

The role of variation of verb placement in the input: Evidence from the acquisition of V2 and verb-final German relative clauses

Abstract

This chapter investigates the acquisition of verb placement in German relative clauses (RCs), which under specific licensing conditions allow for variation in word order. The finite verb can surface either in final position or in second position; the latter structures are referred to as integrated V2 (iV2). To address the question of how children deal with this alternation in the input we developed a picture-supported delayed-imitation task, which is the first to elicit the production of iV2 structures and verb-final RCs. We tested 23 monolingual German-speaking three-year-olds and 21 adults. Our results revealed a striking asymmetry between the two structures. Children repeated significantly more V-final than iV2 structures correctly and exhibited a robust preference for verb-final RCs over iV2 structures, changing the verb placement from V2 to verb-final significantly more often than from verb-final to V2. Adults repeated both verb-final RCs and iV2 structures in a target-like manner. We argue that children's preference for verb-final placement results from an economy-based learning strategy at play during the acquisition process.

Keywords: verb placement, variation, relative clauses, German, acquisition

1. Introduction

Much recent language acquisition research has addressed the role of variation in the input for children's acquisition (Westergaard 2003; Bentzen 2009; Anderssen and Westergaard 2010, Anderssen, Bentzen and Westergaard 2010; Kieburg and Schulz 2010; Waldmann 2014 among others). Two major findings emerge from this work. First, children are sensitive to the subtle distinctions in information structure, semantics, and syntactic distribution, resulting in the production of varying word orders. For instance, Westergaard (2003, 2009) finds that in *wh*-questions Norwegian children produce V2 and non-V2 word orders in appropriate contexts, suggesting that children are sensitive to micro cues in the input. The same observation was made for other phenomena, such as the subject positions in Norwegian (Bentzen 2009) and Greek (Kapetangianni 2010), and the pre- and post-nominal position of adjectives in Italian (Cardinaletti and Giusti 2010). Second, certain word order variants are adult-like in child language from early on, whereas others are delayed. For instance, English and Cantonese monolingual children acquire double object dative constructions before prepositional datives (Gu 2010). In *wh*-questions, French children at early stages prefer the *wh*-in-situ option over the movement option (e.g., Hulk and Zuckerman 2000; Zuckerman and Hulk 2001). Taken together, these findings suggest that although children are sensitive to fine syntactic, semantic, and pragmatic distinctions between different variants, this sensitivity may vary across languages and across phenomena within a single language, resulting in different acquisition paths for different phenomena involving variation.

In this chapter, we address the question of how a child deals with the word order variation present in the input by investigating the acquisition of the verb placement in German embedded clauses. German provides an ideal testing ground for this question since in embedded clauses the verb – given certain requirements are met – may be in clause final position (V-final) as well as in second

position (V2). Although verb-final placement is one of the main characteristics of subordinate clauses, in specific syntactic environments subordinate clauses license V2 as well, resulting in variation in the input. These environments include *weil* ‘because’-clauses, certain types of complement clauses, and relative clauses (for an overview, see *i.a.* Reis 1997; Wurmbrand 2014). The present study focuses on the syntactic environment of relative clauses (RCs). In German RCs the verb generally occupies the final position (1a); under specific conditions embedded V2 is also licensed in structures labeled integrated¹ V2 structures (henceforth iV2), illustrated in (1b), (Brandt 1990; Gärtner 2001a/b; Zwart 2005).²

- (1) a. *Hier gibt es zwei Frauen, die den Präsidenten **getroffen haben*** RC
 here there-is EXPL two women PRO:NOM the:ACC president met have
- b. *Hier gibt es zwei Frauen, die **haben** den Präsidenten **getroffen*** iV2
 here there-is EXPL two women PRO:NOM have the:ACC president met
 ‘Here there are two women that met the President.’

Note that in examples such as (1), iV2 structures and verb-final RCs are minimal pairs differing at the surface only in the position of the finite verb (cf. Gärtner 2001a/b, 2002; Endriss and Gärtner 2005; de Vries 2006; Sanfelici, Schulz and Trabant 2017).

What does it mean for a child acquiring German to be confronted with both word orders in (1) in the input? Does the child prefer (1a) over (1b)? What can acquisition data reveal about the nature of this embedded V2? Previous acquisition studies provide mixed results regarding these questions. Rothweiler (1993) reports a preference for V-final RCs and states that iV2 structures are produced later, suggesting that embedded V2 is a late acquired phenomenon. On the other hand, Brandt (2004) claims that young children up to age 4 mainly produce iV2 structures in spontaneous speech and suggests that embedded V2 clauses represent the transition step from main clauses to verb-final subordinate clauses in the course of acquisition. Given that spontaneous speech data invite different and sometimes even contradictory analyses (cf. Tracy 1991), we addressed the question of how children deal with the alternation in (1) in an experimentally controlled context, using a picture-supported delayed-imitation task that required participants to repeat sentences of the types (1a) and (1b). This way we contribute to the debate on the acquisition of embedded V2 using evidence from data that are less open to different analyses (Lust, Flynn and Foley 1996).

Our results from three-year-old monolingual German-speaking children reveal that the great majority of children produced both word orders in (1), but exhibited a significant preference for verb-final RCs over iV2 structures. Children changed iV2 structures into verb-final RCs more frequently than verb-final RCs into iV2 structures. Moreover, six children exclusively produced verb-final word order. Adults performed at ceiling in the repetition of both verb-final RCs and iV2 structures. Assuming that verb-final and embedded V2 differ regarding the feature specification of the embedded C^0 (assertive force either absent or present), we argue that children’s preference for verb-final RCs reflects two subsequent acquisition stages: an early stage characterized by the embedded C^0 underspecified; and a second stage, in which the embedded C^0 can be specified for assertive force. Whereas in the first stage verb-final placement is the only option generated by the children’s grammar, in the second stage V2 and verb-final placement are

¹ We adopt the label ‘integrated V2 structures’ proposed in Gärtner (1998, and subsequent works). For a definition of ‘integrated’ we refer the reader to Section 2.

² Examples are provided with glosses when the morpho-syntactic information is relevant for explanatory purposes. Otherwise, we will offer the direct English translation and highlight the relevant aspects in bold.

both possible in principle. Children nevertheless prefer V-final, because they follow an economy-based learning strategy which favors the underspecified embedded C^0 .

The paper is structured as follows. In Section 2 we outline the basic properties of German RCs and of iV2 structures and their licensing conditions. Section 3 provides an overview of previous acquisition studies. In Section 4, we report our experimental design and the results. In Section 5, we discuss our findings and sketch our acquisition proposal. The chapter concludes with final remarks in Section 6.

2. Theoretical premises

German is an OV language with a strict verb second (V2) requirement (e.g., Thiersch 1978; den Besten 1989; Holmberg 2015). In root clauses the finite verb must appear in second position independently of the grammatical function of the constituent in the first position. The first position may be filled by a subject as in (2a) or a non-subject, e.g., an object, as in (2b).

(2) a. *Peter hat ein Buch gelesen.*

Peter has a book read
'Peter has read a book.'

b. *Ein Buch hat Peter gelesen.*

a book has Peter read
'A book, Peter has read.'

In subordinate clauses the finite verb is in final position.

(3) *Maria hat gesagt, dass Peter ein Buch gelesen hat.*

Maria has said, that Peter a book read has
'Maria said that Peter read a book.'

The strict V2 word order in main clauses is standardly analyzed as verb movement to the topmost head position of the clause, i.e. C^0 (e.g., den Besten 1983; Platzack 1983; Platzack and Holmberg 1989), followed by an obligatory XP movement to Spec,CP. In embedded clauses, verb raising to C^0 does not apply and the verb moves up to T^0 (e.g., Vikner 1995).³

However, there are some exceptions to this generalization. German allows verb movement to C^0 in complement clauses selected by certain bridge verbs (e.g., *sagen* 'say', *glauben* 'believe') preference predicates (e.g., *vorziehen* 'prefer'), consecutive *so*-clauses and causal clauses introduced by *weil* 'because' (Reis 1997, 2016). In addition, some RCs allow verb movement as well (Brandt 1990; Gärtner 1998). In German RCs, the verb generally occupies the final position, but under specific conditions iV2 structures are licensed (cf. (1b)) (Brandt 1990; Gärtner 2001a/b; Zwart 2005). We assume that these contexts exhibit different degrees of syntactic integration within the matrix clause: V2 complement clauses are syntactically integrated and *weil*-clauses are syntactically non-integrated (Reis 1997, 2006, 2016; Meinunger 2004; Truckenbrodt 2006; Gärtner and Michaelis 2010; Wurmbrand 2012).⁴

³ But see Haider (2010) for a different proposal where V^0 only targets C^0 .

⁴ Some embedded V2 clauses, including *weil*-clauses, are usually labeled as dependent clauses, more specifically as conjunctive main clauses, whereas other embedded V2 clauses, such as complement clauses seem to properly be subordinate clauses (cf. Reis 1997; Freitag and Scherf this volume).

