on purpose."
b. *O navio afundou propositadamente.
the ship sank on purpose
"The ship sank on purpose."

(18) a. O navio foi afundado para cobrar o seguro.
the ship Aux sunk to collect the insurance
"The ship was sunk to collect the insurance."
b. *O navio afundou para cobrar o seguro.
the ship sank to collect the insurance
"The ship sank to collect the insurance."

(19) a. O navio foi afundado com explosivos.
the ship Aux sunk with explosives
"The ship was sunk with explosives."
b. *O navio afundou com explosivos.
the ship sank with explosives
"The ship sank with explosives."

It has also been noted that passives of some verbs (e.g., *construir* "build", *desenhar* "desenhar", *cozinhar* "cook", and *criar* "create, raise"), take obligatory *by*-phrases or other elements, namely adjuncts of time, place, manner or purpose (Grimshaw, 1990; Grimshaw & Vikner, 1993). The examples below were adapted from Grimshaw and Vikner (1993, 143).

(20) a. Esta casa foi construída *(por um arquitecto
this house Aux.event built by an architect
francês).
french

2 But see Zubizarreta (1985) and Williams (1974, 1985) for a discussion on control into purpose clauses in the passive. Specifically, Williams (1974, 1985) argued that some examples suggest that control into purpose clauses does not require the antecedent to be syntactically represented (e.g., *Grass is green to promote photosynthesis*). See also Bhatt and Pancheva (2006) for an overview of the literature and empirical facts on implicit arguments.

"This house was built by a French architect."

b. Esta casa foi construída *(em 1987/ em um
this house Aux.event built in 1987 in one
mês/ num bairro problemático/ com muita
month in+a neighbourhood problematic with much
dificuldade).
difficulty
"This house was built in 1987/ in one month/ in a bad neighbourhood/ with great difficulty."

Grimshaw and Vikner (1993) pointed out that the verbs that present this property are a subset of the aspectual class of accomplishments (or culminated processes). These are verbs that have a complex, two-part event structure, formed by an activity (or process) sub-event and a state sub-eventuality, which results from the activity sub-event. Crucially, the verbs that have obligatory *by*-phrases or adjuncts are verbs of creation: the Theme comes into existence or goes through a change of state that is tantamount to creation as a result of the event. Grimshaw and Vikner (1993) refer to these verbs as "constructive accompliments", as opposed to "non-constructive accomplishments", which do not require obligatory *by*-phrases or adjuncts in the passive. Non-constructive accomplishments include verbs of destruction (e.g., *destroy*, *demolish*) and verbs that involve neither the creation or the destruction of the Theme argument (e.g., *transcribe*, *record*). Grimshaw and Vikner argued that for constructive accompliments the Theme does not exist, in the relevant sense at least, until the entire event has taken place, whereas for non-constructive accomplishments the Theme is involved from the beginning and participates in the activity sub-event of the verb. Under the assumption that participating argument "identifies" a sub-event, the Theme argument of non-constructive accomplishments identifies both the activity and result state, whereas the Theme argument of constructive accomplishments identifies only the result state. Thus, the requirement of a *by*-phrase or adjunct in passives of constructive accomplishments arises from the need to identify the activity sub-event, as the Theme argument participates only in the result state sub-eventuality. Thus, the obligatoriness of *by*-phrases or adjuncts in the verbal passive is predicted by the aspectual properties of predicates, in particular by event structure.

Grimshaw and Vikner (1993) also noted that, with some of these verbs, the progressive may also rescue such passives, without a *by*-phrase or an adjunct.

(21) A casa está a ser construída.
the house Aux Asp Aux built
"The house is being built."

Following suggestions from Bach (1981), the authors suggested that this is because the progressive turns the whole accomplishment into a state. Alternatively, following Vikner (1986), it may be said that the progressive creates a process (i.e., an activity). Either way, the progressive turns a complex event structure into a simple event one, and there is no need to identify two sub-events.

Some syntactic and semantic restrictions apply on the verbs that may passivize in EP. First, only participles of verbs with direct internal arguments, either transitive or ditransitive, may occur in the passive.[3] Thus, unaccusative verbs (22-a) and unergative verbs (22-b), even when they occur with cognate objects (22-c), cannot form verbal passives in EP. The examples below are from Duarte (2003, 529).

(22) a. *O telhado foi caído (pelo vendaval).
the roof Aux fallen by+the strong wind
"The roof was fallen (by the strong wind)."
b. *O João foi tossido (pelo fumo).
The João Aux coughed by+the smoke
"The João was coughed (by the smoke).
c. *Foram choradas lágrimas de raiva pela Maria.
Aux cried tears of anger by+the Maria
"Tears of anger were cried by Maria."

3 In this respect, EP patterns with English and differs from languages such as Dutch and German, which allow passivization of unergative verbs (i) (Baker et al., 1989; Jaeggli, 1986; Shannon, 1992). The examples are from Jaeggli (1986, 595).

(i) a. Er wordt gefloten.
it was whistled
"There was whistling." *Dutch*
b. Es wurde bis spät in die Nacht getrunken.
it was till late in the night drunk
"Drinking went on till late at night." *German*

Moreover, verbs that select only indirect complements generally cannot passivize in EP (23)-(24). The examples below are adapted from Duarte (2003, 529).

(23) a. O Pedro telefonou ao João.
the Pedro phoned PREP+the João
b. *O João foi telefonado (pelo Pedro).
the João Aux phoned by+the Pedro

(24) a. Os críticos gostaram do espectáculo.
the critics liked PREP+the show
b. *O espectáculo foi gostado (pelos críticos).
The show was liked by+the critics.

There are, however, some exceptions to this rule (e.g., *obedecer* "obey", *pagar* "pay" and *responder* "answer"), as illustrated by the sentences in (25)-(26) (Duarte, 2013; Peres & Móia, 1995).

(25) a. Os manifestantes obedeceram à ordem.
the protesters obeyed Prep+the order
"The protesters obeyed the order."
b. A ordem foi obedecida pelos manifestantes.
the order Aux obeyed by+the protesters
"The order was obeyed by the protesters."

(26) a. A administração ainda não pagou aos
the administration still Neg pay Prep+the
trabalhadores.
workers
"The administration still hasn't payed the workers."
b. Os trabalhadores ainda não foram pagos pela
the workers still Neg Aux payed by+the
administração.
administration
"The workers still haven't been payed by the administration."

Moreover, the restrictions on passivization of verbs with prepositional objects seem to vary widely across speakers. Estrela (2011), in an analysis of written production by students enrolled in university courses, found instances of non-canonical passives with indirect transitive verbs (e.g., *reflectir em* "reflect on", *esbarrar com* "bump into", *prescindir de*

"dispense with", *optar por* "opt to"). Sentences of this type are also found in corpus data and journalistic texts in Catalan (Crespí, 2017).

Pseudo-transitive verbs that express quantitative values of physical or abstract entities, in scales of weight (*pesar* "weight"), measure (*medir*, "measure"), price (*custar* "cost", *valer* "be worth"), time (*durar* "last"), etc., also exclude the passive (27-b). The object of a pseudo-transitive sentence is not truly a direct object, as shown by the fact that it cannot be replaced with an accusative clitic (27-c) (Duarte, 2003, 2013).

(27) a. O João pesa agora 85 quilos.
the João weights now 85 kilos
"João now weights 85 kilos."
b. *85 quilos são agora pesados pelo João.
85 kilos Aux now weighted by+the João
"85 kilos are now weighted by João."
c. *O João pesa-os agora.
the João weights+CL.Acc now
"the João weights them now."

Light verbs with Goal external arguments also disallow passivization. See the contrast between (28-a), with an Agent external θ-role, and (28-b). These examples are from Duarte (2003, 530).

(28) a. A sova foi dada por três meliantes armados.
the beating Aux given by three delinquents armed
"The beating was given by three armed delinquents."
b. *A sova foi apanhada pelo refém que ousou
the beating Aux caught by+the hostage that dared
prostestar.
protest.Inf
"The beating was got by the hostage that dared to protest."

Regarding the aspectual properties of verbs, restrictions apply on the passivization of stative verbs. Thus, possession statives (e.g., *ter* "have", *possuir* "possess", *revelar* "reveal, show", *demonstrar* "show") disallow the verbal passive (29) (Duarte, 2003, 2013).[4]

4 When verbs such as *revelar* "reveal, show" and *apresentar* "present" are used in their non-stative sense, the verbal passive is allowed:

(i) a. Os detalhes da investigação foram revelados hoje.
the details of+the investigation Aux revealed today
"The details of the investigation were revealed today."

(29) a. *A casa de férias é tida pelo João.
the house of vacation Aux had by+the João
"The vacation home is had by João."
b. *Muita sensatez foi revelada pela Sara.
a lot of sense Aux shown by+the Sara
"A lot of sense was shown by Sara."
c. *Muitos erros eram apresentados pelo artigo.
many errors Aux presented by+the article
"Many errors were presented by the article."

Capacity verbs also disallow verbal passives. These are verbs that, in an active transitive sentence, take a Locative argument as subject and a Theme argument as direct object (e.g., *conter* "contain", *comportar* "comprise", *compreender* "comprehend, include", *incluir* "include") (Duarte, 2003, 2013).

(30) a. *Uma piscina olímpica era comportada pelo
a pool Olympic Aux comprised by+the
complexo.
complex
"An Olympic pool was comprised by the complex."
b. *Vários erros eram contidos pelo relatório.
several mistakes Aux contained by+the report
"several mistakes were contained by the report."

Some psychological verbs, including epistemic verbs (31-a), verbs of emotion (31-b), constitute an exception to the ban on stative verbs from the passive (Duarte, 2003, 2013). This is relevant for the present work, namely due to previous findings on the acquisition of the passive showing verb type asymmetries and to contemporary accounts of these asymmetries (see Chapter 3).

(31) a. As aplicações da tufa na construção eram
the applications of+the tuff in+the construction Aux
largamente conhecidas pelos romanos.
widely known by+the Romans
"The applications of tuff in construction were widely known by the Romans."

---

b. As testemunhas foram apresentadas pelo advogado de defesa.
the witnesses Aux introduced by+the attorney of defense
"The witnesses were introduced by the defense attorney."

b. Esse grupo terrorista era temido por todos.
that group terrorist Aux feared by all
"That terrorist group was feared by everyone."

It has been shown that, in adult grammar, verbal passives carry higher processing costs than actives (Ferreira, 1994, 2003) and than adjectival passives (Lima Júnior & Corrêa, 2015). This effect has typically been attributed to reanalysis of the sentence-initial DP as the Theme argument rather than the Agent (Ferreira, 2003; Huang, Zheng, Meng, & Snedeker, 2013). Contra this account, research on the processing of verbal passives by adult speakers of BP suggested that the effect is not necessarily due to this type of reanalysis, as it is also seen with inanimate derived subjects (Lima Júnior & Corrêa, 2015). This result does not exclude, however, that the higher processing cost associated with verbal passives may be compounded by animacy, prototypicality and concreteness effects, properties which are compatible with Agents (Ferreira, 1994) and tend to be associated with the grammatical subject position (Bates & MacWhinney, 1982; Bock, 1986a; Bock & Warren, 1985; Kelly, Bock, & Keil, 1986).

Given the higher processing cost it carries, and if it is the case that, generally speaking, the active and the verbal passive may be used to describe the same situation, why and when do speakers use the verbal passive? The verbal passive typically describes a change of state, place or possession undergone by the internal argument of the main verb. Use of the passive is determined by pragmatic and discourse factors. When the internal argument of the main verb is the topic of discussion, and when the external argument is unknown, unimportant or easily recoverable from the discursive and situational context, a short passive may be used felicitously. This is illustrated by the sentences in (32), adapted from Pullum and Donaldson (2015).

(32) a. O paciente foi diagnosticado com um tipo raro
the pacient Aux diagnosed.PART with a type rare
de cancro.
of cancer
"The patient was diagnosed with a rare form of cancer."

b. O Presidente John F. Kennedy foi assassinado
the president John F. Kennedy Aux assassinated.PART
em 1963.
in 1963
"President John F. Kennedy was assassinated in 1963."

The long passive, on the other hand, focuses the external argument, which often constitutes new information. In fact, an information structure constraint applies on the use of the long passive in lieu of the active: the material in the *by*-phrase should be either newer or no older than the material in subject position. See the contrasts in (33) and (34), also adapted from Pullum and Donaldson (2015).

(33) a. Viste as notícias sobre o YouTube? Foi
saw.2S the news about the YouTube Aux
comprado pela Google!
bought.PART by+the Google
"Did you see the news about YouTube? It was bought by Google!"

b. #Viste as notícias sobre a Google? O YouTube foi
saw.2S the news about the Google the YouTube Aux
comprado por eles!
bought.PART by them
"Did you see the news about Goggle? YouTube was bought by them!"

(34) a. Um homem entrou no bar, e pediu ao
a man entered in+the bar and asked the
camareiro: 'Traga-me uma cerveja Sagres.' Então,
waiter bring+Cl.1S.Dat a beer Sagres so
a Sagres foi-lhe servida pelo
the Sagres Aux+Cl.3S.dat served.PART by+the
camareiro.
waiter
"A man walked into the bar, and asked the waiter: 'Give me a Sagres beer.' So, a Sagres beer was served to him by the waiter."

b. #Um homem entrou no bar. Uma cerveja Sagres
a man entered in+the bar a beer Sagres
foi pedida por ele.
Aux ordered.PART by him
"A man walked into the bar. A Sagres beer was ordered by him."

In (33-a), the material in the *by*-phrase is newer than that in subject position, whereas in (34-a) both DPs denote old information. Thus, both sentences are felicitous long passives. Conversely, in (33-b) and

(34-b), the material in the *by*-phrase is older than that in subject position. This renders the passive infelicitous.

According to Keenan and Dryer (2007), the passive may be considered a foregrounding construction, compared with the syntactically unmarked and pragmatically neutral active. That is, the passive may be used to foreground the verb's internal argument, which is not usually presented as "topical" in the active. In this respect, the passive is similar to topicalization structures (35-b).

(35) a. Nós ainda não fomos a Londres.
we yet Neg go.1P to London
"We haven't gone to London yet."
b. A Londres, nós ainda não fomos.
to London, we yet Neg go.1P
"To London, we haven't gone yet."

However, the passive seems to be a weaker foregrounding construction than topicalization structures. Thus, in (35-b) *Londres* is more of a topic than *nós*, which in (35-a) occupies the subject position (i.e., it is an unmarked topic, according to Keenan & Dryer, 2007). Conversely, in a sentence like *Os candidatos já foram entrevistados* "The candidates have already been interviewed", *os candidatos* is a topic to the same extent as the subject of the corresponding active, *A Ana já entrevistou os candidatos* "Ana has already interviewed the candidates" (Keenan & Dryer, 2007).

The passive may also be used to maintain discourse continuity: when particular relevance is given to a referent (the discourse topic), speakers subsequently tend to place it in the highest hierarchical position available in the sentence (see Lima Júnior, Corrêa, & Augusto, 2018, and references therein).

Finally, short passives have consistently been found to be more frequent than long passives in adult speech. For instance, Biber, Johansson, Leech, Conrad, and Finnegan (1999) and Wanner (2009) claimed that the short passive is more common in English, both in spoken and written production. The same was seen in Portuguese school textbooks (Correia, 2003 *apud* Estrela, 2013).

2.2 ADJECTIVAL PASSIVES

Adjectival passives in EP, as in other Romance languages and Germanic languages such as Dutch, German and English, share with

verbal passives the property that their subject corresponds to the object of the active verb, which is a past participle in the passive. However, unlike English, EP has one verbal passive auxiliary (*ser*) and two adjectival passive auxiliaries (*estar*, *ficar*). That is, in EP, verbal passives without a *by*-phrase may be distinguished from adjectival passives by auxiliary selection, as shown by the examples in (36). Duarte and Oliveira (2010a, 2010b) argued that choice of auxiliary in EP adjectival passives reflects the tripartite participle typology proposed for English by Embick (2004): *ser* typically combines with eventive participles to form verbal passives (36-a), *estar* with stative participles to form stative adjectival passives (36-b), and *ficar* with resultative participles to form resultative adjectival passives (36-c) (see Section 2.4.1).[5]

(36) a. O cão foi aleijado.
the dog Aux.event hurt
"The dog was hurt." *Verbal passive*

b. O cão estava aleijado.
the dog Aux.stative hurt
"The dog was hurt." *Stative adjectival passive*

c. O cão ficou aleijado.
the dog Aux.result hurt
"The dog got hurt." *Resultative adjectival passive*

Regarding interpretation, verbal passives and resultative adjectival passives describe different phases of dynamic situations: verbal passives focus the event, which is usually a change of state, place or possession undergone by the internal argument, whereas resultative adjectival passives focus the result state brought about by a change of state, place or possession. Stative adjectival passives, unlike resultative adjectival passives, describe pure states, in the sense that they do not contain an eventive component related to a change of state, place or location that brings about this state (Duarte, 2013; Duarte & Oliveira, 2010a, 2010b).

Besides auxiliary selection and interpretive differences, adjectival passives present several properties that set them apart from verbal passives. Namely, participles in adjectival passives show some prop-

5 Different auxiliaries for verbal and adjectival passives are also found in German (*werden* and *sein*), as well as in Spanish and Catalan (*ser* and *estar*). In Italian, short passives with the auxiliary *essere* are ambiguous between adjectival and verbal passive readings, whereas passives with the auxiliary *venire* are always unambiguously verbal (Volpato et al., 2016).

erties associated with adjectives (see, among others, Wasow, 1977 and Levin & Rappaport, 1986 for English, as well as Santos, 1999, Duarte & Oliveira, 2010b and Mendes, 1994, 2001 for EP).

Participles in adjectival passives, but not those in verbal passives, may be prefixed with negative *i(n/m)-*, as shown by the contrast between (37) and (38). The adjectival passives in (37) are formed with participles with the negative prefix *i(n/m)-*, which do not correspond to any EP verb (**indeterminar*, **inacabar*). That is, negative *i(n/m)-* attaches only to adjectives. The examples were adapted from Duarte (2003, 534).[6]

(37) a. A soma ainda está indeterminada.
the sum still Aux.state undetermined
"The sum is still undetermined."

b. A escultura ficou inacabada.
the sculpture Aux.result unfinished
"The sculpture is unfinished."

(38) a. *A soma foi indeterminada pelo empreiteiro.
the sum Aux.event undetermined by+the contractor
"The sum was undetermined by the contractor."

b. *A escultura foi inacabada pelo artista.
the sculpture Aux.event unfinished by the artist
"The sculpture was unfinished by the artist."

Participles in adjectival passives, similarly to adjectives and unlike verbs, allow diminutive suffixes (Duarte, 2003, 2013). This is illustrated by the contrast between the adjectival passives in (39) and the verbal passives in (40). These examples are adapted from Duarte (2003, 534).

(39) a. A casa está limpinha.
the house Aux.state clean.Dim
"The house is clean."

b. O João ficou assustadinho com a notícia.
the João Aux.result frightened.Dim with the news

6 Similarly, English participles with the negative preffix *-un* (e.g., *unopened*, *unshaven*, *unmarked*, and *untouched*) are taken to be unambiguously adjectival, as negative *un-* attaches to adjectives (e.g., *unfriendly*, *unhappy*, *unspectacular*) but not to verbs (Siegel, 1973 *apud* Levin & Rappaport, 1986). Adjectival participles in English, but not verbal participles, may also occur as complements to verbs such as *seem*, *remain*, *sound*, and *look* (as in *The door remained closed*) and as prenominal modifiers (Fabb, 1984; Levin & Rappaport, 1986; Wasow, 1977).

"João was frightened with the news."

(40) a. *A casa foi limpinha (pelo João).
the house Aux clean.Dim by+the João
"The house is clean (pelo João)."
b. *O João foi assustadinho (pela notícia).
the João Aux.event frightened.Dim by+the news
"João was frightened (by the news)."

Participles in adjectival passives may be coordinated with an adjective (41), whereas participles in verbal passives may not (42). The examples below are from Duarte (2003, 442).

(41) a. O caldo ficou perfumado e saboroso.
the broth Aux.result fragrant.Part and tasty.Adj
"The broth was fragrant and tasty."
b. Os museus de Bagdade estavam destruídos e
the museums of Baghdad Aux.state destroyed.Part and
vazios.
empty.Adj
"The museums of Baghdad were destroyed and empty."

(42) a. *O caldo foi perfumado e saboroso.
the broth Aux fragrant.Part and tasty.Adj
"The broth was fragrant and tasty."
b. *Os museus de Bagdade foram destruídos e
the museums of Baghdad Aux destroyed.Part and
vazios.
empty.Adj
"The museums of Baghdad were destroyed and empty."

The participle in the adjectival passive may take degree modifiers (43-a), unlike the participle in the verbal passive. However, it has been observed that the adverb *muito* may modify eventive participles, although this seems to be subject to variation (43-b)-(43-c) (Mendes, 1994, 2004).[7]

7 But see also the examples in (i):

(i) a. Os testes estão *(muito) corrigidos.
the tests Aux.state very corrected
"The tests are (very) corrected."
b. O almoço está *(muito) cozinhado.
the lunch Aux.state very cooked
"The lunch is (very) cooked."

(43) a. Ele está/ficou muito assustado com a
he Aux.state/Aux.result very frightened with the
notícia.
news
"He's very frightened with the news."
b. Este modelo foi muito vendido no ano
this model Aux.event very sold in+the year
passado.
last
"This model sold well last year."
c. *Cartago foi muito destruída pelos Romanos.
Carthage Aux.event very destroyed by+the Romans
"Carthage was very destroyed by the Romans."

Another property that sets the adjectival passive apart from the verbal passive is that the former may be formed with participles derived from unaccusative verbs. That is, adjectival participles, unlike verbal passive participles, are not subject to the restriction that the base verb must be a true transitive verb. See the contrast in (44), adapted from Duarte (2003, 535).

(44) a. A hortênsia estava/*foi florida.
the hydrangea Aux bloomed
"The hydrangea was in bloom."
b. A vítima ficou/*foi desmaiada.
the victim Aux fainted
"The victim was fainted."

Adjectival passives differ from verbal passives in that they do not freely allow *by*-phrases, agent-oriented adverbs, purpose clauses and instrumental PPs, that is, the occurrence of these elements in adjectival passives is restricted (45).

(45) a. *O almoço estava/ficou feito pela Maria.
the lunch Aux.state/Aux.result made by+the Maria
"The lunch was made by Maria."
b. *O espelho estava/ficou partido
the mirror Aux.state/Aux.result broken
propositadamente.
on purpose
"The mirror was broken on purpose."

c. *O desenho estava/ficou emoldurado para
the drawing Aux.state/Aux.result framed to
dar de presente.
offer Prep present
"The drawing was framed to offer as a present."

d. *O jardim estava/ficou regado com uma
the garden Aux.state/Aux.result watered with a
mangueira.
hose
"The garden was watered with a hose."

These properties have favoured the view that the participles in adjectival passives have been re-categorized as adjectives, and enter the derivation as such (i.e., that they are formed in the lexicon). However, recent literature has pointed out that adjectival passives may allow some types of *by*-phrases, agent-oriented adverbs, purpose clauses and instrumental PPs, and that the occurrence of these elements in the adjectival passive is more systematic and widespread than previously noted. Such data has been reported for German (Alexiadou, Gehrke, & Schäfer, 2014; Anagnostopoulou, 2003; Gehrke, 2011, 2012, 2013, 2015; Kratzer, 2000; Maienborn, 2009, 2011; Schlücker, 2005), English (Bruening, 2014; McIntyre, 2013), Hebrew (Doron, 2013; Meltzer-Asscher, 2011) and Spanish (Bosque, 2014; García-Pardo, 2017; Gehrke & Sánchez-Marco, 2012). The examples in (46) show that these constructions are also observed in Portuguese.

(46) a. Os acessos estavam bloqueados pelos grevistas.
the entrances Aux.state blocked by+the strikers.
"The entrances were blocked by the strikers.

b. A casa estava cuidadosamente decorada.
the house Aux.state carefully decorated
"The house was carefully decorated."

c. A porta ficou aberta para arejar a sala.
the door Aux.result open to air the room
"The door was open to air the room."

d. O exercício ficou corrigido com caneta azul.
the exercise Aux.result corrected with pen blue
"The exercise was corrected with blue ink."

Thus, adjectival passives allow some types of *by*-phrases, namely those in which the complement of *by* is generic or abstract (47) (Alexiadou

et al., 2014; Gehrke, 2013; Kratzer, 2000; Maienborn, 2011; Meltzer-Asscher, 2011).

(47) a. As Ilhas Selvagens estão protegidas por leis de
the Islands Savage Aux.state protected by laws of
conservação da natureza.
conservation of nature
"The Savage Islands are protected by conservation laws."
b. As novas cláusulas ficaram aceites por todos.
the new terms Aux.result accepted by all
"The new terms were accepted by everyone."

In a study by Gehrke and Sánchez-Marco (2012), a corpus of written Spanish data was searched for verbal passives (with the auxiliary *ser*), adjectival passives (with the auxiliary *estar*) and adjectives with *by*-phrases. The frequency counts obtained with this search showed that adjectival passives with *by*-phrases do not constitute a rare occurrence, in comparison with verbal passives with *by*-phrases. Thus, 8.7% of adjectival passives and 11.7% of verbal passives in the corpus contained a *by*-phrase, whereas only 0.6% of adjectives combined with a *by*-phrase.

However, the *by*-phrases that occurred in adjectival passives tended to show different properties than those in verbal passives. Namely, definite determiners, pronouns, proper names were more frequent in verbal passives than in adjectival passives. Conversely, bare nouns and indefinite determiners were more frequent in adjectival passives than in verbal passives. *By*-phrases in adjectives were similar to *by*-phrases in adjectival passives with regard to the frequency of definite determiners, pronouns, proper names and bare nouns, but the frequency of *by*-phrases with indefinite determiners was lower in adjectives than in adjectival passives. Thus, according to this study, although *by*-phrases in adjectival passives are relatively common, they seem to be of a different type than those in verbal passives and more similar to those in adjectives. Data such as these has favoured a distinction between adjectival participles and adjectives, and an analysis of adjectival passives distinct from that of copula constructions (see Section 2.4.1).

Adjectival passives of atelic location verbs (e.g., *rodear* "surround", *cercar* "surround, encircle", *ladear* "flank", *cobrir* "cover", *seguir* "follow", *preceder* "precede") obligatorily take a non-agentive PP (Bosque, 1999; Duarte, 2003, 2013; Grimshaw, 1990; Grimshaw & Vikner, 1993). With

some of these verbs, the preposition that heads the obligatory locative PP may alternate between *por* "by" and *de* "of" or between *de* "of" and *com* "with" (48).[8]

(48) a. Granada está rodeada *(de/por montanhas).
Granada Aux.state surrounded Prep mountains
"Granada is surrounded by mountains."

b. O cume ficou coberto *(de/com neve).
the summit Aux.result covered of/with snow
"The summit was covered with snow."

c. A aldeia é ladeada *(por uma represa).
the village Aux.state surrounded Prep a dam
"The village is flanked by a dam."

d. Cada capítulo é seguido *(de/por um resumo).
each chapter Aux.state followed of/by a summary
"Each chapter is followed by a summary."

As noted by Grimshaw (1990), these obligatory PPs behave like arguments, and are very different from the obligatory adjuncts described by Grimshaw and Vikner (1993) (see Section 2.1). They are also distinct from the *by*-phrases in adjectival passives described above.

Some verbs in EP show double participle formation, that is, they have an irregular participial form (e.g., *limpo* "clean, cleaned", *submerso* "submerged", *cego* "blind"), alongside the regular form (e.g., *limpado* "cleaned", *submergido* "submerged", *cegado* "blinded"). According to Duarte (2003, 2013), when a verb has two participial forms, it is generally the irregular form that occurs in verbal passives (49).

(49) a. A encomenda foi entregue/*entregada
the package Aux.event delivered.IRG/delivered.RG
pelo carteiro.
by+the postman
"The package was delivered by the postman."

8 When the verb *seguir* "follow" is used in an actional sense, only the preposition *por* "by" is allowed (i) (Estrela, 2013).

(i) O criminoso foi seguido *da/pela polícia.
the criminal Aux.event followed of+the/by+the police
"The criminal was followed by the police."

b. O aluno foi expulso/*expulsado
the student Aux.event expelled.IRG/expelled.RG
da sala de aula.
of+the room of class
"The student was expelled from the classroom."
c. A casa foi totalmente limpa/*limpada.
the house Aux.event completely cleaned
"The house was completely cleaned."
d. O assaltante foi morto/*matado pela polícia.
the burglar Aux.event killed by+the police
"The burglar was killed by the police."

Furthermore, Duarte (2003, 2013) claimed that, when the irregular participle has been or is in the process of being re-categorized as an adjective, the verbal passive disallows the irregular form (50-a), while the stative adjectival passive disallows the regular form (50-b). As for resultative adjectival passives, in some cases it may, and in others it must, take the irregular participle (50-c). The examples below are adapted from Duarte (2003, 442-443).

(50) a. O carro foi submergido/*submerso pela
the car Aux.event submerged by+the
torrente.
stream
"The car was submerged by the stream."
b. O carro está *submergido/submerso na
the car Aux.state submerged in+the
torrente.
stream
"The car was submerged in the stream."
c. O carro ficou submergido/submerso na
the car Aux.result submerged in+the
torrente.
stream
"The car was submerged in the stream."

This generalization, however, does not account for all the facts. First, the acceptability of the regular or the irregular form of the participle in verbal and adjectival passives seems to vary widely across speakers. Second, with at least some of the verbs that show double participle formation, either the irregular or the regular form may combine with *estar* or *ficar*, with interpretive differences between the two. This is

the case of the verb *corrigir* "correct". In (51-a), in which the irregular participial form of the verb (*correcto* "correct") is used, it is asserted that the exercise has been solved correctly. In (51-b), in which the regular participial form of the verb (*corrigido* "corrected") is used, it is not asserted whether the exercise has or not been solved correctly, only that it has been evaluated by someone after being solved.

(51) a. Os exercícios estão/ficaram correctos.
the exercises Aux.state/Aux.result correct
"The exercises are correct."
b. Os exercícios estão/ficaram corrigidos.
the exercises Aux.state/Aux.result corrected
"The exercises are corrected."

As in the case of verbal passives, there are semantic restrictions on the predicates that may occur in adjectival passives. These restrictions are probably due to the aspectual interpretation of these sentences (Duarte, 2003; Mendikoetxea, 1999a, see). Thus, atelic predicates — those belonging to the aspectual classes of activities and states, such as predicates that involve physical contact without a target state and some predicates that describe psychological states— are restricted in the adjectival passive, being allowed only in special contexts (Embick, 2004; Kratzer, 2000).

(52) a. *O cão está pontapeado.
the dog Aux.state kicked
"The dog is kicked."
b. *O autor está muito respeitado pelos seus
the author Aux.state very respected by+the his
pares.
peers
"The author is very respected by his peers."

(53) a. *A cadeira ficou empurrada.
the chair Aux.result pushed
"The chair was pushed."
b. *A sobremesa ficou apreciada por todos.
the dessert Aux.result appreciated by everyone
"The dessert was appreciated by everyone."

Another contrast regards the possibility of the progressive auxiliary *estar (a)*, which appears to be more restricted in resultative adjectival passives than in verbal passives, as shown by the contrasts in (54),

from Duarte (2013, 441). It should be noted that there is some variation across speakers with regard to the acceptability of resultative adjectival passives with the progressive.[9]

(54) a. Quando ouvi o noticiário, os museus de
when heard.1S the news the museums of
Bagdade estavam a ser/*ficar
Baghdad Aux Asp Aux.event/Aux.result
destruídos.
destroyed
"When I heard the news, the museums of Baghdad were being destroyed."

b. Quando a polícia chegou, a vítima do assalto
when the police arrived the victim of+the robbery
estava a ser/*ficar ferida.
Aux Asp Aux.event/Aux.result hurt
"When the police arrived, the victim of the robbery was being hurt."

In addition, stative adjectival passives tend to be ill-formed if the auxiliary is perfective (55-a)-(55-b). Conversely, resultative adjectival passives tend to be ill-formed if the auxiliary is imperfective (55-c), unless the predicate may receive an habitual interpretation (55-d).

(55) a. *A casa já esteve construída em 1987.
the house already Aux.state.prf built in 1987
"The house was already built in 1987."

b. A casa já estava construída em 1987.
the house already Aux.state.imprf built in 1987
"The house was already built in 1987."

9 Some of these forms are fully grammatical, as shown by the examples in (i), which were kindly provided by Maria Lobo (p.c.). In these examples, use of the verbal passive auxiliary *ser* is disallowed or marginal.

(i) a. A casa está a *ser/ficar inundada.
the house Aux Asp Aux.event/Aux.result flooded
"The house is flooding."

b. As janelas estão a *ser/ficar estragadas.
the windows Aux Asp Aux.event/Aux.result damaged
"The windows are getting damaged."

c. A carne está a ?ser/ficar esturricada.
the meat Aux Asp Aux.event/Aux.result burnt
"The meat is getting burnt."

c. ?O trabalho ficava feito.
the work Aux.result.imprf done
"The work was done."

d. Apesar de todos os problemas de organização, o
in spite of all the problems of organization the
trabalho ficava sempre feito.
work Aux.result.imprf always done
"In spite of all the organizational problems, the work was always done."

Unlike English *hear* and *see*, the EP perception verbs *ouvir* and *ver* may form adjectival passives, as shown by the corpora examples in (56)-(58). These are, however, coerced adjectival passives. These constructions may be interpreted as a resultant-state adjectival passives, and thus have a reading that is similar to the perfective, that is, a "job done" or "that's over" interpretation (Kratzer, 2000)). Such an interpretation requires a supporting context (see Section 2.4.1).

(56) (. . .) o que mais irrita e cansa na produção GRP
what most irritates and tires in+the production GRP
é a sensação opressiva de que, ouvido um disco,
is the sensation oppressive of that heard.Part a record
estão ouvidos os próximos dez.
Aux.stative heard.Part the next ten
"What irritates and tires the most about the GRP production is the oppressive sensation that, having listened to one of the albums, you've listened to the next ten."

Corpus CetemPúblico (par=ext621697-clt-92b-2)

(57) Ferreira do Amaral guiou-os até à margem sul,
Ferreira do Amaral guided+cl.3P Prep to+the bank south
para mostrar como vão as obras do outro
to show how go the construction works in+the other
lado do rio, que o lado de cá já estava
side of+the river Comp the side of here already Aux.stative
visto.
seen.Part
"Ferreira do Amaral drove them to the South bank, to show the progress of the works on the other side of the river, as this side had already been seen."

Corpus CetemPúblico (par=ext147729-pol-94a-1)

(58) Para além do passeio de teleférico, já estão
besides of+the ride of cable car already Aux.stative
vistos o Pavilhão da Utopia, o Pavilhão do
seen.Part the Pavilion of+the Utopia the Pavilion of+the
Conhecimento dos Mares e o Pavilhão do
Knowledge of+the Seas and the Pavilion of+the
Futuro.
Future
"Besides the cable car ride, the Utopia Pavilion, the Maritime Knowledge Pavilion and the Pavilion of the Future have already been seen."

Corpus CetemPúblico (par=ext361601-soc-98a-1)

In the case of the verb *ver*, a "job done" or "that's over" interpretation may be facilitated by its polisemy, as this verb may also receive actional, non-perception interpretations (e.g., "verify", "discover"). Thus, in (57) and (58), the verb *ver* may be interpreted as having checked the progression of the construction work. However, in (56) the verb *ouvir* is unambiguously being used as a perception verb, albeit an intentional and agentive one, that is, it is being used as "listen" rather than "hear". In fact, both verbs may be used as actional ("watch", "listen") and non-actional ("see", "hear") perception verbs, and may form adjectival passives such as the ones above when used as actional perception verbs, if the context permits it.

2.3 GB ACCOUNTS OF THE PASSIVE

The traditional view is that verbal passive participles and adjectival passive participles are derived through different mechanisms: verbal participles are derived in the syntactic component, while adjectival participles are generated in the lexicon (e.g., Wasow, 1977). This view was maintained and widely accepted in the GB framework (Chomsky, 1980, 1981).

In standard GB accounts, verbal passives were analyzed as an instance of A-chain formation motivated by the absorption of accusative Case by the passive morpheme *-en/-ed* (e.g., Baker et al., 1989; Jaeggli, 1986; Williams, 1981). Under this analysis, the passive morpheme is assigned the verb's external θ-role, and the internal argument receives

the internal θ-role in its base position. Hence, the grammatical subject position in the verbal passive does not receive a θ-role. In English, this property is attested by passive sentences in which preposing of the internal argument has not occurred, as is the case of (59), from Jaeggli (1986). In this sentence, the subject position position is occupied by an expletive element (*it*), which does not receive a θ-role.

(59) It was believed that the conclusion was false.

As the external θ-role is assigned to an element in the syntactic derivation, it remains syntactically active even when it is not overtly realized in a *by*-phrase. Under this account, differences between short verbal passives, on the one hand, and unaccusative and middle constructions, on the other hand, regarding the acceptability of agent-oriented adverbs, instrumental PPs and purpose clauses were attributed to the presence, in the former, and the absence, in the latter, of the external θ-role (Baker et al., 1989; Jaeggli, 1986).[10]

A crucial property of the verbal passive is that the internal argument of the verb is realized as a subject with nominative Case. In GB analyses, the passive morpheme is assigned not only the external θ-role, but also accusative Case. Because of this, the object DP cannot be Case-licensed in its base position. Thus, it must move to subject position, where it receives nominative Case and triggers verbal agreement on the passive auxiliary (Baker et al., 1989; Jaeggli, 1986). This movement operation is allowed because the subject position is non-thematic, due to absorption of the external θ-role by the passive morpheme.

As noted by Jaeggli (1986), movement of the internal argument is obligatory in English, with the exception of passives with clausal internal arguments, such as (59), given that clauses do not require Case (Chomsky, 1981). In languages such as Italian, Spanish and Portuguese, in which nominative Case may be assigned to a DP within the VP, passives allow post-verbal subjects.

As shown in Section 2.1, the DP in a passive *by*-phrase is interpreted as bearing the external θ-role of the passivized predicate regardless of the particular nature of that θ-role. In GB accounts, it was assumed that the external θ-role of the passivized verb, after being

10 Chomsky (1981) and Marantz (1984), on the other hand, proposed that passive morphology blocks the syntactic realization of the external argument, without altering the lexical representation of the passivized verb. In these accounts, the external argument is not syntactically represented in the passive.

assigned to the passive morpheme, is transmitted to the DP in the *by*-phrase, via a mechanism such as co-indexing (Baker et al., 1989) or percolation of the θ-role (Jaeggli, 1986). Thus, passive *by*-phrases contrast with nominal *by*-phrases, in which the preposition assigns a default Affector/Agent θ-role to its complement (Fox & Grodzinsky, 1998; Jaeggli, 1986). Because the preposition *by* that heads the passive *by*-phrase does not restrict the θ-role of its complement, Zubizarreta (1985) proposed that this is a semantically empty preposition (i.e., a *dummy preposition*), selected only to Case-license the external argument.

Regarding the status of the passive *by*-phrase, Zubizarreta (1985) argued that this element is an adverbial phrase. She argued that it is interpreted like an adverbial, in that it restricts the referential value of the participle's unexpressed external argument, which otherwise receives an indefinite or generic interpretation (depending on the verb and the aspectual properties of the predicate). For instance, in (60) the *by*-phrase *pela polícia* "by the police" restricts the meaning of the Agent of *matar* "kill".

(60) O Pedro foi morto pela polícia.
the Pedro Aux killed by+the police
"Pedro was killed by the police."

Similarly, Grimshaw (1990) argued that the *by*-phrase is an "argument adjunct", that is, an adjunct that is licensed by a suppressed or absorbed external argument.[11]

11 It should be noted, however, that passive *by*-phrases pattern with arguments with regard to extraction from weak islands, such as factive islands (i-b) and extraposed clause islands (ii-b). The examples below are from (Duarte, 2003, 526).

(i) a. Quem lamentas que tenha escrito a carta?
who lament.2S that has seen the letter
"Who do you lament to have written the letter?"
b. Por quem lamentas que tenha sido escrita a carta?
by who lament.2S that has been written the letter
"By who do you lament the letter to have been written?"
c. *Como lamentas que ele tenha escrito a carta?
How lament.2S that he have written the letter
"How do you lament that he wrote the letter?"

(ii) a. Quem é conveniente que critique o artigo?
who is convenient that criticize the article
"Who is it convenient that criticize the article?"
b. Por quem é conveniente que o artigo seja criticado?
by who is convenient that the article is criticized

Agreement in gender and number of the participle with the derived subject, seen in EP and other Romance languages, was attributed to the presence of an additional functional head (the Past Participle Agreement position) to which the internal argument and the passive participle move (see Kayne, 1985 for French and Italian, Belletti, 1990, 1993 for Italian and Colaço & Gonçalves, 1995 for EP).

As for adjectival participles, it was assumed that they involved a change of category, a lexical operation (Bresnan, 1982; Levin & Rappaport, 1986; Williams, 1981, among others). Consider the verb *fechar* "close", which assigns an Agent θ-role and a Theme θ-role. The derivation of the adjectival participle *fechado* was assumed to involve a change of category, the elimination of the external Agent θ-role from the argument structure and the externalization of the Theme θ-role (e.g., Bresnan, 1982; Williams, 1982, but cf. Levin & Rappaport, 1986). The adjectival participle then behaves like a regular adjective, and may freely occur in predicative and attributive position. Under this analysis, the adjectival passive auxiliary is in fact a copula verb, as it combines with an adjective, not with a verb phrase, and adjectival passives reduce to predicative sentences with an adjective. Importantly, in adjectival passives, as opposed to verbal passives, there is no movement of the internal argument to subject position. This is relevant for some accounts of passive acquisition (see Chapter 3).

Because the external θ-role has been eliminated from the argument structure of *fechar* in the lexicon, it cannot be assigned to the passive morpheme. Therefore, the optional *by*-phrase of verbal passives cannot be projected in the case of adjectival passives, as its complement cannot receive a θ-role by transmission: there is no possibility of licensing a *by*-phrase or agent-oriented modification, as by the time the participle enters the syntactic derivation it has lost its Agent role. That is, an analysis along these lines does not account for the occurrence of some types of *by*-phrases and agent-oriented modification in adjectival passives.

"By who is it convenient the that article be criticized?"

c. *Como é conveniente que o João critique o artigo?
How is convenient that the João criticizes the article
"How is it convenient that João criticize the article?"

2.4 CONTEMPORARY ACCOUNTS OF THE PASSIVE

This section begins by focusing two main contemporary lines of inquiry in the syntactic analysis of verbal and adjectival passives. In Section 2.4.1, I briefly survey the participle and passive typologies proposed by Kratzer (1986, 2000) for German and by Embick (2004) for English, as well as the extension to EP of Embick's proposal (Duarte & Oliveira, 2010a, 2010b). Hallman and Kallulli (2013) characterized accounts such as Embick's typology of participles as feature-based approaches, as they derive actives, passives and unaccusatives from different sets of features on the heads that comprise the predicate. In Section 2.4.2, I briefly describe the Smuggling account of the passive proposed by Collins (2005b), as well as subsequent adjustments proposed by Gehrke and Grillo (2007, 2009a, 2009b). Following Hallman and Kallulli (2013), the Smuggling account can be characterized as a configurational approach to the passive (as opposed to feature-based approaches), as it assigns distinct underlying structures to actives, passives, and unaccusatives and assumes a strong correspondence between an argument's structural position and its θ-role. Finally, in Section 2.4.3 I describe a recent account of Portuguese verbal and adjectival passives (Lima Júnior & Augusto, 2015, 2017).

2.4.1 *Participle typology*

A line of inquiry on the passive has privileged the articulation of participle typologies, in terms of their semantic properties or in terms of the featural on the heads that comprise the predicate. An influential typology has been the two-way distinction, within adjectival participles, proposed by Kratzer (2000) for German. Verbal passives in German are formed with the auxiliary *werden* "become", while adjectival passives are formed with the auxiliary *sein* "be". Kratzer (2000) argued that German adjectival (*sein*) passives do not constitute a homogeneous class, and proposed two subclasses in accordance with their behaviour with regard to the adverbial expression *immer noch* "still": target state and resultant state passives —see the examples in (61) and (62), from Kratzer (2000, 385-386).

(61) *Target state passives*

a. Die Geisslein sind immer noch hidden.
the little goats are still hidden

b. Die Reifen sind immer noch aufgepumpt.
the tires are still pumped up
c. Der Deckel ist immer noch abgeschraubt.
the list is still screwed off
d. Das Gebäude ist immer noch geräumnt.
the building is still evacuated
e. Die Ausfahrt ist immer noch versperrt.
the driveway is still obstructed

(62) *Resultant state passives*

a. Das Theorem ist (*immer noch) bewiesen.
The theorem is (*still) proven
b. Der Briefkasten ist (*immer noch) geleert.
the mail box is (*still) dried
c. Die Wäsche ist (*immer noch) getrocknet.
the laundry is (*still) dried
d. Die Gäste sind (*immer noch) begrüsst.
the guests are (*still) greeted
e. Die Töpfe sind (*immer noch) adgespült.
The pots are (*still) washep up

The labels "target state" and "resultant state" are borrowed by Kratzer (2000) from Parsons (1990, 234-235), who drew a distinction between the two types of states along these lines: a resultant-state passive denotes a state that holds forever after an event that culminates; this is the state of the event having culminated. A target-state passive, on the other hand, denotes a "typical", independently identifiable state that is true of the Theme/Patient argument of a verb after the event has taken place. As noted by Kratzer (2000), in Nedjalkov and Jaxontov's (1988) terminology, target state passives would be resultatives, and resultant state passives would be perfects.

Hence, a sentence such as *The plate is broken* denotes that the Theme argument (the plate) is in a state that is a typical consequent state of an event of breaking, and a sentence such as *The floor is swept* may mean that at the reference time t, the floor is in a state such that an event of sweeping the floor took place before t (Oliva & Wexler, 2018). Thus, a resultant-state denotes a more complex, derived state than the target-state of a verb such as *break* or *close*.[12]

12 Ramchand (2017) articulated the distinction between target-state and resultant-state participles in the following terms: only verbs that have a result projection (resP) in their base meaning give rise to good target state participles (i.e., without coercion).

Kratzer argued that resultant-state passives may be marginally acceptable with activity verbs. Consider the sentences in (63), from Kratzer (2000, 388): although they sound bizarre out of the blue, they are ameliorated when a supporting context imposes a "job done" or "that's over" interpretation. That is, (63-a) may be felicitous if it is one's job to pet the cat while the neighbour is on vacation, and (63-b) may be felicitous in the context of a factory that produces baby carriages and employs someone to test their wheels by pushing them a few times.

(63) a. Die Katze ist schon gestreichelt.
the cat is already petted
b. Dieser Kinderwagen ist schon geschoben.
this baby carriage is already pushed

While previous analyses standardly assumed that adjectival participles are lexical (i.e., derived in the lexicon), Kratzer (2000) argued that both resultant-state and target-state passives in German can be derived from phrases. This is the case of the resultant-state passive in (64) (from Kratzer, 2000, 388), in which a VP-idiom has been adjectivized, and of the target-state passive in (65-a), which includes a manner adverb (*schlampig* "sloppily") that cannot modify states, as shown by (65-b) (both examples are from Kratzer, 2000, 392). In (65-a), modification of the stem *kämm-* by the adverb *schlampig* must have occurred before stativization, that is, the creation of the target-state participle affected a phrase, rather than a lexical item.

(64) Ihm sind die Leviten gelesen.
he.dat are the Leviticus read
"He was scolded."

(65) a. Die Haare waren immer noch schlampig gekämmt.
the hairs were still sloppily combed
"The hair was still combed sloppily."
b. *Die Haare waren schlampig fettig.
the hairs were sloppily greasy
"The hair was greasy sloppily greasy."

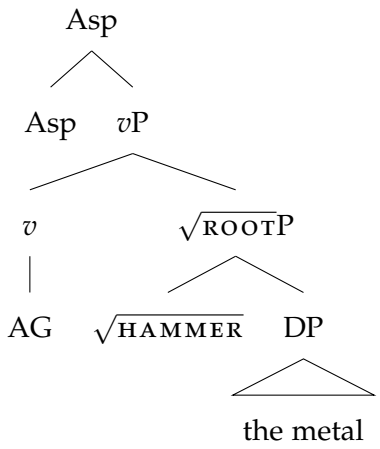
The formation of passives with non-resP verbs, on the other hand, involves coercion, whereby a contextually derived target-state is accommodated, using a null res head. That is, in the case of target-state participles, the verb has res in its lexical specification; in the case of resultant-state participles, the verb does not have res in its lexical specification, and ResP is added constructionally.

Subsequent work by Embick (2004) proposed a tripartite typology of participles for English. Besides eventive participles, which enter the verbal passive construction, Embick made a distinction between two subclasses of adjectival participles: resultative and stative. These three types of passive predicates may be distinguished by two semantic properties, agentivity and eventivity. Eventive participles have an agentive subcomponent that is absent from both subclasses of adjectival participles. Resultative participles share with eventive participles the presence of an eventive subcomponent. This gives rise to the requirement of an event that causes the result state denoted by the resultative participle. Finally, stative participles denote pure states, that is, they have neither an agentive nor an eventive subcomponent.

In Embick's account, couched in the Distributed Morphology framework, stative and resultative participles, like eventive participles, are derived in the syntax. Differences between the syntactic properties and interpretation of the three types of participles are due to differences in the selectional and featural properties of the Aspectual (Asp) and verbalizing (v) heads.

Eventive participles have both eventivity and agentivity. Eventivity is associated with the v head. Thus, in eventive passives, Asp selects a complement headed by a v that bears an [AG] feature. This [AG] feature provides the agentive interpretation and licenses the agentive *by*-phrase —see the initial representation in (66), from Embick (2004, 367), for the eventive passive *The metal is hammered by John*.

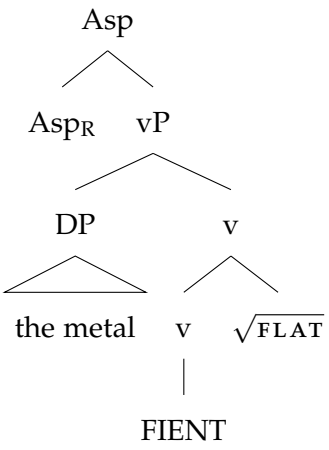
(66)



Resultative participles denote a state that results from a prior event, therefore their derivation must comprise v and its concomitant even-

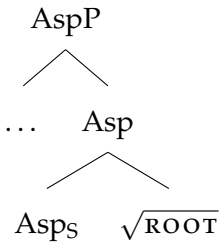
tivity. However, the *v* of a resultative participle cannot be *v*[AG], given that the resultative is not agentive. Rather, resultative Asp (Asp_R) selects a *v* bearing a [FIENT] (fientive) feature, a type of BECOME-operator that denotes a transition event that moves toward a state. Thus, on this proposal a resultative passive such as *The metal is flattened* has the structure represented in (67), from Embick (2004, 374).

(67)



Finally, stative participles have neither eventivity nor agentivity, hence Embick proposed that the *v* head is not present, and stative Asp (Asp_S) attaches directly to the $\sqrt{\text{ROOT}}$ —see the representation in (68), from Embick (2004, 364).

(68)



These three types of participles may be distinguished by several diagnostics. Embick (2004) argued that stative participles, but not resultative participles, may occur as secondary predicates in structures with verbs of creation (e.g., *build*, *create*, *make*) (69). Conversely, resultative participles, but not stative participles, allow modification by manner adverbials (70). Note that, in these examples, the stative participial form (*open*) differs from the resultative participial from (*opened*), as

the verb *open* is one of the few in English that show this morphological distinction. The examples below are from Embick (2004, 357).

(69) a. *This door was built opened.
b. This door was built open.

(70) a. The package remained carefully opened.
b. *The package remained carefully open.

