

Universidade de Lisboa
Faculdade de Letras
Departamento de Linguística Geral e Românica



**THE ACQUISITION OF CONTROL
IN EUROPEAN PORTUGUESE COMPLEMENT CLAUSES**

Celina Filipa Mendes Agostinho

Dissertação
Mestrado em Linguística

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Dissertação orientada pelas
Prof.^a Doutora Ana Lúcia Santos e Prof.^a Doutora Inês Duarte

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Abbreviations used in glosses

I 1st person

2 2nd person

3 3rd person

ACC Accusative

CLI Clitic

COMP Complementizer

DAT Dative

DIM Diminutive

GER Gerund

IND Indicative

INF Infinitive

P Plural

PREP Preposition

PROG Progressive

S Singular

SUBJ Subjunctive

Resumo

Este estudo debruça-se sobre o desenvolvimento da gramática de controlo em crianças monolíngues falantes de Português Europeu (PE). Pretende-se avaliar a compreensão do sujeito foneticamente nulo em completivas infinitivas por crianças entre os 3 e os 5 anos. Assim, foi testada a sua escolha de antecedente em completivas infinitivas, um contexto de controlo obrigatório, e em sujeitos oracionais de infinitivo não-flexionado, um contexto de controlo não-obrigatório.

É geralmente aceite que as crianças têm conhecimento da gramática de controlo em completivas (à exceção de completivas de *promise* “prometer”), embora as crianças em estádios muito iniciais possam ter leituras de controlo não-obrigatório de sujeitos nulos obrigatoriamente controlados (McDaniel & Cairns, 1990b; McDaniel et al., 1991; Landau & Thornton, 2011). Como explicação, McDaniel et al. (1991) sugerem que estas leituras se devem a uma representação não-adulta de estruturas completivas, e que a interpretação de PRO nestes contextos é feita através de estratégias interpretativas lineares. Em alternativa, Sherman e Lust (1986, 1993) sugerem que o conhecimento da sintaxe de controlo é contínuo, e que os efeitos de desenvolvimento se devem à aquisição lexical e à integração do conhecimento lexical com o conhecimento sintático. De acordo com esta proposta, as crianças não usam estratégias interpretativas lineares para atribuir um antecedente a PRO. A sua interpretação deste elemento é baseada no seu conhecimento gramatical ao longo de todo o seu percurso de desenvolvimento.

Uma tarefa de compreensão, baseada em McDaniel e Cairns (1990a, b), foi desenvolvida para recolher juízos de referência e aplicada a 64 crianças e 20 adultos. A tarefa reúne quatro condições, duas das quais estão divididas em duas subcondições: (1) controlo de sujeito, com (1a) verbos transitivos (*querer*, *conseguir*) e (1b) verbos ditransitivos (*prometer*), (2) controlo de objeto, com (2a) objetos diretos (*ensinar a*, *proibir de*, *pôr a*) e (2b) objetos indiretos (*dizer para*), (3) sujeitos oracionais (*aborrecer*, *assustar*), e (4) casos de interpretação pragmaticamente determinada (*pedir para*).

Deste modo, a tarefa experimental testa contextos de controlo obrigatório (Condições 1, 2 e 4) e um contexto de controlo não-obrigatório (Condição 3). Isto permitir-nos-á testar se as crianças entre os 3 e os 5 anos têm interpretações de PRO baseadas no conhecimento da gramática de controlo. Além disso, a Condição 4 irá permitir-nos avaliar qual a interpretação preferencial das crianças e dos adultos, uma vez que ambos os potenciais antecedentes na matriz são opções gramaticais e os contextos usados na tarefa são neutros quanto ao antecedente.

As questões de investigação que guiaram este projeto são: 1) as crianças falantes de PE em estádios iniciais do desenvolvimento têm interpretações de PRO baseadas no conhecimento gramatical? e 2) as crianças falantes de PE são capazes de distinguir entre os diferentes contextos em que PRO ocorre e entre as diferentes propriedades referenciais deste elemento nulo nesses contextos?

Foi colocada a hipótese de que se houver um estágio inicial em que PRO tem interpretação livre, tal como foi sugerido por Hsu et al. (1989), McDaniel & Cairns (1990b), McDaniel et al. (1991), e Eisenberg & Cairns (1994), as crianças irão aceitar um DP sujeito, um DP objeto ou uma personagem não mencionada na frase como o controlador de PRO, independentemente da estrutura em que este elemento ocorra (nomeadamente em contextos de controlo obrigatório e de controlo não-obrigatório). Se, por outro lado, a escolha de antecedente em completivas de controlo por crianças entre os 3 e os 5 anos for restringida pelo seu conhecimento gramatical, o seu comportamento poderá ser explicado por três hipóteses. De acordo com a *Single Argument Structure Hypothesis* (SASH: Santos, Gonçalves & Hyams 2014, in prep.), as crianças analisam os verbos de controlo ditransitivos como tendo apenas um argumento interno proposicional, pelo que deverão 1) ter uma preferência marcada pelo controlo de objeto em estruturas com dois argumentos internos, 2) ter diferentes proporções de controlo de objeto com diferentes verbos matriz ditransitivos, e 3) evidenciar a reanálise da estrutura argumental dos verbos de controlo ditransitivos. Por outro lado, se as crianças tiverem as mesmas proporções de controlo de objeto com todos os verbos ditransitivos, o seu comportamento poderá ser explicado por efeitos de intervenção (*Argument Intervention Hypothesis*, AIH: Orfitelli 2012a, b). Estendendo esta hipótese a contextos de controlo, e assumindo uma análise de controlo como movimento (Hornstein 1999), pode considerar-se que o DP objeto irá intervir no controlo de sujeito com verbos como *prometer*. Por último, e dado que o PE é uma língua pro-drop, a saliência do sujeito mais alto como um potencial antecedente para sujeitos nulos encaixados poderá afetar a escolha de antecedente em contextos de controlo (Montalbetti 1984), pelo que as crianças poderão dar respostas de controlo de sujeito em contextos de controlo de objeto. Relativamente à segunda questão de investigação, se as crianças forem de facto capazes de distinguir entre os diferentes contextos em que PRO ocorre e entre as diferentes propriedades referenciais que este elemento nulo tem nesses contextos, as respostas de controlo por um antecedente não mencionado na frase ficarão restringidas a contextos de controlo não-obrigatório (nomeadamente a sujeitos oracionais).

Os dados experimentais indicam que as crianças conseguem identificar contextos de controlo obrigatório e de controlo não-obrigatório, uma vez que

escolhem um antecedente não mencionado na frase apenas nos sujeitos oracionais. Na condição de controlo de sujeito, as crianças responderam de acordo com a gramática adulta apenas com os verbos transitivos (Condição 1a), isto é, na ausência de um DP objeto na matriz. Com o verbo *prometer*, as respostas de controlo de sujeito das crianças ficaram muito abaixo dos níveis adultos, o que pode ser resultado de efeitos de intervenção (Friedmann, Belletti & Rizzi 2009; Orfitelli 2012a, b para efeitos semelhantes com movimento-A), se o controlo for analisado como movimento (Hornstein, 1999). No entanto, estes efeitos também podem ser resultado de uma análise não-adulta da estrutura argumental dos verbos com dois argumentos internos (um DP objeto e um argumento oracional), isto é, estes efeitos podem dever-se à *Single Argument Structure Hypothesis* (SASH: Santos, Gonçalves & Hyams 2014, in prep.). Este estudo demonstrou que as crianças falantes de PE entre os 3 e os 5 anos de idade analisam os verbos de controlo de objeto como tendo apenas um argumento interno, em que o DP objeto da gramática adulta constitui um sujeito da infinitiva. Isto dá origem a produções agramaticais com preposições mal colocadas e infinitivos flexionados em contextos de infinitivo não-flexionado. Se o DP objeto selecionado por um verbo de controlo ditransitivo for tomado como o sujeito de uma oração não-finita, a criança terá leituras de controlo de objeto com verbos de controlo de objeto e com verbos como *prometer*. Isto é, em estruturas de controlo de objeto a criança terá leituras aparentemente adultas com uma análise não-adulta da estrutura completiva. Esta hipótese também prediz melhores resultados na compreensão de controlo de objeto com verbos que apresentam mais casos deste tipo de análise não-adulta nos dados de produção provocada de Santos, Gonçalves & Hyams (2014, in prep.), nomeadamente com *proibir de*. Os dados experimentais demonstram que esta predição é confirmada: as crianças têm melhores resultados com *proibir de* do que com *ensinar a*. Além disso, as crianças (à semelhança dos adultos) têm uma forte preferência por controlo de objeto com *pedir para*, o que poderá igualmente dever-se à SASH, em estádios iniciais.

Palavras-chave: Aquisição, sintaxe, controlo, completivas, compreensão

Abstract

This study addresses the development of Control in monolingual children acquiring European Portuguese (EP). It aims at assessing children's comprehension of the phonetically null infinitival subject in Obligatory Control (OC) contexts, as well as in sentential subjects, an NOC context. Hence, children's choice of antecedent in infinitival complement clauses and sentential subjects was tested using a comprehension task based on McDaniel and Cairns (1990a, b).

It is generally assumed that children have early knowledge of control in complement clauses (with the exception of complements of *promise*), although very young children may have non-obligatory control readings of obligatorily controlled null embedded subjects (McDaniel & Cairns, 1990b; McDaniel et al., 1991; Landau & Thornton, 2011). As an explanation, it has been suggested that the syntactic representation of complement clauses is non target-like at early stages of development (McDaniel et al., 1991), and that non-adult answers may follow from linear interpretative strategies (Hsu & Cairns, 1990 *apud* McDaniel & Cairns 1990a). Alternatively it has been suggested that knowledge of the syntax of control is continuous, and developmental effects follow from lexical acquisition and from the integration of lexical knowledge with syntactic knowledge (Sherman & Lust 1986, 1993). According to this proposal, children show some knowledge of the grammar of control, as they are able to identify control contexts, and they do not use linear interpretative strategies to establish PRO's reference. Their interpretation of PRO is grammatically based at all times throughout their development.

A comprehension task, based on McDaniel and Cairns (1990a, b), was developed to elicit referential judgments and applied to 64 children aged 3 to 5 and 20 adults. It comprises four test conditions, two of which are divided into two subconditions: (1) subject control, with (1a) transitive verbs (*querer* "want", *conseguir* "manage to") and (1b) ditransitive verbs (*prometer* "promise"), (2) object control, with (2a) direct objects (*ensinar a* "teach", *proibir de* "forbid", *pôr a* "put to") and (2b) indirect objects (*dizer para* "tell"), (3) sentential subjects (*aborrecer* "bother", *assustar* "scare"), and (4) cases of pragmatically determined interpretation (*pedir para* 'ask'). Hence, this task tests both obligatory control (OC) contexts (Conditions 1, 2 and 4) and a non-obligatory control (NOC) context (Condition 3). This will allow us to assess whether children have grammatically based interpretations of PRO, and whether children have a stage of free interpretation of PRO. In addition, Condition 4 will allow us to assess children's and adults' preferred interpretation, given that both sentence-internal potential antecedents are grammatical options and the contexts used in the task were designed to be neutral.

Our research questions are: 1) do Portuguese-speaking children show evidence of grammatically based interpretations of PRO at early stages? and 2) are Portuguese-speaking children able to distinguish between different PRO-contexts and the subsequent varying referential properties of this null element?

It was hypothesized that if there is an early stage of free interpretation of PRO, as suggested by Hsu et al. (1989), McDaniel & Cairns (1990b), McDaniel et al. (1991), and Eisenberg & Cairns (1994), children will accept a subject DP, an object DP or a third-character as the controller of PRO, regardless of the structure it occurs in (namely in both obligatory control and non-obligatory control configurations). If, on the other hand, children's choice of antecedent in control complements is grammatically constrained, children's behavior may be explained by three hypotheses. According to the Single Argument Structure Hypothesis (SASH: Santos, Gonçalves & Hyams 2014, in prep.), the acquisition of control is contingent on the acquisition of control verbs' argument structure: children initially misanalyze ditransitive control verbs as taking a single propositional complement, and they must subsequently reanalyze the argument structure of these predicates. Consequently, young children should 1) show a strong preference for object control in structures with two internal arguments, 2) evidence different rates of object control responses with different matrix verbs, and 3) show evidence of reanalysis of ditransitive control verbs' argument structure. Conversely, if children prefer object control with all ditransitive control verbs equally, their performance may be explained by Orfitelli's (2012a, b) Argument Intervention Hypothesis (AIH), an explanatory proposal that was made for the delayed acquisition of raising-to-subject with experiencer arguments in English, with verbs such as *seem* and *appear*. Extending this hypothesis to control structures with two internal arguments, and assuming a movement account of control (Hornstein 1999), an object DP would act as an intervener for subject control with *promise*-type verbs. Finally, given that EP is a pro-drop language, the saliency of the higher DP subject as an antecedent for embedded null subjects may affect the choice of antecedent in control contexts (Montalbetti 1984), and children may show subject control interpretations in object control contexts. Concerning the second research question, if children are in fact able to distinguish between the different contexts in which PRO occurs and the subsequent varying referential properties of this null element, third character responses will be restricted to non-obligatory control contexts (in particular to sentential subjects).

The experimental results indicate that children are able to distinguish between obligatory control and non-obligatory control contexts, given that they choose an unmentioned character as the antecedent only in sentential subjects.

Children performed at adult level with subject control only with transitive verbs, that is, in the absence of a DP object in the matrix clause. In the case of *prometer* ‘promise’ children performed far below adult level, a fact that could result from intervention effects (Friedmann, Belletti & Rizzi 2009; Orfitelli 2012a, b for similar effects on A-movement) if control is analyzed as movement (Hornstein, 1999). However, these effects may also result from a misanalysis of the argument structure of verbs with two internal arguments (a DP object and a clausal argument), that is, these effects may be due to the Single Argument Structure Hypothesis (SASH: Santos, Gonçalves & Hyams 2014, in prep.). This study showed that Portuguese-speaking children between 3 and 5 years of age misanalyse object control verbs as verbs taking a single internal (propositional) argument: they take the DP object to be the subject of the infinitive, which results in non-target like utterances with misplaced prepositions (the preposition is placed to the right of the verb, instead of being placed to the right of the target grammar DP object) and inflected infinitives in uninflected infinite contexts. The inflected infinitive, then, is able to license the target grammar DP object as an infinitival subject. If the DP object selected by either an object control verb or a *promise*-type verb is taken to be the subject of the non-finite complement clause, what appears to be an object control reading can come for free, resulting in seemingly target comprehension of object control and non-target comprehension of subject control with *promise*. This hypothesis also predicts better comprehension results with the object control verbs that presented more cases of the type of misanalysis identified by Santos, Gonçalves & Hyams (2014, in prep.), in their elicited production task, namely *proibir de* ‘forbid’. Our experimental data shows that this prediction is confirmed: children have better comprehension results with *proibir de* “forbid” than with *ensinar a* “teach”. Furthermore, both children and adults show a strong preference for object control with *pedir para* “ask”, which may also be due to the Single Argument Structure Hypothesis, at the initial stages of development.

Keywords: Acquisition, syntax, control, complement clauses, comprehension

1. Introduction

Control involves an interpretative dependency between a null embedded subject and an antecedent. In obligatory control (OC), the antecedent must be a matrix clause subject or object. Control is typically associated to non-finite clauses. The two following sentences illustrate subject control and object control in infinitival complement clauses (1):

- (1) a. O João quer _ ir ao cinema. *Subject control*
the John wants _ go.INF to+the cinema
John wants to go to the cinema.
- b. A Maria ensinou o João a _ jogar ténis. *Object control*
the Maria taught the John PREP _ play tennis
Maria taught John how to play tennis.

In non-obligatory control (NOC), the antecedent may be a matrix clause subject/object, a pragmatically or semantically salient antecedent or an arbitrary antecedent. This is illustrated in (2):

- (2) É proibido _ andar na relva. *NOC*
is forbidden _ walk.INF on+the grass
It is forbidden to step on the grass.

These structures were first described by Rosenbaum (1967), and remain a challenge for linguistic theory. Landau (2001) enumerates some of the questions still to be resolved by linguistic theory on this persistent problem: “Despite the wealth of research into this topic, we still lack secure answers to fundamental questions: What is the theory of control a theory of? Is it an autonomous module of grammar or the locus of intersection between modules? Is control a relation defined on thematic/semantic representations, or syntactic ones? Is it established derivationally or at the interface? What is the relation between control and binding or movement? Can it be reduced to either of the two? What is the status of the empty category PRO? Is it superfluous, is it a pronoun or anaphor, or both – in different environments? Should obligatory and non-obligatory control be subsumed under the same theory?” (Landau 2001: 109-110). When posing some of these questions, Landau (2001) seems to have in mind the two main current accounts of control – his own account of control as Agree (Landau 2000, 2004, 2006, 2013) and Hornstein’s movement theory of control (Hornstein 1999) – which rely on highly divergent assumptions and consequently provide highly divergent answers to these questions. Acquisition data may aid us in evaluating the adequacy of different theoretical accounts of linguistic phenomena. Therefore, our account of the

experimental data will take into account the divide in the theory of control mentioned above.

The acquisition of control by English-speaking children was first studied by Carol Chomsky (1969), and her basic results have been replicated by numerous subsequent studies (McDaniel & Cairns 1990a, b; Hsu et al. 1985, cited in Hsu et al. 1989; McDaniel, Cairns & Hsu 1990/1991; Sherman 1983, cited in Sherman & Lust 1986, 1993; Eisenberg & Cairns 1994; see also O’Grady 1997 and references therein). There are, however, few studies on the acquisition of control in recent years: Landau & Thornton (2011) indirectly approach this subject in a case study on the development of complementation with the verb *want* in English; Goodluck, Terzì and Díaz (2001) studied the referential properties of empty subjects (PRO and *pro*) in subjunctive and infinitival complements of the Spanish and Greek counterparts of *try* and *want* in acquisition; Santos, Gonçalves & Hyams (2014, in prep.) assessed the development of complementation with Exceptional Case Marking (ECM) and control predicates in European Portuguese (EP); Martins (in prep.) tested the interpretation of control complements of *prometer* “promise” (among other structures) in EP-speaking children diagnosed with Autism Spectrum Disorders/SLI; and Perovic & Janke (2013) studied the acquisition of binding, control and raising by English-speaking high-functioning children with autism. The two studies for EP mentioned above constitute, as far as we are aware, the only research on the acquisition of control available for this language.

In this study we assess the interpretation of the null infinitival subject in complement clauses of subject and object control verbs, using a reference judgment comprehension task (McDaniel & Cairns 1990a, b). The task tests subject control with transitive verbs (*querer* “want”, *conseguir* “manage to”) and ditransitive verbs (*prometer* “promise”), object control with direct objects (*ensinar a* “teach”, *proibir de* “forbid” and *pôr a* “put to”) and indirect objects (*dizer para* “tell”), pragmatically determined interpretations (*pedir para* “ask”) and non-obligatory control in sentential subjects (*chatear* “bother” and *assustar* “scare”). In the reference judgment task, a child is asked to hear a story and to help a silly puppet (Benny) understand the story. Our subjects are 64 children divided into three age groups: 3 year-olds (n=20, range 3;0.12 – 3;11.27, mean=3;6), 4 year-olds (n=21, range 4;1.01 – 4;11.27, mean 4;5) and 5 year-olds (n=23, range 5;0.08 – 5;11.27, mean=5;4). An additional group of 20 adults was also tested. This is an exploratory study, given that the development of the comprehension of control structures has not been previously studied in typically developing Portuguese children. The acquisition of control, namely the central question of children’s interpretation of the null embedded subject in these structures, remains to be characterized in EP. This dissertation, however, is

concerned only with the syntactic factors that condition the interpretation of PRO, and does not assess pragmatic and semantic factors that may also be involved in this phenomenon.

Hence, this dissertation aims 1) to contribute towards the assessment of the development of control in young children, which remains understudied in European Portuguese; 2) to evaluate, considering the comprehension of the null embedded subject in complement clauses, the adequacy of the two main syntactic theories of control within the Minimalist Program, 3) to assess previous accounts of the acquisition of control by English-speaking children, namely the claim that young children have a stage of free control (McDaniel & Cairns 1990a, b; Hsu et al. 1985 *apud* Hsu et al. 1989; McDaniel et al. 1990/1991; Eisenberg & Cairns 1994), and 4) to assess previous claims for the acquisition of control in EP, made on the basis of production data (Santos, Gonçalves & Hyams 2014, in prep.).

This dissertation is organized as follows: in Chapter 2 we present the grammar of control, namely the main characteristics of control complements, control complements in EP, and the two minimalist accounts of control mentioned above, as well as control in GB theory; in Chapter 3, we review some of the previous literature on the acquisition of control (which concerns mostly the acquisition of English), as well as studies in the acquisition of complementation, the raising/control distinction and raising structures that are relevant for the hypotheses posed in this study (which may be found at the end of the same chapter); in Chapter 4 we describe the task used in this study, as well as the data collection procedures and the transcription, scoring and statistical treatment of the experimental data; in Chapter 5 we present the experimental data, from both child and adult participants, as well as relevant data from the SANTOS *corpus* of spontaneous child production and child-directed speech (Santos 2006/2009; Santos et al. 2014); in Chapter 6 we discuss the comprehension data, taking into account the research questions and the hypotheses presented in Chapter 3; finally, in Chapter 7, we present the main conclusions of our study.

2. The grammar of control

The two following sentences illustrate the phenomenon of obligatory control, the obligatory co-reference between a phonetically null subject in the lower clause (here represented as a gap) and an argument DP in the matrix clause. As observed in (1), control is typically associated to infinitival clauses.

(1) a. A Maria_i quer [_{-i/*j} ir ao cinema]. *Subject control*
the Maria wants go.INF to+the cinema
Maria wants to go to the cinema.

b. O João_i obrigou o Pedro_j [a _{-*i/j} sair de casa]. *Object control*
the John forced the Peter to leave.INF the house
John forced Peter to leave the house.

This chapter will briefly survey the main properties of obligatory control (OC) and its principal syntactic accounts, from Chomsky's GB account (1980, 1981, 1982) to the more recent minimalist analyses of control as movement (Hornstein 1999) and control as agree (Landau 2000, 2004, 2006). It will also succinctly present some aspects of the closely related raising structure, whenever relevant, given that the precise distinctions between these two structures is subject to ongoing debate.

Since this dissertation is concerned with the acquisition of obligatory control solely in complement clauses, adjunct structures will not figure in this survey of the properties and accounts of control.

Section 2.1 will survey the basic properties of obligatory control structures and raising structures, and section 2.2 will briefly describe clausal complementation and control in European Portuguese (EP). Section 2.3 will present the GB (section 2.3.1) and the current minimalist accounts of control – control as movement (section 2.3.2) and control as agree (section 2.3.3).

2.1- Basic properties of control structures

Obligatory control involves an interpretative dependency between a null infinitival subject and an overt argument DP in the matrix clause. Control makes the embedded subject (the controllee) co-referential with a matrix argument (the controller), which may be the subject (yielding subject control) or the object (yielding object control), depending on the matrix predicate. The sentence in (1a) above illustrates subject control – the subject of the matrix verb *querer* “want” is co-referential with the subject of the infinitival clause *ir ao cinema* “to go to the cinema”. In (1.b), the reference of the null subject of the infinitival clause is fixed by the object of the matrix verb (*Pedro*), hence object control obtains. This

interpretative dependency obeys locality conditions, *i.e.*, the controllee must be in a clause adjacent to that of its controller. Raising is like control in that it involves an interpretative dependency between a matrix DP and a null infinitival subject and must also be local (Rosenbaum 1967).

Raising and control have identical surface strings, yet map onto divergent grammatical projections (Rosenbaum 1967). This is illustrated by (2)-(3):

- (2) a. O João tentou compreender a fórmula. *Subject control*
the João tried understand.INF the formula
João tried to understand the formula.
- b. O João pareceu compreender a fórmula *Raising-to-subject*
the João seemed understand.INF the formula
João seemed to understand the formula.
- (3) a. O Pedro ajudou os meninos a compreender a fórmula. *Object control*
the Pedro helped the boys PREP understand.INF the formula.
Pedro helped the boys to understand the formula.
- b. O Pedro viu os meninos resolver a fórmula. *Raising-to-object/ECM¹*
the Pedro saw the boys solve.INF the formula.
Pedro saw the boys solve the formula.

The crucial distinction between control and raising structures, as noted from the onset of the Government and Binding Theory framework (Chomsky 1980, 1981), lies in their thematic assignment properties. In control structures, one

¹Raising-to-object (RtO)/Exceptional Case Marking (ECM) in EP is limited to the perception verbs *ver* “see”, *ouvir* “hear” and *sentir* “feel, sense” and to the causative verbs *mandar* “order”, *deixar* “let” and *fazer* “make” in EP (Barbosa & Raposo 2013: 1957). Santos, Gonçalves & Hyams (2014, in prep.) assume an RtO analysis of these sentences, on the basis of facts such as the impossibility of pseudoclefting (i) or clefting with *é que* (ii). In these structures, the clefted material must be a constituent. However, in RtO sentences the embedded subject has undergone movement and no longer forms a single constituent with the embedded predicate, thus precluding clefting (Postal 1974: 132-3; Santos, Gonçalves & Hyams 2014). Similarly, topicalization of the string following the matrix verb (iii) yields ungrammaticality, given that only a single constituent can be topicalized (Raposo 1989).

- (i) *O que o Pedro viu foi os meninos resolver a fórmula. *Pseudoclefted RtO structure*
What the Pedro saw was the boys solve.INF the formula
What Pedro saw was the boys solve the formula.
- (ii) *Os meninos resolver a fórmula é que o Pedro viu. *‘É que’ cleft*
the boys solve.INF the formula COMP the Pedro saw
The boys solve the formula is what Pedro saw.
- (iii) *Os meninos resolver a fórmula o Pedro viu. *Topicalized RtO/ECM structure*
the boys solve.INF the formula the Pedro saw.
The boys solve the formula Pedro saw.

argument in the matrix clause (either the subject or the object) appears to receive two θ -roles, one from the embedded predicate and another one from the matrix verb. In raising structures, on the other hand, either the surface subject or the surface object receives a single θ -role from the embedded predicate, given that raising-to-subject verbs do not select an external argument and raising-to-object verbs do not select an object DP.

In (2a), *o João* is AGENT of *tentar* “try” and EXPERIENCER of *compreender* “understand”. In (2b), however, *o João* is EXPERIENCER of *compreender* “understand” only – the raising-to-subject verb *parecer* “seem” does not assign a θ -role to its external argument, unlike the subject control verb *tentar* “try”. In (3a), *o João* is both THEME of the object control verb *ajudar* “help” and EXPERIENCER of *compreender* “understand”, while in (3b) *o João* is only AGENT of *resolver* “solve” – the verb *ver* “see” does not assign a θ -role to its surface matrix object. This indicates that raising and control verbs have different thematic structures: the subject and object positions of control verbs are θ -positions, while the subject position of a raising-to-subject verb and the object position of a raising-to-object/ECM verb are θ -positions.

Consequently, control predicates impose selectional restrictions on their external arguments, and expletive subjects are barred from control structures (4b).² Raising-to-subject predicates, conversely, can take expletive subjects (4a), indicating that they do not assign a θ -role to their external argument (Rosenbaum 1967):

- (4) a. *pro* Parece estar a chover.
pro seems be.INF PROG rain.INF
It seems to be raining.
- b. **pro* Tentou estar a chover.
pro tried be.INF PROG rain.INF
It tried to be raining.

Likewise, raising-to-object/ECM predicates (5a) can take complement clauses with expletive subjects; the same type of complement is not available for object control verbs (5b):

² However, with some embedded predicates a control verb may be coerced into taking an expletive subject (i) in informal or metaphorical speech (Kirby 2011):

- (i) *ok* Hoje, *pro* ameaça/ promete/ quer chover.
today, *pro* threatens/ promises/ wants rain.INF
Today it threatens/ promises/ wants to rain.

- (5) a. O João ouviu *pro* chover lá fora.
 the John heard *pro* rain.INF outside
 John heard it rain outside.
- b. *O João persuadiu *pro* a _____ chover.
 the John persuaded *pro* PREP _____ rain.INF
 John persuaded it to rain.

Expletive subjects, typically subjects of existential and weather verbs, are semantically empty and cannot receive θ -roles. The control verb *tentar* “try” must assign an AGENT θ -role to its subject, hence an expletive subject in the complement clause renders the structures in (4b) ungrammatical: the expletive cannot be coreferential with an agentive [+animate] matrix subject. In (5b) the object control verb *persuadir* “persuade” must assign a THEME θ -role to its object, which must also be capable of being persuaded, that is, it must be [+sentient]. Consequently, the obligatory coreference with an expletive subject in the complement clause leads to ungrammaticality.

In fact, external arguments of control verbs generally must be [+animate] and sometimes even [+human], in order to satisfy the subcategorization properties of control verbs, whose lexical meanings usually imply agentivity, such as volition and intention (Perlmutter 1970; Rudanko 1989).³ Raising predicates, on the other hand, do not impose selectional restrictions of their own – these are imposed by the embedded predicate only.

The contrast in (6) shows that the raising predicate *parecer* “seem” does not impose selectional restrictions on its subject, and evidences the semantic link between the matrix subject and the embedded predicate: the sentence in (6b) is ungrammatical, as the embedded predicate *ler* “read” selects a [+human] subject. In (7), however, both sentences are ungrammatical, as the matrix predicate *tentar* “try” assigns its subject an AGENT θ -role.

- (6) a. A pedra parecia rolar.
 the rock seemed roll.INF
 The rock seemed to be granite.
- b. *A pedra parecia ler _____ a polémica nos jornais.
 the rock seemed read.INF the polemic in+the newspapers
 The rock seemed to read polemic in the newspapers.

³ Rudanko (1989: 21) points out some exceptions: control verbs such as *serve*, *contribute* and *suffice* can only take inanimate subjects, while control verbs such as *deserve*, and *fail* can take either animate or inanimate subjects. This observation also excludes metaphoric or metonymic usages.

- (7) a. *A pedra tentou rolar.
 the rock tried roll.INF
 The rock tried to be granite.
- b. *A pedra tentou ler a polémica nos jornais.
 the rock tried read.INF the polemic in+the newspapers
 The rock tried to read the polemic in the newspapers.

This pattern is maintained with raising-to-object/ECM and object control verbs:

- (8) a. O João deixou a pedra rolar.⁴
 the John made the rock roll.INF
 John made the rock roll.
- b. *O João deixou a pedra ler a polémica nos jornais.
 the John made the rock read.INF the polemic in+the newspapers
 John made the rock read the polemic in the newspapers.
- (9) a. *O João persuadiu a pedra a rolar.
 the John persuaded the rock PREP roll.INF
 John persuaded the rock to roll.
- b. *O João persuadiu a pedra a ler a polémica nos
 the John persuaded the rock PREP read.INF the polemic in+the
 jornais.
 newspapers.
 John persuaded the rock to read the polemic in the newspapers.

The raising predicate *deixar* “let” does not impose selectional restrictions on the DP to its right: as in the sentences with *parecer* “seem”, if the selectional restrictions of the embedded predicate are satisfied by the raised object, the sentence is grammatical (8a); if the raised object violates the selectional restrictions of the embedded predicate, the sentence is ungrammatical (8b). Conversely, the object control verb *persuadir* “persuade” does impose selectional restrictions on its object – it must be sentient, i.e. capable of being persuaded, as mentioned above.

⁴ With the verb *mandar* “order, tell to”, however, this test does not yield good results:

- (i) *O João mandou a pedra rolar.
 the João ordered the stone roll.INF
 João ordered the stone to roll.

The verb *deixar* “let” also imposes selectional restrictions if it is interpreted as “give permission”. In this case, the DP object must be sentient.

Thus both the sentences in (9) are ungrammatical, given that the DP *a pedra* “the rock” is incapable of satisfying this requirement.

Object control and RtO/ECM predicates also show differences in the interpretation of embedded passives (Rosenbaum 1967: 59-61): in raising structures, an embedded passive (10a) and its active infinitival counterpart are synonymous (10b), *i.e.*, they are truth-conditionally equivalent, while in control structures the embedded passive (11a) and the active sentence in (11b) denote different states of affairs:⁵

- (10) a. Eu vi/deixei o João convencer o Pedro. =
 I saw/let the John convince.INF the Peter
I saw/let John convince Bill.
- b. Eu vi/deixei o Pedro ser convencido pelo João.
 I saw/let the Peter be.INF convinced by+the John
I saw/let Peter be convinced by John.
- (11) a. Eu obriguei o médico a examinar o João. ≠
 I forced the doctor COMP examine.INF the John
I forced the doctor to examine John.
- b. Eu obriguei o João a ser examinado pelo médico.
 I forced the John COMP be.INF examined by+the doctor
I forced John to be examined by the doctor.

Adapted from Rosenbaum (1967)

This contrast is another consequence of the differences between control and raising verbs in their subcategorization properties. In (10a, b) the RtO/ECM verb *ver* “see” θ-marks neither *o João* “John” nor *o Pedro* “Peter”, thus it is irrelevant for interpretation which one appears as the surface object. Conversely, in (11a) the object control verb *obrigar* “force” θ-marks *o médico* “the doctor”, while in (11b) it θ-marks *o João* “John”. Thus the two sentences have distinct meanings: in (11a) it is

⁵ Again, *mandar* “order, tell to” does not have the expected behavior in this test (i):

- (i) a. Eu mandei o João convencer o Pedro.
 I told the John convince.INF the Peter
I told John convince Bill.
- b. #Eu mandei o Pedro ser convencido pelo João.
 I told the Peter be.INF convinced by+the John
I told Peter be convinced by John.

the doctor who is forced to perform the examination, whereas in (11b) it is John who is forced to undergo the examination.