In the following we sketch the main properties of verb-final RCs and the properties of iV2 structures. In Standard German, verb-final RCs are generally introduced by the relative pronoun *der/die/das* ‘who/which’, marked for gender, number, and case. This type of RC is labeled d-RC. Due to syncretism in the inflectional paradigm of German, only the masculine singular form of the d-pronoun differs between nominative vs. accusative case in its overt morphological realization (*der* vs. *den*), as illustrated in (4a) and (4b). The feminine and neuter forms of the relative pronoun are identical for nominative and accusative case as are the plural forms of the relative pronouns.

- (4) a. *Der Mann, der rote Haare hat, ist mein Bruder.* Subject RC
 the:NOM man PRO:NOM red hair has is my brother
 ‘The man that has red hair is my brother.’
 b. *Der Mann, den du getroffen hast, ist mein Bruder.* Object RC
 the:NOM man PRO:ACC you:NOM met have is my brother
 ‘The man that you met is my brother.’

D-RCs may appear center-embedded as in (4) or in clause-final position as in (5).

- (5) *Du hast gestern einen Mann getroffen, der rote Haare hat.*
 you:NOM have yesterday a:ACC man met PRO:NOM red hair has
 ‘Yesterday, you met a man that has red hair.’

Apart from d-RCs, Standard German RCs can be introduced by other pronouns including *welcher* ‘which’, but these are reported to be rare (Fleischer 2004: 218). In some German varieties, such as Bavarian and Alemannic, RCs can be introduced by complementizers such as *was* ‘what’ or *wo* ‘where’, as illustrated in (6).

- (6) *Der Mann, wo einen Hut auf hat, ist mein Bruder.*
 the:NOM man where a:ACC hat on has is my brother
 ‘The man that is wearing a hat is my brother.’

In the area of Hesse, where our testing took place, d-RCs are reported to represent the most widespread strategy of relativization (cf. Fleischer 2004).

Besides verb-final RCs, German allows iV2 structures as shown in (1b). iV2 structures are licensed under specific conditions; these are summarized in Table 1 (cf. Brandt 1990; Gärtner 2001a/b, 2002; Sanfelici, et al. 2017).

TABLE 1
Licensing conditions for iV2 structures

FACTOR	PROPERTY
TYPE OF MAIN PREDICATE	Preferably, presentational and existential predicates (Gärtner 2001a/b; Weinert 2012; Sanfelici, et al. 2017)
TYPE OF ANTECEDENT	Weak indefinite [+specific] (Gärtner 2007)
TYPE OF iV2 PRONOUN	D-pronouns (Gärtner 1998)
POSITION OF THE iV2	Not center-embedded (Gärtner 2001a/b)
PROSODIC CONTOUR OF iV2	Integrated in the main clause (Endriss and Gärtner 2005)

The factors listed in Table 1 specify the conditions that license iV2 structures. Weinert's (2012) analysis of spontaneous speech corpora provides further information about the typical occurrences of iV2 structures. Regarding the type of main clause predicate, only a small set of verbs appear with iV2 structures: *es gibt* 'there is', *da ist/sind* 'there be', possessive existential *haben* 'have', and evidential existentials such as *sehen* 'see', *kennen* 'know' and *hören von* 'hear about' (cf. Section 4.2). As for the type of pronoun, iV2 structures containing a subject d-pronoun clearly dominate. Regarding the function of the iV2, most iV2 structures have a subject pronoun. Importantly, although their distribution is restricted to specific conditions (cf. Table 1), iV2 sentences are reported to be frequent in spontaneous speech (Weinert 2012).

Semantically, iV2 structures behave like restrictive relatives (Gärtner 1998) in most aspects: iV2 structures serve to restrict the extension of – and thus modify – the antecedent (e.g., Heim and Kratzer 1998). The difference between iV2 and restrictive relatives concerns *de re* and *de dicto* readings. Consider the pair in (7). Whereas in (7a) the indefinite antecedent can have both a *de re* and a *de dicto* interpretation, in (7b) the indefinite antecedent has only a *de re* interpretation, because it takes wide scope with respect to the modal operator in the main clause.

- (7) a. *Maria möchte einen Fisch fangen, der kariert ist* verb-final RC
 Maria wants a:ACC fish catch PRON:NOM checkered is
 b. *Maria möchte einen Fisch fangen, der ist kariert* iV2 structure
 Maria wants a:ACC fish catch PRON:NOM is checkered
 'Maria wants to catch a fish that is checkered.'
 (examples from Gärtner 2001: 104)

In line with previous work (Reis 1985, 1997; Gärtner 1998, 2001, 2002; Sanfelici et al. 2017) we assume that embedded V2 clauses have assertive force (see the related Assertion Hypothesis by Hooper and Thompson 1973; among others). Therefore, in cases like (7b) the indefinite NP is outside the scope of the modal operator (also for negation, etc.). As iV2 clauses encode asserted propositions, C^0 is specified for assertive force and attracts the finite verb (Truckenbrodt 2006; Julien 2015; among others; but see Gärtner and Michaelis 2010).^{6,7} While in embedded V2 clauses C^0 is specified for assertive force, in verb-final RCs the embedded C^0 is not specified for this feature. In verb-final RCs the embedded C^0 is underspecified. As a result of this underspecification, verb-final RCs allow both readings in (7a).

Taking these patterns together, iV2 structures exhibit a hybrid behavior intermediate between restrictive verb-final RCs and main clauses. Like restrictive RCs, iV2 clauses restrict the reference of the NP, thus behaving like a predicate, and are prosodically integrated into the matrix clause. Like main clauses and unlike RCs, iV2 structures exhibit the verb in second position and cannot appear center-embedded. Three competing proposals have been put forward to account for this hybrid behavior. First, iV2 structures have been classified as a particular type of RCs (cf. Schuetze-Coburn 1984; Lambrecht 1994; Weinert 2004; Catasso and Hinterhölzl

⁵ As pointed out by a reviewer, due to the nature of the indefinite antecedent, it is probably more adequate to posit the restrictive interpretation as a general tendency and not as a categorical condition.

⁶ Throughout the paper we remain agnostic as to whether assertive force is to be formalized as a privative feature, a value of the feature or a category projecting a phrase structure (for a discussion on features we refer the reader to Adger and Svenonius 2011).

⁷ Alternatively, one may assume an Illocutionary Act Phrase above the embedded CP, as proposed in Woods (2016, this volume).

2016). Second, iV2 structures have been argued to involve paratactic coordination (Gärtner 2001a/b). Gärtner argues that iV2 structures are main clauses that are paratactically coordinated to the first main clause under which they are prosodically, semantically, and pragmatically integrated. Finally, iV2 structures have been claimed to be syntactically integrated within the matrix clause, merged as adjuncts at the vP level and then extraposed (Sanfelici et al. 2017). Apart from the different degree of integration exhibited by iV2 structures, all accounts define iV2 structures as instances of embedded root phenomena: embedded at the pragmatic-discourse level according to Gärtner (1998, 2001a/b) and at the syntactic level according to Catasso and Hinterhölzl (2016) and Sanfelici et al. (2017). Common to all analyses is the assumption that iV2 structures are clauses that are embedded at some level.

As for the comparison of iV2 structures and verb-final RCs, iV2 structures are licensed, if C^0 is specified for assertive force and if the licensing conditions (cf. Table 1) are met. The verb-final counterpart is licensed if C^0 is underspecified, i.e. if the clause is embedded. Put differently, verb-final RCs can appear in the all environments in which iV2 structures are licensed, because the set of conditions licensing verb-final RCs properly contains those conditions that license iV2 structures. In the following, we refer to this relation between the licensing conditions of the verb-final RCs and the licensing conditions of the iV2 structures as a ‘superset-subset-relation’. Hence, two notions are crucial in accounting for our acquisition data: feature specification and the superset-subset-relation. In Section 3 we review the state of the art on the acquisition of word order variation and specifically of verb-final RCs and iV2 structures.

3. Verb-final RCs and iV2 structures in acquisition

A large body of research has addressed the acquisition of verb placement both in monolingual German-speaking children (e.g., Clahsen 1982, Clahsen and Smolka 1985, Tracy 1991, Clahsen, Penke and Parodi 1992) as well as in L2-learners (e.g., Prévost 2003, Rothweiler 2006, Tracy and Thoma 2009, Meisel 2009, Schulz and Schwarze 2017). Much research on German has focused on the question of when children acquire target-like verb placement. In addition, the acquisition of mastering the alternation of V2 in finite main clauses and verb-final in subordinate clauses has been investigated. From these lines of research two robust findings have emerged regarding the acquisition of German. Main clause word order is acquired earlier than subordinate clause word order (Clahsen 1982, 1990, Rothweiler 1993, Tracy 1991; among many others). Moreover, children acquire phrase-structure rules quite early with verb placement being almost error-free (Clahsen 1990; Weissenborn 1990; Wexler 1998; Clahsen et al. 1992; Rothweiler 1993; Müller and Penner 1996).⁸ Children start with exclusively verb-final utterances with mostly nonfinite verbs. Verb placement in matrix sentences emerges around 2;6 to 3;0 and in embedded sentences between 3;0 and 3;6 (cf. Clahsen and Smolka 1985; Clahsen 1990; Tracy 1991, 1995; among many others).

