CHAPTER NUMBER

ON GERMAN V2 "RELATIVE CLAUSES":
LINGUISTIC THEORY MEETS ACQUISITION[1]

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1. Introduction

A vast amount of literature has dealt with the role of finite verb placement and its acquisition path in German, both in monolingual German-speaking children (e.g., Clahsen 1982, Clahsen & Smolka 1985, Weissenborn 1990, Tracy 1991, Clahsen, Penke & Parodi 1992, Rothweiler 1993) and in L2-learners (Hamann 2000, Prévost 2003, Rothweiler 2006, Tracy & Thoma 2009, Meisel 2009, among others). Much attention has been paid to detecting when and how children acquire the verb placement parameter and the ability to correctly fill the verb position, namely V2 in finite main clauses and verb-final in subordinate clauses. The data show that German children acquire the verb placement parameter very early and place the verb correctly in both matrix and embedded contexts around age 3 (see Clahsen & Smolka 1985, Wexler 1998). This conclusion is generally shared in the German acquisition literature and has been corroborated by many

studies (see Rothweiler 1993, Tracy 1995).

Although verb-final placement is usually taken as one of the main characteristics of subordinate clauses in German, in specific syntactic environments subordinate clauses may license V2. This option is available i.a. in some complement clauses, in *weil*-clauses, and in relative clauses (for an overview, see Reis 1997, Wurmbrandt 2005, among many others). Up to now, it is an open question in acquisition research how children deal with these contexts, in which V2 and verb-final are both grammatical options.

The present paper addresses this question, investigating whether children prefer V2 or verb-final in a controlled experimental setting where the syntactic and semantic conditions allow for both structures. The syntactic structures we used are relative clauses (RCs). In German RCs the verb usually occupies the final position (1a), but under specific conditions, so-called integrated V2 (henceforth iV2)[2] structures as in (1b) are licensed (Brandt 1990, Gärtner 2001a/b, Zwart 2005):[3]

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

b. *Hier gibt es zwei Frauen, die* **haben**
here there-is EXPL two women PRON:NOM have
den Präsidenten **getroffen**
the:ACC president met
'Here there are two women that met the President.' iV2

Note that in (1), at the surface iV2 clauses and verb-final RCs are minimal pairs differing only in the position of the finite predicate. Whereas verb-final RCs are syntactically subordinate clauses, iV2 structures have been treated as paratactic coordination, i.e. as main clauses that are paratactically coordinated with the clause containing a presentational or existential predicate (Gärtner 2001a/b, 2002, Endriss

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[2] Note that previous acquisition studies have referred to iV2 structures as "V2-relatives".

[3] Examples will be provided with glosses when the morpho-syntactic information is relevant for the explanation. Otherwise, we will give the direct English translation and highlight in bold the relevant item.

& Gärtner 2005, de Vries 2006, a.o.). Previous acquisition research seems to support this syntactic analysis, as several studies have reported V2 structures to be the first relative clause-like structures produced in spontaneous speech by children up to age 4 (Brandt 2004, Diessel & Tomasello 2005, Brandt, Diessel & Tomasello 2008).

Unlike this line of acquisition studies, we investigated how children deal with the alternation in (1) in an experimentally controlled context. A picture-supported delayed-repetition task was developed to test monolingual German-speaking children between age 3 and 5. In the following we report our results comprising data from 3-year-old children (n = 23) and from the control group of adults (n = 21). Our experimental results show a robust preference in children for verb-final RCs over iV2 structures. Whereas adults correctly repeated iV2 structures with V2, children showed a clear tendency to change iV2 stimuli into verb-final RCs. These findings contradict the acquisition pattern proposed in Brandt et al. (2008) and, furthermore, challenge the syntactic coordination analysis for iV2 clauses as proposed in Gärtner (2001a/b).

The paper is structured as follows. In Section 2 we outline some basic properties of German relative clauses. We then focus on iV2 clauses and their licensing conditions and briefly summarize the analysis proposed by Gärtner (2001a/b). Section 3 provides an overview of the previous acquisition studies. In Section 4, our experimental design is sketched, and the results are discussed. In Section 5, we delineate our syntactic proposal for iV2 and provide evidence in support of our derivation. Section 6 presents concluding remarks.

2. Relative clauses in German: V2 and V-final structures

Finite RCs in German appear in post-nominal position. The verb usually occupies the final position, but as stated in the Introduction, under specific conditions iV2 structures are licensed (see example (1)) (Brandt 1990, Gärtner 2001a/b, Zwart 2005). In the following we first characterize the main properties of verb-final RCs (Section 2.1) and then focus on the properties exhibited by iV2 structures and outline the analysis proposed in Gärtner (2001a/b) (Section 2.2).

2.1. Verb-final relative clauses

Verb-final RCs are introduced by a relative pronoun in Standard German and by an uninflected complementizer in some German varieties. In Standard German, the relative pronoun *der/die/das* 'which' must be 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 in its overt morphological realization in nominative vs. accusative case (*der* vs. *den*), as illustrated in (2a) compared to (2b). The feminine and neuter forms of the relative pronoun are identical for nominative and accusative case as are the plural forms of all d-relative pronouns.

(2) a. *Der   Mann, **der**   rote Haare hat, ist mein*
the:NOM man   PRON:NOM red hair   has is my
Bruder.
brother
'The man that has red hair is my brother.'   Subject RC

   b. *Der   Mann, **den**   du   getroffen hast, ist*
the:NOM man   PRON:ACC you:NOM met   have is
mein Bruder.
my   brother
'The man that you met is my brother.'   Object RC

D-RCs appear both center-embedded as in (2) and sentence final as in (3).

(3) *Du   hast gestern   einen Mann getroffen, **der***
you:NOM have yesterday a:ACC man   met   PRON:NOM
rote   Haare hat.
red   hair   has
'Yesterday, you met a man that has red hair.'

Apart from d-relative pronouns, Standard German RCs can be introduced by other pronouns including *welcher* 'which' and *wer* 'who'; these are reported to be rare (Fleischer 2004: 218). In some German varieties, such as Alemannic and Bavarian dialects, RCs may be introduced by complementizers such as *was* 'what' or *wo* 'where', as illustrated in (4):

(4) *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 wears a hat is my brother.'

Concerning the area of Hesse, where our testing took place, marking of RCs via d-pronoun is reported to be the most widespread strategy of relativization (Fleischer 2004). Hence, in the following we focus on d-RCs.

2.2. iV2 structures: a paratactic analysis

iV2 structures as in (1b), repeated below as (5), are reported to be frequent in spontaneous speech, although their distribution is restricted to specific contexts (Weinert 2012).[4]

(5) *Hier gibt   es   zwei Frauen*, *die   **haben** den*
    here there-is EXPL two women   PRON:NOM have   the:ACC
    *Präsidenten **getroffen***.
    president   met
    'Here there are two women that met the President.'

Both theoretical (Brandt 1990, Gärtner 2001a/b, 2002) and empirical studies (Weinert 2012) agree that iV2 clauses are licensed under specific syntactic, semantic, and prosodic conditions, spelled out below:

(a) Type of predicate
The predicate in the main clause must be presentational or

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[4] Weinert (2012) performed a corpus study of spontaneous speech of both male and female speakers from many geographical areas of Germany. The corpus includes around 280.000 words from a range of informal, formal and public data: informal face-to-face conversations collected by the author and Anna Linthe (in 2006/2007); task-based dialogues collected by the author and Gillian Razzaki (in 1994); formal academic consultations collected by Andrea Krengel (in 1997); informal interviews (Dittmar & Bredel 1999); semi-formal public television and discussions and entertainment programmes and a radio discussion (mostly from 2006/2007, some from the *Freiburger Korpus* and the *Dialogstrukturen Korpus* of the Institut für deutsche Sprache, Mannheim, dating from 1975); informal everyday and work conversations from 2004 to 2007 recorded by the author; and informal telephone conversations collected by Brons-Albert in 1984.

existential (Gärtner 2001a/b). Moreover, according to Weinert (2012) iV2 clauses are mainly licensed by a small set of matrix predicates, among them *es gibt* 'there is', *da ist/sind* 'there be', possessive existential *haben* 'have', and evidential existentials as *sehen* 'see', *kennen* 'know' and *hören* 'hear'.

(b) Type of antecedent
The antecedent must be indefinite. More precisely, it must be a weak noun phrase in the sense of Milsark (1974), which is introduced by an intersective determiner, e.g., by *some,* by numerals, or by the indefinite article. Note that these are low risk quantifiers in Gärtner's (2007) terms. This restriction regarding the antecedent is confirmed by the corpus data: Weinert (2012) reports that she did not find strongly quantified NPs as antecedents of iV2 structures.[5] Furthermore, the indefinite must be specific (Gärtner 2001a/b).

(c) Type of introducing pronoun
The iV2 structure can be introduced by d-pronouns only. If introduced by a w-pronoun, the verb has to appear in final position (Gärtner 1998). Furthermore, Weinert's study shows that subject pronouns dominate. More than 70% of iV2 clauses contain a subject gap.

