The Acquisition of Infinitival Clauses and The Developmental Advantage of Restructuring Verbs: A Growing Trees Perspective

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Abstract

Restructuring verbs (Rizzi, 1976) are verbs that, although selecting for infinitival complements, behave syntactically like simple clauses (Wurmbrand, 2001). This phenomenon occurs across languages and typically involves modal, aspectual, and motion verbs. The debate over the structural mechanisms underlying restructuring has been active for decades, with various accounts diverging on key assumptions and structural aspects. In this paper, we aim to explore the acquisition of restructuring verbs in Italian and present new developmental data to refine and inform current syntactic theories.

1 Introduction

"Restructuring" is a term that goes back to Rizzi's (1976; 1982) seminal work, in which he identified in Italian a class of predicate that despite selecting for infinitival complements, behave like simple clauses. Diagnostics for restructuring vary depending on the morphosyntactic features of each language (Wurmbrand, 2001). In Italian, a good diagnostics is Clitic Climbing (CC). In (1), the clitic pronoun *lo*, originating as the internal argument of the infinitive, surfaces attached to the main verb. This operation is usually unacceptable (2), as the clitic would cross a clausal CP boundary (signaled by the prepositional complementizer *di*).

(1) Marco lo$_1$ finisce di costruire.
    Marco it.CL finishes to build.
(2) *Marco lo$_1$ decide di costruire.
      Marco it.CL decides to build.

The question is then what licenses transparency effects between the infinitival verb and its matrix clause, and why restructuring usually pertains only to a subset of verbs (modal, aspectual, and motion verbs; Wurmbrand 2001).

2 Restructuring in syntactic theory

The different syntactic accounts available on the market can be grouped in two lines of analysis: bi-clausal and monoclausal approaches (Wurmbrand, 2001). The former usually assume that the main verb and its infinitive start out as two independent domains that later on get unified by a syntactic process (e.g., Kayne (1991); Roberts (1997); Burzio (1986); Rizzi (1982, 1976)). To illustrate the main logic, consider Müller's (2020) approach. He argues that clausal union is obtained from an elementary operation *Remove* (parallel to *Merge*) that erases portions of the structure from the derivation. Under his proposal, infinitival complements of restructuring verbs are full clauses that lose their CP (and TP) projections after *Remove* has taken place.

(3) ...[$_{VP}$ V$_{Restructuring}$ [$_{CP}$ ... [$_{TP}$ ... [$_{VP}$ V$_{Infinitive}$
    $\rightarrow$ *Remove* $\rightarrow$ ...[$_{VP}$V$_{Restructuring}$[$_{VP}$V$_{Infinitive}$

Monoclausal approaches propose instead that the restructuring verb and its complement never constitute two separate domains, and they are merged as one from the beginning (e.g., Di Sciullo and Williams (1987); Picallo (1990); Grano (2015); Rochette (1999)). For instance, capitalizing on the recent discoveries of the cartographic enterprise (Belletti, 2004; Rizzi, 1997), Cinque (2006) observed that verbs causing restructuring effects appear to correspond to specific heads within Cinque's (1998) hierarchy. Based on this observation, he proposes that verbs whose semantics align with functional heads within the (split) TP, always enter the structure as such, even when transparency effects (e.g., clitic climbing) do not occur. The syntax of a restructuring construction would then be the following:

(4) [$_{TP}$ ... [$_{FP}$ F$_{Restructuring}$ ... [$_{VP}$ V$_{Infinitive}$

The theoretical divide between monoclausality and biclausality already gives rise to two conflicting developmental predictions. If the initial derivation of restructuring verbs involves the presence of an embedded CP domain, we expect them to surface only when complementation is acquired. To address this question, we will pair Cinque's (2006) functional restructuring with a recent developmen-

tal approach that also relies on a cartographic perspective (Friedmann et al., 2021).