Evidence regarding the frequency of V2 placement in embedded sentences is mixed (Rothweiler 1993; Brandt 2004; Diessel and Tomasello 2005; Brandt, Diessel and Tomasello 2008).

Analyzing about 800 embedded clauses produced by seven monolingual German children, Rothweiler (1993) reports that the finite verb is placed systematically in clause-final position as soon as the children start producing subordinate clauses. The few exceptions reported in Rothweiler (1993) consist of V2 after *weil* ‘because’ (n=9) as in (8), and V2 in iV2 (n=1) as in

⁸ Some studies on other Germanic languages found that children produce verb placement errors in matrix clauses (e.g., Waldmann 2011, for Swedish).

(9). Both cases are in principle grammatical options in German and hence do not constitute a deviant pattern.⁹

(8) *Weil da is kein gesich*
because there is no face
'Because there is no face' (XI, Age 5;06)

(9) *Es gibt Menschen die werfen einfach dreck ausm me aufm Fenster*
EXPL there-is people:ACC PRO:NOM throw simply dirt out-of-the on-the window
'There are people who simply throw garbage out of the window' (XI, Age 5;06)

We take example (9) to be an instance of an iV2 structure, because all licensing restrictions for iV2 are met: a presentational/existential predicate, an indefinite antecedent, a d-pronoun, and sentence-final position of the clause (cf. Table 1). In contrast to this one instance of an iV2 structure in Rothweiler's corpus (1993), 80 RCs showed verb-final verb placement. These findings suggest that German children first assign the value 'verb-final' to the verb-placement parameter, and maybe only later modify the value to allow for subordinate clauses with 'V2'. Brandt et al. (2008), analyzing a large spontaneous speech corpus based on one child, Leo, in contrast, report that young German-speaking children regularly produce V2 structures that according to the authors are RCs. In fact, the majority of relative clauses attested in their corpus are structures with the verb in second position. An example is given in (10), where the verb *passt* 'watches' precedes *auf* 'out' and therefore, is in second position (example from Brandt et al. 2008: 335).¹⁰

(10) *Im Schlangenhau ist sicher auch einer dabei, der passt auf*
in.the snake.house is surely also somebody there PRO:NOM watches out
'In the snake house there is surely also somebody present who is watching out'
(Leo, Age 4;11)

In line with Brandt et al. (2008), Diessel and Tomasello (2005), analyzing data from the Leo corpus (CHILDES), find that iV2 structures are especially frequent in the early speech samples. Up to age 2;5, the finite verb is placed in second position in 70% of Leo's RCs; 22% of the RCs show an ambiguous word order, and only 8% of the RCs occur with the finite verb in final position. These proportions change with age. As of age 5;0, 68% of Leo's RCs exhibit verb-final placement, 27% verb-second, and 5% ambiguous verb placement. A similar study by Brandt (2004), which analyzed the Simone corpus (CHILDES), finds that iV2 structures are more frequent than verb-final RCs up to age 4;0, at which point the recordings stopped. Taken together, the studies by Tomasello and colleagues suggest that RCs first emerge with V2 word order and that verb-final becomes the predominant word order sometime after 4;0. The earliness of iV2 structures over verb-final RCs is accounted for by two factors: (i) the frequency of V2 in the input, and (ii) the similarity of iV2 structures to simple main clauses. As for (i), it is claimed that V2 constructions are more frequent in German child directed speech than verb-final subordinate clauses (cf. Stoll, Abbot-Smith and Lieven 2005; Brandt et al. 2008: 345; cf. also Weinert 2012).¹¹ As for (ii), iV2 structures are claimed to be similar to main clauses in terms of

⁹ Rothweiler (1993: 42-43) reports that in her corpus only two embedded clauses overall are non-adult-like.

¹⁰ In order to avoid confusion, we use the label iV2 structures. Note that Brandt et al. (2008) refer to them as "V2-relatives".

¹¹ Although verb-final RCs are overall more frequent than iV2 structures, Leo's caregivers produced a large number

word order. As argued in Diessel and Tomasello (2005), children acquire structures in a bottom-up fashion, starting with constructions that minimally differ from simple main clauses. In their view, iV2 structures play a key role in the development of German RCs since they exhibit properties of both main and subordinate clauses, “which may help the child to bridge the gap between simple sentences and complex relative constructions” (Brandt et al. 2008: 346). A closer examination of the structures produced by the children reported in Brandt et al. (2008), however, suggests that these structures may not be RC variants after all or at least not all of them. First, as also mentioned by the authors, the structures mainly consist of a DP, followed by a V2 clause as illustrated in (11) (from Brandt et al. 2008: 340), rather than of a full main clause and a V2 clause.

- (11) *Ne Scheibe, die kann man auch darunter rollen lassen*
 a disk PRO:ACC can one:NOM also under-it roll let
 ‘A disc that/it you can roll under there’ (Leo, Age 4;6)

Second, structures such as (11) do not meet the first licensing condition for iV2 structures (cf. Section 2)§§: there is no matrix clause and hence there is no (overt) presentational/existential predicate in the main clause. What is more, the great majority of the structures analyzed by the authors as iV2 involve a definite description as in (12) instead of an indefinite NP as antecedent, violating the condition on the type of antecedent to license iV2 structures (from Brandt et al. 2008: 334-335).

- (12) *Die Biene, die holt ein Mittagessen*
 the bee PRO:NOM gets a lunch
 ‘The bee that/she is getting lunch’ (Leo, Age 2;4)

Therefore, we suggest that these examples are instances of left-dislocation along the lines proposed by Grewendorf (2002) rather than instances of iV2 structures (cf. also Sanfelici et al. 2017). Note that it is open whether our analysis holds for all early iV2 structures. Note that these findings are in stark contrast with Rothweiler’s (1993) results according to which verb-final RCs are produced early and frequently.

In summary, despite a large body of acquisition research on verb placement it is unclear whether children prefer verb-final RCs or iV2 structures. As spontaneous speech utterances often allow for multiple analyses (e.g., V2 embedding as instances of main clauses), in the present study we used a controlled experimental setting to explore whether children prefer V-final RCs or iV2 structures.

4. The experiment

We developed a picture-supported delayed-imitation task to address two questions: (Q1) Do three-year-old children prefer verb-final (RC) or V2 (iV2) structures? (Q2) Does the preference differ between children and adults? A total of 23 typically developing monolingual German-speaking children between 3;0 and 3;9 (mean age: 43 months) and 21 adults were tested. All

of iV2 structures, which according to Brandt et al. (2008) provides the model for Leo’s early relative clauses. Out of 329 relative clauses in their input sample, 139 (42%) were iV2 structures.

children were recruited in daycare centers in the area of Frankfurt am Main.¹² This age range was chosen for the following reasons. Brandt (2004) found that up to age 4 children mostly produce iV2 structures. Moreover, three-year-old children are known to exhibit non-adult-like performance, which can inform us about properties of the grammar that are not deducible from the adult system.

4.1. Design and materials

The picture-supported delayed-imitation task consists of three parts: listening to the pre-recorded stimulus, pointing to a matching picture, and then repeating the stimulus. The pointing task was implemented to assess children's comprehension of the pre-recorded sentences. In addition, it served to reach a more than three-second delay between the stimulus presentation and its repetition. According to McDade, Simpson and Lamb (1982), this delay ensures that participants repeat only those sentences they comprehend. Furthermore, the pictures made the task suitable for young children. The experiment consists of 24 test items, 24 fillers¹³, and 6 warm-up items to familiarize participants with the experimental procedure. Each item was presented with a picture, as exemplified in (13) paired to Figure 1. The main factor varied in the test items was verb placement in the RC. For each of the 24 test items, a verb-final RC as in (13a) and an iV2 variant as in (13b) was presented. The two variants were then assigned to two different lists. Every participant was tested on 12 test items prompting the production of a verb-final RC and 12 test items prompting the production of an iV2 structure.

(13) Example test item

	<i>Hier gibt es einen Mann,</i>	
	here there-is EXPL a:ACC man	
a.	<i>der ein gefährliches Krokodil eingefangen hat</i>	V-final
	PRO:NOM a dangerous crocodile caught has	
b.	<i>der hat ein gefährliches Krokodil eingefangen</i>	iV2
	PRO:NOM has a dangerous crocodile caught	
	'Look, there is a man who caught a dangerous crocodile.'	

