

Precocious Control

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Abstract

Early development of control and Raising to Object (RtO) structures in English is investigated by focusing on the complementation of the verb *want* in diary data from one child from age 1;6 to 2;6. The child progresses through several stages of acquisition that cannot easily be explained as a function of the input or by processing limitations. The child data find explanation in Landau's (2000, 2004, 2006) Agree-based theory of control, which analyzes the cross-linguistic range of complement types as resulting from different combinations of Tense and Agreement features on the I and C heads. The acquisition stages reflect changing grammatical hypotheses about the feature composition of possible complements for *want*. For both control and RtO, the child initially attempts a subjunctive complement. RtO structures are acquired late as they require the additional step of CP truncation. The proposal is compared with the predictions made by theories of control based on predication, binding and movement.

Key Words.

Control, Raising to Object, language acquisition, infinitival clauses, subjunctive clauses

Word Count: 155

1. Introduction

This paper investigates the properties of children's early infinitival complements by tracking the development of the complementation for the verb *want*, using diary data from one child, 'Laura'. The diary data, which extend from 1;6 to 2;6, reveal that the child tries a number of non-adult ways to express the complements of *want* before settling on the adult 'control' and 'Raising to Object' structures. We draw on Landau's theory of 'the calculus of control' (Landau 2000, 2004, 2006), to show that the child's different attempts at the complementation for *want* can be understood as expressions of various attested cross-linguistic ways of representing control. The research findings thus accord with the continuity hypothesis as it is stated in Crain and Pietroski (2002), that children's grammars differ from adult grammars only in those ways that adult grammars differ from each other.

Children's acquisition of the complementation for the verb *want* makes an interesting focus for investigation because *want* is a verb that is both frequent in conversation between parents and children, acquired early, and selects a range of complements, which, in English, take the form in (1); simple DP complements (1a), Small Clauses as in (1b), control (1c) and raising to object (henceforth RtO) (1d).

- | | | | |
|-----|----|------------------------------------|-----------------|
| (1) | a. | I want the truck | (DP Complement) |
| | b. | I want the truck clean | (Small Clause) |
| | c. | I want to push the truck | (Control) |
| | d. | I want daddy/him to push the truck | (RtO) |

In control complements, the subject of the higher clause is understood as the subject of the lower clause. In RtO complements, like (1d), this is not the case; the infinitival clause has a different subject, i.e., the NP *daddy*. Although it is the logical subject of the embedded clause, in English, this NP takes accusative case, as demonstrated by the accusative pronoun *him* in (1c). Traditionally such structures have been called ‘Exceptional Case Marking’ or *ECM* structures (accusative case being assigned ‘exceptionally’ across the clause boundary to the embedded subject¹). The term ‘Raising to Object’ has its origins in an early analysis of Postal (1974) and reflects the growing current consensus that the accusative NP does become a matrix object in these constructions. We adopt it here without further discussion.

Surveying the complements in (1), it is clear that the child is faced with a considerable task to sort out the properties of these different clause types, and, in English, this must be accomplished with little help from morphology. Furthermore, the RtO structure is genuinely marked across languages. Given this, it would not be surprising if children did not converge immediately on the correct set of complements for *want*.

The paper proceeds as follows. In section 2, we review previous literature on the production of control structures. This is followed, in section 3, by an introduction to the set of diary data from the child under investigation. Section 4 introduces the theoretical background, in particular Landau’s (2000, 2004) theory of control that forms the basis of the analysis of the child

¹ The verb *want* is sometimes argued not to be a true *believe*-type RtO verb because it fails to passivize. Other desiderative verbs such as *mean* and *intend*, that also license *for*-complements, do passivize, however, so we will simply assume that this is a quirk of *want*. Furthermore, it passes most of the other RtO tests that *believe* does (Postal 1974: 176-187).

data presented in section 5. Section 6 discusses alternative conceptions of control and attempts to evaluate how well they might cope with the data we report. Section 7 is the conclusion.

2. Previous literature

There is a sizeable literature on children's comprehension of control structures but this literature mostly focuses on when and whether or not children correctly interpret the properties of individual control verbs (e.g. subject versus object versus adjunct control). For an excellent review of the literature on pre-school children's comprehension of control structures, see Guasti (2002), and for some relevant discussion see Goodluck et al. (2001). Our focus is the *form* of children's early productions of control and RtO structures. The literature on children's early productions of control structures is minimal, offering little more than the observation that children frequently leave out *to* in infinitival clauses (cf., Limber 1976, Bromberg and Wexler 1995, Harris and Wexler 1996). There are several exceptions: Bloom, Tackeff and Lahey (1984), a brief proposal by Radford (1990) and the detailed study by Goro (2004) that lays the foundation for this paper. These are reviewed below.

Bloom et al. (1984) study the development of *to* in four children from age 2 to 3 years². They studied structures of the form V-to-V, and V-NP-to-V. In the V-to-V contexts, the children start to use the infinitival marker *to* at varying rates in obligatory contexts from about 25 months. Among the structures of the form V-NP-V-to-V included in the study are RtO constructions, but also included are *tough*-constructions (e.g., *It's hard for you to eat your thing*) and wh-infinitives

² The children studied are Eric, Gia, Kathryn and Peter, whose data is available on the CHILDES database (MacWhinney 2000).

(e.g., *I'll show you how to work it*). This range of structures with syntactically different properties makes these data difficult to interpret. At any rate, Bloom et al. report that the structures with an intervening NP were acquired later, and only after the children were using *to* in the V-to-V structures more than 75% of the time. To explain children's increase in the use of *to* over time, Bloom et al. appeal to a number of factors that must come together; (i) children's knowledge of the distribution of the infinitival marker, which has to be learned from the input (ii) prior knowledge of the lexical item *to* as a preposition and (iii) increased processing capacities.

Radford's proposal about the structure of control and RtO complements follows from his proposal that children lack the ability to generate functional categories before about 24 months. Lacking IP, children generate VP complements instead, giving control and RtO utterances the structures in (2a) and (2b) until the relevant functional categories mature and children can project adult-like structures (Radford 1990, p.141).

- (2) a. Want [_{VP} see handbag]
 b. Jem want [_{VP} Mummy [_V take] it out]

The paper that lays the foundation for our case study is Goro (2004). Goro provides a thorough investigation of the distribution of *to*-infinitives in child English, using data from Adam 2;3-3;2 (Brown 1973), Sarah 2;3-3;2 (Brown 1973) and Abe 2;4-3;2 (Kuczaj 1976), available on the CHILDES database (MacWhinney 2000). The first finding is that these children do not *overgenerate to*; they do not use it erroneously in causative complements (*make/let*), complements of verbs of perception (*see/watch/hear*), contracted verb forms (*wanna/gonna*) or in combination with modals. The forms in (3) are unattested, except for the occasional error.

- (3) a. #John made Mary to go
 b. #I saw John to cross the street
 c. #I wanna to go
 d. #You can to finish the task

Children do *undergenerate* infinitival *to*, however. Where Goro finds that the children undergenerate is in the complements of *want*, *need* and *like*³. The children all omitted *to* to varying degrees in structures in which the complement has an empty subject (e.g. *I need to go*)⁴. When the omission rate is calculated across the period of about a year that was studied, Adam uses bare complements with no *to* 34.2% of the time, Sarah omits *to* 93.9% of the time, and Abe omits it only 4.1% of the time. For structures with an overt subject (e.g. *I need you to go*), the children's rate of *to*-omission was higher, with Adam omitting *to* in 98.5% of his utterances, Sarah 100% (though there was little data for her) and Abe 51.4%. Further investigation of Adam and Abe's development shows that both children omit *to* to a greater extent in the later data with overt subject complements, with rapid decline in the *to* omissions at age 3. I replicate Goro's

³ Goro searched for RtO complements with *believe*, and he also searched for raising complements, but found none in the transcripts.

⁴ By complements with an 'empty subject', Goro (2004) appears to refer just to Control, giving the example *John wanted [e to go]*. By complements with 'overt subject' complements, Goro apparently intends ECM/RtO, giving the example *John wanted [Mary to go]* (his (9)). There is no suggestion that empty subject complements could include Non Obligatory Control (NOC).

tables for Adam and Abe below⁵. The tables exclude numbers of examples with the contracted form *wanna*.

-- Please place Tables 1 & 2 here --

Goro reserves the question of the optionality of *to* in the (control) empty subject complements for future research and focuses on providing an explanation of the high omissions of *to* in the complements with overt subjects, that is, the complements produced when an adult would use a RtO complement. Goro's proposal assumes Exceptional Case Marking rather than RtO. He proposes that languages may vary parametrically in whether they allow Exceptional Case Marking (ECM) into (just) small clauses, as in French, or into infinitival clauses as well, as in English. He suggests that children begin with the subset option, and initially produce only small clause complements. Thus, an utterance such as *I need you do it* would initially have the structure in (4), with the IP layer missing.

(4) I need [_{SC} you do it]

Since children do not overgenerate *to*, Goro takes this as evidence that they know that the infinitival marker *to* is an instantiation of [-tense] Infl. Thus, taking note of *to* in adult ECM utterances like *I need you to do it*, should cause children to generate an IP layer (with the feature [-tense]), thus adopting the English setting of the parameter.

In the next section, we introduce Laura's data. Like Goro's data from Adam and Abe, Laura also omits *to* in empty subject complements, but omits it a far greater proportion of the

⁵ The tables are Table 7 and Table 8 respectively in Goro (2004).

time in productions that, for adults, call for RtO structures. The data suggest that the children are not simply generating adult structures that happen to be missing *to*, but that, at least some children have an alternative hypothesis initially about the properties of control and RtO structures. This leads us to reassess Goro's small clause hypothesis and to look to Landau's (2000, 2004, 2006) theory of control, which embraces a wide set of cross-linguistic data, for explanation of the child data.

3. The Data

This section lays out the kinds of utterances with *want* produced by Laura. Laura was a relatively early talker; two word combinations appeared at 1;5 months, and three and four word combinations were plentiful at 1;6 years. The diary data that are analyzed in this paper start at 1;6 and extend to age 2;6.

A few points about early talkers and diary data are in order. The perspective taken here is that early talking children make informative subjects. Being linguistically precious, they often reveal their linguistic hypotheses in ways that later talking, more conservative children do not. In particular, their speech may contain more 'mismatches' with the adult grammar than later-talking children. These mismatches may be consistent but short-lived, lasting only a week or two, and they may well slip through the cracks of weekly or fortnightly data recording, but they may make their way into daily diary notes. Such 'mismatches' with the adult grammar have the potential to provide important insights into the developing grammar. The diary data from Laura reveal a more detailed developmental progression than has been previously been documented, including data that has not been observed previously in transcripts of children's speech.

3.1 Early Productions

As one might expect, many of Laura's early productions at 1;6 months are minimal *I want X* utterances. Some examples from 1;6 are given in (5). In (5a), *X* is a DP and an DP is clearly all that is intended; in (5b), *X* is an NP, but the intended meaning suggests some lexical material is missing. In (5c), *X* is a small clause, but from an adult perspective, it is not clear whether Laura intends the small clause *I want my shoe off* or the infinitival clause *I want to take my shoe off*. This is also the case in (5d), where just a preposition or particle occurs with *want*.⁶

- (5) a. Context: Laura is holding some paper and pointing to pens
Laura: I want a pen (1;6.20)
- b. Context: Sees mother brushing her teeth, and wants to do this too
Laura: I want teeth (1;6.19)
- c. Context: One shoe falls off while sitting at the table
Laura: I want shoe off (1;6.19)
- d. Context: Wanted to turn outside tap off after the garden had been watered
Laura: I want off (1;6.28)

The numbers of *want* utterances with NP/DP complements, in combination with a preposition or particle, and those that are judged to be non-adult due to missing lexical material are summarized in Table 3 below.