Unlike raising structures, control structures do not show evidence of reconstruction. Reconstruction effects follow the path of the moved element: it is well-established for A'-movement and it has been argued for A-movement that, regardless of which copy feeds the PF component (usually the higher copy), any copy may feed the LF component of grammar (Chomsky 1977: 17; Fox 1999; Bobaljik 2002). More precisely, some aspects of the interpretation of a moved element are determined at its base position – such as θ -assignment – while others may be determined at the landing site – such as scope (Chomsky 1977; Chomsky 1993). The raising sentence in (12) illustrates this phenomenon:

(12) Someone from New York is very likely *t* to win the lottery.

Fox (1999: 160)

The sentence in (12) is ambiguous: if the moved element takes scope in the landing site, the interpretation is that there is a specific person in New York who is very likely to win the lottery (e.g. due to the purchase of a great quantity of tickets). If the moved element takes scope at its base position, the interpretation is that it is likely that the winner of the lottery will be from New York (e.g. due to the large number of lottery ticket buyers in that city) (Fox 1999: 160).

Conversely, the control structure in (13) is unambiguous: its only possible reading is that a precise individual from New York decided to buy lottery tickets:

(13) Someone from New York decided to buy lottery tickets.

Adapted from Fox (1999)

Control also allows for objects of prepositions as antecedents, unlike raising-to-object/ECM:

(14) Rene signaled/appealed to Jean to leave the room.

Runner (2006: 206), based on Sag & Pollard (1991)

Raising and control show differences in interpretation, albeit some superficial similarities. Both (obligatory) control and raising are subject to locality/minimality conditions, that is, the null embedded subject and its antecedent cannot be separated by an intermediate clause. Traditionally, the interpretation of the null embedded subject in control structures is said to be constrained by the Minimal Distance Principle (MDP: Rosenbaum 1967), which states that the antecedent of PRO is the closest c-commanding NP.

The MDP, however, does not account for the interpretation of the null embedded subject with subject control verbs such as *prometer* “promise”, *jurar* “swear” and *ameaçar* “threaten”, which optionally take a matrix object (indirect with *prometer* “promise” and *jurar* “swear”, direct with *ameaçar* “threaten”), with no alteration in the control relation.

Furthermore, the MDP is only applicable to obligatory control (OC), and thus implies a reductive view of control phenomena. Obligatory control is only one of the two major types of control proposed by Williams (1980), the other being non-obligatory control (NOC), and only one of several types (and subtypes) distinguished by Landau (2001).⁶ Control, unlike raising, presents interpretative differences depending on the configurational relation between the null embedded subject and a potential antecedent, as well as the semantic properties of both the matrix and the embedded predicates (Landau 2001). In OC, the relation between the controller and the controllee must obey locality and c-command conditions, as illustrated in (15a). Non-obligatory control (NOC), on the other hand, is not subject to these requirements: in NOC there is no local, c-commanding antecedent to obligatorily assign referential content to the null embedded subject, as shown in (15b). Hence, the null infinitival subject may or may not be identified with an antecedent in the matrix clause, if there is one available (Williams 1980).

- (15) a. A alegada vítima_i decidiu [_{-i/*j} retirar as acusações]. OC
the alleged victim decided withdraw.INF the charges
The alleged victim decided to withdraw the charges.
- b. Não é recomendado [_{-arb} beber água desta fonte]. NOC
not is recommended drink.INF water of+this fountain
It is not recommended to drink water from this fountain.

The embedded sentence in (15a) is an object complement, thus the antecedent locally c-commands the null subject it assigns reference to, and PRO is

⁶ The types and subtypes of control distinguished by Landau (2000) are defined in (i):

- (i) I. *Obligatory Control* (OC): the controller and the infinitive must be clausemates.
a. *Exhaustive Control* (EC): PRO must be identical to the control.
b. *Partial Control* (PC): PRO must include the controller.
- II. *Non-obligatory Control* (NOC): The infinitive need not have a clausemate controller.
a. *Long-Distance Control*: The controller and the infinitive are not clausemates.
b. *Arbitrary Control*: PRO has no argumental controller.
- III. *Implicit control*: The controller is not syntactically expressed.

Adapted from Landau (2000: 3)

For the purposes of this dissertation, we will only consider the OC/NOC distinction introduced by Williams (1980).

obligatorily controlled. Conversely, the embedded sentence in (15b) is a sentential subject, a NOC-context: in this case, PRO may have an arbitrary reference, *i.e.*, its antecedent may be pragmatically determined or it may have an undetermined reference, due to the absence of a c-commanding local controller.

Finally, subject and object control verbs differ in their ability to detransitivize (Bach's Generalization: Bach 1979). Detransitivization is possible with ditransitive subject control verbs, but unavailable with object control verbs⁷:

- (16) a. O João prometeu lá estar.
 the John promised there be.INF
 John promised to be there.
- b. *O João persuadiu a lá estar.
 the John persuaded PREP there be.INF
 John persuaded to be there.

2.2- Clausal complementation and control in European Portuguese

This section will briefly describe the grammar of clausal complementation and control in European Portuguese (EP).

EP has clausal complements with the indicative (17a), the subjunctive (17b), and the infinitive, which can be uninflected (OC) (17c), or inflected (17d). This section will consider only uninflected infinitival complements.

- (17) a. O João já soube que passou na entrevista.
 the John already learned that passed.IND in+the interview
 John has already learned that he passed the interview.
- b. O Pedro duvida que fique com um bom horário.
 the Pedro doubts that (he) stays.SUBJ with a good schedule
 Pedro doubts that he'll get a good schedule.
- c. A Maria decidiu comprar casa.
 the Maria decided buy.INF house.
 Maria decided to buy a house.
- d. O professor pediu aos alunos para trazerem o livro.

⁷ In Portuguese, it is possible for an object control verb to drop one of its internal arguments if the verb selects for an indirect object (i). In these cases, we may have control by an implicit argument.

(i) *ok* O pai disse (aos filhos) para PRO arrumar o quarto.
 the father told (to+the sons) COMP PRO clean+up.INF the room
 The father told (his sons) to clean up their room.

the teacher asked to+the students COMP bring.INF.3P the book
The teacher asked the students to bring the book.

Obligatory subject control (subject OC) occurs in complement clauses with matrix verbs such as *querer* “want”, *gostar de* “like”, *adorar* “love” (18a), *insistir em* “insist” (18b) and *conseguir* “manage to”.⁸ Some comissive verbs, such as *prometer* “promise”, *jurar* “swear” and *ameaçar* “threaten” (18c), can optionally take a matrix *goal* object while maintaining subject control (Barbosa & Raposo 2013).

- (18) a. A Maria_i adora _{-i} ler livros de História.
the Maria loves ₋ read.INF books of History
Maria loves reading History books.
- b. A Maria_i insistiu em _{-i} falar com o gerente.
the Maria insisted PREP ₋ speak.INF with the manager.
Maria insisted in speaking with the manager.
- c. O director_i ameaçou o João_j de _{-i/*j} cortar os fundos.
the director threatened the John PREP ₋ cut.INF the funds
The director threatened John of cutting the funds.

Similarly, obligatory object control (object OC) also occurs in complement clauses. Verbs such as *ensinar a* “teach”, *obrigar a* “force”, *impedir de* “prevent”, *proibir de* “forbid” and *ajudar a* “help” trigger direct object control:

- (19) a. Os grevistas_i impediram-nos_j de _{-*i/j} entrar.
the strikers prevented+cli.acc.1P PREP ₋ enter.INF
The strikers prevented us from entering.
- b. A professora_i ensinou os alunos_j a _{-*i/j} resolver a equação.
the teacher taught the students PREP ₋ solve.INF the equation
The teacher taught the students how to solve the equation.

⁸ Some of these structures may also be interpreted as restructuring sentences. Unlike subject control sentences, restructuring sentences are monoclausal – the finite verb and the infinitive verb form a complex verbal head with a single subject position, filled by an overt pronoun or DP. Only a few verbs can manifest restructuring, among them the subject control verbs *conseguir* “manage to”, *querer* “want” and *tentar* “try”. An evidence of restructuring is the possibility of clitic climbing: in restructuring sentences, a clitic pronoun selected by the infinitive verb may raise and attach itself to the finite verb (Gonçalves 1998, 1999, 2000; Barbosa & Raposo 2013):

- (i) a. A Maria não lhe conseguiu devolver o livro.
The Maria not cli.dat.3S managed return.INF the book
Maria did not manage to return the book to him.
- b. O João não te quer mostrar a carta.
The John not cli.dat.2S wants show.INF the letter
John does not want to show the letter to you.

Indirect object control verbs are invariably directive order verbs that take a complement clause headed by the preposition *para*, such as *dizer para* “tell”. These verbs optionally select an indirect object with a GOAL θ -role⁹ that obligatorily controls the embedded null subject (20) (Barbosa & Raposo 2013).¹⁰

- (20) A professora_i disse a dois alunos_j para _{-i/j} ir ao
 The teacher told PREP two students COMP ₋ go.INF to+the
 quadro.
 blackboard.
The teacher asked two students to walk up to the blackboard.

However, with directive request verbs such as *pedir para* “ask” and *implorar para* “beg” the null embedded subject may co-refer with either the matrix indirect object or the matrix subject (21a). In these cases, the reference of the null embedded subject may be disambiguated by pragmatic factors, as we can see in (21b, c).

- (21) a. O João_i pediu ao Pedro_j para _{-i/j} sair por um momento.
 the John asked to+the Pedro COMP ₋ get+out.INF for a moment.
John asked Pedro to get out for a moment.
 b. O João_i pediu ao professor_j para _{-i} sair por um momento.
 the John asked to+the teacher COMP ₋ get+out.INF for a moment.
John asked the teacher to get out for a moment.
 c. O professor_i pediu ao João_j para _{-j} sair por um momento.
 the teacher asked to+the John COMP ₋ get+out.INF for a moment.
The teacher asked John to get out for a moment.

In addition, with object control verbs there is the possibility of ambiguity between uninflected and inflected infinitives (22a)-(23a), given that the 1st and 3rd singular persons of the inflected infinitive are homonymous with the uninflected infinitive (Barbosa & Raposo 2013), and these verbs allow inflected infinitives (22b)-(23b).

⁹The verb *insistir* “insist” is an exception, as it optionally selects an oblique object with the preposition *com* “with”:

- (i) Eu insisti_i com o arquitecto_j para _{-i/j} pôr aquelas janelas.
 I insisted with the architect COMP put.INF those windows
I insisted that the architect put those windows.

¹⁰ The inflected infinitive is also grammatical and widely used in this context:

- (i) A professora_i disse a dois alunos_j para *pro**_{i/j} irem ao quadro.
 The teacher told PREP two students COMP go.INF to+the blackboard.
The teacher asked two students to walk up to the blackboard.

- (22) a. O João_i pediu ao Pedro_j para _{-j} ir buscar a encomenda.
 the John asked to+the Pedro COMP ₋ go.INF(.3S) get the parcel
John asked Pedro to go get the parcel.
- b. O João_i pediu ao Pedro_j para _{-j+k} irem buscar a encomenda.
 the John asked to+the Pedro COMP ₋ go.INF.3P get the parcel
John asked Pedro to go get the parcel (together with someone else).
- (23) a. O João_i obrigou o Pedro_j a _{-j} ir buscar a encomenda.
 the John forced the Pedro PREP ₋ go.INF(.3S) get the parcel
John forced Pedro to go get the parcel.
- b. O João_i obrigou os meninos_j a _{-j} irem buscar a encomenda.
 the John forced the boys PREP ₋ go.INF.3P get the parcel
John forced the boys to go get the parcel.

Verbs such as *chatear* “bother”, *alarmar* “alarm”, *prejudicar* “harm”, and *agravar* “worsen” take sentential subjects, which are NOC contexts: the null embedded subject does not have a c-commanding antecedent and hence may have an arbitrary interpretation (PRO_{arb}), which may be determined by pragmatic and semantic factors (Barbosa & Raposo 2013). However, the null subject of the embedded clause may also be coreferent with a DP in the matrix clause:

- (24) a. _{-i/arb} Pagar impostos aborrece a Joana_i.
₋ pay.INF taxes bothers the Joana.
To pay taxes bothers Joana.
- b. _{-arb} Fumar faz mal à saúde.
₋ smoke.INF does harm to+the health
Smoking harms one’s health.

Finally, European Portuguese also has the Prepositional Infinitival Construction (PIC: Raposo 1989, Duarte 1992, Barbosa & Cochofel 2004), an infinitival structure introduced by the preposition *a* which, according to Barbosa & Cochofel (2004), involves both ECM and control. The PIC occurs with the perception verbs *ver* “see”, *ouvir* “hear” and *sentir* “feel, sense” and probably with other verbs such as *encontrar* “find” (Barbosa & Raposo 2013: 1969). In this structure, the infinitive verb can be either inflected or uninflected, and the subject position of this infinitive is obligatorily filled by a null element (Raposo 1989). The PIC is superficially similar to some canonical object control structures, as illustrated in (25):

- (25) a. Eu persuadi os meninos a escrever(em) à tia. *Object control*
 I persuaded the boys PREP write.INF(.3P) to+the aunt.

I persuaded the boys to write to their aunt.

- b. Eu vi os meninos a jogar(em) aos berlindes. *PIC*
I saw the boys PREP play.INF(.3P) to+the marbles.
I saw the boys playing marbles.

Although the strings above are similar, they show different syntactic and semantic properties and map onto distinct syntactic configurations. Firstly, the PIC has a progressive aspectual value which is absent from object control structures (Raposo 1989). Hence, unlike object control structures (26a), the PIC can be replaced by a gerund, as it equally conveys a progressive aspectual value (26b):

- (26) a. Eu persuadi os meninos escrevendo à tia.
I persuaded the boys write.GER to+the aunt.
I persuaded the boys by writing to their aunt.
(≠ Eu persuadi os meninos a escrever(em) à tia.)
- b. Eu vi os meninos jogando aos berlindes.¹¹
I saw the boys play.GER to+the marbles.
I saw the boys playing marbles.
(= Eu vi os meninos a jogar(em) aos berlindes.)

This progressive aspectual component disappears in bare infinitival complements of perception verbs (27b), showing that it is associated with the preposition *a* in the PIC (Raposo 1989; Duarte 1992):

- (27) a. Eu vi os meninos a atravessar a rua.
I saw the boys PREP cross.INF the street
I saw the boys crossing the street.
(= Eu vi os meninos atravessando a rua).
(= I saw the boys cross.GER the street).
- b. Eu vi os meninos atravessar a rua.
I saw the boys cross.INF the street
I saw the boys cross the street.
(≠ Eu vi os meninos atravessando a rua.)
(≠ I saw the boys cross.GER the street).

Secondly, object control structures and the PIC differ in their constituent structure: in object control sentences, the surface object and the infinitival clause are two distinct complements, both subcategorized for by the matrix verb; in the

¹¹ The gerund is preferred by Brazilian Portuguese speakers and used in some Portuguese regional dialects, while the PIC is preferred by European Portuguese speakers of the norm.

PIC, the whole sequence following the matrix verb is a single constituent, the matrix verb's only internal argument (Raposo 1989: 277).

The status of the PIC as a single constituent is indicated by its behaviour in several contexts: unlike canonical object control structures (29), the PIC can be focussed in the pseudocleft structure (28a) and in the *é que* cleft structure (28b) topicalized (28c), and replaced by the interrogative pronoun *o que* (28d) (Raposo 1989; Santos, Gonçalves & Hyams 2014, in prep.):¹²

- (28) a. O que ele viu foi os meninos a sair de casa.
 what he saw was the boys PREP leave.INF of house
 What he saw was the boys leaving the house.
- b. Os meninos a sair de casa é que ele viu.
 the boys PREP leave.INF of house COMP he saw
 The boys leaving the house is what he saw.
- c. Os meus alunos a copiar no exame eu não vi.
 the my students PREP cheat.INF in+the exam I not saw
 My students cheating on the exam I did not see.
- d. P: Sabes o que o Luís viu?
 know what the Luís saw
 Do you know what Luís saw?
 R: Os meninos a sair de casa.
 the boys PREP leave.INF of house
 The boys leaving the house.
- (29) a. *O que ele obrigou foi os meninos a sair de casa.
 what he forced was the boys PREP leave.INF of house
 What he forced was the boys to leave the house.
- b. *Os meninos a sair de casa é que ele obrigou.
 the boys PREP leave.INF of house COMP he forced
 The boys to leave the house is what he forced.

¹² One argument suggesting that *querer* “want” does not take the PIC is the impossibility of clefting the infinitival proposition introduced by *a* (i), contra claims by Barbosa & Raposo (2013):

- (i) a. ??O que eu quero é os meninos a sair de casa. *Pseudocleft*
 What I want is the boys PREP leave of house.
 What I want is the boys leaving the house.
- b. *Os meninos a sair de casa é que eu quero. *‘É que’ cleft*
 The boys PREP leave.INF of house COMP I want
 The boys leaving the house is what I want.

c. *Os meninos a sair de casa eu não obriguei.
 the boys PREP leave.INF of house I not forced
The boys to leave the house I did not force.

d. P: *Sabes o que o Luís obrigou?
 know what the Luís forced?
Do you know what Luís forced?

R: Os meninos a sair de casa.
 the boys PREP leave.INF of house
The boys to leave the house.

Based on Raposo (1989)

These tests allow us to show that a verb such as *pôr a* “put to” does not subcategorize a PIC. Firstly, the sequence following *a* in (30a) cannot be focused in an pseudocleft (30b) or an *é que* cleft (30c), showing that this string is not a single constituent. Secondly, this structure does not have a progressive value, as (30d) shows (cf (26a) and (27a) above).

(30) a. O professor pôs os alunos a fazer exercícios de
 the teacher put the students PREP make.INF exercises of
 matemática.
 math
The teacher made the students make math exercises.

b. *O que o professor pôs foi os alunos a fazer exercícios
 what the teacher put was the students PREP make.INF exercises
 de matemática.
 of math
What the teacher made was the students make math exercises.

c. *Os alunos a fazer exercícios de matemática é que o
 the students PREP make.INF exercises of math COMP the
 professor pôs.
 teacher put
The students make math exercises is what the teacher made.

d. *O professor pôs os alunos fazendo exercícios de matemática.
 the teacher put the students make.GER exercises of math
The teacher made the students make math exercises.

Hence, we assume that *pôr a* “put to” does not select a PIC and that the structure of the “NP a clause” under this verb is more similar to object control. We thus follow the suggestion in Raposo (1989: 292-294), with a reference to *pôr a* “put

to” in note 20. However, we acknowledge the special status of *pôr a* “put to” as an object control verb, in a pair with *deixar a* “leave” in a sentence such as (31).

- (31) O professor deixou os alunos a fazer exercícios.
 the teacher left the students PREP do.INF exercises
The teacher left the students doing exercises.

The difficulty in extracting only the embedded clause shows the difference between these structures and typical object control:

- (32) a. ?A fazer exercícios é que o professor pôs os alunos.
 PREP do.INF exercises COMP the teacher made the students
To do exercises is what the teacher made the students.
 b. A fazer exercícios é que o professor obrigou os alunos.
 PREP do.INF exercises COMP the teacher forced the students
To do exercises is what the teacher forced the students

Let us now return to PIC structures. Some facts pose a problem for the analysis of the PIC and subsequently allow the suggestion that the PIC structure involves (subject) control: the infinitival subject forms a single constituent with the PIC. However, when pronominalized the overt DP shows accusative Case, nominative morphology being ungrammatical in this context (Barbosa & Cochofel 2004):

- (33) a. Eu vi-os a comerem um gelado.
 I saw+cli.acc.3P PREP eat.INF.3P an icecream
 b. *Eu vi eles a comerem um gelado.
 I saw they PREP eat.INF.3P an icecream
I saw them eating icecream.

Barbosa & Cochofel (2004: 387, 388)

To account for this pattern, Raposo (1989) proposes an analysis of the PIC that involves both ECM and subject control: the PIC is a small clause headed by the internal P with a lexical subject in Spec/PP that controls the null subject of the *a*-phrase. If the infinitive is uninflected, the clause is assumed to be a CP, preventing government of PRO by the preposition *a* (34). If the infinitive is inflected, the clause is assumed to be an IP and the *pro* subject receives Case from I with Agr, which in turn is assigned Case by *a* (35).

- (34) ... [_{PP} a [_{CP} [_{IP} PRO I VP]]].

- (35) ... [_{PP} a [_{IP} *pro* I/Agr VP]].

Raposo (1989: 287)

Subsequently, Barbosa & Cochofel (2004) argue for a prepositional small clause analysis of the PIC, along the lines of the one proposed by Raposo (1989). However, they emphasize the progressive aspectual contribution of the preposition *a*, in line with Duarte's (1992) analysis. Hence, they propose that the preposition *a* in a PIC heads an aspectual head (AspP).

In summary, in EP complement clauses are OC contexts, while sentential subjects are NOC contexts. We find obligatory subject control in complement clauses and in the PIC, obligatory object control in complement clauses, and cases of pragmatically determined control in complement clauses with matrix request verbs such as *pedir para* "ask".

2.3- Control in generative grammar

This section will survey some of the theoretical proposals that have been made to account for the distribution and interpretation of PRO, starting with Chomsky's (1980, 1981, 1982) Government and Binding account (subsection 2.4.1), moving on to Hornstein's (1999) account of control as movement (subsection 2.4.2) and ending with Landau's (2000, 2004, 2006) account of control as agree (subsection 2.4.3).

Given that this dissertation regards only the acquisition of control in complement clauses, only the relevant aspects of these theoretical accounts of control will be surveyed.

2.3.1- Control in Government and Binding Theory

As we have observed above, in control structures the overt DP appears to bear two θ -roles, while in raising structures it bears only one θ -role, assigned by the lower verb. However, in the Government and Binding model of grammar (GB: Chomsky 1980, 1981, 1982) it is impossible for a single argument to bear more than one θ -role, as a result of two universal constraints on syntactic derivations – the θ -Criterion (36) and the Projection Principle (37):

(36) *θ -Criterion*

Each argument bears one and only one θ -role, and each θ -role is assigned to one and only one argument.

Chomsky (1981: 36)

(37) *The Projection Principle*

Representations at each syntactic level (i.e., LF, and D- and S-Structure) are projected from the lexicon, in that they observe the subcategorization properties of lexical items.

Chomsky (1981: 29)

The θ -Criterion requires bi-uniqueness between arguments and θ -roles, whereas the Projection Principle ensures correspondence of representations at all levels of derivation and that the subcategorization properties of lexical items are satisfied from the onset.

Consequently, the GB account of control draws a clear distinction between control and raising: in raising structures the overt DP is generated in the infinitival subject position and then moved to the subject or object position of the matrix clause, an operation motivated by the inability of the embedded infinitive predicate to assign Case: given that overt DPs require Case to be licensed (see the formalization of the Case Filter below, in 42), the Move operation is necessary for the overt embedded subject to receive Case from the tensed matrix verb and, subsequently, for the structure to converge. Conversely, in control structures the overt antecedent DP is generated in its surface position, while the infinitival subject position is filled by a null element – the base-generated empty category PRO – that bears the θ -role assigned by the embedded predicate and does not require Case to be licensed (Chomsky 1980, 1981, 1982):

(38) O João_i tentou [PRO_i resolver o exercício]. *Subject control*
 the John tried PRO solve.INF the exercise
João tried to solve the exercise.

(39) O João_i ensinou o filho_j a [PRO_j andar de bicicleta]. *Object control*
 the John taught the son PREP PRO ride.INF PREP bicycle
John taught his son how to ride the bicycle.

With regard to Binding Theory, PRO is self-contradictory: it is similar to a pronoun in that it has no antecedent in its clause, and it is like an anaphor in that it is assigned reference by an overt c-commanding antecedent. Hence, PRO can be regarded as a pronominal anaphor (PRO is [+anaphoric, +pronominal]). As such, it must be subject to both Principle A and Principle B of the Binding Theory:

(40) *Binding Theory*

- (A) an anaphor is bound in its governing category.
- (B) a pronominal is free in its governing category.
- (C) an R-expression is free.

Chomsky (1981: 188)

If PRO has a binding category, it must be both free and bound in that binding category, which is clearly an impossibility. It follows that PRO cannot be governed.¹³ Chomsky (1981: 191) thus derives the *PRO theorem*:

(41) PRO is ungoverned.

PRO's distribution is hence partly determined by the Binding Theory (Chomsky 1981): PRO appears in ungoverned positions, namely the subject position of infinitives. Case Theory (Manzini 1983; Koster 1984; Huang 1989) then determines that PRO occurs in the subject position of some infinitives (and gerunds) and does not alternate with an overt DP, given that in GB it is assumed that infinitives and gerunds are incapable of assigning Case¹⁴ and the Case Filter (42) stipulates that overt DPs require Case in order to be licensed.¹⁵

(42) *Case Filter*

*NP if NP has phonetic content and has no Case.

Chomsky (1981: 49)

The interpretation of PRO is determined by Control Theory, unlike that of other NPs, which is determined by the Binding Theory (Chomsky 1981: 192). Control theory involves different factors, namely structural configurations, intrinsic properties of control verbs, and other semantic and pragmatic considerations (Chomsky 1981: 75-79). As an approximation, Chomsky (1981: 77-78) states that the controller of referential PRO must be an argument of the matrix clause; PRO's controller will either be the matrix subject or the matrix object, depending on the properties of the embedding verb. If a potential antecedent is unavailable in the matrix clause, PRO receives an arbitrary interpretation (*PRO_{arb}*).

2.3.2 – Control as Movement

Three developments within the Minimalist Program have contributed to a radical reassessment of control theory: the reconceptualization of movement as a

¹³ In early GB theory, *Government* is understood as in (i):

(i) β is a governing category for α if and only if β is the minimal category containing α , a governor of α , and a SUBJECT accessible to α .

Chomsky (1981: 220)

¹⁴ Later on, Chomsky and Lasnik (1993) suggest that infinitivals and gerunds assign Null Case, which only PRO can bear.

¹⁵ PRO's presence in the embedded subject position is independently required by the Extended Projection Principle (EPP: Chomsky 1982: 10), which stipulates that all clauses have subjects.

copy-and-delete operation (Chomsky 1995), the weakening of the θ -Criterion with the elimination of D-Structure (Chomsky 1993), thus allowing a reformulation in which an argument must be assigned at least one θ -role, and each argument or argument chain may be assigned more than one θ -role (Brody 1993 and Bošković 1994 *apud* Polinsky 2013), and the weakening of Null Case. According to Hornstein (1999), these developments in syntactic theory allow for the elimination of PRO, which he argues to be stipulative.

Hornstein and Polinsky (2010: 5-7) argue that PRO is a grammar-internal formative, since it presupposes the entire grammatical architecture to specify its properties – PRO lacks inherent semantic and phonetic content; rather, it is assigned referential content by the elements it enters a relation with (subject to licensing by specific structural configurations), unlike a lexical item. They further argue that the minimalist principle of dispensing with grammar-internal constructs disfavors the maintenance of PRO.

The central claim of Hornstein’s Movement Theory of Control (MTC: Hornstein 1999) is that the control relation is mediated by movement, which is here understood as in the Copy Theory of Movement (Chomsky 1995): the DP is base generated in the infinitival subject position and moved to the relevant matrix position, leaving a copy behind. Both copies are θ -marked, and one of the copies is deleted:¹⁶

(43) John tried [~~John~~ to kiss Mary].

Adapted from Hornstein & Polinsky (2010)

In the embedded subject position, the DP *John* is assigned the agent θ -role of *kiss*. It then moves to the matrix subject position, where it is assigned the agent θ -role of *try*, an operation driven by the need to assign θ -roles and the Extended Projection Principle. In this analysis, Agree is a subpart of the Move operation. The locality conditions on control (and on A-movement in general) are due to Agree’s restrictive reach (Polinsky 2013; Hornstein & Polinsky 2010).

This is a radical parting from earlier approaches to control, all of which analysed it as a “*non-movement* dependency” (Hornstein & Polinsky 2010). The reconceptualization of control as an instantiation of A-movement also entails the unification of control and raising, since they now differ minimally with regard to

¹⁶ In the sixties and early seventies, movement theory already involved copying and chopping operations (see Ross 1967).

whether or not the matrix verb assigns a θ -role to the moved DP (Hornstein and Polinsky 2010).

Given that Hornstein & Polinsky (2010) state that the MTC treats control as a variety of A-movement, it is expected that control relations show the properties typical of A-chains. Accordingly, they highlight some parallels between OC and A-movement in English:

- (44) All but the head of an A-chain is phonetically null.
 - a. John is likely *t* to win.
 - b. John wants PRO to win.
- (45) Only the head of a chain is in a Case marked position.
 - a. *John is likely *t* will win.
 - b. *John hopes PRO will win.
- (46) A-movement can be successive cyclic given the right choice of predicates.
 - a. John seems *t* to be likely *t* to win.
 - b. John wants PRO to try PRO to win.
- (47) A-chains respect minimality/ locality.
 - a. *John_i seems that it was told *t*_i that Sam won.
 - b. *John_i persuaded Sam PRO_i to leave.
- (48) A-chains only license sloppy readings under ellipsis.
 - a. John seems *t* to like Mary and Bill does too (=it seems that Bill likes Mary).
 - b. John wants PRO to see Mary and Bill does too (=Bill wants Bill to see Mary, *Bill wants John to see Mary).
- (49) A-traces do not block *wanna* contraction.
 - a. I'm gonna (=going to) leave.
 - b. I wanna (=want to) leave.

Hornstein & Polinsky (2010: 10)

Hornstein's MTC also derives the distribution of OC PRO from the properties of A-movement: OC PRO appears where A-traces appear. Assuming that minimality and principles of least effort restrict movement, OC PRO is limited to the subject position of non-finite clauses (Hornstein & Polinsky 2010).

NOC PRO, on the other hand, resists an A-movement analysis, given that it has no local controller (Hornstein 1999). Consequently, Hornstein and Polinsky

(2010) argue that the properties of the two varieties of control differ greatly, and that NOC has no similarities to A-chains:

- (50) The NOC relation is not subject to locality conditions.
- a. *John_i persuaded Sam PRO_i to leave.
 - b. John persuaded Mary that PRO washing himself would impress Joan.
- (51) NOC licenses strict readings under ellipsis.
- a. John thinks that washing himself will impress Mary and Bill does too.
(Ambiguous; =Bill thinks that John washing himself will impress Mary,
Bill thinks that Bill washing himself will impress Mary)

Hornstein & Polinsky (2010: 11)

Hence, in the MTC, OC and NOC are conceptualized as fundamentally different phenomena – the derivation of NOC structures is treated as involving pronominalization rather than movement. Movement generates obligatory (unique) control; pronominalization generates non-obligatory control (Polinsky 2013):

- (52) a. Nós decidimos [~~nós~~ ir à praia]. OC, *A-movement*
 we decided ~~we~~ go.INF to+the beach
We decided to go to the beach.
- b. Não é boa ideia [*pro* beber água desta fonte]. NOC,
pronominalization
 not is good idea *pro* drink.INF water of+this fountain
It's not a good idea to drink water from this fountain.

The MTC resorts to Nunes' (1995) notion of *sideward movement* to account for control by objects of prepositions (Hornstein 1999; Polinsky 2013). According to Nunes' Copy+Merge theory of movement the operation Move is not a single complex operation (Chomsky 1995), but rather the result of the interaction between the independent operations of Move, Copy, Form Chain and Chain Reduction (Nunes 2001). The Copy+Merge theory, Nunes (2001) maintains, allows instances of sideward movement, with some restrictions. In sideward movement "(...) the computational system copies a given constituent α of a syntactic object K and merges α with a syntactic object L, which has been independently assembled and is unconnected to K" (Nunes 2001: 304-5). That is, movement may be sideward in that the moved element can merge with a phrase marker different from the one that dominates it in its original position. Crucially, the two copies no longer have to be in a c-command relation (Nunes 1995).

2.3.3 – Control as Agree

Contra Hornstein (1999), Landau (2003) argues for the maintenance of PRO within Minimalism. Landau's (2000, 2004, 2006) account of obligatory control associates it to a feature-based calculus of finiteness in embedded clauses. This account treats control as an instance of Agree, the relevant features being [T] and [Agr] on both embedded I° and C°. Control is closely tied to the distribution of (in)dependent tense: independent tense (or unselected tense, as the matrix verb does not select the embedded tense) is associated with referential DPs or *pro*; selected tense (the matrix verb selects the embedded tense) is further divided into dependent and anaphoric tense. Dependent tense may or may not result in control, while anaphoric tense always implies control (Landau 2004: 837).

Landau (2004, 2006) argues that government/Case-based theories of control cannot account for the cross-linguistic data. Firstly, it is well-established that PRO can bear Case like any overt DP – in languages with case-concord, such as Icelandic, Russian and Hungarian, the Case of PRO is shown by an element associated to it, such as an adjectival predicate, a reflexive or a quantifier (see Landau 2006 and references therein). The morphological case displayed by these items agrees with that of PRO. Crucially, there is no case-matching between PRO and its controller, suggesting that PRO is independently case-marked, *i.e.* PRO bears its own, locally assigned Case, distinct from the Case of its controller. That PRO bears standard Case challenges Hornstein's (1999) account of control as movement: traces left by A-movement cannot bear Case (Landau 2006). Moreover, if PRO is no different from overt DPs with respect to Case (and consequently to government), it follows that Case theory has no bearing on the distribution of PRO.