FIGURE 1
Picture paired to test-items in (13)



¹² A parental questionnaire ensured that none of the participants had signs of language impairment, language delay, or hearing problems. In addition, all children were administered a standardized language test (SETK for ages 3 to 5, Grimm 2001), on which they performed within age-appropriate norms.

¹³ The 24 filler sentences comprised four types of sentences balanced according to the position of the finite verb.

The pronoun in both the RCs and the iV2 structures was always the syntactic subject of the embedded clause, as many studies have reported that children have difficulties with object relatives (for German e.g., Diessel and Tomasello 2005, Brandt et al. 2008, Adani et al. 2012, Sanfelici et al. 2014). This choice was further motivated by the observation in Weinert (2012) that the majority of iV2 structures in natural speech corpora contain a subject d-pronoun. We used compound verb forms in the embedded clause, i.e. either perfect tense or modal plus infinitive to make it possible to unambiguously determine the verb position of the finite verb in participants' repetitions. All test items were constructed in accordance with the specific syntactic conditions for licensing iV2-structures and were in line with the results from Weinert's corpus study (cf. Section 2). All sentences contained presentational or existential predicates in the main clause: *gibt es* 'there is'; *hier ist, da ist* 'here is'; *kennen* 'to know'; *sehen* 'to see', which are reported to be the most frequent ones used in adults' speech (Weinert 2012). The head noun in the main clause was always an indefinite nominal introduced half the time by the indefinite article *ein/eine* 'a' and half the time by the quantifier *zwei* 'two'.

All prerecorded stimuli had an integrated prosodic contour and met the prosodic constraints of iV2 structures (cf. Gärtner 2001a/b). The semantic default? requirement to interpret iV2 (and RC) structures restrictively was met via the discourse context displayed in the picture. In all pictures, two candidates were depicted as possible referents for the head noun. In (13) for instance, two men are present that differ with respect to the animal depicted. In addition, two possible candidates for the object DP are depicted, i.e. two crocodiles in (13), which differ with regard to the agent.

The order of the 48 items was pseudo-randomized for each list. Participants were tested individually by an experimenter in a quiet room in their kindergarten. The test session started with a familiarization phase. During this familiarization phase, the child was introduced to the "Findebuch" 'find-things-book', a book with pictures of animals and people. The child was asked to name the depicted animals and figures; this way lexical inventory used in the task was introduced. The experiment was video-taped and audio-recorded for further analysis. After this introductory session, the experimenter outlined the instructions as follows:

- (14) *Hör gut zu, ich sag dir was, du suchst das richtige Bild und zeigst es mir. Und dann sagst DU den Satz genauso noch einmal.*
'Listen, I will tell you something, and then you look for the right picture and show it to me. Then YOU will repeat the sentence once more just as it was.'

In the picture book, pictures and empty pages were alternated. After the presentation of the prerecorded stimulus, the experimenter turned the empty page and showed the corresponding picture to the child. Then, the child pointed to the matching scene and afterwards repeated the sentence. If the child was hesitant or did not follow the required order, the experimenter repeated the item once. No response-contingent feedback was given to the children.

4.2. Coding scheme for RC and iV2 test items

Repetitions of the test items were analyzed according to a two-level coding scheme: the first level considered the type of structure produced by the participant, and the second level considered the verb position in the repeated utterance.

4.2.1. First-level coding

Children produced various structures besides RCs and iV2s; this is reflected by the variable "type

of structure”. The coding comprised the following categories:

A. RC-STRUCTURE

Verb-final RCs and iV2 structures are coded as RC-structure if the repetition contained the main clause, the antecedent, the pronoun, and the remainder of the sentence. The code was assigned independently of the verb position. Hence, we coded a repetition as RC-STRUCTURE if the child correctly repeated the stimulus and also if verb placement was changed. Examples for verb-final and iV2 repetitions are given in (13a-b), here repeated as (15a) and (15b).

- (15) *Hier gibt es einen Mann,*
here there-is EXPL a:ACC man
a. *der ein gefährliches Krokodil eingefangen hat* V-final
PRO:NOM a dangerous crocodile caught has
b. *der hat ein gefährliches Krokodil eingefangen* iV2
PRO:NOM has a dangerous crocodile caught
‘Look, there is a man who caught a dangerous crocodile.’

B. COMPLEMENT-CLAUSE

Repetitions were coded as COMPLEMENT-CLAUSE if a RC/iV2 stimulus was repeated as a main clause followed by a complement clause introduced by the complementizer *dass*. This change occurred in our data only in cases in which the predicate in the main clause was *sehen* ‘to see’ or *kennen* ‘to know’. For instance, instead of the target-like verb-final RC *Anna kennt zwei Jungen, die einen grauen Elefanten waschen wollen* ‘Anna knows two boys that wants to wash a grey elephant’, and the corresponding iV2 *Anna kennt zwei Jungen, die wollen einen grauen Elefanten waschen* ‘Anna knows two boys that wants to wash a grey elephant’, children produced complement clauses such as (16).

- (16) *Anna kennt dass zwei Jungen einen grauen Elefanten waschen wollen.*
‘Anna knows that two boys wants to wash a grey elephant.’
(ECS416, Age 44 months)

Cases where the complementizer *dass* was missing were coded as AMBIGUOUS.

C. AMBIGUOUS

Repetitions were coded as AMBIGUOUS if they were lacking the pronoun, such as (17a) with the verb in final position and (17b) with the verb in pre-final position.

- (17) a. *Hier gibt es einen Mann ein gefährliches Krokodil eingefangen hat*
‘Here there is a man a dangerous crocodile has caught.’
(LEM139, Age 52 months)
b. *Hier gibt es einen Mann ein gefährliches Krokodil hat eingefangen*
‘Here there is a man a dangerous crocodile has caught.’
(BHS152, Age 47 months)

D. MAIN CLAUSE

Syntactically complete main clauses with the verb in second position were coded as MAIN CLAUSE as in (18). In these cases, no subordinate clause was produced by the child.

- (18) *Ein Mann hat ein gefährliches Krokodil eingefangen*

‘A man caught a dangerous crocodile.’

(BJH410, Age 43 months)

E. FRAGMENT

Syntactically incomplete clauses such as single words or phrases (e.g. *Ein Krokodil* ‘a crocodile’) or chunks (e.g., *fangen ein Krokodil* ‘to catch a crocodile’) were coded as FRAGMENT.

F. OTHER

Null-reactions, namely cases when the child did not repeat, or simple pointing to the picture were coded as OTHER.

4.2.2. Second-level coding

The second level of coding concerned verb placement. It was only applied to the repetitions coded as RC-STRUCTURE. If the verb had the same position as in the test item, the repetition was coded as ‘correct’. If the repeated utterance showed the finite verb in a position different from that in the test item, the repetition was coded as ‘V-change’. Thus, we coded as ‘V-change’ repetitions of a verb-final RC test item as an iV2 and, *vice versa*, repetitions of iV2 test items as a verb-final RC. In addition, the label ‘unanalyzable’ was used for cases where the finite verb was missing as in (19a), or when it was doubled as in (19b).

- (19) *Hier gibt es einen Mann,*
here there-is EXPL a:ACC man
a. *der ein gefährliches Krokodil eingefangen*
PRO:NOM a dangerous crocodile caught
b. *der hat ein gefährliches Krokodil eingefangen hat*
PRO:NOM has a dangerous crocodile caught has
‘Look, there is a man who caught a dangerous crocodile.’

4.3. Results

In the following, we only report results concerning the test items. We first provide an overview of the children’s types of repetitions regardless of the actual verb placement according to the first-level coding (Section 4.3.1), and then we present our results on verb placement in the repetitions based on the type of RC-STRUCTURE according to the second-level coding (Section 4.3.2).

4.3.1. Children’s repetitions

Adults repeated all test items in both conditions as RC-STRUCTURES. The children’s repetitions comprised various structures. Table 2 summarizes children’s repetitions in the two test conditions, verb-final RC (V-final) and iV2.