⁶ No attempt has been made to capture the phonology of the utterances. However, Laura's articulation was good and she was easy to understand.

-- Please place Table 3 here --

3.2 *Productions in contexts of control*

Productions with embedded complements appear before 2 years of age. In contexts in which Laura is expressing what she wants to do, that is, in contexts of ‘control’, several types of utterances appear. Laura uses control complements that are adult-like in the sense that the infinitival marker *to* is present, as illustrated by the example in (6a). In addition, there are examples with *wanna*, as in (6b), that are also adult-like, provided that *wanna* is considered to be a contraction of *want* and *to*, and not an unanalyzed whole. We return to this point later. Finally, there are examples in which the infinitival marker *to* is absent, as shown in (6c).

- (6) a. Context: Father is reading morning paper
Laura: I want to see paper (1;8.10)
- b. Mother: 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)

In the control data, the matrix subject is overwhelmingly a 1st person subject (i.e., *I*), which is not surprising, given this is spontaneous speech from a young child. There are no examples of the form in (6c), with non-1st person subjects. In the later files, there are examples with 2nd person subjects like (6a) in which *to* is present. Some examples are given in (7).

- (7) a. Do you want to play baby dolls with me? (2;2.17)
- b. Are you want to play with me? (2;2.24)
- c. Do you don't want to be an alligator? (2;3.07)

A summary of the data in control contexts is given in Table 4. The table shows the number of productions with *want*, *want to* and *wanna* at five time intervals from 1;6 to 2;5 years.

-- Please place Table 4 here --

Overall, the figures show that infinitival *to* is missing in a good number of Laura's utterances before 2 years of age, though *to* is more often realized, either overtly or as part of the contracted form *wanna*. It is worth examining the data more closely, to verify that Laura has indeed analyzed the internal make-up of *wanna*. In the literature, it has been reported that children may initially be confused. For example, Bloom et al. (1984) report that in Gia's first file (Bloom, 1970), the form *wanna* co-occurs with an NP on 8 of 50 occasions, although the error does not show up in the transcripts of the other 3 children studied by Bloom and her colleagues. To check further, we conducted a search for *wanna* + DP (*the/my/your/his/her* NP) in the transcripts of Nina (Suppes), Eve (Brown), but upturned only 1 error in Nina's speech – *I wanna it* (Nina 27:659).

If it were the case that *wanna* was functioning as an unanalyzed whole, Laura might be expected to use *want* and *wanna* interchangeably. The alternation between *want to* and *wanna* should surface both when the complement is a DP but also when it is a VP. It is difficult to assess this prediction accurately with DP complements, however, because there is a confound with the

phonology. It is difficult to know whether the schwa transcribed as the last sound of *wanna* is in fact a reduced article that goes with the following noun phrase. There are 11 examples in the data set from Laura that were recorded in the diary notes as *wanna*, but are open to interpretation (cf. (8)). Notice that the ambiguous examples appear quite close in time, on two occasions with 3 examples appearing in one day. In two cases, Laura may not know that *clothes* and *milk* are mass nouns, in which case she may be saying ‘I want a clothes’. It is also interesting that in five of the examples, the schwa precedes a quantifier (*one, more, many*) suggesting that Laura may think these words appear with a determiner, as is possible in other languages. Others, such as (8a) may simply have some lexical material missing, given the early age of the production. The complete list of examples is below.

- (8) a. Context: Laura wants to go to the park
 Laura: I wanna park (1;8.20)
- b. Context: Looking at a clothes catalogue
 Laura: I wanna clothes (1;8.20)
- c. Context: Father was amusing Laura by putting on different silly hats
 Laura: Does Daddy wanna more hat? Does daddy want more hat? (1;8.20)
- d. No context in diary
 Laura: Does daddy wanna one?⁷ (1;9.05)

⁷ At this point, Laura had apparently hypothesized that *one* occurs with determiners, as utterances like the following suggest:

- (i) Context: Laura wants two books about Barney
 Laura: I want two ones (1;10.20)

- e. Context: Playing with her doll
Laura: Baby wanna milk (1;9.05)
- f. Context: Laura wants to continue playing a game pretending to be horses
Laura: I wanna more game (1;9.05)
- g. Context: Laura wants a lot of a snack
Laura: I wanna many (1;11.25)

Given that the phonology is a confounding factor, a better test for whether or not *wanna* is being treated as an unanalyzed whole is to investigate VPs, to see if *wanna* appears interchangeably with *VP* and *to+VP*. As Table 2 shows, *wanna* appears with VP complements 60 times, but there are no cases recorded of *wanna* appearing with *to + VP*. These findings concur with Goro's (2004) findings for Adam, Sarah and Abe. Overall, the picture that emerges is that Laura is not using *wanna* as an unanalyzed whole, and the data with *want +VP* and *wanna + VP* can be taken at face value.

As the graph shows, when Laura starts to produce embedded complements, more than 50% are missing the infinitival *to*. This proportion decreases over time. Thus, there is some fluctuation in the structure used to express obligatory control, just as Goro (2004) observed. The structures that Laura uses for control in the same time frame are summarized in Figure 1 below. The graph depicts the data presented in Table 4.

-- Please place Figure 1 here --

(ii) Context: Pointing to closed cupboard in kitchen

Laura: I want this one cake (1;10.20)

3.3 *Productions in Raising to Object Contexts*

Let us now turn to situations in which Laura wanted something to happen, or wanted someone else to do something for her. This is the situation in which English-speaking adults use RtO structures like *I want her to go* in which the subject of the event expressed in the lower clause takes accusative case. This is the structure that takes Laura some time to acquire.

In the earliest recordings in the diary, there were 5 utterances in which Laura intended for someone who was present to do something, but did not specify the intended agent with a lexical DP or pronoun. Examples of this kind have not been observed previously in the literature on English-speaking children. Without the context notes in the diary entry, these look like attempts at control. The 5 examples are given in (9), and a dash is used to represent the missing agent.

- (9) a. Context: Laura wanted mother to push her in the stroller
Laura: I want _ push Laura (1;7.19)
- b. Context: Laura wanted mother to dance
Laura: I want _ dance (1;8.05)
- c. Context: Laura wanted mother to open the door to the study
Laura: I want door open. I want _ open door. (1;9.09)
- d. Context: Laura wanted father, not her mother, to change her diaper.
Laura: I want _ change it (1;9.26)
- e. Context: Laura wanted mother to brush her (=mother's) teeth
Laura: I want _ brush your teeth, mommy (1;10.25)

About a month later, at age 1;10 and 1;11, another structure appears when Laura wants someone else to do something for her – she produces utterances like *Mummy wanna do that*, but, apparently intended the meaning ‘I want Mummy to do that’. It is, of course, difficult to know if this is the intended meaning, or whether, in fact, she intends ‘Mummy wants to do that’. If the intended meaning is ‘I want Mummy do that’, then the structure’s surface form is a radical departure from Laura’s intended meaning, because the intended agent of the action expressed by the embedded clause precedes the higher verb *want*. Almost all of these examples appeared in situations in which two potential agents were being contrasted. There were 12 instances of this structure, 2 from age 1;8 to 1;9 and 10 in the last time period, from 1;10 to 1;11. In several cases, Laura recasts her request.

- (10) a. Context: Laura wanted mother, not father, to get her out of her car seat
 Laura: Mummy wanna do that (1;10.10)
- b. Context: Laura wanted the dog to get up on the bed with her
 Laura: Boomer wanna come (1;10.19)
- c. Context: Laura wanted father to bring her juice to her, while she lay on the bed with mother
 Laura: Daddy wanna get it (1;11.02)
- d. Context: Laura wanted father to read her a book
 Laura: Daddy wanna read it. Daddy read it (1;11.02)
- e. Context: none noted in diary notes
 Laura: I want mummy do that. Mummy wanna do that. Mummy do that (1;11.05)

- f. Context: Mother was trying to fix father's sunglasses, but Laura wanted father to do it

Laura: Daddy wanna do that. [takes sunglasses to father] Daddy, can you do that? (1;11.15)

Examples of this kind have not been discussed in the literature, which is hardly surprising, given the fact that (a) they appeared extremely early in the course of acquisition, (b) the phenomenon was short-lived, and (c) on the surface, they are well-formed utterances albeit with an entirely different meaning. One possibility is that *wanna* in the examples in (10) is misanalysed as a deontic modal, parallel to *should*. However, because it is difficult to be sure exactly what structure Laura intended to produce, we will not attempt a detailed analysis of these productions. We have recorded their existence, however, in case they should reemerge in future studies, at which point they can be integrated into an analysis.

Around this time Laura starts to use *want* with embedded clauses that contained an overt subject, either a lexical DP or a pronoun. The first such example emerged at 1;11;28, and just 3 such examples appeared before age 2;0. This structure rapidly gains favor, and there are 44 examples of this structure between 2;0 and 2;2. This is the structure that Goro (2004) argues has a small clause embedded predicate.

- (11) a. I want you do it (2;1.09)
b. I want Daddy sing (2;1.10)
c. I want you buy some at the store for me (2;1.16)
d. I want you carry me get the mail (2;1.21)
e. Mummy, I said I want you come here (2;2.22)

- f. I don't want Boomer [the dog] lick my face (2;2.13)

Productions like the ones in (11) are always missing *to*, unlike Laura's earlier productions in control contexts, where use of the infinitival *to* marker fluctuated, gradually increasing over time. Given that some of Laura's productions contain 3 clauses, it seems unlikely that processing limitations are responsible for the absence of *to*. Thus a non-linguistic explanation of the data seems untenable. Furthermore, notice that in the productions in which the embedded subject is a 3rd person subject, the verb also lacks inflection. In (11f), for example, there is no 3rd person agreement between *Boomer* and *lick*. This important observation will contribute to our proposal that the embedded clause in these productions is in the subjunctive mood.

The case of the embedded subject provides further support for the view that the productions in (11) are in the subjunctive. In the vast majority of the structures taking the form in (11), the subject of the embedded clause is *you*, so it is not possible to check what case it takes. There are 8 examples with 3rd person pronominal subjects, however. Examples are given in (12). The first two occurrences, which occur before 2;4, bear nominative case and there is no infinitival *to* marker; the six later examples bear accusative case. In all but the first example when accusative case appears, it does so in combination with the infinitival marker *to*.

- (12) a. I want he go away, mummy (X3) (2;2.14)
b. I want he play Dalmatians (2;3.22)

The developmental path shown in the examples suggest that Laura is not producing adult-like RtO structures until about 2;4, when examples like (13) appear.

- (13) a. I want him to go to work (2;4.04)
b. I don't want her to get in the shower (2;4.09)

The numbers of productions for the various structures produced by Laura in contexts in which adults would produce RtO structures are summarized in Table 5, and graphed in Figure 2 below.

-- Please place Table 5 here --

-- Please place Figure 2 here --

3.4 *Small clause complements*

Finally, it is worth noting that there are a few utterances in the corpus that seem to be small clauses. The ones that are clearly adult-like appear at 2;2 or after. Some examples are shown in (14). Given that these small clauses appear rather late, Goro's proposal that utterances like *I want you do it* feature an embedded small clause is questionable.