Secondly, there is ample cross-linguistic evidence of control in finite embedded clauses: Hebrew, the Balkan languages, Persian, Spanish, Dogrib, and Kannada all exhibit obligatory control into subjunctive complements (see Landau 2004 and references therein). The finite control data from languages such as Hebrew and the Balkan languages suggests that PRO is sensitive to the distribution of embedded tense, *i.e.* to the features [T] and [Agr] on both I° and C° (Landau 2004).

Landau's (2000, 2004, 2006) proposal is a feature agreement system, in which the specifications of the [T] and [Agr] features on the C° and I° heads of the embedded clause determine the distribution of both embedded tense and PRO. The presence of the [T] feature on C° is licensed by the selecting head, the matrix verb. Different featural compositions result in different complement types (indicative, subjunctive, inflected infinitive and uninflected infinitive), which may

or may not have (in)dependent tense and consequently may or may not be control environments. This account of control also relies heavily on Chomsky's (2000, 2001) conceptualization of Agree as a local derivational process, driven by feature checking and deletion of uninterpretable features (Landau 2004).

As stated above, the distribution of PRO is inherently tied to the distribution of (in)dependent tense. The criteria for tense (in)dependence is semantic, not morphological – an infinitival clause may be tensed, whereas a subjunctive clause may be untensed. The feature [T] on C° and I° encodes semantic tense in the syntax: in embedded clauses the matrix predicate may impose selectional restrictions on the [T] value of C°. If the matrix predicate does not select for tense, embedded C° lacks the [T] feature and the embedded clause has independent tense (no [T] on C°). If tense is selected by the matrix predicate, embedded C° may either have dependent tense ([+T] on C°), which differs from the matrix clause, or anaphoric tense ([-T] on C°), which is the same as the matrix clause (Landau 2004: 839). Unlike [T], the [Agr] feature (actually a bundle of ϕ -features) is solely morphological (Landau 2004: 839). Consequently, Landau (2004) assumes that embedded I° bears [+Agr] iff there is agreement morphology, *i.e.*, the I° heads of indicatives, subjunctives and inflected infinitives are [+Agr], while the I° heads of uninflected infinitives are [-Agr].

Landau (2000) then derives the OC generalization:

(53) *The OC Generalization*

In a configuration [... DP_i ... Pred ... [_S PRO_i ...] ...], where DP controls PRO: If, at LF, S occupies a complement/specifier position in the VP-shell of Pred, then DP (or its trace) also occupies a complement/specifier position in that VP-shell.

Landau (2000: 11)

That is, a VP-internal infinitive must have a clausemate antecedent for PRO, whereas a VP-external infinitive does not obey the same restrictions (Landau 2001). The difference between OC and NOC is due to Agree's locality properties. Agree obeys the Phase Impenetrability Condition (PIC: Chomsky 1998, 1999 *apud* Landau 2001): the controller must be found in the phase immediately dominating the infinitival CP phase in order to achieve OC, *i.e.*, OC applies only to VP-internal (*in situ*) infinitives (Landau 2000). On the other hand, NOC applies to VP-external (displaced) infinitives, that is, in preverbal subject infinitives and adjunct clauses: IP-subjects and adjuncts are islands, hence everything inside them is invisible to Agree. These differences in transparency to Agree are also reflected in asymmetries

in extraction: OC infinitives license extraction, whereas NOC infinitives do not (Landau 2000). This is systematized in (54):

(54) a. Infinitive is VP-complement/ VP-specifier (VP-internal) → OC

b. Infinitive is IP-subject/ adjunct (VP-external) → NOC

Landau (2000: 14)

Following Reinhart & Reuland's (1993) analysis of reflexives, in which it is assumed that all anaphors that fail to be syntactically licensed are interpreted as logophors, Landau (2000) suggests that NOC PRO, which enters no syntactic relation with an element outside its phase, is interpreted as a logophor. Thus, like a logophor, it is licensed by discourse factors.

Summarizing, non-control environments are tense independent, while control environments have either anaphoric tense or dependent tense. Due to restrictions on the operation Agree, obligatory control is local and occurs in VP-internal complements. Non-obligatory control, on the other hand, occurs in contexts that are out of Agree's reach, namely sentential subjects and adjuncts.

3. The acquisition of control

We consider here the problem of the development of an interpretative dependency between the phonetically null subject of an infinitival complement clause and an argument DP in the matrix clause.

The acquisition of control involves lexical and syntactic knowledge. Regarding the lexicon, children must acquire the argument structure of each control verb, as well as its control properties. Regarding syntactic knowledge, and depending on the theoretical approach we assume, children must have knowledge of PRO and its properties, PRO-contexts, c-command, Binding Theory and locality conditions (on either Agree or Move). They must also be sensitive to the differences in choice of controller in different syntactic contexts, namely obligatory control (OC) contexts, such as object complement clauses, and non-obligatory control (NOC) contexts, such as sentential subjects.

Control in the acquisition of European Portuguese (and other varieties of Portuguese) remains, to the best of our knowledge, an unexplored subject, with the exception of Santos, Gonçalves & Hyams (2014), a study centered on elicited production, and Martins (in prep.), a study comparing comprehension of relative clauses and control structures in children with Specific Language Impairment and Autistic Spectrum Disorders. There is, however, research on the acquisition of control by children acquiring English (C. Chomsky 1969; Lust et al. 1986; Sherman 1983, cited in Sherman & Lust 1986, 1993; Hsu, Cairns & Fiengo 1985, cited in Sherman & Lust 1993; Hsu, Cairns, Eisenberg & Schlisselberg 1989; McDaniel & Cairns 1990a, b; McDaniel et al. 1990/1991; Eisenberg & Cairns 1994; Cairns et al. 1994; see also O'Grady 1997 and references therein), French (Chipman & Gerard 1987), Sinhala (Gair, Lust, Sumangala & Rodrigo 1989, cited in Sherman & Lust 1993), Japanese (Lust, Wakayama, Snyder, Mazuka & Oshima 1985, cited in Sherman & Lust 1993) Spanish (Echeverría 1978, cited in Padilla 1990; Goodluck et al. 2001) and Greek (Goodluck et al. 2001). In some of these cases, the acquisition of control is treated only in conjunction with other subjects, and does not constitute the central focus of the research: for instance, the Goodluck et al. (2001) study contrasts subject control and obviation in Greek and Spanish infinitival and subjunctive complements of *prospathol/intentar* “try” and *thelol/querer* “want”, and Chipman & Gerard’s (1987) studies co-reference with the matrix clause in control complements and in finite complements. Hence, the literature that guided the development of the working hypothesis and of the methodology in this study is almost entirely concerned with the acquisition of control by English-speaking children. In addition, many of these studies are concerned mainly with adjunct clauses rather than complement clauses (e.g. McDaniel et al. 1990/91; Cairns et

al.1994; Eisenberg & Cairns 1994). The main findings and conclusions of comprehension studies on the acquisition of control will be summarized in section 3.1.

The acquisition of control has also been assessed in studies on the control/raising distinction (Becker 2005, 2006, 2014; Kirby 2011) and in studies on the acquisition of complementation (e.g. Landau & Thornton 2011, based on diary data of one child). The superficial similarity of control/raising strings (and, in European Portuguese, object control/PIC strings) may lead to a learnability problem (Becker 2005, 2006, 2014; Kirby 2011; Santos, Gonçalves & Hyams 2014, in prep.). Moreover, the same verb may take several types of complements: the object control verb *obrigar* “force”, for instance, allows both inflected and uninflected infinitives as complements (1), while the perception verb *ouvir* “hear” allows both RtO and the PIC (with either the inflected or the uninflected infinitive) as complements (2).

- (1) O João obrigou os meninos a ir(em) à escola. *Object control*
 the João forced the boys PREP go.INF(.3P) to+the school
João forced the boys to go to school.
- (2) a. O João ouviu os meninos brincar. *RtO*
 the João heard the boys play.INF
- b. O João ouviu os meninos a brincar(em). *PIC*
 the João heard the boys PREP play.INF(.3P)
João heard the boys playing.

Children, then, must search the input for positive evidence that points towards the adult analysis. At initial stages, that task may be guided by innate biases, such as the subset principle or multiple cues to structure and verb class (Becker 2005, 2006, 2014). Children may also pose hypotheses that are made available by UG but are absent from the input (Landau & Thornton 2011), as well as overgeneralize structures present in the input that may converge with their initial biases (Santos, Gonçalves & Hyams 2014, in prep.). Alternatively, children may prefer some structures over others due to early constraints on syntactic derivations, such as stricter locality conditions (Orfitelli 2012a, b). These learnability problems and initial biases will be discussed in section 3.2.

Finally, the working hypothesis that guided the methodology used in this study will be developed in section 3.3.

3.1 – Studies in the acquisition of control

The first study on the acquisition of control in a generative framework was Carol Chomsky's doctoral dissertation, published as a book in 1969 under the title *The Acquisition of Syntax in Children from 5 to 10*. Carol Chomsky used a comprehension *act out* task to test children's choice of antecedent for OC PRO in infinitival complement clauses with the matrix verbs *tell* and *promise*. The subjects were 9 5-year-olds, 7 6-year-olds, 7 7-year-olds, 8 8-year-olds, 8 9-year-olds and 1 10-year-old.

The results of the comprehension *act out* task show that at early stages children give more object control responses than subject control responses, regardless of the matrix verb: according to C. Chomsky (1969), this is due to Rosenbaum's (1967) Minimal Distance Principle, which states that the controller is the nearest DP to the left of the null embedded subject (see section 2.2). Children overgeneralize this principle to subject control sentences with two internal arguments, thus responses to complements of *tell* are in accordance with the target grammar, whereas responses to complements of *promise* are not. Hence, for object control, children show adult interpretations, although they may not yet have the target grammar. In complement clauses with *promise*, on the other hand, children may not achieve adult-level performance until school-age (C. Chomsky 1969).

The basic results of C. Chomsky's (1969) study were replicated in several subsequent studies (Hsu, Cairns & Fiengo 1985 *apud* Hsu, Cairns, Eisenberg & Schlisselberg 1989; Sherman & Lust 1986; Eisenberg & Cairns 1994; see also O'Grady 1997 and references therein). Namely, in several studies (see Sherman & Lust 1986 and references therein), it has been shown that children aged 3-10 often assign object control to *promise* as well as to *tell*.

However, Padilla (1990) claims that C. Chomsky's (1969) results do not bear out the proposal of a linear distance principle in child grammar. Namely, "although 25% of the children gave object control responses to both sentences types, about 50% of them distinguish between *promise* and *tell*, assigning a subject control interpretation to sentences like (7a) [(3) below], while the rest of the subjects gave mixed responses for both sentence types or mixed responses only for the subject control sentence-types" (Padilla 1990: 45-46). He then concludes that even if the MDP is operative in child grammar, children also take into account the lexical properties of verbs in interpreting PRO.

- (3) a. Bozo promises Donald to do a somersault. (Make him do it).
b. Bozo tells Donald to hop up and down. (Make him do it).

C. Chomsky (1969), repeated in Padilla (1990: 45)

In a subsequent investigation, McDaniel, Cairns & Hsu 1990/91 (see also McDaniel & Cairns 1990a, b) studied the acquisition of control in complement and adverbial clauses. In the first study, 20 children aged 3;9 to 5;4 (mean age 4;6) participated in an *act out* task and a grammaticality/ reference judgment task, after being trained in judging sentences. In a second study, which the authors describe as “a longitudinal counterpart to the first” (McDaniel, Cairns & Hsu 1990/91: 309), 14 children aged 4;1 to 4;10 at the beginning of the study were asked to give grammaticality and reference judgments of sentences, also after receiving training in judging sentences. The types of test items presented in these two studies are exemplified in (4):

(4) *Sentence types presented for act out and judgment*

- a. The zebra touches the lion before drinking some water. *Control adverbial*
- b. Cookie Monster tells Grover to jump into the water. *Control complement*
- c. Grover pats Bert before he climbs up the steps. *Finite adverbial*
- d. Grover tells Cookie Monster that he will climb up the tree. *Finite complement*

McDaniel, Cairns & Hsu (1990/91: 302)

The results of the two studies, they claim, confirm the stages of the acquisition of control in complement and adverbial previously defined in Hsu et al. (1985), repeated here in McDaniel, Cairns & Hsu’s (1990/91) reformulation:

(5) *Stages of the development of control*

Grammar Type IA: Arbitrary reference of PRO is permitted in both complements and adverbials.

Grammar Type IB: Arbitrary reference of PRO is permitted in the adverbial, but adult control applies in the complement.

Grammar Type II (object control): In adverbial clauses, the object of the higher clause controls PRO.

Grammar Type III (mixed control): In adverbial clauses, either the subject or the object of the higher clause controls PRO.

Grammar Type IV (adult control): In adverbial clauses, the subject must control PRO.

McDaniel, Cairns & Hsu (1990/91: 306)

Most importantly, McDaniel, Cairns & Hsu (1990/91) claim that children show an early stage of arbitrary control in both complement clauses and adverbials (GT IA), followed by a stage in which children have acquired control in complement clauses (excluding exceptional cases such as *promise*) but not in

adverbials (GT IB). Following Hsu et al. (1985, 1989) and Hsu & Cairns (1990), they also claim that children with grammar types IA and IB use linear strategies to interpret the reference of PRO, particularly in adverbial sentences: the use of a minimal distance (or nearest noun) strategy yields object control, while the use of a subject (or first noun) strategy yields subject control (see also McDaniel & Cairns 1990a: 341). They note, however, that none of the children in the study use a sentence-external referent strategy.

In order to account for the initial stage of arbitrary control, McDaniel, Cairns & Hsu (1990/91) draw on Tavakolian's (1981) Conjoined Clause Hypothesis: these arbitrary interpretations are due to a coordination analysis of subordinated (complement or adverbial) structures. Given the Continuity Hypothesis (Pinker 1984 *apud* McDaniel, Cairns & Hsu 1990/91), children should be able to determine PRO's controller as soon as the structures that require control are correctly analyzed. However, if infinitival complement and adverbial clauses are analyzed as coordinate structures in early grammar, children do not have a requirement for obligatory control, since PRO has no c-commanding antecedent.¹⁷ Instead, they rely on linear strategies to interpret PRO's reference.

In this account, the initial coordination analysis is due to limitations on the processor, allied to lexical and semantic learning. Coordinated structures are assumed to be less demanding on the processor than subordinated ones: coordination would involve little more than the sequencing of two relatively independent elements, whereas subordination requires the processor to maintain the matrix clause "open" in order to embed the subordinate clause. In complement clauses, the acquisition device must determine the subcategorization properties of control verbs, while in adverbials it must acquire the meanings of subordinating conjunctions (probably one by one). Since the semantic relation between a verb and its complements is a very salient one, control in complement clauses precedes control in adverbial clauses.

With the goal of expanding on the conclusions of the McDaniel, Cairns & Hsu (1990/91) study, namely on the role of lexical acquisition in the acquisition of subordination and control and on the specificities of the linear interpretative strategies used by children, Cairns et al. (1994) conducted a longitudinal study with 15 children aged 3;10 to 4;11 at the beginning of the study. The children participated in both judgment and *act out* tasks designed to test for subject and object control

¹⁷ McDaniel, Cairns & Hsu (1990/91) note that this implies that children are allowing an untensed verb to occur in a solitary clause. They quickly brush aside this matter, claiming that this is not ruled out by UG, given that in some languages the subjunctive may occur in a solitary clause.

complement clauses, infinitival adverbial clauses (including preposed adverbial clauses), and adverbial clauses with pronoun subjects (also including preposed adverbial clauses):

(6) *Sentence types presented for act out and judgment*

- a. The horse wants to kiss the pig. *Subject control without DO, complement clause*
- b. Big Bird tells Ernie to jump over the fence. *Object control, complement clause*
- c. Ernie kisses Cookie Monster before jumping over the fence. *Subject control, adverbial clause*¹⁸
- d. Grover pats Big Bird before he stands on the bench. *Pronominal subject, adverbial clause*
- e. Before swimming in the pool, the horse touches the pig. *Subject control, preposed adverbial clause*
- f. Before he drinks the water, the sheep pats the dog. *Pronominal subject, preposed adverbial clause*

Cairns et al. (1994: 285-286)

Regarding the subject of this dissertation, the authors conclude that there is no evidence that the obligatory nature of control is acquired earlier in subject control complements than in object control complements. Further, they note that the most common non-adult interpretation is arbitrary control, in both subject and object control complements. The data also includes observations of arbitrary control with adverbial clauses. Hence, the authors claim that the existence of an initial non-control stage (GT IA) is confirmed by their data. However, they also note that all the children in this study show a strong preference for sentence-internal antecedents.¹⁹ As in the preceding studies, these responses are attributed to a coordination analysis of subordinate clauses.

Following this line of research, Eisenberg & Cairns (1994) tested the production and comprehension of infinitival complements with the verbs *want*, *like*, *tell*, *force*, *try*, *pretend*, *ask*, *beg*, *promise*, *threaten*, and *say*. Twenty-five children aged 3;7 to 5;4 participated in a story completion task to elicit infinitive complement clauses and in an *act out* task with grammaticality judgment to test their comprehension of PRO. The test sentences included object control structures (e.g., with *tell*) and subject control structures (e.g., with *try*), as well as structures requiring with

¹⁸ Landau (2000) treats control intro adverbial clauses as an instance of NOC (see Chapter 2).

¹⁹ After the child's initial judgment, the experimenter would try to determine if the child allowed control by other characters, both sentence-internal and sentence-external, by repeating the sentence and asking follow up questions.

implicit control (e.g., with *say*) and RtO structures (e.g., with *want*). The sentences in (7) illustrate the structures tested in this study:

(7) *Test sentence types*

- a. The teacher told the class to start the test. NP_i-V-NP_j [PRO_j -to-VP] – *Object control*
- b. The waiter promised the patron to bring the food. NP_i-V-NP_j [PRO_i -to-VP] – *Subject control with an intervening object*
- c. The boy tried to clean up the mess. NP_i-V [PRO_i -to-VP] – *Subject control without an intervening object*
- d. The mother said to play outside. NP_i-V [PRO_j -to-VP] – *Object control with an implicit object*
- e. The coach wanted the girl to join the team. NP_i-V [NP_j -to-VP] – *RtO*

Eisenberg & Cairns (1994: 719)

In what concerns the interpretation of PRO, the results indicate that children have not yet reached adult knowledge of control at age 5. However, several response patterns were distinguishable: all but two children showed arbitrary reference in [NVtoV] infinitives, with at least one transitive subject control verb. With *promise*-type verbs, children displayed either object control or mixed subject/object responses. Only in two instances were sentence-external antecedents allowed in [NVNtoV] infinitives, in contrast to [NVtoV] infinitives, suggesting that in [NVNtoV] strings sentence-internal antecedents are highly preferred by children. Further, three children showed no evidence of control. According to Eisenberg and Cairns (1994), these results comport with McDaniel et al.'s (1990/1991) results, as well as with the conjoined clause analysis originally proposed by Tavakolian (1978, 1981).

However, Sherman & Lust (1986, 1993) and Sherman (1987) are strongly critical of this line of research, due to both theoretical and methodological issues, which they claim to have bearing on the interpretation of the results. Firstly, previous studies on the acquisition of control focus primarily on comprehension tasks, which aim to tap children's interpretation of PRO, i.e., their choice of antecedent (e.g. C. Chomsky 1969; Hsu et al. 1985, cited in Hsu et al. 1989; see Sherman & Lust 1993 and references therein). Sherman & Lust (1993: 11) argue that "analysis of children's performance on such tasks has provided information about only one aspect of interpretation, particularly choice of antecedent (mainly overgeneralization of choice of object), not directly about the critical grammatical features of PRO." Sherman & Lust (1993) argue that the critical features of PRO concern its distribution and whether its interpretation is obligatory or arbitrary.

Choice of antecedent is only one element of the grammar of control (see Chomsky 1981).

Secondly, they criticize the use of the Minimal Distance Principle (MDP) to explain children's assignment of object control to *promise* as well as to *tell* (see Sherman & Lust 1986, 1993 and references therein). Namely, "distance" is not always well defined in papers on the acquisition of PRO, so it is unclear whether these researchers are using it as a structural principle or as a surface strategy.

Moreover, Sherman (1987) and Sherman & Lust (1986, 1993) argue that as a surface strategy, the MDP is a processing strategy that implies that children do not access lexical and syntactic principles involved in control and are sensitive only to surface distance between the null subject and its potential antecedent. That is, if children do indeed use such strategies, then their grammar is to that extent "not determined by structural principles of language" (Sherman 1987: 90). A continuity hypothesis of language development, Sherman & Lust (1993) claim, is incompatible with linear strategies at early stages, i.e., the use of linear strategies by young children implies that UG constraints are not operative from the onset of language acquisition. Their interpretations of PRO are not based on a structural analysis of the sentences presented to them. Nonetheless, McDaniel, Cairns & Hsu (1990/1991) believe their approach to be within a "Continuity Hypothesis" (Pinker 1984 *apud* McDaniel, Cairns & Hsu 1990/1991) of language acquisition, and take its tenets into consideration when building their argumentation.

The overgeneralization of object control can have several explanations. In fact, Sherman & Lust (1993: 12) point out that "a wider review of the acquisition data does not support the MDP as a general and unique performance-based (surface-distance) principle of language knowledge for these control structures (cf. Sherman 1987)". In previous studies that tested children's comprehension of "in order to" clauses (Tavakolian 1978 *apud* Sherman & Lust 1993) and passive sentences with *tell* (Goodluck 1978 and Maratsos 1974 *apud* Sherman & Lust 1993) children gave a high percentage of subject antecedent choices. In both sentences in (8), the nearest NP is blocked as an antecedent because it is within a PP, a non c-commanding position.

- (8) a. The lion jumps over the pig Ø to stand on the horse.
b. Bill was told by John Ø to leave.

Tavakolian (1978), repeated in Sherman & Lust (1993: 12)

In addition, according to Sherman (1983), reported in Sherman (1987) and Sherman & Lust (1986, 1993), children do not choose the nearest noun as the antecedent as a general principle, only with some verbs and in some structures. The

results of Sherman's (1983) study (reported in Sherman 1987 and Sherman & Lust 1986, 1993) suggest that there is no evidence of a non-structural principle of linear distance in children's interpretation of PRO in complement clauses, even at the youngest ages tested (see below, this section).

Moreover, Sherman & Lust (1993) point out that many previous studies on the acquisition of control have focused mainly on adverbial control structures. For instance, Hsu et al. (1985) tested both complement clauses and adverbial clauses, but only children's responses to the adverbial clauses were used to classify their subjects according to "grammar types". Hsu et al. (1985) exclude infinitival complements from the classification process "(...) on the basis of their exceptional status, difficulty, or inconsistencies in previous findings" (Hsu et al. 1985: 35 *apud* Sherman & Lust 1993: 13). Sherman & Lust (1993: 13) claim that following this reasoning it is unclear why to *include* adverbial clauses, which might similarly be considered "exceptional" and "difficult" for children. Significantly, the results of Hsu et al.'s study (as presented in Table 2 in Hsu et al. 1985, Sherman & Lust 1993 note) show that for control into complements children in all age groups (3;2 to 8;3) overwhelmingly chose the object as antecedent, including for complements of *promise*. According to Sherman & Lust (1993: 13), these results suggest that the complement sentences would not have corroborated Hsu et al.'s (1985) proposed five developmental stages of the grammar of control. Sherman & Lust (1993) also note that adjunct control clauses involve linguistic principles that, at least partially, are distinct from those that underlie complement control clauses (see Sherman & Lust 1993 and references therein). Therefore results based on adjunct clauses may not generalize to other structures.

Sherman & Lust (1993) also assess the McDaniel & Cairns (1990b) study. They maintain that its conclusions suggest that children do not have "a full grammar relevant to control", and that its methodology "does not validly test children's grammatical knowledge of PRO" (Sherman & Lust 1993: 11-12). McDaniel & Cairns (1990b) claim that initially children do not have a requirement for control due to a non-adult analysis of control structures (see above). In their study, McDaniel & Cairns (1990b) elicited children's judgments on sentences such as (9):

(9) Grover tells Bert PRO to jump over the fence.

McDaniel & Cairns (1990b), repeated in Sherman & Lust (1993: 11)

The participants were asked who would jump. Based on the responses of only two children (see also McDaniel, Cairns & Hsu 1990/91), who said that "anyone" could jump, McDaniel & Cairns (1990b) suggest that "there is a stage, previously

unattested (...) during which children lack control” (McDaniel & Cairns 1990b: 316 *apud* Sherman & Lust 1993: 11).

Sherman & Lust (1993: 12) argue that a possible pragmatic interpretation is that anyone could jump. They exemplify other possible interpretations: “(...) it is possible that Grover tells Bert to jump over the fence and that Bert doesn’t want to. In that case, Grover might decide to jump, as well as Cookie Monster. More generally, telling someone to jump does not entail that that person must jump, nor does it entail that *only* that person jump.” Hence, the two children who responded “anyone” to the stimulus question may be basing their interpretation on valid pragmatic considerations, and not due to a lack of control.

In summary, Sherman & Lust (1993) maintain that previous studies are vague in regard to the nature of the MDP and narrowly focused on choice of antecedent, which is not uniquely determined by the syntactic properties of control. Moreover, the overgeneralization of object control may reflect a grammatical principle, rather than a linear performance strategy.

Sherman & Lust (1986, 1993) also report selected results of two experimental studies on children’s knowledge of the null subject PRO in complement control structures (from Sherman 1983). The first study (a “Lexical-Control” study, henceforth “Study 1”) focuses on children’s knowledge of PRO’s distribution and on choice of antecedent with different control verbs. In order to study these two aspects of the grammar of control, Study 1 comprises both a production task and a comprehension task. The second study (a “Pragmatic Lead” study, henceforth “Study 2”) tested children’s comprehension of obligatory PRO (Sherman 1983 *apud* Sherman & Lust 1993).

The test subjects in Study 1 were 72 children, divided evenly over three age groups (G1: 3;0 to 3;11; G2: 5;0 to 5;11; G3: 7;0 to 7;11; mean age 5;6). In Study 2, 36 children, again divided evenly over the same three age groups, were tested (Sherman & Lust 1993: 15). In total, 108 children aged 3 to 8 participated in Sherman’s (1983) study (as reported in Sherman & Lust 1993).

In Study 1, production was tested using an elicited imitation task. Children’s responses were scored as either “correct” or “incorrect”. Incorrect responses were then subjected to error analysis. Comprehension of the control verbs *tell*, *remind* and *promise* was tested using an *act out* task (Sherman 1983 *apud* Sherman & Lust 1993). This study tested 20 sentences in two matched tasks. Sixteen of these sentences were complement structures such as (10), and the other 4 were coordinate sentences, 2 with a gap and 2 with a pronoun subject, as in (11):

(10) *Complement sentences*

- a. Tom promises Bill to eat the ice cream cone. *Subject control*
- b. The lady reminds the man to eat the apple. *Object control*
- c. Jimmy promises Tom that he will drink the milk. *Subject co-reference*
- d. Jimmy tells Tom that he will ride the bicycle. *Object co-reference*

(11) *Coordinate sentences*

- a. The turtle_i tickles the skunk_j and Ø_{i, *}_j bumps the car. *Null anaphor*
- b. The turtle_i tickles the skunk_j and he_{i, j, k} bumps the car. *Pronoun anaphor*

Sherman (1983), repeated in Sherman & Lust (1993: 47-48)

In Study 2, children were tested for the same set of sentences types by an *act out* task only. Study 2 included a pragmatic lead, in order to test PRO's obligatory co-reference in object infinitival complements as well the optional property of pronouns in object finite complements. Half of the sentences were preceded by a pragmatic lead to subject (12), and the other half by a pragmatic lead to object (13). The same pragmatic leads preceded the coordinate sentences (Sherman & Lust 1993).

(12) This is a story about **John** (subject)

- a. John told Tom PRO to leave.
- b. John told Tom that he would leave.

(13) This is a story about **Tom** (object)

- a. John told Tom PRO to leave.
- b. John told Tom that he would leave.

Sherman (1983), repeated in Sherman & Lust (1993: 17)

Sherman (1983), reported in Sherman & Lust (1993), hypothesizes that, in keeping with a "continuity hypothesis" of language acquisition, children should be able to access basic principles of the distribution and interpretation of PRO in object complement clauses. Children are then expected to differentiate between infinitival and finite object complements, namely in regards to the proforms that they involve and their interpretation. That is, children should be able to understand that PRO is obligatorily controlled in infinitival complements, whereas pronouns in finite complements are free in reference. If they obey the principle of minimality, they should show a preference for object control in infinitival complements, and if this principle is specific to control contexts, it should not have effects on their interpretation of pronouns in finite complements (Sherman & Lust 1993). Children should also demonstrate knowledge of the lexicon, namely its role in determining

the antecedent of PRO. Thus, they should differentiate between *promise* and object control verbs such as *tell* and *remind* (Sherman & Lust 1993).

The results of the act out tasks in the two studies replicate previous findings on the verb *promise*: the data shows an overgeneralization of choice of object as PRO's antecedent to infinitival complements of *promise*. Sherman & Lust (1993) argue that this is not inconsistent with grammatical knowledge of control and cannot be explained by the use of linear strategies. Rather, this reflects a grammatical principle of locality, namely, syntactic minimality.²⁰

Sherman's (1983) results (reported in Sherman & Lust 1986, 1993) also show that children are able to distinguish between finite complements and infinitival complements, independently of the matrix verb. Children gave more object antecedent responses with infinitival complements than with finite complements. Sherman & Lust (1986, 1993) maintain that these results suggest that the generalization of object control is confined to infinitival complements.

In the imitation task children also showed more ease in imitating infinitival complements with object control verbs than with subject control verbs (*promise*). Conversely, they found finite complements with subject control verbs to be easier to imitate than finite complements with object control verbs. These results, Sherman & Lust (1986, 1993) argue, suggest that children associate type of control to type of complement.

Further, they maintain that children are able to differentiate between PRO and pronoun anaphora in complement clauses from the earliest age group tested. Children's responses to coordinate structures also suggest that children associate general properties with null anaphora: both in coordinate structures and in complement clauses, they treat null anaphora as obligatorily co-referent with an antecedent in the matrix clause, and they do not allow a pragmatic lead to influence their choice of antecedent. However they did allow a pragmatic lead to influence their choice of antecedent for pronoun anaphora, in complement clauses and in

²⁰ For their analyses, Sherman & Lust (1993) formalize a working definition of minimality used by Huang (1989):

(i) Minimal distance (in a Control Domain)

a. x is closer to y than z, if x c-commands y, but z does not c-command y.
b. For two nodes, x and z, both of which c-command y, x is closer to y than z, if x is separated from y by fewer constituent boundaries than z is.

Sherman & Lust (1993: 8) after Huang (1989: 553)

This definition leads Sherman & Lust (1993) to assume that the verb *promise* is an exceptional and marked case where the lexicon must override a syntactic principle in the establishment of the control relation.

coordinate structures. Thus, they claim, children treat PRO as obligatory in reference and pronouns as free in reference.

Sherman & Lust (1993) draw the conclusion that children have early knowledge of the subject control and object control distinction, as well as of syntactic properties relevant to the interpretation of PRO, that is, “children have continuous knowledge of the fundamental syntactic properties which are relevant to the *distribution* and *interpretation* of PRO in complement control” (Sherman & Lust 1993: 34).

According to these authors, there is no period in which the interpretation of PRO is free: it is continuously constrained by UG. Namely, children know that control in infinitival object complements is obligatory, since they did not allow a pragmatic lead to bias their choice of antecedent in this context. There is no evidence that there is a stage in which children do not access grammatical principles underlying the interpretation of PRO, or in which they are unable to apply structural analyses relevant to control (namely that of complement subordination). Instead, developmental effects are due to lexical acquisition, i.e., the need to map UG syntactic principles onto language-specific principles encoded in the lexicon.

On the other hand, Sherman’s (1983) results indicate that it is not until the age of 8 that children consistently evidence subject control with the verb *promise*. Hence, Sherman & Lust (1993) claim that children’s continuous knowledge of the syntactic principles of control is independent from their lexical development. Children do, however, show evidence that they distinguish between *tell/remind* and *promise* from an early age, as they give more subject control responses with *promise* than with *tell/remind*.

Sherman & Lust (1987, 1993) also claim that children show a strong syntactic principle of minimality, which guides their choice of antecedent in infinitival object complements. This principle of minimality is structural in nature: “children differentiated coordinate and subordinated structures, and differentiated infinitival from finite complements in applying this principle” (Sherman & Lust 1993: 34).

These facts, they argue, “suggest that the child must learn to override a very strong structure-dependent principle of UG, that is, syntactic minimality, in certain cases. He or she must learn that the lexicon can override this principle, but also maintain this principle in his or her grammar” (Sherman & Lust 1993: 40).

In summary, Sherman & Lust (1986, 1993) propose that “(...) the child may need to integrate already existing syntactic principles with gradually developing knowledge related to the lexicon” (Sherman & Lust 1993: 39-40). Children’s

interpretation of PRO is grammatically guided: children have a developing theory of control and a general theory of anaphora and apply grammatical principles in the interpretation of PRO and other anaphoric elements. Essentially, children must learn to integrate general syntactic principles of control with idiosyncratic control properties of verbs (namely subject control with *promise*).

