

Investigating the L2 initial state

Additional evidence from the production and comprehension of Afrikaans-speaking learners of German

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This study evaluates the predictions of three theories of the L2 initial state: Full Transfer, Minimal Trees and Structural Minimality. It presents experimental evidence from a production and a comprehension/interpretation task. The tasks were conducted with Afrikaans- and with English-speaking learners of German. These data are novel in that (a) they present an experimental paradigm for accessing the receptive abilities of L2 learners at the initial state, and (b) they include evidence from learners of an L2 (German) that is typologically very close to their L1 (Afrikaans). The results are argued to provide unique support for the Full Transfer hypothesis.

1. Introduction

In 1996, Schwartz and Eubank declared the characterization of the L2 initial state “[o]ne of the more neglected topics in L2 acquisition research” (Schwartz & Eubank 1996: 1). This state of affairs has certainly changed over the past decade, which has seen a lively debate on the nature of the L2 initial state, documented and discussed extensively in White (2003). One of the central issues at stake has been the extent to which L2 learners transfer representations from their L1 into their initial state L2 grammars. Several principled theoretical positions have been put forward and defended on the basis of empirical data. Nevertheless, the debate is still very much unresolved, due in large part, we believe, to limitations in the empirical data adduced as evidence.

With very few exceptions (Hulk 1991; Bhatt & Hancin-Bhatt 2002), the data used to argue about the initial state have come from spontaneous production only. This has led to two basic problems. The first is that very early production data is often unavailable. At the very beginning of L2 acquisition, learners may well go through a ‘silent period’. Once they start speaking, they could be argued to have already passed the initial state. Thus any production data is potentially vulnerable to the criticism that

it does not really represent the initial state, making production data a less than ideal source of evidence for investigating initial state representations.

A second and more general problem with production data is how to interpret properties that are missing from a learner's speech, for example, the lack of inflectional morphology. Proponents of weak continuity have often assumed that the absence of a property in production is equivalent to the absence of its underlying grammatical representation. Yet much recent work, in particular by Lardiere and colleagues (Gavrusseva & Lardiere 1996; Lardiere 1998a, 1998b), has challenged this assumption by demonstrating that learners observe syntactic requirements associated with a functional category, even though this functional category is not overtly realized. There are good reasons to believe, therefore, that 'absence of evidence' in production does not constitute 'evidence of absence' of the corresponding syntactic representations. In consequence, great caution has to be taken when interpreting missing properties in learners' speech. This problem is particularly serious in the case of learners at an early stage, where missing properties are common and frequent. Thus once again, data from spontaneous production by themselves can rarely provide conclusive evidence with regard to syntactic representations at the L2 initial state.

A second limitation of the data used in the debate on the initial state is that it comes mostly from learners of L2s that are typologically very different from their L1s (e.g., Turkish and Korean learners of German (Schwartz & Sprouse 1994, 1996; Vainikka & Young-Scholten 1994, 1996b), Hindi learners of English (Bhatt & Hancin-Bhatt 2002)). Although these data are no doubt valuable, they need to be complemented by data from learners who are acquiring an L2 that is typologically *similar* to their L1. Data of this kind are crucial to determine the upper bound of transfer at the initial state.

The aim of the research presented here was to collect data that overcome both of these shortcomings. Firstly, our data come from language comprehension and interpretation in order to circumvent the problems surrounding production data. The original impetus for constructing such a task was the challenge presented by White (2003:75), who observed that:

to investigate the possibility that there might be a stage prior to the emergence of L2 speech in which functional categories are lacking, we need methodologies that do not rely on production data. Comprehension tasks where functional properties are manipulated are not easy to construct.

In our view, the task employed in the study reported in Section 4 of this paper (first presented in Grüter 2004) is precisely such a task. Secondly, we are presenting data from Afrikaans-speaking learners of German, that is, both the L1 and the L2 are Germanic V2 languages which are historically and typologically closely related. These data will be compared to previously reported results from English-speaking learners of German on the same experimental tasks (Grüter 2004).

The paper is organized as follows: Section 2 presents the syntactic construction used in the comprehension task, and provides an overview of the relevant properties of

the languages involved – German, Afrikaans, and English. Section 3 presents the three initial state hypotheses under investigation: ‘Full Transfer’ (Schwartz & Sprouse 1994, 1996, *inter alia*), ‘Minimal Trees’ (Vainikka & Young-Scholten 1994, 1996a, 1996b), and ‘Structural Minimality’ (Bhatt & Hancin-Bhatt 2002), as well as their predictions for the experiment reported here. Finally, the experiment itself is presented and discussed in Section 4.

2. Syntactic background

The experiment reported in this paper takes advantage of a property of constituent wh-questions in German, such as those in (1a) and (1b), namely that they are structurally ambiguous between a subject and an object question interpretation.¹

- (1) a. *Was beisst die Katze?*
 what bite.3SG the cat
 ‘What is biting the cat?’ (= subject question)
 or ‘What is the cat biting?’ (= object question)
- b. *Was hat die Katze gebissen?*
 what have.3SG the cat bitten
 ‘What has bitten the cat?’ (= subject question)
 or ‘What has the cat bitten?’ (= object question)

This structural ambiguity is the result of several independent syntactic properties of German. First, German is generally assumed to be underlyingly SOV, with a head-initial CP, head-final IP and head-final VP, given the fact that the lexical verb follows the object in embedded clauses (see (2)) and in modal constructions.