- (14) a. I want my candles back (2;1.10)
b. I want that book back for me (2;1.17)
c. I need it opened so I can put the spoon in there (2;2.18)
d. We want it open (2;3.18)
e. I don't want the light off (2;3.22)
f. I want my lid on so I can drink it (2;3.24)

3.5 Summary

This section has described Laura's productions in contexts of control and in contexts in which adults would produce RtO structures. Initially, Laura produces some control structures with omission of *to*; others have the infinitival marker present. By around 2;2, the infinitival marker is present in the majority of her productions with *want*. The puzzle is that at the same time *to* is almost at ceiling in control structures, it is entirely absent from the structures Laura uses when an adult would use a RtO structure. This contrast makes clear that the presence or absence of *to* is not conditioned by non-linguistic factors such as limited processing resources but by Laura's grammatical hypotheses about the relevant structures. It appears that Laura does not necessarily immediately converge on the correct analysis for control and RtO structures. If Laura, and possibly English speaking children in general, initially hypothesize structures that do not coincide with 'English', we would nevertheless expect them to be in line with the Continuity Hypothesis, and within the boundaries permitted by Universal Grammar. In the next section we turn to Landau's (2000, 2004, 2006) theory of control, to examine the variation that occurs across languages. This theory, that pays close attention to the cross-linguistic form of control complements, will be the basis of the analysis of the child data presented in section 5.

4. Theoretical Background: The calculus of control

Control is one of the earliest topics studied in generative grammar (starting with Rosenbaum 1967), and accordingly, has been analyzed from widely varying theoretical perspectives. Although space limitations do not permit us to discuss anything more than a fraction of these

theories, we evaluate below one representative subset against the child data (see section 6). In the present section we lay out the fundamental aspects of the theory we will adopt in analyzing the data.

It is a striking feature of the history of control theory that up until fairly recently, it offered no natural locus for parametric variation. The dominant approaches to control throughout the past 30 years were exclusively based on the facts of English (see, among others, Williams 1980, Bresnan 1982, Manzini 1983, Dowty 1985, Sag and Pollard 1991, Hornstein 1999, Jackendoff and Culicover 2003). Nevertheless, the conclusions drawn from these studies were framed in universal terms. Even the few studies that did address non-English data did not paint a comprehensive typological landscape of control.⁸ This neglect proved lethal, since crosslinguistic evidence demonstrates quite clearly the inadequacy of the classical answers to the basic questions of the field.

To focus on one key question: What determines the distribution of PRO? This is simply the question of what distinguishes clausal complements whose subject is null and necessarily controlled by a matrix argument, from those whose subject is possibly lexical and distinct from any antecedent. In other words, this is the basic OC-NOC distinction.

Without getting into detail, the mainstream view held that either agreement or Case predict the distribution of PRO. However, this view is untenable once we look outside English (for a summary of arguments to this effect, see Landau 2006). What is needed in its stead is a theory that both recognizes the diversity of control constructions across languages, and succeeds in capturing truly universal patterns. Such a theory is proposed in Landau 2004 (on the basis of Landau 2000) and extended in Landau (2006). The empirical coverage of the theory extends from

⁸ Borer 1989 is a notable exception.

Raising/Small Clause complements to English infinitive and indicative clauses, controlled and uncontrolled subjunctive clauses in Balkan languages and Hebrew, obviative subjunctives in Romance, controlled inflected infinitives in Hungarian, uncontrolled inflected infinitives in European Portuguese and Welsh, and control in nominalized complements in Basque.

Below we focus on the analysis of infinitival and subjunctive complements, which are relevant to the child data.

4.1 Crosslinguistic data

As is well-known, all infinitival complements in English display OC. Certain predicates select infinitival RtO and/or indicative complements. Lacking subject *pro*-drop, the option of NOC into complements is unattested in English.

- | | | | |
|------|----|--|-------------------|
| (15) | a. | John _i expects [PRO _i to leave early]. | <i>OC</i> |
| | b. | John expects Louise _i [_{t_i} to leave early]. | <i>RtO</i> |
| | c. | John expects [that Louise will leave early]. | <i>No control</i> |
| | d. | * John _i expects [that <i>pro</i> _{i/j} will leave early]. | <i>NOC</i> |

English also attests, at least in formal registers, subjunctive complements. These complements, selected by desiderative and directive verbs, feature a bare verbal stem.

- | | | |
|------|----|--|
| (16) | a. | Her Royalty ordered the master of ceremonies that no speech be allowed before her own. |
| | b. | George demanded that he visit the construction site first. |

Notice that *George* and *he* can corefer in (16b), implying that the English subjunctive, unlike its Romance and Slavic counterparts, is not obviative (compare the obviative *for*: **George_i demanded for him_i visit the construction site first*). This will play a crucial role in the analysis to be presented in section 5.

Turning to subjunctives in the Balkan languages, the picture is very different. In Greek, Bulgarian, Romanian etc., infinitives are either entirely absent or used only in frozen forms. Both OC and NOC complements are expressed with subjunctives (indicative complements show no control), the choice being determined by the matrix verb. We refer to OC complements as C(ontrolled)-subjunctives and NOC complements as F(ree)-subjunctives.⁹ Note that like English, Balkan subjunctives are non-obviative.

- (17) a. I Maria_i prospathise PRO_{i/*j} na divasi.
 the Mary tried.3sg PRO PRT read.3sg
 ‘Mary tried to read.’

(Greek: C-subjunctive)

⁹ The subjunctive mood in these languages is realized by a preverbal particle (the verbal morphology is the same as in the indicative) and in Romanian and Albanian, by a designated complementizer, often omitted.

- b. Ion_i vrea ca Dan/*pro*_{i/j} să rezolve problema.

Ion wants that Dan/pro PRT solve.3sg the-problem

‘Ion_i wants Dan/him_{i/j} to solve the problem.’

(Romanian: F-subjunctive)

Verbs selecting C-subjunctives are (translated as) *try, help, know how, dare, manage, begin*, etc.

Verbs selecting F-subjunctives are *believe, want, hope, prefer, persuade, ask, forbid*, etc. The contrast is keyed to tense. The matrix and the embedded event in F-subjunctives are temporally distinct, whereas in C-subjunctives only one event takes place. As a result, tense sequencing is allowed in the former but not in the latter (Varlokosta 1993).

- (18) a. tora, o Yanis elpizi /theli na figi avrio.

now, the John hopes/wants PRT leave.3sg tomorrow

‘Now, John hopes/wants to leave tomorrow.’

(Greek: F-subjunctive)

- b. * tora, o Yanis kseri /arxizi na kolimbai avrio.

now, the John knows-how/begins PRT swim.3sg tomorrow

‘Now, John knows how/begins to swim tomorrow.’

(Greek: C-subjunctive)

Interestingly, Landau (2000) has shown that the same tense distinction divides OC verbs in English into two types: Those allowing *partial* control and those forcing *exhaustive* control. As

shown below, the distinction has to do with whether, in a suitable context, PRO can or cannot properly include the controller (partial control is marked with a '+' subscript).

- (19) a. Yesterday, John preferred to finish the work tomorrow.
b. * Yesterday, John managed to finish the work tomorrow.
c. (We thought that) the chair preferred_i [PRO_{i+} to gather at 6].
d. * (We thought that) the chair managed_i [PRO_{i+} to gather at 6].

For English, the generalization is: Tensed complements ((19a) vs. (19b)) license partial control (19c), whereas untensed complements do not (19d). For the Balkan languages, the generalization is: Tensed complements display NOC (F-subjunctives), whereas untensed complements display OC (C-subjunctives).

What is the English-Balkan contrast that is responsible for the different effect of Tense on the control behavior of the complement? Clearly, it is agreement. While the Balkan subjunctive verb carries agreement, the English infinitival verb does not. This suggests that the grammar (or calculus) of control is sensitive to the interaction of two features: semantic tense, [T], and morphological agreement, [Agr].

In fact, [T] and [Agr] seem to play symmetrical roles. Keeping tense constant, we see that agreement yields NOC (17b) and lack of agreement yields OC (19a) (also allowing partial control) – in tensed complements. In untensed complements, agreement has no effect: whether it is present (17a) or absent (19b), OC obtains (and partial control is disallowed). Keeping agreement constant, we see that tense yields NOC (17b) and no tense yields OC (17a) – in Agr-

bearing complements. In Agr-less complements, tense has no effect: whether it is present (19a) or absent (19b), OC obtains.

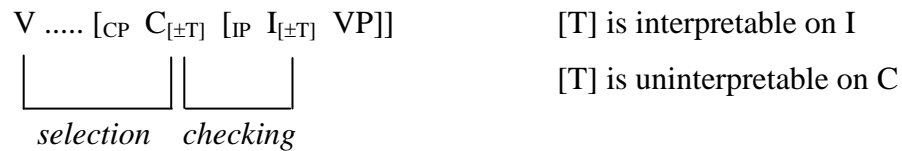
As Landau (2004, 2006) shows, the same pattern recurs in other types of complements. Inflected infinitives bear agreement (hence their name). When they are also tensed, NOC obtains (European Portuguese), but when they are untensed, OC does (Hungarian). Languages with a rich complementation system, like Welsh, Basque and Turkish, provide strikingly systematic evidence for this pattern. Verbs selecting tensed complements contrast in their OC-NOC profile according to whether or not they license agreement in the complement; while verbs selecting inflected complements contrast in their OC-NOC profile according to whether or not they license (semantic) tense in the complement (see Tallerman 1998, San-Martin 2004, Słodowicz 2007).

4.2 *How the System Works*

The crosslinguistic picture calls for a theory that distinguishes various types of complement clauses: Raising infinitives, control infinitives (inflected or not), subjunctives (tensed or not) and indicatives. The theory also needs to distinguish two types of nominal phrases that can appear as the subject in these clauses: DP/*pro* vs. PRO. Finally, some “interface rule” is required, to link up the different clause types with the DP (subject) types.

For clause typing, Landau adopts the standard [T] and [Agr] features. These features may show up on both the I(nfl) and C(omp) heads of the complement. Since selection is local, a matrix V can only determine the [T] value of the embedded I via the intermediate head C. Thus C also bears a [T] feature, although an uninterpretable one, since semantic tense is interpreted on I, as usual. Standard feature checking between I and C (“deleting” [T] on C) guarantees the desired tense dependency.

(20) The syntax of selected tense



Consider the tense distinctions we need. Selected tense is expressed by a [T] feature on C. Unselected tense (i.e., unrestricted by the matrix predicate) simply involves no [T] on C. Hence, infinitive and subjunctive complements, whose tense depends on the matrix predicate, bear [T] on their C head. Dependent tense subsumes two cases: The embedded tense is distinct from the matrix tense or identical (anaphoric) to it. Distinct dependent tense, in turn, may be realized either as irrealis (desiderative, propositional) or realis (factive); Landau encodes both as [+T]. Anaphoric tense is [−T] (small clauses may lack [T] altogether).

Consider next the specification of [Agr]. Uncontroversially, [+Agr] on I encodes overt morphological agreement inflection. Landau follows the traditional analysis of infinitival I as being specified [−Agr] (so-called “abstract” agreement). This captures the distinction between indicative and infinitival clauses. How is the distinction between control I and raising I to be expressed? Contra Martin 2001, there is no solid basis to the claim that raising and control infinitives differ in their tense properties (see Baltin and Barrett 2002, Hornstein 2003); in fact, raising infinitives are tensed, hence the difference must lie in [Agr]. Following Borer's (1989) notion of "degenerate Infl", Landau assumes that I in raising infinitives (selected by *seem*, *believe*, etc.) is radically unspecified for [Agr].¹⁰

¹⁰ This may be a side-effect of the absence of a CP layer and, possibly, the reason why these infinitives lack an EPP position (Chomsky 2001).

The [Agr] specification of C is not as transparent. By assumption, the very [Agr] slot on C is parasitic on [+T]. Thus, C with [+T] (dependent tense) may be either [+Agr] or unspecified for [Agr], while [−T] (anaphoric tense) or lack of [T] (independent tense) on C entail unspecified [Agr].

Of present interest are complements with irrealis (i.e., dependent) tense. These may be headed either by a fully specified $C_{[+T,+Agr]}$ or by a partially specified $C_{[+T]}$ (ignoring RtO complements). Landau speculates that the two choices correspond to non-obviative and obviative clauses, respectively. Thus, the first type includes English subjunctives and Balkan F-subjunctives; the second type includes Romance subjunctives and English *for*-infinitives. The tables below summarize the feature specifications of some (not all) of the clause types describable by the system.