(d) Position of the iV2 clause
Unlike verb-final RCs, iV2 clauses cannot be center-embedded. They only appear in sentence-final position (Gärtner 2001a/b).

(e) Semantic role of iV2 structures
iV2 structures can only have a restrictive interpretation (Gärtner 1998, and subsequent works).

(f) Prosodic contour of iV2 clauses

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[5] There is one exception to this robust pattern, namely (i) with a definite DP. However, as Weinert herself suggests, it involves a 'of a kind' reading (Weinert 2012: 260).

(i) *es gibt die leute die na die die springen ins wasser die schwimmen immer weißte*

'there are some people who who who jump right in at the deep end and they always stay a float you know (= things always turn out all right for certain people)'

iV2 clauses must be prosodically integrated in the main clause (Gärtner 2001a/b, Endriss & Gärtner 2005).[6]

Given the properties identified for iV2 structures, both Gärtner and Weinert conclude that iV2 clauses exhibit a hybrid behavior that is intermediate between real restrictive verb-final RCs and main clauses. Like restrictive RCs, iV2 clauses restrict the reference of the NP and behave like predicates. In addition, they are prosodically integrated into the matrix clause. Like main clauses, iV2 structures show the verb in second position and always appear in sentence-final position. In order to capture these properties, Gärtner (2001a/b) suggests that iV2 clauses involve paratactic coordination. More precisely, iV2 structures are claimed to be main clauses paratactically coordinated with the clause containing the presentational or existential predicate. According to this analysis, (6) has the representation in (7) (Gärtner 2002, Endriss & Gärtner 2005, de Vries 2006, a.o):

(6) *Maria ist ein Mensch$_i$, der$_i$ liebt seine Kinder*
     Maria is a   person   PRON:NOM loves his   child
     'Maria is a person that loves her child.'

(7)

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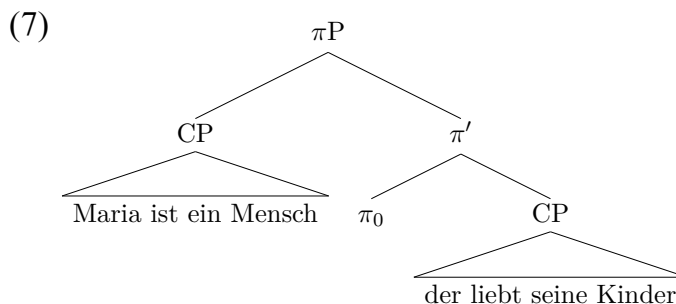
[6] The only counterproposal for prosodic integration of iV2 structures we are aware of comes from Birkner (2006, 2008). The author analyzed corpus examples of what she calls the Mensch-Konstruktion 'person-construction' in (i) (from Birkner 2006: 222). She observes that the level of syntactic integration is overall reflected prosodically, with verb-final relative clauses tending to be integrated (53% of 53 strongly integrated) and verb-second clauses tending not to be (69% of 16 unintegrated).

(i)   *das Is einfach n = mensch äh der gehört auch zu mir*
        that is simply a   person eh pron belongs also to me
        'he's simply someone who is also part of my life'

However, we disregard her results due to the amount of variation observed in the data and the small number of verb-second clauses in Birkner's study. We leave a deeper prosodic analysis for future research.

The structure in (7) accounts for the core properties of iV2 structures: The verb is in second position as in main clauses; iV2 clauses cannot be center-embedded since they are main clauses; only d-pronouns are licensed since the pronoun is an anaphor.

In order to also account for the semantic and prosodic similarity of iV2 structures with verb-final RCs, Gärtner further refines the structure in (7). His starting point is the observation that iV2 clauses are syntactically main clauses, but do not have the same interpretation as simple main clauses. This is illustrated in (8). Unlike the main clause (8b), the iV2 structure in (8a) acts as a restrictor on the nominal expression in the matrix clause (Brandt 1990: 40):

(8) a. *Maria ist ein Mensch$_i$, der$_i$ liebt seine Kinder*
'Maria is a person that loves her children.'
b. *#Maria ist ein Mensch. Der liebt seine Kinder*
'Maria is a person. That one loves his children.'

The intended interpretation in (8b) is something like 'Maria is a person, a human being. As a human being she loves her children'. This interpretation fails, however, because the indefinite NP in predicate position does not provide a discourse marker and hence, the pronoun *der* does not have an antecedent to which it can refer (we come back to this point in Section 5.2).

The different reading of (8a) compared to (8b) shows that iV2 clauses are not computed in isolation. Instead, the matrix clause and the iV2 structure form a discourse unit. Gärtner suggests that the mediating head coordinating the matrix clause with the iV2 clause hosts the feature [REL]. The head π_{REL} is responsible for switching the feature specification on the weak demonstrative from [+demonstrative] to [+relative] when iV2 is interpreted.[7] As a result, although iV2 clauses are main clauses, they are interpreted as restricting the indefinite pronoun. Hence, the pragmatic oddness in (8b) is not present in (8a).

Other proposals minimally differ from the one in (7) with respect to the nature of the mediating head. Den Dikken (2005) for instance proposes a topic head instead of π_{REL}. Common to all these accounts is that iV2 structures belong to the Discourse Grammar in the sense of Williams (1977), whereas verb-final RCs are treated as real instances of Sentence Grammar subordination. In Section 5 we return to this topic.

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[7] As will be discussed in detail in Section 5, a classical E-type analysis of the pronoun (Kamp 1981, Heim 1982) cannot capture the observed facts.

3. iV2 structures in acquisition

As mentioned in the Introduction a vast body of research has systematically investigated the development of verb placement and more generally of word order in German subordinate clauses. Two main findings have emerged from these studies. First, it has been shown that main clauses are acquired before subordinate clauses, a finding that is uncontroversial also cross-linguistically (Clahsen 1982, 1990, Rothweiler 1993, among many others). Second, children learn verb placement rules quite early (Clahsen 1990, Weissenborn 1990, Clahsen et al. 1992, Rothweiler 1993, Müller & Penner 1996). According to Clahsen (1990), children correctly place the finite verb in second position in main clauses around age 3 (see also Weissenborn 1990). Rothweiler (1993) observed that German-speaking children systematically place the finite verb in clause final position as soon as they produce subordinate clauses. Based on an analysis of about 800 embedded clauses produced by seven monolingual German children, Rothweiler (1993) found only twelve clauses in which the verb does not occupy the verb-final position, nine of them with V2 after *weil* 'because' as in (9), and one with V2 in a RC as in (10). Note that both structures are grammatical in German and hence do not constitute a deviant pattern.

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

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

The example in (10) can be taken as an instance of iV2 structure since all restrictions (see Section 2) for its licensing are met (e.g., presentative/existential predicate, indefinite antecedent, d-pronoun, sentence-final position). On the basis of the results in Rothweiler (1993), we can conclude that iV2 structures as in (10) are produced less frequently than verb-final RCs in child language.

Interestingly, the findings reported by Brandt et al. (2008) suggest a different acquisition pattern. Based on a much larger database than the

one in Rothweiler (1993), Brandt et al. (2008) report that young German-speaking children regularly produce verb-second RCs in their spontaneous speech. In fact, the majority of the first relative clauses observed are argued to exhibit V2, i.e. structures with the verb in second position.

Analyzing data from one German-speaking child called Leo (available on CHILDES), Diessel (2004) and Diessel & Tomasello (2005) report that iV2 structures are especially frequent in the early speech samples. Up to the age of 2;5, 70% of Leo's RCs exhibit the finite verb in second position, 22% show an ambiguous word order, and only 8% occur with the finite verb in final position. In the subsequent development, the proportions change radically. At the age of 5;0, 68% of Leo's RCs show verb-final, 27% show verb-second, and 5% show an ambiguous verb order. Brandt (2004), looking at data from another German-speaking child called Simone (also available on CHILDES), observes that iV2 clauses are predominant over verb-final RCs until 4;0, the age at which the recordings of Simone ended. This suggests that verb-final relatives emerge after age 4;0.

Taking these findings together, Brandt et al. (2008) conclude that the first type of RCs produced by German-speaking children shows the verb in second position and that children only later produce relative clauses with verb-final word order. The authors propose that two factors make the V2 structures available to the child early in development and prior to verb-final relatives: (i) the frequency of V2 in the input, and (ii) their similarity to simple main clauses.

As for (i), it is claimed that verb-second clauses are much more frequent in German child directed speech than verb-final subordinate clauses (see Stoll, Abbot-Smith, & Lieven, 2009). As for (ii), iV2 structures are similar to main clauses in terms of word order. According to Diessel and Tomasello (2005), children acquire structures in a piecemeal 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. 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. At first glance, this view provides further support for the syntactic analysis of iV2 clauses proposed in Gärtner (2001a/b).