3 The Growing Trees Hypothesis (GTH)

According to the GTH (Friedmann et al., 2021), children's syntactic development follows the hierarchy of the syntactic tree proceeding in a bottom-up fashion, starting from the lower zones (VP domain), up to the highest portions of the left periphery. From their data, Friedmann et al. (2021) identified the following developmental zones:

(5) 1. [$_{TP}$ T ... [$_{VP}$ V]]
2. [$_{QP}$ ... [$_{ModP}$ ... [$_{FinP}$ ... (+ zone 1)
3. [$_{ForceP}$ ... [$_{IntP}$ ... [$_{TopP}$ ... (+ zones 1,2)

The three zones are implicationally related (if 2 is present, also 1 is present; if 3 is present, also 2 and 1 are present). This allows us to predict an earlier appearance of restructuring verbs over infinitival complements (i.e., control verbs; see Landau (2013)). If they are functional heads within the TP (Cinque, 2006), they should appear at stage 1, whereas control complements should appear only at stage 3, when the functional head relevant to complementation is acquired (i.e., ForceP).

4 Material and methods

We gathered transcription data from the spontaneous production of 11 children within the CHILDES database (MacWhinney, 2000) with ages ranging from 1;05 to 3;04 (see Tab.1). For each transcript, we manually extracted (non-root) infinitival verbs, and each of them was coded with respect to its matrix predicate, i.e. if it was introduced by either a restructuring or a control verb. For the restructuring class we counted 206 occurrences of modals (*potere, volere, sapere, dovere*)[1]; 53 aspectual verbs (*finire, stare, cominciare, provare, riuscire*)[2]; 47 causative (*fare*, i.e., *make*); 43 instances of motion verbs (*andare* and *venire*)[3]. Other types of infinitival (control) complements consist of 29 purpose clauses; 8 though constructions; and 20 other verbs[4].

5 Results

In our analysis, we followed the rationale of Patrizi & Sanfelici (2024), whose study was guided by a

Figure 1: wMLU for the first appearance of restructuring, 2nd stage, and 3rd stage structures (mean).

Corpus (no. children)	Age	Tokens	wMLU range
Antelmi (1)	2;2-3;4	2728	2.6-4.6
Calambrone (3)	1;7-2;11	5178	1.2-4.7
D'Odorico (4)	1;06-2;00	2849	1.1-2.2
Tonelli (3)	1;05-2;04	1474	1.1-4.8

Table 1: Corpus specifics

similar research question, investigating the acquisition of Cinque's (1998) adverbial hierarchy under the Growing Trees Hypothesis. We started by calculating with the CLAN software the average wMLU at the point when children first used the restructuring verbs listed above. Like Patrizi & Sanfelici (2024), we computed the MLU in words to ensure an overall uniform analysis across the four different corpora. Fig.1 displays the results, which shows the comparison between the time (mean wMLU) in which the first restructuring verbs appear for each child, with both yes/no questions and wh-questions (pertaining to the 2nd zone of the GTH), and control and finite complement structures (pertaining to the 3rd zone).

6 Conclusions

Our results reveal an implicational relationship between restructuring verbs and other types of infinitives, highlighting a developmental advantage of the former over the latter. This finding aligns with the predictions of the GTH, provided we also assume that restructuring verbs are functional heads. However, this outcome is inconsistent with approaches that propose an underlying biclausal syntax for restructuring, as such models would predict the concurrent appearance of restructuring verbs with other complement structures.

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[1] i.e., *can, want, being able to, must.*

[2] i.e., *finish, be, begin, try, succeed.*

[3] i.e., *come, go.*

[4] *dire* 'to say'; *bisogna* 'having to'; *prestare* 'lending to'; *stare/essere* 'being to'; *mettere* 'putting to'; *imparare* 'learning to'; *servire* 'using to'; *lasciare* 'letting to'.
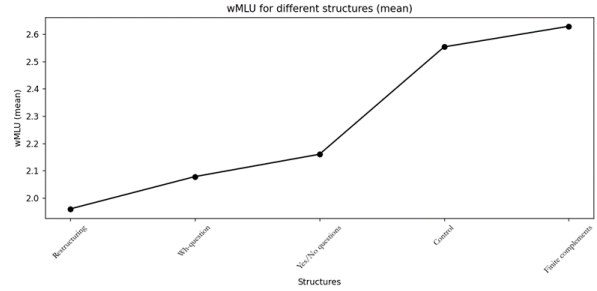
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