-- Please place Tables 6 & 7 here --

Let us now return to the observations made in section 4.1 and see how they can be explained in terms of this system.

The comparative examination of control structures brings out one striking generalization. Whenever the embedded clause contains *both* agreement and semantic tense – there is no control. OC is witnessed only when either [T] or [Agr] is negatively specified. Thus, of the two sets of

syntactic environments – those that require a lexical subject (or *pro*) and those that require PRO – it is the *former* that constitutes a natural class. PRO is the elsewhere case of lexical subjects.¹¹

We now need to define the “interface rule” between the clausal features and the subject features. For the latter, we use the independently needed referential distinction between PRO and lexical DPs, here encoded by an interpretable feature [R].

(21) Specifying [R] on DPs

- a. Lexical DP, *pro* \Rightarrow [+R]
- b. PRO \Rightarrow [-R]

Roughly, referential DPs are [+R], “anaphoric” DPs are [-R]. [-R] is an interpretable feature that requires an antecedent for identification.

The link to the clausal features can now be stated in terms of an uninterpretable counterpart of [R], present on functional heads like I and C (cf. the analogous dual manifestation of ϕ -features). The split between [+T,+Agr] and the elsewhere cases is mediated by an uninterpretable [R] feature as follows.

(22) *R-assignment Rule*

For $X_{[\alpha T, \beta Agr]} \in \{I, C, \dots\}$:

- a. $\emptyset \rightarrow$ [+R] / $X_{[_]}$, if $\alpha = \beta = '+'$
- b. $\emptyset \rightarrow$ [-R] / elsewhere

¹¹ This is somewhat simplified, as Landau shows that OC can also result in F-subjunctives, if the features of I and C “cancel out” by mutual checking. This option has no bearing on the current discussion so we put it aside.

Put simply, whenever I or C are specified for [+T,+Agr], they automatically come to bear [+R]; any other feature constitution – [+T,-Agr], [-T,+Agr] or [-T,-Agr] – is associated with [-R]. *Lack* of [T] or [Agr] renders the rule inapplicable – no [R] value is assigned. Licensing of the subject simply means checking off whatever uninterpretable feature(s) I and C bear. Since lexical DPs are specified with an interpretable [+R], they will be able (in fact, required) to check off the uninterpretable [+R] found on I/C specified for [+T,+Agr]. Since PRO bears interpretable [-R], it will be obligatory if either I or C is negatively specified for [Agr]/[T] (while still specified for the other feature).

In the remainder of this section, we illustrate the derivation of three types of complements: tensed control infinitive, English subjunctive, and RtO. The purpose of this illustration is to show how the correct assignment of [T]/[Agr] values to the complement I and C heads automatically yields the control type (OC or NOC). This will allow us to appreciate, in the next section, what effects on control would result from the child's *mis*valuation of these features.

A typical derivation of a tensed control infinitive looks as follows.

(23) *OC-infinitive (tensed)*

- a. John wanted [PRO to say a few words].
- b. $[_{CP} DP .. F .. [_{CP} C_{[+T,+Agr,+R]} [_{IP} PRO_{[-R]} [I' I_{[+T,-Agr,-R]} [VP t_{PRO} ..]]]]]$
- | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| | | | |
| Agree _[+Agr,+R] | Agree _[+Agr,+R] | Agree _[+T,±Agr] | Agree _[-Agr,-R] |

The [R] values of C and I are fixed by (22). Of interest in this derivation is the mediation of control by C. [+R] on C is checked against the matrix F (= I) while [-R] on I is checked by

PRO.¹² Note also that Agree (C,I) matches their ϕ -features, ignoring the opposite polarities of [Agr], which reflect morphological spellout only.

A lexical DP or *pro*, instead of PRO, would crash this derivation: The [-R] feature on I would remain unchecked. The learning implication is that a child who correctly analyzes the infinitival *to* as [+T,-Agr] would *not* generate it in conjunction with a lexical subject or *pro*. We return to this prediction in the next section.

Consider next the derivation of an English subjunctive, where control does not apply.

(24) *English subjunctive (no control)*

- a. John prefers that no promises be made to the newcomers.
- b. $[_{CP} \dots DP \dots F \dots [_{CP} C_{[+T,+Agr,+R]} [_{IP} [_{I'} I_{[+T]} [_{VP} DP/pro_{[+R]} \dots]]]]]$
- $\text{Agree}_{[+Agr,+R]}$ $\text{Agree}_{[+T]}$ $\text{Agree}_{[+Agr,+R]}$

The subjunctive C in English is non-obviative, which means it is specified [+T,+Agr] and, by virtue of (22), also [+R]. The latter feature is checked off by a lexical DP subject or *pro*. Note that the subject also checks (abstract) agreement against C, not I. Although not presently crucial, it is an interesting question what is the source of nominative case in the subjunctive clause, given the lack of agreement. If it is C, then case is checked together with [Agr] as part of Agree (C,DP/*pro*) in (24b). If nominative case is associated with I (hence, with semantic tense), an additional Agree relation is formed between I and the subject, to check off that feature.

Two points are important concerning the subjunctive. First, a PRO subject would crash the derivation: The [+R] feature on C would remain unchecked. Second, the embedded subject is

¹² This route through C is what allows the partial control effect; see Landau (2000, 2004) for details.

assigned nominative case (and not accusative), a result secured whether we associate that case with [T] or [Agr]. The learning implications are: (i) a null subject in these contexts can only be analyzed as *pro*, not PRO (yielding NOC, not OC); and (ii) an overt pronoun in these contexts would be marked nominative. These predictions are addressed in the next section.

Finally, we sketch the derivation of an RtO construction.

(25) *Raising-to-Object (no control)*

- a. John wanted her to say a few words.
- b. [CP [IP DP_j I [_{VP} t_j [V+V [DP_i [t_v [IP t_i [I I_[+T]] [VP t_i ...]]]]]]]]]]]
- [] []
- Agree_[+Agr,+R] Agree_[ACC]

We step aside of various technical debates surrounding the analysis of RtO (see Runner 2006). For simplicity, we assume that the embedded subject raises to the matrix Spec,VP position, whose EPP feature is induced by light v (Chomsky 2007), although more complex alternatives are possible (Koizumi 1993).

In this execution, the familiar “exceptionality” of RtO complements consists in their reduced size – bare IPs, without a CP layer. As suggested above, this may be the source of their [Agr]-defectiveness: The I head is specified for [+T] only. The absence of a CP layer is crucial in allowing the matrix light *v* to probe the embedded subject (thereby assigning it accusative case): An intervening CP projection would have blocked this Agree relation by the Phase Impenetrability Condition (Chomsky 2000). The learning implication is that RtO clauses in the input would not be analyzable by the child as long as she takes them to be CPs. We return to this point below.

5. Analysis of child data

The theoretical section has laid out the typology of control across languages. We have seen that the values of [Agr] and [T] on the functional nodes I and C, together with [R] assignments for DPs, give rise to a considerable variety of clause types across different language families. In this section, we consider how children might acquire the ‘control’ grammar of their ambient language, focusing on how English-speaking children arrive at the appropriate set of complements for the verb *want*.

Landau (2004) addresses the learnability of clause types and their properties, asking what aspects are universal, and what aspects are open to parametric variation. For those aspects that vary, what information from the ambient language informs the child of the correct options for her language? Landau proposes that the lexical semantics of the matrix predicate provide the critical data for the child to break into the system. As Landau puts it “part of knowing what *manage* means is knowing that it takes a complement with no tense operator (i.e., anaphoric tense); part of knowing what *prefer* means is knowing that it takes a complement with dependent tense; and part of knowing what *believe* means is knowing that it takes a complement with independent tense” (p. 870). Thus, since selection is local, the UG procedure in (26) assigns an uninterpretable [T] value to C, which is available to the local I head where it is interpretable.

(26) Specifying [T] on embedded I/C

- a. Anaphoric tense \Rightarrow [-T] on I/C
- b. Dependent tense \Rightarrow [+T] on I/C
- c. Independent tense \Rightarrow [+T] on I; \emptyset on C

The next step is to figure out the [Agr] value of the clausal complement. This requires the child first to pay attention to whether the verb in the clausal complement morphologically spells out [+Agr] features or not. This observation of the ambient language translates, again through UG procedures, to a feature assignment for [Agr] on I (where abstract agreement, in the form of [-Agr] is used to capture the form of infinitival clauses, and RtO infinitives lack any specification for [Agr]).

(27) Specifying [Agr] on I

- a. overt agreement \Rightarrow [+Agr]
- b. abstract agreement \Rightarrow [-Agr]
- c. no agreement $\Rightarrow \emptyset$

This brings us to specification of [Agr] features on C, which is the only place where properties of the positive input do not translate seamlessly into a UG-given feature assignment. The reason is that agreement is rarely manifested on complementizers. A null C, in principle, could be either [+Agr] or not (Landau speculates that [-Agr] is unattested, reducing potential variability). The suggestion is that [+Agr] on C is parasitic on [+T].

(28) Specifying [Agr] on embedded C

- a. [+Agr] \Rightarrow [+T]
- b. otherwise $\Rightarrow \emptyset$

Note that “tensed” complementizers could be either [+T] or [+T,+Agr] in this system. In finite clauses, this dichotomy corresponds to the distinction between obviative and non-obviative subjunctives, respectively. The learning cue for the child is indirect: Obviative complementizers,

it seems, are always lexical. Thus a lexical complementizer in the input is potentially [+T] (obviative) or [+T,+Agr] (non-obviative), but a null one can only be the latter. This system is indeed underdetermined by the input, but as Landau observes, obviation is often an idiosyncratic property that must be mastered case by case.

Let us now turn to the task of children acquiring English. Following Goro's (2004) research on the distribution of infinitives, we assume that children know that infinitival clauses have an abstract Agr, which is reflected by a [−Agr] feature assignment. The challenge children face is to figure out how the various clausal complements in their language match up with the various feature assignments. We will follow Laura's hypotheses for the complementation for the verb *want* below. The path of acquisition can be divided into 3 stages, summarized in Table 8 below.

-- Please place Table 8 here --

5.1. Stage 1 (1;6-1;9)

The first clausal complements for the verb *want* appear at 18 months. These are likely to be among the earliest verbal complements for any verb. However, given that Laura is using the verb *want* meaningfully and productively, it can be assumed that she knows the lexical semantics of *want* and this gets her underway with feature assignment.

Knowledge of the lexical semantics of *want* implies knowing that *want* selects a complement with dependent tense, and that this is realized by a C that is specified as [+T]. The verb *want* does not appear with a complementizer in the input (which could imply obviation), so Laura goes ahead and assigns a [+T, +Agr] C. The [+T] value of C must be matched by a [+T] value on the local I (to be checked off), hence the infinitival I is assigned [+T] as well.

For an adult, the presence of the infinitival marker *to* in the input would lead to a [–Agr] assignment to the I head. However, given that these early attempts at control are at around 18 months, it seems reasonable to suppose that, in the absence of experience, the child has not yet fully analyzed the presence of *to* in the input. There is no morphological inflection on the verb, so the I head is initially assigned no [Agr] feature. What is the typological profile that results from this no [Agr] feature assignment? It is neither an indicative nor an infinitive clause – it is a subjunctive one, with the feature assignment of formal English subjunctives, as seen previously in (24): C is [+T,+Agr] and I is [+T].