However, a closer look at the structures produced by the children reported in Brandt et al. (2008) calls the analysis as verb second RCs *stricto sensu* – see Section 2.2 – into question. The utterances produced by the children mainly consist of an isolated DP followed by a V2

clause, as illustrated in (11) (from Brandt et al 2008: 340). In our view, these structures cannot be analyzed as proper instances of iV2.

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

Of the conditions for licensing iV2 structures (see Section 2.2), the example in (11) does not meet condition (a): Since there is no matrix clause, there is no presentative/existential predicate in the main clause. Furthermore, the majority of the structures considered by the authors as instances of iV2 clauses involve a definite description as in (12) instead of an indefinite NP (from Brandt et al. 2008: 334). Hence, besides condition (a), also condition (b) is not met in examples like (12):

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

On the basis of this evidence we suggest that structures like (11) and (12) should be interpreted as examples of left-dislocation along the lines proposed by Grewendorf (2002) rather than as instances of iV2 clauses. Consequently, it remains unclear whether iV2 structures are indeed the 'first' relative clause structures to appear in children's production.

4. The experiment

To investigate how children treat verb-final RCs and iV2 structures, we developed a picture-supported delayed-repetition task. We aimed at testing typically developing monolingual German-speaking children between the ages of 3 and 5. The results reported in the present paper are based on the data of 23 3-year-olds and 21 adults. Our research questions were as follows:

(Q1) Do 3-year-old children prefer V-final RC or iV2 structures?
(Q2) Does children's preference differ from that of adults?

Addressing (Q1), children are expected to prefer iV2 structures over V-final RCs based on the theoretical account proposed in Gärtner

(2001a/b) and the previous acquisition studies (Brandt 2004, Brandt et al. 2008). If iV2 structures are main clauses coordinated via a discourse procedure, and V-final RCs are instances of subordination, a preference for main clause structures in young children is expected.

As for research question (Q2), Brandt et al. (2008) state that children's preference for iV2 structures holds until age 4. Given this, we expect our 3-year-olds to exhibit a clear preference for iV2, whereas adults should not show a preference for iV2 structures anymore.

4.1. Participants

In the following, we report results on 23 typically developing monolingual German-speaking children at age 3. All children were recruited in kindergartens in Frankfurt am Main. In addition, 21 adults were tested as control group. The participant details are summarized in Table 1.

	Participants	Age range	Mean age	SD
Children	23	3;1-3;9 years	43;0 months	3 months
Adults	21	19;2-30;9 years	25;4 years	74 months

Table 1: Description of participants

All parents gave written consent for their children's participation in the study. 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 3-5, Grimm 2001), on which they performed within age-appropriate norms.

4.2. Design and material

We developed a picture-supported delayed-repetition task (see Lust, Flynn & Foley 1996), which consists of three parts: listening to the pre-recorded stimulus, pointing to a matching picture, and repeating the heard sentence. The pointing task was implemented to test children's comprehension of the pre-recorded stimulus. In addition, it served to reach a more than 3s delay between the stimulus presentation and its repetition. According to McDade, Simpson & Lamb (1982), this delay ensures that participants repeat only those sentences they comprehend. Furthermore, pictures made the task suitable for young children.

The experiment consists of 24 test items and 24 fillers as well as 6 warm-up items to familiarize the participants with the experimental procedure. Each item was presented with a picture, as exemplified in (13). 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 version as in (13b) was constructed. Each version was assigned to one of two experimental lists. Every participant was tested on 12 test items inviting the repetition of a verb-final RC, and 12 test items inviting the repetition of an iV2 structure.

(13) Example test item
Hier gibt es einen Mann,
here there-is EXPL a:ACC man

   a. *der ein gefährliches Krokodil*   V-final
      PRON:NOM a dangerous crocodile
      eingefangen hat
      caught has

   b. *der **hat** ein gefährliches Krokodil*   iV2
      PRON:NOM has a dangerous crocodile
      eingefangen
      caught
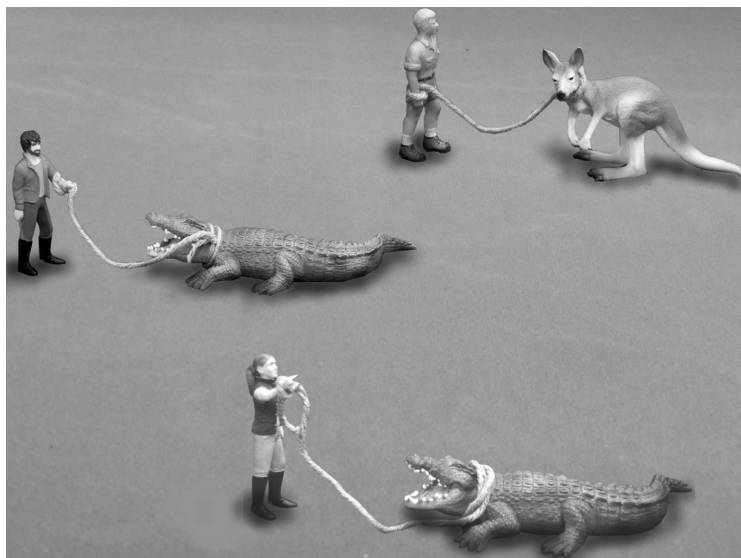   'Look, there is a man who caught a dangerous crocodile.'

Figure 1: Picture paired to test item in (13)

Since many studies found children to have difficulty with object relatives (for German e.g., Diessel & Tomasello 2005, Brandt et al. 2008, Adani et al. 2012, Sanfelici, Schulz & Trabandt 2015), subject RCs were used, i.e., the pronoun in both the RC and the iV2 structure was the syntactic subject of the clause. In order to rule out the possibility of interpreting the test items as pseudo-relative clauses (Grillo & Costa 2014), we used different tenses for the predicate in the main clause (present tense) and in the RC and in the iV2 clause (either perfect tense, as in (13) or future modal tense). The presence of a finite auxiliary form (e.g., *hat* 'has' or *will* 'wants to') helped to determine the position of the verb in the participants' responses. In 6 of the RC and 6 of the iV2 test items the predicate in the clause was in the perfect tense, e.g., *hat eingefangen* 'has caught' in (13) with the picture showing the result of the performed action (Figure 1). In the other 6 RCs and 6 iV2 items, the predicate exhibited the analytic future form (e.g., *fotografieren will* 'wants to photograph').

All test items were construed in accordance with the specific conditions for licensing iV2-structures (see Gärtner 2001a/b; Section 2.2). Hence, we tested sentences with presentative or existential predicates in the main clause. In line with the results of Weinert (2012), we included the following predicates: *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 in adults' speech. All head nouns in the main clause were indefinite nominals introduced by the indefinite article *ein/eine* 'a' or by the quantifier *zwei* 'two' (see Sanfelici, Schulz & Trabandt, in prep. for more details on the experimental set up). In order to meet the prosodic constraints exhibited by iV2 structures (Gärtner 2001a/b), prerecorded stimuli with an integrated prosodic contour were used. The picture setting ensured that both RCs and iV2 structures had a restrictive reading only. In all pictures, two candidates were depicted as possible referents of the head noun. In (13) for instance, two men are present that differ with respect to their paired objects: a crocodile or a kangaroo. In addition, two possible candidates for the object DP are depicted, i.e. two crocodiles in (13), which differ in their paired agents, a man and a woman.

An additional set of 24 filler sentences were created that was balanced between V2 and V-final to test whether children exhibited general difficulty with either verb second or verb final structures (see Sanfelici, Schulz & Trabandt, in prep. for more details).

4.3. Procedure

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" 'finding book', a book with pictures of animals and people. The child was asked to list the names of the depicted animals and people to introduce the lexical items used in the task. The experimenter and the child sat on one side of a table, and the picture book and a computer were placed in front of the child. 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 mal.*
'Listen, I will tell you something, and then you look for the matching picture and show it to me. Then YOU will repeat the sentence once more exactly 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 then she repeated the sentence. Three warm-up items were presented first. If the child did not understand the instructions or the order of the tasks, the experimenter repeated the three warm-up items. After this, the testing session started. If the child was hesitant or did not follow the requested order, the experimenter repeated the respective item once. No response-contingent feedback was given to the children. Children were tested in two sessions, comprising the experiment and the standardized language test, which lasted between 25 and 40 minutes each.

4.4. Coding scheme for RC and iV2 test items

Repetitions of the test items were analyzed according to a two-step coding scheme: the first step focused on the type of structure produced by the participant, and the second step involved coding the verb position in the repeated utterance. The first step was included since children produced also structures other than the intended RCs and iV2

clauses respectively, as expected in this type of task with 3-year-olds. Adults showed high task conformity in their repetitions. The first coding contained several categories. Here, we report on the two categories that are relevant for our discussion: RC-STRUCTURE and MAIN CLAUSES (see Sanfelici, Schulz & Trabandt in prep. for further details).