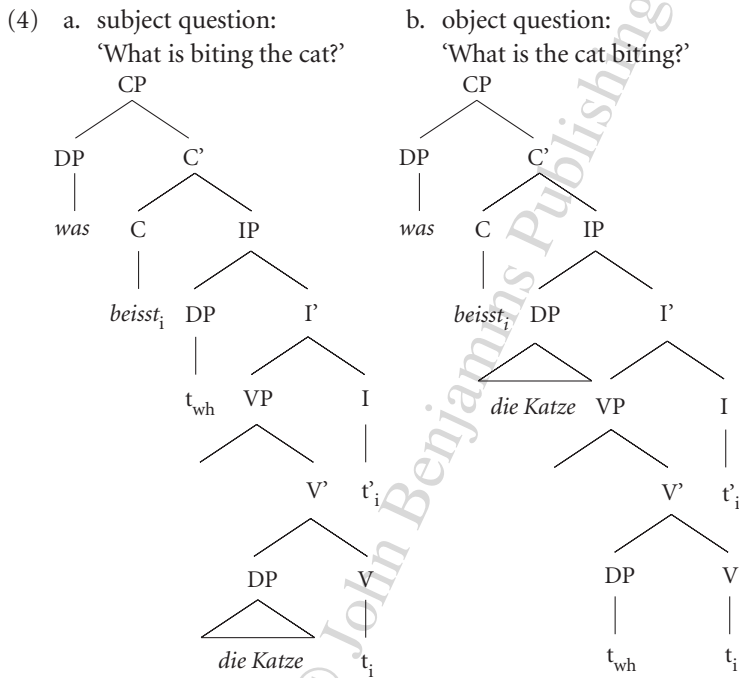
- (2) *..., weil die Katze den Hund beisst.*
 because the cat the dog bite.3SG
 ‘... because the cat bites the dog.’

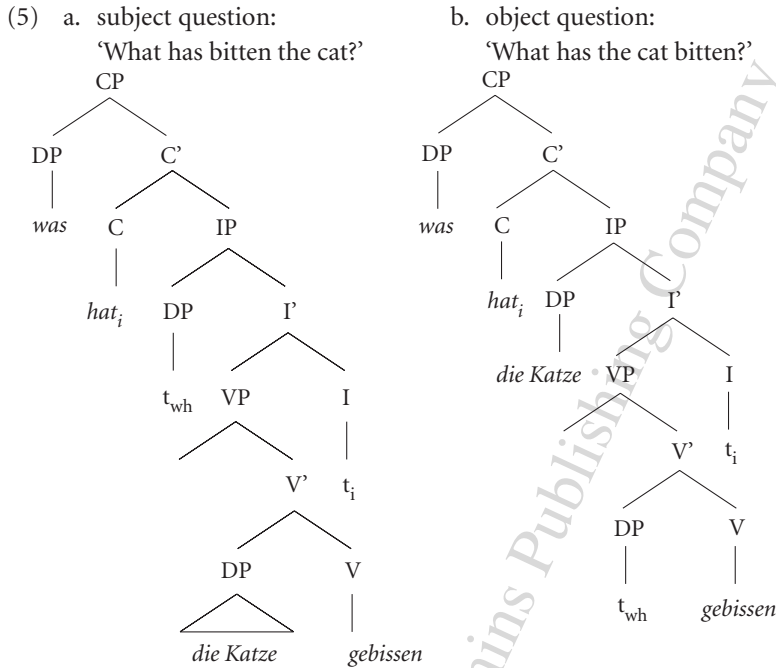
German is also a V2 language, which means that in matrix clauses, the finite verb raises into the second position, generally assumed to be C, while any other XP – be it the subject or another constituent – can fill the clause-initial position, that is, Spec-CP (3).

- (3) *Manchmal beisst die Katze den Hund t_i.*
 sometimes bite.3SG the cat the dog
 ‘The cat sometimes bites the dog.’

Furthermore, in German, wh-movement is overt and involves the wh-phrase raising into the clause-initial position (Spec-CP). As a consequence of this, together with the fact that German has a head-final VP and verb raising into C, all German wh-questions have a wh-phrase in clause-initial position and a finite verb in second position; any other noun phrases occur to the right of the finite verb.

Keeping this in mind, consider again the *wh*-questions in (1). In both the present (1a) and the perfect (1b) tense, the *wh*-phrase *was* occurs in Spec-CP, the finite verb (*beisst* in (1a) and *hat* in (1b)) occurs in C, and the DP *die Katze* can appear either in the complement position of the VP or in Spec-IP. If *die Katze* is parsed as the complement of V (see (4a) and (5a)), then this DP is parsed as the object. Consequently, the *wh*-phrase *was* must be parsed as the subject, yielding a subject question interpretation. If, on the other hand, *die Katze* is parsed in Spec-IP (see (4b) and (5b)), then this DP is parsed as the subject. Consequently, the *wh*-phrase *was* must be parsed as the object, yielding an object question interpretation.





Turning to the L1s of the learners under consideration here, Afrikaans is a Germanic language that developed out of 17th century Hollandic Dutch and is spoken in South Africa. With respect to the properties just mentioned, it is identical to German. It is generally assumed to be an SOV language with a head-initial CP, head-final IP and head-final VP, evidenced by the fact that the verb follows the object in embedded clauses (6) and modal constructions.

- (6) ..., *omdat die kat die hond byt.*
 because the cat the dog bite
 '... because the cat bites the dog.'

Afrikaans is also a V2 language: in matrix clauses the finite verb raises into C and is preceded only by an XP in Spec-CP (7).

- (7) *Soms byt_i die kat die hond t_i.*
 sometimes bite the cat the dog
 'The cat sometimes bites the dog.'