TABLE 2
Overview of children’s repetitions of the test items in the two conditions:
Raw numbers, standard deviation, and percentages

TYPE OF REPEATED STRUCTURE	V-FINAL	iV2
-------------------------------	---------	-----

RC-STRUCTURE	115 (35.7) 41.7%	97 (31) 35.1%
COMPLEMENT-CLAUSE	14 (7.8) 5.1%	10 (9) 3.6%
AMBIGUOUS	2 (2.4) 0.7%	6 (4.5) 2.2%
MAIN CLAUSE	89 (27.8) 32.3%	96 (25.3) 35.1%
FRAGMENT	32 (19.1) 11.6%	36 (17.7) 13%
OTHER	24 (14.1) 8.7%	31 (16.6) 11.2%
TOTAL OF REPETITIONS	276 (100%)	276 (100%)

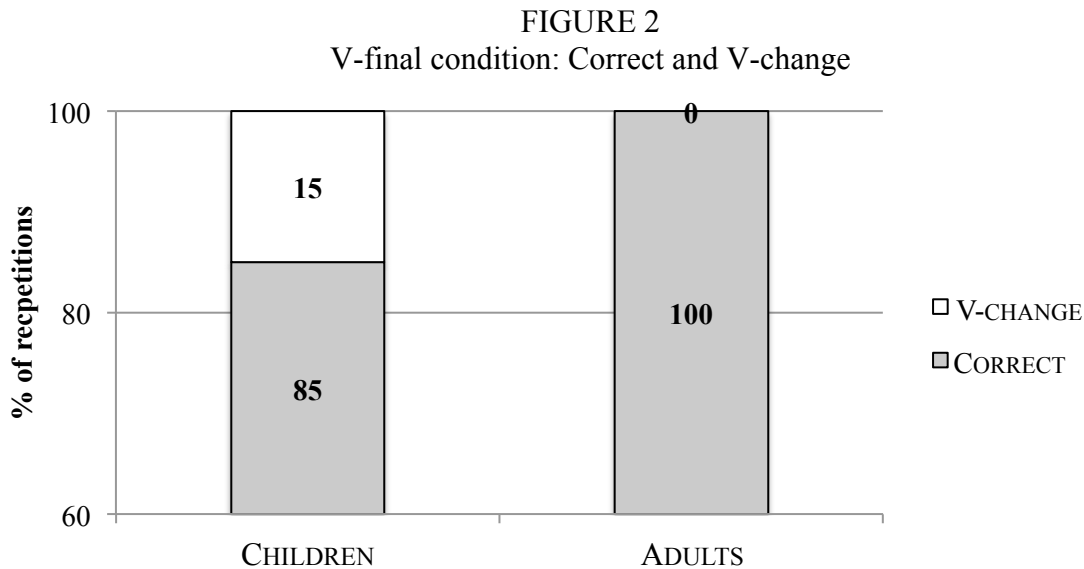
Table 2 shows that children at age 3 repeat verb-final RCs in 41.7% of items in a target-like way as RC-STRUCTURES. In the iV2 condition, repetitions involved a RC-STRUCTURE in 35.1% of the utterances.¹⁴ MAIN CLAUSES were the most frequent non-target structures. Repetitions were classified as main clauses in 32.3% of the items in the V-final condition and in 35.1% of items in the iV2 condition. Except for RC-STRUCTURES the frequencies of the response types in children's repetitions are very similar between the two conditions. This observation is supported by a statistical analysis. Significant differences between the two conditions are found for RC-STRUCTURES (Wilcoxon related samples, $Z=-2.48$, $p=.013$), but not for COMPLEMENT-CLAUSE, AMBIGUOUS, MAIN CLAUSE, FRAGMENT and OTHER (Wilcoxon related samples, all p 's > .1). These responses were disregarded from further analysis (for a complete analysis of children's responses see Schulz, Sanfelici and Trabant in preparation).

4.3.2. Results in the RC-STRUCTURES responses

In order to address the two research questions of whether 3-year-old children prefer verb-final or iV2 structures (Q1) and whether the preference differs between children and adults (Q2), participants' RC-STRUCTURES responses were analyzed according to how frequently verb placement of the test items was repeated correctly and how often it was changed (V2 to verb-final and verb-final to V2). To answer the research questions, verb placement had to be unambiguous. Seven responses had to be excluded from the analysis of RC-STRUCTURE repetitions, four in the verb-final and three in the iV2 condition. Among these were repetitions with two instances of the finite predicate as depicted in (19b), and structures lacking a finite predicate, as shown in (19a). The following results include RC-STRUCTURE repetitions with a finite predicate: 111 instances of RC-structures in the verb-final condition and 94 in the iV2 condition. These RC-structures were produced by 18 children. The remaining 5 children are not included in this analysis.

¹⁴ The rate of correct repetitions in both conditions did not depend on the outcome of the pointing task (cf. Schulz, Sanfelici and Trabant in preparation).

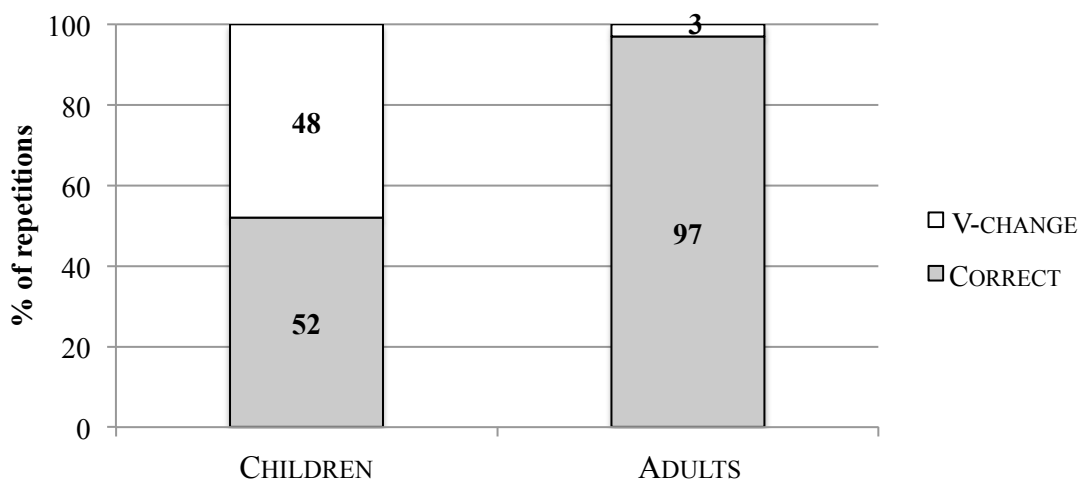
Figure 2 summarizes the results in the V-final condition for children and adults. The percentages are calculated by using the aggregate totals of all the participants' Correct and V-change responses.



Both, 3-year-old children and adults were very accurate in their repetition of V-final relative clauses. The children repeated the test items correctly in 85% of the cases; in 15% of the responses verb position was changed resulting in an iV2 sentence. Adults always repeated the test-items correctly. A statistical comparison of the distribution of Correct and V-Change repetitions in the V-final condition reveals a significant difference (Wilcoxon related samples, $Z=-3.4, p<.001$). Next, children's performance was compared to that of the adults'. Children's performance of Correct responses was significantly different from that of the adults (Mann-Whitney, $U=375, Z=5.5, p<.001$). To investigate whether children and adults differed in the amount of V-Change repetitions we performed a comparison between proportions applying the Chi-Square test since in the adults' group we obtained zero observations in this category. Although the percentages descriptively differ, this analysis showed that the likelihood of producing a V-Change in the children's group did not significantly differ from that of the adults ($\chi^2(1)=6.69, p=.153$).

The results for the iV2 condition are depicted in Figure 3.

FIGURE 3
iV2 condition: Correct and V-Change



Adults consistently repeated the iV2 items as V2 and changed the verb position in only 3% of items. The difference between Correct and V-Change repetitions in the adults' group was significant (Wilcoxon related samples, $Z=-4.3$, $p<.001$). Differently from adults, 3-year-olds changed the verb position from V2 to V-final in almost half of their repetitions. The rate of Correct and V-Change responses in the iV2 condition in the children's group was not significantly different (Wilcoxon related samples, $Z=.98$, $p=.328$). Next, we compared the performance of the children to that of the adults. A significant effect of group was found in the rate of Correct (Mann-Whitney, $U=375$, $Z=5.5$, $p<.001$) and in the rate of V-Change responses (Mann-Whitney, $U=34$, $Z=-4.7$, $p<.001$).

We further compared the response types (Correct and V-Change) across the two conditions iV2 and V-final in the group of 3-year-olds. The rate of Correct responses significantly differed between V-final and iV2 conditions (Wilcoxon related samples, $Z=-2.21$, $p=.027$). Likewise, there was a significant difference between the two conditions regarding the rate of V-Change repetitions (Wilcoxon related samples, $Z=2.3$, $p=.021$). Children produced significantly more Correct repetitions in the V-final condition than in the iV2 condition and more V-Change repetitions in the iV2 than in the V-final condition. In the adults' group, there was no difference in the rate of Correct and V-Change responses across conditions. The rate of Correct repetitions was the same for the V-final condition and the the iV2 condition (Wilcoxon related samples, $Z=-1.6$, $p=.102$). The same observation holds for V-Change repetitions (Wilcoxon related samples, $Z=-1.6$, $p=.102$).

In order to test whether the children's performance at a group level was influenced by the behavior of individual children, we performed an individual level analysis of response types. Among the 18 who produced RC-STRUCTURES, 12 children produced both word orders in their repetitions. They produced both Correct and V-change responses. Notably, the remaining six children always produced V-final structures: they changed all iV2 test items into V-final RCs, and they repeated all V-final test items correctly. In contrast, none of the children produced iV2 structures only.