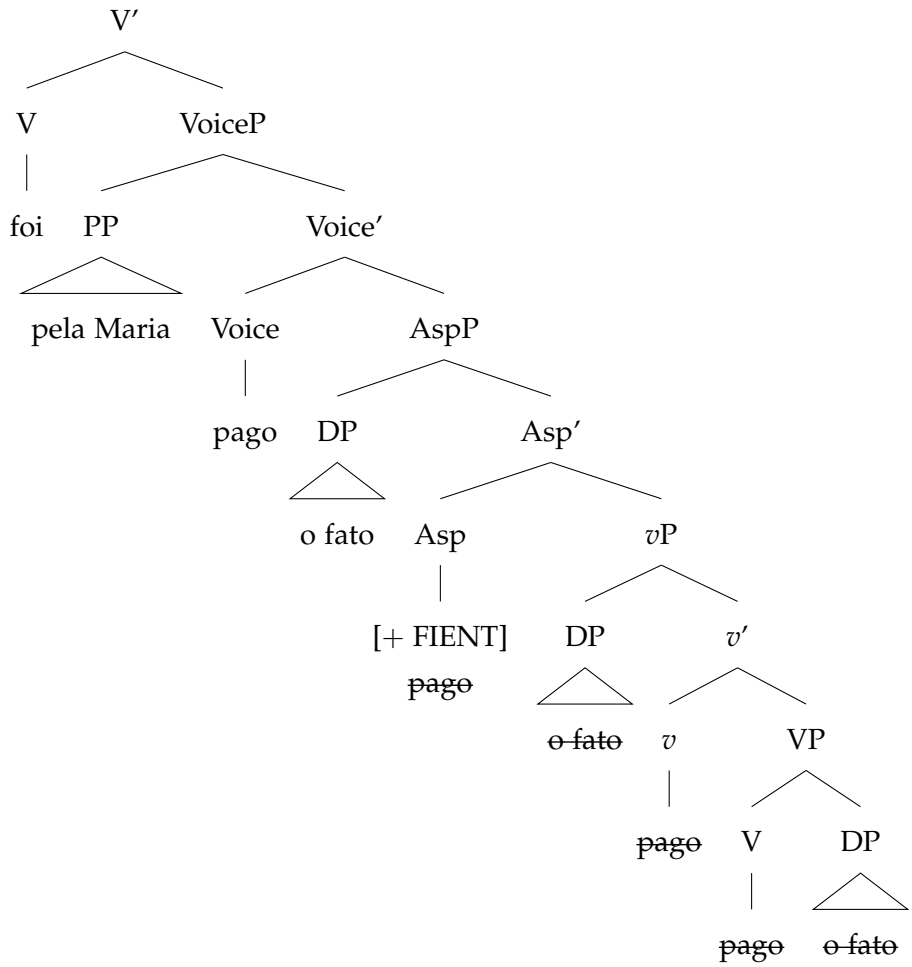
Embick (2004) also argued that passives with *by*-phrases are unambiguously eventive in English, as the *by*-phrase may not be licensed in resultative passives (and by extension in stative passives).

Duarte and Oliveira (2010a, 2010b), following work by Alexiadou and Anagnostopoulou (2008) for Modern Greek, extended Embick's proposal to EP passives. As we saw above, EP has three passive auxiliaries. Duarte and Oliveira (2010a, 2010b) suggested that the tripartite typology of participles is reflected in choice of auxiliary: *ser* selects eventive participles (71-b), *ficar* selects resultative participles (71-b), and *estar* stative participles (71-c). In other words, these different auxiliaries select different functional projections as complements.

(71) a. O espelho foi partido (pelo Pedro).
the mirror Aux.event broken by+the Pedro
"The mirror was broken (by Pedro)."
b. O espelho ficou partido.
the mirror Aux.result broken
"The mirror was broken."
c. O espelho está partido.
the mirror Aux.state broken
"The mirror was broken."

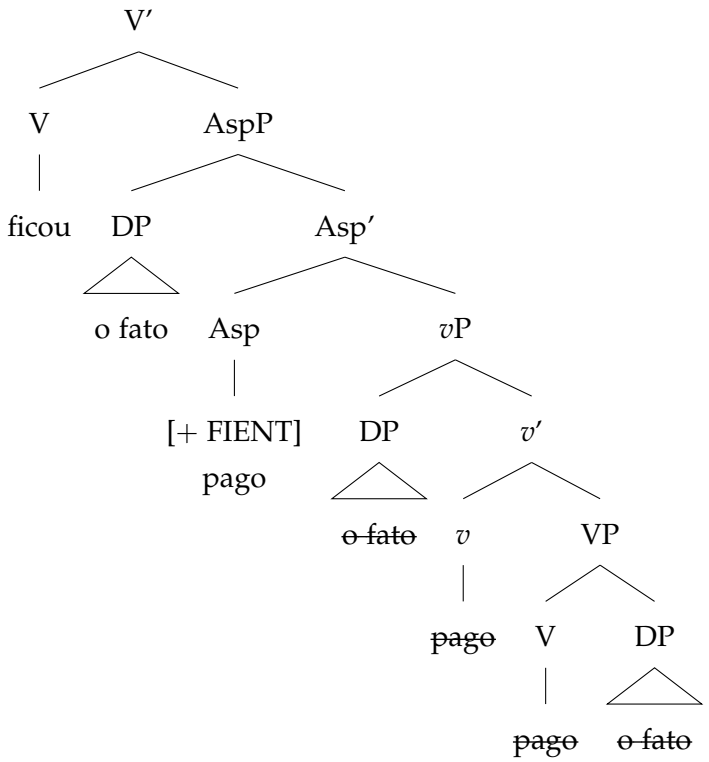
Duarte and Oliveira (2010a, 2010b) argued that the eventive passive auxiliary *ser* selects VoiceP —it is this projection that brings the agentive interpretation associated with verbal passives. Voice, in turn, selects an AspP with the feature [+ FIENT], which is associated with eventivity. Thus, on this account an eventive passive such as *O fato foi pago pela Maria* "The suit was paid by Maria" has the (partial) representation in (72), taken from Duarte and Oliveira (2010a, slide 13).

(72)



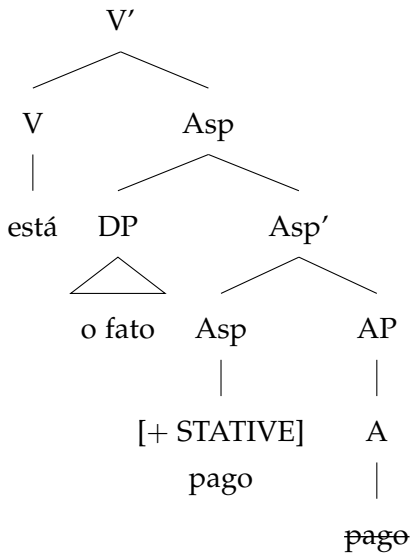
The resultative auxiliary *ficar* takes an AspP with the feature [+ FIENT] as complement, thus accounting for the eventivity seen in resultative adjectival passives. Given that resultatives do not have agentivity, Duarte and Oliveira (2010a, 2010b) assumed that Voice is not present in the derivation. On this account a resultative passive such as *O fato ficou pago* "The suit was paid" has the (partial) representation in (73), from Duarte and Oliveira (2010a, slide 14).

(73)



Lastly, the stative auxiliary *estar* selects an AspP with the feature [+ STATIVE]. Given that stative participles have neither agentivity nor eventivity, Duarte and Oliveira (2010a, 2010b) proposed that neither Voice nor *v* are present in these structures. Thus, on this account a stative passive such as *O fato está pago* "The suit is paid" has the (partial) representation in (74), from Duarte and Oliveira (2010a, slide 15).

(74)



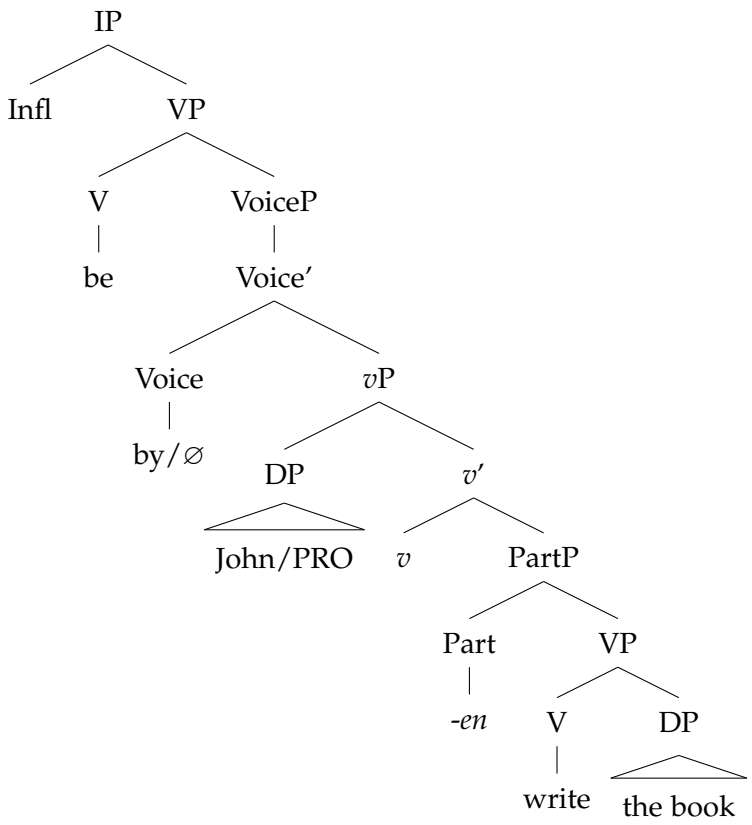
In short, Duarte and Oliveira (2010a, 2010b) argued that EP displays a morphosyntactic reflex of participle typology that is absent from English. Whereas in English short passives may be ambiguous between stative, resultative and eventive readings (depending on the main verb, as some verbs do not allow verbal or adjectival passive readings), in EP there is no ambiguity, as each reading is associated with a specific auxiliary.

2.4.2 *The Smuggling account*

The Smuggling account of the verbal passive, proposed by Collins (2005b), rests on a strict interpretation of the Uniformity of Theta Assignment Hypothesis (UTAH: Baker, 1988). Hence, on this account, the external θ-role of the passivized verb is assigned to Spec of *v*P, as in the active. That is, the external argument in the passive occupies the same underlying position as in an active sentence. Moreover, the passive *by*-phrase is not a constituent. The preposition *by* in fact spells out Voice, which takes the *v*P as its complement. The preposition *by* in the passive *by*-phrase is a dummy preposition, made up only of uninterpretable features. Voice (*by*) checks accusative Case on the external argument in Spec of *v*P —the Case feature of *v* is divorced from *v* and projected as part of Voice in the passive (Collins, 2005b, 96). Given that there is some evidence that the external argument is syntactically represented even when it is omitted (e.g., from

anaphor binding), Collins proposed that, in short passives, a PRO is merged into Spec of *v*P, and Voice is null as PRO does not bear an accusative Case feature. The complement of *v* is a Participle Phrase (PartP), which in turn contains the VP. PartP is headed by the participle morpheme *–en*. On this account, a passive sentence *The book was written (by John)* has the initial representation in (75), from Snyder and Hyams (2015, 345).

(75)

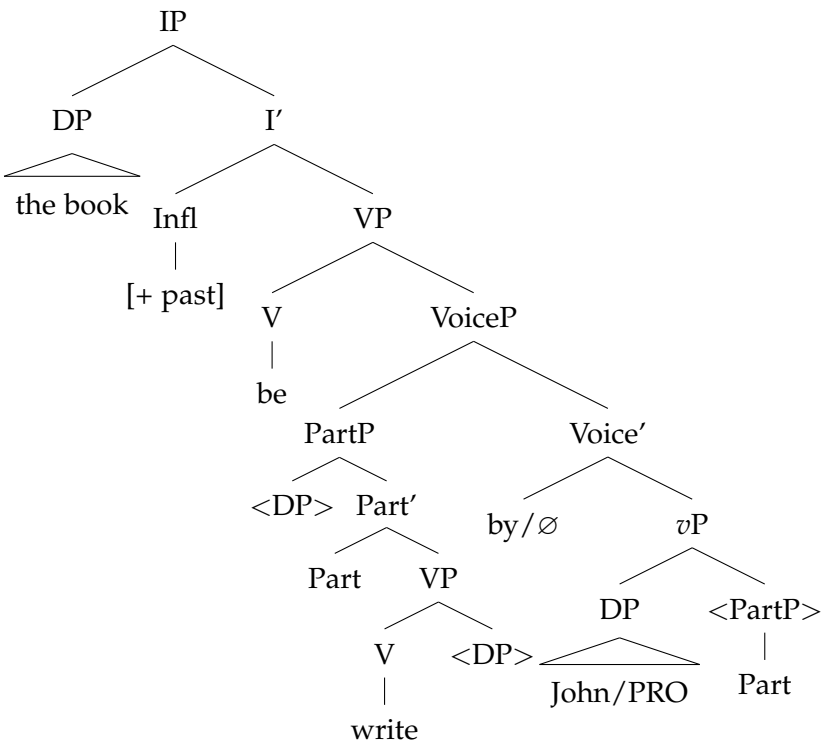


A consequence of this analysis is that the underlying object in a passive must always move across the external argument, whether the *by*-phrase is omitted or not. Hence, raising the internal argument to Spec of IP across Spec of *v*P would violate minimality (Chomsky, 1995; Rizzi, 1990, 2004) and give rise to intervention effects. Collins' proposal is to smuggle the internal argument, within PartP, past the external argument in Spec of *v*P. That is, the internal argument is moved within PartP to a position from which it may move to Spec of IP without incurring in a minimality violation. Smuggling is defined by Collins (2005b, 97) as follows:

> Suppose a constituent YP contains XP. Furthermore, suppose that XP is inaccessible to Z because of the presence of W (a barrier, phase boundary, or an intervener for the Minimal Link Condition and/or Relativized Minimality), which blocks a syntactic relation between Z and XP (e.g., movement, Case checking, agreement, binding). If YP moves to a position c-commanding W, we say that YP smuggles XP past W.

In the verbal passive, V raises and adjoins to Part, thus forming the participle. The internal argument then raises to Spec of Part. Smuggling occurs when PartP moves to Spec of VoiceP. This places the internal argument in a position from which it can move to Spec of IP without giving rise to intervention effects. Subsequent movement of the internal argument to subject position is motivated by Case-checking. Movement of PartP to VoiceP is required in order to license it, i.e., so that uninterpretable features on *-en* are checked by Voice. It also yields the correct word order (*The book was written by John* instead of **The book was by John written*). See the representation in (76), from Snyder and Hyams (2015, 346).

(76)



Crucially, this proposal relies on the assumption that the Freezing Principle, formulated by Müller (1998, 124) as in (77), fails to apply in certain environments. Otherwise, movement of the DP out of PartP, after PartP has already undergone movement, would constitute a violation of the Freezing Principle Collins (2005a, 2005b).

(77) *X [Y . . . < X > . . .] < Y >

In summary, the derivation of the verbal passive in the Smuggling account proceeds as follows:

1. The external argument in the passive occupies the same underlying position as in an active sentence: it is merged into Spec of *v*P. When the external argument is omitted, PRO is merged into this position.

2. The participle morpheme *-en* heads a PartP, which is the complement of *v*.

3. Part takes a VP complement. V raises and adjoins to Part, forming the participle.

4. The participle moves and adjoins Spec of VoiceP.

5. Voice licenses the participle. In a long passive, VoiceP is headed by the dummy preposition *by*. In a short passive, this position is realised as ∅.

6. Movement of PartP smuggles the internal argument past Spec of *v*P to Spec of VoiceP, thus avoiding a minimality violation. Otherwise, the external argument would intervene in raising of the internal argument to subject position.

The Smuggling account of the passive has been criticized on conceptual and empirical grounds (Gehrke & Grillo, 2009b; Kiparsky, 2013; Lima Júnior & Augusto, 2015, 2017; Manzini, 2017). Among other issues, movement of the PartP in the passive is not properly motivated —it is unclear what triggers it and how it is constrained, it overgenerates, and it presents a look-ahead problem. Moreover, the *by*-phrase is not a constituent in this account, despite the fact that it may be extracted —the examples in (78-a) and (78-b) are from Duarte (2016-2017, 2), and the one in (78-c) was adapted from Lima Júnior and Augusto (2015, 69).

(78) a. A: O protocolo foi assinado por todos os
the protocol Aux.event signed by all the
interessados. B: Pelos sindicatos, não foi.
interested by+the unions not Aux.event
"A: The protocol was signed by all parties. B: By the unions, it wasn't."

b. Por quem é que o protocolo foi assinado?
by who is that the protocol Aux.event signed
"By who was the protocol signed?"

c. Foi pelos sindicatos que o protocolo foi
was by+the unions that the protocol Aux.event
assinado.
signed
"It was by the unions that the protocol was signed."

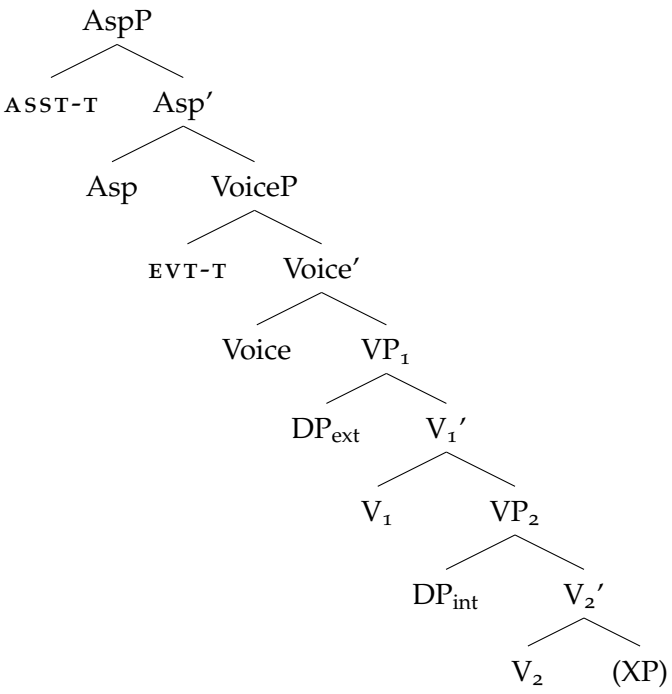
In addition, Voice in Collins' account is a functional category made up only of uninterpretable features, which under minimalist assumptions is undesirable, given that, according to Chomsky (1995), any proposed functional node must be motivated by an interpretable feature relevant at LF (Lima Júnior & Augusto, 2015, 2017). This objection was predicted by Collins (2005b, 95), who claimed that there are heads made up only of uninterpretable features in the grammar.

A subsequent proposal seeks to motivate Smuggling via a semantic requirement. The account proposed by Gehrke and Grillo (2007, 2009a, 2009b) is based on the idea that passivization is an operation on event structure, rather than on argument structure. That is, instead of simply placing the internal argument in subject position and demoting the external argument to an optional *by*-phrase, passivization involves movement of the consequent state sub-event of a structurally complex event to a discourse-related position at the edge of the verb phrase. This position, Voice, is argued by Gehrke and Grillo (2007, 2009b) to be independently needed in actives as well as passives, as it forms the basis for the event time, which is the complement of Asp —in this regard, Gehrke and Grillo (2007, 2009b) followed Demirdache and Uribe-Etxebarria's (2000) approach to tenses and aspects and their representation in the syntax, wherein these are predicates that take temporal arguments.

Following Travis (2000), Gehrke and Grillo (2007, 2009b) assumed a VP shell account for the syntactic representation of the event structure. In this model, an event with a consequent state involves a V_2, which introduces the theme argument (DP_{int}) and the endpoint of the

event, and a V_1, which corresponds to the causing sub-event and introduces the external argument (DP_{ext}). That is, the consequent state is syntactically represented as a lower VP shell with the internal argument in its specifier, whereas the causing sub-event is represented as a higher VP shell with the external argument in its specifier. In a passive, the internal argument is "smuggled" within VP_2 past the external argument in VP_1. A semantic requirement (a kind of topicalizaton) singles out the consequent state and assigns it a feature that triggers movement of VP_2 to Spec of VoiceP, where Voice situates the event time of the clause within the consequent state sub-event (VP_2). Gehrke and Grillo (2009a) speculated that the feature the consequent state is endowed with may be an *aboutness* feature (Rizzi, 2006; Rizzi & Shlonsky, 2007). Thus, according to Gehrke and Grillo (2007, 2009a, 2009b), movement of the lower VP shell to Voice is separated from the subsequent raising of the internal argument to subject position and independently motivated by interface requirements. The initial representation of a passive is shown in (79), from Gehrke and Grillo (2009b, 237).[13]

(79)



13 As stated by Gehrke and Grillo (2009b), in this representation XP denotes further elements, such as PPs or APs, which may be complements of V_2.

This account makes clear predictions regarding which predicates are passivizable and which are not: passivization is possible only with predicates that constitute structurally complex events, particularly those with a consequent state. Following Dowty (1979), Gehrke and Grillo (2007, 2009b) assumed that verbal predicates may be decomposed into the atomic predicates CAUSE, DO and BECOME and combinations of these. Passivizable verbs are those that involve a BECOME predicate, that is, accomplishments and achievements. As noted by Gehrke and Grillo (2009b), event types containing BECOME are associated with change of state predicates, that is, they have a consequent state (adopting Moens and Steedman's 1998 terminology). In these predicates, the BECOME component is associated with the lower VP shell (VP_2), while the higher VP shell (VP_1) is associated with a CAUSE component.

However, some states may also passivize. These do not involve BECOME, and do not have a complex, decomposable event structure (i.e., they are structurally simple). Gehrke and Grillo (2007, 2009b) proposed that, in order to passivize, states require semantic coercion to be re-interpreted as a consequent state. In particular, Gehrke and Grillo (2009b) claimed that some states allow an inchoative reading, that is, of a state having come into existence: the stative *John owns that house* can be coerced into *John has gained ownership of that house*, and *Mary fears bankruptcy* can be coerced into *Mary has come to fear bankruptcy*. Gehrke and Grillo (2009b) proposed that this reading is derived by a type shift from state to achievement, which adds a BECOME component. Thus, only states that may be interpreted as consequent states may passivize.

Contra Gehrke and Grillo (2007, 2009b), it may be argued that it does not seem to be the case that only predicates that have a BECOME component (with or without recourse to semantic coercion) may passivize. In fact, there is evidence that passivized verbs do not necessarily involve a change of state. According to Lima Júnior and Augusto (2015), this is shown by a test of contradiction contrasting what Rappaport Hovav and Levin (2010) categorized as verbs of manner (e.g., *varrer* "sweep") and verbs of result (e.g., *partir* "break"): in the case of the passive with *varrer* "sweep" (80-a), the test does not yield a contradiction, whereas with *partir* "break" (80-b) it gives rise to a contradiction. Thus, it can be argued that only the passive with the verb *partir* "break" involves a true change of state (Beavers, 2011; Beavers & Koontz-Garboden, 2012; Lima Júnior & Augusto, 2015; Rappaport

Hovav & Levin, 2010). The examples below are adapted from Lima Júnior and Augusto (2015, 74).

(80) a. O chão foi varrido, mas ainda está cheio de
the floor Aux.event swept but still is full of
pó.
dust
"The floor was swept, but it is still full of dust."

b. #O prato foi partido, mas ainda está inteiro.
the plate Aux.event broken but still is whole
"The plate was broken but is still in one piece."

2.4.3 *An alternative account of Portuguese passives*

Lima Júnior and Augusto (2015, 2017) proposed an alternative analysis of Portuguese passives. Following Boeckx (1998) and Collins (2005b), they assumed that the derivation of passives must be active-like. They suggested that the verbal passive employs a PassiveP, an alternative to the *v*P of actives. This PassiveP is incapable of assigning accusative Case, which distinguishes it from *v*P, but constitutes a phase. In this regard, Lima Júnior and Augusto followed suggestions from Legate (2003), who argued that passive verb phrases are strong phases, as they pattern with active verb phrases with regard to *wh*-reconstruction effects, parasitic gaps and quantifier raising. In Lima Júnior and Augusto's analysis, the external argument is merged into Spec of PassiveP. This external argument is assumed to be arbitrary PRO, as in Collins' account. In languages such as Portuguese and English, PassiveP imposes a semantic constraint on the external argument, as it has a [trigger] feature that must be associated with the external argument (see also Legate, 2012). This feature may be associated with an Agent, a Cause or a Theme (Cançado, 2002, 2005).

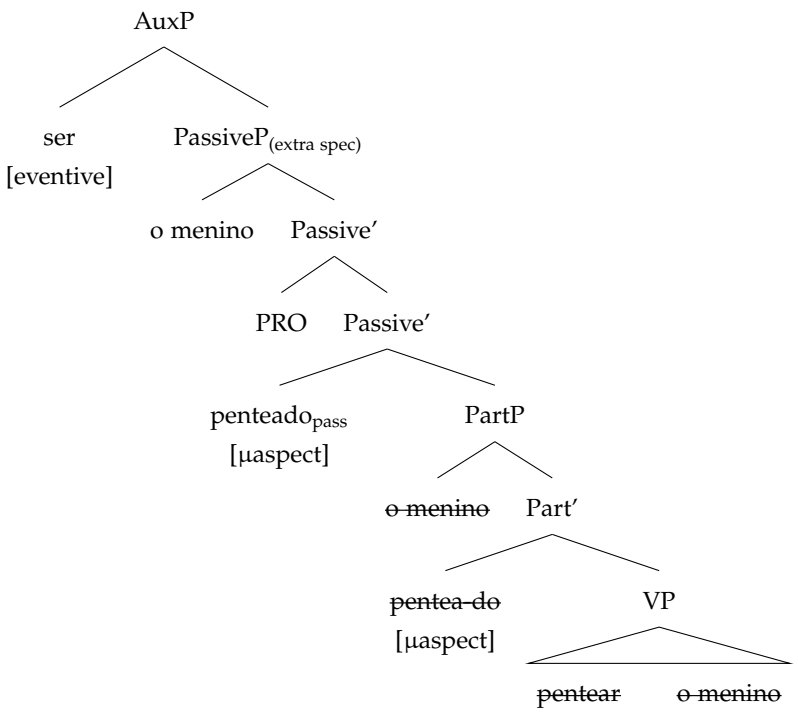
Importantly, because PassiveP is a strong phase, it may project an extra specifier. This provides an escape hatch for the internal argument, from which it may move to Spec of TP, thus satisfying EPP. The internal argument, as it was not accusative Case in its base position, remains active until it reaches Spec of TP, where it is assigned nominative Case. Additionally, Lima Júnior and Augusto (2015, 2017) proposed that the internal argument bears a feature that is valued at subject position. Following Rizzi (2006), Lima Júnior and Augusto argued that the subject position has special discourse properties (e.g.,

quasi-topicality), which could be relevant for motivating raising of the internal argument in the passive.[14] Thus, with Rizzi (2006), Lima Júnior and Augusto assumed that topics and subjects share a common property with regard to the relation between them and the predicate, which is the property of "aboutness". Thus, actives and passives differ crucially in which argument bears an [aboutness] feature.

On this account, the derivation of a short verbal passive such as *O menino foi penteado* "The boy was combed" proceeds as follows: the main verb (*pentear* "comb") is merged with the internal argument (*o menino* "the boy"); V then adjoins to Part, forming the complex V-part (*penteado* "combed") —this complex is [μaspect], as the feature [aspect] on the participle must be valued by an auxiliary verb, via an agreement operation (Lunguinho, 2011). Up this point, the derivation is similar to that of an active, and if a transitive *v**P were merged with V-part, accusative Case would then be assigned to the internal argument. In a passive sentence, PassiveP (a passive *v*P) is merged instead, therefore the internal argument is not assigned accusative Case and remains active for subsequent computations. V-part then adjoins Passive, forming the complex V-part-passive. As mentioned above, the implicit external argument (PRO_{arb}) is merged on Spec of PassiveP. Because PassiveP is a strong phase, it may project an extra spec, to which the internal argument moves. The complex V-part-passive moves to Aux. The head Aux then moves to T, where its ϕ-features are valued (singular, 3rd person). Finally, the internal argument moves to Spec of TP, where it is assigned nominative Case and its [aboutness] feature is read off. The partial representation in (81) is from Lima Júnior, Augusto, and Corrêa (2018, 37).

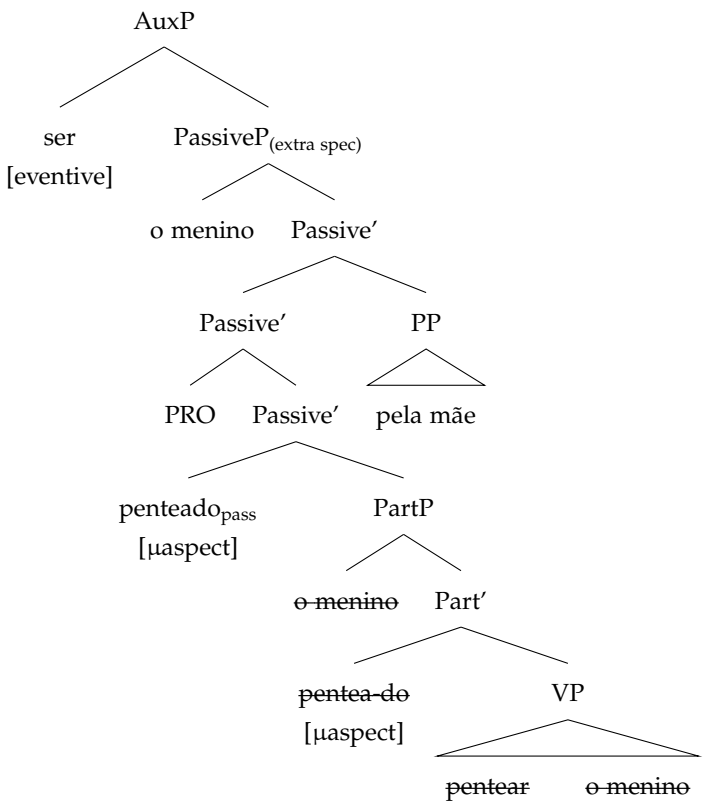
14 Lima Júnior and Augusto (2017) noted that this comports with the psycholinguistic literature: experimental data showed that the subject position tends to be occupied by the element most active in working memory, and by the most animate and prototypical element in a proposition. That is, the structurally high subject position correlates with informational privilege (Bates & MacWhinney, 1982; Bock, 1986a, 1986b; Bock & Warren, 1985; Foley & Van Valin Jr., 1985).

(81)



Lima Júnior and Augusto (2015, 2017) analysed the passive *by*-phrase as an adjunct that is semantically oriented to the the external argument (Bruening, 2013, 2014; McIntyre, 2013). Hence, they proposed that, in a long passive, the *by*-phrase is adjoined to PassiveP, at the position of PRO_{arb}. Because the *by*-phrase is an adjunct, it does not constitute an intervener to raising of the internal argument to subject position. The complement of *by* is compositionally θ-marked by the preposition and the verb (Cançado, 2009). Thus, a long verbal passive such as *O menino foi penteado pela mãe* "The boy was combed by the mother" has the (partial) representation in (82), adapted from Lima Júnior and Augusto (2015, 67) and Lima Júnior, Augusto, and Corrêa (2018, 37).

(82)



Contra Embick (2004) and Duarte and Oliveira (2010a, 2010b), Lima Júnior and Augusto (2015, 2017) analysed participles as a uniform class. That is, they did not draw a distinction between active and passive participles, or between verbal and adjectival passive participles. Hence, eventive and adjectival (resultative or stative) readings of passives are not determined by the participle (i.e., by the functional heads that compose it). Instead, the auxiliaries *estar* and *ficar* value the aspectual feature of the participle, giving rise to either a stative or a resultative interpretation of the predicate (Lunguinho, 2011). Verbal and adjectival passives are distinguished by the presence, in the former, and the absence, in the latter, of PassiveP.

Moreover, Lima Júnior and Augusto (2015, 2017) analysed adjectival passives as distinct from copula constructions. That is, in adjectival passives, *estar* and *ficar* are true auxiliary verbs. First, in spite of the evident differences between verbal and adjectival passives, the fact that adjectival passives allow some *by*-phrases and instrumental PPs may be taken to suggest that the two structures are not as distinct as it is usually assumed. Second, contrasts such as those in

(83-a)-(83-b) suggest that copula constructions, with a true adjective, and adjectival passives do not have the same underlying structure.

(83) a. A cama estava cuidadosamente arrumada.
the bed Aux.state carefully made
"The bed was carefully made."
b. *A cama estava cuidadosamente bonita.
the bed Aux.state carefully pretty
"The bed was carefully pretty."

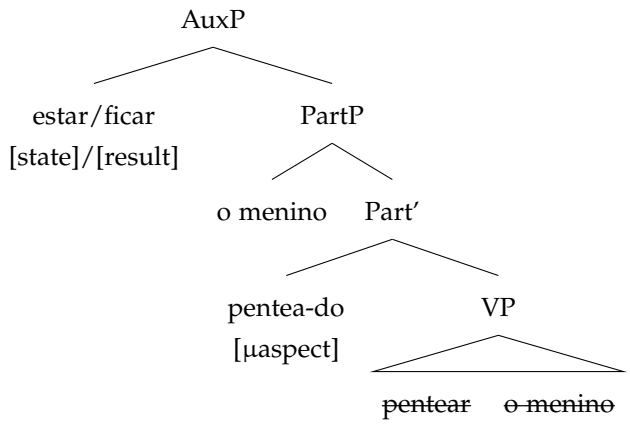
In (83-a) it is clear, given the auxiliary *estar*, that this is a stative passive. On a copula analysis, an agent-oriented adverb such as *cuidadosamente* "carefully" should be disallowed. However, Lima Júnior and Augusto (2015) noted that such sentences are fully grammatical and common in Portuguese. When the participle is substituted with an adjective such as *bonita* "pretty", the sentence becomes ungrammatical (83-b). This indicates that the participle in (83-a) is not a pure adjective and that its verbal nature has not been completely lost.[15]

Lima Júnior and Augusto (2015, 2017) claimed that, apart from auxiliary selection, the distinction between the two types of adjectival passives is solely aspectual. They proposed that in stative and resultative passives there is an agreement operation between the participial node and the auxiliary, whereby the auxiliary values aspect on the participle, which is [μaspect], leading to either a stative interpretation, with *estar*, or a resultative interpretation, with *ficar* (Lunguinho, 2011). Thus, a stative passive like *O menino está penteado* "The boy is combed" or a resultative passive like *O menino ficou penteado* "The boy was combed" have the (partial) representation in (84), adapted from Lima Júnior, Augusto, and Corrêa (2018, 38).

15 Note, however, that speakers may in some cases accept copula sentences with true adjectives and agent-oriented modification. The example below is from Anabela Gonçalves (p.c.), who I'm grateful to for calling my attention to this fact.

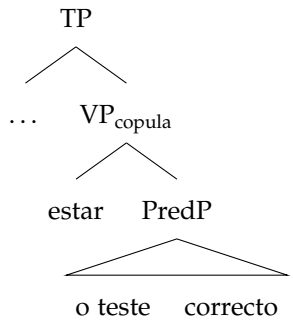
(i) A casa estava propositadamente bonita para recebermos os
the house Aux.state on purpose pretty to receive.Inf.1P the
convidados.
guests
"The house was pretty on purpose to receive the guests."

(84)



Lastly, the participles that occur in adjectival passives must be distinguished from those that have been fully recategorized as adjectives (e.g., *corrigido* "corrected" vs. *correcto* "correct"). Lima Júnior and Augusto (2015, 2017) analysed the sentences in which these recategorized participles combine with *estar* or *ficar* as copula constructions. Thus, a sentence such as *O teste está correcto* "The test is correct" has the partial representation in (85), from Lima Júnior, Augusto, and Corrêa (2018, 38).

(85)



2.5 SUMMARY

As we have seen, in Portuguese the distinction between verbal and adjectival passives is reflected in auxiliary selection. Moreover, auxiliary selection in Portuguese adjectival passives has been argued to distinguish between stative and resultative passives (Duarte & Oliveira, 2010a, 2010b; Lima Júnior & Augusto, 2015, 2017). Thus, Portuguese differs both from English, in which the same auxiliary (*be*) is used with all three types of passives, and from Spanish and Catalan, which

have one auxiliary for verbal passives (*ser*) and another for adjectival passives (*estar*). The examples shown above in (36) are repeated here in (86).

(86) a. O cão foi aleijado.
the dog Aux.event hurt
"The dog was hurt." *Verbal passive*

b. O cão estava aleijado.
the dog Aux.stative hurt
"The dog was hurt." *Stative adjectival passive*

c. O cão ficou aleijado.
the dog Aux.result hurt
"The dog got hurt." *Resultative adjectival passive*

Besides auxiliary selection, these three types of passives differ with regard to their interpretive properties: verbal (or eventive) passives focus the event (86-a), resultative adjectival passives focus the consequent state of an event (86-c) and stative adjectival passives denote states which do not necessarily have a causing event (86-b) (Duarte, 2013; Duarte & Oliveira, 2010a, 2010b).

Verbal passives and adjectival passives differ with regard to their tolerance of certain elements, such as agent-oriented modification and *by*-phrases. Contrasts such as those in (87), as well as evidence from anaphor binding and the fact that verbal passives show the disjoint reference effect, suggest that verbal passives have an agentive component that is absent from adjectival passives, even when the *by*-phrase is omitted.

(87) a. O navio foi/*ficou afundado
the ship Aux.event/Aux.result sunk
propositadamente.
on purpose
"The ship was sunk on purpose."

b. O navio foi/*ficou afundado para cobrar
the ship Aux.event/Aux.result sunk to collect
o seguro.
the insurance
"The ship was sunk to collect the insurance."

c. O navio foi/*ficou afundado com
the ship Aux.event/Aux.result sunk with
explosivos.
explosives

"The ship was sunk with explosives."

Although recent literature has shown that the presence of such elements in adjectival passives is more widespread than previously thought, the fact remains that there are more restrictions at work in adjectival passives than in verbal passives. Namely, the agent-oriented modifiers and *by*-phrases that occur in adjectival passives tend to be generic or abstract (Alexiadou et al., 2014; Anagnostopoulou, 2003; Bosque, 2014; Bruening, 2014; García-Pardo, 2017; Gehrke, 2011, 2012, 2013, 2015; Gehrke & Sánchez-Marco, 2012; Kratzer, 2000; Maienborn, 2009, 2011; McIntyre, 2013; Meltzer-Asscher, 2011; Schlücker, 2005). The Portuguese examples in (46) are repeated below in (88).

(88) a. Os acessos estavam bloqueados pelos grevistas.
the entrances Aux.state blocked by+the strikers.
"The entrances were blocked by the strikers.

b. A casa estava cuidadosamente mobilada.
the house Aux.state carefully furnished
"The house was carefully furnished."

c. A porta ficou aberta para arejar a sala.
the door Aux.result open to air the room
"The door was open to air the room."

d. O exercício ficou corrigido com caneta azul.
the exercise Aux.result corrected with pen blue
"The exercise was corrected with blue ink."

Data such as these has been interpreted as evidence that adjectival participles do not enter the derivation as adjectives (i.e., they are not formed in the lexicon), hence there is an eventive component that may be subject to modification prior to adjectivization. Indeed, some evidence suggests that adjectivization may also apply to VPs, which supports the idea that (at least some) adjectival participles are formed in the syntax (Alexiadou et al., 2014; Anagnostopoulou, 2003; Bruening, 2014; Kratzer, 2000, among others). Verbal passives may be distinguished from adjectival passives by the presence of a functional head such as Voice/Passive (e.g., Alexiadou et al., 2014; Lima Júnior & Augusto, 2015, 2017), which is associated with agentivity.

A contemporary line of inquiry focuses on participle typology. This is the case of work by Kratzer (2000), who proposed that German participles may be categorized as target-state or as resultant-state participles. In short, target-state participles are formed from predicates that have a consequent state in their semantics, namely ac-

complishments and achievements (e.g., *break*). Resultant-state participles, unlike target-state participles, may be formed from atelic predicates, namely activities (e.g., *sweep*). In fact, in the case of activities, a marginal adjectival passive may become acceptable if a supporting context imposes a "job done" or "that's over" interpretation. The examples in (63) are repeated below in (89).

(89) a. Die Katze ist schon gestreichelt.
the cat is already petted
b. Dieser Kinderwagen ist schon geschoben.
this baby carriage is already pushed

As noted by Kratzer (2000), (89-a) is acceptable if it is one's job to pet the cat while the neighbour is on vacation, and (89-b) is acceptable in the context of a factory that produces baby carriages and employs someone to test their wheels by pushing them a few times.

Subsequent work for English by Embick (2004) proposed a tripartite typology of participles, which has since been extended to Modern Greek (Alexiadou & Anagnostopoulou, 2008) and to EP (Duarte & Oliveira, 2010a, 2010b). On this account, as on Kratzer's, both verbal and adjectival participles are derived in the syntax. Differences between the three types of participles with regard to their syntactic properties and interpretation are due to the selectional and featural properties of the functional heads that compose the predicate. Thus, eventive participles have both eventivity and agentivity: Asp selects a complement headed by a v that bears an [AG] (agentive) feature. Resultative participles have eventivity, but no agentivity: resultative Asp (Asp_{R}) selects a complement headed by a v that bears an [FIENT] (fientive) feature. Lastly, stative participles have neither eventivity nor agentivity: the v head is not present, and stative Asp (Asp_{S}) attaches directly to the $\sqrt{\text{ROOT}}$. Duarte and Oliveira (2010a, 2010b) argued that EP shows evidence for this typology, namely in the form of auxiliary selection —see the examples in (86) above.

Another contemporary line of inquiry assumes a strict version of the UTAH (Baker, 1988). This is the case of the Smuggling account of the passives proposed by Collins (2005b): the external argument in the passive occupies the same underlying position as in an active sentence (Spec of vP). Thus, raising the internal argument to Spec of IP across Spec of vP would violate minimality (Chomsky, 1995; Rizzi, 1990, 2004). The solution, according to Collins (2005b), is to smuggle the internal argument, within PartP, past the external argument in

Spec of *v*P. That is, PartP moves to Spec of VoiceP, thus placing the internal argument in a position from which it can move to Spec of IP without giving rise to intervention effects. Crucially, this proposal relies on the assumption that the Freezing Principle (Müller, 1998, 124) fails to apply in certain environments.

The Smuggling account, however, has been criticized on the basis that movement of PartP to Spec of VoiceP is not properly motivated and poses a look-ahead problem —this movement is said to be an *ad hoc* solution need to circumvent a potential minimality violation. Gehrke and Grillo (2007, 2009a, 2009b) sought to motivate Smuggling by positing that it satisfies a semantic requirement on Voice. In this view, passivization is an operation on event structure, not argument structure: it involves movement of the consequent state sub-event of a structurally complex event to a discourse-related position at the edge of the verb phrase.

Gehrke and Grillo (2007, 2009b) assumed a VP shell account for the syntactic representation of the event structure (Travis, 2000): an event with a consequent state involves a V_2, which introduces the theme argument (DP_{int}) and the endpoint of the event, and a V_1, which corresponds to the causing sub-event and introduces the external argument (DP_{ext}). In the verbal passive, the internal argument is "smuggled" within VP_2 past the external argument in VP_1.

This entails that only with predicates that constitute structurally complex events, particularly those with a consequent state, are passivizable. However, although passivization with stative predicates is more restricted than with actional predicates, some states do passivize. Gehrke and Grillo (2007, 2009b) proposed that states may passivize if they may be re-interpreted as a consequent state. That is, structurally simple events (those without two sub-events) require semantic coercion in order to passivize.

Finally, Lima Júnior and Augusto (2015, 2017) proposed an alternative account of Portuguese passives. Following Collins (2005b), they proposed that in the passive the external argument is merged into Spec of PassiveP (an alternative to the *v*P of actives that does not assign accusative Case). However, on Lima Júnior and Augusto's account the external argument does not intervene in raising of the internal argument to subject position. This is due to the presence of an [aboutness] feature on the internal argument (Rizzi, 2006). Moreover, in the case of long passives, the *by*-phrase is an adjunct that is semantically oriented to the external argument. Adjectival passives may be

distinguished from verbal passives by the absence of PassiveP, that is, they do not have an agentive component. Within adjectival passives, the distinction between stative and resultative passives is solely aspectual: the auxiliaries *estar* and *ficar* value [μaspect] on the participle as stative and as resultative, respectively.

3

THE PROBLEM OF PASSIVE ACQUISITION

The acquisition of the verbal passive is a longstanding research topic. Early studies showed that comprehension and production of canonical English verbal passives (with the auxiliary *be*) is delayed with regard to actives (see Baldie, 1976; Hayhurst, 1967; Horgan, 1975, 1978; D. Slobin, 1968; D. I. Slobin, 1966; Turner & Rommetveit, 1967, among others).[1] This delay has been replicated for several other languages, namely German (Bartke, 2004; Mills, 1985), Dutch (Verrips, 1996), French (Sinclair et al., 1971), Spanish (Oliva & Wexler, 2018; Pierce, 1992), Catalan (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018; Parramon, 2015), Greek (Driva & Terzi, 2007; Terzi & Wexler, 2002), Russian (Babyonyshev & Brun, 2003), Serbian (Djurkovic, 2007; Perovic et al., 2014), Japanese (Sano, 2000; Sugisaki, 1997, 1998) and Mandarin Chinese (Chang, 1986). In addition to this, early spontaneous and elicited production studies showed that, when children produce passives, the *by*-phrase tends to be omitted (Baldie, 1976; Braine, 1971; Hayhurst, 1967; Horgan, 1975, 1978, among others).

Crucially verb type plays an important role in the acquisition of the passive, at least in some languages. Maratsos et al. (1979) and Maratsos et al. (1985) found that English-speaking children performed significantly better with passives of actional verbs than with passives of non-actional (subject experiencer) verbs. This verb type contrast has been consistently replicated for English (Gordon & Chafetz, 1990; Hirsch, Modyanova, & Wexler, 2006; Sudhalter & Braine, 1985, among others), as well as for Catalan (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018; Parramon, 2015), Italian (Volpato et al., 2016)

1 The English *get*-passive, on the other hand, is successfully produced and comprehended by the age of 2-3 years (Crain & Fodor, 1993; Gotowski, 2019; F. N. Harris & Flora, 1982; D. Slobin, 1994; Turner & Rommetveit, 1967). Crucially, verbal passives and (at least some) *get* passives seem to be structurally dissimilar (Alexiadou, 2012; Reed, 2011). The *get* passive disallows purpose clauses and agent-oriented modifiers like *on purpose*, which suggests that the Agent θ-role is absent from the derivation. The contrasts below are from Borga and Snyder (2018b, 13).

(i) a. The ship was/*got sunk [PRO to collect the insurance].
b. The book was/*got torn on purpose.

and Spanish (Oliva & Wexler, 2018). Hirsch (2011) and Hirsch and Wexler (2006b) reported that even though English-speaking children at the age of 4 already seem to comprehend passives of actional verbs, they do not comprehend passives of non-actional verbs until the age of 6 or 7.

Some authors have interpreted these findings as evidence that passive grammar is delayed until school age, as seen with subject experiencer verbs (Borer & Wexler, 1987; Hirsch & Wexler, 2006b; Wexler, 2004). According to this view, children seemingly understand passives of actional verbs from the age of 3-4 years by assigning these strings an adjectival passive structure, which is unavailable for most subject experiencer verbs (Borer & Wexler, 1987; Hirsch & Wexler, 2006b). Alternatively, it has been proposed that children show knowledge of passive grammar by age 4, but passives of some verbs require further development (Hyams & Snyder, 2005; Snyder & Hyams, 2015; Snyder & Nguyen, 2017).

However, some studies have found early acquisition of the verbal passive. For English, Crain and Fodor (1993), Crain et al. (2009) and O'Brien et al. (2006) claimed that children comprehend and produce passives when the experimental setting meets certain discourse and pragmatic felicitousness conditions that license the use of the passive. Crosslinguistically, early acquisition of the verbal passive has been reported for Sesotho (Demuth, 1989), Inuktitut (Allen & Crago, 1996), K'iche' Maya (Pye & Pox, 1988), Kiswahili and Kigiriama (Alcock, Rimba, & Newton, 2011), and Zulu (Suzman, 1985, 1990). Evidence for early acquisition of at least some aspects of passive grammar also comes from the psycholinguistic literature, in particular priming studies (Brooks & Tomasello, 1999; Messenger, Branigan, & McLean, 2011, 2012, among others).

To the best of my knowledge, the acquisition of the verbal passive in European Portuguese (EP) has been studied only by Estrela (2013) (Sim-Sim, 2006 has provided only some partial results). This study found evidence for a passive delay and for a verb type asymmetry in EP. However, it presents some methodological flaws that may have negatively impacted children's performance. As for Brazilian Portuguese (BP), Lima Júnior, Augusto, and Corrêa (2018); Lima Júnior, Corrêa, and Augusto (2018) found that children show early knowledge of of passive grammar, and argued that poor performance with some experimental paradigms is due to the processing cost associated with passives (among other factors). Lima Júnior, Augusto,

and Corrêa (2018); Lima Júnior, Corrêa, and Augusto (2018) followed the model of language acquisition proposed by Corrêa (2009, 2014), which I briefly describe in this chapter.

The main findings on the acquisition of the passive are surveyed in more detail in Section 3.1. Section 3.2 surveys some of the early accounts for the verb type contrast found in early verbal passives. The two following sections (Section 3.3 and Section 3.4) discuss two competing contemporary accounts of passive delay: the Universal Phase Requirement (UPR) (Hirsch & Wexler, 2006b; Wexler, 2004) and the Universal Freezing Hypothesis (UFH) Hyams and Snyder (2005); Snyder and Hyams (2015). Section 3.5 surveys some studies showing early passive acquisition in English and in other languages. Recent findings and proposals for EP and BP are surveyed in Section 3.6. Section 3.7 summarizes and concludes the chapter.

3.1 MAIN FINDINGS

3.1.1 *Short vs. long passives*

Early studies on spontaneous production found that long verbal passives are uncommon in child production and that the short passive emerges earlier than the long passive in children's speech (Harwood, 1959; Horgan, 1975, 1978; but see Budwig, 1990, who found that, despite higher rates of short passives than long passives in children's production, both are produced from around age 3). Similarly, early elicited production studies found that English-speaking children produce short passives at higher rates than long passives (Baldie, 1976; Braine, 1971; F. N. Harris & Flora, 1982; Hayhurst, 1967; Horgan, 1975, 1978, among others). Some studies also indicated that children find short passives easier to comprehend and produce than full passives (e.g., Baldie, 1976; Budwig, 1990; M. Harris, 1976; D. Slobin, 1968).[2]

Consider the data from an elicited production study by Horgan (1975, 1978). In her task, 54 children between the ages of 2;0 and

2 In one of the first accounts of passive acquisition, Bever (1970) proposed that young children interpret noun-verb-noun sequences as Actor-Action-Objects, and thus comprehend reversible passives as if they were actives, with the agent in subject position. For an updated version of this idea, see Omaki and Lidz (2015) —the authors argued that in incremental processing, the first noun tends to be interpreted as an Agent; however, children, unlike adults, have difficulties revising initial assumptions, leading to active interpretations of passive sentences.

4;2 years were asked to describe pictures. Examples of short passives produced by these children are provided below:

(1) a. The door is unlocked.
b. Tree is blowed down.
c. Tree is broken.
d. A ball be kicked.
e. The car's parked.
f. A door was opened.

Horgan (1975, 94) noted that "truncated passives seemed to be almost exclusively an after-the-fact observation on the state of things. Most of the passives used the verb 'broken', which children also used as an adjective, or a stative, as well as a verb". That is, children's short passives described the state of an object and employed only very familiar verbs, in particular verbs that may be used both as statives and as transitives.