In contrast, Wexler (1992) and Broihier & Wexler (1995) (both cited in Guasti 2002) assume a maturation hypothesis of language acquisition. This hypothesis holds that some aspects of Universal Grammar (in this case, PRO) are unavailable at early stages. Their availability is subject to a biological program. Accordingly, these authors reject proposals such as those made by McDaniel, Cairns & Hsu (1990/1991) and Cairns et al. (1994), and claim that the development of control has only two stages:

(14) a. *Stage 1*

Children do not have access to PRO and thus allow free interpretation of PRO in nonfinite complement and adjunct clauses.

b. *Stage 2*

Children have access to PRO. They interpret PRO as adults do when it occurs in nonfinite complement clauses. However, they still allow free interpretation of PRO in nonfinite adjunct clauses.

Guasti (2002: 356), based on Wexler (1992) and Broihier & Wexler (1995)

PRO is not available to children at early stages: it is scheduled to mature at around 3-4 years of age (Wexler 1992 *apud* Guasti 2002). However, children know how to project embedded clauses, and they know that every clause must have a subject. Consequently, children must represent sentences such as (15) in a way that avoids the need for a null element:

(15) a. Ariel wants PRO to drink.

b. Ariel left before PRO finishing the homework.

Guasti (2002: 357)

According to this account, children analyze these embedded clauses as NPs, in which *to* is interpreted as a nominalizing morpheme, as DPs do not require subjects. The understood subjects of these NPs are taken to be anyone relevant in the context (Wexler 1992 *apud* Guasti 2002). Once PRO becomes available, children are able to interpret control complement clauses (15a) in an adult manner, but not control adverbial clauses (15b). According to Wexler (1992) and Broihier & Wexler (1995), cited in Guasti (2002), this is because they cannot represent

temporal adjuncts accordingly to target, as children lack null (temporal) operators in their grammars until the age 6, due to maturation. Consequently, children must continue to represent adjuncts as NPs until empty operators are made available by maturation. Therefore, children retain their free interpretation of the understood subject in adjunct clauses.

3.2 – Studies in the acquisition of the control/raising distinction and clausal complementation

As shown in chapter 2, strings with sentential complements may map onto several structures, namely control and raising structures. Conversely, the same verb can take multiple types of complements: the verb *conseguir* “manage to” may take a subjunctive or an uninflected infinitive complement, whereas the verb *ver* “see” may take a RtO complement, a PIC or an indicative complement. These two issues may give rise to learnability problems. When confronted with strings such as (16), the child must search for evidence in the input in order to determine whether the infinitival complement is a control or raising complement, and which class the matrix verb belongs to: control verbs, raising verbs, or ambiguous verbs, which may take both control and raising complements (Becker 2005, 2006, 2014).

- (16) a. O João parece gostar das aulas todas. *Raising-to-subject*
 the João seems like.INF of+the classes all
 João seems to like all the classes.
- b. O João conseguiu ir às aulas todas. *Subject control*
 the João managed go.INF to+the classes all
 João managed to go to all the classes.

The child may come into the acquisition process with biases and unmarked assumptions that guide the acquisition of control/raising verbs and infinitival complements (Becker 2005, 2006; Kirby 2011; Santos, Gonçalves & Hyams 2014, in prep.). For instance, Becker (2005) claims that the Subset Principle leads to an early bias towards a control analysis: the learner poses the most restrictive hypothesis to account for a new structure in the input, so that there will be positive evidence available in the input to force a change of grammar if this initial hypothesis is incorrect. In the case of the control/raising distinction, such evidence may come in the form of expletive subjects, which are compatible only with raising verbs (see chapter 2). The child could thus adopt an *expletive-driven* learning strategy (Becker 2005, 2006). However, Becker (2005, 2006), argues that the *expletive-driven* learning strategy is insufficient on both logical and empirical grounds. Verbs such as *begin*, *continue*, *start* and *fail* appear in both control and raising structures, and Becker

(2005, 2006) claims that empirical evidence from children’s comprehension of these structures suggests that they initially pose a raising analysis of control structures (see below, this section). Similarly, Kirby (2010) argues in favor of a default raising analysis in the case of Raising-to-Object (RtO)/ object control strings.

Children may also have an early preference for non-defective complements (Landau & Thornton 2011) or complete functional complements (Santos Gonçalves & Hyams 2014, in prep.), which would lead to a bias towards control. Constraints on A-movement may as well hinder the acquisition of raising complements (Hirsch & Wexler 2007), or at least some raising complements (Orfitelli 2012a, b).

Becker (2005, 2006) approaches the problem of how children learn the distinction between subject control strings and RtS strings (17):

- (17) a. Janine_i tends [_i to eat sushi]. *Raising-to-subject*
 b. Janine_i likes [PRO_i to eat sushi]. *Subject control*

Becker (2006: 441)

Based on the results of a modified Grammaticality Judgment task (McDaniel & Cairns 1990a), Becker (2005, 2006) maintains that children aged 3 and 4 years-old do not have an innate bias towards control and do not acquire the control/raising distinction by being exposed to evidence such as the occurrence of expletives (see above). How do children, then, achieve the correct analysis for control verbs? Becker (2005, 2006) proposes that children rely on a set of cues to structure and to verbs (see table 1), animacy being a central cue (Becker, 2014). None of these cues constitutes an absolute trigger to change of analysis. Rather, they are cumulative and probabilistic cues.

Table 1: *Summary of Probabilistic Cues*

Structure Cues		Verb Cues	
Cue	Implication	Cue	Implication
Animate subject	control	Monoclausal frame	Control verb
Eventive predicate	control		
Inanimate subject	raising	Expletive subject	Raising verb
Stative predicate	raising		

Becker (2005: 59)

Similarly, Kirby (2011) argues that experimental data shows that children first take verbs in object control/RtO strings to be raising verbs. She maintains that,

because they assign fewer θ -roles, raising structures carry a lower cognitive load than control structures, and are therefore acquired earlier.

Experimental results (Kirby 2009, reported in Kirby 2011), lead Kirby (2011) to claim that children aged 4 to 5 perform better on RtO than on object control and appear to be more willing, if not biased, to analyze object control verbs as RtO verbs. This would be due to the lower cognitive load that RtO verbs carry, as they θ -mark only one internal argument, whereas object control verbs θ -mark two internal arguments.

Contra this line of research, Hirsch, Orfitelli & Wexler (2007, 2008) claim that fundamental methodological flaws in Becker's studies may compromise her results and conclusions. First of all, her results do not comport with Hirsch & Wexler's (2007) results, who found that younger children, namely most 3 year-olds, do not comprehend the unraised counterparts of raising structures. Becker (2006), however, does not test these structures, making it impossible to know how many children did not have knowledge of the raising verbs she tested.

In addition, Becker's (2006) claims that children interpret control verbs as raising verbs do not comport with the large acquisition literature showing that young children are able to establish the control relation in contexts of obligatory subject control into a complement clause without an intervening object (see Hirsch, Orfitelli & Wexler 2008 and references therein).

In order to revise Becker's findings, Hirsch, Orfitelli & Wexler (2008), tested 50 children aged 3 to 7 using a Truth-Value Judgment task (TVJ: Crain & Fodor: 1993), with scenarios similar or identical to those used by Becker (2006). This test introduces some adjustments to Becker's (2006) methodology.

In the unraised condition younger children's performance was poor: 40% of the 4 year-olds performed at or below chance. These results undermine Becker's (2006) findings, given that many of the children she tested may not know the meaning of raised verbs in unraised structures (Hirsch, Orfitelli & Wexler 2008).

On the other hand, in the raised condition the majority of children younger than 6 (86.7%) did not achieve above chance comprehension. According to Hirsch, Orfitelli & Wexler (2008), children's responses to RtS items indicate that they are using a copula analysis, as substitution of the copula for the main verb results in opposite truth-value judgments. This may have misled Becker (2006) to claim that children have early comprehension of raised sentences. These findings lead Hirsch, Orfitelli & Wexler (2008) to maintain that, once methodological errors are

corrected, children evidence non-adult analyses of raising sentences, such as the copula analysis with RtS sentences.

Building on claims by Hirsch & Wexler (2007) and Hirsch, Orfitelli & Wexler (2007), who hold that children do not acquire raising up to the age of 6-7, Orfitelli (2012a) compared children's comprehension of RtS with *seem* and *(be) about*, using two within-subject experiments (part of a larger study on the acquisition of A-movement). Her results show that children aged 4-6, who had difficulties with *seem*, were also able to understand RtS with *(be) about*. Given these results, the acquisition of raising cannot be treated in a uniform way across predicates. Orfitelli (2012a, b) poses the hypothesis that this difference in acquisition rates may be due to the presence of an experiencer-phrase in RtS with *seem*-type verbs (18):

(18) Rene seemed/ appeared (to Alexander) to be wearing a hat.

Orfitelli (2012a: 46)

Raising over full DP experiencer arguments is disallowed in many languages, namely Romance. In fact, English is typologically rare in this respect. Furthermore, the experiencer-phrase leads to an apparent violation of locality conditions on movement, given that it intervenes between the base and surface positions of the moved element (Collins 2005a). Until the syntactic operation that allows raising over a DP experiencer is acquired, English-speaking children's grammar may be similar to that of adult Romance, causing difficulties in their comprehension of raising with *seem* and *appear* (Orfitelli 2012a). Under these assumptions, raising with predicates that disallow experiencer-phrases, such as *(be) about*, are not expected to be delayed.

Orfitelli (2012a) notes that the experiencer-phrase is interpreted even if it is unpronounced, implying that it is represented in the syntactic structure, as θ -roles are assigned in the syntax. This leads to delay in the acquisition of RtS with *seem* and *appear* whether or not the experiencer-phrase is pronounced. This prediction is captured by the Argument Intervention Hypothesis (AIH: Orfitelli 2012a, b):

(19) Children are delayed in acquiring structures which require A-movement across an intervening argument (whether this argument is overt or covert).

Orfitelli (2012b: 4)

In summary, Orfitelli (2012a, b) proposes that children do not have a problem with raising in itself. Rather, children's delay in acquiring RtS with *seem*-type verbs is explained by the AIH: children are unable to raise over an intervening experiencer-phrase. Raising with other predicates, such as *(be) about*, may be acquired earlier.

Similarly, Friedmann, Belletti & Rizzi's (2009) account for asymmetries in the acquisition of subject/object relatives in terms of intervention. It is widely known that object relatives are acquired later than subject relatives, an observation that has been made for several languages (see Friedmann, Belletti & Rizzi 2009 and references therein). Friedmann, Belletti & Rizzi (2009) propose that this is due to intervention: while both subject and object relatives involve A'-movement, only the latter involve movement across an intervener (the subject position of the relative clause), that is, a position that could also be involved in the A'-chain.

Following a distinct line of inquiry, Landau & Thornton (2011) studied the complementation of the verb *want*, using diary data from one English-speaking child – Laura – aged 1;6 at the beginning of the study and 2;6 at the end. The verb *want* is one of the first control/raising verbs to appear in child speech and shows high rates of production at early stages. Besides control and RtO complements, it may also take DP complements and small clause complements (20):

- (20) a. I want to push the truck. *Control*
- b. I want daddy/ him to push the truck. *RtO*
- c. I want the truck. *DP complement*
- d. I want the truck clean. *Small clause*

Landau & Thornton (2011: 920)

As reported for other children in previous studies (see Landau & Thornton 2011 and references therein), the data from Laura shows that once children enter the multiword stage, they start producing the verb *want* with control complements, both with and without the infinitival marker *to*. When she wants to do something herself, Laura produces control complements with the infinitival marker *to* (21a) and utterances with *wanna* (21b), alongside ungrammatical complements missing *to* (21c). These subject control complements without *to* were gone by age 2.

- (21) a. Context: Father is reading morning paper.
 Laura: I want to see paper. (1;8.10)
- b. Context: Mother offers to get Laura's umbrella.
 Laura: I wanna get it. (1;9.23)
- c. Context: Mother started to zip up Laura's jacket.
 Laura: I want do that. (1;10.11)

Landau & Thornton (2011: 926)

On the other hand, Laura took quite some time to produce the RtO structure. In situations in which Laura wanted something to happen or someone to do something (typically denoted by RtO structures), the earliest diary recordings

show the production of utterances without the infinitival marker *to* and without an embedded subject (22). Landau & Thornton (2011) claim that these utterances, superficially similar to control structures, represent a stage in development previously unaccounted for.

(22) a. Context: Laura wanted mother to push her in the stroller.

Laura: I want _ push Laura. (1;7.19)

Landau & Thornton (2011: 927)

Drawing on Landau's (2000, 2004, 2006) theory of control as Agree (see Chapter 2), Landau & Thornton (2011) analyze these utterances as NOC structures: control infinitives and subjunctive clauses differ minimally in the features for tense and agreement specified on their I and C heads. The tense values that a particular verb assigns to the embedded I and C heads are provided by UG – the lexical semantics of the matrix predicate provide this information. Knowing the meaning of each matrix predicate entails knowing whether it takes a complement clause with dependent, anaphoric or independent tense. Hence, knowing the meaning of the verb *want*, children should assign dependent tense to its complement. The agreement values of a complement, however, are open to variation across languages. The acquisition device must ascertain, on the basis of positive experience, which [Agr] features to assign to the embedded I head. If children initially assign the incorrect features, they may produce a subjunctive clause in place of an infinitival clause. Landau & Thornton (2011) propose that at early stages English-speaking children hypothesize that *want* may take a subjunctive complement (which has dependent tense), similarly to languages such as Romance, as well as an infinitival complement. They also propose that at early stages they may generate subjunctive complements with either an overt DP subject or a *pro* subject. This results in non-obligatory control.

Laura started to produce adult RtO structures only at age 2;4. Landau & Thornton (2011) assume that at this point Laura started to truncate the embedded CP to TP. Children, then, show an early preference for full CPs over truncated embedded complements.

Santos, Gonçalves & Hyams (2014, in prep.) directly evaluate children's biases in the acquisition of clausal complements. They tested 58 Portuguese-speaking children aged 3 to 5 on a sentence completion task with perception, causative and object control verbs, in order to assess children's preferential analyses. Table 2 shows the verbs used in this task, the class they belong to and the types of complements they can take:

Table 2: *Verbs used in the sentence completion task*

Verbs	Class	Complement types
<i>ver</i> “see”	Perception verbs	RtO, PIC, Inflected infinitive, Finite (Indicative), complex predicate (only with embedded intransitive or unaccusative verbs)
<i>mandar</i> “order”; <i>deixar</i> “let”	Causative verbs	RtO, Finite (Subjunctive), Inflected infinitive, complex predicate
<i>ensinar</i> “teach”; <i>proibir</i> “forbid”	Object control verbs	Object control (with the inflected or uninflected infinitive) ²¹
<i>querer</i> “want”; <i>conseguir</i> “manage to”	Subject control verbs	Subject control (uninflected infinitive), Finite (Subjunctive)

Santos, Gonçalves & Hyams (in prep.: 32-33)

This evidences the *multiple frames problem* (Santos, Gonçalves & Hyams 2014, in prep.): the absence of a one-to-one correspondence between the meaning of a verb and the complement types it selects. In addition, some of these complement types also pose the *string identity problem* (Santos, Gonçalves & Hyams 2014, in prep.) in EP. The PIC and some object control strings are superficially undistinguishable; on the other hand, causative and perception verbs may take both RtO complements and full CP inflected infinitive complements, which may be superficially similar in the case of the 3rd person singular with a non-pronominal subject, since it lacks overt morphology in the inflected infinitive.

Basically, the authors stress the fact that, when faced with a novel verb in a string with the form represented in (23), children must map it into one of two argument structures (29a, b).

(23) V DP VP

- a. V [DP] [VP] *Object control, with an inflected or uninflected infinitive*
- b. V [DP VP] *RtO, PIC, CP Inflected infinitive*

Santos, Gonçalves & Hyams (in prep.: 23)

As we have seen, children may approach these structures with biases or unmarked assumptions. Regarding syntactic structure, they may have a preference

²¹ The verb *proibir de* “forbid” may additionally take a subjunctive complement.

for full CP complements over defective complements (Landau & Thornton 2011), which results in delayed acquisition of raising. Santos, Gonçalves & Hyams (2014, in prep.) reformulate this hypothesis as in (24):

- (24) *Complete Functional Complement Hypothesis (CFC)*: Children initially analyze a propositional argument to a verb as a complete functional complement.

Santos, Gonçalves & Hyams (in prep.: 26)

The authors define a ‘complete functional complement’ as “a complement in which all features, including the features (Case, phi-features) of the external argument, can be internally checked” (Santos, Gonçalves & Hyams in prep: 26).

In what concerns the argument structure of verbs, children may prefer structures with only one internal argument, as they carry fewer θ -roles and may thus be less cognitively demanding (Kirby 2011, see above). This implies that children may project the complement clause as one single internal argument, and may have a default raising analysis of control/raising strings. The *Single Argument Selection Hypothesis* (SASH: Santos, Gonçalves & Hyams 2014, in prep.) captures this prediction:

- (25) *Single Argument Selection Hypothesis (SASH)*: Children initially assume a verb selects only a single (propositional) argument.

Santos, Gonçalves & Hyams (in prep.: 27)

The inflected infinitive clause is a non-defective complement and consequently does not challenge the SASH. For this reason, it is predicted to be unproblematic for children (Santos, Gonçalves & Hyams 2014, in prep.).

The experimental results show that with causative verbs, the most frequent answer for all groups except the 3 year-olds was the inflected infinitive. Among the 3 year-olds, the most frequent answer was the infinitive with no causee, which is not entirely felicitous in the contexts used in the task. Children displayed low production of object control and RtO structures. Although the authors argue that children do not have a problem with control *per se* (all age groups also produced high rates of target sentences in the subject control condition), they seem to have difficulties with object control structures. In fact, children differed greatly from adults in this condition: they displayed far lower rates of object control production, they produced object control structures with an omitted (propositional or DP) argument (26), and they produced ungrammatical inflected infinitive clauses with overt subjects (27), in which case the DP is legitimized as the subject of the infinitive, similarly to grammatical inflected infinitives (Santos, Gonçalves & Hyams 2014, in prep.):

- (26) ... ensinou a balançar. (3;08.23)
 taught to swing

Santos, Gonçalves & Hyams (in prep.: 47)

- (27) *(A mãe pata) proibiu **de** os patinhos irem ao pé
 the mother duck forbade PREP the little ducks go.INF.3P PREP close
 do crocodilo. (5;01.00)
 of+the crocodile
 (vs. ... proibiu os patinhos **de** irem ao pé do crocodilo.)

Santos, Gonçalves & Hyams (in prep.: 48)

The authors point out that these non-target responses such as (33) are considerably more frequent with *proibir de* “forbid” than with *ensinar a* “teach”. These responses are also more frequent among older children (4 and 5 year-olds), since younger children (3 year-olds) tended to avoid the verb *proibir de* “forbid”.

Santos, Gonçalves & Hyams (2014, in prep.) argue that this set of facts supports both the CFC and the SASH: children are analyzing object control verbs as taking a single internal argument, which may be a complete functional complement with a subject DP internally licensed by an inflected infinitive. They are also avoiding RtO complements in favor of the inflected infinitive with causative verbs. The authors also point out that the SASH predicts better comprehension results with object control verbs, that is, adult-like object control readings under a non-adult analysis of object control complements, given that object control comes for free. Conversely, the SASH predicts poor comprehension results with *promise*-type verbs.

Finally, Santos, Gonçalves & Hyams (in prep.) found no evidence that young children produce non-finite complements of *querer* “want” with a non-obligatorily controlled null subject, of the type described by Landau & Thornton (2011). They also point out that subjunctives are crosslinguistically difficult to acquire (see Santos, Gonçalves & Hyams in prep. and references therein), and that the production of subjunctives in adult English is low, making them unlikely to appear in the child’s linguistic input. As an alternative analysis, they propose that in the structures detected by Landau & Thornton (2011) children are attempting to license the subject within the infinitive clause, similarly to subjects in inflected infinitive clauses in EP. English-speaking children would be thus applying an UG option that is absent from the input.

3.3- Working hypothesis

Previous findings on the acquisition of control (Sherman 1983 *apud* Sherman & Lust 1993) lead us to hypothesize that young children acquiring European Portuguese will demonstrate: 1) grammatically based interpretations of PRO at early stages, and 2) the ability to distinguish between control in OC contexts (e.g. object complement clauses) and control in NOC contexts (e.g. sentential subjects). This hypothesis predicts that children will show unrestricted interpretation of PRO only in NOC contexts. Third character responses will thus occur only in NOC contexts, such as sentential subjects.

Regarding the choice of controller, and assuming that Portuguese-speaking children do display grammatically determined interpretations of PRO, we expect to find a preponderance of object control responses in accordance with the literature for the acquisition of English. This performance may be accounted for by (at least) two different hypotheses: Single Argument Structure Hypothesis (SASH: Santos, Gonçalves & Hyams 2014, in prep.) and the Argument Intervention Hypothesis (AIH: Orfitelli 2012a, b).

Not needing to assume that control is movement, the Single Argument Structure Hypothesis (SASH: Santos, Gonçalves & Hyams 2014, in prep.) predicts that children will show a strong preference for object control in structures with two internal arguments (*promise*-type verbs and object control verbs). This hypothesis also predicts different rates of acquisition of adult control with different verbs, since the acquisition of control is contingent on the acquisition of each verb's argument structure and the types of complement it can take. It is upon reanalysis of the verb's argument structure that children acquire adult grammar of control. In fact, Santos, Gonçalves & Hyams (2014, in prep.) have found asymmetries in rates of non-adult responses between *ensinar a* “teach” and *proibir de* “forbid” (see above). Similarly, we should find different rates of target (object control) and non-target (subject control, third character) responses between different object control verbs in our comprehension task, as well as high rates of object control with *prometer* “promise”.

A different explanation for target object control with object control verbs and non-target object control with *promise*-type verbs may be developed if we assume that control is movement (Hornstein 1999). Orfitelli's (2012a) Argument Intervention Hypothesis (AIH) may account for non-target object control readings with *prometer* “promise” (which we expect to find). Similarly to experiencer-phrases in RtS with verbs such as *seem*, which Orfitelli (2012a) claims to be the source of children's difficulties with RtS contra claims by Hirsch & Wexler (2007), the *goal*

argument selected by *prometer* “promise” may lead to a violation of locality conditions and act as an intervener. This type of explanation, based on argument intervention, would predict similar rates of object control with different verbs, given that under this view the acquisition of control relies on the acquisition of an underlying syntactic operation rather than on the acquisition of the control verb’s argument structure.

However, children’s interpretation of control structures may also be affected by other factors. In null subject languages such as Portuguese and Italian, null (*pro*) subjects and overt pronominal subjects in embedded clauses have different interpretations: null subjects are, in the preferred interpretation, co-referential with the matrix subject, while overt pronominal embedded subjects are either co-referential with the matrix object or deictic (Montalbetti 1984). This pattern may also be reflected on children’s interpretation of PRO. Given that they are acquiring a pro-drop language, European Portuguese-speaking children may show subject control interpretations of PRO in object control complements, if they extend this interpretation to PRO.

The explanatory hypotheses and their respective predictions are summarized below:

(28) Do Portuguese-speaking children show evidence of grammatically based interpretations of PRO at early stages?

- a. If there is an early stage of free interpretation of PRO, the subsequent prediction is that children will accept a subject DP, an object DP or a third character as the controller of PRO, regardless of the structure it occurs in. Conversely, if children do have grammatically based interpretations of PRO at early stages, they will be able to distinguish between different PRO-contexts and the subsequent varying referential properties of this null element – in this case, third character responses will be restricted to NOC contexts (namely sentential subjects).
- b. If the interpretation of PRO is grammatically constrained, and concerning the choice of controller in OC contexts, then:
 - I. According to the Single Argument Structure Hypothesis (SASH: Santos, Gonçalves & Hyams 2014, in prep.), children should 1) show a strong preference for object control in structures with two internal arguments, 2) evidence different rates of object control responses with different matrix verbs, contingent on the rhythm of the acquisition of argument

structure, and 3) reanalyze their interpretation of PRO, accordingly to their reanalysis of argument structure.

- II. If we assume that control is movement and extend Orfitelli's (2012a, b) Argument Intervention Hypothesis (AIH) to subject/object control, 1) the matrix object will be the preferred controller in structures with two internal arguments (one internal argument acts as an intervener for subject control), and 2) object control will be equally preferred with all verbs at the same stage (particularly in the case of younger children).
- III. If the saliency of the higher subject in EP also affects the choice of antecedent in control contexts (Montalbetti 1984), children will show subject control interpretations in object control contexts.

4. Methodology

In order to assess children's interpretation of PRO in complement clauses and to test the hypotheses and predictions developed in chapter 3, a reference judgment task was designed, largely based on McDaniel & Cairns (1990a, b). Hence, this task evaluates children's interpretation of OC PRO in complement clauses, and NOC PRO in sentential subjects.²² In this reference judgment task, the child first hears a story, which provides a discourse context for each test sentence (Crain & Thornton 1998). The child is then asked to help a silly puppet (Benny) understand the events in the story, in particular an utterance in its conclusion (the test sentence), by answering the puppet's questions. While telling the story, experimenter 1 also acts it out using a set of dolls, with the exception of the test sentence at the end. The silly puppet is introduced to the child before testing.

An alternative to the present methodology would be a truth-value judgment task. A truth-value judgment task (Crain & Thornton 1998), which is typically used in investigations on children's interpretation of syntactic structures, would have the advantage of being cognitively less demanding on the child, and thus more enjoyable to child subjects. However, it would also become too long, since each possible reading of PRO, in each condition, would have to be tested separately. A verb such as *querer* "want" would also be very difficult to include in this task: in the truth-value task it is very difficult to represent events that have not yet happened.

Another alternative to the present methodology would be using pictures to create the relevant contexts for sentences. However, according to Crain & Thornton (1998), children may not interpret images the way adults do, which may lead to errors that do not actually reflect linguistic knowledge: "In several instances, we have given alternative tasks to children with the same linguistic materials (e.g. Crain, Thornton and Murasugi 1987; Miyamoto and Crain 1991). The results from the picture versions of the experiments are consistently poorer than the results from the versions that involve vignettes acted out by the experimenter using toys and other props. We have the subjective impression that children are less proficient than adults at 'parsing' the contents of pictures" (Crain & Thornton 1998: 122). In a task in which stories are acted out using toys, the child is presented with a visual representation of the entire sequence of events. In a picture based task, only

²² Adverbial clauses, which are the focus of much of the research on control for English (e.g. Hsu et al. 1989; McDaniel & Cairns 1990a, b; McDaniel et al. 1990/1991; Eisenberg & Cairns 1994), were not included in this study because it is unclear that the same principles are operative in control complements and control adverbials, and consequently the conclusions we derive for control adverbials may not generalize to complement clauses (see Sherman & Lust 1993).

‘snapshots’ of events, in Crain & Thornton’s (1998: 122) terms, are presented to the child, who must then reconstruct the sequence of events.

Conversely, the reference judgment task itself places other significant cognitive demands on the child, as it presupposes greater linguistic conscience, and it may consequently be more difficult to apply to younger children, namely the 3-year-olds. The truth-value judgment task may therefore be less demanding and more enjoyable to young children. However, the choice of the reference judgment task was justified by its potential to allow testing for several interpretations of PRO with fewer items than the truth-value judgment task.

The experimental task and its application are described in section 4.1. The treatment and statistical analysis of the experimental data is presented in section 4.2.

4.1- The experimental task

Subjects

The test subjects were 64 children aged 3 to 5 years-old (35 girls and 29 boys) and 20 adults (more details on the child subjects is provided in table 1).²³ All child and adult subjects were monolingual European-Portuguese speakers. None of the child subjects included in the data analysis had previous reports of language impairment or cognitive deficits. All the adults in the control group were enrolled in undergraduate and graduate courses at the time of testing. None of them had a significant background in linguistics.²⁴

²³ A total of 75 children were tested, but 11 were excluded, for the reasons stated in (i)-(vi):

- (i) 1 subject had been designated for speech therapy;
- (ii) 2 subjects were excluded due to apparent cognitive deficits;
- (iii) 2 subjects were excluded due to unmanageable distraction and agitation (the second session of the task was applied to only one of them);
- (iv) 1 subject was excluded due to a recording error;
- (v) 1 subject was excluded because it was not possible to apply the second session, as she was no longer going to kindergarten;
- (vi) 4 subjects were already 6 years old, and thus outside the target age range. In 2 of these cases, only the first session was applied.

In addition, 22 adults were tested, but 2 were excluded from the data analysis due to recording errors.

²⁴ Some of the adult participants were enrolled in introductory courses in linguistics. Their response patterns and overall impression of the task did not differ from those who were not.

Table 1: *Child subjects*

Age group	Number	Range (mean)
3 year-olds	20 (11 girls/ 9 boys)	3;0.12 – 3;11.27 (3;6)
4 year-olds	21 (13 girls/ 8 boys)	4;1.01 – 4;11.27 (4;5)
5 year-olds	23 (11 girls/ 12 boys)	5;0.08 – 5;11.27 (5;4)

Test items and data collection

The child data was collected at Jardim de Infância SASUL – Serviços de Ação Social da Universidade de Lisboa (March 1st 2013 - February 27th 2014), Jardim de Infância *Os Letrinhas* (September 9th 2013 - January 28th 2014), Externato da Luz (June 5th 2013 - July 24th 2013), Jardim de Infância APIST – Associação de Pais do Instituto Superior Técnico (May 6th 2014 - May 13th 2014), and Centro Social da Paróquia de S. Sebastião da Pedreira (June 11th 2014 - July 4th 2014), with written and informed consent from the school's director and the parents of the individual children. Collection of child data took place in a separate room in the various kindergartens attended by the children. The control group data was collected at Faculdade de Letras da Universidade de Lisboa (September 27th 2013 - December 12th 2013). All interviews with child and adult subjects were recorded using a Tascam linear PCM recorder (model DR-07 MKII). The answers of both the child and the adult participants were also annotated during testing, with some exceptions in the control group, in which case the answers were only recorded.

Each story was simultaneously told and acted out by experimenter 1 using a set of toys, with the exception of the test sentence at the end, which was not acted out, only told. The stories present several different situations, and each story contextualizes a single test item. Experimenter 2 manipulates the puppet and provides the stimulus to elicit children's reference judgments (every child was introduced to the puppet before starting the task). Every test sentence was told twice at the puppet's request, under the pretext that he cannot hear well, so as to ensure that the child has perceived it clearly. After answering the puppet's question (and this was the relevant answer for this study), the child is asked to act out the action denoted by the embedded predicate, if he is willing to do it. This makes the task more engaging to the child, which is all the more important in a rather lengthy and repetitive task. In (1) and (2) we provide examples of items from this experimental task.

(1) *Test item 4, Condition 1.a (subject control with transitive verbs)*

Exp. 1: The kitten, the piglet and the lamb live in the farm too. One day, the piglet says: "Did you know that there are strawberries in the woods? The wild ones – they say they're much better than the others!" Then, they go look for strawberries in the woods. They split, and in the end...

Test item: **O cordeirinho consegue encontrar os morangos.**

The lamb manages to find the strawberries.

Exp. 2 (using the puppet): Who is going to find the strawberries?²⁵

(2) *Test item 5, Condition 1.b (subject control with ditransitive verbs).*

Exp. 1: Three animals live in a house in the woods: the duck, the rooster and the rabbit. They are neighbors of the farm animals. One day, the duck says: "How about we invite some friends over for dinner?" The others say: "Yes, that's a great idea!" Then they divide tasks, and...

Test item: **O galo promete ao coelho cozinhar o jantar.**

The rooster promises the rabbit to cook dinner.

Exp. 2 (using the puppet): Who is going to cook dinner?²⁶



Fig. 1- Scenario for item 5, Condition 1.b

²⁵ In the original Portuguese:

Exp. 1: O gatinho, o porquinho e o cordeirinho também vivem aqui na quinta. Um dia, diz o porquinho: "Sabem que há morangos no bosque? Dos selvagens - dizem que são bem melhores que os outros!" Então, vão à procura de morangos no bosque. Separam-se, e no fim...

Item de teste: **O cordeirinho consegue encontrar os morangos.**

Exp.2 (usando o fantoche): Quem é que vai encontrar os morangos?

²⁶ In the original Portuguese:

Exp. 1: Numa casa vivem três animais: o pato, o galo e o coelho. São vizinhos dos animais da quinta. O pato diz um dia: "E se convidássemos alguns amigos para virem cá jantar?" Os outros dizem: "Sim! Sim! É uma ótima ideia!" Então, dividem as tarefas, e...

Item de teste: **O galo promete ao coelho cozinhar o jantar.**

Exp. 2 (usando o fantoche): Quem é que vai cozinhar o jantar?

Each story has three characters, which allows testing for three possible readings: subject control, object control (with ditransitive verbs), and third character interpretations (choice of a character unmentioned in the test item as the antecedent of PRO). The contexts were designed to be neutral, with no leads as to which character will perform the action denoted by the embedded predicate. All the characters in the stories are animals, in order to avoid readings based on world knowledge, namely knowledge of hierarchical relations (especially on items with *pedir para* “ask” and *dizer para* “tell”, which may have a deontic interpretation). The characters were highly diversified, in order to maintain interest. The names of the characters were highlighted in the beginning of each story, and the toys in each story also had similar relative sizes. Each test sentence was introduced by an expression such as *então* “then”, in order to emphasize the test sentence, as well as to maintain the temporal sequence and to indicate that the event denoted by the test sentence did happen in the story, given that it is not acted out.²⁷

The tense of the story and the test sentence is always the present. This is because experimenter 1 does not act out the final part of the story, and the past tense would therefore be inconsistent. It is also a neutral time of narrative, alike the past perfect. The use of the present also avoids the use of the past imperfect in some of the stories, as this tense is more difficult to interpret (in many of the stories, the past imperfect would have been inescapable when introducing the characters and the environment they are in, if the stories were in the past tense). The question asked is in the future tense, given that it would be infelicitous to use the past perfect in these contexts.²⁸

²⁷ All test sentences were introduced by the adverb *então* “then”, with the exception of:

- (i) test item 4, in (1), in which the test sentence is introduced by *e no fim* “and in the end”;
- (ii) test item 5, in which the test sentence is introduced by *Então dividem as tarefas, e...* “Then they divide tasks, and...”;
- (iii) test item 21, in which the test sentence is introduced by *Então ao chegar a casa...* “Then once they arrive home...”