5. Discussion

In this study we investigated how children deal with the verb alternation between V2 and verb-final in restrictive relative clause structures in environments in which both options are grammatical. Two research questions were addressed: (Q1) Do children prefer V-final RCs or iV2 structures?; and (Q2) Does the preference differ between children and adults?. In order to

avoid the problems related to analyses of spontaneous speech corpora, we developed a novel picture-supported delayed-imitation design able to elicit both iV2 structures and verb-final RCs in a controlled setting. The responses of 23 German-speaking children at the age of 3 and of 21 adults were analyzed according to how often participants repeated the heard test items correctly and how often they changed the verb position in V-final relative clauses and in iV2 structures. Out of the 23 children, only 18 produced RC-structures in their repetitions. Our data show that children's repetitions were significantly more accurate in the V-final than in the iV2 condition. In addition, the rate of verb position changes was significantly higher in the iV2 condition than in V-final condition. In almost half of the test items, three-year-old children repeated the iV2 structure as verb-final RC. The individual analysis revealed that out of the 18 children producing RC-structures, 12 children exhibited both word orders. The remaining six children exclusively used the verb-final word order in their repetitions. In the V-final condition their rate of correct RC repetitions was at ceiling and in the iV2 condition at 0. Interestingly, none of the children exhibited the opposite pattern: exclusive use of iV2 structures. Differently from the children, adults repeated both verb-final RCs and iV2 structures almost always correctly. Our results are in line with previous acquisition findings based on spontaneous speech from Clahsen (1990) and Rothweiler (1993), indicating that from age 3 onwards, and possibly already before, RCs are produced with the verb in clause-final position. The proposal by Brandt (2004) and Brandt et al. (2008: 346) that iV2 structures play an important role in the development of German RCs by helping the child to “bridge the gap between simple sentences and complex relative constructions”, is not supported by our data – at least not for children at age 3. In contrast, our findings show that young children have no problem distinguishing main clauses from verb-final subordinate clause structures and do not generalize syntactic properties such as verb placement from main clauses to embedded clauses. In cases of alternation between two grammatical word orders, children clearly prefer verb-final placement in embedded clauses. Six children even repeated embedded iV2 and V-final RCs exclusively with verb-final placement. Adults, in contrast, repeated both V-final and iV2 stimuli correctly. Why is verb-final verb placement the children's preferred option in the syntactic environment under investigation, even though our experimental stimuli met all licensing conditions for iV2 structures? And why does this preference change in development? And why did six children exhibit verb-final order only in these environments? We argue that children's preference for verb-final placement reflects two subsequent acquisition stages that differ regarding the feature specification of the embedded C^0 . In addition, we assume that children follow an economy-based learning strategy during the acquisition process. Recall the two notions relevant to account for our data: feature specification and the superset-subset-relation. As stated in Section 2, according to a feature-based approach to embedded V2, the embedded C^0 triggers V2, if it is specified for assertive force. When the embedded C^0 lacks the specification for assertive force, the verb remains in final position. The licensing conditions for verb-final RCs and of iV2 structures can be characterized as being in a superset-subset-relation. The set of licensing conditions for verb-final RCs properly includes the set of licensing conditions for iV2 structures. In the following we focus on the syntactic licensing conditions that are given in (20).¹⁵

- (20) Syntactic licensing conditions for iV2-structures
- (i) CP is embedded
 - (ii) The embedded C^0 is specified for assertive force

¹⁵ For the remaining requirements we refer to Table 1 in Section 2.

- (iii) CP is introduced by a d-Pronoun
- (iv) CP is in sentence-final position
- (v) The NP antecedent is a weak indefinite

Verb-final RCs are licensed if (20i) is met, whereas iV2 structures are licensed if all the conditions (20i-v) are met. We propose that children's preference for verb-final placement is present in two subsequent acquisition stages. The two acquisition stages differ with respect to whether the child has acquired that the embedded C^0 can be specified for assertive force. At stage 1, the embedded C^0 is underspecified. At stage 2, the embedded C^0 can be specified for assertive force. The six children who exclusively produced the verb-final word order in RCs are in Stage 1, where C is not yet specified for assertive force, and the twelve children who produced both word orders are in stage 2, where C may be specified for assertive force.

Put differently, if the child's grammar only has an underspecified embedded C^0 as we argued for in stage 1, iV2 structures cannot be generated by the child. Thus, children only produce verb-final RCs. In order to allow specification of the embedded C^0 for the assertive force, the child has (i) to realize that this option is allowed by the grammar of her language and (ii) to identify the conditions licensing this option listed in (20). Note that our data cannot answer the question of what exactly these children are still lacking. It may be the lack of embedded V2 in their grammar altogether, or of specific licensing conditions for iV2 structures.

Differently from children at stage 1, children at stage 2 can produce both word orders. Since the method we used ensured that participants repeated only those sentences they comprehended (cf. McDade, Simpson and Lamb 1982), we conclude that the twelve children who produced both word orders had acquired at least some of the conditions in (20) licensing embedded V2.¹⁶ Put differently, the grammar of these children generates both options: the underspecified embedded C^0 and the embedded C^0 specified for assertive force. Interestingly, these twelve children prefer verb-final placement. We argue that this is the result of an economy learning strategy: children opt for the underspecified C^0 because it fulfills the superset-subset relation, which suggests that children are conservative learners in the sense of Snyder (2007, 2011).¹⁷ Adults, on the contrary, do not resort to this strategy; they produced both word orders target-like and showed almost no variation, indicating that this economy strategy is no longer at play once acquisition is complete.¹⁸

As suggested by an anonymous reviewer, another possibility to account for the full dataset of findings may be to propose that the economy component that favors the verb-final placement can have various degrees of weighting in the course of the learning process. Under this view, the 18 children have acquired both word orders, but they differ in the degree of weighting. Accordingly, the six children who produced verb-final RCs only would have a very strong weighting; the

¹⁶ As pointed out by one reviewer, we should leave open the question as to whether the children tested in our experiment have acquired all the licensing conditions in (20) or just some of them. Further research is required to properly address this issue.

¹⁷ Note that our proposal could be expressed within the parameter hierarchy approaches to syntactic variation (e.g., Roberts and Holmberg 2010; Biberauer and Roberts 2015): the licensing conditions in (20) are then viewed as different micro-parameters that are hierarchically ordered. (20i) then implies a shorter walk in the parametric space than (20i-v).

¹⁸ Alternatively, economy may be measured in terms of movement steps, stating that children prefer a derivation without movement over derivations involving movement (cf. i.a., Zuckerman and Hulk 2001; Waldmann 2014). According to this proposal, children prefer verb-final RCs since they involve no movement. Note that the claim that derivations without movement are preferred over ones with movement usually relies on the assumption that the moved structure is syntactically derived from the unmoved one. However, at least under certain analyses of iV2 structures (see Section 2), they are not derived from verb-final RCs. The implications of this observation we leave for further research.

remaining twelve children who produced both verb-final RCs and iV2 structures would have a weaker weighting. Finally, the adults would have a very weak weighting such that they produced iV2 structures as appropriate. Although this is a plausible view, it is a question whether and how different weighting decisions can be derived from economy. More generally, it remains open what the proper division of labor between grammar and economy is in accounting for the data. For the time being, we take the absence of a structure in children's production, of iV2 structures in our case, to reflect an underspecified structural representation of C^0 (see e.g, Hyams 1996, 2011 for the underspecification of functional categories, the English *pro*-drop and root-infinitive phenomenon). On the other hand, the economy component accounts for the preference towards one word order, i.e. the verb-final placement.

Our results then provide further evidence that the embedded V2 instantiated in iV2 structures cannot be fully equated with the V2 licensed in main clauses. Since children start with main clauses, which are V2 in German, we should have expected young children to strongly prefer iV2 structures. On the contrary, we found that in embedded clauses children opt for verb-final, which in our view is the reflex of an underspecified C^0 . This result may also be taken as support of an analysis of iV2 structures as embedded clauses, which are syntactically integrated into the main clause (as proposed in Catasso and Hinterhölzl 2016; Sanfelici et al. 2017), rather than as conjoint main clauses (as proposed in Gärtner 2001). Moreover, our results cast doubt on the view that children acquire syntactic structures proceeding from structures that minimally differ from simple main clauses to syntactically more complex structures like subordinate clauses, as argued in Diessel and Tomasello (2005), Brandt et al. (2008).