Findings such as these motivated claims that children's early passives are adjectival constructions. On the basis of production data from Harwood (1959) and Braine (1971), Watt (1970, 185) argued that "(...) it seems more reasonable, in fact, to think that the child is constructing truncates ("Those cookies were baked") by the same rules he uses to construct simple predicate-adjective sentences ("Those cookies were good"). The surfaces are very similar, and participles like "baked" are quasi-adjectival." A similar suggestion is made in Baldie (1976, 347), who hypothesised that children's more adult-like comprehension of the short passive is due to the availability of an adjectival passive analysis: "Does an individual interpret *The plate was painted* (*sc*. The man painted the plate) in the same way as *The plate was painted* (*sc*. The plate was thick, etc.)? (...) it would appear from the present findings that an utterance is easier to perceive if more than one syntactic path is available. The agentless passive *The short thick metal nail was bent* (*by the hammer*) with its passive and adjectival possibilities was comprehended far more regularly than were sentences lacking the additional adjectival interpretation." Borer and Wexler (1987, 139), citing Horgan's results, claimed that "(...) in the absence of a grammatical apparatus, which matures later, an adjectival analysis of passive sentences is all that is available to the child."

In response to claims such as these, Weinberg (1987) pointed out that production data is not an appropriate probe of children's knowledge, as it cannot be ruled out that Horgan's subjects understood

both short and long passives, but failed to produce long passives due to independent constraints. Moreover, short passives are more common than long passives in adults' production, in part due to information structure constraints on long passives (see Chapter 2). In the same vein, Pinker et al. (1987) remarked that the the properties of children's passives described by Horgan may actually reflect the discourse and semantic factors that influence children's choice of when to include the *by*-phrase. As noted by D. Slobin (1968), short passives avoid the mention of an uninteresting or contextually redundant agentive DP. Maratsos and Abramovitch (1975), citing data from Goldman-Eisler and Cohen (1970), noted that adults are more likely to use the short passive than the long passive in a wide range of situations, and Whitehurst and Ironsmith (1974) found that children who were old enough to comprehend long passives failed to use them in spontaneous speech. It seems that long passives occur infrequently in the spontaneous speech of even competent speakers. When the baseline use of a structure is so low, Maratsos and Abramovitch (1975) argued, the time of onset of use in spontaneous speech is probably deceptive as to the time of acquisition of the relevant grammatical knowledge. They further remarked that production studies such as those by Horgan (1975, 1978) and Harwood (1959) do not provide direct evidence on the acquisition of long and short passives, but about their use.

Subsequent comprehension studies failed to consistently replicate this length contrast. Some studies have found that short and long passives are (mis)comprehended by English-speaking children at roughly the same rates, with no statistically significant differences between them (e.g., Gordon & Chafetz, 1990; Hirsch & Wexler, 2006b; Maratsos & Abramovitch, 1975; Maratsos et al., 1985; O'Brien et al., 2006; Orfitelli, 2012a). Maratsos and Abramovitch, who reported similar comprehension of short and long passives by English-speaking children, claimed that the results from their experiment suggest that truncated passives do not develop earlier than long passives. To the contrary, Maratsos and Abramovitch (1975, 148) noted that "if anything, they support the hypothesis that competence in responding to the two forms develops in close temporal synchrony. Whatever is crucial to the development of one is apparently crucial to the development of the other."

Finally, a recent cross-linguistic study on the comprehension of short and long passives with actional verbs by 5-year-old children

found wide variation regarding length contrasts in the passive: for Catalan, Dutch, German, Hebrew, Lithuanian and Polish, children performed significantly better on short passives than on long passives, whereas for Danish and English there were no statistically significant differences between them (Armon-Lotem et al., 2016).

3.1.2 *Actional vs. subject experiencer verbs*

A study by Maratsos et al. (1985, 1979) achieved an important result: children acquiring English show a contrast between actional and subject experiencer verbs in their comprehension of the verbal passive. Concretely, the authors found that children up to school age comprehend passives of verbs such as *comb*, *scratch*, *hold* and *kick* (2-a) better than passives of verbs such as *see*, *hear*, *like* and *fear* (2-b).[3]

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

Maratsos et al.'s Experiment I comprised 14 4-year-olds and 17 5-year-olds. The children were tested on actives and passives of four physical action verbs (*find*, *hold*, *wash* and *shake*) and eight mental state verbs (*remember*, *forget*, *like*, *miss*, *see*, *hear* and *watch*). A semantically "intermediate" verb, *smell*, was also tested: this verb allows both actional and non-actional readings. Children were presented with each item and a small set of toys representing the characters, and then were asked *who did it?*[4] Only those children who performed well on the active items were included in the study.

3 Maratsos et al. (1985, 168) described the difference between actional and subject experiencer verbs as follows: "In *John was liked by Mary*, for example, the underlying subject *Mary* is typically described as something like an experiencer of the verb, rather than an active intentional initiator, and the underlying subject *John* is a stimulus of the experience, rather than the patient of an action". In a study on perception verbs, Viberg (1983, 123) described this difference in the following terms: "The distinction between an activity and an experience is illustrated by pairs such as *look at* vs. *see* and *listen to* vs. *hear*. Activity refers to an unbounded process that is consciously controlled by a human agent, whereas experience refers to a state (or inchoative achievement) that is not controlled". Lastly, Orfitelli (2012b, 6), in a study on the acquisition of raising-to-subject and verbal passives in English, succinctly defined actional verbs as those that have agentive subjects and more directly affected objects, and subject experiencer verbs as those that have non-agentive subjects and less directly affected objects.

4 As the authors acknowledged, this question may be strange in the case of mental verbs. It was used, despite its incongruence, because during a previous piloting

The results showed that children performed above chance on actional passives, but were below chance on mental state passives. Regarding the results for each verb, Maratsos et al. (1985) pointed out that not a single mental state passive was understood as well as any of the physical action passives. Interestingly, the verb *smell*, which sometimes has actional and sometimes has mental state readings, ranked above all mental state verbs, and below all physical action verbs. *Watch*, an intentional perception verb, was responded to most accurately of the mental state verbs.

In Experiment II, a sentence-picture matching task, children were tested on actives and passives of six actional verbs (*wash*, *kiss*, *push*, *kick*, *find* and *hold*)) and six mental state verbs (*see*, *hear*, *like*, *love*, *hate* and *remember*). For each item, there were two pictures to choose from: one representing the adult interpretation, and the other the θ-role reversal interpretation. The 80 subjects were distributed across five age groups, each with 16 subjects: 4-year-olds, 5-year-olds, 6-year-olds, 8- and 9-year-olds, and 10- and 11-year-olds. As in the previous experiment, only children who achieved above-chance performance on actional and mental verb actives were included in the study.

Children's performance on the *hear* items was particularly poor, which the authors attributed to the pictorial representation for this verb (one character was shown with unblocked ears, and the other, with earmuffs). Scores for *hear* in the passive remained low relative to other mental state verbs in the older age groups. Due to the added difficulty associated with the *hear* items, Maratsos et al. (1985) eliminated this verb from the analysis of the results.[5]

The results from the remaining verbs showed that children from age 4 performed well on passives of actional verbs: the 4-year-old group obtained an accuracy score of 85%, and every age group from the age of 5 scored above 90%. The results with passives of mental state verbs were consistently poorer: 4-year-olds obtained a score of 92% on mental state actives, but only 34% on the corresponding passives. Improvement on mental state passives was gradual. Only the

stage questions like *who liked who(m)?* or *who liked someone?* only seemed to confuse children.

5 Another study on the acquisition of the verbal passive in English also found particularly poor performance on passives with *hear*: O'Brien et al. (2006) tested the verbs *see* and *hear* in a truth-value judgement task. The authors excluded the verb *hear* from the analysis due to very poor results with this verb, in contrast with *see*, which elicited significantly better results. Snyder and Hyams (2015) argued that the verb *see* was used in an actional sense (*discover, find*) in the task.

two oldest age groups showed stable competence with mental verb passives: 8- and 9-year-olds achieved an accuracy score of 87%, and 10- and 11-year-olds a score of 99%.

Maratsos et al. (1985) pointed out that children's performance (excluding the two older groups, who performed at ceiling with passives of both verb types) was homogeneous with the different actional verbs, but heterogeneous across the different mental state verbs, even after the exclusion of *hear*. In this respect, the results from Experiment II differed from those from Experiment I, in which performance with passives of mental state verbs was homogeneous. Further analysis showed that the outlying verb was *see*. The authors reported, however, that even with *see* removed the variation between *like*, *love*, *hate* and *remember* was sufficient to produce a nearly significant heterogeneity. The verb *remember* was the most difficult among these verbs (although, as in the case of *see*, the active form was not difficult). It may be relevant, according to Maratsos et al. (1985, 181), that *see* and *remember* are the least "affective" of the mental state verbs tested in this experiment.

Nevertheless, the overall results from the two experiments by Maratsos et al. (1985) converged: actional passives of actional verbs are better understood by children than passives of mental state verbs until school age. Children can readily comprehend passives of actional verbs, in particular physical action verbs. These same children cannot comprehend structurally similar but semantically different passives, concretely passives of subject experiencer verbs: those passives in which the underlying object is somehow perceived, cognized, or emotionally experienced by the underlying subject. This verb type asymmetry is not due to an overall difficulty with subject experiencer verbs, that is, the problem is specific to passives.

Maratsos et al.'s basic finding was replicated by several subsequent studies (Gordon & Chafetz, 1986, 1990; Hirsch, 2011; Hirsch & Wexler, 2006b; Orfitelli, 2012b; Sudhalter & Braine, 1985, among others). These studies have shown that, by the age of 5, English-speaking children's performance on passives of actional verbs is reliably above chance, whereas their performance on passives of subject experiencer verbs remains at chance or below chance.

The verb type contrast seen in English has also been replicated for other languages. In a study on the acquisition of Catalan, Cunill (2012) used a two-choice sentence-picture matching task, based on Maratsos et al. (1985) and Hirsch and Wexler (2006b), to test the com-

prehension of passives with actional verbs (*empenyar* "push", *rentar* "wash", *petonejar* "kiss", *agafar* "hold") and subject experiencer verbs (*recordar* "remember", *odiar* "hate", *estimar* "love", *veure* "see") by children between the ages of 3;3 and 8;2. His results showed that passives of actional verbs elicited higher correctness scores from children than passives of subject experiencer verbs.

Additional results come from Gavarró and Parramon (2017), who used a four-choice sentence-picture matching task, originally designed for English and adapted to Catalan within the context of the project COST Action A33 (Armon-Lotem et al., 2016), to test 173 children between the ages of 3 and 6 years on the comprehension of actives and passives of actional verbs —see the example items in (3). For each sentence, children were asked to choose the correct picture out of four options: a picture depicting the adult reading of the sentence, a picture depicting the θ-role reversal interpretation, a picture with another character carrying out the action described by the sentence, and a picture with no action depicted. The verbs tested were: *empènyer* "push", *auscultar* "examine", *besar* "kiss", *alimentar* "feed", *rentar* "wash", *esgarrapar* "scratch", *pentinar* "comb", *dibuixar* "draw", *embrutar* "dirty", *acariciar* "stroke", *abraçar* "hug", *tapar* "cover", *portar* "carry", *tibar* "pull", *afaitar* "shave", *fotografiar* "photograph", *pintar* "paint", *pessigollejar* "tickle", *picar* "hit", *mossegar* "bite", *perseguir* "chase" and *eixugar* "dry".

(3) a. El germà petit tapa el pare.
the brother little covers the father
"The little brother covers the father."

b. El pare és tapat.
the father Aux.event covered
"The father is covered."

c. El pare és tapat pel germà petit.
the father Aux.event covered by+the brother little
"The father is covered by the little brother."

While short passives were understood above chance by all age groups, the comprehension of long passives was above chance only for 6-year-olds (the criterion adopted to define above chance performance was that the lower Confidence Interval was above 50%). Conversely, 3-, 4- and 5-year-olds were below chance for long passives. Children's most common error was to point to the θ-role reversal picture; choice of the picture with an unmentioned character as Agent or of the picture

with no action depicted was marginal. From these results, Gavarró and Parramon (2017) concluded that Catalan-speaking children up until the age of 6 years not only miscomprehend verbal passives, but also assign them a reverse interpretation.

A subsequent study by Gonzaléz (2018) tested the comprehension of passives of *sentir* "hear" and *veure* "see" by children between the ages of 4;4 and 10;1, using a two-choice sentence-picture matching task, which was based on the experiment described in Chapter 5, as it adapted to Catalan the items used to test the actives and passives with *ouvir* "hear" and *ver* "see" in EP and employed the same pictures. Gonzaléz found that it was only from the age of 7 that children performed above chance on short passives, and only at 9-10 that children performed above chance on long passives. In combination with Gavarró and Parramon (2017), these findings replicate for Catalan the empirical picture seen in English: a consistent passive delay and a verb type asymmetry, with passives of actional verbs being better understood than passives of subject experiencer verbs.

This pattern is also found in Spanish. Oliva and Wexler (2018) tested children on the comprehension of actives and passives (both short and long) of actional and subject experiencer verbs. The experiment consisted of a two-choice sentence-picture matching task: one picture represented an action as described by the test item, and the other the θ-role reversal interpretation. A set of sixteen verbs was used: eight actional verbs (*abrazar* "hug", *besar* "kiss", *empujar* "push", *golpear* "hit", *lavar* "wash", *peinar* "comb", *tapar* "cover" and *tocar* "touch") and eight subject experiencer verbs (*amar* "love", *escuchar* "listen", *mirar* "watch", *odiar* "hate", *oír* "hear", *olvidar* "forget", *recordar* "remember" and *ver* "see"). The participants were 60 children aged 3;0-6;11, who were divided into four age groups: 3-year-olds, 4-year-olds, 5-year-olds and 6-year-olds.

The results showed that: i) children performed better on actives than on passives (the 3-year-old group scored 87.5% correct on actives with subject experiencer verbs, the lowest score of any group on active sentences); ii) children performed better on short passives of actional verbs than on short passives of subject experiencer verbs, although no significant difference between the two verb types was found for actives or for long passives; and iii) children performed better on short passives than on long passives, a difference that was statistically significant —this effect, however, was due only to actional verbs, as

there were no significant differences between short and long passives of subject experiencer verbs.

Oliva and Wexler (2018) pointed out that their Experiment 1 did not entirely replicate for Spanish the results Gavarró and Parramon (2017) obtained for Catalan. In the experiment on Catalan, 6-year-olds show almost adult performance on actional long passives (92%). In the experiment on Spanish, 6-year-olds did not perform much better than chance level (62.5%). Moreover, they noted that English-speaking children generally show excellent performance on long passives by the age of 6, using the same method as their experiment on Spanish (e.g., Hirsch & Wexler, 2006b; Maratsos et al., 1985).

3.2 SEMANTIC VERB CLASS-BASED ACCOUNTS

There have been many attempts to explain the verb type contrast found by Maratsos et al. (1979) and Maratsos et al. (1985). The accounts described in this section focus on the properties of actional and non-actional verbs as semantic classes.

Maratsos et al. (1985) suggested 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 involve properties such as kinesis, change of state, and intentionality (among others); highly transitive objects are affected or changed by the event, definite and inanimate (among other properties). Thus, a sentence like *John broke the glass* is very high in semantic transitivity. A sentence like *John's mask scared the girl* is lower, but still contains some properties of semantic transitivity, such as an affected object, and definite subject and object. The sentence *John liked the girl* is lower still, 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 (see also Becker, 2014, for a discussion on the effects of animacy of the subject and the object on children's comprehension of the passive and other structures).

If children hypothesize that the English passive is constrained by semantic transitivity, as Hopper and Thompson (1980) argued some structures are in other languages, 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*. In addition, Maratsos et al. (1985) argued that, as passives are infrequent in the input, children's passives may remain centered around a "prototypical core" (actional verbs) until quite late, even if they are exposed to a wider range of passives.

Data from spontaneous production by parents lends some support to this hypothesis. A preliminary analysis of corpus data by Maratsos (1985) showed that the non-actional passives used in Maratsos et al.'s experiments may be nearly absent from the input received by young children: "not once did a parent ever refer to something being known, forgotten, seen, heard, missed, liked, loved, hated, watched, remembered, or smelled. That is, though there are experience-related stems (scare, surprise, irritate, confuse, hurt, tire), all of them have the experiencer as the grammatical object, none as the grammatical subject of the underlying transitive" (Maratsos et al., 1985, 187).[6] As for actional verbs, Maratsos et al. (1985, 187-188) reported that:

> (...) there is actually little use of the kinds of physical action verbs generally used in our (and other) comprehension studies. For most of the action verbs that are used are verbs of result. That is, they refer to some change of physical state or appearance of the underlying object. The typical psycholinguistic action verb, on the other hand, refers to some temporary physical contact that does not entail a lasting effect on the object. For example, compare *break* and *kick* in this light. When someone breaks something, the thing is changed in a way denoted by the verb: as a lasting result, it is in a different state after the event. But when someone kicks something, the thing is affected during the event itself by the impact, presumably, but there is not necessarily any lasting effect. Virtually all the passivized verbs in our sample refer to lasting result types of events (including the emotion-related verbs; when someone scares someone, for example, the event causes a change of emotional state which *scare* describes). So nearly all the passive uses of the parents denote something getting changed (e.g., *it got all messed up*;

6 In line with this, Ferreira (1994) found that when adult subjects were asked to produce sentences with a specified verb, they produced 31% passives when given an object experiencer verbs, and only 4% passives when given a subject experiencer or actional verb (which Ferreira grouped into the same category).

> *does it need to be fixed*?) or something in the state resulting from a change (*is that broken*?), unlike the sentences more typical in comprehension studies (e.g., *the tiger was kissed by the lion*).

The two kinds of passives found in the samples of parents' production analyzed by Maratsos (1985) —involving either physical action verbs or object experiencer verbs— are high in semantic transitivity. Conversely, the mental state passives tested by Maratsos et al. (1985) are low in semantic transitivity. Thus, Maratsos et al. claimed that children initially restrict passivization to this core of highly transitive verbs.

Sudhalter and Braine (1985) aimed to assess whether the acquisition of the passive is an all-or-nothing process or a gradual process. They argued that, if the acquisition of the passive is an all-or-nothing process, this would be manifested in a bimodal distribution of children's scores (with children who have mastered the verbal passive on one end and those who have not on the other).

They ran two experiments. Experiment I comprised 76 school-aged children: 27 first graders (mean age 6;5), 19 third graders (mean age 7;9) and 30 sixth graders (mean age 10;9). They were tested on actives and long passives of four actional verbs (*push*, *cut*, *call* and *kick*) and twelve subject experiencer verbs, which were further divided into three categories: perception verbs (*see*, *hear*, *notice* and *ignore*), cognitive verbs (*recognize*, *believe*, *understand* and *forget*) and emotion verbs (*trust*, *hate*, *like* and *admire*). Each child was given an answer sheet numbered 1-32, with two proper names after each number, corresponding to the grammatical subject and the complement of the *by*-phrase of each passive sentence, or to the subject and object of each active. The test items were read aloud to each child and followed by two questions, with the form "Which one [*verb*]ed the other one? Which one [*verb*]ed?" Thus, for a sentence like *John forgot Harriet*, the questions were "Which one forgot the other? Which one forgot?" Although Sudhalter and Braine (1985) did not provide an example of the stimulus questions for a passive item, it may be inferred that, for a sentence like *George was understood by Richard*, the questions were "Which one understood the other? Which one understood?" The child was asked to circle the name on the answer sheet that answered the question.

The results replicated the verb type contrast found by Maratsos et al. (1979) and Maratsos et al. (1985). For the passives tested in Exper-

iment I, Sudhalter and Braine (1985) found a main effect of verb type and a main effect of grade level. There were no significant differences between the three subclasses of subject experiencer verbs. Regarding the distributions of children's responses, Sudhalter and Braine (1985) reported that they are generally unimodal. That is, Experiment I provided no evidence that there was sampling of two distinct populations. Instead "(. . .) the development in the comprehension of the passive in this age range appears to consist in a slow increase in the probability of comprehension (about 5% per year), with the actional verbs leading the experiential verbs" (Sudhalter & Braine, 1985, 462).

Sudhalter and Braine (1985) hypothesised that a bimodal distribution of response patterns may be found in younger children. Experiment II included 50 pre-school children: 25 young pre-schoolers (5 3-year-olds and 20 4-year-olds) and 25 old pre-schoolers (20 5-year-olds and 5 6-year-olds). The children were tested on actives and long passives of six actional verbs (*call*, *cut*, *help*, *bother*, *kick* and *dress*) and six subject experiencer verbs (*love*, *hate*, *hear*, *see*, *forget* and *believe*). The materials included twelve stuffed animals. For each item, a pair of stuffed animals was placed in front of the child. The child heard each item, which was followed by instructions of the form "Pick up the animal that [*verb*]ed the other. Pick up the animal which [*verb*]ed."

The statistical analysis of the results did not find a main effect of age group. There was a main effect of verb type and a main effect of Voice, as well as an interaction between these two factors. Sudhalter and Braine noted that, in the case of actional verbs, few children showed evidence for a "first noun as actor" strategy (Bever, 1970). In the case of subject experiencer verbs, a large number of children had scores of zero. In fact, a majority of them (52%) seemed to interpret passives of subject experiencer verbs as if they were actives (8% interpreted sentences in an adult-like manner, and 40% showed intermediate levels of performance). Sudhalter and Braine (1985, 468) argued that this distribution of scores suggests gradual development of the passive: "We do not have a group demonstrating noncompetency and a second group demonstrating competency. We definitely do have a large group demonstrating noncompetency, but the children with intermediate scores seem best interpreted as only knowing just enough to block consistent interpretation of the sentences as actives."

In view of these results, Sudhalter and Braine (1985) claimed that, in order to fully master the passive, children must acquired pieces of knowledge that may be assumed to be acquired separately. That is,

children may have only partial knowledge of the cues to passiveness (i.e. past participle, and *by*). Thus, one possible explanation for the verb type contrast first found by Maratsos et al. (1979) is that the preposition *by* is more easily understood as a cue to Actor than as a cue to Experiencer. When children do not recognize sufficient cues to the passive, they revert to an agent/experiencer-first strategy. In the case of subject experiencer verbs, the semantic class of the participle may block the recognition of the *by*-phrase as a cue to passiveness, as they can only recognize, or more easily recognize, the preposition *by* as introducing an Actor, rather than an Experiencer.[7]

Subsequent work took into account learnability considerations to explain children's delay with passives of subject experiencer verbs (Pinker, 1989, 2013; Pinker et al., 1987). 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. Evidently, this is not the case in English or in Romance languages such as Spanish, Catalan, Italian and Portuguese, which allow passives with *by*-phrases as well as passives of subject experiencer verbs, such as *see*, *hear* and *love*.

Pinker et al. (1987) suggested that, under learnability considerations, it is reasonable to assume that children initially assume that the language they are learning only allows passives actional (Agent-

7 Fox and Grodzinsky (1998) made a similar, but more detailed, proposal: they hypothesised that children's grammar lacks the mechanism of θ-transmission proposed by Jaeggli (1986). Nevertheless, the complement of *by* does have a θ-role: an Agent/Affector role that is directly assigned by the preposition, as in nominal *by*-phrases.

(i) a. the book *by Karl Marx*
b. the city's destruction *by the Mongols*

This is compatible with full passives of actional verbs, as the *by*-phrase would receive an Agent θ-role from the verb in the adult grammar, but not with full passives of subject experiencer verbs. In this case, the *by*-phrase should receive an Experiencer θ-role from the verb, but instead receives an Agent θ-role directly from the preposition. Thus, children are predicted to have difficulties interpreting long passives of subject experiencer verbs, but not short and long passives of actional verbs and short passives of subject experiencer verbs. Using a truth-value judgment task, Fox and Grodzinsky (1998) found that their predictions were borne out. However, see criticism and counter-evidence from Hirsch and Wexler (2006a) and Hirsch and Wexler (2006b).

Patient) verbs. In particular, given that children do not have access to negative evidence, and when they are corrected they seem to be insensitive to it, if they hypothesized a rule system generating a language that is a superset of the target language, there would be no retreat from such overgeneralization (see Pinker et al., 1987, and references therein). Hence, there is a clear advantage in having a cautious approach to which verbs or classes of verbs may passivize in the language they are acquiring, as languages vary widely in this respect, outside a core of actional (Agent-Patient) verbs (Keenan, 1985; Keenan & Dryer, 2007). That is, children may initially hypothesize that the language they are acquiring allows the verbal passives with a more restricted set of verbs, in accordance with learnability principles. They would then generalize passivization to a wider set of classes of verbs in accordance with positive evidence in the linguistic input.

However, it cannot be the case that children are such conservative learners that they only generate passives for those verbs that they have heard in passive sentences in the input. Pinker et al. (1987) showed that in children's spontaneous speech, they utter passive participles that they could not have heard in the input. In an analysis of spontaneous production by children, using the Brown and Bloom *corpora* (Bloom, 1973; Brown, 1973), Pinker et al. (1987) found several instances of non-adult participial forms (4).[8]

(4) a. It's broked? [i.e. is it broken?] (Adam 3;3)
b. I don't want the bird to get eated. (Adam 3;7)
c. I want to be shooted. (Adam 3;8)
d. Is dat where I was borned? (Adam 4;2)
e. We got all stucked on each other. (Sarah 4;2)
f. His mouth is splitted. (Sarah 5;1)

According to Pinker et al. (1987), children are productive users of the passive, but they are not unconstrained. The authors proposed that children show constrained productivity of passive participles: their generalization of the passive to verbs they might have not heard used in this structure in the input is guided by a possibly innate semantic constraint. In keeping with the typological literature (Keenan, 1985),

8 Some of these non-adult participles, as can be seen in these examples, were introduced by the auxiliary *get*, instead of *be*, and some of them are compatible with an adjectival interpretation. Nonetheless, forms such as those in (4-c) and (4-d) are unlikely to receive a stative interpretation.

Pinker et al. (1987) claimed that children's tendency to passivize depends on the mapping between θ-roles and grammatical functions specified by the verb: early generalization of the passive is limited to verbs with Agent-Patient argument structures (i.e., actional verbs). This is an initial approach to the constraint on adult grammar.

Pinker et al. (1987) proposed an account of the adult constraint on passivizable verbs based on Pinker's (1984) Thematic Core theory, couched in Talmy's (1985) theory of semantics (see also Talmy, 1988), which has important consequences for the acquisition of the verbal passive. This account has recently been adopted by Snyder and Nguyen (2017), who articulated the idea of semantic coercion in the passive in its terms (cf. Gehrke & Grillo, 2007, 2009b). In this view, the thematic core of the passive is characterized by a change of state or circumstance undergone by the surface subject as a result of being acted upon by the complement of *by*. That is, the "core" of the English passive is characterized by the dyad of Agent-Patient θ-roles, in the "Action" field —this is in agreement with the cross-linguistic pattern noted by Keenan (1985), and for some languages it would virtually suffice to describe the semantic constraint on passivizable verbs. The English passive is more permissive: most classes of transitive verbs may passivize. According to Pinker et al. (1987), the class of passivizable verbs may also include those that come to have Agent-Patient argument structures in an extended abstract sense. Following Talmy (1985), Pinker et al. (1987) proposed that the Agent-Patient dyad has direct counterparts in other semantic fields such as Possessor-Possession in the Ownership field and Perceiver-Percept in the Perception field. Applying this to the English passive, the proposal is that verbs can be passivized if and only if they are associated with a dyad of θ-roles corresponding to the Agent-Patient dyad (either Agent-Patient itself, or its counterpart in another semantic field). Which classes of non-actional verbs may thus come to be passivizable and which do not is subject to cross-linguistic variation (see also Pinker, 1984, 1989, 2013).

Children acquiring English, according to Pinker et al. (1987), Pinker (1989, 2013) and Snyder and Nguyen (2017), limit the set of passivizable verbs to those in the "Action" field. As we have seen, the passive in English and in Portuguese is more permissive than this —in English more so than in Portuguese, perhaps due to the availability of the *se* passive, which is more frequent in colloquial speech than the

periphrastic passive and may be used with a wider range of verbs. Pinker et al. (1987, 250) stated that:

> Languages have the option of defining classes in which thematic labels are assigned to arguments whose roles abstractly resemble those of physical thematic relations; English in particular has evolved a set of distinct semantically cohesive classes of nonphysical verbs for which the thematic roles of agent and patient are defined more abstractly and thus for which the passive predicate-argument construction is permissible. What they all have in common is some construal of the underlying subject and object arguments as abstract agents and patients, respectively. Several other subclasses do not admit of such construal, and passivizability has not been extended to them.

Regarding psychological verbs, Pinker et al. (1987) noted that object experiencer verbs may be more easily deemed as passivizable than subject experiencer verbs. This is at odds with work suggesting that a wide range of object experiencer verbs may not even have the verbal passive in English (see Belletti & Rizzi, 1988; Landau, 2002, among others).

A subsequent study by Gordon and Chafetz (1990) offered an opposing view, as it proposed that the verbal passive is initially learned on a verb-by-verb basis, and that verb type has only a limited and indirect role in acquisition. The authors conducted an analysis of spontaneous production using the Brown corpus Brown, 1973. The passives they found were categorized as verbal passives, adjectival passives and adjuncts. Gordon and Chafetz (1990, 233) described adjuncts as sentences in which the passivized verbs acted as an adjunct to its subject. The subject, in turn, was usually the object of *get* or *need*. These passive constructions could be either eventive (e.g., *You need your diaper changed*) or adjectival (e.g., *You got your back sunburned*).[9]

9 All long passives were classified as verbal. In the case of short passives, *process* or *dynamic* interpretations were classified as verbal, and *states* as adjectival. Gordon and Chafetz noted that the process/state distinction was not used to classify verb types (which would be more or less equivalent to the actional/non-actional distinction), but to classify the situation denoted by the sentence. Thus, being seen by someone was classified as a process, although *see* is non-actional, whereas to be in a condition of "washedness" was classified as a state, although *wash* is actional. Another cue was the presence of an implicit logical subject (Roeper, 1987b): short passives that could

The results of the searches showed that passives (of all three types) accounted for only 0.36% of all adult utterances in the Brown corpus. Long passives were especially scarce in the input to the children: all but four of the passives were short. Non-actional verbal passives were also found to be rare in the input heard by English-speaking children: only 8% of all verbal passive tokens contained non-actional verbs.

Gordon and Chafetz's second study consisted of an experiment testing children's comprehension of actional and non-actional passives, with and without *by*-phrases. The verbs tested included nine actional verbs (*drop*, *eat*, *carry*, *hold*, *wash*, *shake*, *hug* and *kick*) and nine non-actional verbs (*watch*, *forget*, *hear*, *know*, *remember*, *believe*, *like*, *see*, *hate*). The subjects were 30 preschool children between the ages of 3;0 and 5;6. Each child was shown a picture of a boy (John) engaged in some activity. A short story described the events in the picture. Children were then asked two questions about the story —these could be actives, short passives or long passives. It must be noted that the stories involved non-reversible situations.

Despite the non-reversibility of the items used in this experiment, the results were consistent with previous findings: children achieved higher accuracy scores on verbal passives of actional verbs than on verbal passives of non-actional verbs. This was the case for both short and long passives. Performance was somewhat better for short passives than for long passives, but this difference was not statistically significant.

Gordon and Chafetz (1990) remarked that, in their experiment, predicates differed only with regard to affectedness of the internal argument. They pointed out that previous work hypothesised that young children may draw a distinction between affected and unaffected objects, and initially assume that only affected objects may occur in subject position in the passive (Fiengo, 1981; Lebeaux, 1985; Roeper, 1987a). According to Gordon and Chafetz (1990, 245):

> In their strongest form, these proposals could be construed as arguing that it is affectedness (or semantic transitivity) rather than actionality *per se* that explains children's un-

take purpose clauses (e.g., *the toy was broken to prove a point*) were classified as verbal, while those that could not (e.g., **the toy is broken to prove a point*) were classified as adjectival. The tense and aspect of the verb were also used as clues: verbal passives are most often used in the past tense, and passives in the present tense usually describe a state rather than a process. Present state processes usually require the progressive form (e.g., *the toy is being broken*).

> even performance on passives. If true, then one should find that differences accounted for by affectedness should be greater than, and to some extent orthogonal to, those accounted for by actionality. However, since non-actional verbs invariably have low-affected logical object arguments, there will always be a confound between actionality and affectedness if one simply contrasts action and non-action verbs.
>
> A way to unconfound these two factors is to consider affectedness within a single class of verbs. While non-action verbs are uniformly low in affectedness of the logical object, action verbs are by no means uniformly high. For example, holding something does not affect it to the same extent as eating it. If it is true that affectedness is significant in constraining passive interpretation, then children should perform better on a verb like *eat* than one like *hold*.

In order words, physical contact verbs, which are usually lower in affectedness of the object than other actional verbs (that is, they do not necessarily involve a change of state, possession or location), are predicted to elicit lower comprehension scores from children. In this view, although both involve physical contact, *eat* and *hold* differ crucially in that the former, but not the latter, necessarily involves a change of state of its internal argument. Gordon and Chafetz (1990) tested this prediction by obtaining adult ratings of affectedness for the verbs used in their task. Adults were asked to rate the verbs on a 7-point scale (1 = low, 7 = high). Gordon and Chafetz then assessed whether these ratings correlated with children's performance on the passive. The mean affectedness ratings for each verb, along with children comprehension scores of passives of those verbs, are given in Table 1, from Gordon and Chafetz (1990, 246).

Gordon and Chafetz reported that there was no relationship between the two measures. Hence, Gordon and Chafetz (1990, 246) concluded that "to the extent that affectedness can be considered a graded concept, the present analysis provides no evidence that it plays a role in determining children's comprehension of the passive construction." That is, the intuitive notion of affectedness, although relevant for semantic transitivity (Maratsos et al., 1985), does not seem to have a role in children's acquisition of the verbal passive.

Verb	Affectedness	% correct
Eat	6.33	58
Kick	5.67	74
Shake	5.33	48
Drop	5.17	78
Wash	4.67	77
Hug	3.67	61
Carry	2.33	82
Hold	2.0	47
Kiss	1.83	67

Table 1: Gordon and Chafetz (1990), mean "affectedness" ratings and performance on passives

However, there is another, dichotomous notion of "affectedness" to consider, as pointed out by Gordon and Chafetz (1990, 246-247):

> The notion of "affectedness", within this approach, relates only to what is strictly entailed in the definition of the verb. For example, while a person or object is normally highly affected by being kicked, an unmovable object, such as a wall, is not. Hence, the logical object of *kick* is not considered "affected" in this stricter sense because the affectedness is not strictly entailed in the meaning of the verb.

Under this definition, the verbs *carry*, *eat*, *shake*, *drop*, and *wash* are [+ affectedness], whereas *kick*, *hug*, *hold*, and *kiss* are [− affectedness]. For each of these two categories, children's correctness scores was 69% and 62%, respectively. Gordon and Chafetz argued that, while this difference is in the predicted direction, it is too small to account for the major differences in children's comprehension of passives. Assuming the view that children's acquisition of the passive proceeds verb-by-verb, given the lack of evidence for an affectedness constraint in their passives, and that it is determined by the occurrence of each verb in the passive in the input available to children, Gordon and Chafetz (1990, 235) postulated a more indirect role of affectedness:

> One of the main functions of the passive in English is to pragmatically focus the logical object of the verb by placing it in subject position. van Oosten (1986) also points

> out that short passives are used as a device for obviating mention of vague, unspecified agents (e.g., "someone" did X). In either case, the passive requires the speaker to predicate something of the logical object. For the most part, the logical objects of non-action verbs don't have much happening to them. If John SEES Bill, it is only John who is doing or experiencing something. There would be little reason to focus on Bill unless he was maybe trying to hide from John. On the other hand, if John HITS Bill, then there is something happening to Bill, and one might want to focus on that by making Bill the surface subject in a passive.

In sum, the affectedness constraint on the derived subject of the verbal passive, with correlates with verb type, is a consequence of the pragmatic constraints on passive use. This leads to the scarcity of verbal passives with non-actional verbs, which generally have unaffected derived subjects, in the input the child perceives. Conversely, actional verbs, which tend to have affected objects that may be focused in discourse, make better candidates for passivization. Therefore, the majority of verbal passives heard by children are actional passives. Hence, Gordon and Chafetz (1990) claimed that affectedness has an important, albeit indirect, role in accounting for the verb type contrast seen in children's performance on passives.

3.3 THE UNIVERSAL PHASE REQUIREMENT

The UPR, proposed by Wexler (2004), stemmed from previous work on the A-Chain Deficit Hypothesis (ACDH), originally proposed by Borer and Wexler (1987). The ACDH posited that children's delay with verbal passives was due to their inability to build a movement A-chain between the underlying object and the subject position. According to this proposal, the ability to form A-chains matures around the age of 5 years.

Important developments in syntactic theory have made the ACDH untenable. The VP/*v*P-internal subject hypothesis argued that the subject is generated within the verb phrase, and then raises to a higher position (Koopman & Sportiche, 1991, among others). As this forms an A-chain, under ACDH children are predicted to have difficulties with the raising of subjects of transitive and unergative verbs

from Spec of VP/vP to Spec of TP, contrary to fact (Stromswold, 1996).

The UPR aimed at overcoming this problem. Wexler (2004) claimed that children's delay does not lie in the formation of A-chains, but rather in phase grammar: the child lacks non-phasal defective v at early stages. The fundamental claim of the UPR, as formulated by Wexler (2004, 164), is given in (5):

(5) Universal Phase Requirement (UPR)
(Holds of pre-mature children, until around age 5).
v defines a phase, whether v is defective or not.

In (5), "pre-mature children" refers to children who have not yet gone through the relevant maturational moment, by which non-phasal defective v_{def} becomes available. In other words, the fundamental difference between child and adult grammar, with regard to the verbal passive, is that young children take all vPs to be strong phases.

The syntactic analysis of the English verbal passive underlying the UPR is as follows: the verbal passive involves v_{def}, a light verb that does not select an external argument. This v is also used in unaccusatives, as opposed to the phasal v used in transitive and unergative structures.[10] In a verbal passive, the object moves from the complement of V to Spec of T, to satisfy the features of T. As v is defective, there is no external argument in Spec of v. See the example below, from Wexler (2004, 163):

(6) $John_i$ T was v V pushed t_i

There is no Minimal Link Condition (MLC) violation in this structure, given that nothing intervenes between the base and the final positions of the internal argument —it is the only DP in the sentence (Wexler, 2004). There is, however, a second sense of locality in Minimalist theory. Phase theory posits that derivations have to proceed in a local manner, spelling out certain structures immediately (each phase) and only allowing parts of a structure (the edge) to be involved in processes higher in the cycle. In the system proposed by Chomsky (1999), there are two phasal categories —C (when T is non-defective) and (non-defective) v. Operations crossing phase boundaries are subject to the condition in (7) (as formulated in Wexler, 2004).

10 But see Legate (2003), who claimed that unaccusative/passive v defines a strong phase in adult grammar.

(7) Phase Impenetrability Condition
When working at a phase, only the edge (the head and the spec(s)) of the next lower phase are available for analysis, and nothing lower than the edge. In particular the complement is not available.

This condition ensures that the operations Agree and Move take place within one phase. As in a verbal passive v is defective, it does not count as a phase, hence, in this case, the operations Agree and Move also take place within one phase (defined by root C). If v were a phase, the operations Agree, between T and the internal argument, and Move, of the internal argument to Spec of T, would not take place, given that the internal argument would be inaccessible to T. The verbal passive would not converge, because T would have undeleted uninterpretable features (Wexler, 2004).

The UPR postulated that children have the adult v*, a v head that selects an external argument and defines a phase, but they do not have v_{def} (weak/defective v), a v head that does not select an external argument and 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 (the asterisk is used here to indicate its phasal status). Around the age of 6, v_{def} becomes maturationally available, and from that moment on children are able to interpret verbal passives of actional and subject experiencer verbs in an adult manner. Later studies, however, put this maturational moment closer to the ages of 7 or 8 years (Gavarró & Parramon, 2017; Hirsch & Wexler, 2006b).

It is not the case that children take passive/unaccusative v to be non-defective —if so, there would be a subject position available for the logical object to move to at the edge of the lower phase, before moving to Spec of T. The child's defective v and the adult's defective v differ only in their phasal/non-phasal status: the child's defective v is phasal, while the adult's is not.[11]

11 In this regard, the UPR differs drastically from the External Argument Requirement Hypothesis (EARH), proposed by Babyonyshev, Ganger, Pesetsky, and Wexler (2001). Under the EARH, young children take structures with defective v to be ungrammatical. Wexler (2004) argued against this hypothesis on the basis of empirical data from raising-to-subject with *seem* (i-a) and non-raising structures with the same verb (i-b). The examples below are from Wexler (2004, 162).

(i) a. Bert seems to Ernie to be wearing a hat.
b. It seems to Ernie that Bert is wearing a hat.

Because young children take defective v to be phasal, the internal argument is inaccessible to the higher phase and cannot Agree with and Move to T. 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. Thus a child subject to UPR represents verbal passives as non-convergent (or ungrammatical) (Wexler, 2004).

The UPR makes clear predictions for several structures. Verbal passives, unaccusatives and raising-to-subject constructions are delayed because they involve a v_{def} head. Those structures that do not involve a v_{def} head, namely adjectival passives and transitives, are not delayed.

Crucially, the UPR, like the ACDH, does not account for the contrast between actional and subject experiencer passives. Borer and Wexler (1987) proposed that this contrast is due to an asymmetry between the two verb types in the formation of adjectival passives: generally, actional verbs may form adjectival passives in English (8), whereas subject experiencer verbs may not (9). The examples below are from Borer and Wexler (1987, 135).

(8) a. the doll appears combed; the combed doll; combed though the doll was, Janie recombed her.
b. the doll appears torn; the torn doll; torn though the doll was, John decided to keep her.

(9) a. *the doll appears seen; *the seen doll; *seen though the movie was, John decided to go again.
b. *the doll appears liked; *the liked doll; *liked though the doll was, John did not to keep it.

The proposal is that children in a premature stage (i.e., prior to maturation of v_{def}) interpret verbal passives of actional verbs as adjectival passives, an option that is not available for verbal passives of subject experiencer verbs. That is, young children have better results with short actional passives due to the availability of a syntactic homophone (an s-homophone, as Babyonyshev et al., 2001 termed it) that does not involve movement across a phase boundary. Babyonyshev et al. (2001, 7) defined an s-homophone as in (10):

According to Wexler (2004), both (i-a) and (i-b) involve defective v, yet only (i-a) is delayed in child English. This poses a problem for the EARH, as it predicts that both structures are delayed.

(10) A phrase α is an s-homophone of β if α and β have distinct structure but common pronunciation.

In other words, in adult grammar a sentence such as (11) may be interpreted either as in (11-a), if it receives an adjectival passive reading, or as in (11-b), if it receives a verbal passive reading. Under UPR, in premature child grammar (11-a) is the only interpretation available. Because the child is unable to derive verbal passives, a string that in adult grammar may be ambiguous between two readings, reflecting two different underlying syntactic structures, is unambiguously adjectival in child grammar.

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

This misanalysis of intended verbal passives as adjectival passives has been often referred to as an "adjectival strategy", although Borer and Wexler (1987) did not use this term. Their argument was that young children, who do not command verbal passive grammar, do command adjectival passive grammar. Their proposal does not describe a strategy as this term is usually employed.

Oliva and Wexler (2018), who called this proposal the Adjectival Interpretation Strategy (AIS), a term that I will use from now on, noted that it may result in an interpretation that, while it allows children to recover the arguments' correct θ-roles, has stative semantics instead of eventive semantics. Since comprehension experiments on the verbal passive generally measure children's ability to recover θ-roles, the AIS produces good results (with some verbs), despite the difference in aspectual interpretation. In fact, under UPR the good performance shown by English-speaking children on actional passives is illusory, and does not reflect grammatical knowledge of the verbal passive. The measure of children's knowledge is their performance on passives of subject experiencer verbs, or any verbal passive that does not have an adjectival passive s-homophone.

This proposal was, to a great extent, motivated by results such as those from Horgan (1978). She found that children produce almost exclusively short passives and suggested that early passives describe after-the-fact observations about states, as opposed to an event. Thus, passives produced by children at early stages are similar to sentences like *Mary is blond* or *Jane is bored*.

The AIS, as described by Borer and Wexler (1987), was criticized from early on. Namely, Weinberg (1987, 178) pointed out that many subject experiencer verbs may form adjectives in English (12).

(12) a. a respected woman
b. an admired man
c. an appreciated complement
d. a despised dictator
e. a loathed criminal
f. an expected retort

Moreover, Hirsch and Wexler (2006b) pointed out that some actional verbs do not make very good adjectives (e.g. ???*a held letter*), while some psychological verbs make better adjectives (e.g. *a remembered poem*) (see also Section 3.1 above).

The AIS has also been criticized by Crawford (2014). She conducted a grammaticality judgement task with 21 English-speaking children between the ages of 4 and 6, and asked them to judge adjectival and verbal passives with a purpose clause and progressive aspect. Under the assumption that the progressive and purpose clauses are disallowed in adjectival passives (*The candy bar is being broken* vs. **The candy bar is being unbroken*), she hypothesised that if children interpret verbal passives as adjectival they would be expected to reject them if in the progressive and with a purpose clause. In the study, however, children accepted such sentences at a rate of 70% on average.[12]

In order to overcome some of these issues, Hirsch and Wexler (2006b), following the tripartite typology of participles proposed by Embick (2004), suggested that children's adjectival passives are resultative. Hirsch and Wexler argued that the syntactic analysis Embick proposed for resultative adjectival passives is unproblematic for children under UPR, as the DP that must raise to subject position is originally merged at the edge of v, hence it is accessible for movement to T. That is, the v of resultative participles is not defective and thus introduces an external argument. Hence, Hirsch and Wexler (2006b, 134) argued that:

> This would be compatible with children taking passives to describe events. A resultative analysis of verbal passives is

12 In response to this, Gavarró and Parramon (2017) argued that children's acceptance of progressive with adjectival passive is due to a delay in the development of aspect (see e.g., Wagner, 2012).

> also quite reasonable since the verbal passives and resultative passives seem to imply each other; they have the same truth-values. If we consider immature children to interpret verbal passives as resultatives, we also have a clear reason to predict that psychological passives will be delayed longer than actional passives. Actional verbs allow a resultative reading since they involve a target state. Psychological verbs for the most part do not involve such a target state. Those actional verbs that do not clearly involve a target state are those that make poorer adjectives (e.g. *held*), assuming no salient context, while those psychological verbs making better adjectives tend to involve such a target state (e.g. *remembered*). The prediction, in need of confirmation, is that children will perform worse on actional passives that make poor resultative passives, and score better on psychological passives that make good resultative passives.

Hirsch and Wexler (2006b) argued that previous work obtained results consistent with the AIS. Babyonyshev and Brun (2003) claimed that evidence from spontaneous production by children acquiring Russian, a language with different verb forms for imperfective and perfective aspect, supports the idea that early passives are adjectival. In a study of the spontaneous production of eight children (2;6-3;9 years), Babyonyshev and Brun found that of the 212 passives produced by the children, 193 (91%) were perfective. This result is not due to a differential between perfective and imperfective passives in the input available to children, as in parental speech only a minority of passives were perfective (44.2%). The authors attributed this result to the fact that perfective verbal passives in Russian are identical to some adjectival passives —short adjectival participles (e.g., *svyazana* "knitted"), but not long participial forms (e.g., *vyazanaja* "knitted"), are homophonous with perfective verbal participles.

Hirsch and Wexler (2006b) also cited a study on the acquisition of Greek, a language in which adjectival passives and verbal passives are not homophonous, as support for an adjectival misanalysis of verbal passives at early stages. Terzi and Wexler (2002) aimed to test the prediction that children will be equally delayed for all passives, in the absence of an adjectival s-homophone for any kind of passive. Unlike English and Romance passives, which employ auxiliaries, Greek passives are formed with non-active morphology on the verb (labelled

NAct in the glosses below). Greek also has adjectival passives, which are formed with a copula verb. In addition to being morphologically distinct from the passivized verb, the adjectival participle in Greek is inflected for gender, number and Case, and agrees with the DP it modifies and its determiner (13-c). The passivized verb is inflected for number, person and Tense. Both verbal and adjectival passives may take *by*-phrases. The examples below are from Terzi and Wexler (2002, 521-522).

(13) a. I fitites diavasan to vivlio.
the students read.3P.Act the book
"The students read the book."

b. To vivlio diavastike (apo tous fitites).
the book read.3S.Past.NAct by the students
"The book was read (by the students).

c. To vivlio ine
the.Nom.Neutr.S book.Nom.Neutr.S is
diavasmeno (apo olous tous neous fitites).
read.Nom.Neutr.S (by all the new students)
"The book is read by all the new students."

Terzi and Wexler (2002) tested 30 Greek-speaking children between the ages of 3;8 and 5;10 on their comprehension of long passives with six actional verbs (*sproxno* "touch", *xtipao* "beat", *akoubao* "touch", *kinigao* "chase", *vourtsizo* "brush" and *filao* "kiss") and four non-actional verbs (*agapao* "love", *mirizo* "smell", *vlepo* "see" and *akouo* "hear"). Each actional verb was tested in a verbal passive and an adjectival passive. Each non-actional verb was tested in two verbal passives, as they may not occur in adjectival passives. Children were given two pictures simultaneously, to choose the one that corresponded to the sentence read by the experimenter. For passive sentences, one of the pictures depicted the adult reading, the other the θ-role reversal reading.

The results showed good performance on adjectival passives (83% at age 3). With long verbal passives, on the other hand, children's performance was uniformly poor: 3-year-olds obtained an accuracy score of only 3% with actional, and performance with non-actional verbs was similarly poor; 4-year-olds achieved 33% correct responses on actional passives and 13% correct responses on non-actional passives; and 5-year-olds obtained a score of 44% correct responses on actional passives and 20% correct responses on non-actional passives. Recall that the English-speaking 4-year-olds tested by Maratsos et al.

obtained a score of 85% on actional passives and 34% on non-actional passives, while 5-year-olds obtained a score of 91% on actional passives and 65% on non-actional (or mental state) passives.

In view of these results, Terzi and Wexler (2002) claimed that the prediction that children are unable to interpret verbal passives in the absence of an adjectival s-homophone is supported by the Greek acquisition data. This is shown by children's poor performance on long adjectival passives. However, although their performance was overall poorer than that of English-speaking children (e.g., Maratsos et al., 1985), Greek-speaking children also showed a verb type contrast, as they did somewhat worse on non-actional passives than on actional passives. The authors speculated that this may be because actional passives are more felicitous than non-actional passives. In fact, Terzi and Wexler (2002, 531-532, fn. 12) noted that the grammaticality of the non-actional long passives tested in their experiment is considered debatable by their informants, a judgment that is shared by the Greek-speaking author of the paper. The authors also pointed out that traditional grammars of Greek (e.g., Tzartzanos, 1946) have noted that passives of verbs such as *akouo* "hear" and *vlepo* "see" do not take *by*-phrases. In addition, the authors noted that these non-actional short passives receive an interpretation closer to that of a middle. Given the goals of the study, which aimed to compare the findings from Greek with those from English, non-actional long passives were included despite these restrictions, and the items used aimed to force a verbal passive interpretation. Thus, for an item such as *I Maria akougete apo ti mama* "Maria is heard by mom", the matching picture depicted Maria playing loud music while her mother listened to her from the next room. As noted by the authors, this may have led to items that were less non-actional than intended —this hypothesized effect, however, is not visible in the results, as far as can be ascertained from the percentages of correct responses presented in the paper.

Hirsch and Hartman (2006) (citet in Hirsch & Wexler, 2006a) considered English-speaking children's comprehension of passives with actional verbs (e.g. *hit*) and with object experiencer verbs (e.g. *fear*), which are seldom included in studies on the acquisition of the passive. They found that passives of object experiencer verbs are acquired earlier than passives of actional verbs. The authors interpreted this as evidence for the AIS, as object experiencer verbs make even better adjectival passives than many actional verbs. However, the issue of whether object experiencer verbs have a verbal passive in English is controver-

sial (see Grimshaw, 1990; Landau, 2002; Pesetsky, 1995), hence it may be the case that this study tested children on adjectival passives of object experiencer verbs without a verbal passive s-homophone.