²⁸ Initially, the task included three follow up questions in order to elicit other readings that the child might allow, besides the preferential reading (the child’s first answer). Namely, these follow up questions tested the possibility that children may allow arbitrary control in OC contexts. For instance, after answering the first question to the story in (1), experimenter 2 would also ask (if the child had answered “the lamb”) “could it be the kitten?”, followed by “and could it be the piglet?” and “and all of them, could that be?” However, after testing 18 children it became clear that this part of the test did not work as intended. Children became uninterested in this part of the task due to the repetitiveness of the follow up questions, and they did not seem to understand what was being asked. Many children assumed that the question was about the other character’s capacity to perform the action denoted by the embedded predicate, rather than if, according to the story they had just heard, another character could also have performed this action. Children’s answers were also clearly biased. Some children answered invariably “no” while others answered

Test conditions, number of items and choice of verbs

The task comprises four test conditions, two of which are divided into two subconditions. These test conditions are presented in Table 2, together with the verbs used in the task and the number of items in each condition. Whenever allowed by the methodology, the verbs used in the task were selected from the SANTOS *corpus* of spontaneous child production and child-directed speech (Santos 2006/2009; Santos et al. 2014).

Table 2: *Test conditions and verbs*

	Condition	Verbs	Number of items
1.a	Subject control (transitive verbs)	<i>querer</i> “want” <i>conseguir</i> “manage to”	4
1.b	Subject control (ditransitive verbs)	<i>prometer</i> “promise”	4
2.a	Object control (with direct objects)	<i>ensinar a</i> “teach” <i>pôr a</i> “put to” <i>proibir de</i> “forbid”	6
2.b	Object control (with indirect objects)	<i>dizer para</i> “tell”	2
3.	Sentential subjects (pre-posed/ post-posed)	<i>chatear</i> “bother” <i>assustar</i> “scare”	4
4.	Pragmatically determined interpretation	<i>pedir para</i> “ask”	4

Each verb has two items, with the exception of *prometer* “promise” and *pedir para* “ask”, which have four items each, as these are the only verbs in their respective conditions. The verb *proibir de* “forbid” was added to Condition 2.a after applying the first session to the first subject, due to concerns that *ensinar a* “teach” may elicit more errors: children may show higher rates of subject control responses with this verb on account of pragmatic factors, given that in order to teach how to do something, the matrix subject may have to perform the action denoted by the

invariably “yes”. The subsequent subjects were not asked these follow up questions. Notably, Martins (in prep.) successfully elicited other readings with the follow up question “and could it be someone else?” Her reference judgment task included a greater variety of structures and she generally tested older children, which may help explain this disparity.

embedded verb as well. The only alternative (direct) object control verb found in the SANTOS *corpus*, however, would have been worse: the verb *ajudar a* “help” would most likely elicit more pragmatic interpretations than *ensinar a* “teach”.

The task totals 24 test items, as well as 7 fillers and 4 training items. Since the test was too long to be applied in one sitting, it was divided into two sessions, with 11 test items in the first session and 13 test items in the second session, as well as 2 training items at the beginning of each session, 4 fillers in the first session and 3 fillers in the second session (one SVO attentional control filler was added to the beginning of the first session, after the two training items and the first test item, in order to ensure that the child was paying attention to the stories and answering in a consequential manner). The fillers are three SVO monoclausal structures, two coordinate structures, one adverbial structure and one passive structure. The training items are two adverbial structures with overt DP subjects in the first session and two coordinate structures (one with a null subject and one with an overt DP subject) in the second session. The order of presentation of the test items and the fillers was first randomized using Excel, and then corrected so as to yield a balanced distribution of test items and fillers. In this semi-randomized order of presentation, two test items from the same condition were never in succession, and fillers were more evenly distributed.²⁹

Each test condition has bearing on the research questions and working hypothesis presented on Chapter 3. They also follow from previous studies for the acquisition of English (namely Condition 1.b, which tests control with *prometer* “promise”).

Condition 1.a allows us to assess whether or not children are able to establish the obligatory control relation, in the absence of other complicating factors. An example from this condition is provided in (1) above. None the verbs in this condition – *conseguir* “manage to” and *querer* “want” – take a prepositional complement clause. *Corpus* data (Santos 2006/2009; Santos et al. 2014) shows that these two verbs are productive in early child production (3).

- (3) a. MAE: +< queres andar no cavalinho?
want.2S ride in+the rocking horse
INM: qué [: quero]. INM 1;5.9
want.1S
MOTHER: do you want to ride the rocking horse?

²⁹ The ages reported in this dissertation, namely in table 1, are those at time of the 1st session. All adults were tested in a single session.

INM: *yes.*

b. TOM: eu que(ro) ver! TOM 2:9.7

I want see.INF

TOM: *I want to see!*

c. INM: a Inê [: Inês] um [: não] consegue pôr o
the Inês not manages+to put+on.INF the
capuchinho. INM 2:9.3
hood.DIM

INM: *The Inês can't put on the little hood.*

d. TOM: não consigo fechar os olhos # a mergulhar. TOM 3;4.25
not manage+to.iS close.INF the eyes PREP dive.INF

TOM: *I can't close my eyes when I dive.*

In combination with Conditions 1.b and 2, Condition 1.a allows us to ascertain if children have problems with the grammar of control in itself or only with control complements with two internal arguments (Santos, Gonçalves & Hyams 2014, in prep.). Condition 1.b also allows us to assess if Portuguese-speaking children have a delay in acquiring subject control with *prometer* “promise”, which is widely reported for English (starting with C. Chomsky 1969). See (2) above for an example item from this condition.

Condition 2 tests children’s interpretation of PRO in object control contexts. It is further divided into Conditions 2.a (example 4) and 2.b (example 5), which test object control by direct objects and by indirect objects, respectively. These conditions may evidence differences between control by direct objects and control by indirect objects. Different results with different verbs in Condition 2.a may indicate varying rates of lexical acquisition of verbs, which bears on hypotheses I and II (see section 3.3).

(4) *Test item 31, Condition 2.a (object control with a direct object)*³⁰

Exp. 1: Three animals of the woods went for a walk by the lake: the badger, the squirrel and the hedgehog. It is the peak of summer, and it has been very hot. The squirrel says: “Oh! The lake is so beautiful! And it’s so pleasant here!” The badger answers: “Yes! In the woods it’s too hot everywhere, even in the shadow!” The hedgehog says: “Even during the night it is too hot!” Then they have the idea

³⁰ The two items with *proibir de* “forbid” are exceptional with regard to the question that elicits the child’s response: in order to elicit PRO’s controller, we had to ask who *cannot* perform the action denoted by the embedded predicate (and crucially, not who *will not*, given that other characters might not perform that action even though they are allowed to).

of diving in the lake. But, given that they're small animals, they're afraid that a bigger animal might show up and hunt them, so they decide that someone should stay by the lake as a lookout. Then...

Test item: **O ouriço proíbe o esquilo de tomar banho no lago.**

The hedgehog forbids the squirrel to dive in the lake.

Exp. 2 (using the puppet): Who cannot dive in the lake?³¹

(5) *Test item 14, Condition 2.b (object control with an indirect object)*

Exp. 1: In an island at sea, three animals meet by chance, amid their travels. They are a turtle, a duck and a seal. The seal says: "I'm going to Patagonia." The turtle says: "I'm going to some islands in the Americas." And she goes on: "and you, duck, where are you going?" The duck answers: "I'm going to Europe." They all ask about the best way to get to their destinations, and exchange information. Then...

Test item: **A tartaruga diz à pata para seguir para Norte.**

The turtle tells the duck to go north.

Exp. 2 (using the puppet): Who is going north?³²

Child production data from the SANTOS *corpus* (Santos 2006/2009; Santos et al. 2014) shows that children know both *ensinar a* "teach" and *pôr a* "put to" (6). The verb *proibir de* "forbid" does not occur in the *corpus* data. However, in an elicited production study (Santos, Gonçalves & Hyams 2014, in prep.), some children replaced the main verb *proibir de* "forbid" with *não deixar* "not let" in their elicited productions, showing that they know the meaning of this verb.

(6) a. MAE: então põe o senhor a papar. TOM 1;9.14

then put the man PREP eat.INF

MOTHER: *Then make the man eat.*

³¹ In the original Portuguese:

Exp. 1: Três animais do bosque foram passear até ao lago: o texugo, o esquilo e o ouriço. Já está no pico do verão, e os três têm muito calor. Diz o esquilo: "Ah! Que bonito que é o lago, e está tão fresco aqui ao pé!" Responde o texugo: "É! No bosque já nem à sombra se está bem. Em todo o lado faz calor." Diz o ouriço: "Pois é, até de noite já faz calor!" E então têm a ideia de mergulhar no lago. Mas como são animais pequenos, têm medo que apareça algum animal maior que os possa caçar, e então decidem que deve ficar alguém de vigia à beira do lago. Então...

Item de teste: **O ouriço proíbe o esquilo de tomar banho no lago.**

Exp 2: Quem é que não pode tomar banho no lago?

³² In the original Portuguese:

Exp. 1: Numa ilha no alto mar, três animais encontram-se por acaso, no meio das suas viagens. São uma tartaruga, uma pata e uma foca. Diz a foca: "Vou para a Patagónia." Diz a tartaruga: "Eu vou para umas ilhas das Américas." E continua: "e tu, pata, vais para onde?" A pata responde: "Eu vou para a Europa." Todas perguntam a melhor forma de chegar aos seus destinos, e trocam informações. Então...

Item de teste: **A tartaruga diz à pata para seguir para Norte.**

Exp.2 (usando o fantoche): Quem é que vai seguir para norte?

b. TOM: sh@b # vou pôr os homens a falar. TOM 2;11.0
 go.1S put the men PREP talk.INF

TOM: I'm going to make the men talk.

c. MAE: olha # quem ensinou # o menino a dizer que era
 look who taught the boy PREP tell.INF COMP was
 do Benfica? TOM 1;7.14
 of+the Benfica

MOTHER: look, who taught the boy to tell that he was a Benfica fan?

d. MAE: quem ensinou?
 who taught
 TOM: a matar? TOM 2;3.9
 PREP kill.INF

MOTHER: who taught?

TOM: to kill?

The only verb included in Condition 2.b was *dizer para* “tell”, as it is the only object control verb that takes an indirect object which we expected children to know. It also occurs in early child production, as shown by data from the SANTOS corpus (7) (Santos 2006/2009; Santos et al. 2014).

(7) TOM: ele é que me disse pa(ra) te dar aquela
 he COMP cli.1S.dat told COMP cli.2S.dat give.INF that
 prenda. TOM 3;8.15
 present

TOM: He was the one who told me to give you that present.

Condition 3 test the interpretation of PRO in sentential subjects, a NOC context. If children do distinguish between the different syntactic contexts in which PRO may appear, there will be differences in response patterns between this condition and all others. Testing both OC and NOC is in accordance with the Sherman & Lust (1993) study, in which the authors claim that the distribution of PRO and its varying interpretations in the contexts it occurs also constitute critical aspects for the acquisition of control (see Chapter 3). This condition also assesses whether or not children have a bias towards sentence-internal antecedents, as previous studies have claimed (McDaniel, Cairns & Hsu 1990/91; Cairns et al. 1994; Eisenberg & Cairns 1994). We present an example of an item from this condition in (8):

(8) *Test item 16, Condition 3 (sentential subjects)*

Exp. 1: An elephant, a crocodile and a hippo are bathing in a lagoon. They spend the whole afternoon playing there, but the sun is already setting. Then...

Test item: **Sair da lagoa chateia o elefante.**

To leave the lagoon bothers the elephant.

Exp. 2 (using the puppet): Who is going to leave the lagoon?³³

Half of the items in this condition have a pre-posed sentential subject, and the other half have a post-posed sentential subject (one of each per verb), in order to detect any differences that there may be between one structure and the other. Both verbs occur on the SANTOS *corpus* (Santos 2006/2009; Santos et al. 2014), although *chatear* “bother” shows up only on child-directed speech (9), while *assustar* “scare” occurs both in child directed speech and child production (10).

(9) ALS: <além de> [/] além de [/] # de chatear a mãe # o que é que
besides PREP bother.INF the mother COMP
a Mafalda faz na Ericeira? INM 2;5.25
the Mafalda do in+the Ericeira
Besides bothering mom, what does Mafalda do in Ericeira?

(10) INI: ass(us)to(u) s(e) # do [: com o] barulho.
got+scared.3S clitic.3S.reflexive with the noise
MAE: assustou se? INI 2;10.20
got+scared.3S cli.3S.reflexive
INI: He got scared, with the noise.
MOTHER: He got scared?

Finally, Condition 4 tests the interpretation of PRO with *pedir para* “ask”, which allows both subject and object control in structures with two internal complements. This condition may indicate which of the two potential antecedents in the matrix clause will be preferred by children, as both are correct (but a sentence-external antecedent is not) and the contexts are neutral (and thus avoid creating a pragmatic context that would favor a particular interpretation).³⁴ In (11) we present an instance of an item from this condition:

(11) *Test item 20, Condition 4 (pragmatically determined interpretation)*

Exp. 1: The dog, the cat and the parrot live together in the same house, because they have the same owners. “I’m tired of being locked in this house!” says

³³ In the original Portuguese:

Exp. 1: Um elefante, um crocodilo e um hipopótamo estão a tomar banho numa lagoa. Passam ali a tarde toda a brincar, mas o sol já se está a pôr. Então...

Item de teste: **Sair da lagoa chateia o elefante.**

Exp.2 (usando o fantoche): Quem é que vai sair da lagoa?

³⁴ Given that children’s sensibility to pragmatic factors is not the object on this investigation, we opted not to evaluate the effect of pragmatic leads on children’s interpretation of PRO in complements of *pedir para* “ask”.

the dog. “Me too. But I know about a park nearby where we can go to play, because I’ve sneaked out a few times to go there” the cat answers. “Well then, what are we waiting for?” says the parrot. They get out of the house and go to the park, where there are rocking horses and swings. “What are we going to do?” asks the dog. “Let’s have a race!” the parrot says. They run around the park, but soon they get tired. Then...

Test item: **O cão pede ao gato para ir para o balanço.**

The dog asks the cat to go to the swing.

Exp. 2 (using the puppet): Who is going to the swing?³⁵

The verb *pedir para* “ask” was the only one used in this condition. Data from the SANTOS *corpus* (Santos 2006/2009; Santos et al. 2014) shows that children are exposed to this verb in child directed speech and have knowledge of its meaning (12).

(12) a. ALS: ela pediu o quê?

she asked what

TOM: <pa(ra) le(var)> [/] pa(ra) [/] pa(ra) levar na casa+de+banho
COMP take.INF in+the bathroom

p(a)ra ela.

TOM 3;2.29

PREP her

ALS: *she asked for what?*

TOM: *to take (it) to the bathroom for her.*

b. ALS: tens que pedir à mãe para limpar. TOM 3;0.22

have.2S COMP ask to+the mother COMP clean.INF

ALS: *You have to ask your mother to clean (it).*

³⁵ In the original Portuguese:

Exp. 1: O cão, o gato e o papagaio vivem juntos na mesma casa, porque têm os mesmos donos. Hoje os donos não estão em casa. “Estou farto de estar fechado em casa!” Diz o cão. “Pois é, eu também. Mas eu sei de um parque aqui perto onde podemos ir brincar, que eu já me escapuli daqui para ir lá umas poucas vezes” responde o gato. “Então de que é que estamos à espera?” Diz o papagaio. Saem da casa e vão ter ao parque, onde há cavalinhos e balanços. “Então vamos fazer o quê?” Pergunta o cão. “Vamos fazer corridas!” Diz o papagaio. Correm à volta do parque, mas cansam-se ao fim de pouco tempo, e então...

Item de teste: **O cão pede ao gato para ir para o balanço.**

Exp.2 (usando o fantoche): Quem é que vai para o balanço?

4.2- Data transcription, scoring and statistical treatment

The answers of all participants were transcribed to an Excel file (an answer sheet), using mostly the annotations taken during testing. Whenever there were doubts, the recordings were consulted. Some tests with adult participants were not annotated, as previously mentioned. In these cases, the transcription was made using only the recordings. Whenever participants self-corrected their first answer, only the last answer was considered. Incongruous answers, which occurred only with child subjects, were coded as NA (non-available answer) in the Excel file.³⁶

Children's responses were scored according to correctness and choice of antecedent – sentence-external antecedent, subject control (in all conditions but Condition 3) and object control (in all conditions but Condition 1.a). The data was subsequently subjected to statistical analysis (proportions of correct, subject, object and sentence-external character responses, as well as Generalized Linear Mixed Models using Rbrul (version 2.24) (Johnson 2009), a script that runs on R (version 3.1.0 for Mac OS X 10.9.4 - Mavericks).

Although ANOVA is often used for the treatment of linguistic data, we opted to use Generalized Linear Mixed Models, which, according to Jaeger (2008), offer many advantages over ANOVA for the analysis of categorical data. Namely, ANOVA has been argued to yield spurious results when applied to categorical data (see Jaeger 2008).

We also opted to use the Rbrul software to run the Generalized Linear Mixed Models because it was built specifically for the treatment of categorical data (Johnson 2009). In addition, it can easily take into account random effects such as sampling (individual speaker) effects (Johnson 2009). Regarding random effects, Johnson (2009) notes that linguistic data sets are usually grouped according to individual speakers. This may introduce random effects, due to normal variation

³⁶ There were 5 instances of incongruous answers, which are enumerated in (i)-(iii) below:

(i) Two children (subjects 65 and 66) answered “Benny” (the puppet) to three different items (*O coelho põe o cão a transportar comida da despensa* “The rabbit makes the dog carry food from the pantry”, *O castor promete ao galo pintar um novo quadro* “The beaver promises the rooster to paint a new picture”, *Chateia o bambi apanhar madeira* “It bothers the bambi to gather wood”). In one instance, subject 66 immediately added that she did not know the answer. Both children were 3 years-olds.

(ii) One 3 year-old child (subject 62) answered *O burro vai pedir para tocar à campainha* “the donkey will ask to ring the bell” to the item *O touro pede ao burro para tocar à campainha* “The bull asks the donkey to ring the bell”.

(iii) One 5 year-old child (subject 23) answered *O elefante tem medo de sair da lagoa* “the elephant is afraid of leaving the lagoon” to the item *Sair da lagoa chateia o elefante* “to leave the lagoon bothers the elephant”.

across speakers: individual speakers may have different biases and preferences, as well as different rates of development. Hence, if we do not include speaker as a random effect, the program may overestimate the effect of the categories of interest, thus generating Type I errors, i.e., false positives (Johnson 2009). However, Johnson (2009) notes that in some situations this conservative approach may make the analysis more vulnerable to Type II errors (i.e., false negatives), by underestimating the effect of the categories of interest. The same author also points out that “most researchers would probably endorse a conservative approach, arguing that it is better to overlook something that does exist than to report something that does not” (Johnson 2009: 369).

It was decided that the test conditions would not be considered a predictor variable, but rather that the data pertaining to each condition would be analyzed under its own model. This is because 1) some conditions are not truly comparable, as they test different syntactic structures, which entail different interpretations of PRO; 2) Conditions 3 and 4 have greater proportions of correct answers than any of the other conditions: in Condition 3 (sentential subjects) any of the three characters is a correct answer, while in Condition 4 (pragmatically determined interpretation) both characters mentioned in the test sentence are correct answers. Hence, the rates of correct responses participants may achieve in these two conditions are not comparable to those they may achieve in other conditions. A global analysis of the data in terms of correctness rates is thus inappropriate, as these discrepancies across conditions would confound the interpretation of the statistical analysis; and 3) children’s interpretation of PRO in different structures (e.g. sentential subjects, subject control) may be conditioned by different factors (e.g. position of the sentential subject).

The predictor variables considered in the statistical analysis of each condition are systematized in Table 3.

Table 3: *Modeling for statistical analysis*

	Condition	Predictor Variables	Response values
1.a	Subject control (transitive verbs)	Age group, verb, speaker (random)	Subject, other character
1.b	Subject control (ditransitive verbs)	Age group, speaker (random)	Subject, object, third character
2.a	Object control (with direct objects)	Age group, verb, speaker (random)	Subject, object, third character
2.b	Object control (with indirect objects)	Age group, speaker (random)	Subject, object, third character
3.	Sentential subjects	Age group, verb, position of the sentential subject, speaker (random)	Object, other character
4.	Pragmatically determined interpretation	Age group, speaker (random)	Subject, object, third character

In the following chapter, which presents the experimental results, we will refer only to the regressions that were made for the target response (in Conditions 1.a, 1.b, 2.a and 2.b), and for the preferred adult response (in Conditions 3 and 4).

5. Experimental data

In this chapter, we present the results of the experimental task described in the previous chapter. In section 5.1, the experimental results are first described in general terms (rates of correct responses) and by experimental condition (the experimental conditions are repeated in Table 1). All the percentages presented in this chapter denote group proportions.

Table 1: *Experimental conditions and verbs*

	Condition	Verbs
1.a	Subject control (transitive verbs)	<i>querer</i> “want” <i>conseguir</i> “manage to”
1.b	Subject control (ditransitive verb)	<i>prometer</i> “promise”
2.a	Object control with a direct object	<i>ensinar a</i> “teach” <i>pôr a</i> “put to” <i>proibir de</i> “forbid”
2.b	Object control with an indirect object	<i>dizer para</i> “tell”
3.	Sentential subjects	<i>chatear</i> “bother” <i>assustar</i> “scare”
4.	Pragmatically determined interpretation	<i>pedir para</i> “ask”

In the following section (5.2), we present the results of a search for control complements produced by young children in the SANTOS *corpus* of spontaneous child production and child directed speech (Santos 2006/2009; Santos et al. 2014).

5.1- Experimental results

General results: proportion of correct responses by condition/age

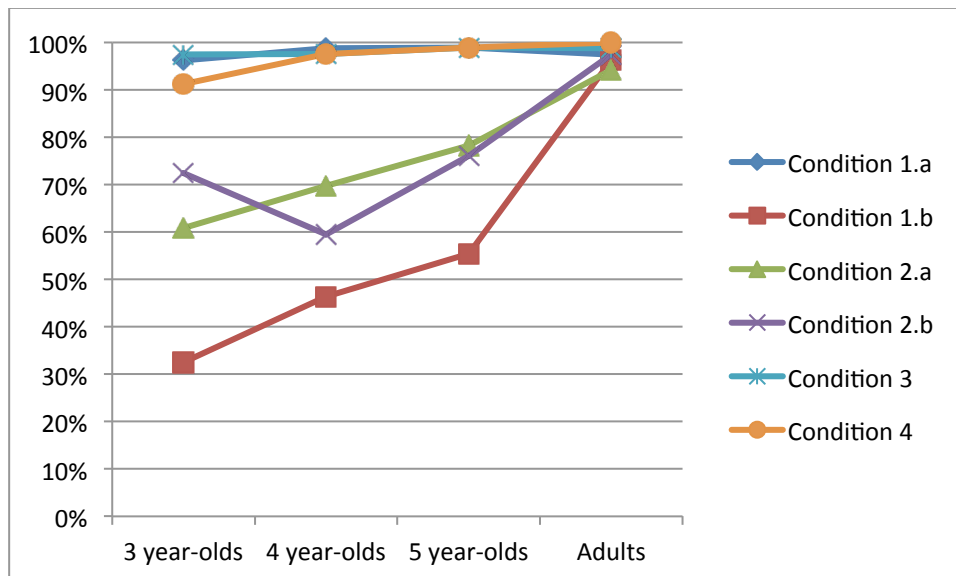
Table 2 presents the proportion of correct answers in each condition per age group:

Table 2: *Proportion of correct answers in each condition per age group*

	3 year-olds	4 year-olds	5 year-olds	Adults
1.a Subject control (transitive verbs)	96,2%	98,8%	98,9%	97,5%
1.b Subject control (ditransitive verbs)	32,5%	46,4%	55,4%	96,2%
2.a Object control (direct objects)	60,8%	69,8%	78,3%	94,2%
2.b Object control (indirect objects)	72,5%	59,5%	76,1%	97,5%
3. Sentential subjects	97,5%	97,6%	98,9%	98,8%
4. Pragmatically determined interpretation	91,2%	97,6%	98,9%	100%

The information on Table 2 is visually represented in Graph 1:

Graph 1: *Proportion of correct answers in each condition per age group*



This allows us to have a good perception of the general results: in Condition 1.a (subject control without an intervening object), Condition 3 (NOC in sentential subjects) and Condition 4 (pragmatically determined antecedent) all age groups performed at ceiling, or close (in Graph 1, the rates of correct responses for

Conditions 1a and 3 are nearly juxtaposed). On the other hand, Condition 1.b (subject control with an intervening object), Condition 2.a (object control with a direct object) and Condition 2.b (object control with an indirect object) all show development throughout the age range tested, and only adults show a rate of correct answers above the 90% mark in these conditions. Hence, there is a marked contrast between structures involving obligatory object control or obligatory subject control across an intervening object and all other structures tested in this task. As expected, Condition 1.b (subject control with an intervening object) had the worst results. Unlike the child participants, the adult participants do not show any relevant differences in rate of correct answers across conditions.

It should be noted, however, that in Conditions 3 (sentential subjects) and 4 (pragmatically determined interpretation) there are more correct answers: in Condition 4, two out of three possible antecedents are correct, while in Condition 3 all the three possible antecedents are correct (none of the age groups had a 100% rate of correct responses in this condition due only to instances in which participants said they did not know how to answer or refused to answer, and these answers were conflated with incorrect answers when calculating the rates of correct responses). The relevancy of these two conditions, however, is not in the rates of correct responses that children may achieve, but rather in assessing whether children's choice of antecedent obeys the Minimal Link Condition (MLC: Chomsky 1995) or the saliency of the higher subject (Condition 4), and whether children show a strong bias towards sentence-internal antecedents (Condition 3). This will be discussed in a more detailed way below, when we will discuss different types of answer and not simply correct/incorrect answers.

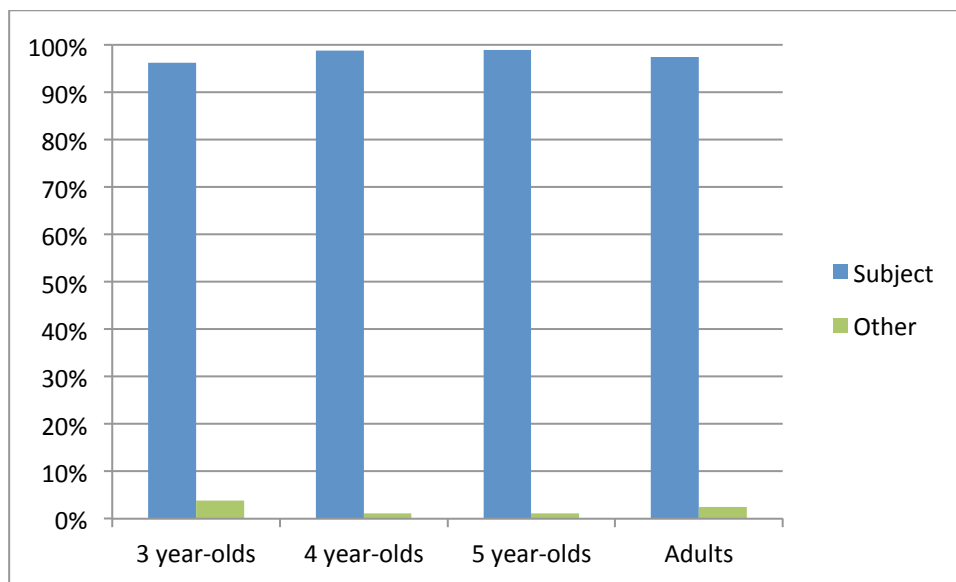
Condition 1.a- Subject control with transitive verbs

Subject control without an intervening object is acquired early in the acquisition of European Portuguese: children as young as 3 are close to ceiling in this condition (96,2%), as shown in Table 3 and Graph 2:

Table 3: *Subject control verbs (querer “want”, conseguir “manage to”)*

	Subject	Other
3 year-olds	96,2%	3,8%
4 year-olds	98,8%	1,2%
5 year-olds	98,9%	1,1%
Adults	97,5%	2,5%

Graph 2: *Subject control verbs (querer “want”, conseguir “manage to”)*



The youngest group tested was at adult level (97,5% subject control responses) in this condition. The results in this condition show that children are able to establish the control relation in subject control structures. The choice of a character not mentioned in the sentence as the antecedent for PRO was residual in all cases. No evidence suggests that children aged 3 to 5 do not have knowledge of the syntactic properties relevant for the interpretation of obligatorily controlled (OC) PRO. None of the children and neither the adults refused to answer or said they did not know how to answer to any item in this condition.

The fact that third-character readings are residual in this condition in both children and adults does not confirm previous findings (Eisenberg & Cairns 1994).³⁷

³⁷ Eisenberg & Cairns (1994) claim to have found three children – aged 3;7, 3;8 and 5;4 – who display arbitrary control in [NVtV] infinitives with *want* and *like*. In this study, arbitrary reference with [NVtV] infinitives is understood as accepting either the subject DP or a sentence-external referent as an antecedent for the null embedded subject (Eisenberg & Cairns 1994: 724)

Children do not seem to be more likely to give arbitrary control responses with this structure than with control complements with two internal arguments.

The results of a Generalized Linear Mixed Model applied to this condition shows that none of the fixed predictors (*Age group*, *Verb*) had a significant effect on response variation. That is, the best model for this condition (considering the response value “subject”) is with the random predictor *Speaker* and no fixed predictors (GLMM: speaker [random]). Hence, we conclude that neither age nor individual verbs are predictive of performance in subject control complement clauses without an intervening object.

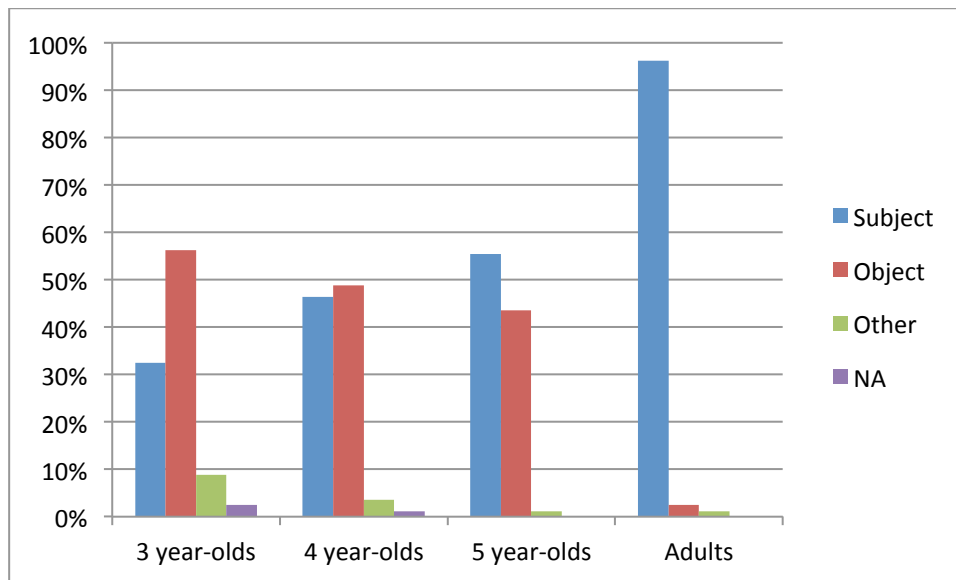
Condition 1.b- Subject control with ditransitive verbs

Unlike subject control transitive verbs, the verb *prometer* “promise” shows delayed development in children’s grammar. Table 4 presents the proportions of every response value in this condition per group. The same information is visually presented in Graph 3.

Table 4: *Subject control verbs (prometer “promise”)*

	Subject	Object	Other	NA
3 year-olds	32,5%	56,2%	8,8%	2,5%
4 year-olds	46,4%	48,8%	3,6%	1,2%
5 year-olds	55,4%	43,5%	1,1%	0%
Adults	96,2%	2,5%	1,2%	0%

Graph 3: *Subject control verbs (prometer “promise”)*



The 3 year-old children gave considerably more object control readings (56,2%) than subject control (32,5%) responses. At age 4, object control (48,8%) and subject control (46,4%) responses have nearly even rates. It was only at age 5 that children gave more subject control (55,4%) than object control (43,5%) responses, but they do so at far lower rates than adult speakers (96,2%). These results suggest that Portuguese-speaking children aged 5 have not yet acquired subject control with *prometer* “promise”, which comports with the well-known delay in the acquisition of *promise* by English-speaking children (first noted by C. Chomsky 1969). However, at age 5 children seem to be starting to approach adult syntax.