6. Conclusion

This chapter investigated the acquisition of the verb placement, looking at relative clauses where both V2 and verb-final are grammatical options. We asked whether children exhibit a preference in such cases and whether this preference differs from that of adults. A picture-supported delayed-imitation experiment was developed prompting participants to repeat V-final RCs and iV2 structures, respectively. We tested 23 three-year-olds and 21 adults. Whereas adults performed at ceiling in both conditions, children performed differently in the iV2 and V-final RC condition. Children correctly repeated verb-final RCs significantly more often than iV2 items. In addition, the three-year-old children changed the verb position from V2 to V-final in almost half of the cases but much less often from V-final to V2. Our findings are consistent with the observations from spontaneous speech in Rothweiler (1993) showing that children either exclusively or predominantly use verb-final word order in RCs. We explained these findings by proposing an acquisition path of verb-placement using an economy-based learning strategy at play during the acquisition process. We identified two acquisition stages which differ regarding the feature specification of the embedded C^0 for assertive force: In the first stage the children's grammar only generates an embedded C^0 underspecified for the assertive force. Hence, children can only produce verb-final RCs. In the second stage the children's grammar generates an embedded C^0 which may be specified for assertive force. That children at this stage prefer the underspecified embedded C^0 reflects an economy-based learning strategy favoring the option that holds for the superset of licensing conditions. It may be that in case of variation in the input this learning strategy is always at play during the acquisition process. Future research is needed to evaluate whether our results can be extended to other structures in which alternation between embedded V2 and verb-final is possible as in certain complement clauses and *weil*-clauses.

References

- Adani, Flavia, Sehm Marie, and Andrea Zukowski (2012). 'How do German Children and Adults deal with their Relatives', in Stavroula Stavrakaki, Marina Lalioti and Polyxeni Konstantinopoulou (eds), *Advances in Language Acquisition*. Cambridge: Cambridge Scholars Publishing, 14–22.
- Adger, David and Peter Svenonius (2011). 'Features in Minimalist Syntax', in Cedric Boeckx (ed.), *The Oxford Handbook of Linguistic Minimalism*. Oxford: Oxford University Press. 27–51.
- Anderssen, Merete, Bentzen Kristine, Rodina Yulia and Marit Westergaard (2010). 'The acquisition of apparent optionality: word order in subject and object shift constructions in Norwegian', in Merete Anderssen, Kristine Bentzen and Marit Westergaard (eds), *Variation in the input: Studies in the acquisition of word order*. Berlin: Springer, 241–270.
- Bentzen, Kristine (2009). 'Subject positions and their interaction with verb movement', *Studia Linguistica* 63(3): 1–31.
- Biberauer, Theresa and Ian Roberts (2015). 'Rethinking formal hierarchies: a proposed unification', *Cambridge occasional papers in linguistics* 7: 1–31.
- Brandt, Margareta (1990). *Weiterführende Nebensätze. Zu ihrer Syntax, Semantik und Pragmatik*. Malmö: Almqvist and Wiksell International.
- Brandt, Silke (2004). *The acquisition of relative clauses in German and English. The very first steps*. Leipzig: University of Leipzig unpublished Master's thesis.
- Brandt, Silke, Diessel Holger and Michael Tomasello (2008). 'The acquisition of German relative clauses: A case study'. *Journal of Child Language* 35: 325–348.
- Brandt, Silke, Lieven Elena and Michael Tomasello (2010). Development of word order in German complement-clause constructions: effects of input frequencies, lexical items, and discourse function. *Language* 86(3): 583–610.
- Cardinaletti, Anna and Giuliana Giusti (2010). 'The acquisition of adjectival ordering in Italian', in: Merete Anderssen, Kristine Bentzen and Marit Westergaard (eds), *Variation in the input: Studies in the acquisition of word order*. Berlin: Springer, 65–93.
- Catasso, Nicholas, and Roland Hinterhölzl (2016). 'On the Question of Subordination or Coordination in V2- Relatives in German', in Ingo Reich and Augustin Speyer (eds.), *Co- and Subordination in German and Other Languages. Linguistische Berichte – Sonderhefte* 21. Hamburg: Buske, 99–123
- Cinque, Guglielmo (1999). *Adverbs and Functional Heads*. New York: Oxford University Press.
- Clahsen, Harald (1982). *Spracherwerb in der Kindheit. Eine Untersuchung zur Entwicklung der Syntax bei Kleinkindern*. Tübingen.
- Clahsen, Harald (1990). 'Constraints on parameter setting: A grammatical analysis of some acquisition stages in German child language', *Language Acquisition* 1: 361–91.
- Clahsen, Harald, Penke Martina and Teresa Parodi (1992). 'Functional categories in early child German', *Language Acquisition* 3: 395–429.
- Clahsen, Harald and Klaus-Dirk Smolka (1985). 'Psycholinguistic evidence and the description of V2 phenomena in German', in Hubert Haider and Martin Prinzhorn (eds), *Verb second phenomena in Germanic languages*. Dordrecht: Foris, 137–168.
- den Besten, Hans (1983). 'On the interaction of root transformations and lexical deletive rules', in Werner Abraham (ed.), *On the Formal Syntax of the Westgermania*. Amsterdam: John Benjamins, 47–131.
- den Besten, Hans (1989). *Studies in West Germanic Syntax*. Amsterdam: Rodopi.
- Diessel, Holger and Michael Tomasello (2005). 'A new look at the acquisition of relative clauses', *Language* 81: 1–25.

- Endriss, Cornelia and Hans Martin Gärtner (2005). 'Relativische Verb-Zweit Sätze und Definitheit', in Franz-Josef d'Avis (ed.), *Proceedings of the Symposium Deutsche Syntax: Empirie und Theorie*. Göteborg: Göteborger Germanistische Forschungen, 195–220.
- Fleischer, Jürg (2004). 'A typology of relative clauses in German dialects', in Bernd Kortmann (ed.), *Dialectology meets typology: Dialect grammar from a cross-linguistic perspective*. Berlin and New York: Mouton de Gruyter, 211–243.
- Gärtner, Hans Martin (1998). 'Does German have V2 relative clauses?', *Sprache und Pragmatik* 48: 1–31.
- Gärtner, Hans Martin (2001a). 'Are there V2 relative clauses in German?', *Journal of Comparative German Linguistics* 3: 97–141.
- Gärtner, Hans Martin (2001b). 'On the force of V2 declarative', *ZAS Papers in Linguistics* 23: 103–109.
- Gärtner, Hans Martin (2002). 'On the force of V2 declarative', *Theoretical Linguistics* 28: 33–42.
- Gärtner, Hans Martin (2007). 'Low risk quantifiers: a game-theoretical approximation to the DP-restriction on iV2-presentationals', in Maria Aloni et al. (eds), *Proceedings of the 16th Amsterdam Colloquium 2007*. Amsterdam: ILLC, 103–108.
- Gärtner, Hans-Martin and Jens Michaelis (2010). 'On modeling the distribution of declarative V2-clauses: the case of disjunction', in Sebastian Bab and Klaus Robering (eds), *Judgements and Propositions*. Berlin: Logos, 11–25.
- Grewendorf, Günther (2002). 'Left Dislocation as Movement', *Georgetown University Working Papers in Theoretical Linguistics* 2: 31–81.
- Grimm, Hannelore (2001). *Sprachentwicklungstest für drei- bis fünfjährige Kinder - SETK 3-5*. Göttingen: Hogrefe.
- Gu, Chloe (2010). 'Word Order in the Development of Dative Constructions: A Comparison of Cantonese and English', in Merete Anderssen, Kristine Bentzen and Marit Westergaard (eds), *Variation in the input: Studies in the acquisition of word order*. Berlin: Springer, 129–156.
- Haider, Hubert (2010). *The Syntax of German*. Cambridge: Cambridge University Press.
- Heim, Irene and Angelika Kratzer (1998). *Semantics in Generative Grammar*. Malden, MA: Blackwell.
- Holmberg, Anders (2015). 'Verb second', in Tibor Kiss and Artemis Alexiadou (eds), *Syntax – Theory and Analysis: An International Handbook*. Berlin: Walter de Gruyter, 342–382.
- Hooper, Joan, and Sandra A. Thompson (1973). 'On the applicability of root transformations', *Linguistic Inquiry* 4: 465–497.
- Hulk, Aafke and Shalom Zuckerman (2000). 'The interaction between input and economy: Acquiring optionality in French *wh*-Questions', *BUCLD Proceedings* 24: 438–449.
- Julien, Marit (2015). 'The force of V2 revisited', *Journal of Comparative Germanic Linguistics* 18: 139–181.
- Hyams, Nina (1996). 'The Underspecification of Functional Categories in Early Grammar', in Harald Clahsen (ed.), *Generative Perspectives on Language Acquisition*. Amsterdam: John Benjamins, 91–127.
- Hyams, Nina (2011). Missing Subjects in Early child Language, in Jill De Villiers and Tom Roeper (eds), *Handbook of Generative Approaches to Language Acquisition*. Dordrecht: Springer, 13–52.
- Kapetangianni, Konstantia (2010). 'Variable Word Order in Child Greek', in Merete Anderssen, Kristine Bentzen and Marit Westergaard (eds), *Variation in the input: Studies in the acquisition of word order*. Berlin: Springer, 179–206.
- Kieburg, Anja and Petra Schulz (2010). 'Input factors in early verb acquisition: Do word order variability and word frequency of verbs matter?', in Merete Anderssen, Kristine Bentzen and