(a) RC-STRUCTURE

We coded both verb-final RCs and iV2 structures as RC-structure when the repetition contained the main clause, the head noun, the d-pronoun, and the following sentence. This code was assigned independently of the verb position. Hence, we coded a repetition as RC-STRUCTURE both if the child correctly repeated the stimulus, and if verb placement was changed. Examples for a verb-final and an iV2 repetition 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*   V-final
PRON:NOM a   dangerous   crocodile
eingefangen   hat
caught   has

b. *der   **hat** ein gefährliches Krokodil*   iV2
PRON:NOM has a   dangerous   crocodile
eingefangen
caught
'Look, there is a man who caught a dangerous crocodile.'

(b) MAIN CLAUSE

We coded as MAIN CLAUSE syntactically complete main clauses with the verb in second position.

(16) *Ein Mann hat ein gefährliches Krokodil eingefangen*
'A man caught a dangerous crocodile.'

The second coding step focused on the verb placement. It was applied to all repetitions coded as RC-STRUCTURE. If the participant repeated the verb in the same position as in the test-item, we coded the repetition 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, the code 'V-change' was used if the child repeated a verb-final RC test item as an iV2 clause and *vice versa* if an iV2 test-item was repeated as a verb-final RC. In addition, the label 'unanalyzable' was used for cases where the finite verb was missing as in (17a), or when it was doubled as in (17b).

> (17) *Hier gibt   es   einen Mann*,
>   here there-is EXPL a:ACC man
>   a. *der   ein gefährliches Krokodil **eingefangen***
>   PRON:NOM a   dangerous   crocodile caught
>
>   b. *der   **hat** ein gefährliches Krokodil **eingefangen***
>   PRON:NOM has a   dangerous   crocodile caught
>   ***hat***
>   has
>   'Look, there is a man who caught a dangerous crocodile.'

4.5. Results

In the following section we first give an overview of children's types of repetitions regardless of the actual verb placement. Then, we present our results on the verb placement in the repetitions of type RC-STRUCTURE. Performance on the filler items reached ceiling (see Sanfelici, Schulz and Trabandt, in prep. for details).

4.5.1. Children's repetitions

Table 2 on the following page characterizes children's repetitions in the two test conditions, verb-final RCs and iV2 clauses.[8]

Statistical analyses revealed that the two conditions significantly differed in the rates of RC-STRUCTURES (Wilcoxon related samples, Z=-2.48, *p*=.013), but not in the rates of MAIN CLAUSE (Wilcoxon related samples, Z=-.925, *p*=.355).

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[8] As stated in Section 4.4, we report on only two types of responses here, RC-structures and Main Clauses, which add up to 100% in Table 2.

	V-final	iV2
RC-STRUCTURE	115 56.4% (35.7)	97 50.3% (31)
MAIN CLAUSE	89 43.6% (27.8)	96 49.7% (25.3)
TOTAL OF ANALYZED REPETITIONS	204 100%	193 100%

Table 2: Children's repetitions of the test items as RC or main clauses in the two conditions: Raw numbers, percentages, and (SD of percentages)

4.5.2. Results in the RC-STRUCTURE responses

In order to address the two research questions participants' RC-STRUCTURE responses were analyzed according to how often verb placement of the test item was repeated correctly and how often it was changed (V2 > V-final and V-final > V2).

Seven 'unanalyzable' responses had to be excluded from the analysis. Among these were repetitions with two instances of the finite predicate as depicted in (17a), and structures lacking a finite predicate, as shown in (17b). Results are reported only on RC-STRUCTURE repetitions containing the finite predicate (n = 111 in V-final condition, n = 94 in iV2 condition). First, we present results on the V-final condition and then on the iV2 condition. Figure 2 summarizes the results in the V-final condition for children and adults.
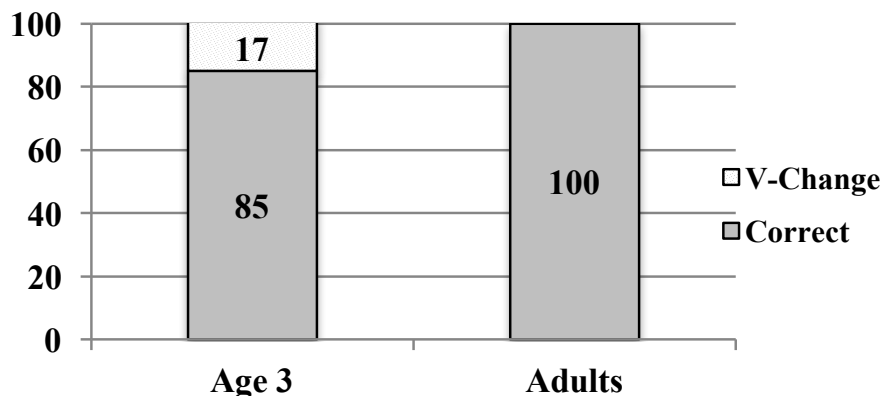

Figure 2: V-final condition: Percentage of correct verb placement and verb change

Both children at age 3 and adults were accurate in their repetition of V-final relative clauses, although the number of correct repetitions differs significantly between children and adults (U=483.0, Z=6.03, $p<.001$). Within the children's group, V-final RCs were repeated correctly more often (85%) than with a change of the verb position (17%) (Wilcoxon related samples, Z=-2.74, $p<.01$). Unlike the children, adults always repeated the test-items correctly.

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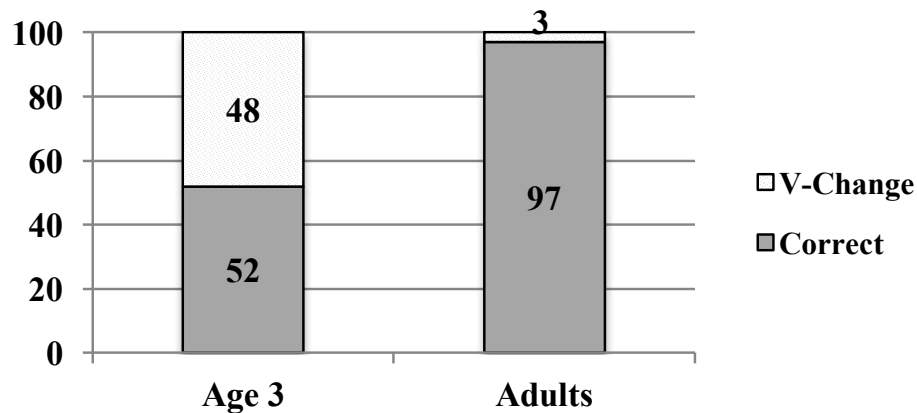

Figure 3: iV2 condition: Percentage of correct verb placement and verb change

The adults' results are comparable to those in the V-final condition. Again, the number of correct repetitions differs between the groups (U=480.0, Z=5.86, $p<.001$). Adults consistently repeated the iV2 items correctly and changed the verb position in only 3% of items. For the children, the results differ from those in the V-final condition. In almost half of their repetitions, 3-year-olds changed the verb position from V2 to V-final. Statistically, no significant difference can be found comparing the frequencies of Correct and V-Change responses in the iV2 condition in the children's group (Wilcoxon related samples, Z=-1.78, p=.239).

When the individual response types (Correct and V-Change) are compared across conditions in the group of 3-year-olds, a significant effect is found (χ^2 (1)= 25.57, $p<.001$). Children produced significantly more V-Changes in the iV2 condition than in the V-final condition.

In order to test whether the different results we obtained in the two conditions may have been due to difficulties in comprehending the iV2 test items, we investigated children's performance in the pointing and its relation to the attested verb placement patterns.

Condition	Repetition	Correct Pointing (n = 167)	Wrong Pointing (n = 39)
V-FINAL	CORRECT	76	17
	V-CHANGE	13	5
IV2	CORRECT	41	8
	V-CHANGE	36	9

Table 3: Pointing and the type of repetitions in the two conditions

Table 3 shows the correctness of pointing is not linked to the correctness of the repetitions. In both conditions children more frequently pointed to the correct scene than to an incorrect one. Since the aim of picture pointing was to test children's interpretation of the heard test item, we conclude that children understood the meaning of the stimulus and that their interpretation did not affect whether they retained or changed the verb positions in either condition.

4.6. Discussion of the experimental results

Our study provides results from a delayed-repetition task testing 3-year-old German-speaking children and adults. We aimed at determining how children deal with the alternation between verb-final RCs and iV2 structures when both options are grammatical. Children's repetitions were analyzed according to how often the test items were repeated correctly and how often the verb position was changed in V-final RCs and in iV2 structures.

For RC-STRUCTURES, significant differences between the two conditions were found. RC-STRUCTURES were produced significantly more often in the V-final condition than in the iV2 condition. This data suggests that children were more accurate with V-final RCs than with iV2 structures.

With regard to the question of whether 3-year-old children prefer V-final or iV2 structures (Q1), based on previous acquisition research children were expected to prefer iV2 structures over V-final RCs. Likewise, given the proposal that iV2 structures are main clauses coordinated via a discourse procedure (Gärtner 2001a/b) and that V-final RCs are instances of subordination, a preference for main clause structures was predicted for young children. Our data does not confirm this prediction. On the contrary, children's performance was significantly better in the V-final than in the iV2 condition. In addition, the rate of verb position changes was higher in the iV2 condition than

with V-final RCs. We interpret these results as evidence that at age 3 children prefer verb-final RCs over iV2 structures.