English, on the other hand, is an SVO language in which CP, IP and VP are head-initial: in embedded clauses and modal constructions, the object follows the verb. English is a non-V2 language: in matrix clauses the finite verb remains in its VP-internal position. If the subject appears in clause-initial position, the verb appears in second position. Yet if an XP other than the subject appears in clause-initial position, the verb appears

in third position because it is still in its VP-internal position and is, therefore, preceded both by the topicalized XP (in the highest position) and the subject (in Spec-IP).

Both Afrikaans and English have overt wh-movement which involves the raising of the wh-phrase into Spec-CP. Overt wh-movement should, therefore, not pose a problem to either Afrikaans or English learners of German. Wh-questions such as those in (1a) and (1b) are assumed to be assigned the syntactic representations in (4) and (5), respectively, by adult native speakers of German. Importantly, these representations require (at least) the functional projections IP and CP. Consequently, hypotheses that differ on the amount of phrase structure available to learners at the L2 initial state, make different predictions as to the availability of the subject and the object question interpretation to these learners – as discussed in the following section.

3. Initial state hypotheses and predictions

A learner's first language is widely agreed to be an important factor in L2 acquisition (but see Platzack 1996 and Epstein, Flynn, & Martohardjono 1996, 1998 for a different view). The issue currently at stake is thus not *if* there is L1 transfer, but *how much* of the L1 grammar is transferred into the L2 grammar. Three positions have been advocated in the recent literature: (i) Full Transfer (Schwartz & Sprouse 1994, 1996), which holds that the L1 grammar as a whole constitutes the L2 initial state, (ii) Minimal Trees (Vainikka & Young-Scholten 1994, 1996a, 1996b), which proposes that only lexical projections up to and including VP are transferred from the L1, and (iii) Structural Minimality (Bhatt & Hancin-Bhatt 2002), which argues for transfer up to and including IP, but excluding the CP projection. In the remainder of this section, these three hypotheses and their predictions for the present experiment are discussed in some detail.

3.1 Full Transfer

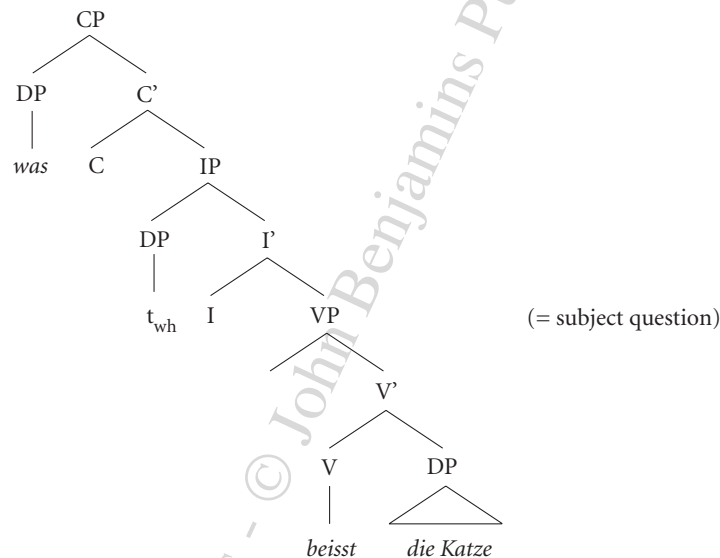
The Full Transfer position on the initial state has been defined perhaps most explicitly within Schwartz and Sprouse's (1994, 1996) 'Full Transfer/Full Access' model, where the claim is that "the entirety of the L1 grammar (excluding the phonetic matrices of lexical/morphological items) is the L2 initial state" (Schwartz & Sprouse 1996:41). Thus transfer effects are expected for both lexical and functional categories. Committing to no specific hypothesis with respect to subsequent L2 development, we will simply refer to this position as 'Full Transfer' and include in this category non-Full-Access proponents such as Bley-Vroman (1990) and Hawkins and Chan (1997), among others. *Predictions:* Under Full Transfer, the syntactic representations available to Afrikaans learners of German at the initial state will be a blueprint of the grammar of Afrikaans, including the properties of verb-raising (both V-to-I and V-to-C).

With regard to language production, the prediction is therefore that these learners will produce utterances showing SVO word order in matrix clauses.

As for the interpretation of the *wh*-questions in (1), the Afrikaans learners should arrive at the same two possible parses as the native-speaker controls ((4) and (5) above) since the representations they are transferring from their L1 happen to be exactly those of the L2. Therefore, no significant differences between the Afrikaans learners and the native-speaker controls are expected under the Full Transfer hypothesis.

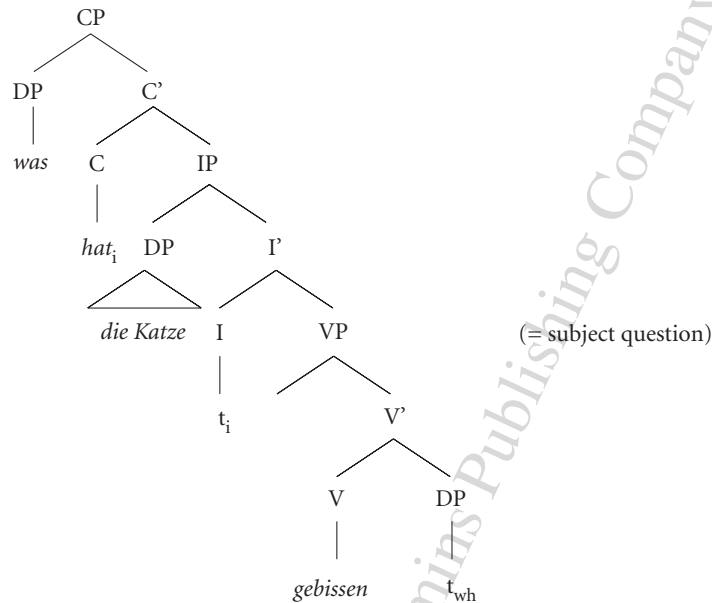
The English learners, on the other hand, are expected to perform differently on this task. With the phrase structure of English at their disposal, the only way for these learners to parse a *wh*-question in the present tense (1a), is as a subject question, as shown in the phrase marker in (8). Within such a grammar, it is impossible for a post-verbal DP, here *die Katze*, to be analyzed as a subject, thus, an object question interpretation of this string is ruled out.