- Marit Westergaard (eds), *Variation in the input: Studies in the acquisition of word order*. Berlin: Springer, 95–127
- Lambrecht, Knud (1994). *Information structure and sentence form: topic, focus, and the mental representations of discourse referents*. Cambridge, UK: Cambridge University Press.
- Lust, Barbara, Flynn, Suzanne and Claire Foley (1996). ‘What Children Know about What They Say: Elicited Imitation as a Research Method for Assessing Children’s Syntax’, in Dana McDaniel, Cecile McKee, and Helen Smith Cairns (eds.), *Methods for Assessing Children’s Syntax*. Cambridge, Mass.: MIT Press, 55–76.
- McDade, Hiram, Simpson Marta and Donna Lamb (1982). ‘The use of elicited imitation as a measure of expressive grammar: A question of validity’, *Journal of Speech and Hearing Disorders* 47: 9–24.
- Meinunger André (2004). ‘Verb position, verbal mood and the anchoring (potential) of sentences’, in Horst Lohnstein and Susanne Trissler (eds), *The syntax and semantics of the left periphery*. Berlin: Mouton de Gruyter, 313–341.
- Meisel, Jürgen (2009). ‘Second language acquisition in early childhood’, *Zeitschrift für Sprachwissenschaft* 28: 5–34.
- Müller, Natascha and Zivi Penner (1996). ‘Early subordination: The acquisition of free morphology in French, German, and Swiss German’, *Linguistics* 34: 133–65.
- Platzack, Christer (1983). ‘Existential sentences in English, German, Icelandic, and Swedish’, in Fred Karlsson (ed.), *Papers from the Seventh Scandinavian Conference of Linguistics*. Helsinki: University of Helsinki, 80–100.
- Platzack, Christer and Anders Holmberg (1989). ‘The Role of AGR and finiteness’, *Working Papers in Scandinavian Syntax* 43: 51–76.
- Prévost, Philippe (2003). ‘Truncation and Missing Inflection in Initial Child L2 German’, *Studies in Second Language Acquisition* 25: 65–97.
- Reis, Marga (1985). ‘Satseinleitende Strukturen im Deutschen: Über COMP, Haupt- und Nebensätze, *w*-Bewegung und die Doppelkopfanalyse’, in Abraham Werner (ed.), *Erklärende Syntax des Deutschen*. Tübingen: Gunter Narr, 271–311.
- Reis, Marga (1997). ‘Zum syntaktischen Status unselbständiger Verbzweit-Sätze’, in Franz-Josef D’Avis and Uli Lutz (eds), *Zur Satzstruktur des Deutschen. Arbeitspapiere des SFB 340 Nr90*. Stuttgart and Tübingen: 121–142.
- Reis, Marga (2006). ‘Is German V-to-C movement really semantically motivated? Some empirical problems’, *Theoretical Linguistics* 32.3: 369–380.
- Reis, Marga (2016). ‘Consecutive ‘so...’ V2-clauses in German’, in Ingo Reich and Augustine Speyer (eds), *Co- and subordination in German and other languages. Linguistische Berichte – Sonderhefte* 21. Hamburg: Buske, 285–318.
- Roberts, Ian and Anders Holmberg (2010). ‘Introduction: parameters in minimalist theory’, In Theresa Biberauer, Anders Holmberg, Ian Roberts and Michelle Sheehan (eds), *Null Subjects: the structure of parametric variation*. Cambridge: Cambridge University Press, 1–57.
- Rothweiler, Monika (1993). *Der Erwerb von Nebensätzen im Deutschen. Eine Pilotstudie*. Tübingen: Max Niemeyer.
- Rothweiler, Monika (2006). ‘The acquisition of V2 and subordinate clauses in early successive acquisition in German’, in Conxita Lleó (ed.), *Interfaces in Multilingualism: Acquisition and Representation*. Philadelphia: John Benjamins, 91–113.
- Sanfelici, Emanuela, Petra Schulz and Corinna Trabant (2014). *Typical German: Intervention and its avoidance in children’s production of relative clauses*. Ms. University of Frankfurt.
- Sanfelici, Emanuela, Schulz Petra and Corinna Trabant (2017). ‘On German V2 “relative clauses”: Linguistic theory meets acquisition’, in Elisa di Domenico (ed.), *Complexity in acquisition*. Newcastle: Cambridge Scholars Press, 63–104.

- Schuetze-Coburn, Stephan (1984). 'On the boards of subordination: signaling relative clauses in spoken German', *Proceedings of the Annual Meeting of the Berkeley Linguistics Society* 10: 650–59.
- Schulz, Petra and Rabea Schwarze (2017). 'How robust is the ban on nonfinite verbs in V2? Evidence from early second language learners of German with and without SLI', *Zeitschrift für Sprachwissenschaft*, 36(1): 51–78.
- Snyder, William (2007). *Child Language: The Parametric Approach*. Oxford: Oxford University Press.
- Snyder, William (2011). 'Children's Grammatical Conservatism: Implications for syntactic theory', in Nick Danis, Kate Mesh and Hyunsuk Sung (eds), *BUCLD 35: Proceedings of the 35th annual Boston University Conference on Language Development, Volume I*. Somerville, MA: Cascadilla Press, 1–20.
- Stoll, Sabine, Abbot-Smith Kirsten and Elena Lieven (2009). 'Lexically Restricted Utterances in Russian, German, and English Child-Directed Speech', *Cognitive Science* 33: 75–103.
- Thiersch, Craig Lee (1978). *Topics in German Syntax*. Ph.D. dissertation, MIT.
- Tracy, Rosemarie (1991). *Sprachliche Strukturentwicklung. Linguistische und kognitionspsychologische Aspekte einer Theorie des Erstspracherwerbs*. Tübingen: Gunter Narr Verlag.
- Tracy, Rosemarie and Dieter Thoma (2009). 'Convergence on finite V2 clauses in L1, bilingual L1 and early L2 acquisition', in Christine Dimroth and Peter Jordens (eds), *Functional categories in learner language. Studies on language acquisition (SOLA)*. Berlin: Mouton de Gruyter. 1–43.
- Truckenbrodt, Hubert (2006). 'On the semantic motivation of syntactic verb movement to C in German', *Theoretical Linguistics* 32.3: 257–306.
- Vikner, Sten (1995). *Verb movement and expletive subjects in the Germanic languages*. New York: Oxford University Press.
- Vries, Mark de (2006). 'The syntax of appositive relativization: on specifying coordination, false free relatives and promotion', *Linguistic Inquiry* 37: 229–270.
- Waldmann, Christian (2014). 'The Acquisition of Neg-V and V-Neg Order in Embedded Clauses in Swedish: A microparametric approach', *Language Acquisition* 21 (1): 45–71.
- Weinert, Regina (2004). 'Relative clauses in spoken English and German. Their structure and function', *Linguistische Berichte* 197: 3–51.
- Weinert, Regina (2012). 'Postmodifying verb-second clauses in spoken German', *Functions of Language* 19(2): 236–265.
- Weissenborn, Jürgen (1990). 'Functional categories and verb movement in early German: the acquisition of German syntax reconsidered', in Monika Rothweiler (ed.), *Spracherwerb und Grammatik: linguistische Untersuchungen zum Erwerb von Syntax und Morphologie*. Opladen: Westdeutscher Verlag, 190–224.
- Westergaard, Marit (2003). 'Word order in wh-questions in a north Norwegian dialect: some evidence from an acquisition study', *Nordic journal of linguistics* 26(1): 81–109.
- Westergaard, Marit (2009). *The Acquisition of Word Order: Micro-cues, information structure, and economy*. Amsterdam/Philadelphia: John Benjamins.
- Wexler, Kenneth (1998). 'Maturation and growth of grammar', in William C. Ritchie and Bhatia Tej (eds), *Handbook of child language acquisition*. San Diego: Academic Press. 55–109.
- Woods, Rebecca (2016). 'Embedded inverted questions as embedded illocutionary acts', in Kyeong-min Kim et al. (eds.), *Proceedings of the 33rd West Coast Conference on Formal Linguistics*. Somerville, MA.: Cascadilla Proceedings Project, 417–426.
- Wurmbrand, Susi (2012). *The timing of Merge: Deriving certain clause-linking mismatches*. Paper presented at Mismatches in Clause Linkage, ZAS, Berlin, 13-14 April 2012.

- Wurmbrand, Susi (2014). 'The merge condition: a syntactic approach to selection', in Peter Kosta et al. (eds), *Minimalism and Beyond: Radicalizing the interfaces*. Philadelphia: John Benjamins, 130–166.
- Zwart, Jan Wouter (2005). 'Iets over zgn. V2-relatieven in het Nederlands', *Nederlandse Taalkunde* 10: 59–81.
- Zuckerman, Shalom and Aafke Hulk (2001). 'Acquiring optionality in French wh-questions: An experimental study', *Revue Québécoise de Linguistique* 30: 71–97.