Addressing the second question of whether children's preference differs from that of adults' (Q2), we expected 3-year-old children to exhibit a preference for iV2 clauses, contrary to adults. This expectation was derived from Brandt et al.'s (2008) claim that children's preference for iV2 structures holds until age 4. Our results show that in the V-final condition, children's performance was similar to that of adults: In the great majority of their repetitions (84.7%), children repeated the test items correctly. In the iV2 condition, however, children differed from adults. In contrast to the prediction based on Brandt et al.'s claim, children did not show a preference for iV2 structures: In almost half of the test items, children repeated the iV2 clauses as verb-final RCs.

These findings suggest that from very early on, RCs are acquired as subordinate clauses with the verb in final position, as has been reported in Clahsen (1990) and Rothweiler (1993). Our results for the 3-year-olds confirm that the verb parameter is set very early. At the age of three, the majority of children has acquired the subordinate configuration, namely the placement of the finite verb in final position. Future research is needed to integrate these findings into the general acquisition path of verb-final RCs and iV2 clauses.

At the same time, we take our results to pose a challenge for the syntactic analysis of iV2 structures as proposed in Gärtner (2001a/b). It is an uncontroversial and robust finding that children produce main clauses before subordinate clauses (Clahsen 1982, 1990, Clahsen et al. 1992, Rothweiler 1993; Tracy 1991). If iV2 structures are syntactically main clauses, it is unaccounted for why the children in our study exhibited difficulties with them. In addition, it is left unexplained why 3-year-old children who produce a high number of main clauses instead of RCs have problems repeating iV2 structures. A possible reason for the low rate of correct responses in the iV2 condition may be the semantic nature of the silent head π (see Section 2.2 Example (7)): Children may have problems in understanding that the iV2 clause restricts the referent of the antecedent. Although this may be plausible, our results indicate that children interpreted the iV2 sentence as restrictive, since they identified the correct matching picture for the majority of items (see Table 3). An additional challenge for the analysis of iV2 as paratactic main clauses comes from the rate of verb position changes. If iV2 sentences are real root clauses, why and how do children change iV2 clauses into V-final RCs? We hence interpret our findings as evidence that children treat iV2 clauses as some kind of

subordinate clauses. In the next section we present a syntactic analysis of iV2 structures that accounts for their syntactic and semantic properties and offers an explanation for the behavior of the children in our study.

5. On the structure of iV2 clauses

In this section we present a new analysis of iV2 sentences, which reformulates Gärtner's (2001a/b, 2002) proposal. In a nutshell, we argue that iV2 structures are CPs in which the embedded verb has moved to C^0 and the d-pronoun is a resumptive topic pronoun. The iV2 clause enters the derivation merged as an adjunct in the specifier of v/VP, whereas the indefinite NP is merged in the argument position in the host clause.

Under this analysis, a) the restrictive nature of iV2 clauses, b) their information unity with the host sentence, c) the nature of the NP antecedent and d) the behavior of focus sensitive particles are derived as the result of the position where the iV2 clause originates. At the same time, this analysis accounts for several problems of existing analyses by maintaining the advantage of Gärtner's (2001a/b) proposal, which treats iV2 sentences as main clauses.

This section is structured as follows. In Section 5.1, we will sketch the main ingredients of our analysis. In so doing, we will revise some requirements to license iV2 structures. In particular, we propose that the weak indefinite must remain inside the v/VP and suggest that the iV2 clause is a CP which sits in the specifier of the v/VP where the indefinite is interpreted. In the following sections we will show how the proposed derivation can account for the properties exhibited by iV2 structures. First, we discuss the restrictive import, (Section 5.2). Then, we turn to binding and scope phenomena (Section 5.3). In Section 5.4, we discuss the sentence final position of iV2 sentences, and in Section 5.5 we summarize our arguments.

5.1. The ingredients of the analysis

We start from three basic observations, which were introduced in Section 2:

    a) iV2 clauses are licensed by a small set of predicates, namely presentational and existential predicates,

b) only weak indefinite NPs can serve as antecedents of iV2 sentences,

c) iV2 sentences restrict the referent of the NP.

We propose that (a) needs to be extended because iV2 clauses may be licensed by other predicates besides presentational and existential predicates. For some speakers, iV2 clauses can also be licensed by predicates that do not involve a predicative relation, as in examples (18) and (19):[9]

(18) a. *Dieses Buch hat **ein Mann**$_i$ geschrieben, der$_i$ kommt aus den USA.*
'This book is written by a man who comes from the USA.'

b. */?? **Ein Mann**$_i$ hat dieses Buch geschrieben, der$_i$ kommt aus den USA.*
'A man who comes from the USA has written this book.'

In addition to the restrictions given in (a) to (c) above, there seems to be a further restriction regarding the position of the indefinite NP in combination with an iV2 clause. Even speakers who allow a wider range of predicates with iV2 sentences as in (18a) show a clear contrast between (18a), where the indefinite NP is inside the vP and (18b), where it has been moved outside the vP. Therefore, to the list (a-c) we add a further requirement. It will turn out to be crucial for our analysis:

d) The indefinite NP sits inside the v/VP, where it is first merged.

Testing the position of the indefinite NP by using Cinque's (1999) low adverbials, we obtain the contrast in (19), in support of (d). The position of the NP in relation to the low adverbial *fälschlicherweise* 'by mistake' shows that the head noun cannot be in Spec,CP. It has to be below the low-adverbial, i.e. the indefinite must sit in the vP:

(19) a. *Dieses Bild hat **fälschlicherweise ein Mann** gekauft, der kommt aus den USA.*

b. */?? Dieses Bild hat **ein Mann fälschlicherweise***

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[9] We are indebted to Florian Schwarz for having raised this issue.
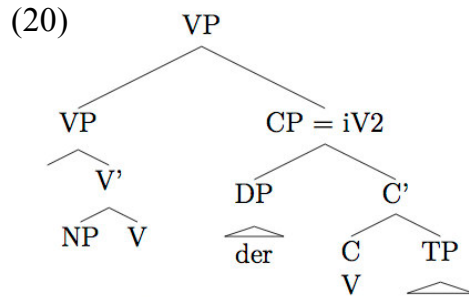
gekauft, der kommt aus den USA.
'By mistake, this picture was bought by a man who comes from the USA.'

In other words, the contrast exhibited in (18) and (19) suggests that the indefinite must be restricted at the v/VP level. Chung & Ladusaw (2004) propose that the argument position occupied by a weak indefinite is not existentially bound when the indefinite composes with the verb. Instead, it remains unsaturated until the event level VP is reached/derived.[10] At this level, the indefinite becomes saturated and hence restricted. As a consequence, the weak indefinite in an argument position does not denote a restricted variable over entities, but a property (see Diesing 1992, McNally 1998). Following Longobardi (1994, 2008) in assuming that the locus of argumenthood is D and that weak indefinites are not proper arguments, we conclude that weak indefinite nouns lack the D layer. Thus, the weak indefinite is not a real argument of the verb. This is reflected in our analysis by the label NP.[11] This observation gives us a key to interpret iV2 clauses. In order to capture the contrast in (18) and (19) and to implement Chung & Ladusaw's claim, we propose that iV2 clauses are adjoined at the v/VP level. They occupy the projection where other restrictors, such as prepositional phrases, are merged in existential sentences as proposed by Belletti & Bianchi (in press). We disregard for the moment the full derivation and focus on the relevant aspects: We propose that the iV2 structure is the CP merged in the Spec,v/VP. In (20), we illustrate the proposed structure with the NP as the complement of the predicate; the same derivation holds if the NP is merged in Spec,vP.[12]

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[10] The authors do not distinguish VP from vP. In their account, both the patient and the agent are licensed inside the VP. For sake of simplicity we will rephrase their formulation as v/VP.

[11] The denotation NP in our analysis can be translated into NumP as suggested by Longobardi (1994) and Belletti & Bianchi (in press). The crucial aspect is that weak indefinites lack the D-layer.

[12] For sake of simplicity, we represent extraposition as right-adjunction as in (20). Other syntactic analyses can be envisaged, depending on the assumptions about X-bar structure. Nothing hinges on this choice.

(20)

```
              VP
           /      \
        VP          CP = iV2
         |         /      \
         V'      DP         C'
        /  \      |        /  \
      NP    V    der      C    TP
                          V
```

In our analysis, iV2 clauses are CPs and C_0 is not occupied by any complementizer. According to the V2 property of German, the verb raises to C_0 in iV2 constructions. The structure in (20) rephrases Gärtner's (2001b: 107) observation that iV2 sentences are cases of embedded root phenomena. In our analysis this is syntactically reflected since the iV2 clause is merged in the host clause and hence is interpreted inside the host-CP. As proposed in other works (Reis 1985, 1997, among many others) embedded root clauses have proto-assertional force, and they must be extraposed.