- (8) English learners' syntactic representation of (1a) under the Full Transfer hypothesis.



In the perfect tense, the situation is exactly reversed. Here (see 1b), the lexical verb appears in clause-final position. Within an English-like grammar, this word order can only be achieved by moving the object of the verb to the left. The only possible parse, then, is the one in which the fronted *wh*-phrase is analyzed as the object, as shown in (9).

- (9) English learners' syntactic representation of (1b) under the Full Transfer hypothesis.



In sum, Full Transfer expects English learners to provide subject question interpretations in the present tense condition, and object question interpretations in the perfect tense condition, whereas Afrikaans learners and native speaker controls are predicted to find questions in both conditions ambiguous. The predictions of the Full Transfer hypothesis for both learner groups are summarized in Table 1.

3.2 Minimal Trees

The Minimal Trees account of the L2 initial state was proposed in the work of Vainikka and Young-Scholten (1994, 1996a, 1996b; henceforth VYS) in analogy to Weak Continuity approaches to L1 language acquisition (see e.g., Radford 1988; Guilfoyle & Noonan 1992). The assumption is that learners start out with lexical projections only. Any functional material, thus anything above VP, is assumed to be absent initially. In the case of L2 learners, VYS proposed furthermore that this initially available VP is that of the L1.

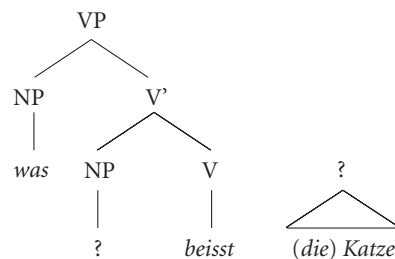
Table 1. Predictions of Full Transfer

	Present Tense	Perfect Tense
<i>L1 Afrikaans</i>	ambiguous/ both interpretations	ambiguous/ both interpretations
<i>L1 English</i>	subject question only	object question only

Predictions: Under these assumptions, the highest projection available to Afrikaans learners at the L2 initial state is a bare head-final VP. The expected word order in these learners' utterances is therefore SOV.

With regard to the interpretation task, we must consider if and how this bare head-final VP can accommodate the German wh-questions in both tense conditions. There appears to be no way to fit the present tense question (1a) into this minimal tree, as illustrated in (10).

- (10) Attempt to accommodate (1a) in the Minimal Trees grammar proposed for the Afrikaans learners.

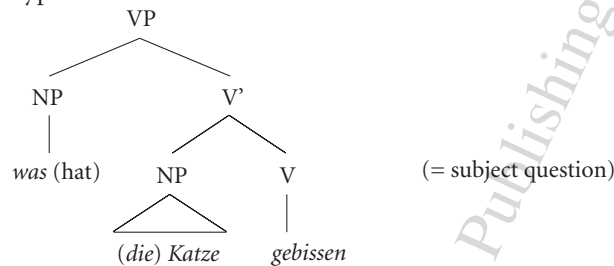


The question is what learners will do in a situation where no syntactic parse is available. One option is that they might simply guess. Thus, if given the choice between a subject and an object question interpretation, we might expect random performance. Alternatively, in the absence of a syntactic representation, learners might employ a strategy for interpretation based on non-syntactic principles, such as linear order, as was proposed for agrammatic patients by Grodzinsky (1995, and later work). Agrammatic patients were shown to have a clear preference for the first NP in a string to be the subject, and the second the object, irrespective of syntactic structure. A more recent study (Kempe & MacWhinney 1999) demonstrated this reliance on linear order in the absence of other (syntactic or morphological) cues, for unimpaired adult native speakers of German and Russian as well. If L2 learners also choose linear order as an interpretive strategy when their syntactic representations cannot accommodate a string, we would expect them to provide subject rather than object question interpretations in this case, as a result of associating the initial wh-phrase with the subject and the animal term with the object role. However, linear order does not appear to be the only non-syntactic cue for interpretation. The study mentioned above (Kempe & MacWhinney 1999) also found that animate nouns are more readily interpreted as agents than inanimate ones. In the German wh-questions under investigation here, there is a clear difference in animacy between the two noun phrases in the clause. While the animal term (e.g., *die Katze*) is clearly [+animate], the wh-phrase *was* can have either an animate or an inanimate referent. If learners use animacy as an interpretive strategy, they will prefer to associate the [+animate] animal term with the agent, and thus the subject, which leaves the patient role for the wh-phrase, resulting in an object question interpretation. Thus it seems that in those cases where the proposed syntactic representations cannot accommodate the string – here the German wh-question – no

principled predictions are possible. In consequence, we will not rely on these cases for evaluating the hypotheses under investigation.