The AIS has also received support from research on Romance. One of the experiments reported by Gavarró and Parramon (2017) targeted adjectival readings of verbal passives by Catalan-speaking children. In Catalan, verbal passives are not homophonous with adjectival passives: verbal passives are formed with the auxiliary *ser*, and adjectival passives with *estar*. The experiment was a two-choice sentence-picture matching task. One of the pictures depicted a human character performing an action on another, while the other picture depicted only the result state of the action. The verbs tested were: *afaitar* "shave", *eixugar* "dry", *alimentar* "feed", *rentar* "wash", *pentinar* "comb", *dibuixar* "draw", *tapar* "cover" and *pintar* "paint". The test items were adjectival passives, with the auxiliary *estar*, and short verbal passives, with the auxiliary *ser*. Responses to verbal passive items were considered correct when the child chose the picture depicting the action, and responses to adjectival passive items were considered correct when the child chose the picture depicting the resut state. Two example items are given in (14), taken from (Gavarró & Parramon, 2017, 18-19).

(14) a. La nena està pentinada.
the girl Aux combed
"The girl is combed." *Adjectival passive*

b. La nena és pentinada.
the girl Aux combed
"The girl is combed (by someone)." *Verbal passive*

The subjects were 120 children between the ages of 3 and 8 years. Gavarró and Parramon found that performance with adjectival passives was above chance for all age groups. In contrast, with verbal passives performance was not above chance until the age of 7. There were statistically significant differences between short passives and adjectival passives, with the latter being better understood than the former, until age 7. For short passives, there are significant differences between 3-, 4-, 5- and 6-year-olds, on the one hand, and 7-8-year-olds and adults, on the other. Adjectival passives were well understood (with above chance performance) even by the youngest group. Nonetheless, there were statistically significant differences between 3-year-olds and children aged 5 or older. Gavarró and Parramon (2017) concluded that adjectival passives are well understood by

Catalan-speaking children from early on, while verbal passives are comprehended only by age 7 —until this point, verbal passives are interpreted as adjectival.

This outcome is not predicted by Borer and Wexler's original proposal: if no s-homophony holds, children should be unable to resort to an adjectival interpretation. Gavarró and Parramon (2017) argued that, although strict s-homophony does not hold, the difference between the adjectival and verbal passive lies in auxiliary selection only. Therefore, they claimed that the conditions on s-homophony should be loosened given cases such as Catalan, in which the difference between the two constructions is not prominent.[13]

Criticism of this study came from Lima Júnior, Augusto, and Corrêa (2018), who argued that the use of the present tense in Gavarró and Parramon's experiment may have contributed to an attributive reading of the verbal passive items. They argued that the strings *és* + *participle* and *està* + *participle* could induce permanent (individual-level predicate) (15-a) and temporary (stage-level predicate) (15-b) adjectival readings (the examples and glosses below were taken from Lima Júnior, Augusto, & Corrêa, 2018, 41). If children interpreted the *és* + *participle* strings as copula constructions with individual-level predicates, the stative picture would be a match for the verbal passive items.

(15) a. El nen és callat.
the boy be.Prs;individual-level quiet
"The boy is quiet." *Permanent reading*

b. El nen està callat.
the boy be.Prs;stage-level quiet

13 However, recall that Gonzaléz (2018) found an asymmetry between short and long passives of *sentir* "hear" and *veure* "see", in that Catalan-speaking children performed above-chance from the age of 7 years on short passives (77.5% correct responses), whereas with long passives they did not perform above-chance until the age of 9-10 (87.5% correct responses). The statistical analysis of the results also found significant differences between short and long passives of perception verbs at the ages of 6 and and 8 (but not at the ages of 4, 5, 7 and 9-10). A similar result was obtained by Cunill (2012), who found that Catalan-speaking 7-year-olds performed well on short passives of subject experiencer verbs (*recordar* "remember", *odiar* "hate", *estimar* "love" and *veure* "see"), but still showed difficulties with long passives of the same verbs. According to Gonzaléz (2018), this length contrast may be explained by the AIS, as *by*-phrases are generally incompatible with the adjectival passive. However, as noted by Oliva and Wexler (2018), length contrasts are expected only with passives of actional verbs, given that subject experiencer verbs disallow adjectival interpretations regardless of the presence or absence of the *by*-phrase.

"The boy is quiet (now)." *Temporary reading*

Lima Júnior, Augusto, and Corrêa (2018) pointed out that, although Catalan distinguishes verbal and adjectival passives via auxiliary selection, tense may also have implications for the interpretation of *ser* + *participle* strings (see also Duarte & Oliveira, 2010b, for EP). Thus, the simple present might facilitate a predicative reading, which may have contributed to the results from Catalan showing a similar pattern of responses for verbal and adjectival passives.

In the same vein as Gavarró and Parramon (2017), Oliva and Wexler (2018) tested the adjectival interpretation of verbal passives in Spanish. As we saw for Catalan, Spanish verbal and adjectival passives are not strict s-homophones: adjectival passives are formed with the auxiliary *estar*, while verbal passives are formed with the auxiliary *ser* —see the examples in (16), adapted from Oliva and Wexler (2018, 69). Oliva and Wexler (2018), following Gavarró and Parramon (2017), assumed that the difference in auxiliary is not sufficient to prevent children from interpreting verbal passives as adjectival passives.

(16) a. La niña es peinada (por su madre).
the girl Aux combed by her mother
"The girl is combed (by her mother)." *Verbal passive*

b. La niña está peinada.
the girl Aux combed
"The girl is combed." *Adjectival passive*

Oliva and Wexler (2018) assumed that under UPR children assign a resultant-state adjectival passive reading to verbal passives (see also Hirsch & Wexler, 2006b). Resultant-state adjectival passives are still stative, but the state is a more complex, derived, entity than the primitive "target" state of a verb like *break* or *close* (Kratzer, 2000). Kratzer argued that any activity verb can be made into a resultant-state adjectival passive and that, in English, *by*-phrases are incompatible with resultant-state adjectival passives.

Using an experimental design similar to the one by Gavarró and Parramon (2017), Oliva and Wexler (2018) tested Spanish-speaking children on the adjectival interpretation of passives. The subjects were 60 children between the ages of 3;0 and 6:11. A set of 8 actional verbs was used (*afeitar* "shave", *besar* "kiss", *dibujar* "draw", *golpear* "hit", *lavar* "wash", *mojar* "wet", *peinar* "comb", *tapar* "cover"). Each of these verbs was tested in a short verbal passive and in an adjectival passive. For

each item there were two pictures to choose from: one represented an action (the eventive picture) and the other the result of the action (the stative picture). For short verbal passives, responses were considered correct when the eventive picture was chosen; for adjectival passives, responses were considered correct when the stative picture was chosen.

The results show that children chose the stative picture more often for both verbal and adjectival passives. This includes the oldest child group tested: for verbal passives, 6-year-old children chose the eventive picture only 40.8%. By contrast, a control group of 15 adults performed above 95% on both verbal and adjectival passives.

Oliva and Wexler (2018) claimed that these results support the UPR, and in particular the idea that children resort to adjectival interpretations of verbal passives prior to maturation of v_{def}. The authors also argued that these results are consistent with the ones for Catalan (Gavarró & Parramon, 2017): in both languages, children apply the adjectival strategy despite the change in the auxiliary between verbal and adjectival passives.

It should be noted, however, that similarly to Gavarró and Parramon (2017), Oliva and Wexler (2018) used the Present on verbal (*ser*) and adjectival (*estar*) passives. See the example in (17), from Oliva and Wexler (2018, 89).

(17) Homer es/está afeitado.
Homer SER/ESTAR shaved.Part
"Homer is shaved."

This is felicitous for adjectival passives, but not for verbal passives, given that the Present in Catalan and in Spanish, as in Portuguese, generally has an habitual rather than an ongoing event interpretation (see Chapter 2).

3.4 THE UNIVERSAL FREEZING HYPOTHESIS

An alternative account was proposed by Hyams and Snyder (2005) and Snyder and Hyams (2015). The UFH assumes the Smuggling account of the verbal passive (Collins, 2005a). As we saw in Chapter 2, Smuggling involves movement of the lower VP, past the external argument, to a position from which the underlying internal argument can move to the grammatical subject position without incurring in a minimality violation. Crucially, Collins (2005a) assumed that Smug-

gling constitutes an exception to the Freezing Principle (Müller, 1998; Ross, 1967, 1986; Wexler & Culicover, 1980), which forbids movement out of already moved phrases. The Freezing Principle was formulated by Müller (1998) as in (18):

(18) *Freezing Principle*:
*X [$_{Y}$ . . . <X> . . .] <Y>

Snyder and Hyams (2015) claimed that children differ from adults in that they do not allow any exceptions to the Freezing Principle. Young children subject to UFH do not allow movement from the raised VP in Smuggling contexts, and thus do not have recourse to mechanism that adults use in order to circumvent a potential minimality violation. Therefore, in child grammar, the external argument blocks movement of the internal argument to subject position in the verbal passive. Smuggling becomes maturationally available around age 4.

To account for the verb type contrast seen in children's comprehension of verbal passives, Snyder and Hyams (2015) followed suggestions by Gehrke and Grillo (2007, 2009b): the later acquisition of non-actional passives is explained by the need of both Smuggling and semantic coercion. Under the version of Smuggling proposed by Gehrke and Grillo (2007, 2009b), based on Travis's (2000) theory of event structure, a typical actional verb has a VP1 that expresses a causing sub-event and introduces the external argument. V1 in turn selects a VP2 that expresses a consequent sub-event, and introduces the internal argument. In the passive, VP2 contains the argument that is smuggled past the external argument. A non-actional verb, however, is stative and has no internal event structure, hence no VP-shell structure. A state can still be passivized via semantic coercion, if it can be reconceptualized as the consequent state of an event. For adults, the impossibility of semantic coercion seems to entail the impossibility of passivization —see the sentences in (19)-(20), from Gehrke and Grillo (2009b, 14), who cited Reinhart (2002) as the source of the examples. Snyder and Hyams (2015) proposed that the ability to semantically coerce a stative verb into a verb with a result state, with an eventive VP shell, becomes maturationally available around age 6.

(19) a. The news worried/ surprised/ excited Max.
b. Max was worried/ surprised/ excited (by the news).

(20) a. The solution appeals to me/ escapes me.
b. *I am appealed/ escaped (by the solution).

In sum, Snyder and Hyams (2015) posited two maturational changes relevant for passive acquisition. First, Smuggling becomes maturationally available around age 4. The child then becomes fully adult-like in her ability to comprehend and produce short and long passives of actional verbs. That is, she is able to smuggle the internal argument past the external argument in a VP shell, and then raise it from the shell into Spec of TP, provided that the verb has internal event structure (an event and a result state). Second, the ability to coerce a non-actional verb so as to have an eventive VP shell and a result state becomes available around the age of 6 years. 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.[14]

According to Snyder and Hyams (2015), evidence for the view that intervention in A-movement determines passive delay (due to the inaccessibility of Smuggling) comes from the acquisition of French and Italian reflexive constructions. In French and Italian, many transitive verbs can be combined with a reflexive clitic to yield a middle or inchoative/anticausative interpretation. Writing on French, Sportiche (2010) argued that these constructions are unaccusative (with the exception of those reflexive-clitic constructions that express true reflexive actions). Snyder and Hyams (2015) refer to these unaccusative constructions as "formally (but not semantically) reflexive clitic con-

14 Snyder and Hyams (2015) also modified Gehrke and Grillo's proposal to account for additional, conflicting data. The authors interpreted the results of previous studies showing early acquisition of the English passive as experimental artifacts (Crain et al., 2009; O'Brien et al., 2006; Pinker et al., 1987), claiming that the items used in these studies introduced [+Topic] or [+WH] feature on the internal argument, which allowed children as young as 3 to move the internal argument from its base position to Spec of TP prior to movement of the VP shell without incurring in a Relativized Minimality (RM) violation (Rizzi, 1990, 2001, 2004). For instance, in O'Brien et al.'s (2006) study, even 3-year-olds succeeded with non-actional passives like *Oscar is liked by the parrot*. To generate a passive sentence with the correct word order, with *liked* before *by the parrot*, the Smuggling account needs a shell to raise to Spec of VoiceP. If 3-year-old children can build a structure that generates the right word order, they must already have a shell available. Snyder and Hyams (2015) suggested that the effect of coercion is not to add an extra shell, but to make an existing, "stative" shell "eventive". Moreover, they proposed that even when the UFH is no longer operative, the Freezing Principle still applies selectively: a "stative" shell has to obey the Freezing Principle, but an "eventive" one does not. This solution, however, seems to be theoretically unmotivated, and it may be argued that it poses problems of its own, in particular with regard to the representation of event structure in the syntax, as it entails that the VP-shell structure does not have any interpretive consequence (cf. Travis, 2000).

structions" (FRCCs). They claimed that FRCCs constitute an interesting testing ground for the UFH, as these unaccusatives resemble the verbal passive, insofar as they involve A-movement of the underlying object to subject position, but there is no intervener in A-movement, as the external argument is not represented in the syntax.

The French sentences below, from Snyder and Hyams (2015, 11), illustrate this point. The sentence in (21-a) is formally reflexive but interpreted as a middle: the subject *les pommes* "the apples" denotes the Patient, not the Agent, of the selling event. As illustrated by the sentence in (21-b), which has an anticausative interpretation, in the present perfect FRCCs take the auxiliary BE (not HAVE) and the perfect participle agrees in number and gender with the internal argument. Both the auxiliary BE and participial agreement with the internal argument are also found with lexical unaccusatives (21-c) and verbal passives (21-d). When the main verb is used transitively, it takes the auxiliary HAVE, and the participle does not display number and gender agreement with the object (21-e).

(21) a. Les pommes se vendent bien ces jours-ci.
the apples SE sell.Pres.3.P well these days-here
"Apples are selling well these days."

b. Les nuages se sont dispersés.
the clouds SE BE.Pres.3.P disperse-Perf.F.P
"The clouds dispersed."

c. Les filles sont tombeés dans la piscine.
the girls BE.Pres.3.P fall-Perf.F.P in the pool
"The girls fell in the swimming pool."

d. Les pommes ont été vendues.
the apples HAVE.Pres.3.P BE-Perf sell-Perf.F.P
"The apples have been sold."

e. Pierre a vendu des pommes.
Peter HAVE.Pres.3.S sell-Perf.M.S of+the apples
"Peter sold some apples."

On Snyder and Hyams's account, children are predicted to perform well on FRCCs, given that raising of the underlying object to subject position does not cross over an external argument (overt or implicit). If they know the relevant syntax, they should select BE (*essere*/*être*) in FRCCs, and HAVE (*avere*/*avoir*) elsewhere.

In support of this prediction, Snyder and Hyams (2015) argued that previous research on the acquisition of French and Italian FRCCs

showed that children produce fully adult FRCCs. Using the HAVE/BE alternation described above as a probe into children's knowledge of FRCCs, Snyder, Hyams, and Crisma (1995) examined the spontaneous speech data of three Italian children (Diana, Guglielmo and Martina), recorded by Cipriani et al. (1989), and one French child (Phillippe) recorded by Suppes, Smith, and Léveillé (1973). The ages covered by these corpora ranged from 1;07.18 to 3;03.12. The results showed that for all children the correlation between reflexivity and the HAVE/BE alternation reached statistical significance.

Snyder and Hyams (2015) performed the same analysis on additional French and Italian corpora. They examined the spontaneous production of two French-speaking children, Max and Léa (Cat & Plunkett, 2002), and two Italian-speaking children, Elisa (Tonelli Collection, MacWhinney, 2000) and Rafaello (Cipriani et al., 1989). The ages of the children in these corpora ranged from 1;05 to 3;05. The correlation between reflexivity and the HAVE/BE alternation was statistically significant for all four children. In absolute terms, of the 114 relevant utterances only four contained an error.

In summary, every 2 year-old in these analyses performed very well with FRCCs, with near perfect command of the HAVE/BE alternation. Snyder and Hyams (2015) argued that this level of success is highly unlikely to have occurred by chance or through the use of a non-grammatical strategy.

Further research has extended the UFH to the acquisition of French *faire*-causatives (Borga & Snyder, 2018b). Kayne (1975) divided these constructions into two main types, the *faire-infinitif* (or *faire-à*) and the *faire-par*. In *faire-à* causatives with a transitive lower verb, the causee is obligatorily realized as either a dative-marked DP following the embedded object (22-a) or as a dative clitic preceding *faire* (22-b). In *faire-par* causatives, the causee appears in an optional *par*-phrase, following the object of the lower verb (22-c). The examples below are from Borga and Snyder (2018a, 13).

(22) a. Jean a fait laver la voiture à Paul.
John has made wash.Inf the car Dat Paul
"John made Paul wash the car."

b. Jean lui a fait laver la voiture.
John he.Dat has made wash.Inf the car
"John made him wash the car."

c. Jean a fait laver la voiture (par Paul).
John has made wash.Inf the car (by Paul)

"John had the car washed (by Paul)."

There are some semantic differences between the two causative constructions, which are similar to those between *be* passives and *get* passives (Guasti, 2016). Namely, stative verbs are disallowed in both *get* passives and *faire-par* causatives (23), and both constructions require their Patient argument to be "affected" by the action the verb denotes, otherwise the sentence is odd (24). *Faire-à* causatives and *be* passives also pattern together, in that they are not subject to these restrictions (25)-(26). The examples are from Borga and Snyder (2018b, 14).

(23) a. ?/*John got loved.
b. ?/*Ils ont fait aimer Jean (par Marie).
they have made love John by Mary
"They had John loved (by Mary)."

(24) a. ?/*The answer got found.
b. ?/*Ils ont fait trouver la solution (par le
they have made find the answer (by the
chercheur).
researcher)
"They had the answer found (by the researcher)."

(25) a. John was loved.
b. Ils ont fait aimer Jean à Marie.
they have made love.Inf John Dat Mary
"They made Mary love John."

(26) a. The answer was found.
b. Ils ont fait trouver la solution au chercheur.
they have made find the answer Dat+the researcher
"They made the researcher find the answer."

Based on these similarities, Guasti (2016) speculated that the development of French causatives will pattern with that of English *get* and *be* passives, that is, *faire-par* causatives will precede *faire-à* causatives. Borga and Snyder (2018a), referenced in Borga and Snyder (2018b), tested this prediction and found that it is confirmed by their data. They examined 11 corpora of spontaneous speech from children acquiring French, whose ages ranged from 1 year to 7 years, and did not find a single instance of a clear *faire-à* causative before age 4 (27). Conversely, two of the children were able to produce *faire-par* causatives with overt *par*-phrases at age 2 (28)-(29). The examples are from Borga and Snyder (2018b, 15-16).

(27) Je faisais faire quoi à mes trois enfants?
I made do what dat my three children
"What did I make my three children do?" (Madeleine 4;01,27)

(28) Elle se fait tirer par la boule comme ça fait du bruit.
she self makes pull by the ball as that makes of-the noise
"She's getting annoyed ['getting herself pulled'] by the ball since it's making noise." (Madeleine 2;05,12)

(29) Il va [se] faire gronder par sa maman et papa.
he goes-to [self] make scold by his mom and dad
"He's going to get (himself) scolded by his mom and dad." (Antoine 2;09,16)

Borga and Snyder (2018b, 11) argued that the UFH can account for the findings from Romance causatives, assuming a slightly updated version of the Freezing Principle (30):

(30) *Freezing Principle* (modified):
In the following configuration, no operation (such as move or Agree) may relate X and Z: *Z... [$_Y$... <X> ...] <Y>

While the Freezing Principle is normally discussed in relation to movement, in keeping with the idea that Smuggling can also have the effect of making Agreement possible, Borga and Snyder (2018a, 2018b) proposed that the Freezing Principle can have the effect of blocking Agreement.

Borga and Snyder (2018b) also presented new results bearing on the UFH. Belletti and Rizzi (2012) argued that Italian active sentences with object experiencer verbs, but not with subject experiencer verbs, require Smuggling. Under their analysis, in an active with an object experiencer verb the lower Theme argument must move past the higher Experiencer, hence Smuggling is required to avoid a RM violation. By contrast, subject experiencer verbs do not require Smuggling, as the Theme is not raised past another argument. Borga and Snyder noted that, assuming the UFH, the prediction for acquisition (at least for Italian and French, which present similar psych verbs) is that mastery of object experiencer verbs will be late, after age 4, while subject experiencer verbs will be acquired much earlier. To test this hypothesis, they analysed the spontaneous production of 11 children acquiring French (the same corpora that were used in their examination of

faire-causatives) and found that object experiencer verbs are very infrequent in children's speech prior to age 4, with a total of 13 possible uses of these verbs and a total of 644 uses of subject experiencer verbs (out of 111,098 utterances). In an analysis of the production of the 5 children whose corpora extended beyond the age of 4, they found a total of 17 uses of object experiencer verbs and 144 uses of subject experiencer verbs (out of 15,106 utterances). Some examples of children's productions, taken from Borga and Snyder (2018b, 26) are provided below.

(31) *Subject experiencer verbs*

a. T' as vu la dessin.
you have seen the drawing
"You saw the drawing." (Léonard, 2;04,27)

b. Je veux de l' eau.
I want of the water
"I want some water." (Marie, 1;11,25)

c. Bah non moi aime pas la banane.
well no me like not the banana
"Well no, me, (I) don't like banana." (Théotime, 2;01,11)

(32) *Object experiencer verbs*

a. Ben ils nous embêtaient.
well they us annoyed
"Well they annoyed us." (Anaé, 5;01,20)

b. Et puis et puis après elle me elle... ça me gênait.
and then and then after she me she... that me bothered
"And then and then after she me she... that bothered me." (Léonard, 2;11,29)

c. Ça le dégoûte un peu.
that him disgusts a bit
"That disgusts him a bit." (Madeleine, 6;05,04)

d. J 'ai envie de t' embêter.
I have desire of you to-annoy
"I want to annoy you." (Théophile, 4;01,24)

Importantly, Borga and Snyder (2018b) interpreted the UFH as a condition on processing, rather than a grammatical deficit. Their claim is that processing of the type of chain found in passives and constructions with object experiencer verbs, derived via Smuggling, demands more computational resources than those available at early stages. Concretely, the proposal is that "the grammatical representa-

tions employed in the production or comprehension of smuggling-derived structures are a source of excessive computational demands, and as such are largely beyond the child's processing capabilities until a relatively late point (circa age four) in brain development" (Borga & Snyder, 2018b, 21). Hence, in their view, the UFH is a hypothesis that concerns the developmental changes in the brain's computational resources for language processing, rather than maturation of grammar.

Lastly, it should be noted that, although neither Snyder and Hyams (2015) nor Borga and Snyder (2018a, 2018b) make reference to adjectival readings of verbal passives as part of their proposal, the UFH does not preclude adjectival readings of actional passives until the age of 4 and of non-actional passives until the age of 6, when the necessary conditions are present.

3.5 STUDIES SHOWING EARLY ACQUISITION OF THE PASSIVE

Some studies have found early production and comprehension of verbal passives, under certain experimental conditions (see Crain & Fodor, 1993; Crain et al., 2009; O'Brien et al., 2006 for English, Koring, Sangers, & Wexler, 2015; Verrips, 1996 for Dutch, and Bencini & Valian, 2008; Manetti, 2012, 2013; Volpato et al., 2016 for Italian). Early passive production has also been found in Sesotho (Demuth, 1989), Inuktitut (Allen & Crago, 1996), Kiswahili and Kigiriama (Alcock et al., 2011), Zulu (Suzman, 1985, 1990) and K'iche' Maya (Pye & Pox, 1988).

Contra Borer and Wexler (1987), Crain and Fodor (1993) and Crain et al. (2009) argued that the paucity of long passives in children's productions may be due to the rarity of situations in which this construction is uniquely felicitous. It may be the case, then, that given an appropriate pragmatic and discourse context for passive use, children should display the ability to produce long passives. Crain et al. (2009) verified this hypothesis using an elicited production task. Thirty two 3- and 4-year-old children were tested. An example item, from Crain and Fodor (1993, 132), is provided below:

(33) *Adult:* See, the Incredible Hulk is hitting one of the soldiers. Look over there. Darth Vader goes over and hits a soldier. So Darth Vader is also hitting the soldiers. Ask Keiko which one.
Child to Keiko: Which soldier is getting hit by Darth Vader?

This item was designed to favour the production of long passives via the contrast with another potential agent in the context (the Incredible Hulk), although it does not preclude actives (e.g., *Which soldier is Darth Vader hitting?*). In this experiment, children produced *by*-phrases 50% of the time. Moreover, all but three of the 32 children tested by Crain and Fodor (1993) produced at least one long passive. Examples of passives produced by children, selected from the sample in Crain et al. (2009, 131-133), are given below:

(34)
a. Which car gets crashen by this big bus? (Leyna 4;9)
b. Which girl is pushing, getting pushed by a car? (Todd, 3;8)
c. She got knocked down by the Smurfie. (Phoebe, 3;4)
d. He's being flied over from that. (Jessica 3;9)
e. It's getting ate up from Luke Skywalker. (Peter 4;1)
f. Which Gummi Bear was crashed by the car? (Scott, 4;5)

On the basis of these results, Crain and Fodor (1993) and Crain et al. (2009) claimed that, under appropriate discourse conditions, children are able to produce long passives. This constitutes evidence for their grammatical competence. Crain et al. (2009) noted, nonetheless, the high frequency of the auxiliary *get*, the occurrence of non-adult participles with *-en* (e.g., *crashen*, *huggen*) and the occasional substitution of *by* with other prepositions (e.g., *from*).

Following Crain and Fodor (1993), O'Brien et al. (2006) suggested that children's poor performance on experimental tasks testing knowledge of the long passive may be due in part to infelicitous conditions for their use. They hypothesized that young children will successfully comprehend long passives if an extra character who could also be the agent is added to the experimental setting. Using the truth-value paradigm, they tested 3- and 4-year-olds long passives of actional and non-actional verbs, in contexts with or without an extra character. Examples of the relevant protocols, from O'Brien et al. (2006, 447), are provided in (35) and (36).

(35) Condition 1: No felicity.
Exp.: In this story we have Santa and a naughty elf. The elf took a plate of goodies left for Santa and hid behind a wall so Santa would not see him.
Elf: Hee, hee. Santa won't see me behind this wall, and I can have these treats all for myself.

Exp.: What the elf forgot, though, is that Santa has super vision. That's how he can see who is naughty and who is nice. He can see through anything, even a wall. So, right away, Santa saw the elf.
Santa: Aha! I see you elf. I see you!!
Exp.: Gobu, can you tell me something about that story?
Gobu: Well, let's see. In that story, the elf was seen by Santa.

(36) Condition 2: Felicity.
Exp.: Oscar is very grouchy. He doesn't like anybody. I wonder if someone likes him, though? Here's a Fancy Lady and a parrot. I wonder if the Fancy Lady likes Oscar?
Fancy Lady: Ew! Oscar stinks. I don't like him because he lives in a garbage can.
Exp.: Well, I wonder if the parrot likes him?
Parrot: Oh, yes, I like you Oscar. I don't mind that [you live] in a garbage can. I like you, Oscar.
Exp.: Gobu, can you tell me something about that story?
Gobu: Well, let's see. Oscar was liked by the parrot.

According to O'Brien et al. (2006), their prediction is confirmed by their results. Children at the ages of 3 and 4 performed better on the Felicity condition than on the No Felicity condition, for both actional and non-actional passives. The children performed above chance with long passives when the extra character was included. When this felicity condition was not satisfied, they performed at chance.

Snyder and Hyams (2015) raised some concerns with regard to this study. Namely, one of O'Brien et al.'s experiments also tested 4-year-old children on short passives. As reported by O'Brien et al., children performed poorly with one of the non-actional verbs tested (*hear*), and the authors excluded all items with that verb from analysis. The only remaining non-actional verb was *see*. Snyder and Hyams argued that, in the materials used by O'Brien et al., this verb was used in actional sense (*discover* or *find*, as in the game of hide-and-seek). More generally, Snyder and Hyams (2015) argued that the materials used in Crain et al.'s and O'Brien et al.'s experiments allowed the child to overcome a potential RM violation, by introducing a [+WH]/ [+Topic] feature on the derived subject.

Early production and comprehension of passives has also been found for Italian. Using a sentence–picture matching paradigm, Volpato et al. (2016) tested children between the ages of 3 and 6 on their

comprehension of short and long passives with actional verbs (*baciare* "kiss", *colpire* "hit", *imboccare* "feed", *inseguire* "chase", *prendere a calci* "kick", *spingere* "push") and with non-actional verbs (*amare* "love", *annusare* "smell", *sentire* "hear", *vedere* "see"). Crucially, half the items had the auxiliary *essere* "be" and the other the auxiliary *venire* "come" —while the *essere* passive is ambiguous between eventive and stative readings, the *venire* "come" passive is unambiguously eventive, with or without a *by*-phrase. The children were asked to choose the matching picture from a set of three: one depicted the adult interpretation, the other the θ-role reversal interpretation, and the other a change of agent and no change of theme. The prediction this last type of picture intended to test concerns adjectival interpretations: if children interpret verbal passives as adjectival passives and are unable to interpret the *by*-phrase, they are predicted to choose the agent-change picture.

There was no main effect of auxiliary (*essere* vs. *venire*). Only children between the ages of 4;9–5;5 showed significant differences between the two auxiliaries, with *venire* passives eliciting better results than *essere* passives. The authors attributed this to the ambiguity seen in *essere* passives, which may pose difficulties for children. Children obtained high accuracy scores on actional *venire* passives: 85% without a *by*-phrase and 76% with a *by*-phrase at age 3.

Replicating results from English and other languages, actional passives were easier to comprehend than non-actional passives for all groups, both with *essere* and *venire*, regardless of the presence of a *by*-phrase. Because this verb type contrast is also seen in *venire* passives, Volpato et al. (2016) claimed that it cannot be due to an adjectival interpretation (contra Borer & Wexler, 1987). Likewise, Volpato et al. argued that this result is unexpected under Snyder and Hyams's approach —given that in all items the derived subject was a topic, no verb type contrast is expected.

Volpato et al. (2016) also tested children's ability to produce unambiguous verbal passives, using a picture description task. The participants were 60 children between the ages of 3 and 6. As shown in the example item below (Volpato et al., 2016, 918), the experimenter described two pictures and then asked the child what happened to one of the characters.

(37) Experimenter: Nella prima foto Sara spinge Marco. Nella seconda foto, la mamma spinge Marco. Cosa succede a Marco nella prima foto?

> "In the former picture Sara is pushing Marco. In the latter, the mum is pushing Marco. What's happening to Marco in the former picture?"
> Target: Marco è/viene spinto da Sara.
> "Marco is being pushed by Sara."

Although passives were not a preferred response, children in all age groups produced passives. Children produced more actional passives than non-actional passives. The difference between short and long passives was not statistically significant —this is a striking result, given that the experimental materials strongly favour the production of the *by*-phrase. Notably, the auxiliary *venire* was preferred by all age groups. According to Volpato et al. (2016), this may reflect a preference for an unambiguous structure. A preference for *venire* in progressive contexts may also have biased children towards this auxiliary.[15]

Demuth (1989, 1990) suggested that there is evidence for early comprehension of passives in Sesotho. She found that children acquiring this language produce passive sentences with a *by*-phrase from the age of 2;8.[16] Although there is no adjectival passive in Sesotho, passivization is a very productive phenomenon. Discourse properties of this language seem to favor the use of passives (Demuth, 1990). The verbal passive is more frequent in Sesotho than in English, largely due to a grammatical constraint that precludes the formation of subject *wh*-questions: Sesotho requires every subject to be [+Topic]. In order to ask a question equivalent to the English *Who broke the vase?*, a Sesotho speaker must use a verbal passive, that is, a sentence equivalent to *This vase was broken by who?* Children acquiring Sesotho show knowledge of this constraint, as they use the passive structure when asking subject questions. Demuth reported that, in an analysis of longitudinal spontaneous-speech samples from four Sesotho-speaking children (spanning ages 2;01- 4;01), she found that passives were produced by children as young as 2 years. Importantly, the passive sentences produced by Sesotho learners cannot have a stative interpretation. Demuth (1989) also found successful comprehension of passives in Sesotho-speaking 3-year-olds. Early production of the passive has also been found in Inuktitut (Allen, 1996; Allen & Crago, 1996),

15 For Snyder and Hyams (2015), these experiments (Volpato, Tagliaferro, Verin, & Cardinaletti, 2013; Volpato, Verin, & Cardinaletti, 2012), like those by Pinker et al. (1987), O'Brien et al. (2006) and Crain and Fodor (1993), may have obtained better results by manipulating discourse features in the testing materials.

16 However, see criticism and counterevidence in Crawford (2004, 2009).

including with subject experiencer verbs, K'iche' Maya (Pye & Pox, 1988), Kiswahili and Kigiriama (Alcock et al., 2011), and Zulu (Suzman, 1985).

Evidence for early knowledge of the verbal passive also comes from psycholinguistic studies, in particular priming studies. Syntactic priming procedures capitalize on speakers' tendency to repeat aspects of syntactic structures across otherwise unrelated sentences. That is, prior exposure to and processing of a syntactic structure facilitates production of that same structure (Branigan, 2007; Pickering & Ferreira, 2008). Crucially, it is held that for syntactic priming to occur the speaker must have access to an abstract representation that may be retrieved to process and comprehend the prime and re-used in subsequent production. Hence, priming may be informative about the structure underlying children's production (Messenger, Branigan, McLean, & Sorace, 2012). Studies employing this methodology have consistently found that children are more likely to produce full passive target sentences after being exposed to full passive primes (e.g., Bencini & Valian, 2008; Huttenlocher, Vasilyeva, & Shimpi, 2004; Shimpi, Gámez, Huttenlocher, & Vasilyeva, 2007).

Messenger et al. (2011) found this effect with short passive primes: the 3- and 4-year-olds English-speaking children who participated in their experiment were more likely to describe pictures depicting transitive events using full passives after being exposed to short passive primes, as opposed to active primes. The authors claimed that these results constitute evidence that children have (shared) abstract syntactic representations for both short and full passives. That is, children are not limited to an adjectival analysis of passives. However, as is often the case in the psycholinguistic literature, Messenger et al. (2011) conflated passives with *be* and *get* in their classification of full passives.

A subsequent study by Messenger, Branigan, McLean, and Sorace (2012) examined children's production of passives with different types of verbs, in an attempt to assess whether the verb type effect found by Maratsos et al. (1985) reflects children's acquisition of the verbal passive or is, in fact, an experimental artifact. Messenger, Branigan, McLean, and Sorace (2012) reported that, in two priming experiments, children produced more actional passives (both correct passives and reversed passives, i.e., passives with reversed θ-roles) after hearing passive primes with actional and object experiencer verbs (Experiment 1) and passive primes with subject experiencer verbs (Experi-

ment 2). A sentence-picture matching task, however, replicated previous results. Messenger, Branigan, McLean, and Sorace (2012) claimed that these results suggest that children are not delayed with the passive, and that the verb type contrast found in previous studies is a task-related effect: they are due to children's poor recognition of depictions of subject experiencer verbs. In other words, Messenger, Branigan, McLean, and Sorace (2012) hypothesised that the verb contrast found in the acquisition of English and Romance passives may reduce to an issue of imageability. However, this is inconsistent with some of the results obtained by Maratsos et al. (1985): children at the age of 5 years obtained 65% correct responses on passives of mental state verbs in a sentence-picture matching task, as opposed to 35% in a stimulus sentence-question procedure (see Section 3.1.2). Messenger, Branigan, McLean, and Sorace (2012) did not offer an explanation as to why children performed better on a sentence-picture matching task than on a stimulus sentence-question procedure, and neither did they offer a hypothesis as to the particular difficulties posed by stimulus sentence-question procedures.

Messenger, Branigan, McLean, and Sorace (2012) also noted that the results from the priming tasks bear only on children's knowledge of the constituent structure of the passive, not on their ultimate interpretation of these sentences. They hypothesised that one way that their results may be reconciled with previous results is that children have more difficulty in interpreting some passives, due to the θ-roles involved or the type of event denoted by the main verb. Hence, it is possible that children's passives are initially constrained with regard to non-syntactic aspects, in particular post-syntactic interpretation.

In a subsequent study, Messenger, Branigan, and McLean (2012) aimed to probe into this issue. They reported a syntactic priming experiment that examined if children's acquisition of the passive is a staged process, with constituent structure preceding the acquisition of non-canonical θ-role mapping. In this experiment, two groups of children, 6-year-olds and 9-year-olds, described transitive actions after hearing active and passives primes. The primes involved actional and object experiencer verbs, whereas the targets always involved actional verbs. That is, the prime and the target could have the same or distinct θ-roles. If syntactic priming is independent from θ-role assignment, then variation in the θ-roles of the prime sentence should not have an effect on priming. As in previous studies, children showed a priming effect for passives, regardless of the θ-roles

involved in the prime and the target. However, 6-year-olds also produced reversed passives (i.e., passives showing θ-role reversal, with the Agent in subject position) following passive primes. According to Messenger, Branigan, and McLean (2012), this suggests that by age 6 children have not yet mastered non-canonical θ-role mapping, although constituent structure is in place. By the age of 9, children have mastered non-canonical θ-role mapping as well as constituent structure. Thus, Messenger, Branigan, and McLean (2012, 997) suggested that:

> One possible explanation consistent with the evidence is that children's acquisition of the passive is a staged process: some aspects of structure may be more difficult to master than others, and hence may be acquired more slowly. More specifically, the non-canonical thematic role mappings associated with passives may be more difficult to acquire than the constituent structure associated with passives. Children may therefore master the constituent structure of the passive at a relatively early age, in the sense that they are able to consistently produce and parse this structure appropriately, before they are able to consistently achieve the relevant non-canonical mappings of thematic roles onto grammatical functions. Such a possibility is interesting because other research has suggested that children's early language may show a disparity between acquisition of aspects of language that relate to form and those that relate to meaning, with earlier mastery of forms than of the meanings that map onto those forms (Naigles, 2002).

If so, the apparent disparity and variability in studies on the acquisition of the English passive would reflect the fact that different methodologies tap into different aspects of the passive structure.

3.6 PREVIOUS STUDIES ON PORTUGUESE

There have been few studies on the acquisition of the verbal passive in EP and BP. Sim-Sim (2006), cited in Estrela (2015), presented partial results for EP. She tested 4-, 6- and 9-year-olds on the comprehension of reversible and non-reversible passives. While non-reversible passives were understood by children at age 4 (94% correct responses), it was

only by age 9 that children understood reversible passives (77% correct responses). Spontaneous production data reveal that passives are infrequent in the speech of both children and adults, in both EP and BP (Estrela, 2016; Perotino, 1995; Pesirani, 2009). Regarding elicited production, the experiments with BP-speaking children reported in Gabriel (2001) provide the only results available for this language. In her study, BP-speaking children between the ages of 3 and 6 years watched animations showing transitive actions with two characters as the agent and patient. The animation was paused in a particular scene and the prompt "tell me about *the agent/non-agent*" elicited the child's production. The prediction was that the non-agent condition would be more likely to elicit passive sentences. Indeed, no passives were produced in the agent-oriented condition. In the non-agent oriented condition, however, the number of passives was small (7% for 3- and 4-year-olds and 11% for 5– and 6-year-olds) and none of the passives produced in the younger group included a *by*-phrase. In fact, the non-target responses showed that BP-speaking children tended to resort to structures such as topic constructions (e.g., *O porco, o gato levou ele* "The pig, the cat took him") and sentences with verbs that allow non-agent subjects (e.g., *ganhar* "gain", *sentir* "feel", *receber* "receive", etc.). According to Gabriel (2001), the high frequency of these alternatives in the input would explain the results. Lima Júnior, Corrêa, and Augusto (2018) argued that the fact that passives occurred in the production of the younger children suggests, nevertheless, that this structure has been identified as a possible way of expressing a transitive event in which the non-agent is prominent.

Estrela (2013, 2015) used a sentence-picture matching task (Experiment 1) and a truth-value judgement task (Experiment 2) to test 3- to 5-year-olds' knowledge of verbal passives in EP. In Estrela's Experiment 1, 72 children, divided into three age groups (3-, 4- and 5-year-olds), were tested on actives and passives of actional verbs. The task, originally designed for English, was an adaptation to EP of the one described in the cross-linguistic study by Armon-Lotem et al. (2016). Given a set of four pictures, children were asked to choose the one that best described the test sentence. A total of 22 verbs were tested: *empurrar* "push", *examinar* "examine", *beijar* "kiss", *alimentar* "feed", *lavar* "wash", *perseguir* "chase", *coçar* "scratch", *pentear* "comb", *desenhar* "draw", *sujar* "dirty", *acariciar* "stroke", *abraçar* "hug", *secar* "wipe, dry" *tapar* "cover", *carregar* "carry", *puxar* "pull", *barbear* "shave", *fotografar* "fotograph", *pintar* "paint, make up", *divertir*

"amuse" (erroneously translated as "tickle" by Estrela, 2015), *magoar* "hit, hurt", *morder* "bite". For each verb, three items were built — an active sentence (38-a), a long passive sentence (38-b) and a short passive sentence (38-c). The examples below are from Estrela (2015, 159):

(38) a. O rapaz fotografa o avô.
the boy photographs the grandfather
"The boy photographs the grandfather."

b. O avô é fotografado pelo rapaz.
the grandfather Aux.event photographed by+the boy
"The grandfather is photographed by the boy."

c. O avô é fotografado.
the grandfather Aux.event photographed
"The grandfather is photographed."

The results replicated for EP the passive delay found in languages such as English, Italian, Spanish and Catalan. All child groups performed well on the active items (86% correct responses at age 3), but verbal passives, both short and long, were not understood by children until age 4 (77% correct responses at age 4 vs. 64% correct responses at age 3). The difference between the active and the passive was statistically significant. No effect of length was found: children showed similar performance on passives with and without a *by*-phrase.

Estrela's Experiment 2 aimed to assess, for EP, the verb type contrast originally found in English. Thus, 75 children between the ages of 3 and 5 (divided into three age groups) were tested on short and long passives of actional and non-actional verbs. For each item, children were asked to indicate whether a sentence was "true" or "false" with regard to an image. A set of 8 actional verbs was tested: *empurrar* "push", *lavar* "wash", *pentear* "comb", *abraçar* "hug", *paint* "paint, make up", *tapar* "cover", *fotografar* "photograph". Similarly, a set of 8 non-actional verbs was tested: *avistar* "sight", *odiar* "hate", *ver* "see", *adorar* "love, adore", *ouvir* "hear, listen", *detestar* "detest, hate", *amar* "love".

For actional passives, children at age 4 obtained an accuracy score of 79%, thus demonstrating that they comprehend these sentences. For non-actional passives the results were much poorer: children at age 5 obtained an accuracy score of only 64%. The difference between actional and non-actional passives was statistically significant from the age of 4. Three-year-olds showed similar performance on actional and non-actional passives (50% correct responses on both sentence types). There were no statistically significant differences be-

tween short and long passives, for either verb type. Estrela (2015) pointed out that there were also differences between actives of actional verbs and actives of non-actional verbs: all child groups performed at ceiling (100% correct responses) with actional verbs, while 3- and 4-year-olds gave only 71% correct responses, and 5-year-olds 86%, with non-actional verbs.

Estrela (2013, 2014) also tested children's ability to distinguish between the three types of passives found in EP (verbal, stative and resultative). Using a grammaticality judgment task, she tested forty 5- and 6-year-olds on certain properties that distinguish between the three types of passives. Besides the difference in the auxiliary, eventive and stative passives may be distinguished by the (un)acceptability of an instrumental PP (39-a); eventive and resultative passives may be distinguished by the (un)acceptability of a purpose clause (39-b); and resultative and stative passives may be distinguished by the (un)acceptability of the adverbial expression *em x tempo* "in x time" (39-c). The example items below, with the expected grammaticality judgments, are from Estrela (2014, 241-242).

(39) a. O castelo foi/*está construído com uma
the castle Aux.event/Aux.state built with a
pá.
shovel
"The castle was/is built with a shovel."

b. O carro foi/*ficou lavado para agradar
the car Aux.event/Aux.result washed to please
ao pai.
to+the father
"The car was/got washed to please the father."

c. O quadro ficou/*está pintado em cinco
the picture Aux.result/Aux.state painted in five
minutos.
minutes
"The picture got/is painted in five minutes."

A set of 20 verbs was tested: *apagar* "turn off", *arranjar* "fix, arrange", *colorir* "colour", *construir* "build", *cortar* "cut", *coser* "sew", *desenhar* "draw", *despejar* "dump, pour (a material); empty (a vessel)", *destruir* "destroy", *escovar* "brush", *estragar* "spoil", *lavar* "wash", *ligar* "turn on", *molhar* "wet, splash", *partir* "break", *pintar* "paint", *plantar* "plant", *rasgar* "tear", *riscar* "line through", *varrer* "sweep".

The task comprised 60 pairs of test sentences, which contrasted eventive vs. stative passives, eventive vs. resultative passives and resultative vs. stative passives, as exemplified in (39). Children were shown a video with two characters; each of them claimed to be a better speaker of EP than the other. Each item comprised a pair of sentences for the child to judge. One of the characters uttered a sentence, and was immediately followed by the other character, who uttered the second element of the pair. Then the child was asked to judge which character had "said it better". All eventive and resultative passives were in the past tense, and all stative passives were in the present tense.

Estrela (2014) reported that children at age 5 performed at chance on all three types of sentence pairs. There were no significant differences between the three conditions. At age 6, children performed better on eventive vs. stative and resultative vs. stative pairs (71.75% and 64.46% correct responses, respectively) than on eventive vs. resultative pairs (53.75% correct responses). The difference in performance across the three conditions was statistically significant. Thus, Estrela (2014) claimed that, for children at the age of 6, the distinction between resultative and stative passives is easier to recognize than the distinction between eventive and resultative passives (for which 6-year-olds are still at chance level); the distinction between eventive and stative passives, in turn, is easier to recognize than that between resultative and stative passives. Nonetheless, the performance of the 6-year-olds did not reach adult level (the criterion adopted was at least 75% correct responses).

These results may reflect the structural and interpretive differences between stative participles, on the one hand, and resultative and eventive participles, on the other hand: while stative participles are pure adjectives and do not involve an eventive component, both resultative and eventive participles involve eventivity (i.e., both involve a v head in their derivation). Resultative and eventive participles may be distinguished only by the absence, in the former, and the presence, in the latter, of an agentive component (a feature on v). Conversely, on the tripartite typology of participles proposed by Embick (2004), stative and eventive participles are maximally different, as they diverge in both eventivity and agentivity. This may explain children's better performance on this contrast than on the two other contrasts. Moreover, it seems that agentivity on its own was not sufficient for children to distinguish between resultative and eventive participles.

It should be noted that Estrela's (2013) tasks present some flaws. Namely, in her first experiment, which tested actional verbs, some of the sentences were odd (e.g., *O rapaz está a ser puxado/divertido*, "The boy is being pulled/amused"), while some of the verbs may not be known by younger children (*perseguir* "chase", *examinar* "examine", and some of the actions depicted in the pictures employed by Estrela are usually described using a complex predicate with a light verb instead of a full verb, unlike in her experiment (e.g., *dar um abraço* "give a hug" instead of *abraçar* "hug" and *dar um beijo* "give a kiss" instead of *beijar* "kiss"). Moreover, the test items were in the Present, which is infelicitous in EP when describing ongoing situations, as was the case in the scenarios employed by Estrela (2013). In her second experiment, testing actional and non-actional passives, the images presented to the child were disparate in drawing style, and seemed to belong to different experiments. There is the possibility that some images were more readable or more attractive than others for the children. In addition, the verb *avistar* "sight" is unlikely to be known by young children. Finally, the paradigm used in her third experiment, a grammatical acceptability task, is arguably too demanding for young children. Hence, even the performance of the 6-year-olds, who showed some knowledge of auxiliary selection and participle typology in EP passives, may have been dampened by this methodology.

In contrast to Estrela's results for European Portuguese, recent work on Brazilian Portuguese by Lima Júnior, Augusto, and Corrêa found evidence for early passive acquisition. Lima Júnior, Augusto, and Corrêa (2018) claimed that children between the ages of 3 and 6 are able to discriminate between eventive and adjectival (stative/resultative) predicates.

Lima Júnior, Augusto, and Corrêa (2018) used a truth-value judgment task to evaluate children's sensitivity to auxiliary selection and its effect on interpretation (whether a predicate will be interpreted as stative, resultative or eventive). Two types of videos were shown to children. Both started with the same event (e.g., someone combing someone else's hair). In video type 1, the final scene corresponded to the result of the process recorded in the video (compatible ending). In video type 2, the final scene corresponded to the result of an action that undid the effect of the process (incompatible ending). Children were then asked yes/no-questions involving the three auxiliaries, as

shown by the examples below (Lima Júnior, Augusto, & Corrêa, 2018, 44).

(40) a. O menino foi penteado?
The boy Aux.event combed
"Was the boy combed?" *Eventive reading*

b. O menino ficou penteado?
The boy Aux.result combed
"Did the boy become combed?" *Resultative reading*

c. O menino está penteado?
The boy Aux.state combed
"Is the boy combed?" *Stative reading*

In the case of adjectival passives (40-b)-(40-c), the answer was expected to depend on the ending of the video: in the compatible ending condition, the expected answer was "yes"; in the incompatible ending condition, the expected answer was "no". In the case of verbal passives (40-a) the expected answer was always "yes", as the event has taken place regardless of the result shown in the end of the video.

A set of 16 videos was made, using 16 actional verbs: *amarrar* "tie up", *amassar* "squeeze", *pentear* "comb", *arrumar* "clean up", *enfeitar* "adorn", *dobrar* "fold", *cobrir* "cover", *enrolar* "curl", *pintar* "paint", *esconder* "hide", *molhar* "wet", *lavar* "wash", *vestir* "dress", *maquiar* "put make up on", *calçar* "put on shoes", and *riscar* "scratch". Eight of these videos were also used to test resultative passives.

Forty-eight children were tested —24 children were initially tested on eventive and stative predicates, and an additional 24 children on resultative predicates only. The data from this second group was contrasted with the previously obtained data on eventive passives, in a between-subjects design. Children were divided into two age groups: Group A, (3;4-4;4, mean = 3;8) and Group B (5-5;10, mean = 5;5). A control group of 24 adults was also tested.

Table 2 (from Lima Júnior, Augusto, & Corrêa, 2018, 46) provides the distribution of the yes-responses obtained for eventive and stative passives.

The statistical analysis of the yes-responses of the 24 children tested for eventive and stative passives showed that there was no main effect of *Age*. There was a main effect of *Video type* (more yes-responses were given to videos with compatible ending), as well as a main effect of *Type of predicate* (more yes-responses were given to eventive passives than to stative passives). There was also a significant inter-

Age group	Passive	Video ending	Yes-responses
Group A (3-4 y/o)	*Eventive*	Compatible	3.83
		Incompatible	2.67
	Stative	Compatible	4
		Incompatible	0
Group B (5 y/o)	*Eventive*	Compatible	3.75
		Incompatible	2.75
	Stative	Compatible	4
		Incompatible	0.08

Table 2: Lima Júnior, Augusto, and Corrêa (2018), mean yes-responses for eventive and stative passives

action between *Type of predicate* and *Video type*. Lima Júnior, Augusto, and Corrêa (2018) noted that this effect was due to the higher number of yes-responses for eventive passives in the incompatible ending condition: children seemed to find it difficult to give a yes-response to the eventive passives when, in order to do so, they had to disregard the ending of the video. Nonetheless, performance was above chance in both age groups.

Table 3 (from Lima Júnior, Augusto, & Corrêa, 2018, 47) presents the distribution of yes-responses to resultative passives.

Age group	Video ending	Yes-responses
Group A	Compatible	3.83
	Incompatible	0.25
Group B	Compatible	4
	Incompatible	0

Table 3: Lima Júnior, Augusto, and Corrêa (2018), mean yes-responses for resultative passives

There was no significant main effect of *Age*. There was a main effect of *Video type* (as in the previous test, more yes-responses were given to videos with compatible endings). There was also a main effect of *Type of predicate* (more yes-responses were given to eventive than to resultative passives). A significant interaction between *Type of predicate* and *Video type* was also found. For compatible video endings, the number of yes-responses was slightly greater in the resultative condition. For

the incompatible ending, on the contrary, more yes-responses were given to eventive passives.