Recalling the properties of iV2 structures outlined in Section 2.2, in the following sections we will provide evidence for the proposal in (20).

5.2. Restrictive nature of iV2 sentences and Information unity

In this section we discuss the restrictive import of iV2 sentences and we show that the proposal in (20) can account for it.

As noticed by Gärtner (2001a/b), iV2 clauses are syntactically main clauses, but do not have the same interpretation as simple main clauses (see Section 2.2). Concerning its interpretation, an iV2, as demonstrated in (21a), shows a behavior similar to its restrictive RC counterpart in (21b):

(21) a. *Das Blatt hat eine Seite, die **ist** ganz schwarz*   iV2
          'The sheet has one side that is completely black.'
      b. *Das Blatt hat eine Seite, die ganz schwarz **ist***   RC
          'The sheet has one side that is completely black.'
      c. *#Das Blatt hat eine Seite. Die **ist** ganz schwarz*   MC
          'The sheet has one side. It is completely black.'
                                        (Examples from Gärtner 2001a: 112)

(21a) and (21b) mean that the sheet has one completely black page.

They do not mean that the page has only one side, which is black. This interpretation contrasts with the meaning of the sequence of V2 main declarative clauses in (21c) (MC). In this example, the pragmatically odd meaning is conveyed that the sheet has only one page and that this page is black. This effect is due to a Horn-scalar implicature, which arises after having processed the first independent sentence: Thus in (21c) the sheet has only one side. The fact that this implicature does not arise in the case of (21a) provides another argument for the non-autonomy of iV2 structures.

Under our analysis in (20), the restrictive nature of iV2 sentences is expected. The indefinite NP is saturated inside the matrix clause at the top of the v/VP level. Thus, the saturation takes place when the NP got restricted by the iV2. Therefore, the restrictive nature of iV2 sentences is derived from the position where the iV2 is merged.

An alternative proposal has been suggested by Gärtner (2001a/b) (see Section 2.2), according to whom the restrictive nature of iV2 structures is due to the feature specification on the discourse head mediating the two main CPs. The discourse head is specified for [+relative] feature, i.e., π_{REL}, and causes the feature specification of the weak demonstrative, *die* in (21a), to switch from [+demonstrative] into [+relative]. Although this may be a plausible assumption, we believe this faces some theoretical problems, which on the contrary do not arise under our proposal. In fact, it remains obscure how a discourse head can operate on the feature specification of a lexical item and manipulate it. If we adopt a minimalist approach to features (Chomsky 1995, 2005), the output at the end of a derivation is sent to the interface where it gets interpreted. Hence, manipulating the syntactic features of a lexical item after the end of the derivation should not be possible. One way to solve this problem would be to abandon the switch from [+demonstrative] to [+relative]. In this case, one would propose that iV2 sentences are simply coordinated to the main clause. This would lead to a concatenation of main clauses, which could not account for the contrast between (21b) and (21c). In sum, under current minimalist assumptions the powerful proposal in Gärtner (2001a/b) seems theoretically problematic. The fact that the reference of the antecedent is restricted by the iV2 remains unaccounted for under Gärtner's analysis whereas under our proposal in (20) it is derived.[13]

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[13] The same problem is also faced in den Dikken's (2005) account. Den Dikken proposes an analysis similar to Gärtner's, but assumes that the mediating head is a topic.

Furthermore, our analysis predicts the occurrence of nominal predicates as antecedents of iV2 structures as illustrated in (8) (from Brandt 1990: 40) repeated here as (22):

(22) a. *Maria ist ein Mensch$_i$, der$_i$ liebt seine Kinder*   iV2
     b. *#Maria ist ein Mensch. Der liebt seine Kinder*   MC
        'Maria is a person that loves her child.'

Examples like (22) with nominal predicates have been taken as evidence that iV2 clauses form an information unit with the host CP (see Section 2.2).

Differently from referential NPs, nominal predicates do not provide a discourse antecedent. This is problematic for Gärtner's analysis since the paratactic analysis of iV2 structures requires the NP antecedent to provide a discourse antecedent, which nominal predicates cannot do. In contrast to Gärtner's approach, in our analysis the indefinite NP is not a discourse antecedent. Rather it is a predicate in Chung and Ladusaw's (2004) terms and it is saturated inside the matrix clause at the top of the v/VP level when it is restricted by the iV2, thus accounting for sentences like (22).

In conclusion the restrictive import of iV2 clauses and the presence of nominal predicates as antecedents provide evidence in support of our proposal. In the next section we provide evidence in support of two other aspects of our proposal in (20), namely that the NP is not merged within the iV2 clause and that iV2 clauses are embedded in the host clause.

5.3. Binding and scope phenomena

In this section we explore the behavior of iV2 clauses with respect to phenomena claimed to provide a reliable test to detect whether two sentences are in a subordinate or paratactic relation. More specifically, we investigate the behavior of iV2 structures with respect to binding phenomena, scope interaction, and the licensing of focus particles. We will demonstrate that the indefinite NP does not form a constituent with the iV2 and that iV2 clauses are not independent main clauses nor main clauses linked via a discourse head, but are embedded in the host clause, as assumed in our proposal in (20).

5.3.1. Principle C, sloppy readings, and variable-binding

Principle C, sloppy reading, and variable-binding are often employed to test whether two sentences are in a subordinate or paratactic relation. In the following, we argue that these environments cannot help in detecting whether an iV2 is an independent main clause or an integrated clause.

Verb-final RCs and iV2 clauses are assumed to differ with regard to condition C effects and sloppy identity readings for the second conjunct (Gärtner 2001a: 102-104). Condition C effects relax in iV2 structures. In addition, a sloppy identity reading for the second conjunct is "hard(er) to get when iV2 is used" (Gärtner 2001a: 104). However, as Gärtner noticed, judgments are sometimes subtle and may diverge. According to ten speakers interviewed for this paper, verb final RCs and iV2 structures are judged as identical with respect to principle C (23). In addition, eight out of ten speakers judged both structures identically with respect to the sloppy identity reading (24) for the second conjunct.

(23) a. *? Er$_i$ hat auf der Party Leute gesehen, die*   *Max$_i$*
       he has at the party people seen   PRON:ACC Max
     nicht kennt.
     not knows   RC

    b. *? Er$_i$ hat auf der Party Leute gesehen, die*   *kennt*
      he has at the party people seen   PRON:ACC knows
     Max$_i$ nicht.
     Max not   iV2
     'At the party he$_i$ saw people that Max$_i$ does not know.'

(24) a. *Hans$_i$ traf in Köln   Leute, die   haben ihn$_i$ nicht*
     Hans met in Cologne people PRON:NOM have him not
     erkannt,   und Peter in Berlin
     recognized and Peter in Berlin   iV2

    b. *Hans$_i$ traf in Köln   Leute, die   ihn$_i$ nicht*
     Hans met in Cologne people PRON:NOM him not
     erkannt   haben, und Peter in Berlin
     recognized have and Peter in Berlin   RC
     'Hans$_i$ met people in Cologne that did not recognized him$_i$ and Peter in Berlin.'

                                           (from Gärtner 2001a: 104)

Given that no differences are found between verb-final subordinate RCs and iV2 clauses with respect to principle C and sloppy reading, we might take (23) and (24) as evidence for the proposal that iV2 clauses are embedded inside the host clause just as verb-final RCs are. However, a more careful conclusion is to say that these two binding tests, principle C and sloppy identity reading, are non-conclusive with respect to whether iV2 sentences are independent main clauses or whether they are integrated into the host CP.

The other binding phenomenon addressed by Gärtner is variable-binding into iV2 clauses by a quantifier. Gärtner shows that variable binding is allowed in verb-final RCs (25a), but degraded in iV2 structures (25b):

(25) a. *Kein Fallschirmspringer$_i$ beachtete ein Haus,*
no skydiver considered a house
das er$_i$ schlecht sehen konnte.
PRON:ACC he badly see could
b. **Kein Fallschirmspringer$_i$ beachtete ein Haus,*
no skydiver considered a house
das konnte er$_i$ schlecht sehen
PRON:ACC could he badly see.
'No skydiver considered a house that he couldn't see well.'

(from Gärtner 2001a: 104)

Gärtner concludes that "c-command, the major syntactic factor involved in binding, might not hold between elements in the putative matrix clause and iV2" (2001a: 104-105). The author interprets these facts as sufficient evidence to treat iV2 paratactically. However, this conclusion seems too strong to us. (25b) can also be ruled out by the more general requirement on iV2 sentences, which we formulate as follows (along the lines of the observation in Gärtner 2001b: 107):

(26) Embedded-root structures, which have proto-assertional force, cannot be in the scope of a negative (or other) operator.