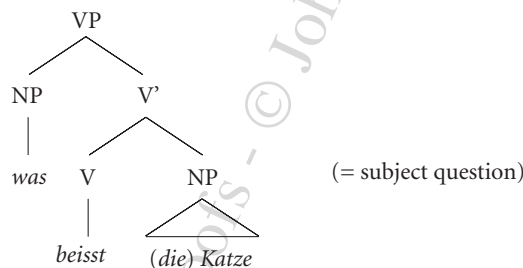
Turning now to the German question in the perfect tense (1b), we find that it can be accommodated within a bare head-final VP rather easily, as shown in (11).² With the noun phrase *die Katze* in the complement of V, this representation will yield a subject question interpretation, and as there is no room for movement, this will be the only interpretation available to Afrikaans learners in the perfect tense condition.

- (11) Afrikaans learners' syntactic representation of (1b) under the Minimal Trees hypothesis.



The syntactic representation available to English learners at the L2 initial state under the Minimal Trees hypothesis is a bare head-initial VP. This minimal tree can accommodate the German question in the present tense straightforwardly, as shown in (12), yielding a subject question interpretation. Again, as no syntactic movement is possible within such a tree, this is expected to be the only possible interpretation for English learners in the present tense condition.

- (12) English learners' syntactic representation of (1a) under the Minimal Trees hypothesis.

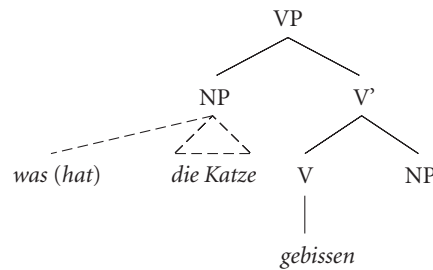


In the perfect tense condition, we face the same problem as with the Afrikaans learners in the present tense condition. As illustrated in (13), the proposed minimal tree simply cannot accommodate the string. As discussed above, this scenario does not allow for a principled prediction.

Table 2. Predictions of Minimal Trees

	Present Tense	Perfect Tense
L1 Afrikaans	cannot be parsed	subject question only
L1 English	subject question only	cannot be parsed

(13) Attempt to accommodate (1b) in the Minimal Trees grammar proposed for the English learners.



In sum, Minimal Trees makes two clear predictions: Afrikaans learners are expected to provide only subject question interpretations in the perfect tense, and English learners are expected to provide only subject question interpretations in the present tense condition. The predictions for the Afrikaans learners in the present tense, and for the English learners in the perfect tense condition cannot be clearly determined. The predictions of Minimal Trees are summarized in Table 2.

3.3 Structural Minimality

The Structural Minimality hypothesis on the L2 initial state, put forward in a recent paper by Bhatt and Hancin-Bhatt (2002), presents an intermediate position between Full Transfer and Minimal Trees. Under Structural Minimality, the assumption is that “[e]arly L2 learners analyze the clausal projection as IP”, more specifically, “all and only properties of L1 associated with the IP-system (and below) are transferred to L2 initial state” (Bhatt & Hancin-Bhatt 2002:366). Consequently, the claim is that “the CP projection is unavailable at the L2 initial state” (p. 383).

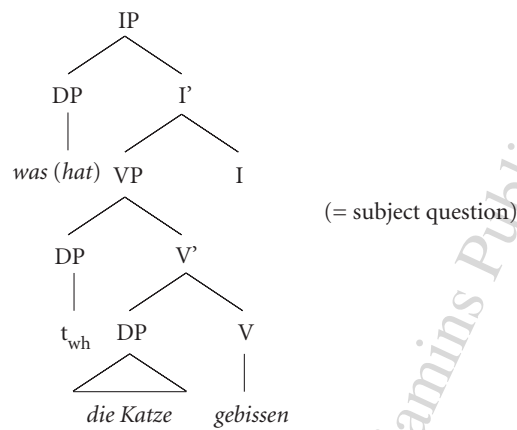
Predictions: Under these assumptions, the syntactic representations available to Afrikaans learners at the initial state consist of an Afrikaans grammar truncated above IP. Note that in this case, the verb – whether it is in V or in I – must always occur in clause-final position, as both VP and IP are head-final in Afrikaans. Thus the prediction with regard to language production is that the word order in these learners’ utterances will be SOV.

As for the interpretation task, it needs to be determined if and how this ‘IP grammar’ can accommodate the German wh-questions. In the present tense, the situation is similar to that discussed above for Minimal Trees: the proposed grammar simply cannot accommodate a post-verbal argument. Thus the prediction of Structural

Minimality for the Afrikaans learners in the present tense condition is the same as for Minimal Trees, namely that the learners will be guessing or employ an interpretive strategy based on non-syntactic principles. As discussed above, this allows for no principled prediction in this condition.

In the perfect tense, on the other hand, the string can be accommodated within an IP-only tree, as shown in (14).

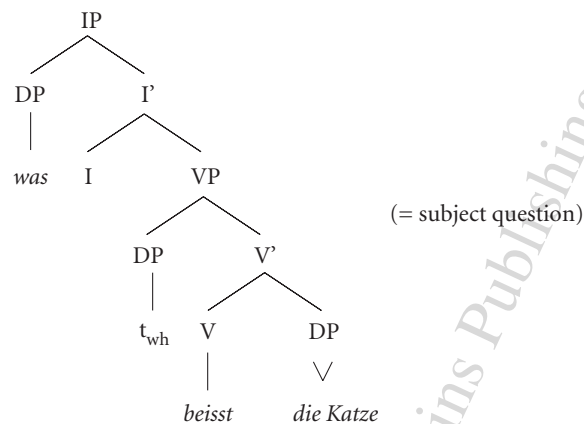
- (14) Afrikaans learners' syntactic representation of (1b) under the Structural Minimality hypothesis.