The results of a Generalized Linear Mixed Model applied to this condition (considering the response value “subject”) shows that the fixed predictor *Age group* had a significant effect on response variation. The best model for this condition is with the random predictor *Speaker* and the fixed predictor *Age group*, which corresponds to the full model for this condition (GLMM: speaker [random] + group ($p < 0.001$)). Hence, *Age group* is predictive of performance in control complement clauses with an intervening object.

Condition 2.a- Object control with direct objects

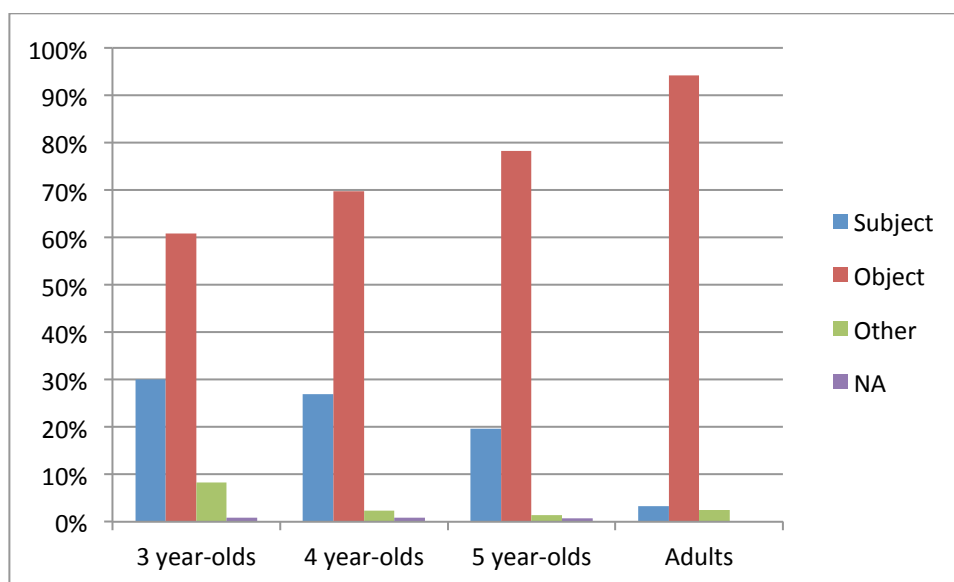
The general tendency of the results is convergent with adult grammar. From age 3, children consistently gave more object control (60,8%) than subject control (30%) responses with object control verbs. However, the child groups do not perform at adult level, as they give a considerable proportion of subject control responses: the comparison of target response rates in the different age groups

shows a pattern of steady increase with age. At age 5 (78,3% object control), children are approaching adult grammar (94,2% object control). Table 5 and Graph 4 show the rates of each response value per group:

Table 5: *Object control verbs with direct objects (ensinar a “teach”, pôr a “put to”, proibir de “forbid”)*

	Subject	Object	Other	NA
3 year-olds	30%	60,8%	8,3%	0,8%
4 year-olds	27%	69,8%	2,4%	0,8%
5 year-olds	19,6%	78,3%	1,4%	0,7%
Adults	3,3%	94,2%	2,5%	0%

Graph 4: *Object control verbs with direct objects (ensinar a “teach”, pôr a “put to”, proibir de “forbid”)*



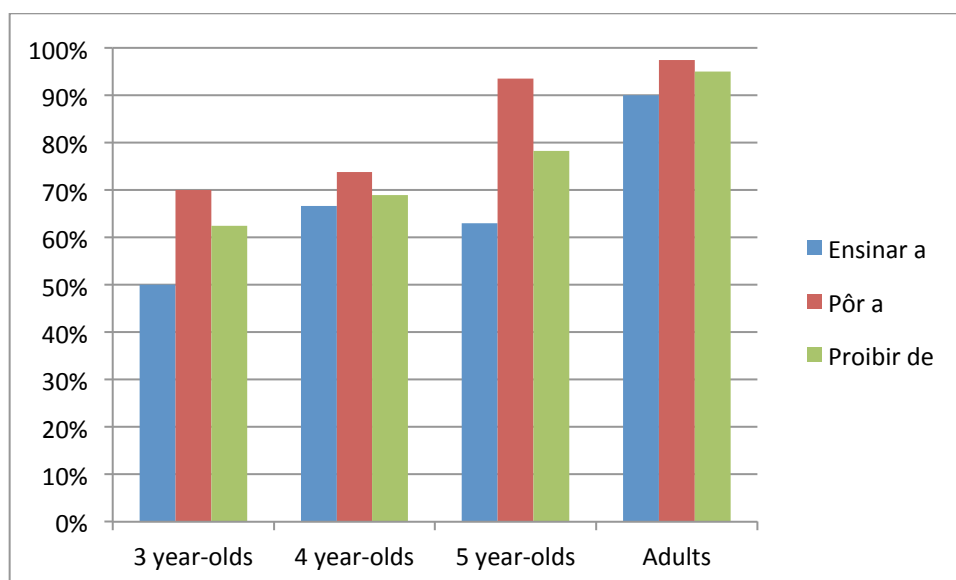
It is equally interesting to note that at age 3 the rate of subject and object control answers in this condition (subject control: 30%; object control: 60,8%) and in the “promise” condition (subject control: 32,5%; object control: 56,2%) are very similar, suggesting that at this stage the verbs in these two conditions are not treated differently. Additionally, the high rate of subject control answers in this condition (object control with direct object) shows that object control structures are not adult-like at the first stages identified in this task.

In this case, however, the inspection of results is not complete if we do not consider the results obtained with each of the verbs, as there are significant differences in response rates between verbs (Table 6 and Graph 5):

Table 6: *Object control rates with each object control verb (ensinar a “teach”, pôr a “put to”, proibir de “forbid”)*

	Ensinar a	Pôr a	Proibir de
3 year-olds	50%	70%	62,5%
4 year-olds	66,7%	73,8%	69%
5 year-olds	63%	93,5%	78,3%
Adults	90%	97,5%	95%

Graph 5: *Object control rates with each object control verb (ensinar a “teach”, pôr a “put to”, proibir de “forbid”)*



Of all three object control verbs, *ensinar a* “teach” shows the worst results in all age groups, including the adult group. Children aged 3 are at chance level with this verb (50% object control). The 4 year-old group shows an increase in object control responses with this verb (66,7%), however at age 5 object control responses decrease slightly (63%), compared to the 4 year-old group.

The predicate *proibir de* “forbid” shows a steady increase in object control rates across all age groups. Children aged 3 gave slightly less object control responses with this verb (62,5%) than children aged 4 (69%). At age 5, the rate of object control responses with this verb (78,3%) is approaching adult levels (95%).

The predicate *pôr a* “put to” shows the highest rates of object control responses in all age groups, including the adult control group. At age 3, children already seem to have some knowledge of this verb’s control properties (70% object

control responses). At age 4, the rate of object control responses with *pôr a* “put to” increases only slightly (73,8%), but at age 5 it has already surpassed the 90% mark (93,5%) and is close to adult levels (97,5%). These results suggest that children aged 3 to 5 years-old distinguish between the verb *pôr a* “put to” and other object control predicates.

The results of a Generalized Linear Mixed Model applied to this condition shows that the best model for this condition is with the random predictor *Speaker* and the fixed predictors *Age group* and *Verb* (GLMM: speaker [random] + group ($p < 0.001$) + verb ($p < 0.001$)). Therefore, both age and the particular verb tested are predictive of performance in object control complement clauses with direct objects.

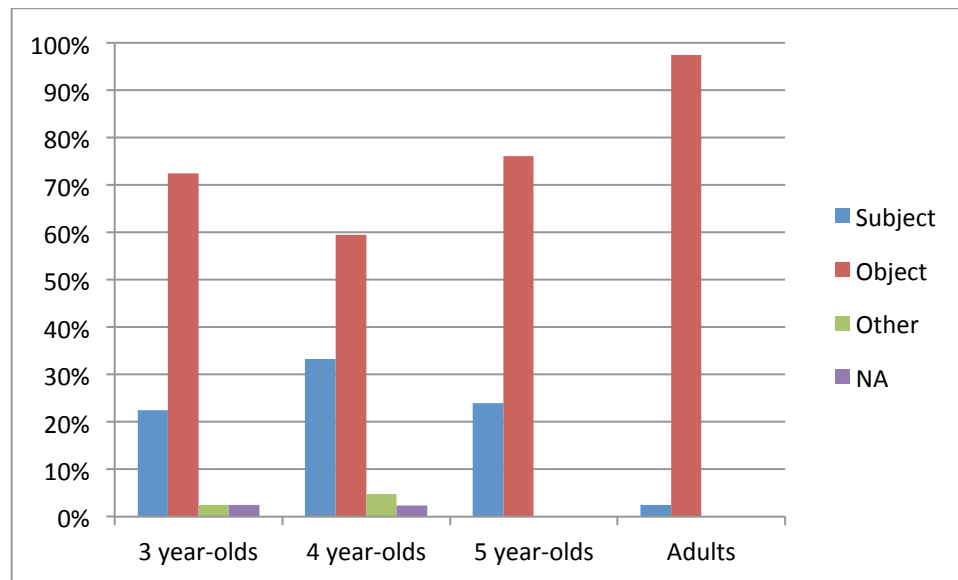
Condition 2.b- Object control with indirect objects

As in Condition 2.a, the general tendency of the results in Condition 2b is convergent with adult grammar: in all age groups object control responses supersede subject control responses, as shown in Table 7 and Graph 6:

Table 7: *Object control verbs with indirect objects (dizer para “tell”)*

	Subject	Object	Other	NA
3 year-olds	22,5%	72,5%	2,5%	2,5%
4 year-olds	33,3%	59,5%	4,8%	2,4%
5 year-olds	23,9%	76,1%	0%	0%
Adults	2,5%	97,5%	0%	0%

Graph 6: *Object control verbs with indirect objects (dizer para “tell”)*



Children aged 3 gave more (indirect) object control responses (72,5%) than subject control responses (22,5%) with *dizer para* “tell”. However, (indirect) object control with *dizer para* “tell” shows a dip at age 4, although object control rates (59,5%) remain much higher than subject control rates (33,3%). In the 5 year-old group, rates of object control responses (76,1%) were only slightly higher than in the 3 year-old group, and remain far below adult levels (97,5%). This indicates a U-shaped developmental pattern. Only the 3 year-olds and the 4 year-olds gave third-character responses, but this is nonetheless a marginal response type.

The results of a Generalized Linear Mixed Model applied to this condition (considering the response value “object”) shows that the fixed predictor *Age group* had a significant effect on response variation, alongside the random predictor *Speaker* (GLMM: speaker [random] + group ($p < 0.001$)). Age is thus predictive of children’s performance in object control complement clauses with indirect objects.

Condition 4- Pragmatically determined interpretation

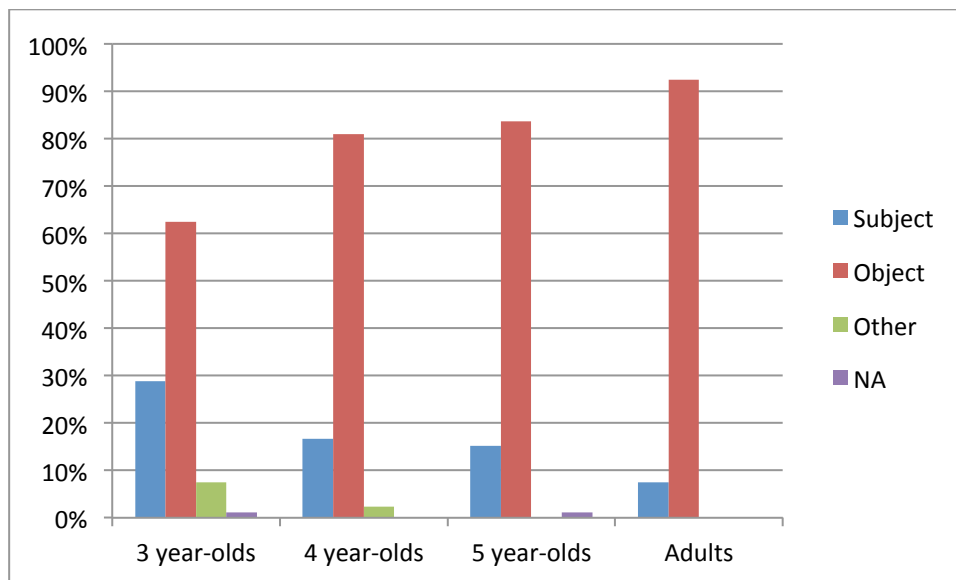
As pointed out above, in this condition the proportion of correct response values is higher than in other conditions (with the exception of Condition 3). This is expected given that both the matrix subject and the matrix object constitute grammatical antecedents of PRO, and that all contexts were designed to be neutral in that respect. However, this condition is particularly relevant to the extent that it allows us to assess whether children (or adults) have a bias towards the subject or the object as the antecedent of PRO.

The results show that all age groups gave higher rates of object control responses than subject control responses, suggesting that they have a bias towards the object as the antecedent of PRO. However, this general tendency is actually more marked in the adult group (92,5% object control responses) than in the child groups. In fact, the 3 year-olds show the highest rate of subject control responses (28,8%). The rates of each response value in this condition are displayed in Table 8 and Graph 7:

Table 8: *Pragmatically determined interpretation (pedir para “ask”)*

	Subject	Object	Other	NA
3 year-olds	28,8%	62,5%	7,5%	1,2%
4 year-olds	16,7%	81%	2,4%	0%
5 year-olds	15,2%	83,7%	0%	1,1%
Adults	7,5%	92,5%	0%	0%

Graph 7: *Pragmatically determined interpretation (pedir para “ask”)*



In the 3 year-old group, whose subject control rates (28,8%) were the highest, object control rates (62,5%) were nonetheless considerably higher than subject control rates. At ages 4 and 5, this tendency is further accentuated (81% and 83,7% object control rates, respectively). The saliency of the matrix subject as the antecedent of PRO is still visible in the child groups, especially at age 3. It is worth noting that this rate of subject control answers (around 30%) is exactly the same rate found at 3 years of age in the “promise” condition and the direct object control condition. The adult group showed the strongest preference for the object as the

antecedent of PRO (92,5%). Among 3 and 4 year-olds, choice of an unmentioned character as the antecedent of PRO was marginal, while in both the 5 year-old group and the adult group there were no responses of this type. These results suggest that both children and adults have a preference for the object as the antecedent of the null infinitival subject, when the context is neutral, even though younger children also show sensitivity to the saliency of the matrix subject as the antecedent of PRO.

The results of a Generalized Linear Mixed Model applied to this condition (considering the response value “object”) show that the fixed predictor *Age group* had a significant effect on response variation (GLMM: speaker [random] + group ($p < 0.001$)).

Condition 3- Sentential subjects

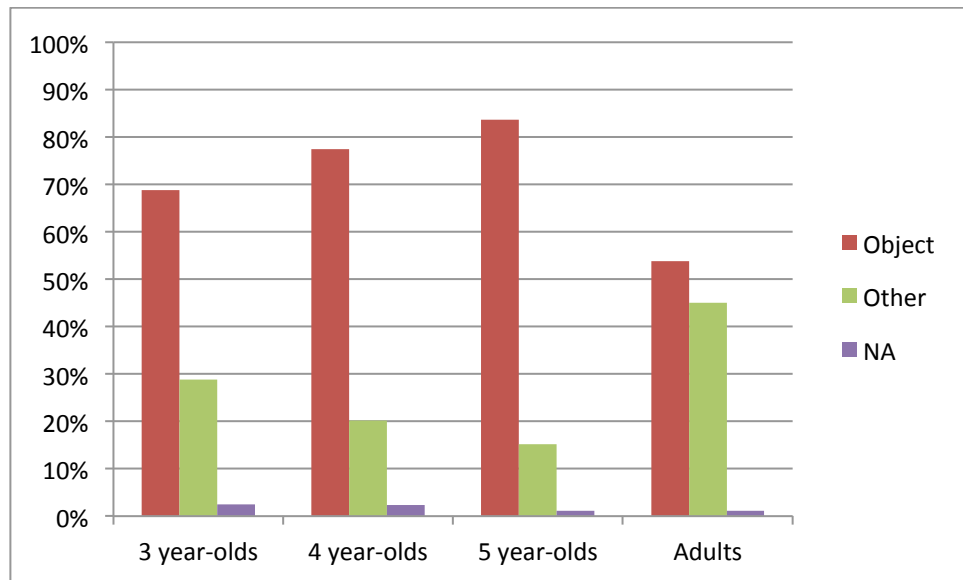
As mentioned above, given that all answers are correct in this condition, the relevancy of including this syntactic structure lies in the assessment of response biases that children and adults might have. If children continue to give residual rates of third character responses in this condition, this constitutes an indication that they have a strong bias towards sentence-internal antecedents. If, on the other hand, children show higher rates of third character responses in this condition, this indicates that children do not have an absolute bias towards sentence-internal antecedents and that they have knowledge of the syntactic structures where PRO appears and how they affect the interpretation of PRO, that is, children distinguish between obligatorily controlled and non-obligatorily controlled PRO.

In fact, in this condition choice of an actor not mentioned in the test sentence as the referent of PRO is much higher than in all other conditions, across all age groups, as shown in Table 9 and Graph 8:

Table 9: *Sentential subjects (chatear “bother”, assustar “scare”)*

	Object	Other	NA
3 year-olds	68,8%	28,8%	2,5%
4 year-olds	77,4%	20,2%	2,4%
5 year-olds	83,7%	15,2%	1,1%
Adults	53,8%	45%	1,2%

Graph 8: *Sentential subjects (chatear “bother”, assustar “scare”)*



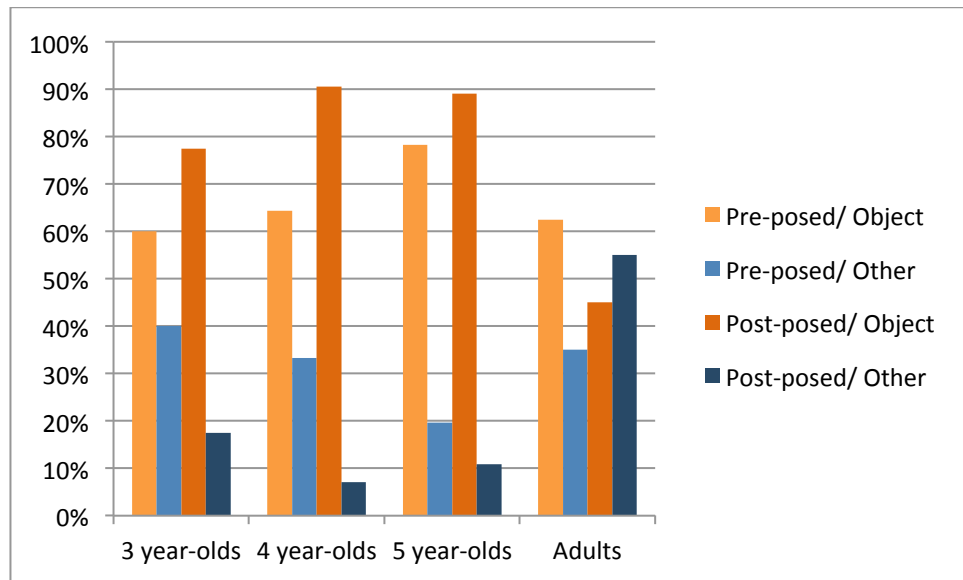
Whereas in all other conditions the rate of third-character responses was residual, in this condition there was a higher rate of third-character responses in all age groups. Interestingly, third-character response rates are higher in the 3 year-old group (28,8%), progressively diminish across the ages of 4 (20,2%) and 5 (15,2%), and achieve the highest levels in the adult control group (45%).

As mentioned in the previous chapter, in this condition the test items also varied according to the position of the sentential subject (pre-posed or post-posed). The results show that there were asymmetries in choice of antecedent between pre-posed and post-posed sentential subjects (Table 10 and Graph 9):

Table 10: *Object and third character choice with sentential subjects (pre-posed, post-posed)*

	Object		Other	
	Pre-posed	Post-posed	Pre-posed	Post-posed
3 year-olds	60%	77,5%	40%	17,5%
4 year-olds	64,3%	90,5%	33,3%	7,1%
5 year-olds	78,3%	89,1%	19,6%	10,9%
Adults	62,5%	45%	35%	55%

Graph 9: *Object and third character choice with sentential subjects (pre-posed, post-posed)*



Interestingly, child subjects and adult subjects show opposite response patterns with post-posed sentential subjects: children gave considerably more object responses than third character responses, while adults gave more third character responses (55%) than object responses (45%), although with a slighter margin of difference.

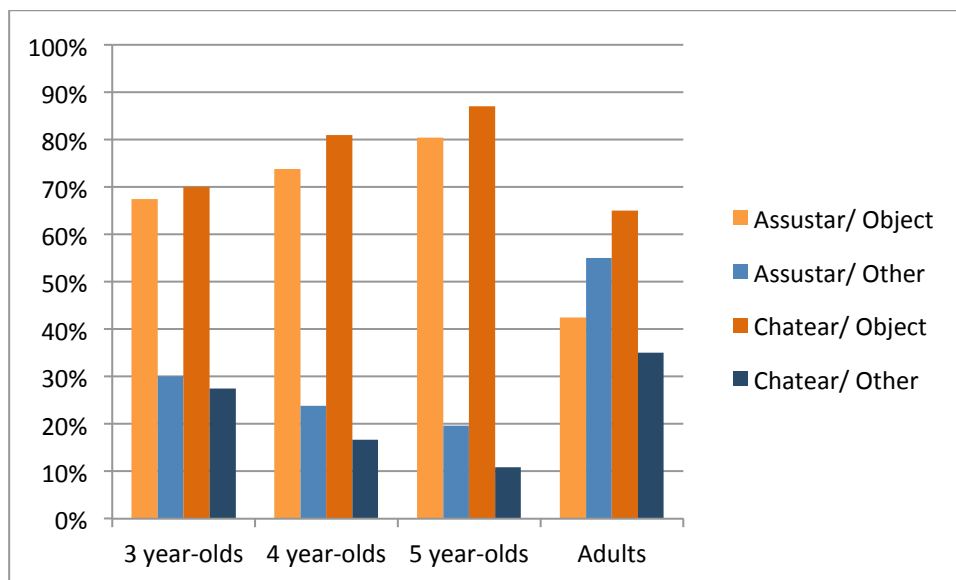
With pre-posed sentential subjects, 5 and 4 year-old children display higher rates of object responses (78,3% and 64,3% respectively) than 3 year-olds (60%). However, adults show a response pattern more similar to that of the 3 year-olds than to that of the 5 year-olds: they show a smaller margin of difference between object (62,5%) and third character responses (35%), although it remains substantial, as in the 3 year-old group.

Similarly, the matrix predicate also seemed to have some impact on choice of antecedent, particularly among the adults, as evidenced by the results presented on Table 11 and Graph 10:

Table II: *Object and third character choice with sentential subjects (chatear “bother”, assustar “scare”)*

	Object		Other	
	<i>assustar</i> “scare”	<i>chatear</i> “bother”	<i>assustar</i> “scare”	<i>chatear</i> “bother”
3 year-olds	67,5%	70%	30%	27,5%
4 year-olds	73,8%	81%	23,8%	16,7%
5 year-olds	80,4%	87%	19,6%	10,9%
Adults	42,5%	65%	55%	35%

Graph 10: *Object and third character choice with sentential subjects (chatear “bother”, assustar “scare”)*



With both verbs, all child groups show a general tendency toward considerably higher object response rates than third-character response rates, although object response rates are slightly higher with *chatear* “bother” than with *assustar* “scare” in all child groups. In the adult group, with the verb *assustar* “scare”, the pattern shown by the child groups is reversed: adults gave more third-character responses (55,0%) than object responses (42,5%) with this verb. There are also smaller margins of difference between object and third character response rates within each verb in the adult group, although with the verb *chatear* “bother” the margin of difference between object responses (65%) and third-character responses (35%) remains sizeable.

The results of a Generalized Linear Mixed Model applied to this condition (considering the response value “object”) shows that the fixed predictors *Age group*, *Verb* and *Position of the sentential subject* had a significant effect on response variation (GLMM: participant [random] + group ($p < 0.001$) + position of the sentential subject ($p = 0.0324$) + verb ($p = 0.0324$)).

Summary of the experimental results

Naturally, in all conditions the random predictor *Speaker* had an effect in response variation: this is due to normal variation across individual speakers, namely in preferences (for both adult and child participants) and in rates of development (for child participants). It is also a result of the partition of the child groups. For instance, a child who is 4;10.14 years old may be at the same stage of development as a child who is 5;00.17 years old, yet they will be included in different groups. However, the child groups are well balanced for age range and age mean (see chapter 4), and the statistical analysis shows that variation across speakers does not compromise the status of *Age group* as a predictor of performance in all conditions except 1.a, in which child and adult groups nearly did not vary in performance.

The only condition in which the full model (see Chapter 4) was disconfirmed was Condition 1.a (subject control with transitive verbs). All child groups performed at adult level in this condition, and hence *Age group* did not have a significant effect on response variation. In all other conditions, *Age group* had a significant effect on response variation, when considering the relevant response values. The fixed predictor *Verb* also did not have an effect on response variation in this condition.³⁸

The fixed predictor *Verb* had an effect on response variation in both Condition 2.a (object control with direct objects) and Condition 3 (sentential subjects). In Condition 2.a, children performed better with the verb *pôr a* “put to” than with *proibir de* “forbid” and *ensinar a* “teach” (which had the worst results).

In Condition 3, child and adult participants differed in their response patterns with the verb *assustar* “scare”: in sentential subjects of this verb, children gave substantially higher rates of object responses than third character responses. Adults, on the other hand, gave more third character responses than object responses, with a smaller margin of difference between the two response values.

³⁸ Statistical analyses were also run for the response value “third character”. In all conditions except 3 (sentential subjects), the only relevant predictor of this response value was the random predictor *Speaker*.

An additional predictor in the same condition, *Position of the sentential subject*, had an effect on response variation. In this case, there is also an asymmetry in response patterns between the child participants and the adult participants in postposed sentential subjects: the adults show higher rates of third character responses than object responses, while children show considerably higher rates of object responses.

Children and adults alike show a preference for object control in structures in which both subject and object controllers are grammatical options and the context does not disambiguate between the two (Condition 4 – pragmatically determined interpretation).

Furthermore, if we look at the subject and object response rates given by 3 year-old children in Condition 4 alongside those they gave in other conditions with ditransitive verbs (Condition 1.b – subject control with ditransitive verbs, Condition 2.a – object control with direct objects, and Condition 2.b – object control with indirect objects), we see that in three of these conditions (1.b, 2.a and 4) children gave similar rates of subject control responses: they gave 32,5%, 30% and 28,8% subject control responses in these three conditions, respectively, as well as 56,2%, 60,8% and 62,% object control responses, respectively. It is only in Condition 2.b that their response pattern diverges from all other conditions with ditransitive verbs: in this condition, children aged 3 gave 22,5% subject control responses and 72,5% object control responses, while children aged 4 gave 33,3% subject control responses and 59,5% object control.

Table 12 summarizes the results of the statistical analysis of the data:

Table 12: *Modeling and general results of the Generalized Linear Mixed Model*

	Condition	Predictor Variables	Response values	Best Model (Rbrul output)
1.a	Subject control (transitive verbs)	Age group, verb, speaker (random)	Subject, third character	Speaker (random), no fixed predictors
1.b	Subject control (ditransitive verbs)	Age group, speaker (random)	Subject, object, third character	Speaker (random), age group ($p < 0.001$)
2.a	Object control with a direct object	Age group, verb, speaker (random)	Subject, object, third character	Speaker (random), age group ($p < 0.001$), verb ($p < 0.001$)
2.b	Object control with an indirect object	Age group, speaker (random)	Subject, object, third character	Speaker (random), age group ($p < 0.001$)
3.	Sentential complements	Age group, verb, position of the sentential complement, speaker (random)	Object, third character	Speaker (random), age group ($p < 0.001$), verb ($p = 0.0324$), position of the sentential subject ($p = 0.0324$)
4.	Pragmatically determined interpretation	Age group, speaker (random)	Subject, object, third character	Speaker (random), age group ($p < 0.001$)

5.2- Corpus data

In this section, we present the results of a search for control complement clauses and sentential subjects on the SANTOS *corpus* of spontaneous child production and child-directed speech (Santos 2006/2009; Santos et al. 2014). The search results show that young children produce subject control complement clauses with verbs such as *querer* “want” and *conseguir* “manage to”, which select only one internal argument, the sentential complement. All three children on the SANTOS *corpus* (INM, INI and TOM) are able to produce subject control complement clauses with transitive verbs from very early stages: INI’s first

recorded production of this structure occurred at the age of 1;10.29 (1a), INM's occurred at the age of 2;5.3 (1b), and TOM's at the age of 1;8.16 (1c).

- (1) a. INI: a (I)nê(s) que(r) i(r) pa(ra) a casa. INI
1;10.29
the Inês wants go.INF to the house
Inês wants to go to the house.
- b. INM: a (I)nê(s) que(r) ver i(s)to. INM 2;5.3
the Inês wants see.INF this
Inês wants to see this.
- c. TOM: (pa)tito # sabe (n)adar. TOM 1;8.16
duck.DIM knows swim.INF
Little duck knows how to swim.

The subject control transitive verbs used by the three children on the SANTOS corpus are: *querer* “want”, *conseguir* “manage to”, *saber* “know”, *aprender a* “learn”, *gostar de* “like”, *pensar* “think” and *preferir* “prefer”. These verbs are sometimes used in elliptic structures. None of the children produced a control complement clause with *prometer* “promise” in the period currently covered by the corpus (INI: ages 1;6.6 - 3;11.12, INM: ages 1;5.9 - 2;9.3; TOM: ages 1;6.18 - 3;10.16).

These three children produced far less object control complement clauses. Similarly, the range of object control verbs used by the children in the SANTOS corpus in the relevant structure is narrower than that of subject control transitive verbs. In the data from all three children, only four verbs introduce object control complement structures: *pôr a* “put to”, *ensinar a* “teach”, *ajudar a* “help” and *dizer para* “tell”.

In some instances, the object control complement clause is introduced by a verb produced by the adult (2b, c). The children also produce these complements at later stages than subject control complements clauses with transitive verbs. INI's first recorded production of this type occurs at the age of 2;11.21 (2a), over one year after her first recorded production of a subject control complement clause with a transitive verb, while TOM's first recorded production of an object control complement clause occurs almost seven months after his first recorded production of a subject control complement clause with a transitive verb, at age 2;3.9 (2c). The three-month gap between INM's first recorded production of a subject control complement clause with a transitive verb, at the age of 2;5.3, and her first recorded production of an object control complement clause, at the age of 2;9.3, is the narrower of the three (2b). This is also the only object control complement clause that INM produces in the entire corpus.

- (2) a. INI: ajuda m(e) a pôr coisas cá dent(r)o .
 INI 2;11.21
 help me PREP put.INF things here inside
Help me put things in here.
- b. ALS: e depois # tu vais ensinar esse bebé a andar?
 and after you go.3S teach.INF that baby PREP walk.INF
 INM: vou.
 go.1S
 ALS: e a falar # tam(b)ém vais?
 and to talk.INF too go.2S
 INM: a falar tam(b)ém!
 PREP talk.INF too INM 2;9.3
ALS: And then? You're going to teach that baby to walk?
INM: Yes.
ALS: And to talk, you're going to teach too?
INM: to talk too!
- c. MAE: quem ensinou?
 who taught
 TOM: a matar? TOM 2;3.9
 PREP kill.INF
MOTHER: who taught?
TOM: to kill?

Again, the results of the *corpus* search corroborate the results of the experimental data. Although subject control with transitive verbs is target-like from early stages, obligatory object control structures show development.

One of the children (TOM) also produced a clausal complement of *pedir para* “ask” (3). He did so only at the age of 3;2.29, and the complement clause was produced in the context of an answer to a question asked by an adult, who produced the verb *pedir* “ask”.

- (3) ALS: ela pediu o quê?
 she asked what
 TOM: <pa(ra) le(var)> [/] pa(ra) [/] pa(ra) levar na casa+de+banho
 COMP take.INF in+the bathroom
 p(a)ra ela. TOM 3;2.29
 PREP her
ALS: she asked for what?
TOM: to take (it) to the bathroom for her.

The same child produced a verbal answer to a question containing a sentential subject (4a) and a full utterance with a sentential subject (4b), both with the verb *apetecer* “feel inclined to”:

- (4) a. MAE: *apetece te jogar filho?*
 feel+like.3S cli.2S.dat play.INF son
 TOM: *apetece.* TOM
 2;4.0

feel+like.3S
MOTHER: do you feel like playing, son?
TOM: I do.

- b. TOM: *não me apetece fazer # destes legos.*
 TOM: 3;7.29
 not cli.1S.dat feel+like do.INF these legos
I don't feel like doing these legos.

The limited number of tokens of complement clauses of *pedir para* “ask” and sentential subjects found in the SANTOS *corpus* disallows any conclusions on these structures.

Finally, in the SANTOS *corpus* we found no occurrences of *prometer* “promise” (infinitive), *prometido* “promised” (past participle), *promete* “promise” (imperative), and *promessa* “promise” (noun). However, we did find one occurrence of *proibido* “forbidden” (past participle) in child directed speech (5):

- (5) MAE: *olha # Inês [/] # Inês # eu já tinha proibido de*
meteres
 look Inês I already had forbidden PREP
 put.INF.2S
isto # ali # estás a ver?
 INI 2;1.10
 this there are PROG see.INF
MOTHER: Look, Inês, I had already forbidden you to put this over there, do you see?