One might ask why children favor the no [Agr] option initially. One possibility, proposed by Rizzi (2005), is that in the initial stages of language acquisition when the production system is immature, children assume those parametric values that reduce the computational load, but which are consistent with their grammatical knowledge at that point. In the present case, choosing the no [Agr] option results in a production without *to*, which would reduce the computational load on the child's performance system. It is not clear that the child's performance system is taxed at this age, however, because the adult feature assignment is adopted almost immediately and clausal complements with *to* also appear. In those complements, Laura assigns C as [+T, +Agr] and I as [+T, –Agr]. At Stage 1, then, both of the complement types, the subjunctive and the adult infinitive, coexist.

What is the consequence of the no [Agr] feature assignment for subjunctives? Recall that in subjunctives, the [+T,+Agr] features on C imply [+R] as well. This, in turn, means that the subject of the embedded clause can be either a lexical DP subject, or *pro*. Since adult English is not a *pro*-drop language, the possibility of *pro* subjects is excluded, but we can assume that 18

month old children have not yet eliminated this possibility¹³. This would predict that at Stage 1, English-speaking children generate subjunctive complements with an embedded *pro* subject (or a DP subject). Thus, on the present analysis, children's early utterances such as *I want swing* do not have the adult English infinitival structure with a missing *to*. They are subjunctive complements with an embedded *pro* subject. The structure is shown in (29). In this case, coreference between the matrix subject and the embedded subject is optional, not obligatory. The [+R] feature on C is properly eliminated by the [+R] feature on *pro*.

(29) [CP ... I_i want [CP C_[+T,+Agr,+R] [IP *pro*_{i/j}[+R] [I' I_[+T] [VP t_{i/j} swing.]]]]]

It is interesting that Laura's very first attempt at expressing control was the utterance in (30), with an embedded DP subject¹⁴. This could be given the same analysis as (29), except that the DP

¹³ For many years, following Hyams (1986), it was assumed that children acquiring English begin with the setting of the Pro-drop parameter that permits null subjects. However, later research showed that the distribution of null subjects in child grammars differed from the distribution in adult Pro-drop languages (e.g. Roeper & Rohrbacher 1994, Valian 1991, Wang, Lillo-Martin, Best & Levitt 1992). This led Rizzi (2005) to propose that children's null subjects in tensed clauses are licensed by a different parameter, the Root Subject Drop parameter. The null subjects of interest to us are in an embedded clause, however, suggesting that they cannot be the product of the Root Subject Drop Parameter, and must be vestiges of a non-adult value for the Pro-drop parameter. Since the last occurrence of this type is (9e), at age 1;10.25, we can conclude that this parameter assumes its adult English value quite early for Laura.

¹⁴ This example was not introduced in the data section.

Laura formed part of the numeration instead of *pro*. In (30), presumably, the pronoun *I* and *Laura* enter accidental coreference, since otherwise the utterance would violate Principle C¹⁵.

(30) I_i want Laura_j swing (1;6.27)

The proposal that *Laura* permits the verb *want* to take a subjunctive complement with a *pro* embedded subject now explains other utterances in the early diary notes, which would otherwise be quite mysterious. Between 1;7 months and 1;10, several non-adult productions were recorded in which the embedded subject differed from the matrix subject (cf. (9)). That is, in a context when *Laura* wants her mother to push her in the stroller she says *I want _ push Laura* (meaning ‘I want you to push Laura’), using a null pronominal subject. These utterances are similar to the *I want pro swing* utterances, only there is no coreference between the matrix and embedded subjects – we have non-obligatory control¹⁶.

¹⁵ There are no studies of Principle C with children as young as 1;6, so we cannot be sure that this purportedly innate principle is determining the coreference possibilities that *Laura* permits in her productions. However, there is no evidence to suggest that children are *not* guided by Principle C. Studies with older preschool children show robust knowledge of Principle C (e.g. Crain & McKee 1985, see also Crain & Thornton 1998). A recent study using the preferential looking paradigm suggests that children can demonstrate knowledge of Condition C in experimental situations at about 30 months (Lukyanenko, Conroy & Lidz 2008).

¹⁶ Further searches of Adam’s data (Brown, in CHILDES) reveal that Adam also produced similar examples. For example, at 2;6.17 (file 8), he says “no want stand head”, which clearly means ‘I don’t want her to stand on her head’. And at 2;10.16 (file 16) Adam says “do want feed you?” in a context where it means ‘Do you want me to feed you?’. Similarly, a search of Nicole’s

An important prediction follows from the proposal that these early productions feature subjunctive complements. If, as we propose, the embedded subject is *pro* and not PRO in the utterances like *I want _ push Laura*, the infinitival marker *to* should never show up in the embedded clause. In an infinitival clause, the embedded I head is specified as [-Agr], and therefore it will also be specified [-R]. This is indeed the adult setting for infinitive-taking *want* (see Table 6), which crucially forces OC (use of PRO). Turning to the empirical data, in all of the 5 cases like *I want _ push Laura* that were recorded in the diary notes, where the intended interpretation was NOC (embedded subject *pro*) – there was no example with the infinitival marker *to*. These findings thus not only demonstrate that Laura uses *want* with subjunctive complements and *pro* subjects, but also that she does so under strict supervision of her grammar: the feature-assignments of the I and C heads must be consistent with those of *pro*. It is hard to see any other reason for her avoidance of *to* in these constructions – at the same age where she *does* use *to* in control utterances (cf. (6a) , (7) and Table 4)).

5.2. Stage 2 (1;10-2;1)

At Stage 2, Laura continues to express control with subjunctive complements as well as with infinitival complements as in adult English. Non-obligatory control, however, with an embedded *pro* subject, disappears. The subjunctive complements gradually decrease over time, and have disappeared by the time Laura reaches 2;2.

data (in the Manchester corpus, CHILDES) reveals a similar example. At 2;1, Nicole says “I want do” four times, but her intended meaning is ‘I want mummy do...’. We can assume that further NOC examples will be observed in other children’s data once close attention is paid to contexts.

Now that Laura has hypothesized the adult control structure incorporating *to*, she is able to use *want* with VP ellipsis. According to Lobeck (1995), VPE is licensed by a head specified for ‘strong agreement’. In the split IP phrase structure that Lobeck assumes, (morphological) tense is the head expressing ‘strong agreement’ in tensed clauses, and in infinitival clauses, infinitival *to* is the relevant head. If we take infinitival *to* to be expressing ‘strong agreement’ (as expressed by the [–Agr] specification on I in Landau’s system), then it is not surprising that adult control structures and VP ellipsis emerge together; two rather different constructions emerge at once – OC and VPE – both triggered by a non-trivial, abstract aspect of grammatical knowledge. By 2;2, the utterances without *to*, such as *I want swing*, have mostly disappeared, replaced with the adult structure, and Laura is using VPE productively with *want*. This development is illustrated in Figure 3 below.

-- Please place Figure 3 here --

In the theoretical section, it was pointed out that a lexical DP or *pro*, instead of PRO, would crash the derivation with a [+T, –Agr] I because the [–R] feature on I would remain unchecked. Thus, a child who correctly analyzes the infinitival *to* as [+T,–Agr] should *not* generate it in conjunction with a lexical subject or *pro*. It is not possible to prove that the embedded null subject is PRO and not *pro* here, but at this stage of development there are no utterances with the surface form *I want Daddy to swing*, with a lexical DP embedded subject together with the infinitival marker, which one might expect if *pro* was a possibility. Utterances with this surface form do not appear until considerably later in development, when Laura adopts a RtO analysis, which we take to be a separate later development at Stage 3. The data suggest that

at this point, Laura does not generate lexical DP subjects in structures with the analysis in (23b). The only way that Laura can express a lexical DP embedded subject is to continue to draw on her first hypothesis and generate utterances with the form *I want Daddy X* with a subjunctive complement.

Laura's subjunctive structures with a lexical DP embedded subject are most productive between age 2;0 and 2;2. This can be seen in the data in Table 4. In Figure 4, the line marked Subjunctive/RtO shows Laura's use of *to* in situations in which an adult would produce an RtO structure. Initially, she produces utterances that we have proposed to be subjunctives, and these are almost entirely lacking *to*. At the same age, however, it can be seen that use of *to* is on the increase in control structures, and is being used about 90% of the time. The control structures depicted in Figure 4 include structures both with *want* and *wanna*. The sharp contrast between the two structures makes it very clear that the lack of *to* in the utterances with a lexical DP embedded subject must be due to the child's grammatical hypothesis about the structure of the embedded complement.

-- Please place Figure 4 here --

There are two important predictions that follow from the proposal that Laura continues to generate subjunctive complements with embedded lexical DP subjects. The first prediction is that the embedded subject will appear with assigned nominative case (and not accusative), a result that holds whether we associate that case with [T] or [Agr]. The prediction that the embedded subject should take nominative case cannot be tested with lexical DPs in English, but it can be tested with 3rd person pronouns. That is, utterances like *I want he swing* should appear, whereas

adult-like productions like *I want him swing* should not be possible if the embedded clause is a subjunctive. The second prediction is that the embedded verb will carry subjunctive morphology and therefore be bare; this prediction can also be tested with 3rd person subjects. Utterances like *I want Daddy/he swing* are predicted to appear, whereas ones like *I want Daddy/he swings*, with 3rd person agreement morphology on the verb, are not. Let us begin our examination of the predictions by looking at the agreement morphology of the embedded verb.

Although utterances with 3rd person subjects are scarce in young children's speech, among Laura's productions with embedded DP subjects are 8 examples with 3rd person subjects; 7 of the 8 examples lack agreement. The exceptional example that has 3rd person agreement is given in (31).

- (31) a. I don't want Boomer [the dog] lick my face (2;2.13)
 b. I don't want my supper be cooked (2;2.18)
 c. I want daddy sing (2;1.11)
 d. I want daddy come in (2;1.19)
 e. I want my baby goes right here! (2;2.3)

These examples contrast with matrix sentences containing the verb *want* in which the subject is in 3rd person. In every one of these recorded examples, the verb shows 3rd person agreement.

- (32) a. Kanga wants medicine (1;10.14)
 b. Daddy wants my fruit chew, mummy (1;11.10)
 c. May wants a dog (1;11.19)
 d. Daddy wants ketchup (1;11.21)

- e. Daddy wants his taco (2;0.6)
- f. Mummy wants his ... she's jacket (2;1.23)
- g. He wants to eat his bone by hisself (2;3.22)

Laura's differing treatment of 3rd person agreement in matrix and embedded sentences strongly suggests that she is treating the examples in (31) as subjunctives, and this is responsible for the lack of agreement on the embedded verb. Of the 8 examples like the ones illustrated in (31), with no 3rd person agreement on the verb in the embedded clause, 3 have 3rd person pronominal subjects. In 2 cases, Laura uses the nominative pronoun *he*, but in one case *him* surfaces, although Laura immediately self-corrected to an adult like RtO example, suggesting it was a speech error. The fact that it was the latest appearing example also suggests Laura was poised to converge on the adult grammar. The examples are given below.

- (33)
- a. I want he go away (repeated 3 times) (2;2.14)
 - b. I want he play Dalmatians (2;3.22)
 - c. I don't want him go yet (2;4.23)

If the lack of verbal morphology on the verb in the embedded clause is due to the fact that children are generating a subjunctive clause, we should expect to find 3rd person verbal morphology present in the embedded complement of other verbs, such as *think*. It is clear that Laura has command of the relevant morphology in embedded indicative clauses at the age when it is stripped under complements with *want*. At age 2;1, 7 examples were recorded in the diary data with morphology present on the embedded verb, and 1 was missing agreement, but this was

an example with *don't* rather than *doesn't*, see (34f)¹⁷. There are 9 further similar examples at 2;2.

- (34) a. I think I spilled my milk (1;11.30)
b. I think you're sick (2;1.6)
c. I hope it's not poopie [dirt on her shoes] (2;1.11)
d. You know it's not your bedtime (2;1.17)
e. These shoes fit! I think it feels comfortable! (2;1.27)
f. I hope it don't spill [plane as it lands] (2;1.10)

These examples add to the evidence that in complements of *want*, the lack of verbal morphology is due to the fact that the embedded complement is governed by presence of syntactic knowledge and not by absence of morphological knowledge.