Lima Júnior, Augusto, and Corrêa (2018) noted that, at first sight, these results may appear to suggest that the verbal passive is acquired late, and that verbal passives are interpreted as adjectival by young children. They argued that children's response patterns in the incompatible ending videos, showing a distinction between eventive predicates and stative/resultative predicates, suggests that some distinction between the three auxiliaries is made by the age of 3 years. Children appear to differentiate between the three auxiliaries available in Portuguese and their semantic properties. In particular, the *SER + participle* string seems to provide the interface information that is relevant for the lexical representation of the passive/voice feature that enables the computation of eventive passives. Lima Júnior, Augusto, and Corrêa (2018) attributed children's non-adult behaviour on eventive passive items with incompatible endings to the need to ignore the conclusion of the video. That is, the poorer performance on these items was due to language external factors, namely the development of executive functions (Diamond, 2006; Miyake et al., 2000; Rodrigues & Marcilese, 2014).

Lima Júnior, Corrêa, and Augusto (2018) tested the production of passives by BP-speaking children (ages 3-6) under favourable conditions, using two priming experiments to elicit passives: (i) an experiment in which a discourse topic was introduced (and systematically recovered throughout the test) by the experimenter as the subject of passive sentences, thus priming the production of these structures; and (ii) a experiment in which the production of passives was elicited without the introduction of a discourse topic, its systematic reintroduction, or the use of passives by the experimenter. This second experiment was presented to those children who had taken part in the first experiment and to a group of children who had not taken part in that experiment, in order to verify if the priming effect would linger across tasks.

Lima Júnior, Corrêa, and Augusto's first experiment was an adaptation of the "Snap" Game (Branigan, McLean, & Jones, 2005). The crucial change was that a single character (a dog named Bob) was introduced and maintained as the topic of the game throughout the task —in all 16 pairs of cards Bob was the patient of the transitive action to be described. In this game, the experimenter and the child alternate going first in describing picture cards. When the experimenter

goes first, his/her description of their card serves as a prime for the child's description of theirs. In the task designed by Lima Júnior, Corrêa, and Augusto (2018), the experimenter's description was always a long verbal passive with Bob as the derived subject (e.g., *O Bob foi picado pela cobra* "Bob was bitten by the snake"). This was the Direct prime condition. The Indirect prime condition corresponded to the child's turns in going first, the idea being that, although no prime was provided for those items, the child can nonetheless be influenced by the experimenter's constant use of passives.

The participants were 28 children, which were divided into two groups with 14 subjects each: Group A (3;0-3;10, Mean 3;4) and Group B (5;0-6;10, Mean 5;9). All sentences produced by children that presented the complex auxiliary-participle (Aux_ser + V_part) were scored as verbal passives.

The distribution of the passives produced by the children is given in 4 (from Lima Júnior, Corrêa, & Augusto, 2018, 102):

Group	Type of priming	N (112)	%
Group A	Direct prime	46	41.07
	Indirect prime	25	23.31
Group B	Direct prime	78	69.74
	Indirect prime	40	35.71

Table 4: Lima Júnior, Corrêa, and Augusto (2018), Experiment 1, distribution of passives per condition

The statistical analysis found a main effect of *Age* and a main effect of *Type of priming*. There was no statistically significant interaction between the two variables. Lima Júnior, Corrêa, and Augusto (2018) pointed out that the age effect was due to an increase in the number of passives in the Direct prime condition, as the difference between the number of passives produced in the Indirect prime conditions did not reach significance level. More verbal passives were produced in the Direct prime condition than in the Indirect prime condition. Nonetheless, all the children tested produced, at least, one verbal passive in the Indirect prime condition. Production of reversed passives was marginal (4 sentences). From this data, Lima Júnior, Corrêa, and Augusto (2018) concluded that children at age 3 can and do produce verbal passives under favorable conditions. In other words, young children have knowledge of passive grammar.

Lima Júnior, Corrêa, and Augusto's second experiment, a picture description task, aimed to verify whether the effect of syntactic priming lingered across tasks, even if none of the characters in the pictures was a discourse topic. This second task was presented as an activity immediately following the "Snap" Game. Images depicting a transitive action were presented and sentence production was elicited by a prompt focusing on the non-agent character (*What happened to X?*). The characters depicted were not reintroduced in any systematic way. The participants in this second task were the same 28 children who participated in Experiment 1 (Group 1), as well as a control group of 20 children (Group 2), which was divided into two age groups: Group A (2;11–3;8, Mean 3;2) and Group B (5;1–6;3, mean: 5;9).

Lima Júnior, Corrêa, and Augusto (2018) reported that, of the total 224 possible utterances in the second task, Group 1 produced 26 passives. Twelve of the 28 children (5 in the 3– and 4-year-old group; 7 in the 5– and 6-year-old group) produced at least one unambiguous verbal passive. More errors were produced in the second task than in the first one: 12 reversed sentences were produced by children in Group 1, but only 3 of these sentences were reversed passives. Children in the control group did not produce any passives. Lima Júnior, Corrêa, and Augusto argued that these results suggest that the priming effect was maintained across tasks. Notably, under this effect 5 of the younger children Group 1 produced passives. Contra Snyder and Hyams (2015), Lima Júnior, Corrêa, and Augusto argued that this is not expected under the assumption that passive grammar develops after the age of 4.

3.7 SUMMARY

As we have seen, the most prominent findings from previous studies of passive acquisition are:

1. Children show a delay in the acquisition of verbal passives. This is a robust finding, having been replicated by several studies for English (Hirsch & Wexler, 2006b; Maratsos et al., 1985; Orfitelli, 2012b), as well as for German (Bartke, 2004; Mills, 1985), Dutch (Verrips, 1996), French (Sinclair et al., 1971), Spanish (Oliva & Wexler, 2018; Pierce, 1992), and Catalan (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018; Parramon, 2015), among other languages. However, some studies have found early acquisition

of the passive (Crain et al., 2009; Demuth, 1990; O'Brien et al., 2006; Volpato et al., 2016, among others).

2. There is no consistent length effect in the comprehension of verbal passives. Many studies have found only a slight and statistically non-significant advantage of short passives over long passives (Gordon & Chafetz, 1990; Hirsch & Wexler, 2006b; Maratsos et al., 1985, among others), whereas some have found a length effect (Gavarró & Parramon, 2017; Oliva & Wexler, 2018). Armon-Lotem et al. (2016) found that performance on short and long passives varies widely across languages.

3. In languages such as English, Italian, Spanish and Catalan, there is a verb type effect on children's comprehension of verbal passives, with passives of actional verbs being better understood than passives of subject experiencer verbs (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018; Maratsos et al., 1985; Oliva & Wexler, 2018; Sudhalter & Braine, 1985; Volpato et al., 2016, among others).

Regarding Portuguese, Estrela (2013) replicated for EP the delay in the comprehension of the verbal passive and the verb type asymmetry previously found for languages such as English, Catalan and Spanish, among others. Moreover, in a grammaticality judgment task, children at the age of 5 were unable to distinguish eventive, resultative and stative passives. Children at the age of 6, on the other hand, were able to differentiate eventive and stative passives, as well as between resultative and stative passives, but not between eventive and resultative passives. However, Lima Júnior, Augusto, and Corrêa (2018) found evidence that BP-speaking children between the ages of 3 and 5 years are able to distinguish between adjectival and verbal passives. Moreover, Lima Júnior, Corrêa, and Augusto (2018) found evidence for a priming effect on children's production of passives, which lingered across tasks.

Various accounts have been proposed to explain the delay observed in the acquisition of the passive in several languages. These accounts can be classed into three categories: i) grammatical accounts, which focus syntactic aspects of the verbal passive that may be subject to maturation of syntax or rely on computational resources that young children have not yet developed — the UPR (Hirsch & Wexler, 2006b; Wexler, 2004) and the UFH (Snyder & Hyams, 2015) fall under this category; ii) input-based or frequency accounts, which attribute passive

delay or the paucity of verbal passives in child production to their low frequency in child-directed speech (Allen & Crago, 1996; Demuth, 1990; Gordon & Chafetz, 1990); and iii) processing and performance-based accounts, which highlight the processing cost of passives in comparison to actives and language external factors that may dampen children's performance (Choe & Deen, 2016; Huang et al., 2013; Omaki & Lidz, 2015).

In this chapter, I have dedicated two sections to two competing contemporary accounts of passive delay, the UPR and the UFH. The experiments described in this dissertation seek to evaluate some of the predictions made by these accounts, which drive much of the current discussion on the acquisition of passives.

The UPR postulates one maturational moment, sometime between the ages of 6 and 8, when non-phasal defective v (v_{def}) becomes available. From this point onward, children are fully adult in their ability to produce and comprehend verbal passives. Prior to maturation, children's passives are adjectival, that is, their adult-like behaviour with passives of actional verbs (or verbs that typically have a target state) is the result of an adjectival reading of intended verbal passives (AIS).

The UFH posits two maturational moments. The first takes place between the ages of 3 and 4 years, at which point the Freezing Principle comes on-line. This maturational moment affects only actional verbs. Thus, children's good performance with actional passives reflects grammatical knowledge of the verbal passive, rather than a non-eventive reading of these sentences. Passives of subject experiencer verbs require further development, due to the need of semantic coercion, which in this view is also subject to maturation. Semantic coercion becomes available around age 7-8. From this point onward, children are adult in their ability to produce and comprehend all passives.

Part II

CHILD COMPREHENSION OF VERBAL PASSIVES IN EP

4

HYPOTHESES AND PREDICTIONS

As we have seen in Chapter 3, there are three main findings to be accounted for regarding the acquisition of the verbal passive in languages such as English, Catalan and Spanish:

1. Children show a delay in the acquisition of (at least some) verbal passives, which has been replicated by several studies (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018; Hirsch, 2011; Maratsos et al., 1985; Oliva & Wexler, 2018; Orfitelli, 2012b, among others). Some studies, however, have found early acquisition of the passive (e.g., Crain et al., 2009; O'Brien et al., 2006; Pinker et al., 1987; Volpato et al., 2016).

2. There is no consistent length effect in the comprehension of verbal passives, that is, it has not been consistently replicated that children perform better with the passives when the *by*-phrase is omitted. Many studies on the comprehension of the passive by children acquiring English have found only a slight and statistically non-significant advantage of short passives over long passives (Gordon & Chafetz, 1990; Hirsch & Wexler, 2006b; Maratsos et al., 1985; Orfitelli, 2012b, among others). However, some studies have found a length effect (Gavarró & Parramon, 2017; Oliva & Wexler, 2018).

3. There is a verb type effect on children's comprehension of verbal passives, with passives of actional verbs being better understood than passives of subject experiencer verbs (Hirsch, 2011; Maratsos et al., 1985, 1979; Oliva & Wexler, 2018; Sudhalter & Braine, 1985, among others).

These findings have been accounted for as deriving from a semantic constraint on children's passives (Maratsos et al., 1985; Pinker, 1989; Pinker et al., 1987), and, more recently, as the result of the unavailability of grammatical categories or mechanisms which are subject to a maturational timeline. This is the case of two hypotheses that have been predominant in recent years: the Universal Phase Requirement (UPR) and the Universal Freezing Hypothesis (UFH). This

study seeks to evaluate the predictions for the acquisition of EP passives made by these two contemporary hypotheses, as has been done, for instance, for the acquisition of Greek passives in the case of UPR (Driva & Terzi, 2007; Terzi & Wexler, 2002).

The properties of the passive in Portuguese make it an interesting testing ground, as this language has been argued to display a three-way distinction among verbal and adjectival passives in the form of auxiliary selection: the auxiliary *ser* is associated with verbal (eventive) passives, the auxiliary *ficar* with resultative adjectival passives, and the auxiliary *estar* with stative adjectival passives (Duarte & Oliveira, 2010b). That is, Portuguese shows a morphosyntactic reflex of the tripartite typology of participles proposed for English by Embick (2004).[1] Hence, Portuguese differs both from English, which employs the same auxiliary for all passives, and from Spanish and Catalan, which employ one auxiliary for verbal passives (*ser*) and another for adjectival passives (*estar*). This allows us to test some predictions made by the UPR and the Adjectival Interpretation Strategy (AIS), as formulated by Hirsch and Wexler (2007) and Oliva and Wexler (2018), namely that young children interpret short verbal passives of actional verbs as resultative adjectival passives.

This chapter is organized as follows: Section 4.1 lays out the predictions made by the UPR and the UFH for the acquisition of passives in EP, Section 4.2 describes the rationale of this study, and Section 4.3 summarizes and concludes the chapter.

4.1 CONTEMPORARY HYPOTHESES AND PREDICTIONS FOR EP

The UPR, as noted in Chapter 3, posits that young children are unable to derive verbal passives, due to the unavailability of non-phasal v_{def}. That is, children have the adult phasal v^* and a phasal v^*_{def}, that is, a v that does not project a spec but nonetheless defines a phase. The adult, non-phasal v_{def} becomes maturationally available around age 7. From this point, children are able to derive verbal passives (Wexler, 2004).

1 However, and as pointed out in Chapter 2, Lima Júnior and Augusto (2015, 2017) argued that, while there are grounds to maintain the three-way distinction between stative, resultative and eventive passives, seen in auxiliary selection, Duarte and Oliveira's analysis of Portuguese passives does not account for data showing that adjectival passives may, in some cases, take *by*-phrases and agent-oriented modification (Alexiadou et al., 2014; Bruening, 2014; García-Pardo, 2014, 2017; Gehrke, 2012, 2013; Gehrke & Sánchez-Marco, 2012; McIntyre, 2013, among others).

The UFH, on the other hand, posits two maturational moments. First, Smuggling becomes available around age 4. From this moment, children are able to derive verbal passives, provided the predicate has a result state —under the version of Smuggling proposed by Gehrke and Grillo (2007, 2009b), in order to passivize a verb must have a complex bi-eventive structure with a result state sub-eventuality. Thus, the first maturational moment posited by the UFH affects actional verbs (or at least telic actional predicates). Passives of subject experiencer verbs, which are stative, require further development, as they must be semantically coerced into having a complex bi-eventive structure with a result state. Semantic coercion becomes maturationally available around age 6 (Snyder & Hyams, 2015).

The UPR and the UFH differ with regard to the status of children's actional passives: while the UFH takes young children's good results with actional passives to reflect their grammatical knowledge (Snyder & Hyams, 2015), at least from the age of 4, the UPR posits that children are, in fact, delayed for all passives until around age 7, and that good performance with actional passives is due to a misanalysis of intended verbal passives as adjectival passives, in particular resultative adjectival passives (Borer & Wexler, 1987; Hirsch & Wexler, 2006b; Wexler, 2004). This has been termed the Adjectival Interpretation Strategy (AIS) by Oliva and Wexler (2018).

As originally formulated on the basis of data on the development of the English passive, the UPR, in conjunction with the AIS, makes strong predictions for any language lacking systematic ambiguity between verbal and adjectival passives: children's delay with the verbal passive should be visible with actional verbs as well as with subject experiencer verbs (Borer & Wexler, 1987). This is confirmed by the results on the acquisition of Greek obtained by Terzi and Wexler (2002). However, studies on the acquisition of passives in Catalan (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018; Parramon, 2015) and Spanish (Oliva & Wexler, 2018), two languages with different auxiliaries for verbal (*ser*) and adjectival (*estar*) passives, also found the verb type asymmetry seen in the acquisition of English passives. Moreover, when asked to choose a picture for a short verbal passive item, Catalan- and Spanish-speaking children until the age of 7 tend to select a stative depiction over an eventive one (Gavarró & Parramon, 2017; Oliva & Wexler, 2018). Consequently, Gavarró and Parramon (2017) and Oliva and Wexler (2018) claimed that the requirements on s-homophony for the AIS to apply should be loosened. In

this view, young children do not require strict s-homophony between verbal and adjectival passives in order to apply the AIS. Given that in Catalan and Spanish the surface difference between the two structures, in the absence of the *by*-phrase, resides in auxiliary selection only, and is thus not prominent, children acquiring these languages have recourse to the AIS. That is, they may ignore the auxiliary and interpret a verbal passive, for which they have no analysis, as a nearly s-homophonous structure, the adjectival passive. This proposal may naturally be extended to EP.

As noted in Chapter 3, Gavarró and Parramon (2017) also tested Catalan-speaking children on the interpretation of short and long passives of actional verbs, using a classical sentence-picture matching task in which children were asked to choose between a picture depicting the adult interpretation of a verbal passive and a picture depicting the theta-role reversal interpretation. In this experiment, children performed poorly on long passives until the age of 6 years. This does not comport with the results from English, which, as we have seen, have found only a non-significant advantage of short passives over long passives, and above chance-level performance on actional long passives by the age of 5 (see Chapter 3). In view of this result, Oliva and Wexler (2018) claimed that Catalan- or Spanish-speaking children are unable to assign an adjectival passive reading to a verbal passive in the presence of a *by*-phrase, given that the *by*-phrase is incompatible with adjectival passives of most verbs. Specifically, Oliva and Wexler (2018, 67) proposed that "(. . .) despite the fact that children are able to ignore the auxiliary in short passives, ignoring both the auxiliary and the by-phrase could be too difficult to overcome; a by-phrase indicates a different kind of structure than the adjectival passive and, therefore, children are not able to use the adjectival interpretation." That is, in the case of Romance passives, in which there is an added cue to the verbal passive structure in the form of selection of the auxiliary *ser*, it becomes too difficult for children to overcome the *by*-phrase, which also constitutes a cue to the verbal passive with most passive predicates. This renders children acquiring Romance unable to use the AIS. Children acquiring English, on the other hand, may overcome the difficulty of interpreting a passive with a *by*-phrase as an adjectival passive. Under this version of the AIS, EP is predicted to pattern with Catalan and Spanish, and to show poor performance on actional long passives.

Oliva and Wexler (2018) also elaborated on the precise interpretation children assign to actional verbal passives, building on a previous proposal by Hirsch and Wexler (2006b). As we saw in Chapter 3, Hirsch and Wexler claimed that children's adjectival passives are resultative, following Embick's (2004) tripartite typology of participles. Concretely, Hirsch and Wexler (2006b, 134) argued that:

> If we consider immature children to interpret verbal passives as resultatives, we also have a clear reason to predict that psychological passives will be delayed longer than actional passives. Actional verbs allow a resultative reading since they involve a target state. Psychological verbs for the most part do not involve such a target state. Those actional verbs that do not clearly involve a target state are those that make poorer adjectives (e.g. *held*), assuming no salient context, while those psychological verbs making better adjectives tend to involve such a target state (e.g. *remembered*). The prediction, in need of confirmation, is that children will perform worse on actional passives that make poor resultative passives, and score better on psychological passives that make good resultative passives.

Building on these claims, Oliva and Wexler (2018) proposed that, when young children perform well on actional verbal passives, they are interpreting these sentences as resultant-state adjectival passives (Kratzer, 2000). As we saw in Chapter 2, a resultant-state denotes a more complex, derived state than the target-state of a verb such as *break* or *close*. Using an example from Oliva and Wexler (2018), an adjectival passive such as *the ball is kicked* means that at the reference time t, the ball is in a state such that an event of kicking the ball took place before t. A target-state passive, on the other hand, denotes a "typical", independently identifiable state that is true of the Theme/Patient argument of a verb after the event has taken place. For instance, an adjectival passive such as *the plate is broken* means that the plate is in a state of being broken, which is the consequent state of an event of breaking. Crucially, Kratzer (2000, 388) pointed out that resultant-state passives are marginally acceptable with activity verbs, if the context imposes a "job done" or "that's over" interpretation.

Albeit quite similar at first sight, Hirsch and Wexler's (2006b) and Oliva and Wexler's (2018) claims regarding children's interpretation of intended verbal passives make different predictions: under Hirsch

and Wexler's version of the AIS, children are predicted to perform better with passive predicates that make natural resultative passives, which are those that involve a target state. The availability of a target state is related to the aspectual class of predicates (Dowty, 1979; Moens, 1987; Moens & Steedman, 1998; Vendler, 1957), hence passives of telic predicates, i.e., accomplishments and achievements, are predicted to be better understood by young children, whereas passives of atelic predicates, i.e., activities and states, are predicted to be poorly understood by young children. Under Oliva and Wexler's version of the AIS, young children are predicted to perform poorly only with passives of stative verbs (e.g., emotion and cognition verbs), activities may be interpreted as resultant-state adjectival passives, and (presumably) accomplishments and achievements may be interpreted as target-state adjectival passives.

In summary, under the UPR, in conjunction with the AIS, children acquiring EP are predicted to:

1. Show significantly poorer performance on actional long passives than on actional short passives, but no contrast between short and long passives of subject experiencer verbs, which are predicted to be poorly comprehended across the board, up to the age of 6-7 years.

2. Display good performance on short passives of actional verbs that have a target-state (e.g., *pintar* "paint", *pentear* "comb", *molhar* "wet, splash") from the age of 3.

3. Under Hirsch and Wexler's (2006b) version of the AIS:
    a) Show delayed comprehension of passives with subject experiencer verbs, such as perception verbs (e.g., *ver* "see" and *ouvir* "hear"), as they do not have a target-state.
    b) Show delayed comprehension of passives with atelic actional verbs, i.e., those that do not have a target-state (e.g., *empurrar* "push", *procurar* "look for", *perseguir* "chase").
    c) Assign resultative adjectival readings to short passives of actional verbs that have a target-state, if they ignore the difference in auxiliary selection (*ser* vs. *ficar*).

4. Under Oliva and Wexler's (2018) version of the AIS:
    a) Show delayed comprehension of passives with subject experiencer verbs, such as perception verbs (e.g., *ver* "see"

and *ouvir* "hear"), unless these may be interpreted as activities ("watch", "listen to").

b) Show good comprehension of passives with activity verbs, which do not have a target-state but may be made into resultant-state adjectival passives (e.g., *empurrar* "push", *procurar* "look for", *perseguir* "chase").

c) Assign resultative adjectival readings to short passives of actional verbs, if they ignore the difference in auxiliary selection (*ser* vs. *ficar*).

The predictions of the UFH for EP do not differ from those for English: children from the age of 4 years are predicted to perform well on passives of predicates with a complex bi-eventive structure with a result state sub-eventuality, given that, under Gehrke and Grillo's (2007) version of Smuggling these predicates do not require semantic coercion in order to passivize (see Chapter 2). That is, children from the age of 4 are predicted to perform well on passives of telic actional verbs (accomplishments and achievements). Delay with these predicates should be seen only at the age of 3 years. Passives of subject experiencer verbs require further development, given that these verbs must be semantically coerced into a complex bi-eventive structure with a result state sub-eventuality in order to passivize —the state denoted by the verb must be interpreted as a result state. Snyder and Hyams (2015) proposed that semantic coercion matures around the age of 6 years. From this point, children are able to comprehend passives of subject experiencer verbs. Although Snyder and Hyams (2015) do not discuss the predictions of their proposal for actional verbs that do not have a result state (i.e., activities), the predictions made for subject experiencer (stative) verbs may naturally be extended to these verbs. Because the Smuggling account of the passive derives passives with and without a *by*-phrase in the same way —as described in Chapter 2, on this analysis, when the *by*-phrase is omitted Voice is headed by a null preposition, in lieu of *by*, and Spec of *v*P takes a PRO, in lieu of a lexical DP—, children are predicted to show similar performance with short and long verbal passives of each verb type.

In summary, under the UFH children acquiring EP are predicted to:

1. Display similar performance on short and long passives of each verb type at all stages.

2. Display good performance on passives of actional verbs that have a result state (e.g., *pintar* "paint", *pentear* "comb", *molhar* "wet, splash") from the age of 4 years.

3. Show poor comprehension of passives with subject experiencer verbs, such as perception verbs (e.g., *ver* "see" and *ouvir* "hear"), until the age of 6 years.

4. Show poor comprehension of passives with actional verbs that do not have a result state (e.g., *empurrar* "push", *procurar* "search", *perseguir* "chase"), until the age of 6 years.

5. Interpret verbal passives of predicates that have a result state in an adult manner, that is, as eventive, at least from the age of 4 years.

In sum, both the UPR and the UFH predict poor performance with passives of subject experiencer verbs and with passives of actional predicates without a target-state (or which may not be interpreted as a resultant-state), as well as good performance on short passives of actional verbs. The two hypotheses differ with regard to the predictions for long passives of actional verbs with a target-state: the UFH predicts no significant differences between short and long passives of actional verbs with a target-state, whereas the UPR predicts significantly poorer performance on long passives of actional verbs with a target-state. The two hypotheses also differ with regard to the developmental timeline of the passive: the UFH postulates two maturational moments, one around the age of 4 and one around the age of 6, while the UPR postulates only one maturational moment around the age of 6-7 years. Finally, the UPR, unlike the UFH, predicts that young children will interpret verbal passives of verbs with a target-state (or which may be interpreted as resultant-states) as adjectival passives, that is, as stative.

4.2 THIS STUDY

The present study employs three experiments to test the predictions of the two contemporary accounts under consideration. In these three experiments I contrast passives of subject experiencer (perception) verbs with passives of telic actional verbs (Experiment 1), passives of telic and atelic actional verbs (Experiment 2) and, lastly, stative

and eventive readings of verbal passives, with the auxiliary *ser*, and resultative adjectival passives, with the auxiliary *ficar* (Experiment 3).

Experiment 1 aimed to replicate the basic results previously obtained for English and for Romance languages such as Spanish and Catalan, which showed an advantage of actional verbs over subject experiencer verbs in the comprehension of passives by young children (see Chapter 3). Thus, Experiment 1 followed a familiar design in this type of study, contrasting typical actional verbs and subject experiencer verbs in verbal passives with and without *by*-phrases.

To be clear, the relevant contrast for testing the UPR/AIS and the UFH is not actional verbs vs. subject experiencer verbs. The UPR is a constraint on A-movement, and says nothing on the agentivity of the external argument. The relevant contrast is between verbs that form good adjectival passives vs. verbs that do not. Likewise, the UFH is a constraint on movement of the internal argument to subject position out of an already moved phrase —the lower VP, which receives a result state interpretation—thus avoiding a minimality violation. The relevant contrast, then, is between verbs that have a complex, bi-eventive structure with a cause sub-event and a result state sub-eventuality and verbs that have a simple, one event structure. In other words, children are predicted to perform better on verbs that typically have a result state —change of state verbs, or verbs of result in Rappaport Hovav and Levin's (2010) terminology— and worse on verbs that typically do not have a result state —stative and activity verbs. Although Snyder and Hyams (2015) do not mention activities, this is a natural prediction of their account.

Because actional verbs that have a typical result state make better adjectival passives, the UPR, in conjunction with Hirsch and Wexler's version of the AIS, like the UFH, predicts better performance on passives of telic actional verbs, namely accomplishments and achievements, than on passives of atelic actional verbs, namely activities. This prediction is tested in Experiment 2 (Chapter 6). This experiment followed the familiar design that was used in Experiment 1, except that where Experiment 1 tested perception verbs, Experiment 2 tested atelic actional verbs, thus removing the action vs. experience distinction. Under Oliva and Wexler's version of the AIS, however, it is less clear that children will perform better on passives of telic actional verbs than on passives of atelic actional verbs.

The UPR/AIS and the UFH make starkly different predictions regarding the interpretation of verbal passives of actional verbs with a re-

sult state: the UPR/AIS predicts that children interpret these passives as resultative adjectival passives (i.e., that they interpret eventive passives as stative passives), whereas the UFH predicts that children will be able to distinguish the eventive reading associated with verbal passives from the stative reading associated with adjectival passives. Experiment 3 (Chapter 7) aimed to test this prediction for EP, using an experiment similar to the one originally designed by Gavarró and Parramon (2017) for Catalan and adapted to Spanish by Oliva and Wexler (2018). Crucially, Experiment 3 differs from these two previous experiments in that it capitalizes on the morphosyntactic distinction between stative and resultative adjectival passives seen in EP, in the form of auxiliary selection. Given the fact that a recent formulation of the AIS states that "pre-mature" children interpret verbal passives as resultative adjectival passives (Hirsch & Wexler, 2006b), Experiment 3 contrasted short verbal passives, with the auxiliary *ser*, and resultative adjectival passives, with the auxiliary *ficar*. Under the UPR, children are predicted to overwhelmingly select a stative depiction for both verbal and adjectival passives, in detriment of an eventive depiction, until the age of 6-7 years. That is, they are predicted to be adult-like with resultative adjectival passives and non-adult-like with verbal passives. Conversely, under the UFH, children are predicted to perform well across the board from the age of 4 years.

4.3 SUMMARY

As we have seen, the central claim of the UPR is that children do not have access to non-phasal v_{def}, which becomes maturationally available only around age 6-7. Thus, children have the adult phasal v^* and a phasal v^*_{def}, that is, a v that does not project a spec but defines a phase (Wexler, 2004). The contrast between actional verbs and subject experiencer verbs, seen in English and in Romance languages, is explained by the assumption that children misanalyse intended verbal passives as resultative adjectival passives (Borer & Wexler, 1987; Hirsch & Wexler, 2006b). Moreover, children acquiring Romance languages such as Spanish and Catalan, which show a morphosyntactic distinction between verbal passives and adjectival passives, as they select different auxiliaries, are assumed to ignore this cue to the verbal passive structure.

The UFH relies on two fundamental claims: first, Smuggling becomes maturationally available around age 4, a change that affects

(telic) actional verbs; second, the ability to semantically coerce a stative predicate into having a complex bi-eventive structure with a result state, thus allowing passivization (Gehrke & Grillo, 2007, 2009b), becomes maturationally available around age 6 (Snyder & Hyams, 2015). This proposal may naturally be extended to actional verbs without a complex bi-eventive structure with a result state, which are thus predicted to also be acquired late.

The UPR and the UFH make similar predictions regarding children's performance with passives of telic actional verbs and passives of subject experiencer verbs: young children are predicted to perform well on short passives of telic actional verbs and poorly on short and long passives of subject experiencer verbs. The UPR and the UFH differ with regard to long passives of telic actional verbs: the UPR predicts poor performance, as children acquiring Romance must overcome an additional cue to the verbal passive structure, whereas the UFH predicts no contrast between short and long passives of each verb type. Moreover, under the UPR children are predicted to interpret verbal passives as stative, whenever this strategy may apply.

The three experiments that comprise this study, which are described in Chapter 5, Chapter 6 and Chapter 7, seek to evaluate these predictions for the acquisition of passives in EP. These experiments capitalize on the aspectual properties of verbs (i.e., whether or not they are telic), as well as the properties of EP with regard to morphosyntactic distinctions between verbal passives and resultative adjectival passives, in the shape of auxiliary selection.

5

EXPERIMENT 1 – ACTIONAL AND PERCEPTION VERBS

As we saw in Chapter 3, previous studies for languages such as English showed that children are more delayed with passives of subject experiencer verbs (e.g., perception verbs) than with passives of actional verbs (Hirsch, 2011; Maratsos et al., 1985; Orfitelli, 2012b, among others). Some studies also suggested that long passives pose more difficulties for children than short passives —this finding, however, has not been consistently replicated in comprehension studies, most of which found only a slight, non-significant advantage of short passives over long passives (e.g., Gordon & Chafetz, 1990; Hirsch & Wexler, 2006b; Maratsos & Abramovitch, 1975; Maratsos et al., 1985; O'Brien et al., 2006; Orfitelli, 2012a). Experiment 1 aims to assess whether these findings also hold for EP. Hence, this experiment tests the classical contrast between actional verbs and subject experiencer verbs (in this case, perception verbs), in short and long passives. Additionally, this experiment seeks to improve on Estrela (2013) in some respects, namely choice of verbs (see Chapter 3, Section 3.6).

The methodology used in this experiment was a sentence-picture matching task. In this paradigm, a set of pictures (usually either two or four) is presented to the child, who is asked to point to the picture that shows what the experimenter or a puppet said. This paradigm presents some advantages relative to other methodologies: children find this procedure to be intuitive and do not seem to have difficulties complying with its demands. Moreover, its application is relatively fast, thus avoiding fatigue. There are, however, some drawbacks to this paradigm. Namely, it does not assess whether children allow more than one interpretation of the same item: as the participant is forced to choose only one picture, by hypothesis children could make their selection according to their preferential, not their exclusive, interpretation of the test sentence.[1] In addition, the fact that the scenarios must be represented by static images imposes restrictions on the

1 This limitation is shared by other methodologies widely used in language acquisition studies: in the act out paradigm, for instance, children act out only one possible interpretation of the test sentence.

selection of verbs to be tested. It could also be argued that children have a harder time reconstructing scenarios presented to them in the form of static images (Crain & Thornton, 1998).

Typically, in studies on passive acquisition using two-choice sentence-picture matching tasks, one picture matches the adult interpretation of the test sentence and the other conveys the θ-role reversal interpretation. In studies on passive acquisition using four-choice sentence-picture matching tasks, additional interpretations are conveyed by the two extra pictures. Generally, one of the extra pictures represents a third character performing the action, and the other shows the characters but no action being performed. Previous studies on passive acquisition using this methodology with sets of four pictures showed that, when young children interpret a verbal passive in a non-adult manner, they overwhelmingly choose the picture involving a θ-role reversal (see, for instance, Gavarró & Parramon, 2017 and Armon-Lotem et al., 2016). For this reason, this experiment employed sets of two pictures. This allowed for a simpler task for children and more straightforward analysis and interpretation of the results.

This chapter provides details on the design of Experiment 1, the procedure followed during testing, the subjects and the results. Section 5.1 describes the conditions tested, Section 5.2 the materials produced for this experiment and the testing procedure, as well as the rationale for choice of verbs, Section 5.3 the participants in this experiment, and Section 5.4 the results and statistical analysis. Section 5.5 discusses the results of this experiment, in relation with previous findings and the contemporary hypotheses under consideration. Finally, Section 5.6 summarizes and concludes the chapter.

5.1 CONDITIONS

Following previous work on the acquisition of English (Hirsch, 2011; Maratsos et al., 1985; Orfitelli, 2012b), this experiment tested actional and subject experiencer (perception) verbs in verbal passives with and without a *by*-phrase. That is, this experiment followed a factorial design that crossed verb type (actional vs. perception) and length (short vs. long). This is systematized in Table 5.

Following Maratsos et al. (1985) and Hirsch (2011), two conditions testing active sentences with actional and perception verbs were included to ensure that the child understood the procedure, the verbs and the scenarios. These two control conditions also acted as fillers.

		Verb type	
		Actional	*Perception*
Length	*Short*	Actional short passive	Perception short passive
	Long	Actional long passive	Perception long passive

Table 5: Experiment 1 – Factorial design

Children who scored fewer than 3 out of 4 items correct in either of these two conditions were excluded from the study. Thus, all the children included in the study showed excellent performance on actives with actional and perception verbs.

Each of the resulting six conditions comprised four items with two different verbs, for a total of 24 items. Two warm ups were presented at the beginning of the task, both of which were actives with the verb *dar* "give". The conditions and verbs tested in this experiment are presented in Table 6.

Condition	Verbs	Tokens
1. Actional actives	*Pentear, pintar*	4 (2 x verb)
2. Perception actives	*Ver, ouvir*	4 (2 x verb)
3. Short actional passives	*Pentear, pintar*	4 (2 x verb)
4. Short perception passives	*Ver, ouvir*	4 (2 x verb)
5. Long actional passives	*Pentear, pintar*	4 (2 x verb)
6. Long perception passives	*Ver, ouvir*	4 (2 x verb)

Table 6: Experiment 1 – Conditions, verbs and tokens

Under the UPR, given that perception verbs do not form good, natural adjectival passives —as pointed out in Chapter 2, they may only form coerced adjectival passives, with a supporting context and a "job done" or "that's over" interpretation, as described by Kratzer (2000) for adjectival passives of activities—, passives of perception verbs, with or without a *by*-phrase, are predicted to elicit poor performance until the age of 6-7 years (Borer & Wexler, 1987; Hirsch & Wexler, 2007; Oliva & Wexler, 2018; Wexler, 2004). On the other hand, short passives of actional verbs are predicted to elicit better, more adult-like performance from early stages, assuming that children acquiring EP

may ignore the difference in auxiliary selection between verbal and adjectival passives, as has been proposed for Catalan (Gavarró & Parramon, 2017) and Spanish (Oliva & Wexler, 2018). Long passives of actional verbs are predicted to be more poorly understood than short passives of actional verbs, given that the *by*-phrase, which is highly restricted in adjectival passives, constitutes an additional cue to the verbal passive structure (Oliva & Wexler, 2018, 67).

Under the UFH, children from the age of 4 years are assumed to have recourse to Smuggling (Collins, 2005b; Gehrke & Grillo, 2007, 2009b), provided that the predicate has a bi-eventive structure with a causing sub-event and a result state sub-eventuality, as is the case of the actional predicates tested in Experiment 1 (see Chapter 6). Thus, they are predicted to perform well on the short and long passives of actional verbs tested in this experiment. Delay on these sentences should be seen only at the age of 3. Short and long passives of perception verbs, on the other hand, are predicted to be poorly comprehended by children up to the age of 6-7 years, when the ability to semantically coerce a state into a complex bi-eventive structure with a result state sub-eventuality finally matures. The implicitness or overtness of the external argument has little bearing on the developmental timeline of the verbal passive, given that short and long passives are derived the same way. Thus, short and long passives of each verb type are predicted to be acquired at the same pace, with no significant differences between them.

5.2 MATERIALS AND PROCEDURE

The experiment was presented to the children by telling them that Benny, a puppet that was introduced to them prior to testing, is preparing a children's book about a family, and that he needs help to choose pictures for his book. 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 (see Figure 1).

The children were asked to listen to very short scenarios about the family, listen to what Benny says at the end of each scenario, and point to the picture that shows what he said. The scenarios were similar for all the items with the same verb, and contextualized the test sentence and the picture pairs, allowing the child to quickly under-

Figure 1: Family picture (used in all three experiments)

stand the situations represented by the pictures. The test sentence was introduced by the expression *então* "then", in order to emphasize it. All long passive, active and warm up items were semantically reversible. In the case of short passives, only one character was mentioned, but all characters were equally able and likely to be the Theme or the Agent, in the case of actional verbs, or the Stimulus and the Experiencer, in the case of perception verbs. Given that EP presents participle agreement in gender and number, as shown in (1), all the characters in each item had the same gender. Half the items had female characters and the other half had male characters.

(1) a. O menino foi penteado
the.Masc.S boy.Masc.S Aux.event comb.Part.Masc.S
pela mãe.
by+the.Fem.S mother.Fem.S
"The boy was combed by the mother."

b. A menina foi penteada
the.Fem.S girl.Fem.S Aux.event comb.Part.Fem.S
pela mãe.
by+the.Fem.S mother.Fem.S
"The girl was combed by the mother."

Each item was presented alongside two pictures: the matching picture represented the adult reading, the mismatching picture the θ-role reversal reading. This also applies to short passives, although in this case the external argument is not expressed —see the example in (2) and Figure 2. Following O'Brien et al. (2006), the pictures included a

third character, to make the use of the *by*-phrase felicitous in the case of the long passive items —see the example in (3) and Figure 3.[2]

(2) *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?

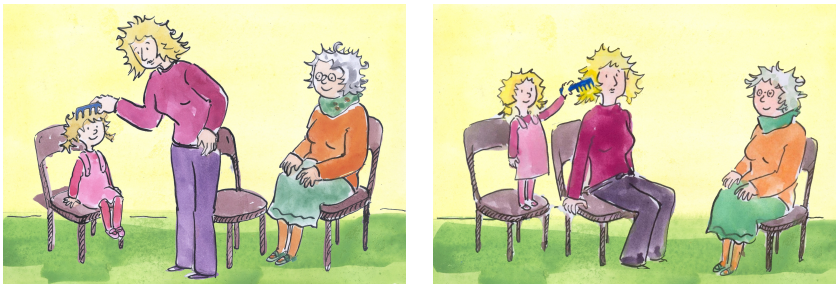


Figure 2: Pictures for Item 11, Condition 3

(3) *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. This led to the exclusion of cognition verbs such as *esquecer* "forget" and *recordar* "recall, remember", as well as emotion verbs such as *amar* "love", *adorar* "like, love", *odiar* "hate" and *detestar* "detest". These verbs would require thought bubbles or inference from acts such as smiling, frowning and hugging in order to be represented using images, thus

2 For the complete list of items, see Appendix A, Section A.1.

Figure 3: Pictures for Item 23, Condition 6

introducing an added layer of difficulty. Although perception verbs such as *ver* "see" and *ouvir* "hear" may also be challenging in terms of imageability, they are more easily represented than cognition and emotion verbs without recourse to thought bubbles, which may not be known by younger children. The actional verbs *pentear* "comb" and *pintar* "paint" were selected from those listed in the CEPLEXicon — Lexicon of Child European Portuguese (Santos, Freitas, & Cardoso, 2014), which is based on two *corpora* of child production and child-directed speech, the Santos *corpus* (Santos, 2006, 2009; Santos, Généreux, Cardoso, Agostinho, & Abalada, 2014) and the Freitas *corpus* (Freitas, 1997). The verb *ver* "see" is also listed, unlike *ouvir* "hear", which was nonetheless deemed to be known by children. These verbs were also selected because they were used in previous studies for other languages (e.g., Maratsos et al., 1985) and for EP (Estrela, 2013), and thus may provide more comparable results.

It should be noted that the verbs *ouvir* "hear" and *ver* "see" may also be actional in EP. According to Viberg (1983), in the field of perception, which includes the five sense modalities (sight, hearing, touch, taste and smell), the distinction between an activity and an experience may be illustrated by the pairs *look at* vs. *see*, for sight, and *listen to* vs. *hear*, for hearing: an activity is an unbounded process consciously controlled by a human agent, and an experience a state or inchoative achievement that is not controlled (see also Vendler, 1957, for an analysis of the aspectual structure of *see*). Accordingly, Viberg (1983) also characterized the verb *watch* as an activity. In English, as he pointed out, there are different lexical items for activity and experience for sight and hearing, whereas for touch, taste and smell there is a higher degree of polysemy. Although in EP there are lexical items that designate activities in the cases of sight (*olhar* "look at" and *assistir* "watch") and hearing (*escutar* "listen"), both *escutar* and *assistir* (but not *olhar*)

are uncommon in colloquial EP —in fact, the verb *assistir* is more common in BP. Moreover, it can be observed that EP presents polysemy in the case of the verbs *ouvir* and *ver*, which may be used to convey an activity ("listen" and "watch", respectively) or an experience ("hear" and "see", respectively).

As pointed out in Chapter 2, when used as actional perception verbs (i.e., as activity predicates), *ver* and *ouvir* do not have 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). Moreover, the verb *ver* presents polysemy, and may also be used to mean "discover" or "verify", uses that are also available for the verb *see* in English (Snyder & Hyams, 2015). The *corpora* examples in (56)-(58), from Chapter 2, Section 2.2, are repeated in (4)-(6) below —it should be stressed that in (4) the verb *ouvir* is being used unambiguously as a perception verb, in what may be characterized as a resultant-state adjectival passive. In fact, all three examples seem to be resultant-state adjectival passives, with no "typical", independently identifiable state that holds true of the Theme/Patient argument, regardless of whether we interpret the verb *ver* in (5)-(6) as "see" or as "check, verify".

(4) (. . .) o que mais irrita e cansa na produção GRP é
what most irritates and tires in+the production GRP is
a sensação opressiva de que, ouvido um disco,
the sensation oppressive of that heard.Part a record
estão ouvidos os próximos dez.
Aux.stative heard.Part the next ten
"What irritates and tires the most about the GRP production is the oppressive sensation that, having listened to one of the albums, you've listened to the next ten."

Corpus CetemPúblico (par=ext621697-clt-92b-2)

(5) Ferreira do Amaral guiou-os até à margem sul,
Ferreira do Amaral guided+cl.3P Prep to+the bank south
para mostrar como vão as obras do outro
to show how go the construction works in+the other
lado do rio, que o lado de cá já estava
side of+the river Comp the side of here already Aux.stative
visto.
seen.Part

"Ferreira do Amaral drove them to the South bank, to show the progress of the works on the other side of the river, as this side had already been seen."

Corpus CetemPúblico (par=ext147729-pol-94a-1)

(6) Para além do passeio de teleférico, já estão
besides of+the ride of cable car already Aux.stative
vistos o Pavilhão da Utopia, o Pavilhão do
seen.Part the Pavilion of+the Utopia the Pavilion of+the
Conhecimento dos Mares e o Pavilhão do Futuro.
Knowledge of+the Seas and the Pavilion of+the Future
"Besides the cable car ride, the Utopia Pavilion, the Maritime Knowledge Pavilion and the Pavilion of the Future have already been seen."

Corpus CetemPúblico (par=ext361601-soc-98a-1)

Hence, this experiment differs from similar experiments on the acquisition of the English passive only with regard to the properties of the subject experiencer verbs tested. Despite these differences, as we will see below (Section 5.4), the general results replicated the contrast found in English and in other languages.

The prediction made by the UPR and Hirsch and Wexler's (2006b) version of the AIS is that children pattern with English-speaking children, with significantly poorer performance on passives with *ver* "see" and *ouvir* "hear" than on passives with typical actional verbs. If, following the version of the AIS proposed by Oliva and Wexler (2018), we assume the view that all activity verbs may form resultant-state adjectival passives, which is the case of the perception verbs *ver* "see" and *ouvir* "hear", when used as actional verbs (4)-(6), and that children have access to this interpretation, then children are predicted to show good performance on short passives of perception verbs. Moreover, and regardless of the version of AIS we adopt, children are predicted to display significantly poorer comprehension of long actional passives than of short actional passives, as in the study on Catalan by Gavarró and Parramon (2017) and the study on Spanish by Oliva and Wexler (2018).

Under the UFH, passives with *ver* "see" and *ouvir* "hear" are predicted to be delayed until around the age 6 years. This is because, under the version of Smuggling proposed by Gehrke and Grillo (2007, 2009b), the verbs *ver* and *ouvir*, whether they are interpreted as ac-

tional or non-actional, do not have a complex, bi-eventive structure with a cause sub-event and a result state sub-eventuality, and thus require coercion in order to passivize. Passives of typical actional verbs, on the other hand, are predicted to elicit good performance from the age of 4 years. Moreover, the UFH predicts that young children perform similarly on short and long passives, i.e., children's results should not show a statistically significant length contrast.

All items were in the Perfect (*Pretérito perfeito*) (7-a). This is because the Present in EP, as in English, generally has an habitual interpretation, not an ongoing event interpretation. Hence, its use in the verbal passive is uncommon and often infelicitous or marginal (7-b). Moreover, the progressive in the standard dialect of EP, in which the aspectual semi-auxiliary *estar* combines with the element *a* and an infinitive (7-c), involves a more complex structure and more grammatical operations than the Perfect and the Present, and thus could introduce a potential confound.

(7) a. O menino foi penteado.
the boy Aux.event.Past combed
"The boy was combed." *Perfect*

b. #O menino é penteado.
the boy Aux.event.Prs combed
"The boy is combed." *Present*

c. O menino está a ser penteado.
the boy Aux Asp Aux.event.Inf combed
"The boy is being combed." *Present progressive*

The string *a* + *Infinitive* was characterized by Raposo (1989, 296-299) as a Prepositional Infinitival Construction (PIC): the preposition *a* heads an infinitival clause, which is similar to small clauses in distribution. More recently, Duarte (1993) and Gonçalves (1992) showed that the analysis of *a* in these strings as a preposition faces empirical problems and analyzed this element as an aspectual (Asp) head that constitutes a discontinuous morpheme with the infinitival marker *-r*. Thus, as noted by Gonçalves and Matos (2008), in this construction mood and aspect are determined structurally, not by the verb itself: *estar* receives a progressive reading when it combines with the Asp head *a* and an infinitive (8-a), but not when it combines with a predicative complement (8-b). The examples are from Gonçalves and Matos (2008, 219).

(8) a. Ele está a ler o livro.
he Aux Asp read.Inf the book

"He's reading the book."

b. Ele está preocupado.
he Cop.Prs worried
"He's worried."

As Oliveira, Cunha, and Gonçalves (2004) observed, aspectual verbs like *estar*, *andar* and *ficar* constitute true aspectual operators that modify the inner temporal properties of the eventualities they combine with (Moens, 1987). When they occur in a structure like the one in (7-c), these verbs select an aspectual class (the "input") and convert it into another which may have different temporal features (the "output"). The "input" must meet a basic condition: it must be an eventuality comprising one or more phases.

According to Oliveira et al. (2004, 142-142), the progressive *estar + a + Infinitive* converts a process into a type of stative predicate, a progressive state, which describes the process as ongoing at the reference time (Moens & Steedman, 1998). Thus, the "input" must be a basic (9-a) or derived process (9-b)-(9-d). A culminated process must lose its culmination, leaving only the preparatory process (9-b), while a culmination must first be added a preparatory process, to make a culminated process, and then be stripped off of its culmination (9-c). With regard to states, a distinction must be drawn between phase and non-phase states (Cunha, 1998): phase states may be converted into a process (9-d), whereas non-phase states cannot undergo that transition, and for this reason cannot constitute "input" for the progressive (9-e). The examples below are from Oliveira et al. (2004, 143).

(9) a. O Pedro está a correr.
the Pedro Aux Asp run.Inf
"Pedro is running."

b. A Rita está a comer uma maçã.
the Rita Aux Asp eat.Inf an apple
"Rita is eating an apple."

c. O gato está a morrer.
the cat Aux Asp die.Inf
"The cat is dying."

d. O meu cão está a ser agressivo.
the my dog Aux Asp be.Inf aggressive
"My dog is being aggressive."

e. *A Maria está a ser alta.
the Maria Aux Asp be.Inf tall
"Maria is being tall."

In any case, as noted by Oliveira et al. (2004, 143-144), the "output" of the progressive is a state, as shown by the fact that it disallows certain temporal adverbs (10) and that it is out in several structures associated with agentivity, such as the imperative and complements of deontic verbs (11). Thus, agentive predicates such as *ler o jornal* "read the newspaper" become non-agentive in the progressive. The examples below are from Oliveira et al. (2004, 144).

(10) O Rui esteve a ler o jornal durante duas
the Rui Aux Asp read.Inf the newspaper for two
horas/ ?às duas horas/ *em duas horas.
hours at two hours in two hours
"Rui read the newspaper for two hours/ at 2 pm/ in two hours."

(11) a. *Rui, está a ler o jornal!
Rui Aux Asp read.Inf the newspaper
"Rui, read the newspaper!"

b. *A mãe obrigou o Rui a estar a ler o
the mother forced the Rui to Aux Asp read.Inf the
jornal.
newspaper
"The mother forced Rui to read the newspaper."

Moreover, these aspectual verbs may be analysed as raising predicates, as they do not θ-mark their subject, which is an argument of the embedded infinitival verb (Gonçalves, 1992; Oliveira et al., 2004; Raposo, 1989). Assuming that aspectual verbs such as *estar* select a TP domain and that *a* is an Asp head, Oliveira et al. (2004, 156) proposed the following partial representation of the infinitival domain selected by aspectual verbs (t_{SUB} stands for the trace of the subject raised to the matrix for Case-checking purposes):

(12) V_{Asp} [$_{TP}$ [$_{T'}$ [$_{AspP}$ [$_{Asp'}$ [$_{Asp}$ a] [$_{VP}$ t_{SUB} V . . .]]]]]

Consequently, using the progressive in this experiment would entail testing children on aspects of grammar that are not relevant to this study. The Perfect (*Pretérito perfeito*), on the other hand, does not involve added structure and preserves almost all the aspectual properties of the predicates it combines with, that is, it preserves the internal temporal structure of the eventualities in its scope (Oliveira et al., 2004, 150). In this respect, it also contrasts with the Present and the Imperfect (*Imperfeito*), which, as noted by Oliveira et al. (2004), may

modify the internal temporal structure of the eventualities in their scope. This is especially relevant given that the UFH assumes the account of the passives proposed by Gehrke and Grillo (2007, 2009a, 2009b), according to which passivization is tied to the aspectual properties of the predicate.

The order of presentation of the items was pseudo-randomized to ensure 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 being the reverse of the other, were given to equal numbers of subjects within the same age group.[3] This ensured that responses to the last few items presented to the subjects were not skewed due to fatigue, especially in the case of the younger child groups.