The representation in (14) will yield a subject question interpretation. What needs to be determined is whether an object question interpretation can also be obtained with this IP-only tree. We argue that the answer is no. One might imagine a representation where the *wh*-word (in Spec-IP) binds a trace in the complement of VP, and the DP [*die Katze*] remains in the specifier of VP, which would presumably yield an object question interpretation. However, a number of researchers have argued that the subject DP of a transitive verb is not allowed to remain VP-internal (see, for example, Alexiadou & Anagnostopoulou 1997; Bobaljik & Jonas 1996; and Chomsky 1995). Recall that the Structural Minimality hypothesis claims that L2 learners transfer all of the properties of IP and VP from their L1; the only properties that are, therefore, not available to the L2 learner at the initial state, are those (uniquely) linked to CP. Since this restriction against leaving the subject VP-internal is presumably not (uniquely) linked to CP, there is, under the Structural Minimality hypothesis, no reason to believe that the restriction does not hold in the initial state grammar of Afrikaans learners. Consequently, the proposed representation, in which the subject DP *die Katze* remains in Spec-VP, is illicit and should not be available to the Afrikaans learners. We, therefore, conclude that under Structural Minimality an object question interpretation of the German *wh*-question in the perfect tense is ruled out for Afrikaans learners. They are predicted to supply only subject question interpretations – derived from (14) – in this condition.

The maximal projection available under Structural Minimality to English learners at the L2 initial state is a head-initial IP, that is, the grammar of English truncated above IP. The German question in the present tense can be accommodated easily within this tree, as shown in (15), yielding a subject question interpretation.

- (15) English learners' syntactic representation of (1a) under the Structural Minimality hypothesis.



To obtain an object question interpretation, one might propose a representation where the finite verb (*beisst*) is in I, the DP [*die Katze*] in Spec-VP, and the wh-phrase binds a trace in the complement of V. Yet not only would this representation contain a VP-internal subject, which is presumably illicit (see above), but it would also require the verb to raise from V to I. As verb-raising is not a property of the L1, English, it is not expected to occur at the L2 initial state of English learners under the assumptions of Structural Minimality. We, therefore, conclude that Structural Minimality predicts that English learners will not provide object question interpretations in the present tense condition.

In the perfect tense, the only possible way to accommodate the string within the representations available to English learners would be by analyzing *die Katze* as the subject and leaving it in the specifier of VP. As argued above, this is not a licit representation. Thus the prediction of Structural Minimality for this scenario is not entirely clear. In sum, it turns out that the predictions of Structural Minimality are precisely the same as those of Minimal Trees, that is, there are two clear predictions: Afrikaans learners will provide only subject question interpretations in the perfect tense condition, and English learners will provide only subject question interpretations in the present tense. The predictions for the Afrikaans learners in the present tense condition, and for the English learners in the perfect tense condition cannot be clearly determined. The predictions of the Structural Minimality account are summarized in Table 3.

Table 3. Predictions of Structural Minimality

	Present Tense	Perfect Tense
<i>L1 Afrikaans</i>	cannot be parsed	subject question only
<i>L1 English</i>	subject question only	no clear prediction

4. The experiment

4.1 Participants

Three groups participated in this study: 17 English-speaking learners of German (mean age: 20, range: 18–30) and 17 Afrikaans-speaking learners of German (mean age: 20, range: 18–27), as well as a control group of 15 native speakers of German (mean age: 37, range: 15–65). The L1 control group was tested in Switzerland, and the L2 learners were recruited from German beginner classes at McGill University in Montreal (the English learners) and the University of Stellenbosch in South Africa (the Afrikaans learners). At the time of testing both groups had received about 30 hours' instruction in German (between 8 and 10 weeks at 3 hours per week in the case of the English learners, and between 6 and 8 weeks at 4 hours per week in the case of the Afrikaans learners). None of the learners, in either group, had had significant prior exposure to German. All English learners identified English as their first and dominant language. Although all of the Afrikaans learners also have English as a second language, they all grew up in Afrikaans-speaking homes (in which both parents and any other caretakers spoke Afrikaans only) and identified Afrikaans as their first and dominant language.

4.2 Procedure

All participants completed a picture interpretation task (see below for detail), which took approximately 30 minutes. The second language learners also participated in a short (5–10 minutes) elicited production task, which was administered immediately following the picture interpretation task. In this task, learners were presented with a picture story. They were asked to tell the story and/or describe the pictures in German as best they could. The learners' utterances were tape-recorded and subsequently transcribed by the experimenter. The aim of this task was to establish that, at the time of testing, the L2 learners were at the initial state of L2 acquisition as defined by the Minimal Trees account (see Section 4.3.1 below), that is, to ensure that these learners constitute the right population for testing the hypotheses at stake.

In the picture interpretation task, participants were presented with visual stimuli (see Figure 1 for an example), which were described to them by the experimenter following a predetermined script. Prior to the task, participants were made familiar with the vocabulary items used in the experiment. Labeled pictures of the relevant animals remained within view for the entire testing session. Other vocabulary was translated

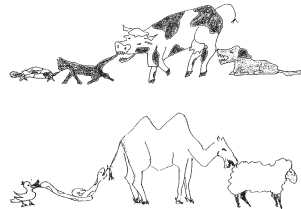


Figure 1. Example of visual stimulus

and explained at the request of participants. Following the description of each picture, the experimenter proceeded with the questions (see Grüter 2004 for a more detailed description of the methodology).