5.3 Stage 3 (2;3-2;5)

By Stage 3, the subjunctive complements with a *pro* subject have completely died out, replaced by adult control structures with an infinitival complement. The subjunctive structures with an embedded lexical DP or pronominal subject, however, continue to be produced up until about 2;4, at which time change is initiated.

¹⁷ In general, the form *doesn't* appears only once 3rd person morphology is stable on main verbs, and frequently follows a period in which *don't* is the form used (Tesan and Thornton 2007).

Presumably, Laura has now heard a good number of RtO structures, but hasn't been able to come up with the appropriate grammar to generate them. We need to explain why. Given that the right analysis of the infinitival marker *to* (as [+T,−Agr,−R]) is already in place, Laura can no longer disregard *to* in the RtO input. As they stand, however, the feature specifications of C and I are unable to generate RtO sentences. In particular, the [−R] feature on I cannot be checked by a lexical DP. Finally, at 2;4, Laura finds a solution to this problem by taking the radical step of truncating the embedded CP to IP. Now, the matrix light *v* can probe the embedded subject and assign accusative case as in adult RtO structures.

There is one further data point that Laura needs to come to terms with. Previously, when Laura revised her initial subjunctive hypothesis and adopted the adult analysis of control, she had to adjust the feature specification of the embedded I from the subjunctive [+T] with no [Agr] specification to the infinitival [+T, −Agr]. With the change to [−Agr] came the use of the infinitival marker *to* (as well as VP ellipsis). Now, at this point in her development, Laura is moving from subjunctive structures with embedded subjects to RtO structures, by truncating CP to IP.

Truncation to IP does not bring about a change in the feature specification of I, however; like the I head in subjunctive structures, the I head in the adult RtO structure lacks an [Agr] feature altogether (see Table 7). It would therefore be reasonable to hypothesize that RtO structures do not have an overt infinitival *to* marker, although this hypothesis is contrary to fact. Moreover, at this point Laura entertains a single, *different* analysis of *to* – [+T,−Agr] – which is incompatible with a lexical subject (given the derived presence of [−R]). This explains why Laura's first attempt in (35a) at an adult RtO structure with accusative case on the pronoun does

not incorporate an infinitival marker; at this stage of her grammar, the feature specification of this marker is incompatible with RtO.

Soon enough, the adult positive input in which *to* is used in RtO structures brings change to Laura's productions, which now consistently contain *to*, as can be seen by the other productions in (35b-f). Following the truncation of CP, however, this *to* can no longer be allowed to bear [-R]. Laura therefore impoverishes the control *to* by removing its [-Agr] feature, thereby forming the RtO *to*. In effect, she "subjunctivizes" *to* so that it becomes consistent with a lexical DP subject. Note that this dual analysis of *to* is unavoidable in any theoretical account of the distinction between control and RtO complements in English. The ambiguity is morphologically invisible, in a sense counterintuitive, and hence difficult to internalize.¹⁸

- (35) a. I don't want him go yet (2;4.23)
b. I want him to stay here with us (2;4.23)

¹⁸ The convoluted acquisition path to the adult RtO structure in English should cause no surprise. This structure is crosslinguistically very marked, occurring in very few languages with very few verbs. Its relative productivity in English is quite exceptional, and possibly requires some deviation from UG. Cf. Chomsky (1981a:17): "It is a "marked property" of English that [RtO structures are] grammatical. Note that in French or German, for example, the corresponding sentences would have the form ... with PRO, rather than ... with an overt lexical item... It seems, then, that [RtO] reflects some modification or relaxation of conditions of universal grammar; we would predict that unless presented with explicit examples such as [RtO sentences], a child learning English would assume that the structures should be as in French or German, with PRO as subject of the embedded infinitival, rather than adopting a marked option".

- c. I don't want him to be dead (2;4.28)
- d. They want us to be at the house (2;5.02)
- e. I just want somebody to play with me (2;5.02)
- f. I don't want you to put your toe in my yogurt (2;5.16)

Laura has now acquired adult-like complementation for the verb *want*, and the diary data end at this point.

5.4 Discussion

Our proposal has traced the development of control and RtO complements but we have not explained why the infinitival *to* fluctuates in early control complements, but not in RtO complements. This fluctuation in use of complements with and without *to* was first observed by Goro (2004) in Adam and Abe's data, though Goro offered no explanation of this. On the proposal we have presented, one small change in the feature assignment to the embedded I gives rise to the two derivations in question – the subjunctive complement and the adult control structure; the subjunctive I is just [+T] whereas the adult control I is [+T, –Agr]. Both of these feature specifications result in a 'successful' convergent derivation, and the child tries both of these 'variations' out before purging the subjunctive one.¹⁹

¹⁹ As to why the subjunctive option is purged we make the following speculation. The child has now mastered RtO, a grammatical form consistent with the input that expresses the meaning *X want DP to VP*. A subjunctive alternative would not only be unattested in the input, but also be redundant. It is noteworthy that this redundancy is systematically avoided across languages. Typically, a language either lacks one of the forms (e.g., Balkan languages lack infinitives) or, if

The optionality seen in control complements vanishes in contexts where RtO structures would be appropriate; in early RtO complements, *to* is missing altogether. Recall that Goro attributes this to a mis-set parameter. He proposes that initially children adopt a subset option for ECM complements, with children beginning with the ‘French’ option in which exceptional case marking is possible only into small clauses and not into infinitival complements. Once children adopt the ‘English’ setting, they can also case mark into infinitival complements. Presumably, at this point, they eliminate small clause complements for ECM verbs in favor of infinitival complements²⁰.

Our proposal based on Laura’s data also requires a major change that causes one structure, in this case the subjunctive, to be completely replaced by RtO structures. Just as with control structures, children initially hypothesize that the embedded complement is a subjunctive, although this time the subjunctive complement has a lexical DP subject. However, this time, changing the feature specification of the embedded I to [+T, –Agr] does not lead to a derivation

it has both, they are used to express distinct meanings (e.g., in Romance subjunctives are obviative, and control is expressed with infinitives). This complementarity has been argued to follow from a blocking principle (Farkas 1992), which may similarly constrain children in the acquisition of competing forms. For example, The Uniqueness Principle, proposed by Wexler & Culicover (1980), similarly proposes that the learning mechanism assign one structure for each meaning.

²⁰ In fact, French, like English, allows verbal small clauses only under causative and perception verbs, and not under *vouloir/désirer* (‘want’) (see Kayne 1981). Thus, it is not clear, on Goro’s proposal, how the French setting can lead English children to produce utterances like “I want you do it”.

that converges; the [-R] of the embedded I will not be checked off by a lexical DP subject. So, the only possible structure for the child at this stage is the subjunctive. In order to achieve the adult grammar, a major change has to take place, truncation to IP, with concomitant impoverishment of *to* to [+T]. Children take some time before they are ready to take this major step. Presumably, when this is accomplished, children have already concluded that subjunctive complements are not the norm in English, and IP complements replace the former CP complements.

Our proposal that children initially generate subjunctive complements as they attempt to produce control and RtO structures is compatible with the empirical data for other children presented by Goro (2004). Goro does not report any examples of embedded complements with pronominal subjects bearing nominative case, but since these are not expected on his analysis, it is likely these searches were not conducted. In an earlier discussion of the development of RtO structures, however, Pinker (1984) entertained the idea that utterances like *I want you do it* contain a finite embedded clause, and he investigated this in Adam's data. Pinker reported that Adam's data was not revealing. Adam reportedly used accusative marking 102 times as compared with 3 instances of nominative marking. But since all but one of the instances with accusative marking occurred in *d'you want me VP*, or *want me VP* environments, Pinker suggests these constructions may have been unanalyzed question markers for Adam. From our perspective, the 3 instances of embedded pronouns with nominative case show that Adam is also likely to have gone through a stage in which he hypothesized embedded subjunctive clauses. Pinker also reports anecdotal data from Wasow's child, who reportedly said *I don't want she + VP* several times, providing further data supporting our analysis.

6. Alternative approaches

The Agree-based theory of control we have adopted and implemented is, of course, not beyond dispute. On the contrary, the long history of the topic has seen an abundance of competing control theories. It is virtually impossible to evaluate the merits and faults of all these alternative approaches within a single article.²¹ Nevertheless, we think it important to bring our child data to bear on specific current debates within the theory of control. Bridging the acquisition-theory gap is not always easy, but we firmly believe it is an effort worth making – for both sides.

To make the task feasible, we will concentrate on *classes* of theories, rather than on particular ones: the predication approach, the binding approach and the movement approach. We will also focus on key aspects of our data, rather than on secondary effects. Then, we will ask how different types of control theories might respond (or fail to respond) to our data. The discussion will be inevitably brief, sometimes speculative, but hopefully substantive enough to underscore the theoretical relevance of our findings.

Let us start with a concise statement of the explanandum – the key aspects of Laura’s acquisition path towards the adult system of complementation for the verb *want*. Recall that

²¹ One current theory that is particularly inadequate in the present context is the lexical-decompositional analysis of Jackendoff and Culicover (2003). J&C in fact have no account of control with *want*-type verbs, since their account of control is limited to action-selecting verbs. They speculate (p. 551) that control with *hope/wish* (and presumably *want*) is due to their being experiencer verbs, but this cannot be the entire story, since most experiencer verbs that select clausal subjects do not impose obligatory control (e.g., *bother*, *annoy*, *amuse* etc.; see Landau 2001).

Laura was observed to pass through three stages of acquisition (Table 8). At Stage 1, Laura entertains two complement types for *want*: A control *to*-complement with PRO, and a subjunctive NOC complement with *pro* (included in the former are *wanna*-complements). Both are correctly analyzed as in the adult grammar, although for adults the subjunctive is formal and infrequent, and the *pro*-drop option is no longer available. At Stage 2, Laura retains the two options, but now the subjunctive complements show up with lexical subjects, the *pro* option dying out. At Stage 3, the correct adult RtO begins to replace the subjunctive, and Laura has converged on the correct analyses of the two types of infinitival *to* (control and RtO).

Certain possibilities were never attested in Laura's speech. They are given below.

(36) *Unattested patterns in Laura's speech*

- a. *want *pro* to VP_[-fin]
- b. * want DP VP_[+fin]
- c. * want pron_[Nom] to VP_[-fin]

That is, Laura knows from the outset that NOC is incompatible with *to*, that *want* does not select an indicative (inflected) complement and that the postverbal DP in RtO is assigned accusative, not nominative case.

6.1 Control as predication

In predication theories of control, the crucial dependency holds between the controller and the entire infinitive (not its subject), which is taken to be a predicate. For example, a sentence like

Mary tried to swim is interpreted along the lines of “In all worlds/situations in which Mary’s attempt succeeds, she has the property of swimming”. Predicational theories split according to whether they posit a syntactic PRO subject in the infinitive (Williams 1980, 1987, Clark 1990) or not (Bach 1979, Chierchia 1984, Dowty 1985, Culicover and Wilkins 1986). In the former variant, predication is taken to be encoded in the syntax; in the latter, it is a lexical entailment or some other non-syntactic relation.

The most fully worked out predicational theory of control is developed in Chierchia 1984. Let us ask, then, how the present results can be accounted for within that theory. Chierchia analyzes infinitival VPs in argument positions as “nominalized properties”; essentially, these are 1-place properties which are mapped to a special kind of individual in order to be able to function as arguments. The functor that maps a VP property to its individual correlate is the infinitival [–Agr], the marker *to* merely being an identity function. Crucially, small clause bare VPs, control *to*-infinitives and RtO *to*-infinitives receive exactly the same syntax and semantics in this analysis; they are indistinguishable (although the verbs selecting them are obviously distinct). NOC infinitives and gerunds (i.e., subject of *bother*, object of *discuss*) are also nominalized properties (there is no PRO_{arb}), which are simply not associated with any control entailment. In contrast, subjunctive clauses are taken to be saturated properties, i.e., propositions (see Chierchia 1984:241-255).