The picture pairs were presented to the subjects using PowerPoint. The position of the target and θ-role reversal pictures (i.e., the matching and mismatching pictures) within the picture pairs was balanced across conditions, verbs and the whole experiment. The PowerPoint presentation was shown to the subjects on a tablet with a 9.7" display.

The experiment was applied to children attending pre-school or primary school in Lisbon, between December 2016 and March 2018. Testing took place in a quiet room in the various schools attended by the children. Testing sessions generally lasted about 10 minutes, and between 10 and 15 minutes in the case of the 3-year-olds. All sessions were recorded with a sound recorder.

Finally, the responses given by the subjects were annotated during testing using an answer registry sheet and subsequently copied to an Excel file and categorized as either *correct* (choice of the matching picture) or *incorrect* (choice of the mismatching picture), for purposes of statistical analysis (see Section 5.6 below).

5.3 SUBJECTS

Experiment 1 was applied to 152 children between the ages of 3 and 8 years (see Table 7). Five of these children (four 3-year-olds and one 5-year-old) were excluded from the analysis due to failure to answer correctly at least 3 out of 4 items in each active sentence condition. All the children were monolingual speakers of EP. None of them had been diagnosed with a language delay, language impairment or cognitive impairment. A control group of 20 adults was also tested, using

3 The only exception was the 7-year-old group, with 19 subjects, 9 of which were tested on one order of presentation and 10 on the other.

the same basic procedure as when testing the children. All the adult participants were monolingual speakers of EP and had completed high school. None of them had a relevant background in linguistics.

Each subject in this study participated in only one of the three experiments. Thus, the subjects described here participated solely in Experiment 1. This is due not just to the possibility of training effects, but also to the fact that some items are repeated from one experiment to another, specifically those with *pintar* "paint" and *pentear* "comb" (see Chapter 6 and Chapter 7).

Age Group	Number	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)	$\geqslant$ 19

Table 7: Experiment 1 – Subjects (167)

The number of subjects varies from one group to another for three reasons. First, the 3-year-old group has more subjects because of an unsuccessful Truth-Value Judgment (TVJ) task that was applied to the same subjects as Experiment 1. This TVJ task was difficult for younger children, leading to the exclusion of a significant number of 3-year-old children who had previously participated in Experiment 1 and succeeded in complying with task demands. After the TVJ task was dropped from this research project, the 3-year-old children who had been excluded due to the TVJ task but met criteria for inclusion in Experiment 1 were included in the study. The TVJ task was always applied after Experiment 1, thus it had no influence on children's responses in this experiment. Second, I attempted to obtain 30 subjects in each age group, but this effort was hindered by time constraints and the lack of reply from some of the institutions I contacted, particularly primary schools, which have more restrictive schedules than pre-schools and are less available for collaboration in research projects. Third, and in connection to the second point, after the application of Experiment 2 (Chapter 6) to older children, there were

insufficient numbers of children to achieve 20 subjects in the case of the 7- and 8-year-old groups.

5.4 RESULTS

Table 8 and Figure 4 present the percentages of correct responses children and adults obtained on short and long passives with actional and perception verbs. These percentages were calculated using Rbrul version 3.1.3 (Johnson, 2009).[4]

Group	Actional		Perception	
	Short	Long	Short	Long
3 y/o	94.1%	62.5%	42.1%	34.2%
4 y/o	99.1%	88.4%	63.4%	50%
5 y/o	97.1%	90.4%	70.2%	48.1%
6 y/o	100%	99%	71.2%	66.3%
7 y/o	98.7%	94.7%	86.8%	73.7%
8 y/o	97.5%	97.5%	100%	85%
Adults	100%	100%	98.8%	96.2%

Table 8: Experiment 1 – Passives (% correct)

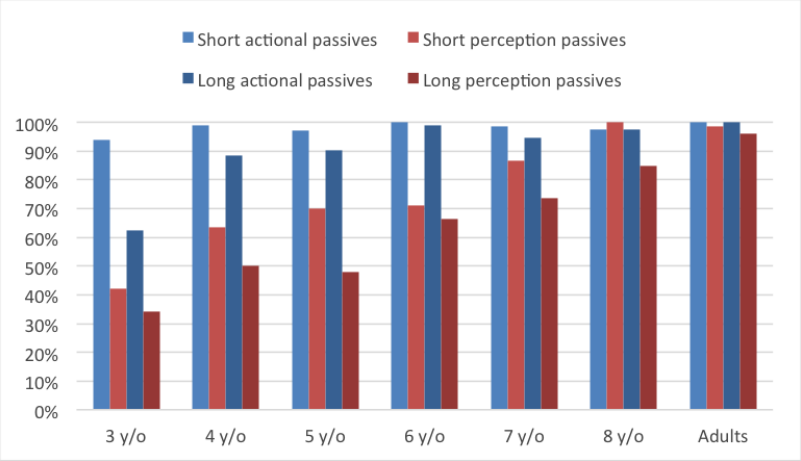


Figure 4: Experiment 1 – Passives (% correct)

4 The results from the active sentences are not presented, since these served as control items and therefore all children included in the study showed excellent performance with these sentences.

The results show that all the child groups performed well on short actional passives. Children at the age of 3, the age group with the lowest score on this condition, achieved a correctness rate of 94.1%. The same children showed a delay with short passives of perception verbs: the 3-year-old group obtained a score of only 42.1% correct responses, and the 4-year-old group a score of 63.4% correct responses. Performance shows little improvement until the age of 7 years, when children obtained 86.8% correct responses. It was only at the age of 8 years that children performed at ceiling on short perception passives, with 100% correct responses.

In the case of long passives, children also showed a verb type contrast, with long actional passives seemingly being acquired earlier than long perception passives. Children at the age of 3 years obtained a score of 62.5% correct responses on long actional passives, but showed much poorer performance on long perception passives, with only 34.2% correct responses. Moreover, in the case of long actional passives, children at the age of 4 years displayed good performance, with 88.4% correct responses, and children at the age of 6 years performed at ceiling, with 99% correct responses. On the other hand, in the case of long perception passives, children at the ages of 4 and 5 years, despite some improvement with regard to 3-year-olds, showed little development, with 50% and 48.1% correct responses, respectively. Children at the age of 6 years showed improved performance with long perception passives, with 66.3% correct responses, as did children at the ages of 7 and 8 years (73.7% and 85% correct responses, respectively). However, none of the child groups performed at ceiling on long passives of perception verbs.

A Generalized Linear Mixed Model (GLMM) that evaluated the effects of *Age group* (3-, 4-, 5-, 6-, 7- and 8-year-olds, and adults), *Length* (short, long) and *Verb type* (actional, perception), as well as an interaction between all three main factors, was applied to all the data from the conditions testing passive sentences. Also included in the model was a random effect for subject. The statistical analysis was obtained using SPSS 25 (IBM Corp, released 2017). This GLMM showed a main effect of *Age Group* (F (6, 2644) = 6.511; $p < 0.001$), but no main effects of *Length* (F (1, 2644) = 0.002; $p = 0.968$) and *Verb Type* (F (1, 2644) = 0.003; $p = 0.954$). In addition to this, the GLMM showed an interaction between *Age Group*, *Length* and *Verb Type* (F (19, 2644) = 2.011; $p = 0.006$).

Pairwise contrasts showed no significant differences between any of the age groups for short passives of actional verbs. This contrasts with the results for short passives of perception verbs: 3-year-olds differed significantly from all other age groups; 4-year-olds differed significantly from 7-year-olds, 8-year-olds and adults; and both 5- and 6-year-olds differed significantly from 8-year-olds and adults. There were also significant differences between 7-year-olds and 8-year-olds, but not between 7-year-olds and adults or between 8-year-olds and adults —see Table 9.[5] These results indicate that only 7- and 8-year-olds performed at a level that cannot be distinguished from adult level on short perception passives.

Age group contrast	t	$p \leqslant .05$
3 y/o - 4 y/o	-2.985	= 0.025
3 y/o - 5 y/o	-3.988	= 0.001
3 y/o - 6 y/o	-4.177	< 0.001
3 y/o - 7 y/o	-7.107	< 0.001
3 y/o - 8 y/o	-11.481	< 0.001
3 y/o - Adults	-10.923	< 0.001
4 y/o - 7 y/o	-3.359	= 0.008
4 y/o - 8 y/o	-6.218	< 0.001
4 y/o - Adults	-5.868	< 0.001
5 y/o - 8 y/o	-5.243	< 0.001
5 y/o - Adults	-4.895	< 0.001
6 y/o - 8 y/o	-5.077	< 0.001
6 y/o - Adults	-4.728	< 0.001
7 y/o - 8 y/o	-2.885	= 0.031

Table 9: Experiment 1 – Short perception passives, age group contrasts

For long actional passives, there were significant differences between 3-year-olds and all other age groups. The 4-year-old group showed significant differences from 6-year-olds and adults, while 5-year-olds differed significantly only from adults. The 6-, 7- and 8-year-old groups showed no significant differences from adults. It can be

5 Only those contrasts that are relevant for this study, in light of previous findings, the contemporary hypotheses under consideration and the research questions, are reported in this chapter, as well as in Chapter 6 and Chapter 7. Moreover, only the statistically significant differences are reported in the tables below (that is, non-significant differences are omitted).

said, then, that children from the age of 6 performed at a level that cannot be distinguished from adult level, in the case of long actional passives —see Table 10.

Age group contrast	t	$p \leqslant .05$
3 y/o - 4 y/o	-4.540	< 0.001
3 y/o - 5 y/o	-4.925	< 0.001
3 y/o - 6 y/o	-7.235	< 0.001
3 y/o - 7 y/o	-5.915	< 0.001
3 y/o - 8 y/o	-6.352	< 0.001
3 y/o - Adults	-7.491	< 0.001
4 y/o - 6 y/o	-2.989	= 0.039
4 y/o - Adults	-3.340	= 0.013
5 y/o - Adults	-2.956	= 0.040

Table 10: Experiment 1 – Long actional passives, age group contrasts

As for long passives of perception verbs, only the 8-year-old group did not differ significantly from the adult group. The 3-year-old group also showed significant differences from 6-, 7- and 8-year-olds, and 4- and 5-year-olds from 7- and 8-year-olds —see Table 11. Thus, it was only at the age of 8 years that EP-speaking children performed at a level than cannot be distinguished from adult level.

Age group contrast	t	$p \leqslant .05$
3 y/o - 6 y/o	-4.550	< 0.001
3 y/o - 7 y/o	-5.360	< 0.001
3 y/o - 8 y/o	-6.661	< 0.001
3 y/o - Adults	-11.984	< 0.001
4 y/o - 7 y/o	-2.874	= 0.040
4 y/o - 8 y/o	-4.091	= 0.001
4 y/o - Adults	-7.142	< 0.001
5 y/o - 7 y/o	-3.072	= .023
5 y/o - 8 y/o	-4.267	< 0.001
5 y/o - Adults	-7.258	< 0.001
6 y/o - Adults	-4.663	< 0.001
7 y/o - Adults	-3.330	= 0.011

Table 11: Experiment 1 – Long perception passives, age group contrasts

Regarding pairwise contrasts between short and long passives, the statistical analysis showed significant differences for actional verbs at the ages of 3 and 4, as well as for perception verbs at the ages of 4, 5, 7 and 8 —see Table 12.

Age group	Verb type	Length contrast	t	$p \leqslant .05$
3 y/o	Actional	Short - Long	6.407	< 0.001
4 y/o	Actional	Short - Long	3.050	= 0.002
	Perception	Short - Long	2.118	= 0.034
5 y/o	Perception	Short - Long	3.428	= 0.001
7 y/o	Perception	Short - Long	2.067	= 0.039
8 y/o	Perception	Short - Long	2.271	= 0.023

Table 12: Experiment 1 – Length contrasts

As for verb type contrasts, all groups from the age of 3 to the age of 7 showed significant differences between actional and perception verbs, for both short and long passives. Conversely, 8-year-olds and adults showed no significant differences between the two verb types, for either short or long passives —see Table 13. These results suggest that the distinction between actional and perception verbs is highly consequential for the comprehension of both short and long passives by EP-speaking children up to the age of 7, with actional passives being invariably better understood than perception passives.

Age group	Length	Verb type contrast	t	$p \leqslant .05$
3 y/o	Short	Actional - Perception	10.450	< 0.001
	Long	Actional - Perception	5.294	< 0.001
4 y/o	Short	Actional - Perception	6.097	< 0.001
	Long	Actional - Perception	6.470	< 0.001
5 y/o	Short	Actional - Perception	4.784	< 0.001
	Long	Actional - Perception	6.900	< 0.001
6 y/o	Short	Actional - Perception	5.077	< 0.001
	Long	Actional - Perception	5.949	< 0.001
7 y/o	Short	Actional - Perception	2.584	= 0.010
	Long	Actional - Perception	3.375	= 0.001

Table 13: Experiment 1 – Verb type contrasts

It could be argued, however, that this contrast between verb types is in fact due to the individual verbs that were used to test these two verb classes. Given that this experiment tested few main verbs, due to various constraints, there is the possibility that children find one of the perception verbs particularly difficult to passivize, thus driving down their performance on passives of perception verbs. At first sight, this appears to be warranted by children's poorer scores with the verb *ouvir* "hear" —see Table 14 and Figure 5, which present the percentages of correct responses children and adults obtained on short passives of each of the four verbs tested. These percentages were calculated using Rbrul version 3.1.3 (Johnson, 2009).

Group	Actional		Perception	
	Pentear	Pintar	Ouvir	Ver
3 y/o	92.1%	96.1%	35.5%	48.7%
4 y/o	98.2%	100%	50%	76.8%
5 y/o	98.1%	96.2%	51.9%	88.5%
6 y/o	100%	100%	50%	92.3%
7 y/o	97.4%	100%	78.9%	94.7%
8 y/o	100%	95%	100%	100%
Adults	100%	100%	97.5%	100%

Table 14: Experiment 1 – Short passives, main verb (% correct)

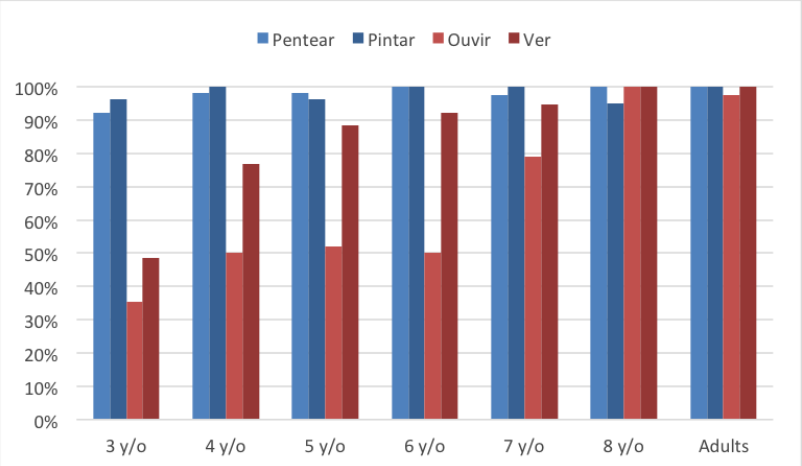


Figure 5: Experiment 1 – Short passives, main verb (% correct)

These results show that children have already reached adult-like performance on short passives with *pentear* "comb" and *pintar* "paint" by the age of 3 years, as is consistent with the data described above. In fact, children's performance on short passives of these two actional verbs appears to be quite homogeneous.

On the other hand, children's performance on short passives of perception verbs seems to vary with the main verb: between the ages of 3 and 7, children achieved noticeably higher rates of correctness on short passives of *ver* "see" than on short passives of *ouvir* "hear": at the age of 3 years, children obtained a score of 48.7% correct responses with short passives of *ver* and a score of 35.5% with short passives of *ouvir*. This difference was more marked at the age of 4 years, given their improved performance with short passives of *ver* (79.3% correct responses), which was not accompanied by similar improvement with short passives of *ouvir* (50% correct responses). Children at the ages of 5 and 6 years continued to perform poorly with short passives with the verb *ouvir*, while their performance on short passives with the verb *ver* continued to improve: 5-year-old children obtained 88.5% correct responses on short passives of *ver*, but only 51.9% on short passives of *ouvir*, whereas 6-year-old children obtained 92.3% correct responses on short passives of *ver*, versus 50% on short passives of *ouvir*. Children at the age of 7 years showed markedly better performance on short passives of *ouvir* (78.9% correct responses), and adult-like performance on short passives of *ver* (96.2% correct responses). Finally, 8-year-olds performed at ceiling on short passives of both *ver* and *ouvir* (100% with both verbs).

In sum, all groups between the ages of 3 and 7 years showed better comprehension of short passives with *ver* than of short passives with *ouvir*. Moreover, children's comprehension of short passives with *ouvir* showed no improvement between the ages of 4 and 6 years, while comprehension of short passives with *ver* improved gradually. This contrasts with the development seen between the ages of 3 and 4 years, when children's performance with short passives of *ver* improved considerably and there was some improvement in their comprehension of short passives of *ouvir*, and between the ages of 6 and 7 years, when children's performance with short passives of *ouvir* showed substantial improvement.

The same general pattern, with an asymmetry between the perception verbs *ver* "see" and *ouvir* "hear" (but not between the actional verbs *pentear* "comb" and *pintar* "paint"), in addition to an asymmetry

between actional and perception verbs, was also seen in the case of long passives. Table 15 and Figure 6 present the percentages of correct responses children and adults obtained for long passives with each verb. Again, these percentages were calculated using Rbrul version 3.1.3 (Johnson, 2009).

Group	Actional		Perception	
	Pentear	Pintar	Ouvir	Ver
3 y/o	63.2%	61.8%	35.5%	32.9%
4 y/o	87.5%	89.3%	33.9%	66.1%
5 y/o	84.6%	96.2%	21.2%	75%
6 y/o	98.1%	100%	46.2%	86.5%
7 y/o	94.7%	94.7%	50%	97.4%
8 y/o	95%	100%	70%	100%
Adults	100%	100%	92.5%	100%

Table 15: Experiment 1 – Long passives, main verb (% correct)

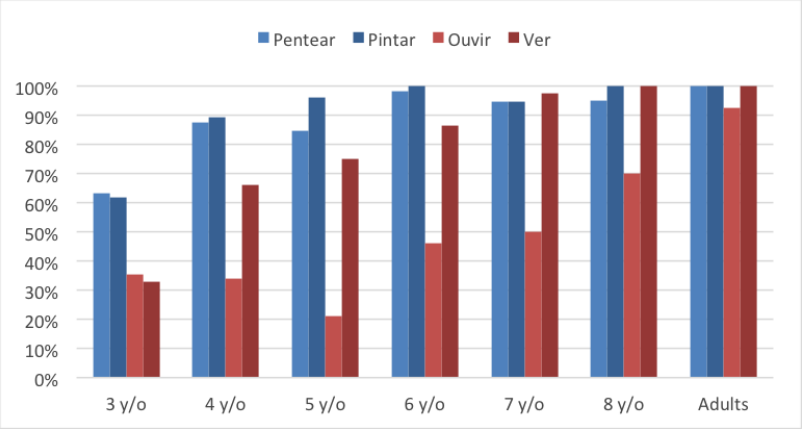


Figure 6: Experiment 1 – Long passives, main verb (% correct responses)

The results indicate that children in all age groups, as well as adults, showed similar performance on long passives of *pentear* "comb" and *pintar* "paint". That is, children's performance on long passives was similar to their performance on short passives in that there was no variation between main verbs within the class of actional verbs. Children at the age of 3 years scored 63.2% correct responses on long passives of *pentear* "comb" and 61.8% correct responses on long passives of *pintar* "paint". By the age of 4 years, children's performance on

long passives of these two verbs had improved substantially (87.5% correct responses with *pentear* and 89.3% correct responses with *pintar*), and continued to improve gradually at later stages. At all ages, the difference in scores between *pentear* and *pintar* was small. This homogeneity was confirmed by the statistical analysis of these data, which will be detailed below, as it showed no significant differences between the two actional verbs for any age group, for either short or long passives —see Table 17 below, which shows the significant differences between main verbs.

Children at the age of 3 years also obtained similar performance on long passives of *ouvir* "hear" (35.5% correct responses) and *ver* "see" (32.9% correct responses). However, from the age of 4 to the age of 8 there is a sharp contrast between the verbs *ouvir* "hear" and *ver* "see", with the latter eliciting better performance than the former: 4-year-olds obtained 66.1% correct responses with long passives of *ver*, in contrast with 33.9% correct responses with long passives of *ouvir*. The same pattern was seen at the age of 5 years —in fact, 5-year-olds showed the sharpest contrast between the two perception verbs, having achieved 75% correct responses on long passives of *ver*, but only 21.2% on long passives of *ouvir*. Children at the age of 6 years showed improved comprehension of long passives of *ouvir*, but their performance was poor nonetheless (46.2% correct responses). The same group obtained 86.5% correct responses on long passives of *ver*. The 7-year-old group, which was adult-like on long passives of *ver* (97.4% correct responses), showed little improvement with long passives of *ouvir* (50% responses correct). Finally, the 8-year-olds performed at ceiling on long passives of *ver* (100%), and showed some improvement in their comprehension of long passives of *ouvir* (70% responses correct). In other words, children's comprehension of long passives with the verbs *pentear* "comb", *pintar* "paint" and *ver* "see" showed remarkable improvement between the ages of 3 and 4, and gradual improvement since then until comprehension of long passives with all three verbs reaches adult level (around age 5-6 for the two actional verbs, and 6-7 for the verb *ver*), whereas their comprehension of long passives with *ouvir* "hear" showed little development and remained poor until the age of 8 years.

What can be derived from these data, in succinct terms, is that while children at the age of 3 showed difficulties with short and long passives of both perception verbs —and in this regard both perception verbs differ from actional verbs—, their performance on passives

of *ver* "see" improved sharply from the age of 4 and remained poor in the case of passives of *ouvir* "hear". These data suggest that there is an effect of main verb only within the class of perception verbs.

A second GLMM was set up to test this hypothesis. This GLMM was similar to the one I described above, with the difference that where the first GLMM tested the factor *Verb type*, this one tested *Main verb*. Hence, the second GLMM evaluated 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 an interaction between all three main factors. Also included in the model was a random effect for subject. This statistical analysis, like the previous one, was obtained using SPSS 25 (IBM Corp, released 2017). The results of this GLMM show that there was a main effect of *Age Group* (F (6, 2616) = 2.252; p = 0.036), as well as an interaction between *Age Group*, *Length* and *Main verb* (F (45, 2616) = 1.887; $p <$ 0.001), but no main effects of *Length* (F (1, 2616) = 0.001; $p >$ 0.05) and *Main verb* (F (3, 2616) = 0.002; $p >$ 0.05).

Pairwise contrasts showed a marked contrast between actional and perception verbs: while there were no significant differences between the two actional verbs, *pentear* "comb" and *pintar* "paint", in any age group, there were significant differences between the perception verbs *ouvir* "hear" and *ver* "see" for short passives at the ages of 4, 5 and 6 years, as well as for long passives at the ages of 4, 5, 6 and 7 years.

In the case of short passives, the 3- and 4-year-old groups displayed significant differences between the two actional verbs (*pentear* "comb", *pintar* "paint") and the two perception verbs (*ouvir* "hear", *ver* "see"). For 3-year-olds, performance with both actional verbs differed significantly from performance with both perception verbs, and there were no significant differences between verbs belonging to the same class. The 4-year-old group also displayed significant differences between *ouvir* and *ver*. That is, while at the age of 3 years short passives of either perception main verb are equally difficult, by the age of 4 years main verb contrasts within this class of verbs arise. Children at the ages of 5 and 6 no longer displayed significant differences between either of the two actional verbs and the perception verb *ver*, but continued to display significant differences between the two actional verbs and *ouvir* and between *ouvir* and *ver*. This result indicates that by the age 5 years children comprehend short passives of actional verbs and of the perception verb *ver* equally well. Only short passives

of *ouvir* "hear" elicit poorer performance at the age of 5 and 6 years —see Table 16.

Age group	Main verb contrast	t	$p \leqslant .05$
3 y/o	*Pentear - Ouvir*	8.604	< 0.001
	Pentear - Ver	6.164	< 0.001
	Pintar - Ouvir	9.255	< 0.001
	Pintar - Ver	6.712	< 0.001
4 y/o	*Pentear - Ouvir*	5.684	< 0.001
	Pentear - Ver	3.075	= 0.004
	Pintar - Ouvir	5.835	< 0.001
	Pintar - Ver	3.314	= 0.004
	Ouvir - Ver	-3.183	= 0.004
5 y/o	*Pentear - Ouvir*	5.236	< 0.001
	Pintar - Ouvir	5.067	< 0.001
	Ouvir - Ver	-4.265	< 0.001
6 y/o	*Pentear - Ouvir*	5.625	< 0.001
	Pintar - Ouvir	5.625	< 0.001
	Ouvir - Ver	-5.008	< 0.001

Table 16: Experiment 1 – Main verb contrasts, short passives

In the case of long passives, children at the age of 3 years also showed significant differences between the two actional verbs and the two perception main verbs. The 4-year-old group, in addition to the main verb contrasts displayed by 3-year-olds, also showed significant differences between the two perception verbs, with long passives of *ver* "see" being better understood than long passives of *ouvir* "hear". That is, children at the ages of 3 and 4 showed a similar pattern for both short and long passives. The 5-year-old group, in addition to significant differences between *ouvir* and all the three other verbs, as in the case of short passives, also showed significant differences between *pintar* "paint" and *ver* for long passives. The 6-year-old group behaved similarly with short and long passives, in that they showed significant differences between *ouvir* and all the three other verbs, and the 7-year-old group showed the same pattern for long passives. That is, the contrast between *ouvir* and the other three verbs was more protracted for long passives than for short passives. Finally, 8-year-olds and adults showed no significant differences between any of the main verbs —see Table 17.

Age group	Main verb contrast	t	$p \leqslant .05$
3 y/o	*Pentear - Ouvir*	3.695	= 0.001
	Pentear - Ver	4.087	< 0.001
	Pintar - Ouvir	3.504	= 0.001
	Pintar - Ver	3.891	= 0.001
4 y/o	*Pentear - Ouvir*	7.126	< 0.001
	Pentear - Ver	2.703	= 0.014
	Pintar - Ouvir	7.396	< 0.001
	Pintar - Ver	2.933	= 0.010
	Ouvir - Ver	-3.886	< 0.001
5 y/o	*Pentear - Ouvir*	9.507	< 0.001
	Pintar - Ouvir	12.401	< 0.001
	Pintar - Ver	2.839	= 0.014
	Ouvir - Ver	-7.294	< 0.001
6 y/o	*Pentear - Ouvir*	6.058	< 0.001
	Pintar - Ouvir	6.186	< 0.001
	Ouvir - Ver	-4.907	< 0.001
7 y/o	*Pentear - Ouvir*	4.573	< 0.001
	Pintar - Ouvir	4.573	< 0.001
	Ouvir - Ver	-4.773	< 0.001

Table 17: Experiment 1 – Main verb contrasts, long passives

In line with previous results, this suggests that performance on passives of actional verbs is homogeneous, whereas performance on passives of perception verbs shows an effect of main verb. Moreover, the general pattern of response shown by the 8-year-old group is adult-like, suggesting that these children have acquired the passive with the verb *ouvir* "hear".

5.5 INTERIM DISCUSSION

Recall the research questions underlying Experiment 1, which were formulated in the introduction to this thesis (Chapter 1):

1. Do EP-speaking children show delayed acquisition of the verbal passive?

2. Do EP-speaking children show a contrast between actional and subject experiencer verbs in the verbal passive?

3. Do EP-speaking children show a contrast between passives with and without *by*-phrases?

Recall also the predictions of the UPR and the UFH for verbal passives of actional verbs (with a target-state) and subject experiencer verbs, in particular those that are relevant for Experiment 1. Under the UPR (Wexler, 2004), in conjunction with the AIS (Borer & Wexler, 1987; Hirsch & Wexler, 2006b; Oliva & Wexler, 2018), children acquiring EP are predicted to:

1. Show significantly poorer performance on actional long passives than on actional short passives (Oliva & Wexler, 2018), but no contrast between short and long passives of subject experiencer verbs, which are predicted to be poorly comprehended across the board, up to the age of 6-7 years.

2. Display good performance on short passives of actional verbs that have a target-state (e.g., *pintar* "paint", *pentear* "comb") from the age of 3.

3. Under Hirsch and Wexler's (2006b) version of the AIS:
    a) Show delayed comprehension of passives with subject experiencer verbs, such as perception verbs (e.g., *ver* "see" and *ouvir* "hear"), as they do not have a target-state.

4. Under Oliva and Wexler's (2018) version of the AIS:
    a) Show delayed comprehension of passives with subject experiencer verbs, such as perception verbs (e.g., *ver* "see" and *ouvir* "hear"), unless these may be interpreted as activities ("watch", "listen to").

Under the UFH (Snyder & Hyams, 2015), children acquiring EP are predicted to:

1. Display similar performance on short and long passives of each verb type at all stages.

2. Display good performance on passives of actional verbs that have a result state (e.g., *pintar* "paint", *pentear* "comb") from the age of 4 years.

3. Show poor comprehension of passives with subject experiencer verbs, such as perception verbs (e.g., *ver* "see" and *ouvir* "hear"), until the age of 6 years.

In answer to the first research question above, children acquiring EP show a delay in the comprehension of verbal passives, seen with long passives of actional verbs, to some extent, and with both short and long passives of perception verbs —see Table 9, Table 10 and Table 11. That is, while there were no significant differences between age groups with regard to short passives of actional verbs —even 3-year-olds showed good performance on this sentence type— there were significant differences between age groups for all other conditions testing passives. This result, showing a passive delay in EP at least with some verbs and when the external argument is overtly expressed, is in agreement with previous findings for EP (Estrela, 2013, 2015), as well as previous findings for languages such as English (e.g., Hirsch, 2011; Hirsch & Wexler, 2006b; Maratsos et al., 1985; Orfitelli, 2012b), Greek (Driva & Terzi, 2007; Terzi & Wexler, 2002), German (Bartke, 2004; Mills, 1985), Dutch (Verrips, 1996), French (Sinclair et al., 1971), Russian (Babyonyshev & Brun, 2003), Catalan (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018; Parramon, 2015) and Spanish (Oliva & Wexler, 2018), among others.

In connection with this point, and in answer to the second research question above, the results presented in this chapter replicate, for EP, the contrast between actional and subject experiencer (perception) verbs previously found in other languages, namely English (Maratsos et al., 1985, 1979), Italian (Volpato et al., 2016), Catalan (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018; Parramon, 2015) and Spanish (Oliva & Wexler, 2018): children performed better with passives of actional verbs than with passives of perception verbs. This is shown not only by the percentages presented in Table 8 and Figure 4, but above all by the results of the first GLMM, which showed that there was an interaction between *Age Group*, *Length* and *Verb Type* (F (19, 2644) = 2.011; p = 0.006), as well as significant differences between the two verb types for all groups between the ages of 3 and 7, for both short and long passives (Table 13). This verb type contrast is, of course, predicted by both the UPR and the UFH.

The second GLMM described in this chapter showed that this verb type contrast is not due to the particular main verbs tested in Experiment 1, i.e., that it does not reduce to asymmetries between main verbs. While there was a contrast between the two perception verbs

(*ouvir* "hear" and *ver* "see"), with *ver* eliciting better performance than *ouvir*, children's performance on the two actional verbs (*pentear* "comb" and *pintar* "paint") was homogeneous, both for short and long passives. That is, the main verb contrast seen in the second GLMM is restricted to the class of perception verbs. This is made evident by the pairwise contrasts between main verbs, which showed that there were no significant differences between passives of *pentear* "comb" and passives of *pintar* "paint", with or without a *by*-phrase. There were, however, significant differences between the two perception verbs at the ages of 4, 5 and 6 years, for short passives, and at the ages of 4, 5, 6, and 7 years, for long passives —see Table 16 and Table 17. Moreover, there were significant differences between the two actional main verbs and the perception verb *ver* at the ages of 3 and 4 years, for both short and long passives, as well as between the actional verb *pintar* and the perception verb *ver* at the age of 5 years, for long passives only. This indicates that, although children performed better with *ver* "see" than with *ouvir* "hear", their performance with *ver* was not identical to their performance with the two actional main verbs. In conclusion, the results show a verb type contrast, between actional verbs and perception verbs, alongside a main verb contrast within the class of perception verbs.

This variation among perception verbs is in line with some of the previous research for English, which showed that *hear* is more poorly understood than *see* and other subject experiencer verbs (Maratsos et al., 1985; O'Brien et al., 2006). Moreover, Maratsos et al. (1985) suggested that, when the sentence-picture matching paradigm is used to assess children's passives, subject experiencer verbs tend to give rise to heterogeneous patterns of response, whereas actional verbs tend to elicit homogeneous performance from children. When a questioning method (*who did it?*) was used, they found no variability among passives of subject experiencer verbs. This would seem to comport with an interpretation of the results that reduces the verb type contrast to imageability issues, as subject experiencer verbs are more difficult to represent pictorially than actional verbs (Messenger, Branigan, McLean, & Sorace, 2012). However, Maratsos et al. (1985) found the same verb type contrast with the questioning method. In fact, children's performance was poorer for passives of both verb types, in comparison with the sentence-picture matching paradigm, a result for which Messenger, Branigan, McLean, and Sorace (2012) offered no explanation. It could also be argued that children's difficulties with

passives of the verb *ouvir* "hear" may actually reflect more general difficulties with the verb itself, or a misunderstanding of the scenario and its representation in the pictures. However, it is unlikely that this is the case, given that all the children included in the study demonstrated that they comprehended the main verb, the scenario and the pictures in their responses to the active controls.[6]

As noted above, in Section 5.2, the verb *ver* also presents polysemy, as it may also have an interpretation akin to "discover" or "verify" — in this regard, *ver* is similar to the English verb *see* (Snyder & Hyams, 2015). In fact, according to Snyder and Hyams (2015), the contrast between *see* and *hear* seen in the studies by Maratsos et al. (1985) and O'Brien et al. (2006) may be due to the availability of actional meanings in the case of *see* and their unavailability in the case of *hear*, which presumably facilitates coercion of a simple event structure (i.e., one without sub-events, and particularly without a cause sub-event and a result state sub-eventuality) into a complex bi-eventive structure. It may be the case, then, that the verb *ouvir* "hear" is more consistently used as a perception verb than *ver* "see", and that the availability of other actional (non-perception) readings for *ver* promotes the comprehension of the passive by children. In this view, the contrast between *ver* "see" and *ouvir* "hear" could be taken to comport with the UFH.

It was also noted above, in Section 5.2, that *ouvir* and *ver* are also used as actional perception verbs in EP, that is, as "listen" and "watch", and not only as "hear" and "see". Recall also that, when used as actional verbs, *ver* and *ouvir* may form only (coerced) adjectival passives with a "job done" or "that's over" interpretation, if there is a supporting context, as these are basically activities, without a target-state (Kratzer, 2000) —see the *corpora* examples in (4)-(6) above. That is, these verbs differ from predicates such as *pentear* "comb" and *pintar* "paint", which are basically accomplishments and do not require a special context in order to form adjectival passives, as they may easily form target-state adjectival passives. It would seem, then, that these results favour a version of the AIS as formulated by Hirsch and Wexler (2006b), rather than as formulated by Oliva and Wexler (2018), who posited that children may interpret any verbal passive with an

6 It should also be noted that Gonzaléz (2018), who used the same images to test the comprehension of short and verbal passives with *sentir* "hear" and *veure* "see" by Catalan-speaking children, and translated the EP test items into Catalan, did not find significant differences between these two verbs. One difference between Experiment 1 and Gonzaléz's experiment was that her items were in the Present instead of the Perfect.

activity verb as a resultant-state adjectival passive. That is, unless we posit that the materials used to test the verb *ver* "see" favoured a "job done" interpretation more than those used to the verb *ouvir* "hear". This is not implausible: in the case of *ver* "see", the scenarios involved the game "blind man's bluff", and the blindfolded character cheats and peaks through the blindfold to see the other participant in the game. Hence, it may be said that it is the task of the blindfolded character to find the other and that he has accomplished that task, which could favour a resultant-state interpretation of the participle. The scenarios with *ouvir* "hear", on the other hand, did not facilitate this interpretation: one of the characters is seen listening to music on headphones and singing at the same time, and the singing is heard by another character also present in the room. So, there is no task that is carried out. This also entails, of course, that the materials for *ver* "see" favoured an actional interpretation of the verb. An actional interpretation is also available for the scenarios with *ouvir* "hear", but in this case it would still be strictly a perception interpretation (as in "listen").

Finally, and in answer to the third research question above, there were also statistically significant differences between short and long passives of actional verbs, as well as between short and long passives of perception verbs —see Table 12. In the case of actional verbs, only 3- and 4-year-olds showed this contrast. In the case of perception verbs, 4-, 5-, 7- and 8-year-olds showed this contrast —6-year-olds, if we look at the percentages in Table 8 and Figure 4, show some improvement in their comprehension of long perception passives that is not accompanied by improvement in their comprehension of short perception passives. It should also be noted that 8-year-olds performed at ceiling on short passives of perception verbs, with 100% correct responses, but obtained only 85% correct responses on long passives of perception verbs. This result is more in line with the predictions of the UPR than with those of the UFH, which predicts no contrast between short and long passives, as they are derived the same way and pose the same difficulty (a potential intervener in raising of the internal argument to subject position). Moreover, the fact that there are contrasts between short and long passives of perception verbs is more in line with the AIS as formulated by Oliva and Wexler (2018) than as formulated by Hirsch and Wexler (2006b): significant differences between short and long passives are not expected unless an adjectival passive interpretation is available, as indeed it is in EP for *ver* "see" and

hear "hear", when used as actional verbs, if we assume that children may assign a resultant-state adjectival passive interpretation to these sentences. That is, the availability of a resultant-state adjectival passive interpretation would be sufficient for the AIS to apply, as posited by Oliva and Wexler (2018). However, recall that, as pointed out in Chapter 3, the contrast between short and long passives has not been consistently replicated, as some studies found only a non-statistically significant advantage of short passives over long passives (e.g., Hirsch & Wexler, 2006b; Orfitelli, 2012b), while others have found a statistically significant difference (e.g., Gavarró & Parramon, 2017; Oliva & Wexler, 2018).

5.6 SUMMARY

Experiment 1 aimed to replicate for EP the verb type contrast previously found for English (Hirsch, 2011; Maratsos et al., 1985, 1979; Orfitelli, 2012b, among others), Italian (Volpato et al., 2016), Catalan (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018; Parramon, 2015) and Spanish (Oliva & Wexler, 2018). The results showed that this verb type contrast also holds for EP: all groups between the ages of 3 and 7 showed significant differences between actional and perception passives, with and without a *by*-phrase. In fact, this contrast had already been found for EP, for children between the ages of 3 and 5 years, by Estrela (2013, 2015). This experiment replicates her results, while addressing some methodological concerns and providing results for older children.

As we have seen, children from the age of 3 performed well on short passives of actional verbs. No significant differences between age groups were found for these sentences, that is, the youngest age group (3-year-olds) performed at a level that could not be distinguished from adult level on these sentences. In the case of short perception passives, children up to the age of 6 years showed significant differences from adults. Children were also delayed with long passives of both actional and perception verbs. Nonetheless, poor comprehension of long passives is more protracted with perception verbs than with actional verbs. For long passives of actional verbs children at the age of 3 showed significant differences from all other age groups, and both 4- and 5-year-olds showed significant differences from adults. The performance of the 6-year-old children, however, could not be distinguished from that of adults. For long passives of

perception verbs, there were significant differences between adults and all child groups except 8-year-olds.

In order to assess whether these results were due to a main verb effect, rather than a verb type effect, a second statistical analysis was applied to the same data. This statistical analysis showed that children's performance on the two actional verbs, *pentear* "comb" and *pintar* "paint", was homogeneous: there were no significant differences between the two verbs for either short or long passives. Conversely, there were statistically significant differences between the two perception verbs, *ouvir* "hear" and *ver* "see", both for short and long passives, with *ver* eliciting better performance from children than *ouvir*. This may have been driven by the availability of non-perception actional readings in the case or *ver* (Snyder & Hyams, 2015), or by the greater availability of a "job done", resultant-state interpretation of the items with *ver* (Oliva & Wexler, 2018).

Despite this variation within the class of perception verbs, it is not the case that *ver* "see" patterned with the two actional verbs. Passives of *ver* were more delayed than passives of either *pentear* or *pintar*. In fact, passives of either perception verb are difficult for children initially —children at the age of 3 years did not show statistically significant differences between *ver* "see" and *ouvir* "hear", for either short or long passives—, but passives of *ouvir* take longer to develop. The fact that there is a main verb effect within perception verbs does not invalidate the verb type effect seen in the first statistical model. On the contrary, there is an effect of verb type, with passives of actional verbs seemingly being acquired earlier than passives of perception verbs, and an effect of main verb within the class of perception verbs.

Finally, Experiment 1 found a contrast between short and long passives, for both actional verbs and subject experiencer verbs. Children at the ages of 3 and 4 years showed statistically significant differences between short and long passives of actional verbs. In the case of perception verbs, children at the ages of 4, 5, 7, and 8 years showed significant differences between short and long passives.

6

EXPERIMENT 2 – VERBAL PASSIVE AND RESULTATIVITY

Having replicated for EP results previously obtained for English and other languages, we now turn to other predictions made by contemporary accounts of passive delay. Hirsch and Wexler (2006b) claimed that children younger than 6-7 years interpret short passives as resultative adjectival passives (employing Embick's 2004 typology). Thus, passives of those verbs that do not form good, natural adjectival passives are delayed in child grammar (but see also Oliva & Wexler, 2018). In a competing account, Snyder and Hyams (2015) suggested that young children are delayed only with passives of predicates that do not have a result state, i.e., predicates without a complex bi-eventive structure with a cause sub-event and a result state sub-eventuality, and must therefore be semantically coerced in order to form the passive —hence the contrast between actional verbs, which tend to have a result state, and non-actional verbs, which tend to not have a result state.

As noted in Chapter 2, the predicates that form good, natural resultative adjectival passives are those that encode a result state. Hence, the two accounts predict a delay with the same verbs, that is, that children will show delayed comprehension of verbal passives with verbs that generally do not have a result state. As we saw in Chapter 5, the results from EP passives of actional and perception verbs are consistent with this prediction, having replicated previous results for English (Maratsos et al., 1985, 1979) and languages such as Catalan (Cunill, 2012; Gavarró & Parramon, 2017; Gonzaléz, 2018; Parramon, 2015), Spanish (Oliva & Wexler, 2018) and Italian (Volpato et al., 2016). It remains to be seen, then, whether actional verbs without a result state and which do not form good adjectival passives pattern with perception verbs, in line with the predictions made by the UPR and the UFH.

Hirsch and Wexler (2006b, 133), unlike Snyder and Hyams (2015), explicitly spelled out predictions for both subject experiencer and actional verbs that do not form good resultative adjectival passives:

> If we consider immature children to interpret verbal passives as resultatives, we also have a clear reason to predict that psychological passives will be delayed longer than actional passives. Actional verbs allow a resultative reading since they involve a target state. Psychological verbs for the most part do not involve such a target state. Those actional verbs that do not clearly involve a target state are those that make poorer adjectives (e.g. *held*), assuming no salient context, while those psychological verbs making better adjectives tend to involve such a target state (e.g. *remembered*). The prediction, in need of confirmation, is that children will perform worse on actional passives that make poor resultative passives, and score better on psychological passives that make good resultative passives.

It is this prediction that Experiment 2 aims to test. Although they did not explicitly address actional verbs without a result state, the claims made by Snyder and Hyams (2015) also entail that passives of these verbs will show delayed acquisition.[1] Thus, Experiment 2 tests the prediction, made by both the UPR and the UFH, that children younger than 6-7 years show poorer comprehension of actional verbs without a result state than of actional verbs with a result state. For this reason, Experiment 2 excludes perception verbs and tests only actional verbs —some of these verbs have result states and others do not, according to familiar diagnostics, namely modification by temporal adverbials (Cunha, 1998; Dowty, 1979; Moens, 1987; Moens & Steedman, 1998; Móia, 2000; Vendler, 1957, 1967). In other words, this experiment abstracts away from the actional vs. subject experiencer distinction and evaluates only the effect of the availability or unavailability of a result state on children's performance with verbal passives. For the purposes of this experiment and subsequent analysis and discussion of the data, I categorize the actional predicates I tested as either resultative or non-resultative.

As in Experiment 1, the methodology employed in this experiment was a two-choice sentence-picture matching task. For more details on this methodology, the reader is referred to Chapter 5.

This chapter provides details on the design of Experiment 2, the procedure followed during testing, the subjects and the results. Sec-

1 I'm grateful to Nina Hyams for discussions on this experiment and on the implications of the UFH for passives of actional verbs without a result state.

tion 6.1 describes the conditions tested, Section 6.2 the materials produced for this experiment and the testing procedure, as well as the rationale for choice of verbs, Section 6.3 the participants in this experiment, and Section 6.4 the results and statistical analysis. Section 6.5 discusses the results of this experiment, in relation with previous findings and the contemporary hypotheses under consideration. Finally, Section 6.6 summarizes and concludes the chapter.

6.1 CONDITIONS

Experiment 2 tested actional predicates that have a result state and actional predicates that do not have a result state in verbal passive structures with and without an overt *by*-phrase. Thus, like Experiment 1, Experiment 2 followed a factorial design that crossed type of predicate (resultative vs. non-resultative) and length (short vs. long). This is systematized in Table 18.

		Type of predicate	
		Resultative	*Non-resultative*
Length	*Short*	Resultative short passive	Non-resultative short passive
	Long	Resultative long passive	Non-resultative long passive

Table 18: Experiment 2 – Factorial design

Also like Experiment 1, Experiment 2 followed Hirsch (2011) in using two conditions testing active sentences with both types of predicates to ensure that the child understood the procedure, the verbs and the scenarios. Children who scored fewer than 3 out of 4 items correct in either of these two conditions were excluded from the analysis. Thus, all the children included in the study showed excellent performance on actives with resultative and non-resultative predicates. Active sentences also acted as fillers.

Each of the resulting six conditions included four items with two different verbs, for a total of 24 items. Two warm up items, identical to those used in Experiment 1 (see Chapter 5), were presented at the beginning of the experiment. The conditions and the verbs tested in Experiment 2 are presented in Table 19.

Condition	Verbs	Tokens
1. Resultative actives	*Pentear, pintar*	4 (2 x verb)
2. Non-resultative actives	*Empurrar, procurar*	4 (2 x verb)
3. Short resultative passives	*Pentear, pintar*	4 (2 x verb)
4. Short non-resultative passives	*Empurrar, procurar*	4 (2 x verb)
5. Long resultative passives	*Pentear, pintar*	4 (2 x verb)
6. Long non-resultative passives	*Empurrar, procurar*	4 (2 x verb)

Table 19: Experiment 2 – Conditions, verbs and tokens

Under the UPR, both the lack of a result state and the presence of an overt *by*-phrase are taken to have the effect of dampening children's performance with verbal passives, as they make it difficult to interpret these sentences as an adjectival passive. Under Hirsch and Wexler's (2007) version of the AIS, passives of actional verbs without a target-state (i.e., activities), with or without a *by*-phrase, are predicted to elicit poor performance until the age of 6-7 years. Under Oliva and Wexler's (2018) version of AIS, on the other hand, young children may interpret verbal passives of activity predicates as resultant-state adjectival passives, given a favourable context (see Kratzer, 2000). Short passives of actional verbs with a target-state (i.e., accomplishments and achievements) are predicted to elicit good performance from early stages under either version of the AIS, assuming that children acquiring EP may ignore the difference in auxiliary selection between verbal and adjectival passives, as has been proposed for Catalan (Gavarró & Parramon, 2017) and Spanish (Oliva & Wexler, 2018). Long resultative passives are predicted to be more poorly understood than short resultative passives, given that the *by*-phrase, which is highly restricted in adjectival passives, constitutes a cue to the verbal passive structure (Oliva & Wexler, 2018, 67).

Under the UFH, it is assumed that children from the age of 4 years have recourse to Smuggling (Collins, 2005b; Gehrke & Grillo, 2007, 2009b), but they may not apply it to predicates that lack a result state, given that they are unable to perform semantic coercion until the age of 6-7 years. If the predicate has a bi-eventive structure with a causing sub-event and a result state sub-eventuality, semantic coercion is unnecessary, and children from the age of 4 years are able to derive the passive. Hence, children are predicted to perform well on passives of resultative actional verbs from the age of 4 and to be delayed

with passives of non-resultative actional verbs until the age of 6-7 years. Given that short and long passives are derived in the same way and delay is determined only by the unavailability of a result state sub-eventuality, no contrast between short and long passives of either verb type is expected. That is, short and long passives of each verb type are predicted to be acquired at the same pace, with no significant differences between them.

6.2 MATERIALS AND PROCEDURE

Experiment 2 followed the same procedure as Experiment 1. Children were told that Benny, a puppet that was introduced to them prior to testing, is preparing a children's book about a family, and that he needs help to choose pictures for his book. The characters used in the test materials for Experiment 2 were the same as those used for Experiment 1: two siblings 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 (see Figure 1 in Chapter 5).

The children were asked to listen to brief scenarios about the family, listen to what Benny says at the end of each scenario, and point to the picture that shows what he said. The scenarios were similar for all the items with the same verb and contextualized the test sentence and the picture pairs, allowing the child to quickly understand the situations represented by the pictures. The test sentence was introduced by the expression *então* "then", in order to emphasize it. In all items only human characters were used, and all characters were equally able and likely to be the Theme or the Agent. As EP presents participle agreement in gender and number, all the characters in each item had the same gender. Half the items had female characters and the other half had male characters.

Each item was presented alongside two pictures: one represented the adult reading of the verbal passive, and the other the θ-role reversal reading. This applies also to short passives, although in this case the external argument is omitted —see the example in (1) and Figure 7. All pictures included a third character, in order to make the use of the *by*-phrase felicitous in the long passive items (O'Brien et al., 2006) —see the example in (2) and Figure 8.[2]

2 For the complete list of items, see Appendix A, Section A.2.

(1) *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?

Figure 7: Pictures for Item 13, Condition 4

(2) *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 searched for by+the boy.

Experimenter: Which image shows what Benny said?

Figure 8: Pictures for Item 24, Condition 6

Choice of verbs was largely determined by their imageability. The two resultative actional verbs, *pentear* "comb" and *pintar* "paint", had already been tested in Experiment 1. Those items were reused in this experiment. The verb *procurar* "look for" was selected from those listed in the CEPLEXicon — Lexicon of Child European Portuguese (Santos, Freitas, & Cardoso, 2014). The verb *empurrar* "push" was deemed to be known by children, having been used in experiments that assessed the acquisition of relative clauses in EP (Costa, Lobo, & Silva, 2011). Choice of resultative and non-resultative actional verbs took into account familiar diagnostics targeting inner aspect (Cunha, 1998; Dowty, 1979; Moens, 1987; Moens & Steedman, 1998; Móia, 2000; Vendler, 1957, 1967). Accomplishments and achievements (employing Vendler's terminology) are telic, and thus may be associated with a result state, whereas activities, like states, are atelic. Standard tests used to distinguish between activities and accomplishments show that both *empurrar* "push" and *procurar* "look for" are basically activities. Namely, as shown in (3)-(4), both are compatible with *durante x tempo* (*for x time*) temporal adverbials and incompatible with *em x tempo* (*in x time*) temporal adverbials.

(3) a. A Maria empurrou a Clara durante 15 minutos.
the Maria pushed the Clara for 15 minutes
"Maria pushed Clara for 15 minutes."

b. *A Maria empurrou a Clara em 15 minutos.
the Maria pushed the Clara in 15 minutes
"Maria pushed Clara in 15 minutes."

(4) a. A Maria procurou a Clara durante 15 minutos.
the Maria looked for the Clara for 15 minutes
"Maria looked for Clara for 15 minutes."

b. *A Maria procurou a Clara em 15 minutos.
the Maria looked for the Clara in 15 minutes
"Maria looked for Clara in 15 minutes."