In a first round of questions – the PRESENT TENSE CONDITION – each picture was followed by four questions: two (ambiguous) constituent wh-questions in the present tense (see (16) for an example) and two distractors. Participants replied non-verbally by simply checking the correct answer(s) on a multiple choice answer sheet provided.

- (16) *Was beisst die Kuh?*
 what bite.3SG the cow
 ‘What is biting the cow?’ / ‘What is the cow biting?’

Participants were instructed that there may be cases where more than one answer is possible, and that they should check every answer that constitutes a possible reply to the question asked. Half of the distractor questions were constructed such that they also had two possible answers. There were five visual stimuli, making for a total of 10 constituent wh-questions in the present tense.

Following this, there was a second round of questions – the PERFECT TENSE CONDITION – in which the same five stimuli were used again in a disguised memory task. This time, participants were asked to memorize the picture, which was then removed before two constituent wh-questions in the perfect tense (17) were asked.³

- (17) *Was hat die Schlange gebissen?*
 what have.3SG the snake bitten
 ‘What has bitten the snake?’ / ‘What has the snake bitten?’

After trying to answer the two questions from memory, participants were shown the picture again, and the two questions were repeated. They then had the opportunity to correct their answers if they found that they had not memorized the pictures correctly. Only the corrected answers were considered in computing the results, thus eliminating memory as a factor. A total of ten constituent wh-questions in the perfect tense were included in the task. Two versions of the task were created by varying the order of presentation.

Table 4. Distribution of verbal elements (cf. VYS 1996a: 152, Table 4)

learner	total	main verbs	<i>hat</i>	<i>ist</i>	other copula	aux	modal
A1	6	3	0	1	0	2	0
A2	0	0	0	0	0	0	0
A3	11	6	1	4	0	0	0
A4	7	7	0	0	0	0	0
A5	10	8	2	0	0	0	0
A6	7	7	0	0	0	0	0
A7	4	4	0	0	0	0	0
A8	4	3	0	1	0	0	0
A9	6	6	0	0	0	0	0
A10	2	1	0	1	0	0	0
A11	2	2	0	0	0	0	0
A12	3	2	0	1	0	0	0
A13	4	1	0	3	0	0	0
A14	4	4	0	0	0	0	0
A15	10	6	1	1	0	2	0
A16	5	5	0	0	0	0	0
A17	3	3	0	0	0	0	0
TOTAL	88	68	4	12	0	4	0

4.3 Results

4.3.1 Elicited production

As all of the learners had had very limited exposure to German at the time of testing, it is not surprising that they had great trouble producing any German speech. Nevertheless, the Afrikaans learners produced a total of 88 verbal utterances as a group. Following VYS's (1996a: 151) procedure for determining whether learners are at the VP-stage, this corpus excludes: "[u]tterances either lacking a verb or containing only a verb and nothing else as well as imitations or clear idiomatic phrases". Table 4 shows the distribution of verbal elements in the Afrikaans learners' relevant utterances.

To determine whether the Afrikaans learners were at VYS's VP-stage at the time of testing, the production data were analyzed for the following five properties: *lack of auxiliaries and modals*, complementizers, *wh-movement*, an agreement paradigm, and verb raising (VYS's own diagnostics, see VYS 1996b: 16). As can be seen in Table 4, none of the learners produced any modals, while only two of the learners produced two auxiliaries each (see e.g., (18) below). Furthermore, this corpus does not contain any overt complementizers or evidence for *wh-movement* (although it should be noted that, as was the case in VYS's study, the elicitation context was not conducive to the production of interrogatives). With respect to the acquisition of an agreement paradigm, consider Table 5, which shows the proportion of correct agreement on main verbs.⁴

Overall, only 8.8% of main verbs were correctly inflected for agreement and although the percentage of correct agreement varies between 0% and 33%, no learner

Table 5. Agreement on main verbs (cf. VYS 1996a: 154, Table 5)

learner	main verbs*	correct agreement
A1	3	1 (33%)
A2	0	0 (0%)
A3	6	1 (17%)
A4	7	1 (14%)
A5	8	1 (13%)
A6	7	0 (0%)
A7	4	0 (0%)
A8	3	0 (0%)
A9	6	0 (0%)
A10	1	0 (0%)
A11	2	0 (0%)
A12	2	0 (0%)
A13	1	0 (0%)
A14	4	0 (0%)
A15	6	1 (17%)
A16	5	1 (20%)
A17	3	0 (0%)
TOTAL	68	6 (8.8%)

* excluding suppletive forms

produced more than one instance of correct agreement on a main verb. Thus, according to VYS's criterion of 60% correct agreement, these learners have clearly not yet acquired the agreement paradigm for German. In sum, based on four out of the five diagnostics employed by VYS, the Afrikaans learners in this study are clearly still at the initial state.

As for the fifth criterion – verb raising – we found five clear instances in this corpus, produced by five different learners. One involves the order [topicalized XP – V – S] (18) and four involve the verb preceding a verbal particle (e.g., (19)). Yet given the almost complete absence of VYS's other four diagnostic properties, we do not believe that these examples alone constitute sufficient evidence for assuming that the Afrikaans learners in this study are anywhere beyond the initial state of L2 acquisition. Moreover, it is interesting to note that the word order in these utterances is precisely that of the L1, Afrikaans. As such, these examples may in fact present additional evidence in support of the Full Transfer hypothesis, which – contrary to Minimal Trees – precisely predicts such utterances to occur at the initial state, as the Afrikaans learners are assumed to transfer all functional projections as well as the L1 property of verb raising into their L2.