Chierchia can account for the NOC data in much the same way that we do (a subjunctive with an as-yet-not-excluded *pro*). Notice that it would not be possible to maintain that *want* at Stage 1 only selects a proposition; this would allow NOC, but would fail to explain why *to* is restricted to coreference (control) readings. Thus, even on the predicational approach, Stage 1 already involves a dual analysis.

The major puzzle for this approach, however, is the latency of RtO *to*. To recall, there is no different analysis for control *to* and RtO *to* in Chierchia's theory (or in other versions of the predication approach, to our knowledge); moreover, the argument structures for control and RtO (e.g, *persuade* and *believe*) are identical; the difference lies in their lexical entailments, which are simpler for *believe*, if anything. Thus, the predication approach leaves unexplained the startling fact that 8 months separate the onset of *to* in control complements from its onset in RtO complements. In contrast, on the present account this delay is attributed to a conjunction of obstacles to be overcome: truncation of CP and "invention" of a novel *to* against the competing, co-existing subjunctive analysis (note that subjunctive and RtO complements cannot compete in the predication account, falling as they do under different semantic types).

6.2 *Control as binding*

In binding-theoretic approaches, PRO in obligatory control is taken to be a silent anaphor (or identified by such, as in Borer 1989). The relevant binding domain is the matrix clause, and the binder is simply the controlling DP. The matrix clause comes to be the binding domain for the embedded subject in various ways. Either the domain definition is extended (see Manzini 1983, Lebeaux 1984, Sag and Pollard 1991), or the complement clause is analyzed as somewhat reduced (a bare IP, see Bouchard 1984, Koster 1984), or internally modified (by I-to-C movement, see Borer 1989) so that it is governed from the outside. In other executions the binding approach blends into the predication one: PRO is an anaphor whose interpretation is given by predicating the infinitive of the binder/controller (see Lebeaux 1984, Hornstein and Lightfoot 1987).

The treatment of NOC under the binding approach is also not uniform. On some accounts, PRO_{arb} is also an anaphor, whose binder simply happens to be a null (possibly generic) operator in the matrix clause (Lebeaux 1984, Borer 1989). On others, the absence of a binding domain in NOC voids the binding condition; PRO_{arb} is still an anaphor, but its interpretation is regulated by discourse alone (Manzini 1983). Finally, some accounts simply treat PRO_{arb} as a pronoun (Bouchard 1983, Koster 1984). Different contexts of NOC may be treated by either the “exempted anaphor” analysis or the pronominal analysis, as in Sag & Pollard 1991.

Again, it seems that the co-existence of control and NOC at Stage 1 of Laura’s speech calls for a dual analysis. Utterances with *to*-complements would involve an anaphoric PRO which must be locally bound in the matrix clause. Utterances without *to* (overt or implicit, as in *wanna*) would either involve an anaphoric PRO lacking a binding domain, or *pro*. The problem for the first option is that uncontrolled null subjects appear in complements, which do have a binding domain (namely, the matrix clause). The problem for the second option (a *pro* analysis) is how to make sure that *pro* is governed (as required in *pro*-drop accounts) in the absence of overt agreement.

The latency of RtO would seem to pose a challenge to those binding accounts that take control complements to be reduced clauses – as RtO complements are. In other words, if control qua binding only applies to bare IP complements (Bouchard 1983, Koster 1984, Hornstein & Lightfoot 1987), and such complements are already available to Laura at Stage 1, it is not clear why they cannot be used in RtO contexts before Stage 3.

6.3 Control as movement

In the movement theory of control, the relation between the controller and the controllee is a standard A-chain dependency. An embedded DP argument passes through the embedded [Spec,IP] position, leaving there a silent copy (=trace), then raises to a matrix thematic position, and finally lands in the EPP position, if there is one. The resulting chain bears two θ -roles and one case, the one assigned in the matrix clause. The reason why the controlled copy cannot be pronounced is the lack of case in the subject position of the infinitive, as in raising complements. The locality of control is said to follow from the locality of A-movement (see O'Neil 1997, Hornstein 1999, 2001, 2003, Boeckx and Hornstein 2004, 2006).

In the movement theory, NOC is treated, as in certain binding theories, as an instance of pronominal reference. In contexts where control cannot apply (basically – island infinitives, like subject clauses), a last-resort *pro* is inserted in the subject position of the infinitive. Presumably, *pro* can but need not be assigned case.

Stage 1 data pose similar problems to the movement theory as they did to the binding theory. Utterances with *to*-complements would involve movement (PRO=A-trace), while utterances without *to* would involve *pro*. The question is what justifies insertion of *pro* as the embedded subject in the latter contexts, given that this is defined as a last-resort operation. There are two possibilities: Either (what we called) subjunctive complements are islands, or their subject position is assigned case. Both options would preclude an A-trace in the complement subject. However, subjunctive complements are not islands in the adult grammar, and there is no independent reason, empirical or theoretical, to assume that they are in the child grammar.

As to the second option – it is probably true that the subject position of subjunctive clauses is assigned case (although we do not believe that the subject of an infinitival clause is any

different; see Landau 2006). The problem is how to guarantee this result within the framework of the movement theory of control. In particular, the lack of agreement on the English subjunctive I head should make it case-deficient, contrary to fact. Boeckx & Hornstein (2006) attempt to distance the earlier formulations of the movement theory of control from their explicit reliance on case, by appealing to “maximal checking” of Tense and Agreement. This would again fail to distinguish infinitives from subjunctives in English, both lacking agreement.

Similarly, whether the lack of case or “maximal checking” is the relevant deficiency of infinitives, there is no natural account of the control-RtO contrast within the movement theory. Both types of constructions involve movement of the embedded subject from a caseless position, and both figure the same marker *to*. Boeckx & Hornstein (2004:446) even propose that RtO complements are CPs, thus virtually indistinguishable from control complements. Hence, our finding that RtO constructions are a significantly later acquisition than control constructions remains a puzzle for the movement theory.

6.4 *The deeper puzzle for the alternatives*

We have seen that the developmental data pose different problems for each type of the three main alternatives – predication, binding and movement. These problems do not seem to arise within the Agree-based theory that we have adopted. There is, however, one deeper puzzle, for *all* the alternatives, that we have not discussed so far. The puzzle is the very duality observed right from the earliest productions in Laura’s *want*-utterances. This is the alternation between *to*-complements (where obligatory control obtains) and *to*-less complements, where NOC obtains. As we argued in section 5, there is good evidence suggesting that these two types correspond to infinitives and subjunctives in Laura’s grammar, respectively.

Why should Laura begin with these two options, given that there is no subjunctive-taking *want* in the adult input? Furthermore, why should the two options be simultaneous? As far as we can tell, these are accidental correlations on each of the alternative accounts. Laura is simply overgenerating a grammatical option (the subjunctive) in contexts limited to infinitives; the two options are unrelated, and eventually the error is filtered out.

This view seems to us unsatisfactory for two reasons. First, accidental correlations are best avoided, if possible. In fact, if accidents are allowed, it is not clear why the *indicative* option is never entertained with *want* (see (36b)). Second, this view fails to do justice to the magnitude of the “error”: Between ages 1;6-2;6, more than a third (37%) of Laura’s productions of clause-taking *want* were in the subjunctive form (on our analysis). Both this high rate and its cooccurrence with infinitives during such a long period are not adequately addressed on the alternative views.

In contrast, the Agree-based system entertains a whole different outlook on clausal complementation. The fundamental idea of Landau (2004) is that the finite-nonfinite distinction is neither binary nor primitive – it is decomposable into various feature combinations, which define a scale of clause types along the finiteness dimension. Mood labels such as “subjunctive” and “infinitive” are mere shorthand for such combinations. In particular, the (non-obviative) subjunctive and the irrealis infinitive (found with *want*) are barely distinguishable in this system. Both are headed by C specified [+T,–Agr], which selects an I specified [+T]. The single difference between them, in English, is that the infinitival *to* is further specified [–Agr] and the subjunctive zero inflection lacks [Agr] altogether (see Tables 6 & 7). This distinction is not only minimal, but also morphologically invisible.

A child learning the verb *want* can tell, on the basis of its semantics, that [T] will be positively specified in the complement. Given the lack of direct evidence bearing on the [–Agr]/no [Agr] choice, it is only natural to expect a certain indeterminacy as to the [Agr] values associated with *want*-complements. The crucial point, however, is that the child’s initial engagement in two options, and the prolonged hedging between them, is not a case of “grammatical schizophrenia”. The child is committed to *one* piece of the puzzle (namely, the [+T] value) while still searching for ways to converge on the *other* piece (namely, the [Agr] value). On the decompositional account that we endorse, these are principled consequences: both the known piece (i.e., the fact that the child never entertains an *indicative* complement for *want*) and the unknown piece are exactly what we predict and cannot be anything else. Thus, this account offers the right kind of balance between rigidity and lenience that seems to be called for by our developmental data.

7. Conclusion

The task of the child is to call on Universal Grammar and, in conjunction with the input data, to form hypotheses about the properties of the ambient language. In some cases, the input data are either not sufficiently rich to inform the child, and in these cases, the child must form a hypothesis, in the absence of experience. The expectation is that the child’s hypothesis will be in accord with the continuity hypothesis and reflect properties of other human languages. We have illustrated this course of acquisition in the present paper, as Laura attempted to converge on the properties of control and Raising to Object structures.

Acquisition of the complementation for *want* in English is faced with two difficulties. First, identifying the [–Agr] value of the control *to* in the absence of morphology; second,

identifying the distinct [Agr]-less *to* in RtO complements, again, in the absence morphology distinguishing it from control *to*. Led by the solid semantic cue of selected tense ([+T]), the child tries out various options. First, she entertains both infinitival and subjunctive complements (but never indicative ones, whose tense is unselected). Already at this early stage, she restricts infinitives to control contexts, but allows NOC with subjunctives – presumably, due to a residual pro-drop option, which gradually dies out. Next, she introduces lexical subjects in the subjunctive complements, presumably attempting the adult RtO structure without yet having correctly analyzed its *to* head. Finally, hitting upon CP-truncation, she masters the infinitival RtO complements and dispenses with the subjunctive option altogether.

Within Landau's Agree-based theory of control (Landau 2000, 2004, 2006), this progression is seen as a "journey" through a series of hypotheses about the feature composition of clausal complements. The proposal that Laura, and perhaps English-speaking children in general, initially produce subjunctive complements rather than infinitival complements is unsurprising on Landau's theory of control, but problematic for other generative analyses of control, and any usage-based approach to language acquisition.