6. Discussion

The data presented in Chapter 5 shows some distinctive patterns. Firstly, only control complement structures with two internal arguments and an obligatory, non-pragmatically determined controller show development, *in terms of rates of correctness*. All other structures – subject control without an intervening argument (Condition 1.a), non-obligatory control (NOC) in sentential subjects (Condition 3) and pragmatically determined interpretations with *pedir para* “ask” (Condition 4) – already show high rates of correctness in the 3 year-old group.

Children’s high rates of correctness in Condition 1.a (subject control with transitive verbs) suggest that they have knowledge of the grammar of control. These results are not due to an absolute bias toward sentence-internal antecedents (contra McDaniel & Cairns 1990/1991, Cairns et al. 1994, and Eisenberg & Cairns 1994): in Condition 3, which tests a NOC context, the same children showed higher rates of third character responses than in any other condition. These results also suggest that children distinguish between the different syntactic configurations in which PRO appears and the varying interpretations of PRO in these configurations. Children have grammatically based interpretations of PRO. Their interpretations are not strategy based, contra claims by Hsu et al. (1989), McDaniel & Cairns (1990/1991), Cairns et al. (1994) and Eisenberg & Cairns (1994).

Hence, the grammar of control in itself cannot account for children’s poor performance with ditransitive control verbs (Conditions 1.b – subject control with *prometer* “promise”, 2.a – object control with direct objects, and 2.b – object control with indirect objects). If children have the grammar of control by age 3, as indicated by their near-perfect performance with subject control complements without an intervening object (Condition 1.a) and different answer patterns in OC and NOC contexts, why do they show development in subject control with an intervening object and object control?

The rates of correctness, however, can be misleading: as previously mentioned, both Conditions 3 (sentential subjects) and 4 (pragmatically determined interpretation) have higher proportions of correct response values. In Condition 3 all possible response values (object and third character, or any of the three characters in the story) are correct answers, while in Condition 4 two out of the three possible response values (subject and object, or the two sentence-internal potential antecedents) are correct answers. Consequently, the rates of correctness are not enough to tell us whether there is development in these two structures, given that children and adults may have different response patterns which

nonetheless correspond to target interpretations. In this sense, there would be development in these structures, which is obscured by the rates of correctness.

In fact, the statistical analysis of the data for these two conditions shows that in both there are significant differences in response rates across age groups (see Chapter 5). Therefore, there is development in these two conditions. Children gave less object control responses in Condition 4 (pragmatically determined interpretation) than adults. In addition, Condition 3 (sentential subjects) shows discrepancies between the child groups and the adult groups in response patterns with pre-posed/post-posed sentential subjects and with different matrix predicates.

Moreover, we saw on Chapter 5 that the 3 year-old group gave similar response patterns on three of the four conditions with ditransitive verbs. In Conditions 1.b (subject control with ditransitive verbs), 2.a (object control with direct objects) and 4 (pragmatically determined interpretation) children aged 3 gave around 30% subject control responses, suggesting that at this stage they are not taking into account the subject/object control properties of these verbs (although they do know that these are OC contexts, given that they do not give third-character responses at significant rates). Assuming a theory of control as Agree (Landau 2000, 2004, 2006), it is in accordance with Landau's (2001) division of labor between the syntax, which establishes the control domain, the semantics, which establishes the controller of PRO in OC, and the pragmatics, which establishes the controller of PRO in NOC (Landau 2001: 150). Under these assumptions, children would first learn to establish the control domain (namely the OC and NOC division) and then learn to establish the controller in these contexts, taking into account the semantic properties of verbs, among other factors. This is also in accordance with proposals on language development that argue that the syntax develops faster than the syntax-pragmatics interface (Schaeffer 1997; Avrutin 1999).

In Condition 2.b (object control with indirect objects) children aged 3 gave only 22,5% subject control responses. This condition also differs from the other conditions in that it shows a U-shaped developmental pattern: children aged 4 gave less object control responses (59,5%) than children aged 3 (72,5%) and children aged 5 (76,1%). These similarities across Conditions 1.b, 2.a and 4, as well as the diverging response patterns found in Condition 2.b, also require an account.

Finally, in Condition 4 (pragmatically determined interpretations) children and adults alike gave more object control than subject control responses, showing that they have a preference for object control. In fact, at the ages of 4 and 5 children gave less subject control responses in this condition, in which this is a

grammatical possibility, than in the object control conditions (2.a and 2.b). This also demands a principled explanation.

The explanatory hypothesis for the facts described above must take into consideration the discrepancies in rates of target responses across individual (direct) object control predicates (see Chapter 5, Condition 2.a): children do not have the same rates of target responses with all verbs with identical control properties, which confirms that lexical acquisition plays a role in the acquisition of control.

The discussion of the experimental data will also take into consideration the grammar of control and the characteristics of control and complementation in European Portuguese (Chapter 2), as well as our main research question and the working hypotheses that guided this study (Chapter 3). These are repeated here:

(I) Do Portuguese-speaking children show evidence of grammatically based interpretations of PRO at early stages?

- a. If there is an early stage of free interpretation of PRO, the subsequent prediction is that children will accept a subject DP, an object DP or a third character as the controller of PRO, regardless of the structure it occurs in. Conversely, if children do have grammatically based interpretations of PRO at early stages, they will be able to distinguish between different PRO-contexts and the subsequent varying referential properties of this null element – in this case, third character responses will be restricted to NOC contexts (namely sentential subjects).
- b. If the interpretation of PRO is grammatically constrained, and concerning the choice of controller in OC contexts, then:

IV. According to the Single Argument Structure Hypothesis (SASH: Santos, Gonçalves & Hyams 2014, in prep.), children should 1) show a strong preference for object control in structures with two internal arguments, 2) evidence different rates of object control responses with different matrix verbs, contingent on the rhythm of the acquisition of argument structure, and 3) reanalyze their interpretation of PRO, accordingly to their reanalysis of argument structure.

V. If we assume that control is movement and extend Orfitelli's (2012a, b) Argument Intervention Hypothesis (AIH) to subject/object control, 1) the matrix object will be the preferred controller in structures with two internal arguments

(one internal argument acts as an intervener for subject control), and 2) object control will be equally preferred with all verbs at the same stage (particularly in the case of younger children).

- VI. If the saliency of the higher subject in EP also affects the choice of antecedent in control contexts (Montalbetti 1984), children will show subject control interpretations in object control contexts.

This chapter is organized as follows: in section 6.1, we present the discussion of the comprehension data presented in the previous chapter, comparing it the results on elicited production presented by Santos, Gonçalves & Hyams (2014, in prep.). In section 6.2 we provide a summary of the discussion.

6.1- Discussion of the comprehension data

Regarding our research question – do Portuguese-speaking children show evidence of grammatically based interpretations of PRO at early stages? – the results described in the previous chapter suggest that children do have knowledge of the grammar of control and that their choice of antecedent obeys this knowledge.

As we have pointed out, if children did have an early stage of free control, as some of the literature for the acquisition of English suggests (Hsu et al. 1985 *apud* Hsu et al. 1989; McDaniel & Cairns 1990a, b; McDaniel, Cairns & Hsu 1990/91; Cairns et al. 1994; Eisenberg & Cairns 1994), then children would accept a subject DP, an object DP or a third character as the controller of PRO, regardless of the configuration it occurred in. This prediction is not borne out: in Condition 1.a (subject control with transitive verbs), a context which has been argued to generate more free control readings in children aged 3 to 5 (Eisenberg & Cairns 1994), the 3 year-old group already shows adult levels of subject control responses with verbs such as *querer* “want” and *conseguir* “manage to”. These responses are not due to a bias towards sentence-internal antecedents: with sentential subjects (Condition 3), a NOC context, children showed considerable rates of third-character responses. In fact, while with all OC contexts tested in the experimental task all age groups (including the adult group) had insignificant rates of third-character responses, in Condition 3 (sentential subjects) children and adults alike displayed considerable rates of this response value.

Furthermore, given that children only gave significant rates of third-character responses where appropriate (that is, in Condition 3, with sentential

subjects), we conclude that children are able to distinguish between different PRO-contexts and the varying referential properties of PRO in these contexts. Children can identify NOC contexts, in which they assign a sentence-external antecedent to PRO at higher rates, and OC contexts, in which they assign a matrix clause antecedent to PRO. Young children restrict third-character readings to NOC contexts and show knowledge of PRO's obligatory co-reference with a matrix clause antecedent in OC contexts.

These findings comport with Sherman's (1983) findings for English (reported in Sherman & Lust 1993), that is, that children have continuous knowledge of the grammar of control, and disconfirm the proposal of a non-control stage, in children with ages comparable to the ones tested in this study (Hsu et al. 1989; McDaniel, Cairns & Hsu 1990/91; Cairns et al. 1994; Eisenberg & Cairns 1994). Children aged 3 do not take PRO's reference to be free, and no evidence suggests that they do not have the target syntactic representation of subject control complements of transitive matrix verbs (contra Hsu et al. 1989; McDaniel, Cairns & Hsu 1990/91; Cairns et al. 1994; Eisenberg & Cairns 1994). In addition, children's results in Condition 1.a (subject control with transitive verbs) are also in accordance with Goodluck et al.'s (2001) results, which show that children acquiring Spanish do not have problems with subject control without an intervening object.

Concerning subject control with *promise*-type verbs (Condition 1.b), our results comport with previous findings for the acquisition of English (starting with C. Chomsky 1969). Portuguese-speaking children show delayed acquisition of subject control with *prometer* "promise". As shown in Chapter 5, children aged 5 still display far lower rates of subject control with *prometer* "promise" than adults, although they are starting to approach the target syntax.

The distinguishing feature of these structures is that there is an intervening DP object between PRO in the embedded clause and its controller in the matrix clause. We will then consider that the source of children's difficulties in this structure lies in the presence of this DP object. Having seen that the interpretation of PRO is grammatically constrained at early stages, children's performance in this condition may be explained by either Hypothesis I (Single Argument Structure Hypothesis: Santos, Gonçalves & Hyams 2014, in prep.) or Hypothesis II (an extension of Orfitelli's 2012a, b Argument Intervention Hypothesis to control structures). Both hypotheses predict non-target object control responses with *promise*-type verbs. If we assume the SASH, then at least in some of these instances children are not even computing the control relation: given a single argument analysis of the target grammar object DP and the clausal complement (V [DP VP]), the target grammar object DP is licensed as an infinitival subject, internally to the

complement clause. Hence, there is no PRO and no co-reference relation. If we assume a movement analysis of control (Hornstein 1999) and extend the AIH to control complements, then these results may be due to intervention effects, given that a position which could potentially be involved in the A-chain intervenes between the antecedent and its base position.

In order to further evaluate these two explanatory hypotheses, then, we must also take into the account the results of the remaining conditions involving control with ditransitive verbs.

Children perform closer to adult level with (direct) object control verbs (Condition 2.a) from early stages: in all age groups, children gave more object responses than subject responses, with a steady increase in object response rates with age.

A closer look into the data shows differences in performance between verbs (see Chapter 5). The predicate *ensinar a* “teach” shows the worst results of all three verbs in this condition, in all age groups (including the adult group). This may be due to the interference of pragmatic factors, as children and adults alike may infer that, in order to teach the action denoted by the embedded predicate, the matrix subject may have to perform it as well. The verb *proibir de* “forbid” shows better results than *ensinar a* “teach”. However, participants’ performance with *proibir de* “forbid” remains worse than their performance with *pôr a* “put to”. At age 5, object control rates with *pôr a* “put to” (93,5%) are nearly at adult level (97,5%). The status of this verb as a control verb is not completely consensual and we do not know for certain that its clausal complement completely conforms with a typical object control structure (again, see Chapter 2). These results may also be due to the higher frequency of this verb in child production and child-directed speech, in comparison with other object control verbs.

These differences in rates of acquisition of object control verbs are in agreement with Hypothesis I (Single Argument Structure Hypothesis). One of the predictions of the Single Argument Structure Hypothesis (SASH: Santos, Gonçalves & Hyams 2014, in prep.) is that children will show different rates of acquisition of different object control verbs, given that the acquisition of control is contingent on the acquisition of the argument structures of different control verbs. Assuming this hypothesis, at least some object control responses, especially at the earliest stages, would be due to a misanalysis of the complement of the matrix verb. In these instances, as previously mentioned for subject control with *prometer* “promise”, the control relation would not actually be computed. As children reanalyze the argument structure of these verbs, there should be different rates of

object control with different verbs, as there may be some hesitation between subject and object control. In this case, other factors may affect the choice of controller. In fact, all child groups gave considerable rates of subject responses in this condition, showing that the saliency of the higher subject as a potential antecedent in a null subject language such as European Portuguese (Hypothesis III) is visible at early stages, if children do extend this saliency to control contexts. These subject control responses, however, are difficult to accommodate under a movement analysis of control (Hornstein 1999).

On the other hand, an explanation of these data in terms of control as movement and argument intervention (based on the Argument Intervention Hypothesis proposed by Orfitelli 2012a, b) entails that the acquisition of control relies more on the acquisition of a syntactic mechanism, rather than lexical acquisition, hence if children have fully acquired this mechanism, they should be able to apply it with all control predicates. If they have not acquired this mechanism yet, they should equally prefer object control with all ditransitive verbs at a given stage, and should not demonstrate lexical effects, unless another explanation for variation across verbs with identical control properties is tenable under a movement theory of control (Hornstein 1999). This prediction is not borne out by our comprehension data. Moreover, this hypothesis entails that children avoid subject control (especially at the earliest stages), as it would involve argument intervention. This is also not borne out by the data: 3 year-olds show high rates of subject control in object control contexts.

Given that both Hypothesis I (Single Argument Structure Hypothesis: Santos, Gonçalves & Hyams 2014, in prep.) and Hypothesis II (based on the Argument Intervention Hypothesis proposed by Orfitelli 2012 a, b for the delayed acquisition of raising with *seem*-type verbs) both lead to object control readings (although they also make divergent predictions regarding the rates of acquisition of object control with different predicates, the possibility of reanalysis and the possibility of subject control responses with object control verbs in the acquisition process), it is interesting to go back to the elicited production data that supported the SASH.

In a sentence completion task, Santos, Gonçalves & Hyams (2014, in prep.) found that children aged 3 to 5 produced non-target inflected infinitives with object control verbs (*proibir de* “forbid” and *ensinar a* “teach”), with missing or misplaced prepositions (2):

- (2) a. ...ensinou [os gansos saltarem]. (4;5.12)
 taught the geese jump.INF.3P

(vs. Ensinou os gansos **a** saltar(em))

b. (O pai) proibiu eles irem para o lago. (5;6.12)
the father forbade they go.INF.3P to the lake
(vs ... proibiu-os **de** irem ao lago).

c. (O macaco) ensinou **a** eles irem para cima da mesa. (5;1.18)
the monkey taught PREP they go.INF.3P to top of+the table
(vs. ... ensinou-os **a** irem para cima da mesa).

d. (A mãe pata) proibiu **de** os patinhos irem ao
the mother duck forbade PREP the ducks.DIM go.INF.3P PREP
pé do crocodilo. (5.1.0)
close of+the crocodile
(vs. ... proibiu os patinhos **de** irem ao pé do crocodilo).

Santos, Gonçalves & Hyams (in prep.: 48)

In the data above, the preposition, when present, precedes the target grammar object DP instead of the infinitive, and this DP appears with nominative morphology when it is pronominal (5b, c) (Santos, Gonçalves & Hyams 2014, in prep.). As we have seen before, these data have lead Santos, Gonçalves & Hyams (2014, in prep.) to propose the Single Argument Structure Hypothesis (SASH), according to which children in some instances assign a V [DP VP] structure to V [DP] [VP] strings. Given that children also prefer complete functional complements, they analyze this structure as an inflected infinitive, which licenses its subject internally (hence the nominative morphology).

As mentioned on Chapter 3, although these non-adult inflected infinitives occur with both *proibir de* “forbid” and *ensinar a* “teach”, these responses are considerably more frequent with the former predicate (Santos, Gonçalves & Hyams in prep.). These production results are the reverse of comprehension results, in which children fared better with *proibir de* “forbid” than with *ensinar a* “teach” (see Chapter 5). Given that the SASH predicts adult-like object control readings with a non-adult syntactic analysis, this apparent discrepancy between comprehension and production is actually consistent with this hypothesis. According to the SASH, object control comes for free if and only if the two internal arguments are taken to be a single argument (*proibir de* “forbid” with an *Inf Flex complement). In initial stages, then, at least some target responses with *proibir de* “forbid” may not correspond to true object control.

Thus the SASH (Santos, Gonçalves & Hyams 2014, in prep.) is able to account for both the comprehension and the production data from the acquisition

of EP. A movement analysis of control (Hornstein 1999), on the other hand, has more difficulty accommodating both the comprehension and the production data under a unified account. This does not exclude that there may be other explanations for the discrepancies across (direct) object control verbs (eventually complementary to the SASH).

Similarly to Condition 2.a, in Condition 2.b (object control with indirect objects) children showed the same general tendency as adults in their response patterns: they gave more object control responses than subject control responses, although at lower rates. However, they also showed a U-shaped developmental pattern. At the age of 4 children gave less object control responses and more subject control responses than at the ages of 3 and 5. Nevertheless, object control responses supersede subject control responses in all age groups (see Chapter 5). These results suggest that children are still acquiring the lexical properties of the verb *dizer para* “tell”, and that there may be reanalysis of the syntactic representation of control complements of this verb, which is in accordance with the SASH (see above).

The comprehension data also shows that children aged 3 gave more object control responses in this condition than in any other condition with ditransitive verbs. This may be due to the fact that children are also exposed to input in which the predicate *dizer para* “tell” takes a single propositional argument, with an inflected infinitive and an internally licensed subject (3b). This structure is available in the adult grammar and satisfies children’s early biases towards single internal arguments and complete functional complements (Santos, Gonçalves & Hyams 2014, in prep.).

- (3) a. O cisne diz ao pato para arranjar comida. V [DP] [VP]
 the swan tells to+the duck COMP get.INF food.
- b. O cisne diz para o pato arranjar comida. V [DP VP]
 the swan tells COMP the duck find.INF.3S food
 The swan tells the duck to find food.

Regarding the subject control rates children had in this condition, as mentioned in Chapter 2, object control verbs with indirect objects may drop this object, in which case there is implicit control (Landau 2000). We may pose the hypothesis that the presence of these structures in the input creates further difficulties for children acquiring EP, and that in some of these instances children may take the subject DP to be the controller of PRO.³⁹ As we saw previously

³⁹ This hypothesis is being tested in an ongoing research project (Gamas in prep.).

(Chapter 2), Santos, Gonçalves & Hyams (2014, in prep.) have also found cases in which children drop one of the complements in their elicited production task, especially among the 3 year-olds (although they did not test object control with indirect objects). In some instances, younger children may also be analyzing these structures in this manner in the comprehension task, although this is not a felicitous interpretation in the contexts tested, as in Santos, Gonçalves & Hyams' (2014, in prep.) production task.

Nonetheless, as in object control with direct objects (Condition 2.a), the saliency of the higher subject as the antecedent of an embedded null subject (Montalbetti 1984) may also be at work in instances of subject control responses. This means that children would identify the controller of PRO with the preferential antecedent for *pro*. In these cases, children are already analyzing the control verb as taking two internal complements (an analysis that for children may be compatible with the same verb also taking a single internal argument even with direct object control verbs, as it happens in adult grammar with verbs such as *dizer para* “tell”) but they are still acquiring the control properties of the matrix verb.

Let us now turn to children's preferential choice of antecedent. In control complements of *pedir para* “ask” (Condition 4), either the matrix subject or the matrix object may be a grammatical antecedent (see Chapter 2). Since this investigation is not concerned with the role of pragmatics on choice of antecedent in control contexts, but rather with children's syntactic knowledge, the items used to test control with *pedir para* “ask” were designed to be neutral, so as to allow us to assess children's (and adults') default preference (see Chapter 4).

Our comprehension results with *pedir para* “ask” suggest that children and adults alike have a strong preference for object control. Nonetheless, children show considerable rates of subject control with this verb, especially the 3 year-olds. The preference for object control is in fact more marked in adults than in children. These results suggest that children do not have an absolute preference for object control; contrary to what an analysis of the results in terms of control as movement and argument and argument intervention would predict, young children's interpretation of PRO is nevertheless constrained by other factors. We suggest that another factor would be the saliency of the higher subject as the antecedent of null subjects in pro-drop languages (Montalbetti 1984). This other factor is difficult to accommodate in an analysis of control as movement, as pointed out above.

Nonetheless, the 3 and 4 year-olds gave less subject control responses in this condition, in which this is a grammatical possibility, than in the object control conditions (2.a and 2.b). Again, this may be due to the SASH. Similarly to *dizer para*

“tell”, the predicate *pedir para* “ask” may take either an object DP and a control complement (4a) or a single inflected infinitive complement with an internally licensed subject (4b) in adult grammar. Given that the structure in (4b) satisfies children’s early biases and is available in the input, children may be analyzing structures such as (4a) in this manner in some instances of object control interpretations. This would result in apparent object control readings. In these cases, object control would not actually be preferred, given that control is not being computed. Of course, this is not the only analysis children would have of these structures in any given stage, otherwise subject control readings would be unavailable.

- (4) a. O touro pede ao burro para tocar à campainha. V[DP][VP]
 the bull asks to+the donkey COMP ring.INF to+the bell
- b. O touro pede para o burro tocar à campainha. V[DP VP]
 the bull asks COMP the donkey ring.INF.3S to+the bell
 The bull asks the donkey to ring the bell.

Similarly to *dizer para* “tell”, the predicate *pedir para* “ask” may also drop its indirect object. In these cases, there may be either subject control or implicit control in adult grammar (see Chapter 2).

Finally, let us consider again children’s and adults’ performance with sentential subjects (Condition 3). As pointed out above, children and adults displayed higher rates of control by a sentence-external antecedent in these structures than in any other structure tested in the experimental task. Rates of third-character responses were marginal in all other conditions, in all age groups.

However, there are some asymmetries between children and adults in this condition. Adults show the highest rates of third-character responses, while children’s preferred response is the matrix object, the only character to be mentioned in the test sentence. This may in part be due to constraints on children’s ability to consider the pragmatic context and the syntax-pragmatics interface: in a syntactic context in which this is an appropriate answer, children may be more apt to give object responses because this is the character that was mentioned in the test sentence. Conversely, adults may be more apt to consider the pragmatic context (Schaeffer 1997; Avrutin 1999).

Regarding the role of the matrix predicate, the data described on Chapter 5 shows that children gave high rates of object responses with both *chatear* “bother” and *assustar* “scare”, although slightly higher with *chatear* “bother” than *assustar* “scare”. (Nonetheless, with both predicates children gave more third character

responses than with any verb from any other condition, showing that they are well aware of the control properties (NOC) of both predicates).

Adults show more distinctions between the two verbs. They gave more third character responses than object responses with *assustar* “scare” (reversing the pattern shown by children), and considerably more object responses than third character responses with *chatear* “bother” (although they still gave more third character responses with this verb than children). A closer inspection of the results shows that this is due to item effects: a single item (17 – *Assusta a girafa andar de carro naquelas estradas* “It scares the giraffe to take those roads in a car”) is responsible for this disparity across the two matrix predicates. In this item adults gave far more third-character responses than in any other item in this condition. Furthermore, the majority of adult participants who gave third-character responses answered that all the three characters in the story would perform the action denoted by the embedded predicate. This may be due to the story itself: experimenter 1 says that the car mentioned in the test item belongs to all three characters and that they live near each other. Adults may infer that all three of them will have to use the car to get home. Nevertheless, children did not show this sharp contrast between this item and the other items in Condition 3 (sentential subjects). Again, this is in accordance with the reported difficulty in child linguistic behavior to take into account the syntax-pragmatics interface (Schaeffer 1997; Avrutin 1999).

Concerning the position of the sentential subject, we have seen on Chapter 5 that children and adults show divergent patterns with post-posed sentential subjects: children gave more object responses than third-character responses, whereas adults gave more third-character responses than object responses. These differences between child and adult subjects may also be due to the item considered above (item 17), which has a post-posed sentential subject.

Consider also Landau’s (2001) analysis of the Super-Equi structure (Grinder 1970 *apud* Landau 2001), who presents the following paradigm (5):

- (5) a. Mary knew that it disturbed John [PRO to perjure himself/*herself].
- b. Mary knew that it damaged John [PRO to perjure himself/herself].
- c. Mary knew that [PRO perjuring himself/herself] disturbed John.
- d. Mary knew that [PRO perjuring himself/herself] damaged John.

Landau (2001: 110)

In Landau’s (2001) analysis, the contrast between (5a) and (5b) is due to the special status of post-posed infinitives with psychological verbs (5a): these remain *in situ*, i.e., they are VP-internal. As a result, OC obtains (at least in English), given

that the embedded Agr is within Agree's reach (see Chapter 2). Infinitives in structures such as (5b), on the other hand, are extraposed, in that they must move to an adjunct position. In pre-posed sentential subjects, on the other hand, there is movement from a VP-internal base position to the IP subject position, regardless of the type of matrix verb (5c)-(5d). Given that the sentential subject is outside the domain of the VP, it constitutes a NOC context (see Landau 2001).

Assuming this analysis, we may hypothesize that children's behavior with post-posed items is, to some extent, indicative of the different status of post-posed sentential subjects with psychological verbs. A deeper discussion of the status of post-posed sentential subjects is left as an open issue deserving further research.

6.2- Summary of the discussion

The data presented in Chapter 5 allows us to answer our main research question and to evaluate (to a certain extent) the explanatory hypotheses considered at the onset of this investigation:

(i) Do Portuguese-speaking children show evidence of grammatically based interpretations of PRO at early stages?

There is evidence suggesting that at early stages children interpret PRO according to grammatical knowledge. No evidence suggests the use of linear, strategy based interpretations (contra Hsu et al. 1989, McDaniel & Cairns 1990a, b; Eisenberg & Cairns 1994). The general tendency of results shows convergence with the adult grammar and some lexical knowledge (more subject control in subject control contexts; more object control in object control contexts). Children performed at adult level with subject control transitive verbs from the age of 3 (the earliest age tested). In this condition, as well as in all other conditions involving OC, children and adults gave marginal rates of third-character responses. Conversely, with sentential subjects (Condition 3), a NOC context, children and adults alike gave considerable rates of third-character responses. In addition, third-character readings are constrained to NOC contexts (Condition 3. sentential subjects). In all conditions involving OC, third-character readings were marginal. Hence, children are sensitive to varying PRO-contexts and have knowledge of syntactic and lexical properties that constrain the interpretation of PRO: children distinguish between OC contexts and NOC contexts.

Nonetheless, with ditransitive verbs other factors besides the grammar of control may play a role, such as the saliency of the matrix subject as a possible antecedent for *pro* (Montalbetti 1984), non-target argument structure with direct

object control verbs and *prometer* “promise” (SASH: Santos, Gonçalves & Hyams 2014, in prep.), and adult-like single (propositional) argument analyses with indirect object control verbs (*dizer para* “tell”) and cases of pragmatically determined interpretations with *pedir para* “ask”. Children aged 3 show considerable rates of subject control with ditransitive verbs, which suggests that the saliency of the matrix subject may play a role in choice of antecedent. Regarding the explanatory hypotheses for children’s preference for object control, it was argued that the SASH (Santos, Gonçalves & Hyams 2014, in prep.) accounts for both the comprehension and the production data more adequately than an account based on the movement theory of control (Hornstein 1999) and on intervention effects (based on the AIH, proposed by Orfitelli (2012a, b) for the delayed acquisition of RtS over experiencers in English). Namely, the predictions made by the SASH that children should display different rates of target object responses with different object control verbs (Condition 2.a) and evidence of reanalysis (Condition 2.b) were in agreement with what was found in the comprehension data. In addition, subject control responses in object control contexts are difficult to accommodate under a movement account of control (Hornstein 1999).

7. Conclusion

The research work described in this dissertation has allowed us to fulfill the goals presented in the opening chapter of this dissertation (Chapter 1). We repeat these goals below:

1. to contribute towards the assessment of the development of control, which remains understudied in European Portuguese;
2. to evaluate, considering newly collected comprehension data, the adequacy of the two main syntactic theories of control within the Minimalist Program (control as Agree: Landau 2000, 2004, 2006, 2013; movement theory of control: Hornstein 1999);
3. to assess previous accounts of acquisition data from English-speaking children, namely the claim that young children have a stage of free control (Hsu et al. 1985 *apud* Hsu et al. 1989; McDaniel & Cairns 1990a, b; McDaniel et al. 1990/1991; Cairns et al. 1994; Eisenberg & Cairns 1994);
4. to assess previous claims for the acquisition of control in EP, made on the basis of production data (Santos, Gonçalves & Hyams 2014, in prep.).

Regarding the first goal, we have, by designing a comprehension experimental task, tested the choice of antecedent in control complement clauses by children aged 3-5 years. The data that has been collected using this task has allowed us to assess the interpretation of PRO, a central aspect of the grammar of control, in young children.

Concerning the second goal of this research project, we have concluded that the EP acquisition data may lend support to Landau's (2000, 2004, 2006, 2013) theory of control as Agree. The comprehension data shows asymmetries in the rate of acquisition of different control verbs, which is not easily accounted for by an account that relies on an overarching syntactic mechanism such as movement (Hornstein 1999) and does not take into consideration the lexical properties of verbs, namely the argument structure of each control verb. The rates of subject control responses children gave with object control verbs are also difficult to account for under a movement theory of control (Hornstein 1999). Furthermore, we know that children have the grammar of control, given that they perform at adult level with subject control complements of transitive verbs (and this performance is not due to an absolute bias towards sentence-internal antecedents). This also shows that the third goal of this dissertation has been fulfilled: the comprehension EP data indicates that young children do not have a stage of free control, and that their interpretation PRO is continually restricted by the grammar

of control (contra claims by Hsu et al. 1985 *apud* Hsu et al. 1989; McDaniel & Cairns 1990a, b; McDaniel et al. 1990/1991; Cairns et al. 1994; Eisenberg & Cairns 1994).

Regarding the fourth goal of this goal of this dissertation, we have shown that our comprehension data is in agreement with previous findings for the acquisition of EP control complements (Santos, Gonçalves & Hyams 2014, in prep.). However, more work is required in order to determine whether these results should receive a different explanation. Namely, more control verbs should be tested, as well as more control contexts.

Our main findings regarding the interpretation of PRO in EP complement clauses by children aged 3 to 5 years are:

1. Young children's interpretation of PRO is continually restricted by the grammar of control. This is shown by their combined performance in Condition 1a (subject control with transitive verbs) and in Condition 3 (sentential subjects). Children perform at adult level in Condition 1a, showing that they have knowledge of PRO's obligatory co-reference with a matrix antecedent. This is not the result of an absolute bias towards sentence-internal antecedents, given that with sentential subjects, a NOC context, children gave higher rates of third-character responses than in any other condition (as all other conditions involved OC). Hence, there is no stage at which children's interpretation of PRO is free, i.e., unconstrained by presumably universal principles (contra claims by Hsu et al. 1985 *apud* Hsu et al. 1989; McDaniel & Cairns 1990a, b; McDaniel, Cairns & Hsu 1990/1991; Cairns et al. 1994; Eisenberg & Cairns 1994).
2. The facts above also show that children are able to distinguish between different PRO contexts and the varying interpretations of PRO in these contexts. That is, children have knowledge of the distinction between OC and NOC contexts, and use that knowledge to guide the interpretation of PRO.
3. Given that children show discrepancies in the rate of acquisition of different object control verbs, as well as better comprehension results with *proibir de* "forbid" than with *ensinar a* "teach", we conclude that the EP comprehension data may lend support to the Single Argument Structure Hypothesis (SASH: Santos, Gonçalves & Hyams 2014, in prep.) over an account in terms of control as movement and argument intervention, based on Orfitelli's (2012a, b) account of the delayed acquisition of RtS with *seem*-type verbs. To this extent, these facts also

support the theory of control as Agree (Landau 2000, 2004, 2006, 2013) over the movement theory of control (Hornstein 1999).

Nonetheless, there are many questions that remain open for investigation and debate. As mentioned in the initial chapter of this dissertation, this work is exploratory. The conclusions presented here may be subject to extension and refinement, namely those concerning object control and NOC in sentential subjects. Both structures require further testing, with more control predicates. The status of sentential subjects, in particular post-posed sentential subjects, also requires more analysis.