To be sure, these tests do not allow us to determine that *pentear* "comb" and *pintar* "paint" are basically accomplishements. In fact, these verbs may also be activities. When the object is a bare plural (5)-(6), or when it is omitted (6), the predicate is compatible with *durante x tempo* (*for x time*) temporal adverbials and incompatible with *em x tempo* (*in x time*) temporal adverbials.

(5) a. A Maria penteou clientes durante duas horas.
the Maria combed clients for two hours
"Maria combed clients for two hours."
b. *A Maria penteou clientes em duas horas.
the Maria combed clients in two hours
"Maria combed clients in two hours."

(6) a. A Maria pintou (quadros) durante duas horas.
the Maria painted pictures for two hours
"Maria painted (pictures) for two hours."
b. *A Maria pintou (quadros) em duas horas.
the Maria painted pictures in two hours
"Maria painted (pictures) in two hours."

Pentear "comb" and *pintar* "paint" diverge from *empurrar* "push" and *procurar* "look for" in that, when combined with a non-generic DP, the predicate is an accomplishment, as shown by the fact they are compatible with *em x tempo* (*in X time*) temporal adjuncts (7). Moreover, both sentences in (7) are clearly associated with a result state: the client having her hair combed (7-a) and the painting having come into existence (7-b), the latter being an example of a creation verb with an incremental object.

(7) a. A Maria penteou uma cliente em duas horas.
the Maria combed a client in two hours
"Maria combed a client in in two hours."
b. A Maria pintou um quadro em duas horas.
the Maria painted a picture in two hours
"Maria painted a picture in two hours."

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 (see also Moens & Steedman, 1998). This does not entail that predicates such as *pentear uma cliente* "comb a client" and *pintar um quadro* "paint a picture" 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.[3]

3 I'm grateful to Rui Marques for interesting and useful comments on these issues.

(8) a. A Maria penteou uma cliente durante duas horas.
the Maria combed a client for two hours
"Maria combed a client for two hours."

b. A Maria pintou um quadro durante duas horas.
the Maria painted a picture for two hours
"Maria painted a picture for two hours."

The predicates used in Experiment 2 are of the type illustrated in (3)-(4) and (7)-(8): they involve non-generic internal complements. As can be seen in the examples above, predicates with *empurrar* "push" or *procurar* "look for" with a non-generic object DP are activities, whereas predicates with *pentear* "comb" or *pintar* "paint" and non-generic object DP are accomplishments. Hence, the relevant contrast —that between the availability and the unavailability of a result state—, may be tested using these predicates.

All scenarios and test items in Experiment 2 were in the Perfect. As pointed out in Chapter 5, the use of the Present in EP verbal passives is uncommon and often infelicitous or marginal, given that it has an habitual interpretation, not an ongoing one. Formation of the progressive in the standard dialect of EP requires adding the aspectual auxiliary *estar a* before the main verb in an active sentence, or before the passive auxiliary *ser* in a verbal passive. That is, the progressive in EP involves a more complex structure (see Chapter 5 for more details). Moreover, the use of the Perfect in Experiment 2 as well as in Experiment 1 leads to more comparable results across experiments.

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 being the reverse of the other, were given to equal numbers of subjects within the same age group, to ensure that responses to the last few items were not skewed due to fatigue, especially in the case of the younger age groups.

The picture pairs were presented to the subjects using PowerPoint. The position of the target and θ-role reversal pictures within the picture pairs was balanced across conditions, verbs and the whole experiment. The PowerPoint presentation was shown to the subjects on a tablet with a 9.7" display.

The experiment was applied to children attending pre-school or primary school in Lisbon, between November 2017 and March 2018. Testing took place in a quiet room in the various schools attended by the children. Testing sessions generally lasted about 10 minutes,

and between 10 and 15 minutes for the 3-year-olds. All sessions were recorded using a sound recorder.

Finally, the responses given by the subjects were annotated during the testing sessions using an answer registry sheet and subsequently copied to an Excel file and categorized as either *correct* (choice of the matching picture) or *incorrect* (choice of the mismatching picture), for purposes of statistical analysis (see Section 6.4 below).

6.3 SUBJECTS

Experiment 2 was applied to 127 children between the ages of 3 and 8 (see Table 20). One 3-year-old child was excluded from the analysis due to failure to answer correctly at least 3 out of 4 items in each active sentence condition. All the children were monolingual speakers of EP. None of them had been diagnosed with a language delay, language impairment or cognitive impairment.

Additionally, a control group of 20 adults was tested, using the same basic procedure as when testing the children. All the adult participants were monolingual speakers of EP, and all had completed high school. None of them had a relevant background in linguistics.

Age Group	Number	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)	$\geqslant$ 19

Table 20: Experiment 2 – Subjects (146)

As mentioned in Chapter 5, each subject in this study participated only in one of the three experiments. That is to say, the subjects described in this section participated exclusively in Experiment 2. This is especially important given that the items with the verbs *pintar* "paint" and *pentear* "comb" had already been used in Experiment 1.

6.4 RESULTS

Table 21 and Figure 9 present the percentages correct responses children and adults obtained on short and long passives of resultative and non-resultative predicates. As in Chapter 5, these percentages were calculated using Rbrul version 3.1.3 (Johnson, 2009).

Group	Resultative		Non-resultative	
	Short	Long	Short	Long
3 y/o	95%	68.8%	73.8%	60%
4 y/o	100%	88.8%	93.8%	75%
5 y/o	98.8%	88.8%	95%	88.8%
6 y/o	99%	91.7%	97.9%	91.7%
7 y/o	100%	93.8%	98.8%	91.2%
8 y/o	98.9%	97.7%	98.9%	94.3%
Adults	100%	100%	100%	100%

Table 21: Experiment 2 – Passives (% correct)

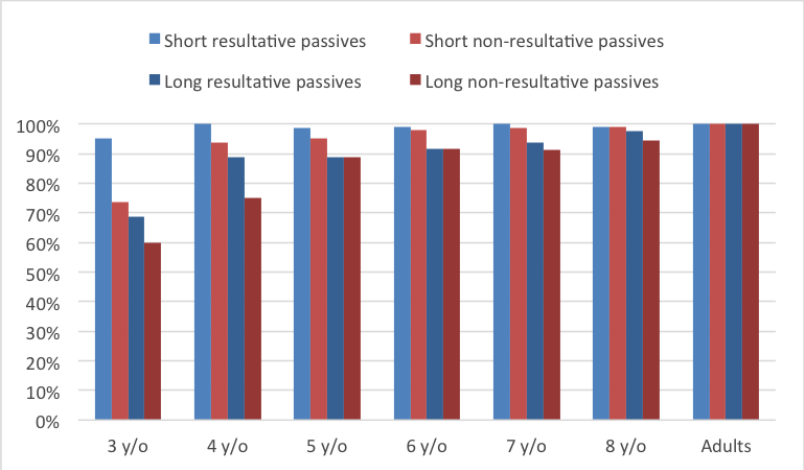


Figure 9: Experiment 2 – Passives (% correct)

Children at the age of 3 showed poorer performance on short non-resultative passives (73.8%) than on short resultative passives (95%). By the age of 4, children achieved a score of 93.8% correct responses on short non-resultative passives. These results suggest that actional short passives without a result state are acquired earlier than short passives of perception verbs: in Experiment 1, children at the age of

4 years obtained only 63.4% correct responses on short perception passives, and children at the age of 7 years obtained 86.8% correct responses on the same items (see Chapter 5). That is, the 7-year-olds tested in Experiment 1 obtained a lower correctness score on short perception passives than the 4-year-olds tested in Experiment 2 obtained on short non-resultative passives.

The 4-year-old group also showed good performance with long resultative passives (88.8% correct responses) and showed somewhat poorer performance with long non-resultative passives (75% correct responses). Their performance is thus noticeably more adult-like than that of 3-year-olds, who obtained 68.8% correct responses on long resultative passives and 60% correct responses on long non-resultative passives. From the age of 5, children performed well on long passives of both resultative and long non-resultative predicates (88.8% correct responses in both conditions). As in the case of short passives, these results suggest that long passives of actional verbs without a result state are acquired earlier than long passives of perception verbs: in Experiment 1, the 8-year-old group obtained 85% correct responses on long perception passives (see Chapter 5).

A GLMM that evaluated the effects of *Age group* (3-, 4-, 5-, 6-, 7- and 8-year-olds, and adults), *Length* (short, long) and *Verb type* (resultative, non-resultative), as well as an interaction between these three main factors, was applied to all the data from passives. Also entered in the model was a random effect for subject. The statistical analysis was obtained using SPSS 25 (IBM Corp, released 2017). This GLMM found a main effect of *Age group* (F (6, 2308) = 4.133; $p < 0.001$). There were no main effects of *Length* (F (1, 2308) = 0.002; $p = 0.966$) and *Verb type* (F (1, 2308) = 0.001; $p = 0.975$), as well as no interaction between *Age group*, *Length* and *Verb type* (F (19, 2308) = 0.712; $p = 0.810$).

A second GLMM was set up, which was similar to the first one, except that the interaction between the three main factors was removed. The adult group was also removed.[4] Thus, the second GLMM evaluated the effects of *Age group* (3-, 4-, 5-, 6-, 7- and 8-year-olds), *Length* (short, long) and *Verb type* (resultative, non-resultative). Also entered in the model was a random effect for subject. This statistical analy-

4 This second GLMM was done at the advice of Ester Boixadera, from the Serveis d'Estadística Aplicada of the UAB, who pointed out that the main effects may be affected by the interaction. The adult group was also removed from the model at Ester Boixadera's advice, as they performed at ceiling and thus showed no variability, which compromised the convergence of the model.

sis was also obtained using SPSS 25 (IBM Corp, released 2017). The GLMM found main effects of *Age group* (F (5, 2008) = 7.803; $p < 0.001$), *Length* (F (1, 2008) = 62.895; $p < 0.001$), and *Verb type* (F (1, 2008) = 19.030; $p < 0.001$).

Pairwise contrasts showed that 3-year-olds showed significant differences from all other age groups except 4-year-olds, collapsing short and long passives of both verb types —see Table 22.

Age group contrast	t	$p \leqslant .05$
3 y/o - 5 y/o	-3.129	= 0.021
3 y/o - 6 y/o	-3.400	= 0.009
3 y/o - 7 y/o	-3.514	= 0.006
3 y/o - 8 y/o	-3.701	= 0.003

Table 22: Experiment 2 – Age group contrasts, all passives

In addition, pairwise contrasts showed significant differences between short and long passives, collapsing resultative and non-resultative predicates, and collapsing all age groups (t = 6.134; $p < 0.001$). Pairwise contrasts also showed significant differences between resultative and non-resultative predicates, collapsing short and long passives, and collapsing all age groups (t = 3.905; $p < 0.001$).

As in the case of Experiment 1, it may be that there are significant differences at the level of main verbs. The percentages of correct responses children and adults obtained on short passives with each main verb are presented in Table 23 and Figure 10. These percentages were calculated using Rbrul version 3.1.3 (Johnson, 2009).

Group	Resultative		Non-resultative	
	Pentear	Pintar	Empurrar	Procurar
3 y/o	95%	95%	87.5%	60%
4 y/o	100%	100%	100%	87.5%
5 y/o	97.5%	100%	100%	90%
6 y/o	100%	97.9%	97.9%	97.9%
7 y/o	100%	100%	100%	97.5%
8 y/o	97.7%	100%	100%	97.7%
Adults	100%	100%	100%	100%

Table 23: Experiment 2 – Short passives, main verb (% correct)

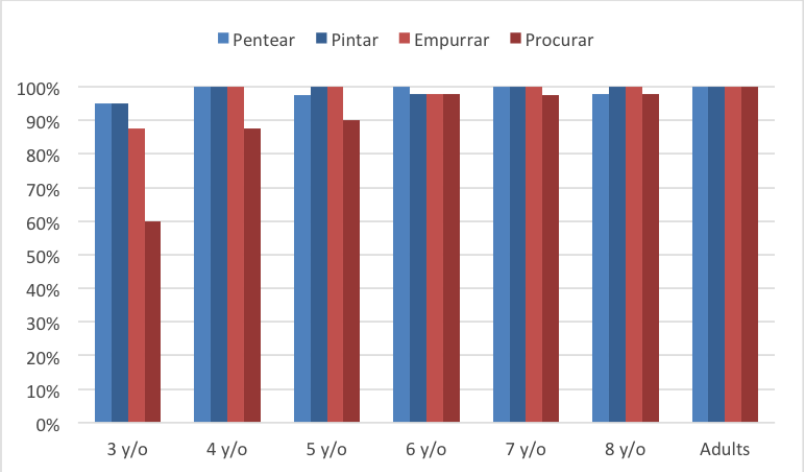


Figure 10: Experiment 2 – Short passives, main verb (% correct)

Children at the age of 3 showed good performance on short passives of the resultative actional verbs *pentear* "comb" (95% correct responses) and *pintar* "paint" (95% correct responses), which is consistent with the results from Experiment 1. The same children performed also well on short passives of the non-resultative verb *empurrar* "push" (87.5% correct responses). This contrasts with their performance on short passives of *procurar* "look for" (60% correct responses). By the age of 4 years, children performed at ceiling on short passives of *pentear*, *pintar* and *empurrar* (100%), and showed good performance on short passives of *procurar* (87.5% correct responses).

A similar, albeit somewhat more protracted, pattern was seen with long passives, as can be seen in Table 24 and Figure 11. Again, these percentages were calculated on Rbrul version 3.1.3 (Johnson, 2009).

Children at the age of 3 showed poorer performance on long passives of *pentear* "comb" (65%, correct responses), *pintar* "paint" (72.5% correct responses) and *empurrar* "push" (67.5% correct responses) than all other age groups. Moreover, their performance on short passives of *procurar* "look for" was somewhat poorer than with the other verbs (52.5% correct responses). By the age of 4, while performance on long passives of *pentear* (87.5% correct responses), *pintar* (90% correct responses) and *empurrar* (95% correct responses) had improved steeply for all three verbs —in fact, children performed better with the non-resultative actional verb *empurrar* than with either of the two resultative actional verbs—, performance on long passives of *procurar* remained poor (55% correct responses). Children at the age of 5 showed

Group	Resultative		Non-resultative	
	Pentear	Pintar	Empurrar	Procurar
3 y/o	65%	72.5%	67.5%	52.5%
4 y/o	87.5%	90%	95%	55%
5 y/o	85%	92.5%	100%	77.5%
6 y/o	89.6%	93.8%	93.8%	89.6%
7 y/o	90%	97.5%	97.5%	85%
8 y/o	97.7%	97.7%	100%	88.6%
Adults	100%	100%	100%	100%

Table 24: Experiment 2 – Long passives, main verb (% correct)

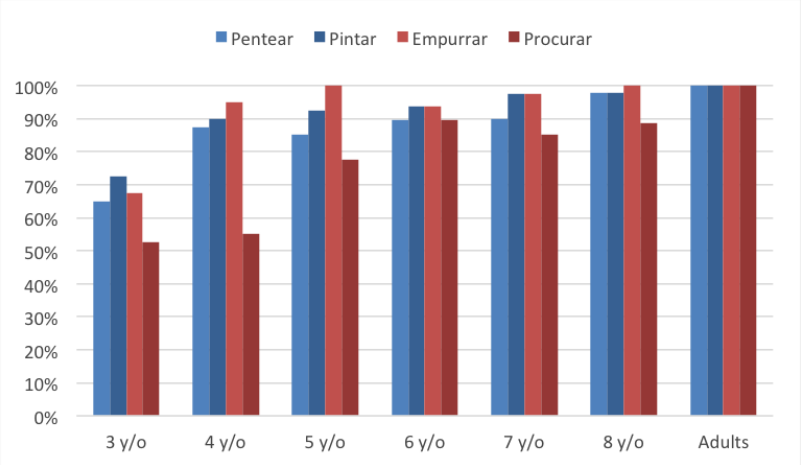


Figure 11: Experiment 2 – Long passives, main verb (% correct)

markedly better performance on long passives of *procurar* (77.5% correct responses), although their performance with this verb remained somewhat poorer than with the three other verbs. In addition, the same children were at ceiling with the non-resultative verb *empurrar* (100%). At the age of 6, children showed good comprehension of all four verbs tested in this experiment.

These results suggest that, at initial stages, there may be significant differences between *procurar* "look for" and the three other verbs. An additional GLMM was set up to test this hypothesis, similar to the first one described above, with the difference that where the first GLMM tested the factor *Verb type*, this one tested *Main verb*. Hence, this GLMM evaluated 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", *empurrar* "push" and *procurar* "look for"), as well as an interaction between these three main factors. Also entered in the model was a random effect for subject. This statistical analysis, like the previous one, was obtained using SPSS 25 (IBM Corp, released 2017). This GLMM found no main effects of *Age group*, *Length* or *Main verb*, as well as no interaction between these three factors.

Again, another GLMM was run, which was similar to the one above, except that the interaction between the three main factors was removed, as well as the adult group.[5] Thus, 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"). Also entered in the model was a random effect for subject. This statistical analysis was obtained using SPSS 25 (IBM Corp, released 2017). The GLMM showed main effects of *Age group* (F (5, 2006) = 7.768; $p < 0.001$), *Length* (F (1, 2006) = 66.530; $p < 0.001$), and *Main verb* (F (3, 2006) = 26.086; $p < 0.001$).

Pairwise contrasts showed that 3-year-olds showed significant differences from all other age groups except 4-year-olds, collapsing short and long passives of all four main verbs —see Table 25.

Age group contrast	t	$p \leqslant .05$
3 y/o - 5 y/o	-2.977	= 0.035
3 y/o - 6 y/o	-3.191	= 0.019
3 y/o - 7 y/o	-3.282	= 0.015
3 y/o - 8 y/o	-3.420	= 0.010

Table 25: Experiment 2 – Age group contrasts, all passives, main verb

Additionally, pairwise contrasts showed significant differences between short and long passives, collapsing resultative and non-resultative predicates and all age groups ($t = 5.770$; $p < 0.001$).

Pairwise contrasts also showed significant differences between *procurar* "look for" and all three other verbs, collapsing short and long passives and all age groups —see Table 26. *Procurar* was more poorly understood than any of the other three verbs (*pentear* "comb", *pintar* "paint" and *empurrar* "push"), as is consistent with the percentages shown above.

5 As in the case of the second GLMM, this fourth GLMM was done at the advice of Ester Boixadera, from the Serveis d'Estadística Aplicada of the UAB.

Main verb contrast	t	$p \leqslant .05$
Procurar - Pentear	-4.599	< 0.001
Procurar - Pintar	-5.285	< 0.001
Procurar - Empurrar	-5.327	< 0.001

Table 26: Experiment 2 – Age group contrasts, all passives, main verb

These data suggest that there was no distinction along the lines of predicate type in children's performance with passives in Experiment 2. In fact, non-resultative passives with *empurrar* "push" patterned with resultative passives of both *pentear* "comb" and *pintar* "paint". Only non-resultative passives with *procurar* "look for" differed from all other passives.

6.5 INTERIM DISCUSSION

Recall the research questions underlying Experiment 2, which were formulated in the introduction to this thesis (Chapter 1):

1. Do EP-speaking children show a contrast between actional predicates with and without a target-state?

2. If EP-speaking children show a delay with passives of subject experiencer verbs, is that delay due to the unavailability of a target-state?

Recall also the predictions of the UPR and the UFH for verbal passives of actional verbs with and without a target-state, outlined in Chapter 4 and in this chapter. Under the UPR (Wexler, 2004), in conjunction with the AIS (Borer & Wexler, 1987; Hirsch & Wexler, 2006b; Oliva & Wexler, 2018), children acquiring EP are predicted to:

1. Display good performance on short passives of actional verbs that have a target-state (e.g., *pintar* "paint", *pentear* "comb", *molhar* "wet, splash") from the age of 3.

2. Under Hirsch and Wexler's (2006b) version of the AIS:
    a) Show delayed comprehension of passives with atelic actional verbs, i.e., those that do not have a target-state (e.g., *empurrar* "push", *procurar* "look for", *perseguir* "chase").

3. Under Oliva and Wexler's (2018) version of the AIS:
    a) Show good comprehension of passives with activity verbs, which do not have a target-state but may be made into resultant-state adjectival passives (e.g., *empurrar* "push", *procurar* "look for", *perseguir* "chase").

Under the UFH (Snyder & Hyams, 2015), children acquiring EP are predicted to:

1. Display similar performance on short and long passives of each verb type at all stages.
2. Display good performance on passives of actional verbs that have a result state (e.g., *pintar* "paint", *pentear* "comb", *molhar* "wet, splash") from the age of 4 years.
3. Show poor comprehension of passives with actional verbs that do not have a result state (e.g., *empurrar* "push", *procurar* "search", *perseguir* "chase"), until the age of 6 years.

As we have seen, the second GLMM indicated a detrimental effect of the unavailability of a target-state in the semantics of the main predicate in children's comprehension of the verbal passive. However, this effect seems to be constrained to early stages —it appears to be visible only in 3-year-olds and possibly 4-year-olds— whereas in Experiment 1 children's delay with perception passives was noticeably more protracted. That is, children's performance on non-resultative passives does not pattern with their performance on perception passives in Experiment 1 (Chapter 5).

In Experiment 1, 3-year-olds obtained 42.1% correct responses on short perception passives and 34.2% correct responses on long perception passives, and 4-year-olds obtained 63.4% correct responses on short perception passives and 50% correct responses on long perception passives —see Table 8 and Figure 4 in Chapter 5. In Experiment 2, on the other hand, 3-year-olds obtained 73.8% correct responses on short non-resultative passives and 60% correct responses on long non-resultative passives, and 4-year-olds obtained 93.8% correct responses on short non-resultative passives and 75% correct responses on long non-resultative passives —see Table 21 and Figure 9 above. By the age of 5 years, children in Experiment 2 already showed good performance with both short and long non-resultative passives (95%

and 88.8% correct responses, respectively), whereas in Experiment 1 children at the age 5 scored only 70.2% on short perception passives and 48.1% on long perception passives, and it was only at the age of 8 that children showed good performance on long perception passives, with 85% correct responses. These results indicate that perception passives and non-resultative passives do not have the same acquisition pattern.

In other words, 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: children generally performed well on actional predicates, whether or not they had a result state and were able to form good, natural adjectival passives. Accordingly, the second GLMM showed no significant differences between 4-year-olds and older age groups, including 8-year-olds. Although it was not possible to model a triple interaction between age group, verb type and length in the case of Experiment 2, it is clear that the results from this experiment indicate that the unavailability of a target-state is not the principal underlying cause of the delay EP-speaking children showed in their comprehension of verbal passives with perception verbs (see Chapter 5).

Moreover, children's performance at younger ages (3-4 years) was poorer with the non-resultative verb *procurar* "look for" than with either the two resultative actional verbs *pentear* "comb" and *pintar* "paint" and the non-resultative actional verb *empurrar* "push". In fact, while in Experiment 1 there was an effect of verb type (actional vs. perception) as well as an effect of main verb only within the class of perception verbs, in Experiment 2 the effect of verb type seen in the second GLMM may in fact be due only to the verb *procurar* "look for". With both short and long passives, *empurrar* "push" patterned with *pentear* "comb" and *pintar* "paint", rather than with *procurar* "look for". In the case of short passives, 3-year-olds obtained 95% correct responses with both *pentear* and *pintar* and 87.5% correct responses with *empurrar*, but only 60% correct responses with *procurar*. In the case of long passives, 3-year-olds obtained 65% correct responses with *pentear*, 72.5% correct responses with *pintar*, and 67.5% correct responses with *empurrar*, and a slightly lower score with *procurar* (52.5% correct responses). The difference was starker in the case of 4-year-olds, who showed little improvement with *procurar* (55% correct responses) and steep improvement with all three other verbs (87.5% correct re-

sponses with *pentear*, 90% correct responses with *pintar*, and 95% correct responses with *empurrar*). The fourth GLMM applied to these data confirmed that *pentear*, *pintar* and *empurrar* patterned together, and that only *procurar* elicited poorer performance from children, as it showed significant differences between *procurar* and the three other verbs tested, and no significant differences between *pentear*, *pintar* and *empurrar*.

There are some distinctions between the two non-resultative verbs that may factor into an explanation of these results, namely the fact that while *empurrar* "push" involves direct action and physical 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. That is, unlike with *pentear* "comb", *pintar* "paint" and *empurrar* "push", with *procurar* "look for" what is observed in the pictures is not sufficient for their interpretation. However, as in the case of *ouvir* "hear" in Experiment 1, it is unlikely that children's somewhat 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 study showed excellent performance on the active controls.

It cannot be excluded that children find it easier to coerce the verb *empurrar* "push" into having a result state and into forming (somewhat unnatural) adjectival passives. That is, it may be the case that the verb *empurrar* "push" lends itself to a resultant-state interpretation more than the verb *procurar* "look for". As we saw in Chapter 2, a sentence such as (9) may be felicitous in the context of a factory that produces baby carriages and employs someone to test their wheels by pushing them a few times. It seems it would be more difficult, although not impossible, to construct such a scenario in the case of *procurar* "look for". In any case, the scenario used to test this verb in Experiment 2 does not seem to support a "job done" interpretation.

(9) Dieser Kinderwagen ist schon geschoben.
this baby carriage is already pushed

Thus, having a result state would be relevant for the comprehension of the passive by children, and the results with *empurrar* "push" and *procurar* "look for" would be consistent with Oliva and Wexler's (2018) version of the AIS —different activity predicates may elicit vary-

ing comprehension results from children depending on the extent to which they allow a resultant-state interpretation.

It may also be argued that the internal argument of *empurrar* "push" is more affected than the internal argument of *procurar* "look for". Previous acquisition studies suggested that the property of affectedness of the internal argument may facilitate passivization for young children (Maratsos et al., 1985), or facilitate passive use (Gordon & Chafetz, 1990). Perhaps affectedness also facilitates resultant-state adjectival passive interpretations, as it can then be said that the internal argument has had an action performed on it, which cannot be said, for instance, of the internal argument of *procurar* "look for".

Thus, in answer to the first research question above, it cannot be said that the absence of a target-state necessarily has a detrimental effect on children's performance with the verbal passive. Rather, it may be said that the possibility of resultant-state interpretations suffices for children to achieve better results with the passives. The availability of such readings appears to vary across activity predicates, and may be tied to the affectedness of the internal argument. Activity predicates that may be construed as involving affectedness of the internal argument seem to elicit better performance from children (see also the results with *ouvir* "hear" and *ver* "see" in Chapter 5, as well as the discussion in Chapter 8). That is, children's performance seems to point towards affectedness being the relevant variable, rather than the availability of a target-state (Hirsch & Wexler, 2006b) or of a result state sub-eventuality (Snyder & Hyams, 2015). In this view, the results from Experiment 2 are compatible with the AIS as formulated by Oliva and Wexler (2018).

In any case, and in answer to the second research question, the data from Experiment 2 does not support the idea that it is the unavailability of a target-state or of a result state sub-eventuality that underlies children's delay with passives of perception verbs, seen in Experiment 1 (Chapter 5). The results from Experiment 2, then, do not seem to be in line with the predictions of the UFH. It must be noted, however, that while the proposal made by Snyder and Hyams (2015) for subject experiencer verbs may naturally be extended to actional predicates without a result state sub-eventuality (i.e., activities), the authors did not explicitly make predictions for these predicates.

Finally, these results may constitute an indication that children's performance with actional predicates that do not have a target-state tends to be more heterogeneous, as seen in the 3- and 4-year-old

groups, similarly to what has been found for subject experiencer verbs in child English (Maratsos et al., 1985) and for perception verbs in child EP in Experiment 1 (Chapter 5).

6.6 SUMMARY

Experiment 2 aimed to test the prediction that children will perform worse on passives of actional predicates without a result state than on passives of actional predicates with a result state, explicitly made by Hirsch and Wexler (2006b), who proposed that children interpret intended verbal passives as resultative adjectival passives, prior to maturation on non-phasal v_{def}. This prediction also follows from the proposal made by Snyder and Hyams (2015) for the acquisition of passives with non-actional verbs, which posits that predicates with a simple event structure require semantic coercion in order to passivize, as passivization applies only to predicates with a result-state subeventuality. Both the UPR and the UFH hold that the lack of a result state underlies children's delay with passives of subject experiencer verbs, and thus the same delay should also be seen with actional verbs without a result state.

The comparison of the results from Experiment 2 to those from Experiment 1 showed that children from the age of 3 displayed better performance on passives of non-resultative actional verbs than on passives of perception verbs, and children from around age 4-5 showed little effect of the unavailability of a target-state in their comprehension of the passive. Thus, it cannot be said that the unavailability of a result state is necessarily the underlying cause of children's protracted difficulties with passives of subject experiencer verbs.

However, the statistical analysis of the data (in particular, the fourth GLMM) also showed that children's poorer performance with non-resultative passives was in fact due only to the verb *procurar* "look for". There were significant differences between this verb and the verbs *pentear* "comb", *pintar* "paint" and *empurrar* "push", but no significant differences between these three verbs. This indicates that the verb type effect seen in the second GLMM was in fact due to a main verb effect.

It may be the case that children find it easier to coerce the verb *empurrar* "push" into having a result state than the verb *procurar* "look for". That is, *empurrar* seems to lend itself to a resultant-state interpretation more than *procurar*, given a supporting context. This may

be due to the fact that the internal argument of *empurrar* may be construed as being more affected than the internal argument of *procurar*. If we consider that affectedness facilitates resultant-state readings, this observation is compatible with the version of AIS proposed by Oliva and Wexler (2018).

7

EXPERIMENT 3 – ADJECTIVAL INTERPRETATIONS

Experiment 3 followed from the idea, proposed by Borer and Wexler (1987), and later on amended by Wexler (2004), Hirsch and Wexler (2006b) and Oliva and Wexler (2018), that young children misanalyze verbal passives as adjectival passives. As we saw in Chapter 3, this proposal is based on the observation that, generally speaking, English *BE + past participle* strings with actional verbs are ambiguous between a verbal passive structure and an adjectival passive structure. In Babyonyshev et al.'s (2001) terms, this ambiguity constitutes an instance of syntactic homophony (or s-homophony). Assuming that the adjectival passive is available at early stages, unlike the verbal passive, children would assign these *BE + past participle* strings the only syntactic structure available to them prior to maturation of non-phasal v_{def} (Hirsch & Wexler, 2006b; Oliva & Wexler, 2018; Wexler, 2004). In particular, Hirsch and Wexler (2006b) proposed that young children analyze verbal passives as resultative adjectival passives (Embick, 2004). Hence, Experiment 3 aimed to test the applicability of the AIS for EP. As we saw in Chapter 3, the AIS is a separate claim from the UPR and was proposed to explain the split, seen in English and in other languages, between actional and subject experiencer verbs, which the UPR by itself cannot do (Borer & Wexler, 1987; Hirsch & Wexler, 2006b; Oliva & Wexler, 2018).

As noted in Chapter 2, this syntactic homophony does not obtain in Portuguese, a language with different auxiliaries for verbal passives (*ser*), stative adjectival passives (*estar*) and resultative adjectival passives (*ficar*) (Duarte & Oliveira, 2010a, 2010b). However, recent empirical data from Catalan (Gavarró & Parramon, 2017) and Spanish (Oliva & Wexler, 2018), two languages with an auxiliary for verbal passive (*ser*) and another for adjectival passives (*estar*), suggested that children may ignore or override the difference in auxiliary in order to assign a syntactic structure to verbal passive strings (but see also Volpato et al., 2016).

Like the experiment employed by Gavarró and Parramon (2017) and adapted to Spanish by Oliva and Wexler (2018), Experiment 3 assessed children's interpretation of short verbal passives and adjecti-

val passives. Gavarró and Parramon's basic methodology was applied to EP, after being modified where appropriate, considering differences between the two languages and the goals of the present study. Namely, given the suggestion that children interpret verbal passives as resultative (Hirsch & Wexler, 2006b), in Experiment 3 I tested resultative adjectival passives, that is, adjectival passives with the auxiliary *ficar*. In addition, while in the experiment by Gavarró and Parramon (2017) all the test items were in the Present, in Experiment 3 all test items were in the Perfect (see Chapter 3). Moreover, choice of verbs was altered, given idiosyncratic properties of the EP counterparts of the verbs used in the experiment on Catalan.

As in Experiments 1 and 2, the methodology employed in this experiment was a two-choice sentence-picture matching task. For more details on this methodology, see Chapter 5. Nonetheless, Experiment 3 presents important differences with regard to Experiments 1 and 2, due to the sentence types tested and the pictures used to represent them, which confront ongoing event and result state readings.

This chapter details the design of Experiment 3, the procedure followed during testing, the subjects and the results. Section 7.1 describes the conditions tested, Section 7.2 the materials produced for this experiment and the testing procedure, as well as the rationale for choice of verbs, Section 7.3 the participants in this experiment, and Section 7.4 the results and statistical analysis. Section 7.5 discusses the results of this experiment, in relation with previous findings and the contemporary hypotheses under consideration. Finally, Section 7.6 summarizes and concludes the chapter.

7.1 CONDITIONS

Experiment 3, unlike Experiments 1 and 2, tested only actional predicates with a result state, as these are the kinds of predicates that may form natural resultative adjectival passives (see Chapter 2). These predicates were tested in verbal passives without a *by*-phrase and in resultative adjectival passives.

Also unlike Experiments 1 and 2, this experiment does not use active sentences as attentional, methodological and lexical knowledge controls. This is because, due to the use of the Perfect, in this experiment active and verbal passive sentences, if understood in an adult manner, are compatible with either of the two images accompanying each item, unlike adjectival passives, which are compatible only with

the picture representing the result state reading. Accordingly, children's responses were scored and analysed not in terms of correctness rates, but in terms of rates of choice of the result state picture (see Section 7.2 below). For these reasons, active sentences were used only as fillers. Moreover, children's excellent performance on actives in Experiments 1 and 2, in which few children were excluded due to failure to answer correctly to most of these items, suggests the vast majority of young children do not have problems with the sentence-picture matching paradigm, despite some potential for difficulties in interpreting static images.

Hence, Experiment 3 tested actional verbs that typically have a result state in active, verbal passive and adjectival passive structures. Each of these three types of sentences comprised 6 items with three different verbs, for a total of 18 items. Two warm up items, identical to those used in Experiments 1 and 2, were presented at the beginning of the experiment. The sentence types and the verbs tested in Experiment 3 are presented in Table 27.

Condition	Aux.	Verbs	Tokens
1. Actives	-	*Pentear, pintar, molhar*	6 (2 x verb)
2. Verbal passives	*Ser*	*Pentear, pintar, molhar*	6 (2 x verb)
3. Adjectival passives	*Ficar*	*Pentear, pintar, molhar*	6 (2 x verb)

Table 27: Experiment 3 – Conditions, verbs and tokens

Under the UPR and the formulation of the AIS proposed by Hirsch and Wexler (2006b), children are delayed for all passives, and assign an adjectival passive interpretation to verbal passives until maturation of non-phasal v_{def} takes place, around the age of 6-7 years. Hence, children's performance is predicted to show a split in correctness between adjectival passives and verbal passives. Concretely, they should overwhelmingly choose the result state picture with both adjectival and verbal passives, with no distinction between the two sentence types.

Under the UFH, children from the age of 3-4 years are able to derive verbal passives of predicates with a bi-eventive structure, with a cause sub-event and a result state sub-eventuality. Hence, children are predicted to show good performance across the board from around the age of 4, when they cease to apply the Freezing Principle to instances of Smuggling. That is, they should overwhelmingly choose the result state picture only with resultative adjectival passives, and

to choose the ongoing event picture more often with verbal passives. That is, their response pattern should show an ability to differentiate between verbal passives, with an eventive interpretation, and resultative adjectival passives, with a stative interpretation.[1]

7.2 MATERIALS AND PROCEDURE

Experiment 2 followed the same basic procedure as Experiments 1 and 2. Children were told that Benny, a puppet that was introduced to them prior to testing, is preparing a children's book about a family, and that he needs help to choose pictures for his book. The characters used in the test materials for Experiment 3 were also the same as those used in the test materials for Experiments 1 and 2: 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 (see Figure 1 in Chapter 5).

The children were asked to listen to very short scenarios about the family, listen to what Benny says at the end of each scenario, and point to the picture that shows what he said. As in Experiments 1 and 2, the scenarios were similar for all the items with the same verb and contextualized the test sentence and the picture pairs, allowing the child to quickly understand the situations represented by the pictures. The test sentence was introduced by the expression *então* "then", in order to emphasize it. Although only one character was mentioned in the test sentence, the test items were semantically reversible in the sense that all characters were equally likely to be an Agent or a Theme. Given that EP presents participle agreement in gender and number, all the characters in each item had the same gender. Half the items had female characters and the other half had male characters.

Each item was presented alongside two pictures: one picture represented the characters engaged in an ongoing action (the ongoing event interpretation), the other represented the characters after the action described by the test sentence had taken place (the result state interpretation). Although Experiment 3 does not include long passives, the third character was maintained in all items and pictures, as some of the pictures had already been used in Experiments 1 and 2 (concretely, those pictures representing the ongoing event reading

1 I'm grateful to Nina Hyams for discussions on this experiment and on the predictions of the UPR and the UFH for adjectival and verbal passives.

with the verbs *pentear* "comb" and *pintar* "paint"). In the pictures representing the result state interpretation, only one of the three characters has undergone a visible change of state. The two other characters remain the same in both pictures. Because all items were in the Perfect, as in Experiments 1 and 2, in adult grammar the active and verbal passive items were compatible with both the ongoing event picture and the result state picture, and thus considerable rates of choice of the result state picture are expected in the adult control group, alongside choice of the ongoing event picture —see the example in (1) and Figure 12. The resultative adjectival passive items, on the other hand, were compatible only with the result state picture —see the example in (2) and Figure 13, as well as the example in (3) and Figure 14.[2]

(1) *Item 11, Condition 2 – Verbal passives*
Experimenter: Look, it's the girl, the mother and the grandmother. They were playing in the garden, and it was a very hot day. Benny, what happened?

Benny: Então... A menina foi molhada.
Then the girl Aux.event splashed

Experimenter: Which image shows what Benny said?

Figure 12: Pictures for Item 11, Condition 2

(2) *Item 13, Condition 3 – Adjectival passives*
Experimenter: Look, it's the girl, the aunt and the grandmother. They were getting ready to go out. Benny, what happened?

Benny: Então... A menina ficou penteada.
Then the grandfather Aux.result painted

Experimenter: Which image shows what Benny said?

2 For the complete list of items, see Appendix A, Section A.3.

Figure 13: Pictures for Item 13, Condition 3

(3) *Item 16, Condition 3 – Adjectival passives*
Experimenter: Look, it's the boy, the uncle and the grandfather. They were playing in the living room with clown make-up. Benny, what happened?

Benny:	Então...	O avô	ficou	pintado.
	Then	the grandfather	Aux.result	painted

Experimenter: Which image shows what Benny said?

Figure 14: Pictures for Item 16, Condition 3

As in Experiments 1 and 2, choice of verbs was to a great extent determined by their imageability. Two of the main verbs, *pentear* "comb" and *pintar* "paint", had already been tested in Experiments 1 and 2, and in both experiments young children had no problems understanding active sentences with these verbs. Short passive items with these verbs were re-used in Experiment 3. The verb *molhar* "wet, splash" was selected from those listed in the CEPLEXicon — Lexicon of Child European Portuguese (Santos, Freitas, & Cardoso, 2014). Moreover, choice of verbs took into account familiar diagnostics targeting inner aspect (Cunha, 1998; Dowty, 1979; Moens, 1987; Moens & Steedman, 1998; Móia, 2000; Vendler, 1957, 1967). Hence, the tests described in Chapter 6 were also applied to the verb *molhar* "wet,

splash". While predicates with *pentear* "comb" or *pintar* "paint" and a definite object DP were categorized as accomplishments, which may be coerced into activities by the addition of *durante x tempo* (*for x time*) adverbials (4)-(5), the predicates with *molhar* and a definite object DP used in Experiment 3 may be categorized as achievements, as they are incompatible with both *durante x tempo* (*for x time*) and *em x tempo* (*in x time*) temporal adverbials (6). That is, the predicates with *molhar* used in this experiment, like those with *pentear* and *pintar*, belong to a telic aspectual class and thus may be associated with a result state.[3]

(4) a. A Maria penteou a Clara durante 15 minutos.
the Maria combed the Clara for 15 minutes
"Maria combed Clara for 15 minutes."

b. A Maria penteou a Clara em 15 minutos.
the Maria combed the Clara in 15 minutes
"Maria combed Clara in 15 minutes."

(5) a. A Maria pintou a Clara durante 15 minutos.
the Maria painted the Clara for 15 minutes
"Maria painted Clara for 15 minutes."

b. A Maria pintou a Clara em 15 minutos.
the Maria painted the Clara in 15 minutes
"Maria painted Clara in 15 minutes."

(6) a. *A Maria molhou a Clara durante 15 minutos.
the Maria splashed the Clara for 15 minutes
"Maria splashed Clara for 15 minutes."

3 In some contexts, *molhar* is compatible with *durante x tempo* (*for x time*) and *em x tempo* (*in x time*) temporal adverbials, which suggests that it may also be an accomplishment. The examples in (i) are from Rui Marques (p.c.), who I'm grateful to for calling my attention to this fact. Moreover, there seems to be some variation across speakers with regard to the acceptability of the examples in (6). That is, some speakers find these sentences to be acceptable or marginal.

(i) a. Ponha os cogumelos debaixo da torneira e molhe-os durante
put the mushrooms beneath of+the faucet and wet+cl.3P for
um minuto.
a minute
"Put the mushrooms beneath the faucet and wet them for a minute."

b. Molhamos o pavimento em menos de dez minutos e depois é
wet.1P the pavement in less than ten minutes and then is
só aplicar a tela.
only apply.Inf the canvas
"We water the pavement in less than ten minutes and then we apply the canvas."

b. *A Maria molhou a Clara em 15 minutos.
the Maria splashed the Clara in 15 minutes
"Maria splashed Clara in 15 minutes."

As mentioned above, all scenarios and test sentences in Experiment 3 were in the Perfect, as in Experiments 1 and 2. In adult grammar, selection of the auxiliary *ser* in an *Aux + participle* string imposes eventive readings, with the exception of some constructions that involve *individual-level* predicates, in which case the sentence may be analysed as a copula structure —see the examples in (7-a) and (7-b). Thus, in (7-a), the use of the Present strongly favours a copula analysis, whereas in (7-b) the use of the Perfect imposes an eventive, verbal passive analysis. The auxiliary *ficar*, on the other hand, imposes result state readings, as illustrated in (7-c).

(7) a. O cão é aleijado.
the dog Cop.Prs hurt.Part (= lame)
"The dog is lame."
b. O cão foi aleijado.
the dog Aux.event.Pst hurt.Part
"The dog was hurt."
c. O cão ficou aleijado.
the dog Aux.result hurt.Part
"The dog was hurt."

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

The picture pairs were presented to the subjects using PowerPoint. The position of the target and θ-role reversal pictures within the picture pairs was balanced across conditions, verbs and the whole experiment. The PowerPoint presentation was shown to the subjects on a tablet with a 9.7" display.

The experiment was applied to children attending several pre-school and primary school in Lisbon, between February and April 2018. Testing took place in a quiet room in the various schools attended by the children. Sessions generally lasted less that 10 minutes, and up to

15 minutes in the case of the 3-year-olds. All sessions were recorded using a sound recorder.

Finally, the responses given by the subjects were annotated during the testing sessions using an answer registry sheet and subsequently copied to an Excel file for purposes of statistical analysis (see Section 7.4 below). Given that both the ongoing event picture and the result state picture were compatible with verbal passives, but only the result state picture was compatible with resultative adjectival passives, evidence that children distinguish between these two sentence types must come in the form of differing rates of result state interpretations (and of ongoing event interpretations) depending on sentence type. That is, if children do distinguish between the two sentence types, their choice of the result state picture should be significantly higher with adjectival passives than with verbal passives. Conversely, if young children interpret verbal passives as adjectival (stative) passives, they should overwhelmingly choose the result state picture with both verbal and adjectival passives, with no distinction between them (see Oliva & Wexler, 2018). Hence, while in Experiments 1 and 2 responses were categorized as either *correct* or *incorrect*, in the case of Experiment 3 responses were categorized as either *result state* (choice of the result state picture) or *ongoing event* (choice of the ongoing event picture).

7.3 SUBJECTS

Experiment 3 was applied to 88 children between the ages of 3 and 6 years (see Table 28 below). None of the children tested was excluded from the analysis due to an inability to comply with task demands. All the children were monolingual speakers of EP. None of them had been diagnosed with a language delay, language impairment or cognitive impairment.

A control group of 20 adults was also tested, using the same basic procedure as when testing the children. All the adult subjects were monolingual speakers of EP and had completed high school. None of them had a relevant background in linguistics.

As mentioned previously in Chapter 5 and Chapter 6, each subject in this study took part in only one of the three experiments. That is, the 108 subjects who participated in Experiment 3 did not participate in either of the two previous experiments. This was motivated not only by the possibility of training effects, but also by the fact that

Age Group	Number	Age range (mean)
3-year-olds	20 (9 girls, 11 boys)	3;0.01-3;11.11 (3;7)
4-year-olds	22 (15 girls, 7 boys)	4;0.20-4;11.16 (4;5)
5-year-olds	30 (16 girls, 14 boys)	5;0.05-5;11.27 (5;5)
6-year-olds	16 (9 girls, 7 boys)	6;0.11-6;11.08 (6;5)
Adults	20 (14 women, 6 men)	$\geqslant$ 18

Table 28: Experiment 3 – Subjects (108)

some items were used in more than one experiment, concretely those with the verbs *pintar* "paint" and *pentear* "comb".

7.4 RESULTS

Table 29 and Figure 15 present the percentages of choice of the result state picture children and adults obtained on verbal passives (VP), with the auxiliary *ser*, and adjectival passives (AP), with the auxiliary *ficar*. These percentages were obtained using Rbrul version 3.1.3 (Johnson, 2009).

Group	Sentence type	
	VP	AP
3 y/o	54.2%	62.5%
4 y/o	56.1%	61.4%
5 y/o	63.9%	70.6%
6 y/o	56.2%	86.5%
Adults	55%	94.2%

Table 29: Experiment 3 – Passives (% result state)

These data show that all age groups followed a pattern in which verbal passives received fewer result state readings than adjectival passives. However, in the case of 3-, 4- and 5-year-olds the difference between verbal and adjectival in rates of choice of the result state picture was small, and in fact the statistical analysis showed that it is not significant. It was only at the age of 6 that the difference in choice of the result state picture became wider. It can also be observed only 6-year-olds behaved similarly to adults. Neither 6-year-olds nor adults seem to have chosen the result state picture less often for verbal

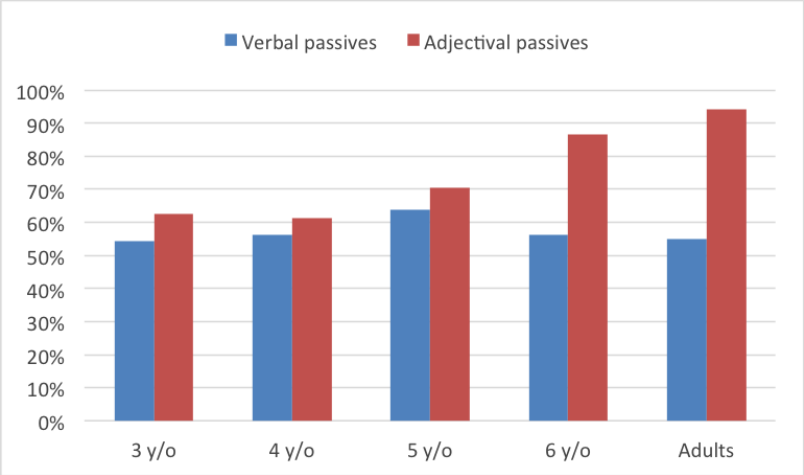


Figure 15: Experiment 3 – Passives (% result state)

passives than 3-, 4- and 5-year-olds. Rather, they chose the result state picture more often for adjectival passives. This is confirmed by the statistical analysis below.

A GLMM was set up and applied to all the data from the passive items, in order to evaluate the effects of *Age group* (3-, 4-, 5- and 6-year-olds, and adults) and *Auxiliary* (*Ser* and *Ficar*), as well as an interaction between these two main factors. The response variable considered was subjects' choice of the result state picture. Also entered in the model was a random effect for subject. This statistical analysis was obtained using SPSS 25 (IBM Corp, released 2017). The GLMM found main effects of *Age group* (F (4, 1286) = 3.538; p = 0.007) and *Auxiliary* (F (1, 1286) = 59.493; $p < 0.001$), as well as an interaction between *Age group* and *Auxiliary* (F (4, 1286) = 9.964; $p < 0.001$).

Pairwise contrasts showed no significant differences between age groups for verbal (*ser*) passives. That is, children of all ages and adults chose the result state picture at roughly the same rates for verbal passives —given that the verbal passives were in the Perfect, both pictures were compatible with these sentences. In the case of adjectival (*ficar*) passives, on the other hand, pairwise contrasts showed significant differences between the three younger child groups (3-, 4- and 5-year-olds) and adults, as well as between 3- and 4-year-olds and 6-year-olds —see Table 30. Thus, with regard to choice of the result state picture as the matching picture for adjectival passives, the only child group that did not significantly differ from adults was the 6-

year-old group. The 3-, 4- and 5-year-olds invariably chose the result state picture less often than the adults.

Age group contrast	t	$p \leqslant .05$
3 y/o - 6 y/o	-3.203	= 0.008
3 y/o - Adults	-4.342	< 0.001
4 y/o - 6 y/o	-3.375	= 0.005
4 y/o - Adults	-4.596	< 0.001
5 y/o - Adults	-4.042	< 0.001

Table 30: Experiment 3 – Adjectival passives, age group contrasts

Pairwise contrasts also showed significant differences between the two auxiliaries for 6-year-olds and adults, but not for the younger age groups (3-, 4- and 5-year-olds) —see Table 31. Both 6-year-olds and adults chose the result state picture significantly less often with verbal (*ser*) passives than with adjectival (*ficar*) passives.

Age group	Aux. contrast	t	$p \leqslant .05$
6 y/o	*Ser - Ficar*	-4.190	< 0.001
Adults	*Ser - Ficar*	-5.315	< 0.001

Table 31: Experiment 3 – Auxiliary contrasts per age group

It is quite clear from these results that there is a marked contrast between children at the age of 5 and younger and children at the age of 6. The 6-year-old group patterned with the adult group, in that their responses differentiated between short verbal passives and resultative adjectival passives. The 3-, 4- and 5-year-old groups, on the other hand, behaved similarly, and showed no significant differences in choice of the result state picture between verbal (*ser*) passives and adjectival (*ficar*) passives.

There were also important differences between the three main verbs tested. Table 32 and Figure 16 show the percentages of result state responses children and adults obtained on verbal passives (VP) and adjectival passives (AP) with each main verb. Again, these percentages were obtained using Rbrul version 3.1.3 (Johnson, 2009).

The data from short verbal passives show that, between the ages of 3 and 5 years, the verb *pintar* "paint" gave rise to considerably higher rates of choice of the result state picture than either *pentear* "comb" or *molhar* "wet, splash", for both verbal and adjectival passives.