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Tables:

Adam	Empty subject complements	Omissions of <i>to</i>	Overt subject complements	Omissions of <i>to</i>
2;3-2;6	24	2 (8.3%)	0	0
2;6-2;10	59	47 (79.7%)	7	6 (85.7%)
2;11-3;2	154	32 (20.4%)	192	190 (99.0%)
3;3-3;6	71	1 (1.4%)	35	3 (8.8%)

Table 1: Adam's development of infinitival complements

Abe	Empty complements	subject Omissions of <i>to</i>	Overt complements	subject Omissions of <i>to</i>
2;3-2;6	6	0	1	1 (100%)
2;6-2;10	52	5 (9.6%)	22	17 (77.3%)
2;11-3;2	114	2 (1.8%)	14	1 (7.1%)
3;3-3;6	103	0	15	0

Table 2: Abe's development of infinitival complements

	<i>want</i> + DP	<i>want</i> + P/particle	<i>want</i> +lexical omission
1;6-1;7	31	5	9
1;8-1;9	26	2	6
1;10-1;11	32	2	2

Table 3: Laura's utterances with *want* + DP, P/particle and with omissions of lexical material

	<i>want</i> + VP	<i>want</i> + <i>to</i> + VP	<i>wanna</i> + VP
1;6-1;7	5	2	2
1;8-1;9	8	10	6
1;10-1;11	16	22	42
2;0-2;1	4	23	13
2;2-2;5	1	49	3

Table 4: Number of utterances produced by Laura in contexts of control

	Want + _ VP (no subject and omission of <i>to</i>)	Want + NP + VP (omission of <i>to</i>)	Adult RtO structure
1;6-1;7	1	1	0
1;8-1;9	3	1	0
1;10-1;11	1	3	0
2;0-2;1	0	44	2
2;2-2;5	0	28	13

Table 5: Laura's successive hypotheses about the form of RtO structures

Obligatory control			
	Exhaustive	Partial	Balkan
	Control	Control	C-subjunctive
	Infinitive	Infinitive	
I	$[-T, -Agr]$	$[+T, -Agr]$	$[-T, +Agr]$
C	$[-T]$	$[+T, (+Agr)]$	$[-T]$

Table 6: Feature specifications for obligatory control

No control				
	Balkan	English	Indicative	Raising
	F-subjunctive	subjunctive		to Object
I	[+T, +Agr]	[+T]	[+T, +Agr]	[+T]
C	[+T, +Agr]	[+T, +Agr]	Ø	(no C)

Table 7: Feature specifications for non-obligatory (or no) control

Structure	Stage 1 (1;6-1;9) control with or without <i>to</i> , NOC without <i>to</i>	Stage 2 (1;10-2;1) NOC disappears, <i>to</i> -less RtO appears	Stage 3 (2;2-2;5) <i>to</i> -less control disappears, <i>to</i> in RtO appears
DP _i want ec _j VP	✓		
DP _i want ec _i VP	✓	✓	
DP _i want ec _i to VP	✓	✓	✓
DP _i want DP _j VP		✓	✓
DP _i want DP _j to VP			✓

Table 8: Laura's acquisition path

Figures:

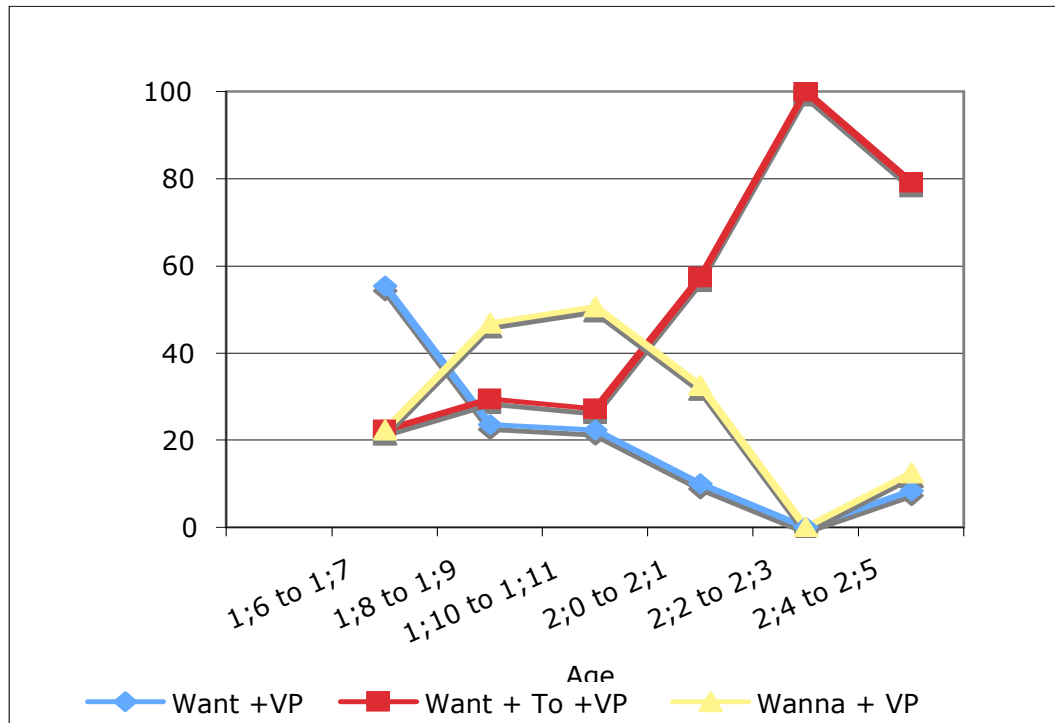


Figure 1: Laura's control structures

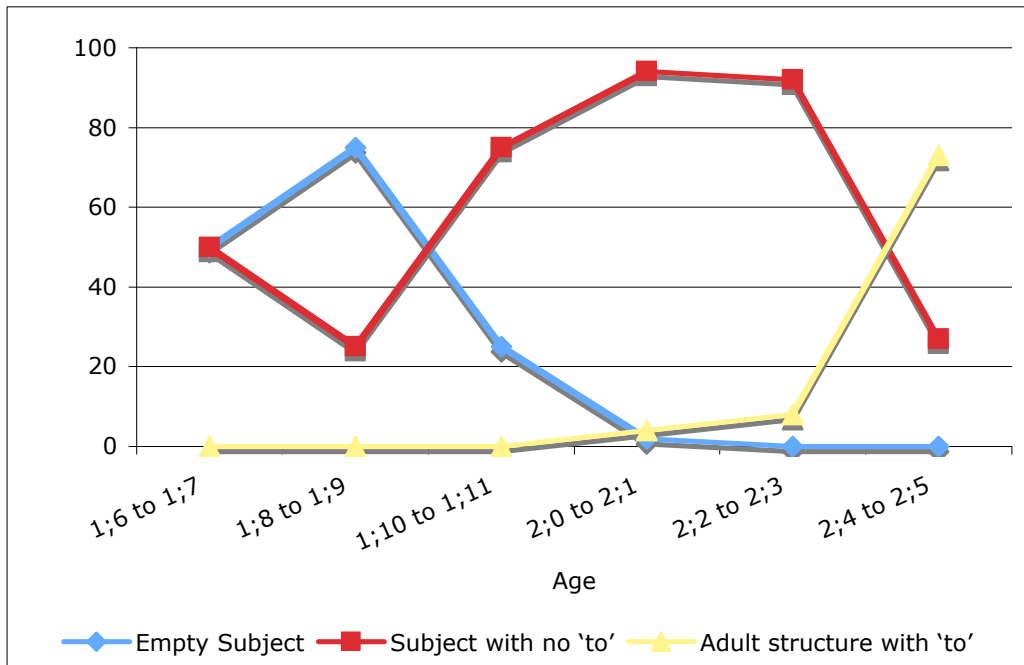


Figure 2: Laura's hypotheses for RtO structures from 1;6 to 2;5

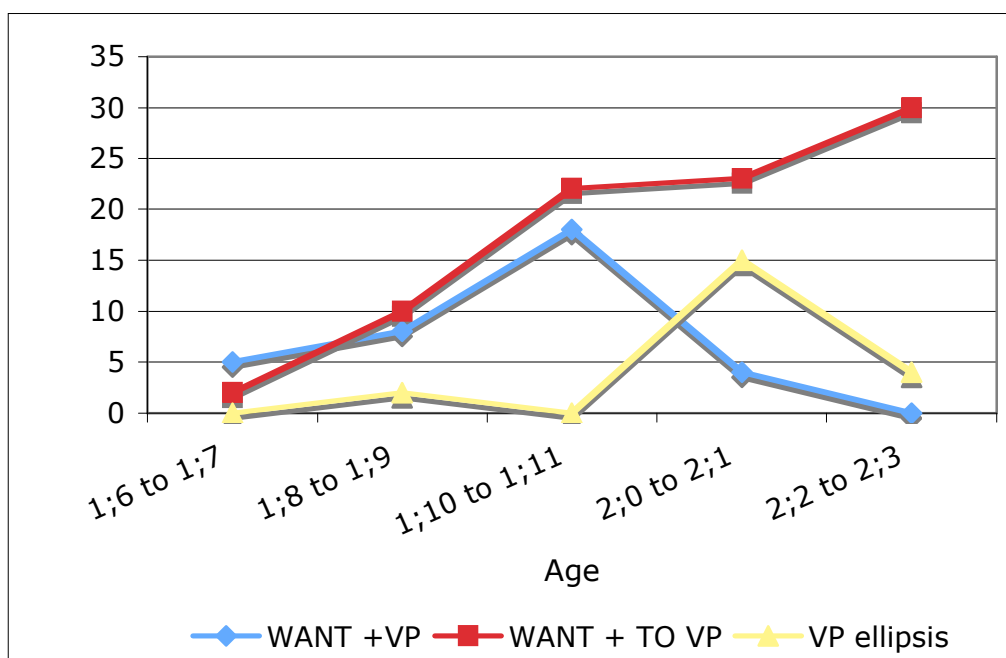


Figure 3: Laura's increasing use of VPE with *to*, and control with *to*

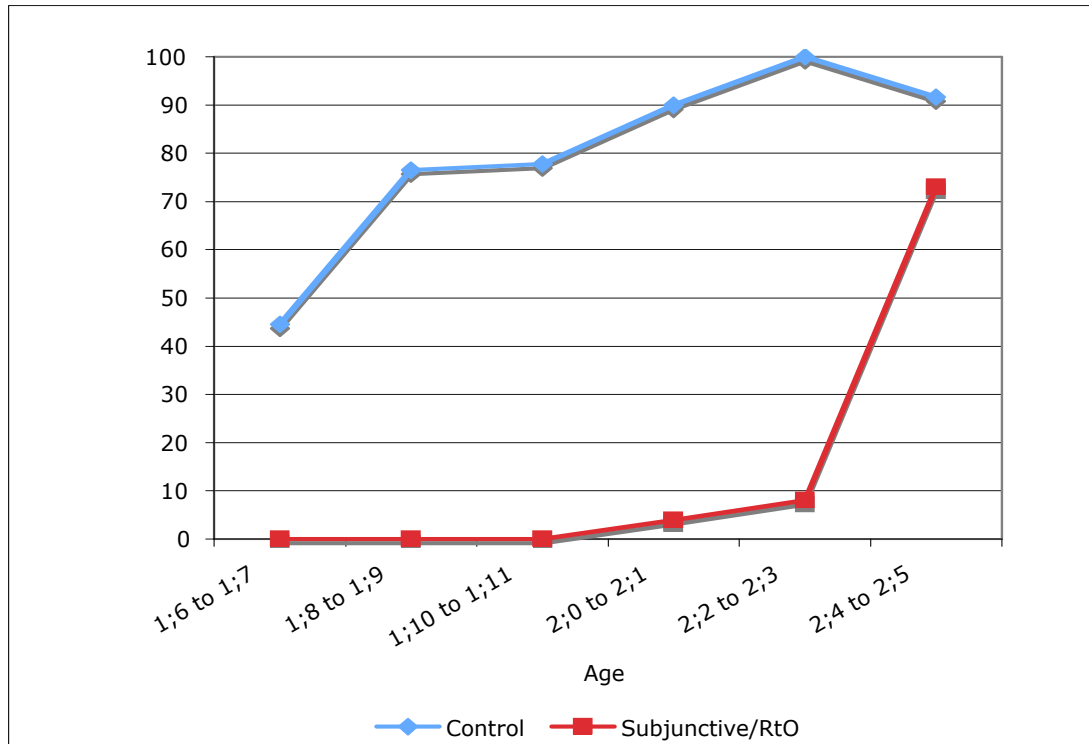


Figure 4: Laura's use of *to* in obligatory control and in her structures used in RtO contexts