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APPENDICES

I. Experimental task

Items, control verbs and conditions

Item	Session	Type of item	Condition	Matrix verb
i.	1	Training item (Adverbial)	–	–
ii.	1	Training item (Adverbial)	–	–
iii.	2	Training item (Coordinate)	–	–
iv.	2	Training item (Coordinate)	–	–
1	1	Test sentence	1a Subject control (transitive verbs)	Querer “want”
2	2	Test sentence	1a Subject control (transitive verbs)	Querer “want”
3	2	Test sentence	1a Subject control (transitive verbs)	Conseguir “manage to”
4	2	Test sentence	1a Subject control (transitive verbs)	Conseguir “manage to”
5	1	Test sentence	1.b Subject control (ditransitive verbs)	Prometer “promise”
6	1	Test sentence	1.b Subject control (ditransitive verbs)	Prometer “promise”
7	2	Test sentence	1.b Subject control (ditransitive verbs)	Prometer “promise”

Item	Session	Type of item	Condition	Matrix verb
8	2	Test sentence	1.b Subject control (ditransitive verbs)	Prometer “promise”
9	2	Test sentence	2.a Object control with a direct object	Ensinar a “teach”
10	1	Test sentence	2.a Object control with a direct object	Ensinar a “teach”
11	1	Test sentence	2.a Object control with a direct object	Pôr a “put to”
12	2	Test sentence	2.a Object control with a direct object	Pôr a “put to”
13	1	Test sentence	2.b Object control with an indirect object	Dizer para “tell”
14	1	Test sentence	2.a Object control with a direct object	Dizer para “tell”
15	2	Test sentence	3. Sentential subjects (pre-posed/ post-posed)	Chatear “bother”
16	1	Test sentence	3. Sentential subjects (pre-posed/ post-posed)	Chatear “bother”
17	1	Test sentence	3. Sentential subjects (pre-posed/ post-posed)	Assustar “scare”
18	2	Test sentence	3. Sentential subjects (pre-posed/ post-posed)	Assustar “scare”
19	2	Test sentence	4. Pragmatically determined interpretation	Pedir para “ask”
20	1	Test sentence	4. Pragmatically determined interpretation	Pedir para “ask”

Item	Session	Type of item	Condition	Matrix verb
21	1	Test sentence	4. Pragmatically determined interpretation	Pedir para “ask”
22	2	Test sentence	4. Pragmatically determined interpretation	Pedir para “ask”
23	2	Filler (SVO)	–	–
24	2	Filler (Passive)	–	–
25	1	Filler (Adverbial)	–	–
26	1	Filler (Coordinate) with a null subject	–	–
27	1	Filler (SVO)	–	–
28	2	Filler (Coordinate) without a null subject	–	–
29	1	Filler (SVO) and control item	–	–
30	2	Test sentence	2.a Object control with a direct object	Proibir de “forbid”
31	2	Test sentence	2.a Object control with a direct object	Proibir de “forbid”

Contexts and test sentences: original Portuguese version

Item	Characters	Other elements	Context	Test sentence	Target answer
i.	Cavalo, porco, touro	–	Um touro, um porco e um cavalo passeiam no campo. Vão até ao lago. Então...	O cavalo mergulha no lago enquanto o touro fica à espera.	Touro
ii.	Leão, crocodilo, leopardo	–	Um leão, um crocodilo e um leopardo andam cada um nas suas andanças. Todos têm muita sede e vão ter ao lago. Então...	O leão ataca o leopardo quando ele corre.	Leopardo
iii.	Vaca, ovelha, cabra	–	Uma vaca, uma ovelha e uma cabra estão a pastar no campo. (Usando os três bonecos): "nham, nham, nham... mmm que erva tão boa!" "Pois é, está mesmo boa!" Comem até ficarem cheias e voltam para a quinta ao fim da tarde. Depois...	A vaca não janta e vai logo dormir.	Vaca
iv.	Pato, porco, tartaruga	–	A pata, a porquinha e a tartaruga vão todas tomar banho ao lago, porque está uma tarde de verão muito quente. Então...	A pata nada até meio do lago e a tartaruga fica junto à areia.	Tartaruga
I	Cão, porco, gato	–	Ao pé de um lago passeiam três animais: um gato, um cão e um porco. "Que água tão fresca!" Diz o gato. O cão e o porco concordam "Sim, sim, é mesmo!" Então...	O porco quer nadar no lago.	Porco

Item	Characters	Other elements	Context	Test sentence	Target answer
2	Porca, ovelha, vaca	–	A porca, a ovelha e a vaca vão passear no bosque. Encontram uma amoreira cheia de amoras. Diz a porca: "Oh, que bom aspeto que têm!" Pergunta a ovelha: "Será que podemos comê-las?" E continua: "Isto aqui assim pode ser de alguém... mas realmente têm muito bom aspeto." Então...	A vaca quer comer as amoras.	Vaca
3	Texugo, esquilo, coelho	Maçã, morangos, cenouras, celeiro	No bosque perto da quinta, vivem três animais: o texugo, o esquilo e o coelho. Diz o coelho para os outros: "Eu vi isto no outro dia - lá na quinta é que não falta comida! Têm uma despensa cheia de comida!" Então, vão roubar comida do celeiro da quinta. E então...	O esquilo consegue trazer uma maçã.	Esquilo
4	Gatinho, porquinho, cordeirinho	Morangos	O gatinho, o porquinho e o cordeirinho também vivem aqui na quinta. Um dia, diz o porquinho: "Sabem que há morangos no bosque? Dos selvagens - dizem que são bem melhores que os outros!" Então, vão à procura de morangos no bosque. Separam-se, e no fim...	O cordeirinho consegue encontrar os morangos.	Cordeirinho
5	Pato, galo, coelho	Panela, colher-de-pau	Numa casa vivem três animais: o pato, o galo e o coelho. São vizinhos dos animais da quinta. O pato diz um dia: "E se convidássemos alguns amigos para virem cá jantar?" Os outros dizem: "Sim! Sim! É uma ótima ideia!" Então dividem as tarefas, e...	O galo promete ao coelho cozinhar o jantar.	Galo

Item	Characters	Other elements	Context	Test sentence	Target answer
6	Águia, urso, raposa	Bife	Numa floresta vivem uma urso, uma águia e uma raposa. E Inverno e tem chovido muito. Estão as três à procura de comida quando se encontram numa clareira. "Com a chuva e o frio, já não se apanha nada!" a águia queixa-se "ficam os bichos todos nas tocas." Todas têm muita fome. Então...	A raposa promete à urso voltar com alguma carne.	Raposa
7	Cavalo, touro, burro	mercearia (foto), palha (ráfia)	Na quinta vivem também um cavalo, um boi e um burro. É hora de almoçar e os três animais encontram a despensa vazia. "Oh! Já não há nada!" Queixa-se o cavalo. "Olha! Pois é! Mas como deixam isto assim sem nada?" Responde o burro. Diz o touro: "Eu estou cheio de fome! Tenho mesmo de comer agora." "Eu também! Eu também!" Respondem o cavalo e o burro. Então, dizem: "Era melhor ir comprar alguma coisa na mercearia." Então...	O burro promete ao cavalo trazer muita palha.	Burro
8	Gato, castor, galo	Pintura, paleta com pincel	O gato, o castor e o galo gostam muito de pintura e desenho, e até têm jeito. Diz o castor para o gato: "As tuas paisagens estão tão bonitas!" Responde o gato: "A sério? Obrigada. Eu gosto imenso dos teus retratos!" E continua: "Aqui o pato também tem feito desenhos muito bons." Então, o pato diz: "E se trocássemos quadros entre nós? Eu gostava de ficar com alguma coisa vossa, e vocês também podem ficar com quadros meus." Então...	O castor promete ao galo pintar um novo quadro.	Castor

Item	Characters	Other elements	Context	Test sentence	Target answer
9	Pato, galo, ouriço	Bicicleta	Na quinta, também vivem o galo, o ouriço e o pato. E Domingo e está calor, por isso os outros foram fazer um picnic. Só estes três é que ficaram por casa. Então, estão a dar uma volta a seguir ao almoço e encontram uma bicicleta que alguém deixou encostada à cerca, sem corrente nem nada. "Olha! Deixaram-na aqui sem ninguém que a vigie!" Diz o galo. "Se dermos uma volta com ela ninguém nota e nem se rala muito", diz o ouriço. "Pois é, só que nem todos aqui alguma vez andaram de bicicleta", diz o pato. Então...	O ouriço ensina o galo a andar de bicicleta.	Galo
10	Texugo, ganso, esquilo	Skate	Um texugo, um ganso e um esquilo são vizinhos num bosque. É janeiro, e o Natal foi há pouco tempo. Chega o esquilo e diz para os outros dois: "Olhem o que me deram no Natal: um skate!" Então...	O texugo ensina o ganso a andar de skate.	Ganso
11	Papagaio, coelho, cão	Maçã, morangos, cenouras, celeiro	O papagaio, o coelho e o cão vivem todos na mesma casa, porque têm os mesmos donos. Mas hoje não está mais ninguém em casa. Então, diz o cão: "Tenho tanta fome! Não deixaram comida suficiente, já viram?" O papagaio e o coelho concordam e dizem: "É, e têm tanta coisa na despensa!" Então...	O coelho põe o cão a transportar comida da despensa.	Cão

Item	Characters	Other elements	Context	Test sentence	Target answer
12	Urso, lobo, tigre	Gruta (foto)	Numa floresta muito grande e muito fria, estão três animais à procura de abrigo para passar a noite: o urso, o lobo e o tigre. Encontram-se, por acaso, junto de uma gruta. Diz o urso: "já andei por esta floresta toda e daqui já não me tiram!". Diz o lobo: "Eh, tem calma! Há espaço para todos." Responde o tigre: "Pois, mas não é assim tão grande, e podem aparecer outros." Então decidem: "Ficamos os três aqui, com a entrada da gruta guardada." Então...	O lobo põe o tigre a guardar a entrada da gruta.	Tigre
13	Cisne, pato, galo	—	Estão três pássaros num lago: o pato, o cisne e o galo. "Estou com tanta fome!" Diz o cisne. "Também eu!" Respondem o pato e o ganso. "Comemos tão pouco ao almoço." Continua o galo. Então...	O cisne diz ao pato para arranjar comida.	Pato
14	Tartaruga, foca, pata	Seta	Numa ilha no alto mar, três animais encontram-se por acaso, no meio das suas viagens. São uma tartaruga, uma pata e uma foca. Diz a foca: "Vou para a Patagónia." Diz a tartaruga: "Eu vou para umas ilhas das Américas." E continua: "e tu, pata, vais para onde?" A pata responde: "Eu vou para a Europa." Todas perguntam a melhor forma de chegar aos seus destinos, e trocam informações. Então...	A tartaruga diz à pata para seguir para Norte.	Pata

Item	Characters	Other elements	Context	Test sentence	Target answer
15	Texugo, esquilo, bambi	Madeira (3 pauzinhos)	Numa grande floresta vivem um texugo, um bambi e um esquilo. De noite fica sempre muito frio na floresta, por isso ali costuma-se apanhar madeira e pinhas para acender a lareira. É mesmo preciso, porque faz imenso frio ali, mas a floresta já começa a ficar estragada. Então...	Chateia o bambi apanhar madeira.	Qualquer personagem ou conjunto de personagens
16	Elefante, crocodilo, hipopótamo	–	Um elefante, um crocodilo e um hipopótamo estão a tomar banho numa lagoa. Passam ali a tarde toda a brincar, mas o sol já se está a pôr. Então...	Sair da lagoa chateia o elefante.	Qualquer personagem ou conjunto de personagens
17	Girafa, zebra, avestruz	Carro	A girafa, a zebra e a avestruz são vizinhas e bastante amigas. Um dia juntam o seu dinheiro e compram um carro todas juntas. Mas para voltarem para as suas casas, têm de passar por estradas cheias de curvas e todas esburacadas. Então...	Assusta a girafa andar de carro naquelas estradas.	Qualquer personagem ou conjunto de personagens

Item	Characters	Other elements	Context	Test sentence	Target answer
18	Galinha, lebre, pata	Três bicicletas	Na quinta vivem também a galinha, a lebre e a pata. Um dia, diz a lebre: "E se fôssemos andar de bicicleta esta tarde? Está um lindo dia. Há muito que não fazia um tempo tão bom." A pata e a galinha dizem: "Sim, sim, acho uma ótima ideia!" Então vão buscar as suas bicicletas e começam a pedalar. Olha, uma bicicleta para a galinha, uma bicicleta para a lebre e uma bicicleta para a pata. Então...	Andar muito rápido assusta a pata.	Qualquer personagem ou conjunto de personagens
19	Pato, carneiro, coelho	Barco	O pato, o carneiro e o coelho também vivem na quinta. Como está um dia muito bom, foram andar de barco: Diz o pato: "Que dia ótimo! Eu sempre adorei este lago." O coelho e o carneiro concordam: "Pois é! Isto é uma paz aqui." Estão a andar de barco muito calmamente quando o vento muda de direção e torna-se mais forte. A viagem deles fica logo mais atribulada. Ficam assustados e não sabem o que fazer. Então...	O carneiro pede ao coelho para descer a vela do barco.	Carneiro/ coelho
20	Cão, gato, papagaio	Baloço, cavalinho	O cão, o gato e o papagaio vivem juntos na mesma casa, porque têm os mesmos donos. Hoje os donos não estão em casa. "Estou farto de estar fechado em casa!" Diz o cão. "Pois é, eu também. Mas eu sei de um parque aqui perto onde podemos ir brincar, que eu já me escapuli daqui para ir lá umas poucas vezes" responde o gato. "Então de que é que estamos à espera?" Diz o	O cão pede ao gato para ir para o baloço.	Cão/ gato

Item	Characters	Other elements	Context	Test sentence	Target answer
			papagaio. Saem da casa e vão ter ao parque, onde há cavaleiros e baloiços. "Então vamos fazer o quê?" Pergunta o cão. "Vamos fazer corridas!" Diz o papagaio. Correm à volta do parque, mas cansam-se ao fim de pouco tempo, e então...		
21	Cavalo, touro, burro	–	Na quinta vivem um cavalo, um touro e um burro. Passam a tarde toda a comer erva no campo. Então, diz o cavalo: "Acho que está a ficar tarde. É melhor ir para casa." E põem-se a caminho de casa. Então ao chegar a casa...	O touro pede ao burro para tocar à campainha.	Burro
22	Pata, galinha, lebre	Saco de farinha	A pata, a lebre e a galinha vivem na quinta também. São as três muito gulosas e às vezes cozinham juntas. Diz a galinha: "vamos fazer um bolo! Há tanto tempo que não como bolo." A pata e a lebre concordam: "Ah, pois é! Há tanto tempo que não fazemos bolo. Vamos lá fazer." Então dividem as tarefas. E então...	A pata pede à lebre para ir buscar farinha.	Pata/ lebre
23	Lebre, galinha, ovelha	–	A lebre, a galinha e a ovelha passeiam junto ao lago, a conversar muito bem-dispostas. Mas então...	A lebre empurra a galinha para dentro do lago.	Galinha
24	Tigre, leão, leopardo	–	Um tigre, um leão e um leopardo vivem na savana africana. Estão sempre a discutir por causa dos territórios para caçar, e então um dia fazem uma corrida para ver quem é mais rápido, e resolver a questão de uma vez por todas. Então...	O tigre é ultrapassado pelo leopardo.	Tigre

Item	Characters	Other elements	Context	Test sentence	Target answer
25	Ganso, castor, lagarto	–	Numa clareira no meio da floresta, um castor, um ganso e um lagarto estão deitados a apanhar sol. Depois...	O lagarto adormece depois de o ganso ir para casa.	Ganso
26	Macaco, tucano, papagaio	–	Moram três animais numa selva muito densa: o macaco, o tucano e o papagaio. Passam a tarde toda a brincar uns com os outros. Mas agora já está a anoitecer, e de noite a selva é um lugar muito assustador. Por isso, vão-se embora para as suas casas. Mas então...	O tucano prega um susto ao macaco e foge.	Tucano
27	Panda, canguru, coala	Mesa, cadeira, presente	É dia de Natal e o panda, o canguru e o coala, que são muito amigos, almoçam juntos. Então a seguir ao almoço...	O panda dá um presente ao coala.	Panda
28	Pantera negra, leoa, chita	Dois coelhos, avestruz	Na selva, estão três animais a ter uma grande discussão: Diz a leoa: "Eu sou a melhor caçadora daqui" E explica: "Eu posso caçar de dia e de noite, e todo o tipo de animais pequenos e médios, e até alguns bem grandes." Responde a chita: "Oh, oh, isso também eu. E corro mais rápido que qualquer uma de vocês." Então diz a pantera negra: "Sabes lá! Se tu alguma vez fazias o que eu faço! Não passas despercebida como eu, à noite ou de dia, na selva densa." A leoa, a chita e a pantera negra então fazem uma competição, a ver quem caça mais animais até ao pôr-do-sol. No fim...	A chita traz dois coelhos e a leoa traz uma avestruz.	Leoa

Item	Characters	Other elements	Context	Test sentence	Target answer
29	Texugo, esquilo, ouriço	Morangos, maçã	No bosque, o texugo, o esquilo e o ouriço estão a fazer um picnic. Trouxeram muitas frutas. Então...	O esquilo dá uma maçã ao ouriço.	Esquilo
30	Águia, pantera negra, leoa	Dois frangos	Na savana, uma águia, uma pantera e uma leoa acabam agora mesmo a sua caçada. Agora já têm uns frangos para o jantar, mas estão muito cansadas do esforço da caçada. Diz a pantera: "Isto cansa imenso! Então com este calor..." Repõe a leoa: "Pois é, eu fiquei cheia de sede, e ainda temos de levar isto tudo para as nossas tocas." A águia diz: "É, nem posso pensar nisso. Isto foi uma caçada muito exigente." Então...	A pantera proíbe a águia de carregar a carne.	Águia
31	Texugo, esquilo, ouriço	–	Três animais do bosque foram passear até ao lago: o texugo, o esquilo e o ouriço. Já está no pico do verão, e os três têm muito calor. Diz o esquilo: "Ah! Que bonito que é o lago, e está tão fresco aqui ao pé!" Responde o texugo: "É! No bosque já nem à sombra se está bem. Em todo o lado faz calor." Diz o ouriço: "Pois é, até de noite já faz calor!" E então têm a ideia de mergulhar no lago. Mas como são animais pequenos, têm medo que apareça algum animal maior que os possa caçar, e então decidem que deve ficar alguém de vigia à beira do lago. Então...	O ouriço proíbe o esquilo de tomar banho no lago.	Esquilo

Contexts and test sentences: English version

Item	Characters	Other elements	Context	Test sentence	Target answer
i.	Horse, pig, bull	–	A bull, a pig and a horse walk in the field. They go to the lake. Then...	The horse dives into the lake while the bull waits.	Bull
ii.	Lion, crocodile, leopard	–	A lion, a crocodile and a leopard are going about their business. They are all very thirsty and go to the lake. Then...	The lion attacks the crocodile when he runs.	Leopard
iii.	Cow, sheep, goat	–	A cow, a sheep and a goat are grazing in a field. (Using the three dolls): "nom, nom, nom... mmm this grass is so good!" "It is! It is really good!" They eat until they are full and they come back to the farm at the end of the afternoon. Then...	The cow doesn't have dinner and goes to sleep right away.	Cow
iv.	Duck, pig, turtle	–	The duck, the pig and the turtle all go bathing in the lake, because it is a relay hot summer afternoon. Then...	The duck swims to the middle of the lake and the turtle stays by the sand.	Turtle
I	Dog, pig, cat	–	Three animals are taking a walk by the lake: a cat, a dog and a pig. "The water is so fresh!" Says the cat. The cat and the pig agree: "Yes, it really is!" Then...	The pig wants to swim in the lake.	Pig

Item	Characters	Other elements	Context	Test sentence	Target answer
2	Pig, sheep, cow	–	The pig, the sheep and the cow go take a walk in the woods. They find a blackberry bush filled with blackberries. The pig says: "Oh, they look so good!" The sheep asks: "Can we eat them?" And she goes on: "They could be somebody's... but they really do look good." Then...	The cow wants to eat the blackberries.	Cow
3	Badger, squirrel, rabbit	Apple, strawberries, carrots, barn	There are three animals living in the woods near the farm: the badger, the squirrel and the rabbit. The rabbit says to the others: "I saw this the other day – in the farm there's no lack of food! They have a pantry filled with food!" Then, they go steal food from the farm's pantry. And then...	The squirrel manages to bring an apple.	Squirrel
4	Kitten, piglet, lamb	Strawberries	The kitten, the piglet and the lamb live in the farm too. One day, the piglet says: "Did you know that there are strawberries in the woods? The wild ones – they say they're much better than the others!" Then, they go look for strawberries in the woods. They split, and in the end...	The lamb manages to find the strawberries.	Lamb
5	Duck, rooster, rabbit	Pan, wooden spoon	Three animals live in a house in the woods: the duck, the rooster and the rabbit. They are neighbors of the farm animals. One day, the duck says: "How about we invite some friends over for dinner?" The others say: "Yes, that's a great idea!" Then they divide tasks, and...	The rooster promises the rabbit to cook dinner.	Rooster

Item	Characters	Other elements	Context	Test sentence	Target answer
6	Eagle, bear, fox	Stake	A bear, an eagle and a fox live in a forest. It's winter and it has been raining a lot. The three of them are looking for food when they find each other in a glade. "With all this rain and cold, you can't catch anything anymore" the eagle complains "all the beasts stay in their dens". They are all very hungry. Then...	The fox promises the bear to come back with some meat.	Fox
7	Horse, bull, donkey	Grocery store (picture), straw (raffia)	A horse, a bull and a donkey live in the farm too. It's time to lunch and the three animals find the pantry empty. "Oh! There's nothing here!" The horse complains. "There isn't! How do they leave this place empty like this?" The donkey replies. The bull says: "I'm starving! I really need to eat now." "Me too! Me too!" The horse and the donkey reply. Then, they say: "It would be better to go buy something at the grocery store." Then...	The donkey promises the horse to bring a lot of straw.	Donkey
8	Cat, beaver, rooster	Painting, pallet with brush	The cat, the beaver and the rooster really enjoy painting and drawing, and they are actually good at it. The beaver says to the cat: "Your landscapes are so beautiful." The cat answers: "Really? Thank you. I really like your portraits!" And he goes on: "The rooster has also been making really good drawings." Then, the rooster says: "What if we exchanged pictures among us? I'd really like to have something from you, and you can also have pictures I've made." Then...	The beaver promises the rooster to paint a new picture.	Beaver

Item	Characters	Other elements	Context	Test sentence	Target answer
9	Duck, rooster, hedgehog	Bicycle	A rooster, a hedgehog and a duck also live in the farm. It's Sunday and it's really hot, so all the other animals went for a picnic. Only these three stayed at home. Then, they're taking a walk after lunch and they find a bicycle that someone has left leaning against the fence, without even a chain. "Look! Someone left it here without anyone to keep an eye on it!" The rooster says. "If we go for a ride nobody will notice. They won't even care much." The hedgehog says. "That's right, but not everyone here has ever ridden a bike before." Says the duck. Then...	The hedgehog teaches the rooster to ride the bicycle.	Rooster
10	Badger, goose, squirrel	Skate	A badger, a goose and a squirrel are neighbors in the woods. It's January, and Christmas was not long ago. The squirrel comes and says to the other two: "Look what I got for Christmas: it's a skate!" Then...	The badger teaches the goose to ride the skate.	Goose
11	Parrot, rabbit, dog	Apple, strawberries, carrots, barn	The parrot, the rabbit and the dog all live in the same house, because they have the same owners. But today there's nobody else at home. Then, the dog says: "I'm so hungry! They didn't leave enough food, have you seen that?" The parrot and the rabbit agree and say: "That's right, and they have so much food in the pantry!" Then...	The rabbit makes the dog carry food from the pantry.	Dog

Item	Characters	Other elements	Context	Test sentence	Target answer
12	Bear, wolf, tiger	Cave (picture)	There are three animals looking for a place to sleep in a very big and very cold forest: they are the bear, the wolf and the tiger. By chance, they find each other near a cave. The bear says: "I have been looking in the entire forest and you won't get me out of here!" The wolf says: "Hey, take it easy! There's room for everybody." The tiger replies: "Yes, but it's not that big, and others might show up." Then they decide: "The three of us stay here, with a guard at the entry of the cave." Then...	The wolf makes the tiger guard the entry to the cave.	Tiger
13	Swan, duck, rooster	–	There are three birds in a lake: the duck, the swan and the rooster. "I'm so hungry!" The swan says. "Me too!" The duck and the rooster answer. "We ate so little at lunch." The rooster goes on. Then...	The swan tells the duck to go get food.	Duck
14	Turtle, seal, duck	Arrow	In an island at sea, three animals meet by chance, amid their travels. They are a turtle, a duck and a seal. The seal says: "I'm going to Patagonia." The turtle says: "I'm going to some islands in the Americas." And she goes on: "and you, duck, where are you going?" The duck answers: "I'm going to Europe." They all ask about the best way to get to their destinations, and exchange information. Then...	The turtle tells the duck to go north.	Duck

Item	Characters	Other elements	Context	Test sentence	Target answer
15	Badger, squirrel, bambi	Wood	A badger, a bambi and a squirrel live in a big forest. At night it always gets cold in the forest, so it is custom there to go gather wood and cones to light a fire. It is really needed, because it gets really cold in the forest, but the forest is starting to get spoiled. Then...	It bothers the bambi to gather wood.	Any character or set of characters
16	Elephant, crocodile, hippo	–	An elephant, a crocodile and a hippo are bathing in a lagoon. They spend the whole afternoon playing there, but the sun is already setting. Then...	To leave the lagoon bothers the elephant.	Any character or set of characters
17	Giraffe, zebra, ostrich	Car	The giraffe, the zebra and the ostrich are neighbors and they are very good friends. One day they gather all their money and they buy a car together. But now, to go back to their homes, they have to take some very bad roads, with lots of turns and holes. Then...	It scares the giraffe to take those roads in a car.	Any character or set of characters

Item	Characters	Other elements	Context	Test sentence	Target answer
18	Chicken, hare, duck	Three bicycles	A chicken, a hare and a duck live in the farm too. One day, the hare says: "What if we rode our bikes this afternoon? It's a beautiful day. The weather hasn't been so good in a while." The duck and the chicken say: "Yes, that's a great idea!" Then they go get their bikes and they start pedaling. Look, a bike for the chicken, a bike for the hare and a bike for the duck. Then...	To ride very fast scares the duck.	Any character or set of characters
19	Duck, ram, rabbit	Boat	The duck, the ram and the rabbit also live in the farm. It's a beautiful day, so they went boating: The duck says: "What a great day! I've always loved this lake." The rabbit and the ram agree: "It is! It's very peaceful here." They are boating very calmly when suddenly the wind changes and becomes stronger. Their outing immediately becomes more troublesome. They get scared and they don't know what to do. Then...	The ram asks the rabbit to lower the boat's sail.	Ram/ rabbit
20	Dog, cat, parrot	Swing, rocking horse	The dog, the cat and the parrot live together in the same house, because they have the same owners. "I'm tired of being locked in this house!" says the dog. "Me too. But I know about a park nearby where we can go to play, because I've sneaked out a few times to go there" the cat answers. "Well then, what are we waiting for?" says the parrot. They get out of the house	The dog asks the cat to go to the swing.	Dog/ cat

Item	Characters	Other elements	Context	Test sentence	Target answer
			and go to the park, where there are rocking horses and swings. "What are we going to do?" asks the dog. "Let's have a race!" the parrot says. They run around the park, but soon they get tired. Then...		
21	Horse, bull, donkey	Farm	A horse, a bull and a donkey live in the farm. They spend the whole afternoon eating grass in the field. Then, the horse says: "I think it's getting late. We should go home." Then, they go on their home. Then once they arrive...	The bull asks the donkey to ring the bell.	Donkey
22	Duck, chicken, hare	Bag of flower	The duck, the hare and the chicken live in the farm too. The three of them are sweet-toothed and sometimes they cook together. The chicken says: "let's bake a cake! I haven't had cake for so long." The duck and the hare agree: "Oh, you're right! We haven't baked a cake for a while. Let's bake a cake." Then they divide tasks. And then...	The duck asks the hare to go get flower.	Duck/ hare
23	Hare, chicken, sheep	–	The hare, the chicken and the sheep are taking a walk by the lake. They are talking and they are in a good mood. But then...	The hare pushes the chicken into the lake.	Chicken
24	Tiger, lion, leopard	–	A tiger, a lion and a leopard live in the African savannah. They are always fighting over the territories for hunting, so one day they have a race to see who the fastest one is, and resolve the matter once and for all. Then...	The tiger is surpassed by the leopard.	Tiger

Item	Characters	Other elements	Context	Test sentence	Target answer
25	Goose, beaver, lizard	–	In a glade in the middle of the woods, a badger, a goose and a lizard are lying in the sun. Then...	The lizard falls asleep after the goose goes home.	Goose
26	Monkey, toucan, parrot	–	There are three animals living in a very dense jungle: the monkey, the toucan and the parrot. They spend the whole afternoon playing. But now it's getting dark, and the jungle is a very scary place at night. So they all go home. But then...	The toucan scares the monkey and runs off.	Toucan
27	Panda bear, kangaroo, koala	Table, chair, present	It's Christmas day and the panda, the kangaroo and the koala, who are good friends, are all having lunch together. Then after lunch...	The panda offers a gift to the koala.	Panda bear
28	Black panther, lioness, cheetah	Two rabbits, ostrich	In the jungle, there are three animals having a big fight. The lioness says: "I'm the best hunter here!" And she explains: "I can hunt during the day and the night, and all kind of small and medium animals, and also some that are quite big." The cheetah replies: "Oh, oh, that I can do as well. And I run faster than any of you." Then the black panther says: "What would you know! You could never do what I do! You can't go unnoticed like me, at night or during the day, in the jungle." The lioness, the cheetah and the black panther then have a competition, to see who hunts the most animals until the	The cheetah brings two rabbits and the lioness brings an ostrich.	Lioness

Item	Characters	Other elements	Context	Test sentence	Target answer
			<p>sunset. In the end...</p>		
29	Badger, squirrel, hedgehog	Strawberries, apple	<p>In the woods, the badger, the squirrel and the hedgehog are having a picnic. They brought a lot of fruit. Then...</p>	<p>The squirrel gives an apple to the hedgehog.</p>	Squirrel
30	Eagle, black panther, lioness	Two chickens	<p>In the savannah, an eagle, a panther and a lioness have just finished their hunt. Now they have some chickens for dinner, but they are very tired from the effort of the hunt. The panther says: "This is very tiresome! And with this heat..." The lioness replies: "It is, I got really thirsty, and we still have to carry this to our dens." The eagle says: "Yes, I can't even think about that. This hunt was very demanding." Then...</p>	<p>The panther forbids the eagle to carry the meat.</p>	Eagle

Item	Characters	Other elements	Context	Test sentence	Target answer
31	Badger, squirrel, hedgehog	–	Three animals of the woods went for a walk by the lake: the badger, the squirrel and the hedgehog. It is the peak of summer, and it has been very hot. The squirrel says: “Oh! The lake is so beautiful! And it’s so pleasant here!” The badger answers: “Yes! In the woods it’s too hot everywhere, even in the shadow!” The hedgehog says: “Even during the night it is too hot!” Then they have the idea of diving in the lake. But, given that they’re small animals, they’re afraid that a bigger animal might show up and hunt them, so they decide that someone should stay by the lake as a lookout. Then...	The hedgehog forbids the squirrel to dive in the lake.	Squirrel

Criança: _____

Data de nascimento: _____

Data de recolha sessão 1: _____

Data de recolha sessão 2: _____

Escola: _____

Sala: _____

Experimentadores: _____

REGISTO DE RESPOSTAS:

Frase-estímulo	Resposta	Notas
Sessão 1:		
1. (i) Quem é que vai mergulhar no lago? Então mostra lá.		
2. (ii) Quem é que vai correr? Então mostra lá.		
3. (17) Quem é que vai andar de carro naquelas estradas? Então mostra lá.		
4. (29) Quem é que vai dar uma maçã? Então mostra lá.		
5. (11) Quem é que vai transportar comida da despensa? Então mostra lá.		
6. (21) Quem é que vai tocar à campainha? Então mostra lá.		
7. (27) 1- Quem é que vai dar um presente? Então mostra lá.		
8. (13) Quem é que vai arranjar comida? Então mostra lá.		
9. (16) Quem é que vai sair do lago? Então mostra lá.		
10. (1) Quem é que vai nadar no lago? Então mostra lá.		
11. (26) Quem é que vai fugir? Então mostra lá.		
12. (14) Quem é que vai seguir para Norte? Então mostra lá.		
13. (6) Quem é que vai voltar com alguma carne? Então mostra lá.		
14. (10) Quem é que vai andar de skate? Então mostra lá.		
15. (25) Quem é que vai para casa? Então mostra lá.		

16. (20) Quem é que vai para o baloiço? Então mostra lá.		
17. (5) Quem é que vai cozinhar o jantar? Então mostra lá.		
Sessão 2:		
18. (iii) Quem é que vai logo dormir? Então mostra lá.		
19. (iv) Quem é que vai nadar até meio do lago? Então mostra lá.		
20. (22) Quem é que vai buscar farinha? Então mostra lá.		
21. (12) Quem é que vai guardar a entrada da gruta? Então mostra lá.		
22. (7) Quem é que vai trazer muita palha? Então mostra lá.		
23. (23) Quem é que vai para dentro do lago? Então mostra lá.		
24. (9) Quem é que vai andar de bicicleta? Então mostra lá.		
25. (3) Quem é que vai trazer uma maçã? Então mostra lá.		
26. (19) Quem é que vai virar a vela do barco? Então mostra lá.		
27. (24) Quem é que vai ser ultrapassado? Então mostra lá.		
28. (30) Quem é que não pode carregar a carne? Então mostra lá.		
29. (18) Quem é que vai andar muito rápido? Então mostra lá.		
30. (2) Quem é que vai comer as amoras? Então mostra lá.		
31. (8) Quem é que vai pintar um novo quadro? Então mostra lá.		
32. (28) Quem é que vai trazer uma avestruz? Então mostra lá.		
33. (31) Quem é que não pode tomar banho no lago? Então mostra lá.		
34. (4) Quem é que vai encontrar os morangos? Então mostra lá.		
35. (15) Quem é que vai apanhar madeira? Então mostra lá.		