That (26) may be the reason for ruling out sentences like (25b) is shown by the examples in (27). The data in (27) demonstrates that iV2 clauses are degraded if a negative operator has scope over the iV2 clause. The ungrammaticality of the iV2 is observed, despite the

absence of variable-binding of the type seen in (25b):

(27) a. *Im Sommer sieht kein Professor Studenten$_i$, die$_i$
arbeiten in der Bibliothek.
'During summer no professors see students that work in
the library'

b. *Niemand kennt eine Mutter$_i$, die$_i$ hasst ihre Kinder.
'Nobody knows a mother that hates her children'

c. *Niemals gab es einen Mann$_i$, der$_i$ kam aus Afrika.
'Never was there a man that came from Africa.'

Hence, iV2 structures differ from main clauses, in which the ban on negative operators is not at work. This is shown in (28). Contrary to the situation in iV2 structures, in a sequence of main clauses the pronoun can pick up its reference from the discourse. Accordingly, in (28) the pronoun *Die* refers to *Studenten* in this case:

(28) Im Sommer sieht kein Professor Studenten$_i$. Die$_i$ arbeiten in
der Bibliothek.
'In summer no professor is meeting students. They work in
the library.'

If iV2 sentences were main clauses coordinated to the host sentence via a discourse head, either a π head as in Gärtner (2001a/b) or a Topic head as in den Dikken (2005), the contrast between (27) and (28) would be hard to explain. To account for this contrast under a main clause analysis of iV2 structures, we would need to introduce Gärtner's [+REL] mechanism, which however faces the problems discussed in Section 5.2. We may conclude that Principle C, sloppy reading, and variable-binding cannot detect whether an iV2 is an independent main clause or an integrated clause. On the one hand, Principle C and sloppy identity reading under coordination do not lead to any conclusive contrast between subordinate clauses and iV2 sentences and, on the other hand, variable-binding is not an operative test given the presence of a more general ban on the negative operators in iV2 structures.[14]

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[14] As another possible variable-binding test, one may use sentences like (i), involving the quantifier *jeder* 'every'. The quantifier can bind the pronoun inside the iV2-clause.

(i) Jeder$_i$ Professor hat eine Sekretärin, die kocht ihm$_i$ Kaffee.
'Every professor has a secretary that prepares coffee for him.'

Other binding tests may shed light on the syntax of iV2 structures, as we will show in the next section.

5.3.2 Principle A, idiom chunks, scopal interaction with modals and licensing of focus particles

In the previous section we concluded that principle C, sloppy reading, and variable-binding do not provide a good test for detecting whether iV2 clauses are embedded under the host clause, or are independent main clauses as proposed by Gärtner. In order to clarify this, we investigate the behavior of iV2 clauses with respect to Principle A and idiom chunks, and then with regard to the scopal interaction with modals and focus particles. On the basis of principle A effects and idiom chunks we will show that iV2 structures and the indefinite NP do not form a constituent. Second, we will demonstrate that the scopal interaction with modals and the licensing of focus particles provide evidence in support of the structural integration of iV2 clauses in the host CP.

As for Principle A and idiom chunks, iV2 sentences pattern with main clauses as well as with extraposed verb-final RCs.

With regard to the binding of a reflexive (29), in both main clauses, extraposed verb-final RCs and iV2 structures (respectively: (29d), (29b) and (29c)) reconstruction effects of Principle A are absent. On the contrary, in non-extraposed verb-final relative clauses the reflexive pronoun is bound by the subject of the RC as shown in (29a):[15]

(29) a. *In einer Schachtel gab es ein Foto von sich$_i$, das Peter$_i$ gestern gefunden hat*.
   b. **Es gab ein Foto von sich$_i$ in einer Schachtel, das Peter$_i$ gestern gefunden hat*.

However, as also noticed by Gärtner, sentences like (i) cannot be taken as evidence for a subordinate analysis of iV2. Co-reference is possible in other cases that clearly involve independent clauses. These are discussed under the label of "telescoping" (see Roberts 1987), and show that the quantifier in one sentence appears to bind a pronoun in a subsequent sentence (see Sells 1985). Hence, also this test for variable-binding is not informative (see Munn 1994).

[15] Picture-NP Anaphors in German are subject to the Binding Theory and do not allow for logophoric use, see Salzmann (2006). Consequently, the examples in (29) provide evidence for reconstruction.

c. *Es gab ein Foto von sich_i (in einer Schachtel), das hat
Peter_i gestern gefunden.
d. *Es gab ein Foto von sich_i (in einer Schachtel). Das hat
Peter_i gestern gefunden.
'In a box there was a photo of himself_i that Peter_i found
yesterday.'

With regard to a co-referent personal pronoun in the matrix clause,
again extraposed RCs, iV2 structures, and main clauses pattern alike.
Here, a co-referential pronoun in required in extraposed relatives (30b),
in iV2 clauses (30c), and in main clauses (30d). As shown in (30a), a
co-referential pronoun is degraded in verb-final RCs:

(30) a. */??Es gab in einer Schachtel ein Foto von ihm_i, das
Peter_i gestern gefunden hat.
b. Es gab ein Foto von ihm_i in einer Schachtel, das Peter_i
gestern gefunden hat.
c. Es gab ein Foto von ihm_i (in einer Schachtel), das hat
Peter_i gestern gefunden.
d. Es gab ein Foto von ihm_i (in einer Schachtel). Das hat
Peter_i gestern gefunden
'There was a photo of him_i in a box that Peter_i found
yesterday.'

Given that idiom chunks can only be relativized in a raising
structure and that extraposition forces a matching derivation (Hulsey &
Sauerland 2006, Cinque 2015), extraposition is predicted to be
impossible when the RC head is idiomatic. The idiom we use is *große
Reden schwingen,* lit. to swing grand speeches 'to give grand speeches'
(from Salzmann 2006) and we test extraposition with the insertion of
the PP *an der Uni* 'at the university'. In accordance with the above
prediction, idiom chunks are licensed in non-extraposed relative clauses
(31a). On the contrary, idiom chunks are degraded in extraposed verb-
final RCs (31b), iV2 structures (31c), and main clauses (31d).

(31) a. *An der Uni spricht jeder Student über **die** großen
Reden, die die Professoren schwingen.*
b. **Jeder Student spricht über **die** großen Reden **an der
Uni**, die die Professoren schwingen.*
c. **Jeder Student spricht über **die** großen Reden **(an der
Uni)**, die schwingen die Professoren.*

d. *Jeder Student spricht über **die großen Reden (an der Uni)**. Die schwingen die Professoren.*
'At the university every student talks about the grand speeches that the professors swing.'

Recall that extraposed RCs require a matching derivation and that a matching derivation means that the antecedent is not merged within the relative clause (see Bianchi 2013, Cinque 2015, a.o). Since iV2 structures and extraposed RCs pattern alike with respect to principle A and idiom chunks, we may conclude that the head NP does not c-command either structure. Thus, as in the case of extraposed RCs, the indefinite NP is not merged within the iV2 sentence, as we proposed in our derivation (20).

We now provide evidence that iV2 sentences are embedded in the host CP.

The scopal interaction of iV2 clauses with respect to a modal shows that although iV2 clauses differ from extraposed relatives, they involve structural integration into the host CP. Hence, they are better analyzed as embedded clauses.

As noticed in Gärtner (2001a/b, and subsequent works), the indefinite antecedent of an iV2 takes wide scope with respect to a modal operator in the CP1. In this respect, the iV2 sentence in (32c) differs from both the verb-final RC in (32a) and the extraposed RC in (32b). On the contrary, the iV2 clause in (32c) patterns with the main clause in (32d). Both types of RCs are scope neutral, whereas the iV2 clause patterns with the main clause inducing a *de re* interpretation:

(32) a. *Maria möchte einen Fisch, der kariert ist,*
Maria wants a:ACC fish PRON:NOM checkered is
fangen.
catch **de re/de dicto**

b. *Maria möchte einen Fisch im Meer fangen, der*
Maria wants a:ACC fish at.the sea catch PRON:NOM
kariert ist
checkered is **de re/de dicto**

c. *Maria möchte einen Fisch fangen, der*
Maria wants a:ACC fish catch PRON:NOM
ist kariert
is checkered **de re**

d. *Maria möchte einen Fisch fangen. Der ist*
Maria wants a:ACC fish catch PRON:NOM is

kariert.
checkered   **de re**

One possibility to interpret these data is to propose that iV2 structures pattern with cross-sentential anaphora, i.e. with main clauses. This proposal would restore the idea that iV2 clauses are paratactically coordinated to CP1. However, the picture is complicated when modal subordination is taken into consideration. As pointed out by Gärtner (2002: 37), the accessibility of discourse referents can be broadened by the use of modal operators in both the clause setting up the referent and the clause containing the anaphor (Karttunen 1976). This effect is shown in (33a), where a main clause is acceptable, contrary to (33b) where the iV2 is degraded.