Group	Pentear		Pintar		Molhar	
	VP	AP	VP	AP	VP	AP
3 y/o	30%	42.5%	82.5%	82.5%	50%	62.5%
4 y/o	36.4%	50%	72.7%	72.7%	59.1%	61.4%
5 y/o	58.3%	66.7%	93.3%	96.7%	40%	48.3%
6 y/o	53.1%	96.9%	65.6%	90.6%	50%	71.9%
Adults	52.5%	97.5%	65%	90%	47.5%	95%

Table 32: Experiment 3 – Passives, main verb (% result state)

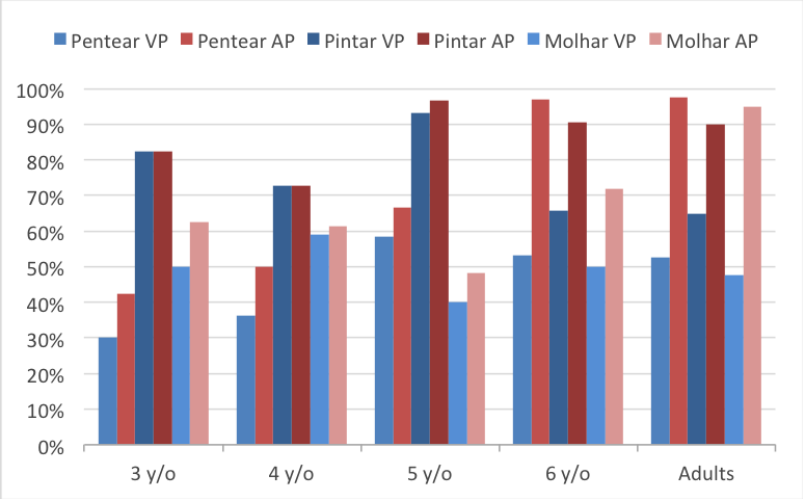


Figure 16: Experiment 3 – Passives, main verb (% result state)

In fact, for each of the three main verbs, the younger child groups consistently chose the result state picture at roughly the same rates with verbal and adjectival passives. In contrast, 6-year-olds and adults chose the result state picture more often with adjectival passives than with verbal passives, regardless of the main verb. Thus, between the ages of 3 and 5 years, choice of the result state picture seems to be more a function of the main verb than of the auxiliary. Children at the age of 6 years and adults also chose the result state picture more often with verbal passives of *pintar* "paint" than with verbal passives of *pentear* "comb" or *molhar* "wet, splash", but not to the same extent as younger age groups. They also showed a distinct pattern of response with adjectival passives, which elicited much higher rates of choice of the result state picture independently of the main verb.

A second GLMM was set up and applied to all the data from the conditions testing passives. This GLMM differed from the first one only in that it included *Main verb* as a main factor and as a term in an interaction. Thus, the second GLMM assessed the effects of *Age group* (3-, 4-, 5-, and 6-year-olds, and adults), *Auxiliary* (*ser*, *ficar*) and *Main verb* (*pentear* "comb", *pintar* "paint", *molhar* "wet, splash"), as well as an interaction between these three main factors. Also entered in the model was a random effect for subject. I first report the significance of the fixed factors, and then the relevant pairwise contrasts between age groups, auxiliaries and main verbs. This statistical analysis, like the previous one, was obtained using SPSS 25 (IBM Corp, released 2017). The GLMM showed main effects of *Age group* (F (4, 1266) = 3.352; p = 0.010), *Auxiliary* (F (1, 1266) = 55.618; $p < 0.001$), *Main verb* (2, 1266) (F = 26.877; $p < 0.001$), as well as an interaction between *Age group*, *Auxiliary* and *Main verb* (F (22, 1266) = 4.221; $p < 0.001$).

Pairwise contrasts showed that children up to the age of 5 showed no significant differences between the two passive auxiliaries tested, for any main verb. Conversely, children at the age of 6 and adults showed differences between the two passive auxiliaries for all three main verbs —see Table 33. This is consistent with the results from the first GLMM, which showed no significant differences between the two auxiliaries until the age of 6 years.

Age group	Main verb	Aux. contrast	t	$p \leqslant .05$
6 y/o	*Pentear*	*Ser - Ficar*	-3.262	= 0.001
	Pintar	*Ser - Ficar*	-2.144	= 0.032
	Molhar	*Ser - Ficar*	-2.080	= 0.038
Adults	*Pentear*	*Ser - Ficar*	-3.724	< 0.001
	Pintar	*Ser - Ficar*	-2.389	= 0.017
	Molhar	*Ser - Ficar*	-4.281	< 0.001

Table 33: Experiment 3 – Auxiliary contrasts per main verb

Moreover, pairwise contrasts showed that children up to the age of 5, unlike 6-year-olds and adults, showed significant differences between main verbs: the 3-year-old group showed significant differences between all three main verbs for verbal passives, and between *pentear* and *pintar* for adjectival passives; the 4-year-old group showed significant differences between *pentear* and *pintar* and between *pentear* and *molhar* for verbal passives; and the 5-year-old group showed sig-

nificant differences between all three main verbs for both verbal and adjectival passives —see Table 34.

Age group	Auxiliary	Main verb contrast	t	$p \leqslant .05$
3 y/o	*Ser*	*Pentear - Pintar*	-6.080	< 0.001
		Pentear - Molhar	-1.972	= 0.049
		Pintar - Molhar	3.287	= 0.002
	Ficar	*Pentear - Pintar*	-4.151	< 0.001
4 y/o	*Ser*	*Pentear - Pintar*	-3.938	< 0.001
		Pentear - Molhar	-2.360	= 0.037
5 y/o	*Ser*	*Pentear - Pintar*	-3.870	< 0.001
		Pentear - Molhar	2.440	= 0.015
		Pintar - Molhar	6.765	< 0.001
	Ficar	*Pentear - Pintar*	-3.266	= 0.002
		Pentear - Molhar	2.434	= 0.015
		Pintar - Molhar	5.240	< 0.001

Table 34: Experiment 3 – Main verb contrasts per auxiliary

The fact that no significant differences between main verbs were found for either verbal or adjectival passives in the case of 6-year-olds, who patterned with adults, combined with the fact that this was the only child age group that showed significant differences between the two auxiliaries for all three main verbs, suggests that at this stage children are able to distinguish between these two sentence types, with regard to their aspectual properties (eventive vs. stative).

7.5 INTERIM DISCUSSION

Recall the research questions underlying Experiment 3, which were formulated in the introduction to this thesis (Chapter 1):

1. Do EP-speaking children distinguish between verbal passives, with the auxiliary *ser*, and resultative adjectival passives, with the auxiliary *ficar*?

2. Do EP-speaking children interpret verbal passives as resultative adjectival passives, that is, as stative?

Recall also the predictions of the UPR and the UFH regarding the interpretation of verbal passives of actional verbs with a target-state,

outlined in Chapter 4 and in this chapter. Under the UPR (Wexler, 2004), in conjunction with the AIS (Borer & Wexler, 1987; Hirsch & Wexler, 2006b; Oliva & Wexler, 2018), children acquiring EP are predicted to:

1. Assign resultative adjectival readings to short passives of actional verbs that have a target-state, if they ignore the difference in auxiliary selection (*ser* vs. *ficar*), whether we assume Hirsch and Wexler's (2006b) version of the AIS or Oliva and Wexler's (2018) version of the AIS.

Under the UFH (Snyder & Hyams, 2015), children acquiring EP are predicted to:

1. Interpret verbal passives of predicates that have a cause subevent and a result state sub-eventuality in an adult manner, that is, as eventive, at least from the age of 4 years.

In answer to the first research question above, the results from Experiment 3 seem to suggest that children up to the age of 5 years do not fully distinguish between adjectival and short verbal passives, despite the difference in choice of auxiliary —see Table 29 and Figure 15. There is a dramatic change in response pattern at the age of 6. At this stage, children's performance was noticeably more similar to that of adults. It was only at the age of 6 that children's responses showed a distinction between the two passive auxiliaries tested in this experiment. This is confirmed by the statistical analysis, which showed that only children at the age of 6 years and adults showed significant differences between short verbal passives and resultative adjectival passives with regard to choice of the result state picture over the ongoing event picture —see Table 31. These data suggest that children up to the age of 5 are ignoring or overriding the aspectual information conveyed by the passive auxiliary (stative in the case of *ficar*, eventive in the case of *ser*). This is in line with the predictions of the UPR and the AIS. The UFH, on the other hand, predicts good performance across the board with the verbs used in this experiment (actional verbs with a target-state), that is, choice of the ongoing event picture with verbal passives and choice of the result state picture with resultative adjectival passives. This prediction is not borne out by the results.

Furthermore, the data from verbal and adjectival passives discriminating between the three main verbs suggests that the interpretation

of these sentences by children up to the age of 5 may be determined by the main verb, or by its pictorial representation, rather than by the aspectual information conveyed by the auxiliary —see Table 32 and Figure 16. This is confirmed by the statistical analysis, which showed that 3-, 4- and 5-year-olds displayed significant differences between main verbs with regard to choice of the result state picture, while displaying no significant differences between verbal and adjectival passives for any main verb —see Table 33 and Table 34. Children at the age of 6 years, on the other hand, did not show significant differences between main verbs for either verbal passives or resultative adjectival passives. This was also the only child group that showed significant differences between the two auxiliaries for all three main verbs —see Table 33. These results suggest that 6-year-olds are able to distinguish between verbal and adjectival passives.

In keeping with this, we have seen that children up to the age of 5 years chose the result state depiction more often with the verb *pintar* "paint" than with either *pentear* "comb" or *molhar* "wet" —see Table 32 and Figure 16. It can be said that the pictures used to test *pintar* "paint" favoured choice of the result state picture, or, alternatively, that the pictures used to test *pentear* "comb" and *molhar* "wet, splash" favoured choice of the ongoing event picture. Indeed, it may be argued, in the case of *molhar* "wet, splash", that both pictures were compatible with the resultative adjectival passives interpretation: although the character corresponding to the Theme is very wet in the result state picture, he/she is also wet in the other one. It may also be argued, in the case of *pentear* "comb", that the pictures may have been confusing for children, because not only the character to be combed has spiky hair, but also all other characters, to the effect that it is not clear what combed may mean. On the other hand, in the case of *pintar* "paint", one picture represents the ongoing event with no result yet and the other the result state and no ongoing event, hence one is unequivocally false and the other true for each sentence. Under this interpretation of the materials and the data, the results from the items with *pintar* "paint" are expected under the AIS and comport with those from Catalan (Gavarró & Parramon, 2017) and Spanish (Oliva & Wexler, 2018), and the results from the items with *pentear* "comb" and *molhar* "wet, splash" are merely an experimental artifact.[4]

4 It could also be argued that the pictures used to depict verbal passives of *pintar* "paint" favoured the choice of the result state picture with both verbal and adjectival passives, as they showed the Patient without any paint on its face (i.e., they

In this view, and in answer to the second research question above, the results from Experiment 3 are compatible with the use of an adjectival strategy by young children, although they do not provide unequivocal evidence for it, given the limitations of the methodology. It is not the case that, with verbal passive items, children up to the age of 5 years choose the result state picture more often than 6-year-olds and adults, and accordingly there were no significant differences between any of the age groups with regard to choice of the result state picture with verbal passives, as would be expected if young children interpreted verbal passives as adjectival (stative) passives. As noted above, the prediction made by the AIS for short verbal passives is that children overwhelmingly choose the picture representing the result state (see Hirsch & Wexler, 2006b; Oliva & Wexler, 2018). That is, the predicted response pattern would be one in which young children chose the result state picture for both verbal and adjectival passives at the same rates that older children and adults chose the result state picture only for adjectival passives. In any case, the fact that children do not appear to distinguish between verbal and adjectival passives could be taken to favour the AIS and the UPR over the UFH, and that their interpretation of these sentences, with regard to their aspectual properties (stative vs. eventive), may be susceptible to language-external factors such as the pictorial representation of the scenarios.

7.6 SUMMARY

Experiment 3 aimed to test the prediction, made by the UPR and the AIS, that children will interpret short verbal passives of actional verbs with a target-state as resultative adjectival passives (Hirsch &

showed the starting point of the event), whereas the pictures used to depict adjectival passives of the same verb showed the Patient with its face painted. Because all the sentences were in the Perfect, this option, which was intended to maximally differentiate between the two interpretations, may have had the effect of leading young children to choose the result state picture at higher rates: this is the only picture in which an event of painting has taken place, which comports with the use of the Perfect. In this view, one improvement that could be made to this experiment would be to have the face of the Patient partially painted in the pictures depicting verbal passives of *pintar* "paint". Of course, this raises the question of how these results fit with those from Catalan and Spanish, as well as what underlies children's behaviour with adjectival passives of *pentear* "comb" and *molhar* "wet, splash" up to the age of 5, as they do not show any evidence for a distinction between verbal and adjectival passives.

Wexler, 2006b; Oliva & Wexler, 2018), prior to maturation on non-phasal v_{def} around age 6-7. In this regard, the UPR differs from the UFH, which predicts good performance across the board on this Experiment, that is, that children choose the ongoing event depiction with verbal passives items and the result state depiction with adjectival passive items.

Although the predictions of the UPR and the AIS are not fully borne out, as young children did not overwhelmingly choose the result state depiction with both verbal and adjectival passives, the general pattern of the results is compatible with the AIS, given that children up to the age of 5 years chose the result state picture at the same rates for verbal and adjectival passives with each of the three main verbs. Thus, they appear to ignore the properties of the auxiliary, and their interpretation of the verbal and adjectival passives tested in this experiment seems to have been determined by the pictorial representations used for each verb. It was only at the age of 6 that children showed evidence for a distinction between verbal and adjectival passives. Concomitantly, the 6-year-old children did not show significant differences between main verbs.

The prediction made by the UFH, on the other hand, is that children from the age of 4 years (i.e., from the moment that Smuggling is made available via maturation) choose the result state picture more often with resultative adjectival passives than with verbal passives. In other words, under the UFH children from the age of 4 are predicted to perform similarly to adults with both verbal and resultative adjectival passives. As we have seen, this prediction is not fulfilled.

8

DISCUSSION AND CONCLUSION

There are three main findings to be derived from the three experiments and the data described in Chapter 5, Chapter 6 and Chapter 7. First, Experiment 1 replicated the basic results found for English, namely a verb type contrast, with passives of actional verbs being consistently better understood by children than passives of subject experiencer verbs. Thus, Portuguese-speaking children patterned with English-speaking children despite the absence of strict s-homophony between verbal and adjectival passives in EP, given the difference in auxiliary selection, and despite the fact that the perception verbs tested, *ouvir* "hear" and *ver* "see", may be actional as well as experiential and may form resultant-state adjectival passives, provided there is a supporting context (Kratzer, 2000). Like previous studies on the acquisition of the passive in English (Crain & Fodor, 1993; Fox & Grodzinsky, 1998; Maratsos et al., 1985), this experiment also found better performance on passives of *ver* than on passives of *ouvir*. It may be the case that this is due to the polysemy of *ver* or to the greater availability of the resultant-state adjectival passive with this verb. As we will see, it may also be argued that affectedness of the internal argument also contributed to children's better performance on passives with *ver* "see" than on passives with *ouvir* "hear".

Second, the results from Experiment 2 suggest that there is little or no effect of the (un)availability of a target-state in children's comprehension of verbal passives of actional verbs. Although children at the age of 3 performed somewhat better on passives of telic actional verbs than on passives of atelic actional verbs, suggesting a facilitating effect of the target-state, this effect appears to have been driven solely by the non-resultative verb *procurar* "look for". It may also be the case that children found it easier to interpret the remaining non-resultative verb tested in this experiment, *empurrar* "push", as having a result state, or that the higher affectedness of the internal argument in the case of *empurrar* promoted children's better performance with this verb. It can be argued that the results from Experiments 1 and 2 favour the view that, with regard to perception verbs and non-resultative actional verbs,i.e., those verbs that do not have a

target-state, the property that distinguishes predicates that elicit better performance from children is that they may be construed as having a highly affected internal argument (on the notion of affectedness, see Anderson, 1979, 2017; Beavers, 2011, 2013; Egerland, 1998; Hopper, 1985; Hopper & Thompson, 1980; Jaeggli, 1986; Lebeaux, 1988; Lehmann, 1991; Tenny, 1987, 1992; Tsunoda, 1985, and von Heusinger & Kaiser, 2011). 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*), as well as in argument realization, word order, transitivity and lexical aspect (see Beavers, 2011; Egerland, 1998; Lehmann, 1991, and references therein).

Third, Experiment 3 suggests that children up to the age of 5 years may ignore or override the difference in auxiliary selection between verbal and adjectival passives. It was only at the age of 6 that children clearly differentiated between the two sentence types. Although the 3-, 4- and 5-year-olds did not differ from 6-year-olds and adults in their performance with verbal passives, as they did not select a stative depiction over an eventive one significantly more often than the two older age groups, the fact that younger children did not seem to distinguish between the two auxiliaries is compatible with the use of an adjectival strategy. It may be the case, then, that children's choice of picture was partly motivated by language-external factors, namely the pictorial representation of the items.

In this chapter I discuss the implications of these results for the two contemporary hypotheses under consideration, the UPR (Wexler, 2004) and the UFH (Snyder & Hyams, 2015), taking previous studies into account. The predictions made by the UPR and the UFH, described in Chapter 4, are repeated below. Under the UPR children acquiring EP are predicted to:

1. Show seemingly poorer performance on long actional passives than on short actional passives, but no contrast between short and long passives of subject experiencer verbs, which should be poorly comprehended across the board up to the age of 7.

2. Display seemingly good performance on short passives of actional verbs that have a target-state (e.g., *pintar* "paint", *pentear* "comb", *molhar* "wet, splash") from the age of 3.

3. Under Hirsch and Wexler's (2006b) version of the AIS:
    a) Show delayed comprehension of passives with subject experiencer verbs, such as perception verbs (e.g., *ver* "see" and *ouvir* "hear"), as they do not have a target-state.
    b) Show delayed comprehension of passives with atelic actional verbs, i.e., those that do not have a target-state (e.g., *empurrar* "push", *procurar* "look for", *perseguir* "chase").
    c) Assign resultative adjectival readings to short passives of actional verbs that have a target-state, if they ignore the difference in auxiliary selection (*ser* vs. *ficar*).
4. Under Oliva and Wexler's (2018) version of the AIS:
    a) Show delayed comprehension of passives with subject experiencer verbs, such as perception verbs (e.g., *ver* "see" and *ouvir* "hear"), unless these may be interpreted as activities ("watch", "listen to").
    b) Show seemingly good comprehension of passives with activity predicates, which do not have a target-state but may be made into resultant-state adjectival passives (e.g., *empurrar* "push", *procurar* "look for", *perseguir* "chase").
    c) Assign resultative adjectival readings to short passives of actional verbs, if they ignore the difference in auxiliary selection (*ser* vs. *ficar*).

Under the UFH, children acquiring EP are predicted to:

1. Display similar performance on short and long passives of each verb type at all stages.
2. Display good performance on passives of actional verbs that have a result state (e.g., *pintar* "paint", *pentear* "comb", *molhar* "wet, splash") from the age of 4 years.
3. Show poor comprehension of passives with subject experiencer verbs, such as perception verbs (e.g., *ver* "see" and *ouvir* "hear"), until the age of 6 years.
4. Show poor comprehension of passives with actional verbs that do not have a result state (e.g., *empurrar* "push", *procurar* "search", *perseguir* "chase"), until the age of 6 years.

5. Interpret verbal passives of predicates that have a result state in an adult manner, that is, as eventive, from the age of 4 years.

This chapter is organized as follows: in Section 8.1, I discuss the verb type and main verb contrasts found in Experiments 1 and 2, in relation to the UPR/AIS and the UFH, namely with regard to the underlying cause of the verb type contrast originally found by Maratsos et al. (1985, 1979). In Section 8.2, I briefly address the contrasts between short and long passives found in Experiment 1. In Section 8.3, I discuss the implications of the results from Experiment 3 for the AIS. Finally, Section 8.4 concludes this study.

8.1 VERB TYPE AND MAIN VERB CONTRASTS

Looking back at the predictions made by the hypotheses under consideration, adult-like performance with short and long passives of actional verbs is expected under the UFH from age 4, provided the actional verb has a result state sub-eventuality (as is the case of the actional verbs used in Experiment 1). Hence, good performance on short passives of actional verbs at the age of 3 years, as seen in Experiment 1, is unexpected, as it is posited that these children do not have recourse to Smuggling and consequently cannot overcome the minimality violation caused by raising of the internal argument past the implicit external argument in Spec of *v*P. It must be noted, at this point, that the scenarios used to test verbal passives in Experiment 1 (as well as in Experiment 2) may not plausibly be said to endow the internal argument with the status of a topic, as Snyder and Hyams (2015) have argued to explain children's good results in the studies by Pinker et al. (1987) and O'Brien et al. (2006).

Under the UPR, lack of passive delay with short passives of actional verbs is expected if children interpret these verbal passives as adjectival passives. Assuming Hirsch and Wexler's (2006b) version of the AIS, good performance with passives of perception verbs and other verbs that cannot occur in good, natural adjectival passives is expected to occur only from around age 6-7. Thus, the contrast between actional and perception verbs seen in Experiment 1 is seemingly compatible with Hirsch and Wexler's version of the AIS.

However, within the class of perception verbs, there was a contrast between the verbs *ouvir* "hear" and *ver* "see": while 3-year-olds showed no statistically significant differences between the two verbs, suggest-

ing that they were equally difficult for these children, 4-, 5- and 6-year-olds performed better with *ver* than with *ouvir*, for both short and long passives, and 7-year-olds performed better with long passives of *ver* than with long passives of *ouvir*. A similar contrast was observed in some studies on passive acquisition in English. Fox and Grodzinsky (1998) found that children between the ages of 3;6 and 5;5 performed much better with long passives of *see* (55% correct responses) than with long passives of *hear* (25% correct responses). The authors speculated that it is possible that some children interpreted the verb *see* as an actional verb, similar to *look*. Maratsos et al. (1985) observed that, of all the subject experiencer verbs they tested, *hear* was the most difficult verb for children at the ages of 4, 5 and 7. Children's performance with subject experiencer verbs was also more heterogeneous than with actional verbs. In fact, children showed no significant differences among actional verbs. Variation among subject experiencer verbs, however, was observed only in the case of a sentence-picture matching paradigm. When a questioning method was used, performance was poorer overall than in the sentence-picture matching task, but there was no variation among verbs of either type. Hence, Maratsos et al. (1985, 179) attributed children's poorer results with the verb *hear* in the sentence-picture matching paradigm, in comparison with the other subject experiencer verbs tested in the same experiment, to its pictorial representation. O'Brien et al. (2006) also found that 4-year-olds performed better on short passives of *see* than on short passives of *hear*. No explanation was offered for this discrepancy. Like Maratsos et al. (1985), O'Brien et al. (2006) excluded all items with *hear* from the analysis of the results and did not present children's correctness rates with this verb. Snyder and Hyams (2015) argued against this decision, on the basis that the items with *see* (the only remaining non-actional verb in O'Brien et al.'s study) used this verb in an actional sense ("discover" or "find").

In EP, the verb *ver* "see" may in some contexts receive an actional reading ("discover", "find", or "verify"). In particular, the items used to test this verb in Experiment 1 may have led young children to interpret *ver* as an actional verb: in the scenarios used to test this verb, two characters play the children's game "blind man's bluff", while a third character sits in the background, and the character that is blindfolded peeks through the blindfold to find the other. It may be said, then, that the verb *ver* "see" is used as an actional verb to mean "find". By hypothesis, under the UFH the availability of this reading could

lead to better results, given that, it is assumed, semantic coercion is rendered unnecessary (Snyder & Hyams, 2015) —however, this is not quite so, given that the class membership of the verb (actional versus non-actional) is orthogonal to the actual issue, which is the availability of a result state, within a complex, bi-eventive structure. That is, while non-actional verbs tend to not have a result state, many actional verbs do not have a result state, and these are also predicted to elicit poorer results from children (see Chapter 4 and Chapter 6). In this view, in order to establish that an actional reading of *ver* "see" has led to better performance from children, it must also be established that this actional reading led to the availability of a result state. It should also be noted that the scenarios used to test the verb *ouvir* "hear" may also have favoured an actional interpretation of this verb: one character sings while listening to music on headphones, and another attentively listens to this character's singing, with one hand behind his ear, while a third character is reading the newspaper. If actionality of the verb is sufficient to facilitate semantic coercion or render it unnecessary, then children should have no problem with the verb *ouvir* "hear" as used in this scenario, especially taking into account that this verb is also used as an actional perception verb ("listen") in EP. This further casts doubt on an explanation of the discrepancy between *ver* and *ouvir* in terms of actionality of the main verb, as this is not sufficient for good performance at early stages.

As we have seen in Chapter 2 and Chapter 5, both *ver* "see" and *ouvir* "hear", when used as actional verbs and in a supporting context, may form resultant-state adjectival passives (Kratzer, 2000). It may be argued, then, that the main verb asymmetry within the class of perception verbs is compatible with the version of the AIS proposed by Oliva and Wexler (2018), according to which any passive of an activity verb can be interpreted a resultant-state adjectival passive by young children, if we assume that the scenarios for *ver* "see" favoured this reading more than the scenarios for *ouvir* "hear". This asymmetry may also be due to the fact that the scenarios used to test *ver* facilitated a reading of the predicate as having an affected internal argument.

It can be argued that the extent to which an event may be construed as involving an affected internal argument may account for the intuition that sentences such as (1-a) and (1-b) 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, Bidgood, Pine, Rowland, & Freudenthal, 2016). For instance, if Pedro

declared that he was sick to not 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 (1-a). 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 (1-b).

(1) a. O Pedro foi visto na rua pelo Paulo.
the Pedro Aux.event 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 Aux.event heard by one of+the janitors
"The student was heard by one of the janitors."

In line with this, it may be the case that, in Experiment 1, the materials used to test the verb *ver* "see" favoured 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 this view, children's better results with passives of *ver* than with passives of *ouvir* may be due to an adversative interpretation associated with the former that is absent in the latter. In the scenarios used to test passives of *ver*, which involved the game "blind man's bluff", 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 interpretation. In fact, the contexts used to test *ouvir* were more neutral in this regard: one of the characters is seen listening to music on headphones and singing at the same time, and the singing is heard by another character also present in the room. This is not to say, of course, that the verbal passive in EP generally has an adversative interpretation, as is the case of some Japanese passive constructions (Deguchi, 2013; Washio, 1993, among others), but rather that a context in which the internal argument is negatively affected may in some cases make a passive structure more felicitous or more available. If children are sensitive to this, then the materials used for *ver* "see" may have offered more favourable conditions for the comprehension of the passive than those used for *ouvir* "hear". Likewise, and in view of the results from Experiment 3, which suggest that children do not distinguish between verbal and adjectival passives until the age of 6 years, it may be argued that the affectedness of the internal argument promotes adjectival passives readings of intended verbal passives by children, in particular resultant-state adjectival readings

(Oliva & Wexler, 2018), as only in these cases it can be said that the internal argument has been acted upon.

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 appears to have been driven solely by the items with *procurar* "look for", as children's performance with passives of the typically non-resultative verb *empurrar* "push" did not differ significantly from their performance with passives of the typically resultative verbs *pentear* "comb" and *pintar* "paint". This result is not predicted by the UFH: young children's good results with passives of *empurrar* "push" are unexpected, given the assumption that a bi-eventive structure with a cause sub-event and a result state sub-eventuality is needed for passivization and that children may not coerce predicates without a result state into having such a structure until the age of 6 years. Under UPR and Hirsch and Wexler's version of the AIS, which makes explicit predictions for actional verbs without a target-state, these results are also unexpected, given that these verbs do not form good, natural adjectival passives, in particular resultative adjectival passives. These results are compatible with the idea that children may comprehend verbal passives of activity predicates (*empurrar* "push", *procurar* "look for") as resultant-state adjectival passives if we assume that the items with *empurrar* "push" favoured this interpretation more than the items with *procurar* "look for" (see Oliva & Wexler, 2018). Crucially, the verb *empurrar* "push" has clearly a more affected internal argument than *procurar* "look for", as it is a physical contact verb. This may have favoured adjectival readings.

In short, the combined results from Experiments 1 and 2 suggest that it is the property of affectedness that promotes better performance with the passive, in the case of predicates that do not have a target-state. In these two experiments, the passivized predicates with *ver* "see" and *empurrar* "push" differed from those with *ouvir* "hear" and *procurar* "look for" in that they had, or could be construed as having, affected internal arguments.

This is in agreement with typological work on the passive. In a survey of passive constructions in various languages, Keenan and Dryer (2007) derived the following generalization: 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. This is what they termed the *basic passive*. It appears to be the most widespread and unmarked type of passive in the world's languages, and in some it is the only type of passive. Importantly, this means that the basic passive, with regard to typological distribution, involves highly affected internal arguments.

In line with this, a bias towards passivization of actional verbs, which tend to have more highly affected internal arguments than subject experiencer verbs, may also be present in adults. Ambridge et al. (2016) reported that experimental evidence from ratings of verb semantics, graded grammaticality judgments and reaction time in a picture-matching task suggested that adults show a tendency 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 (see also Ferreira, 1994, 2003). Thus, affectedness seems to play a role in passivization, insofar as verbs with highly affected internal arguments seem to passivize more easily and to require less of a supporting context than verbs with less affected internal arguments (see also Gordon & Chafetz, 1990; Lebeaux, 1988). Note, however, that in English (and Portuguese) the verbal passive is not restricted to predicates with highly affected internal arguments (Anderson, 1979; Egerland, 1998; Tenny, 1987).

If it is the case that affectedness of the internal argument facilitates resultative adjectival readings for children, then they are predicted to perform better with passives of predicates that have highly affected internal arguments than with passives of predicates with unaffected internal arguments, even when they allow adjectival participles. This would be the case of *remember* in English, which may form adjectival participles (e.g., *a remembered poem*) but has an unaffected internal argument. I leave this question for further research.

It should be pointed out that young children's performance on passives of *ver* "see" remained poorer than their performance on passives of *pentear* "comb" and *pintar* "paint". Pairwise contrasts showed that, for both short and long passives, there were significant differences between the two actional verbs and *ver* at the ages of 3 and 4 years, with passives of actional verbs being better understood than passives of *ver*. There were also significant differences between the verb *pintar* and the verb *ver* for long passives at the age of 5 years. In contrast with this, none of the age groups showed significant differences between the two actional verbs (or the two accomplishment predicates) at any stage, for either short or long passives. That is, it is not the

case that children treated *ver* "see" similarly to the two actional verbs, hence the verb type asymmetry is maintained, alongside the variation across verbs within the class of perception verbs.

Finally, the general results from Experiment 1 are consistent with those from Estrela (2013), in that they replicated for EP the verb type contrast that had previously been found in English (Maratsos et al., 1985) and in other Romance languages such as Catalan (Gavarró & Parramon, 2017), Spanish (Oliva & Wexler, 2018) and Italian (Volpato et al., 2016), with passives of actional verbs being consistently better understood by children than passives of subject experiencer verbs.

8.2 LENGTH CONTRASTS

As noted in Chapter 3 and Chapter 4, the UFH assumes the Smuggling account of the passive, in which there is a minimality violation in the absence of Smuggling 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 (perception or subject experiencer, actional with a result state, and actional without a result state). As we have seen, this prediction was not borne out by the results from Experiment 1. Children at the age of 3 showed significant contrasts between short and long passives of actional verbs (but not between short and long passives of perception verbs, suggesting that all passives of perception verbs were poorly comprehended by 3-year-olds). Children at the age of 4 years showed significant differences between short and long passives of both actional and perception verbs, and children at the ages of 5, 7 and 8 years showed significant differences only between short and long passives of perception verbs (see Table 12 in Chapter 5). In this regard, and contra the UFH, children do not show evidence for a maturational moment at the age of 4: the expected pattern, in that case, would be poor performance on both short and long passives of actional verbs at the age of 3 years, and similarly good performance on both from the age of 4 years (see also Ganger, Dunn, & Gordon, 2005).

Under the UPR and the AIS, it may be assumed that children acquiring Portuguese ignore the difference in auxiliary as has previously been proposed for Catalan (Gavarró & Parramon, 2017) and Spanish (Oliva & Wexler, 2018). As we have seen above, this predicts poorer performance with long actional passives than with short actional passives, and poor performance across the board with non-actional pas-

sives. This is because, as stated by Oliva and Wexler (2018), when the *by*-phrase is present, children must ignore an additional cue to the verbal passive. As pointed out in Chapter 2, the *by*-phrase is highly restricted in the adjectival passives (although some types of *by*-phrases are allowed in adjectival passives). The fact that children at the ages of 3 and 4 showed a length contrast in passives of actional verbs is consistent with Oliva and Wexler's claim. However, children also showed no contrast between short and long passives of actional verbs from the age of 5 years. In fact, Portuguese-speaking children showed better performance than Catalan- and Spanish-speaking children on these items from early stages: at age 3, EP-speaking children obtained 62.5% correct responses on long actional passives, whereas in Gavarró and Parramon's first experiment, Catalan-speaking children obtained only 23% correct responses on long actional passives, and in Oliva and Wexler's study, Spanish-speaking children obtained 24.2% correct responses. This unexpected difference between EP and Catalan/Spanish remains for future research.

In addition, and as noted in Chapter 3, the contrast between short and long passives has not been consistently replicated across comprehension studies, as some studies have found only a small, non-statistically significant advantage of short passives over long passives (e.g., Hirsch & Wexler, 2006b; Orfitelli, 2012b). In the case of EP, Estrela (2013) also did not find a length effect in passives of either actional or subject experiencer verbs. These cases, in which there are no statistically significant differences between short and long passives, remain to be accounted for.

8.3 ADJECTIVAL READINGS OF VERBAL PASSIVES

As noted in Chapter 4, under the UFH, children are predicted to perform well on passives of actional verbs with a result state from the age of 4 years. Hence, in the case of Experiment 3, which tested stative and eventive readings of short verbal passives and resultative adjectival passives, this account predicts that children from the age of 4 years choose the result state picture more often with resultative adjectival passives than with verbal passives. That is, children from the age of 4 are predicted to perform similarly to adults with both verbal and resultative adjectival passives. As we have seen in Chapter 7, this prediction is not borne out by the results from Experiment 3, as 3-, 4- and 5-year-olds showed no distinction between verbal and adjectival

passives. Moreover, the results do not show evidence for maturation at the age of 4 years, as there were no significant differences between 3-, 4- and 5-year-olds. It is only at the age of 6 years that children show the ability to distinguish between verbal and adjectival passives. This group also differed significantly from all three younger age groups, suggesting that maturation has occurred at this stage. These data also reinforce the conclusion that there is no maturational moment at the age of 4 (see Section 8.2 above).

Conversely, the UPR states that children are delayed for all passives until around age 6-7. Thus, it relies on the AIS to explain the contrast between actional and subject experiencer verbs in children's comprehension of English verbal passives. The AIS states that children misanalyse intended verbal passives as adjectival passives, in particular resultative adjectival passives (Borer & Wexler, 1987; Hirsch & Wexler, 2006b; Oliva & Wexler, 2018). Crucially, passives of actional verbs, but not passives of subject experiencer verbs, allow this misanalysis, given that actional verbs tend to make better adjectival passives than subject experiencer verbs. In the case of Romance languages such as Catalan and Spanish, which select different auxiliaries for verbal passives (*ser*) and adjectival passives (*estar*), and thus do not show strict s-homophony between the two structures, it has been proposed that children are nonetheless able to resort to the AIS, given that the difference between the two structures is not prominent. That is, near s-homophony is sufficient for the AIS to apply (Gavarró & Parramon, 2017; Oliva & Wexler, 2018). This proposal may naturally be extended to Portuguese, which presents a three-way distinction in auxiliary selection: *ser* is associated with verbal passives, *estar* with stative adjectival passives and *ficar* with resultative adjectival passives (Duarte & Oliveira, 2010a, 2010b; Lima Júnior & Augusto, 2015). Thus, following previous work for Catalan (Gavarró & Parramon, 2017) and for Spanish (Oliva & Wexler, 2018), Experiment 3 assessed eventive and stative readings of short verbal passives and resultative adjectival passives with telic actional verbs. The prediction is that young children overwhelmingly choose a stative depiction for both verbal and adjectival passives, in detriment of an eventive one, and that they show no significant differences between the two sentence types.

The results from Experiment 3 were mixed with regard to these predictions. Although they show a stark contrast between the performance of 3-, 4- and 5-year-olds and that of 6-year-olds and adults, the distinctions between these groups are not in the direction pre-

dicted by the UPR and the AIS: 3-, 4- and 5-year-old children did not differ from from 6-year-olds and adults in their performance with verbal passives, that is, they did not select a stative depiction over an eventive one more often with verbal passives than the two older age groups. In fact, there were no significant differences between age groups for verbal passives.

Nonetheless, Experiment 3 suggests that children up to the age of 5 years may ignore or override the difference in auxiliary selection between verbal and adjectival passives. It was only at the age of 6 that children clearly differentiated between the two sentence types. This suggests that children are ignoring the auxiliary, in particular the aspectual information it conveys (eventive vs. stative), and hence their responses rely on properties of the main verb or on its pictorial depiction. This is consistent with the fact that 3-, 4- and 5-year-olds, who did not show significant differences between the two auxiliaries, showed significant differences between main verbs. Conversely, 6-year-olds and adults, who showed significant differences between the two auxiliaries with all three verbs tested, did not show significant differences between main verbs.

We can make sense of these results if we assume that the pictures used to test *pentear* "comb" and *molhar* "wet, splash" favoured choice of the ongoing event picture, even under a resultative reading. It may be argued, in the case of *molhar* "wet, splash", that both pictures were compatible with the resultative adjectival passive interpretation: although the character is very wet in the result state picture, she/he is also wet in the other one (the water is all over the character). In the case of *pentear* "comb", it may be argued that the pictures may have been confusing for children, because not only the character to be combed has spiky hair, but also all other characters, to the effect that it is not clear what combed may mean. On the other hand, in the case of *pintar* "paint", one picture represents the ongoing event with no result yet and the other the result state and no ongoing event, hence one is unequivocally false and the other true for each sentence. Under this interpretation of the materials and the data, the results from verbal passives with *pintar* "paint" are expected under the AIS and comport with those from Catalan (Gavarró & Parramon, 2017) and Spanish (Oliva & Wexler, 2018), and the results from verbal passives with *pentear* "comb" and *molhar* "wet, splash" are actually an experimental artifact. Hence, one improvement that could be made to this experiment would be to change the ongoing event depiction

of *pentear* "comb" and *molhar* "wet, splash", to have no visible result at all, similarly to the ongoing event depiction of *pintar* "paint". This remains for future research.

The results from Experiment 3 are consistent with those from Estrela's (2013) fourth experiment, which aimed to assess children's ability to distinguish between verbal passives (VP), resultative adjectival passives (R-AP) and stative adjectival passives (S-AP). As described in Chapter 3, Estrela (2013) used a grammaticality judgment task to test 5- and 6-year-olds on their acceptability of VPs, R-APs and S-APs with instrumental PPs, purpose clauses and *em x tempo* "in x time" adverbials —the adult judgments are shown in Table 35.

	VP	R-AP	S-AP
Instrumental PP	✓	*	*
Purpose clause	✓	*	*
Em x tempo "In x time"	✓	✓	*

Table 35: Properties tested by Estrela (2013), Experiment 4

Thus, in Estrela's (2013) experimental design, eventive and stative passives were distinguished by the (un)acceptability of an instrumental PP (2-a); eventive and resultative passives were distinguished by the (un)acceptability of a purpose clause (2-b); and resultative and stative passives were distinguished by the (un)acceptability of the temporal adverbial *em x tempo* "in x time" (2-c). The example items in (39), from Chapter 3, are repeated below, with the expected grammaticality judgments. On each item, children were tested on two contrasting sentences, one grammatical and one ungrammatical.

(2) a. O castelo foi/*está construído com uma
the castle Aux.event/Aux.state built with a
pá.
shovel
"The castle was/is built with a shovel."

b. O carro foi/*ficou lavado para agradar
the car Aux.event/Aux.result washed to please
ao pai.
to+the father
"The car was/got washed to please the father."

c. O quadro ficou/*está pintado em cinco
the picture Aux.result/Aux.state painted in five
minutos.
minutes
"The picture got/is painted in five minutes."

Estrela (2014) reported that children at the age of 5 were at chance on all three conditions, that is, they did not show the ability to distinguish VPs from S-APs, V-Ps from R-APs, or R-APs from S-APs. At age 6, children performed better on VP vs. S-AP and R-APs vs. S-AP pairs (71.75% and 64.46% correct responses, respectively) than on VP vs. R-APs pairs (53.75% correct responses), with significant differences in performance between all three conditions. Thus, Estrela (2014) claimed that, for children at the age of 6, the distinction between resultative and stative passives is easier to recognize than the distinction between eventive and resultative passives, for which 6-year-olds were still at chance level. The distinction between eventive and stative passives, in turn, is easier to recognize than that between resultative and stative passives. Nonetheless, the performance of the 6-year-olds did not reach adult level on any condition (the criterion adopted was at least 75% correct responses).

As we have seen above, the 6-year-olds who participated in Experiment 3 were fully adult-like with verbal and resultative adjectival passives. This difference between the 6-year-olds who participated in Experiment 3 and those who participated in Estrela's (2013; 2014) experiment may be due to the difficulty associated with a grammaticality judgment task, which may have obscured children's competence with regard to the distinction between verbal passives and resultative adjectival passives. Nonetheless, Estrela's results are in line with those from Experiment 3, in that there was a sharp contrast between the performance of 5-year-olds and that of 6-year-olds in their ability to differentiate verbal passives from adjectival passives (but cf. Lima Júnior, Augusto, & Corrêa, 2018).

8.4 CONCLUSION

Experiment 1 replicated for EP the familiar contrast between actional and subject experiencer verbs in early passives that was originally found for English by Maratsos et al. (1985, 1979). That is, Portuguese-speaking children showed a delay with the verbal passive, seen with

perception verbs. This is despite the fact that the perception verbs used in this experiment, *ver* "see" and *ouvir* "hear" may also be actional (i.e., they may also mean "watch" and "listen", respectively).

The results from Experiment 2, which showed no contrast between actional predicates with and without a target-state in children's comprehension of the passive, undermine the idea that the (un)availability of a target-state underlies the contrast between actional and subject experiencer verbs, either because semantic coercion is not required for passivization, as posited by the UFH, or because it facilitates adjectival readings of intended verbal passives, as posited by the UPR and the AIS, as formulated by Hirsch and Wexler (2006b). These results may be reconciled with the idea that children may comprehend verbal passives of activity predicates (*empurrar* "push", *procurar* "look for") as resultant-state adjectival passives if we assume that the items with *empurrar* "push" favoured this interpretation more than the items with *procurar* "look for" (see Oliva & Wexler, 2018).

The combined results of Experiments 1 and 2 also indicate that children's performance with verbal passives of verbs without a target-state is a function of the extent to which the event may be construed as involving an affected internal argument. In the case of Experiment 1, the scenarios with *ver* "see" facilitated an adversative interpretation that was not available in the scenarios with *ouvir* "hear". In the case of Experiment 2, the internal argument of *empurrar* "push" is clearly more affected than that of *procurar* "look for", as *empurrar* is a physical contact verb. In previous studies, it has been argued that affectedness facilitates passive comprehension and production in both adults (Ambridge et al., 2016) and children (Gordon & Chafetz, 1990; Maratsos et al., 1985). In view of the results from Experiment 3, it can also be argued that affectedness facilitates adjectival readings of verbal passives in the case of young children. That is, the AIS, which is ancillary to the UPR, can be maintained if we assume that it is affectedness of internal argument, and not the presence of a target-state, that facilitates this strategy. Semantic coercion, which in the UFH explains the verb type contrast in children's comprehension of the passive, is thus rendered unnecessary.

Finally, the results from Experiment 3 suggest that there is development in children's comprehension of the passive between the ages of 5 and 6 years, and no maturational moment prior to that. Children up to the age of 5 years seem to ignore or override the difference in auxiliary selection between verbal and adjectival passives. Only 6-

year-olds clearly differentiated between the two sentence types tested in Experiment 3. It may be the case that younger children are ignoring the aspectual information conveyed by the auxiliary (eventive vs. stative), and hence their responses rely on properties of the main verb or on its depiction. This is consistent with the fact that 3-, 4- and 5-year-olds, who did not show significant differences between the two auxiliaries, showed significant differences between main verbs. Conversely, 6-year-olds and adults, who showed significant differences between the two auxiliaries with all three verbs tested, did not show significant differences between main verbs. As we have seen, the ongoing event depictions used to test the verbs *pentear* "comb" and *molhar* "wet, splash" may have favoured choice of the ongoing event picture. This effect of the materials is not seen at the age of 6, as these children have acquired the verbal passive and are able to distinguish between verbal and adjectival passives. The results from *pintar* "paint", on the other hand, are similar to those previously obtained for Catalan (Gavarró & Parramon, 2017) and Spanish (Oliva & Wexler, 2018). This may be because, in this case, one picture represented the ongoing event with no result yet and the other the result state and no ongoing event, hence one was unequivocally false and the other true for each sentence.

Overall, the results of the three experiments favour the idea that the verbal passive is delayed until the age of 6 years, at which point the underlying grammar of the passive undergoes maturation —the experiments that comprise this study are not set up to tell us whether this is maturation of Smuggling (Snyder & Hyams, 2015) or of non-phasal v_{def} (Wexler, 2004), as this would involve looking at other structures, namely unaccusatives. Good performance on verbal passives prior to this may be attributed to the AIS, if we assume that strict s-homophony is not required, as has been proposed for Catalan (Gavarró & Parramon, 2017) and Spanish (Oliva & Wexler, 2018), which is reinforced by the EP data from Experiment 3. Hence, verbal passives of predicates that make good adjectival passives (e.g., accomplishments) elicit better, more adult-like performance from children. In the case of verbal passives of predicates that make poorer adjectival passives (e.g., activities), children's performance appears to be a function of the affectedness of the internal argument. We may then argue that a construal of the event as involving an affected internal argument facilitates adjectival passive interpretations of intended verbal passives by young children.

APPENDIX

A

EXPERIMENTAL ITEMS

A.1 EXPERIMENT 1

1. Condition 1. Actional actives
   A avó penteou a mãe. "The grandmother combed the mother."
2. Condition 1. Actional actives
   A menina pintou a mãe. "The girl painted the mother."
3. Condition 1. Actional actives
   O pai penteou o menino. "The father combed the boy."
4. Condition 1. Actional actives
   O tio pintou o menino. "The uncle painted the boy."
5. Condition 2. Perception actives
   O menino viu o tio. "The boy saw the uncle."
6. Condition 2. Perception actives
   O avô ouviu o menino. "The grandfather heard the boy."
7. Condition 2. Perception actives
   A menina viu a avó. "The girl saw the grandmother."
8. Condition 2. Perception actives
   A tia ouviu a menina. "The aunt heard the girl."
9. Condition 3. Short actional passives
   O menino foi penteado. "The boy was combed."
10. Condition 3. Short actional passives
    A menina foi pintada. "The girl was painted."
11. Condition 3. Short actional passives
    A mãe foi penteada. "The mother was combed."
12. Condition 3. Short actional passives
    O pai foi pintado. "The father was painted."

13. Condition 4. Short perception passives
A menina foi vista. "The girl was seen."

14. Condition 4. Short perception passives
A tia foi ouvida. "The aunt was heard."

15. Condition 4. Short perception passives
O pai foi visto. "The father was seen."

16. Condition 4. Short perception passives
O menino foi ouvido. "The boy was heard."

17. Condition 5. Long actional passives
A menina foi penteada pela avó. "The girl was combed by the grandmother."

18. Condition 5. Long actional passives
O avô foi pintado pelo menino. "The grandfather was painted by the boy."

19. Condition 5. Long actional passives
O avô foi penteado pelo pai. "The grandfather was combed by the father."

20. Condition 5. Long actional passives
A menina foi pintada pela tia. "The girl was painted by the aunt."

21. Condition 6. Long perception passives
A mãe foi vista pela menina. "The mother was seen by the girl."

22. Condition 6. Long perception passives
A menina foi ouvida pela mãe. "The girl was heard by the mother."

23. Condition 6. Long perception passives
O menino foi visto pelo avô. "The boy was seen by the grandfather."

24. Condition 6. Long perception passives
O tio foi ouvido pelo menino. "The uncle was heard by the boy."

25. Warm-ups
O tio deu um balão ao menino. "The uncle gave a balloon to the boy."

26. Warm-ups
    A menina deu uma flor à mãe. "The girl gave a flower to the mother."

A.2 EXPERIMENT 2

1. Condition 1. Resultative actives
   A avó penteou a mãe. "The grandmother combed the mother."

2. Condition 1. Resultative actives
   O pai penteou o menino. "The father combed the boy."

3. Condition 1. Resultative actives
   A menina pintou a mãe. "The girl painted the mother."

4. Condition 1. Resultative actives
   O tio pintou o menino. "The uncle painted the boy."

5. Condition 2. Non-resultative actives
   A avó empurrou a menina. "The grandmother pushed the girl."

6. Condition 2. Non-resultative actives
   O menino empurrou o pai. "The boy pushed the father."

7. Condition 2. Non-resultative actives
   A menina procurou a tia. "The girl looked for the aunt."

8. Condition 2. Non-resultative actives
   O avô procurou o menino. "The grandfather looked for the boy."

9. Condition 3. Short resultative passives
   A mãe foi penteada. "The mother was combed."

10. Condition 3. Short resultative passives
    O menino foi penteado. "The boy was combed."

11. Condition 3. Short resultative passives
    A menina foi pintada. "The girl was painted."

12. Condition 3. Short resultative passives
    O pai foi pintado. "The father was painted."

13. Condition 4. Short non-resultative passives
    A mãe foi empurrada. "The mother was pushed."

14. Condition 4. Short non-resultative passives
O menino foi empurrado. "The boy was pushed."

15. Condition 4. Short non-resultative passives
A avó foi procurada. "The grandmother was looked for."

16. Condition 4. Short non-resultative passives
O menino foi procurado. "The boy was looked for."

17. Condition 5. Long resultative passives
A menina foi penteada pela avó. "The girl was combed by the grandmother."

18. Condition 5. Long resultative passives
O avô foi penteado pelo pai. "The grandfather was combed by the father."

19. Condition 5. Long resultative passives
A menina foi pintada pela tia. "The girl was painted by the aunt."

20. Condition 5. Long resultative passives
O avô foi pintado pelo menino. "The grandfather was painted by the boy."

21. Condition 6. Long non-resultative passives
A menina foi empurrada pela tia. "The girl was pushed by the aunt."

22. Condition 6. Long non-resultative passives
O tio foi empurrado pelo menino. "The uncle was pushed by the boy."

23. Condition 6. Long non-resultative passives
A menina foi procurada pela mãe. "The girl was looked for by the mother."

24. Condition 6. Long non-resultative passives
O pai foi procurado pelo menino. "The father was looked for by the boy."

25. Warm-ups
O tio deu um balão ao menino. "The uncle gave a balloon to the boy."

26. Warm-ups
    A menina deu uma flor à mãe. "The girl gave a flower to the mother."

A.3 EXPERIMENT 3

1. Condition 1. Actives
   A avó penteou a mãe. "The grandmother combed the mother."

2. Condition 1. Actives
   O pai penteou o menino. "The father combed the boy."

3. Condition 1. Actives
   A menina pintou a mãe. "The girl painted the mother."

4. Condition 1. Actives
   O tio pintou o menino. "The uncle painted the boy."

5. Condition 1. Actives
   A menina molhou a tia. "The girl splashed the aunt."

6. Condition 1. Actives
   O avô molhou o menino. "The grandfather splashed the boy."

7. Condition 2. Verbal passives
   A mãe foi penteada. "The mother was combed."

8. Condition 2. Verbal passives
   O menino foi penteado. "The boy was combed."

9. Condition 2. Verbal passives
   A menina foi pintada. "The girl was painted."

10. Condition 2. Verbal passives
    O pai foi pintado. "The father was painted."

11. Condition 2. Verbal passives
    A menina foi molhada. "The girl was splashed."

12. Condition 2. Verbal passives
    O pai foi molhado. "The father was splashed."

13. Condition 3. Adjectival passives
    A menina ficou penteada. "The girl was combed."

14. Condition 3. Adjectival passives
O avô ficou penteado. "The grandfather was combed."

15. Condition 3. Adjectival passives
A menina ficou pintada. "The girl was painted."

16. Condition 3. Adjectival passives
O avô ficou pintado. "The grandfather was painted."

17. Condition 3. Adjectival passives
A menina ficou molhada. "The girl was splashed."

18. Condition 3. Adjectival passives
O menino ficou molhado. "The boy was splashed."

19. Warm-ups
O tio deu um balão ao menino. "The uncle gave a balloon to the boy."

20. Warm-ups
A menina deu uma flor à mãe. "The girl gave a flower to the mother."

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