(33) a. *Maria möchte einen Fisch fangen. Den könnte sie essen*.
        'Mary wants to catch a fish. It she could eat'   MC
     b. **Maria möchte einen Fisch fangen, den könnte sie essen*.
        'Mary wants to catch a fish that she could eat.'   iV2
                                                      (from Gärtner 2002: 37)

As Gärtner concludes, if iV2 structures are treated similar to a sequence of clauses, modal subordination failures are unexpected. His solution to this is to specify the paratactic head with the feature [+restrictive], which as we already discussed in section 5.2 is theoretically problematic.

Under our analysis, the facts in (33) are derived. Given that the iV2 clause is an embedded CP that has proto-assertional force, it cannot be in the scope of modal operators (Reis 1985, 1997). This is a reformulation of Gärtner's (2002: 38) proposal that iV2 structures are instances of embedded root phenomena. That iV2 clauses are syntactically integrated in the host clause is further supported by the behavior of focus particles.

Additional evidence in support of the syntactic integration of iV2 structures comes from the licensing of focus particles, such as *sogar* 'even' as in (34). Focus-sensitive particles such as *sogar (even)* can find their associate within the iV2 (from Gärtner 2001a: 124).

(34) *Ich kenne **sogar** Leute, (/) die lesen CHOMskys Bücher*.

'I even know people that read Chomsky's books.'
→ Even Chomsky is an x such that I know people who read x's books

Since a focus particle must c-command the focused constituent (Bayer 1996: 96), examples like (34) suggest that iV2 sentences are structurally integrated into the host sentence. Then, the iV2 can provide the associate for the focus particle.

To sum up, the binding facts, i.e., Principle A and idiom chunks, suggest that the indefinite NP is not merged within the iV2. In our derivation, the two objects (indefinite NP and iV2) are independent of each other. Furthermore, the contrasts between (27) and (28) in the case of negation, and (33a) and (33b) in the case of modal subordination suggest that iV2 structures must be syntactically embedded, but by different means than relative clauses. This conclusion is further supported by the interaction of iV2 clauses with focus particles as shown in (34).

5.4. The position of iV2 structures

The analysis proposed in (20) states that iV2 and NP do not form a constituent. Hence, it is predicted that iV2 clauses cannot undergo topicalization or, more generally movement operations together with the antecedent they restrict. This prediction is borne out. Example (35a) shows that iV2 clauses cannot undergo topicalization together with the antecedent they restrict while verb-final RCs can, as shown in (35b):

(35) a. *[*jemanden,* [*den **nennen** sie Wolf Jürger,*]]$_i$ *suche ich t$_i$*
b. [*jemanden,* [*den sie Wolf Jürger **nennen**,*]]$_i$ *suche ich t$_i$*
'Someone that they call Wolf Jürger, I look for.'
(from Gärtner 2001a: 99)

In addition to constituency, Gärtner (2000a: 99) stresses that iV2 clauses must occur in sentence final position. In his analysis this fact follows directly from treating iV2 clauses as independent sentences. Under our analysis proposed in (20), the sentence-final position of iV2 clauses is derived by the fact that they are treated as instances of embedded V2 clauses. Reis (1985, 1997) (among many others) proposed that embedded V2 clauses have assertional proto-force, which forces them to be extraposed. Hence, iV2 clauses must undergo extraposition as other embedded V2 clauses.

Another advantage of treating iV2 sentences as embedded root clauses comes from the fact that iV2 structures may be stacked. In (36), both iV2 clauses are interpreted as restricting the antecedent *Leute*:

(36) *Es gibt viele Leute,* [*die essen kein Fleisch*],[*die sind* (*sogar*) *vegan*].
'Here there are many people that do not eat meat, that also are vegan.'

Given the example in (36), proposing a genuine root clause analysis for iV2 sentences is complicated since "no sentence can have a multiplicity of roots" (den Dikken 2005: 701). On the contrary, the option to stack iV2 clauses in German can be captured in the analysis in (20): both iV2 clauses are CPs that are located in the specifier of v/VP.[16]

5.5. Summary

In section 5 we outlined a new analysis of iV2 structures, which aimed at maintaining the advantages of Gärtner's (2001a/b) proposal while offering a syntactic derivation that derives the semantic properties of iV2 clauses transparently. In a model of transparent correspondence between syntax and semantics, the behavior of iV2 sentences calls for a syntactic configuration in which iV2 structures are merged in the host clause (Section 5.2). In our proposal (20), iV2 clauses are merged and hence interpreted at the topmost v/VP level. Since the iV2 is a CP and lacks a complementizer, the verb raises to C_0, in accordance with the V2 parameter of German. The behavior of iV2 clauses with respect to binding and scope phenomena is accounted for (Section 5.3): the iV2 and the antecedent do not form a constituent (as in the case of extraposed relative clauses, see Bianchi 2013). The iV2 sentence-final position follows from the fact that iV2 is an instance of embedded root phenomena (Section 5.4). As we argued, our analysis also offers an explanation for some cases that remained problematic in Gärtner's analysis, such as NPs in predicate position, the scopal interaction with modals, and the licensing of focus particles.

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[16] The differences between Dutch and German iV2 clauses exceed the limits of this paper. In short, we propose that they need to be analyzed differently from iV2 structures in German.

6. Conclusion

This paper addressed the structure and acquisition of iV2 structures, i.e., clauses that look on the surface like relative clauses with the verb in second position. 23 3-year-old children and 21 adults were tested in a delayed-repetition study. We investigated how children treat verb-final RCs and iV2 clauses in contexts where both are grammatical option. We addressed the following two research questions: (Q1) Do 3-year-old children prefer V-final or iV2 structures?, (Q2) Does children's preference differ from that of adults? Our answers show that acquisition data can help to uncover the underlying structure of German iV2 structures.

The results of our experiment showed robust tendencies. Whereas adults performed at ceiling in both conditions, children performed differently in the iV2 and V-final RC condition. Children correctly repeated V-final RCs more often than iV2 items. In addition, they changed the verb position from V2 into V-final in almost half of their repetitions but not *vice versa*.

These findings, we believe, contradict the results reported in Brandt et al. (2008), who argue that iV2 structures are the first RC-like structures produced by children up to age 4 in spontaneous speech. Our results do not support the syntactic analysis of iV2 structures as involving discourse parataxis proposed by Gärtner (2001a/b, and subsequent works). Instead they point towards a stable preference for syntactic subordination marked via verb-final placement as reported in Rothweiler (1993). Thus, our findings represent a challenge for Gärtner's main clause analysis of iV2 structures.

Based on the experimental results and the syntactic and semantic behavior of iV2 clauses, we propose a novel analysis for these structures. Our proposal is a syntactic implementation of Gärtner's conclusion that iV2 sentences are an instance of embedded root phenomena (Gärtner 2002: 38). Building on Chung & Ladusaw (2004), we suggest that iV2 clauses are CPs merged in the specifier of the v/VP of the host clause. In this position, iV2 clauses restrict the indefinite NP. Under this analysis, a) the restrictive nature of iV2, b) their information unity with the host sentence, c) the nature of the NP antecedent, and d) the behavior of focus sensitive particles are derived as the result of the position where the iV2 clause originates. At the same time, this analysis accounts for several problems with the existing analyses while maintaining the advantage of Gärtner's (2001a,b) proposal, which treats iV2 sentences as main clauses.

Based on their structural integration, we suggest that iV2 sentences are computed by children as subordinate clauses. The 3-year-olds in our sample apply to them the canonical verb position of subordinates, i.e. verb-final. Hence, under our analysis, iV2 clauses, and more generally embedded root phenomena, constitute a clash with respect to the verb placement rule children acquire very early: V2 for main clauses and V-final for subordinate clauses (see Clahsen & Smolka 1985, Meisel 1992, Rothweiler 1993, Tracy 1995, Wexler 1998). iV2 structures represent a deviation from this rule: Although they exhibit the verb in second position, they are integrated into the host clause. We conclude that iV2 sentences are an exception to the verb-parameter and therefore may need more time to be acquired. Further research has to investigate whether 4- and 5-year-old children would exhibit the same behavior as their younger peers.

Crucially, our analysis predicts that younger children also exhibit difficulty with other embedded root phenomena, such as V2 complement clauses and V2-*weil* clauses. As in case of iV2 clauses vs. verb-final RCs, pre-school children are predicted to prefer the respective V-final counterparts. First evidence for this prediction is found in Clahsen (1990) and Rothweiler (1993). They report that embedded root phenomena appear relatively late in German-speaking children's spontaneous speech, while the respective verb-final counterparts are produced early (but see Brandt, Lieven & Tomasello 2010 for contradictory results). These predictions derived from our theoretical proposal will be investigated in more detail in a further experiment we are currently developing.

Concluding, the results from our delayed-repetition task are in line with our proposal on the syntactic structure of iV2 clauses. The high frequency of V-Change from V2 to V-final may be taken as further evidence for the proposal that the iV2 sentences are CPs placed at the topmost v/VP level where they saturate the NP. In a broader perspective, our findings suggest that acquisition data can provide evidence for theoretical claims and may contribute to a deeper understanding of syntactic and semantic phenomena.

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