- (18) *Und das hab die Mädchen die Geschirr gebreak.*
 and this have.1sg the girl the dishes broken
 'And here the girl has broken the dishes.' (Participant A1)

- (19) *Sie mache die Tür zu.*
 she make.1SG the door closed-PARTICLE
 'She is closing the door.' (Participant A14)

The English learners' production data are very similar to those of the Afrikaans learners in that the corpus does not include any evidence for verb raising and none of the learners produced any auxiliaries, modals, overt complementizers or utterances involving wh-movement. Furthermore, only 40% of the main verbs produced by the English learners were correctly inflected for agreement and, although this is much higher than the 8.8% correct agreement of the Afrikaans learners, it is still well below VYS's 60% cut-off point. (The reader is referred to Grüter 2004 for a detailed analysis of the English learners' production data.) These data show that, like the Afrikaans learners, the English learners in this study are at the initial state of L2 acquisition. Consequently, the results obtained from the Afrikaans learners and the English learners on the interpretation task in this study constitute the relevant evidence for testing the three initial state hypotheses under consideration.

The primary aim of the production task was to establish that the learners in this study were at the initial state of L2 acquisition. This is confirmed by the results presented above. In addition, these production data from the Afrikaans learners also provide direct evidence bearing on the three hypotheses under consideration: recall from Section 3 above that both Minimal Trees and Structural Minimality predict SOV word order in these learners' utterances, while Full Transfer predicts SVO order (in matrix clauses). Table 6 shows the order of verb and complement in the learners' relevant utterances.⁵

Table 6. Order of verb and complement (cf. VYS 1996a:157, Table 7)*

learner	total	VO	VX	total V-initial VP	OV	XV	total V-final VP
A1	4	1	1	2	2	0	2
A2	0	0	0	0	0	0	0
A3	6	4	2	6	0	0	0
A4	7	4	3	7	0	0	0
A5	8	6	2	8	0	0	0
A6	7	2	5	7	0	0	0
A7	5	5	0	5	0	0	0
A8	5	5	0	5	0	0	0
A9	5	4	1	5	0	0	0
A10	1	1	0	1	0	0	0
A11	0	0	0	0	0	0	0
A12	3	2	1	3	0	0	0
A13	1	1	0	1	0	0	0
A14	1	1	0	1	0	0	0
A15	8	6	2	8	0	0	0
A16	3	3	0	3	0	0	0
A17	0	0	0	0	0	0	0
TOTAL	64	45	17	62	2	0	2

* V = verb; O = object; X = other constituent

As can be seen in Table 6, of the 64 utterances that were relevant to this analysis, 62 (i.e. 97%) were instances of SVO. The only two instances of SOV (produced by participant A1) involve an auxiliary in second position and the main verb in final position. Consequently, the predictions made by Minimal Trees and Structural Minimality are not borne out; Full Transfer alone makes the correct prediction for the production data.

4.3.2 Picture identification

Replies to the ambiguous constituent wh-questions in both test conditions (PRESENT TENSE, PERFECT TENSE) were coded as four types: (i) subject question interpretation checked only ('subject only'), (ii) object question interpretation checked only ('object only'), (iii) both subject and object question interpretations checked ('both'), and (iv) neither. Figures 2, 3 and 4 show the results for the native speakers, the Afrikaans learners, and the English learners respectively.

Frequencies of answer types were analysed in a three-way learner (native speakers, Afrikaans learners, English learners) by tense condition (present, perfect) by answer type (subject only, object only, both, neither) ANOVA. The main effect for answer type was significant ($F(3,138) = 36.77, p < .0001$), as were all interaction effects. In particular, the three-way interaction between the variables was significant ($F(6,138) = 19.89, p < .0001$). Subsequent pairwise comparisons using the Tukey HSD procedure ($\alpha = .05$) were conducted. An additional 3-way tense-by-answer-type-by-order of presentation (version A, version B) ANOVA revealed no significant effects for order of presentation.

Neither in the native speaker group nor in the Afrikaans learner group were there any significant differences between the two tense conditions. In the English learner group, on the other hand, pairwise comparisons revealed significant differences for an-

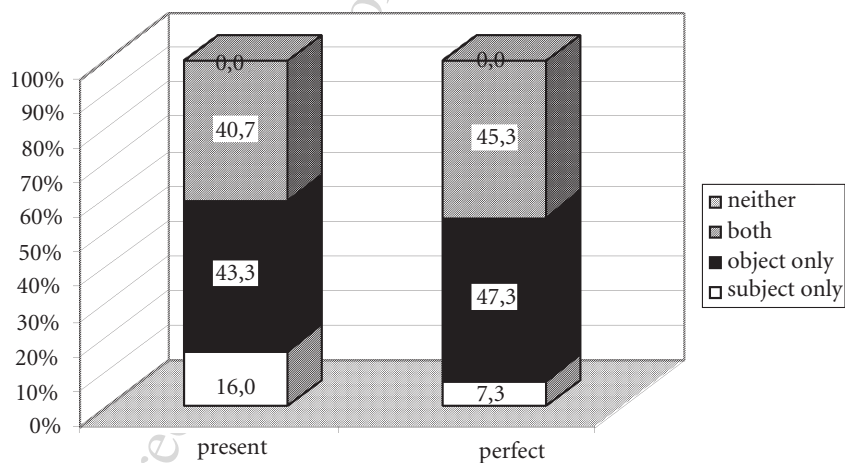


Figure 2. Interpretation task: Results of the L1 control group

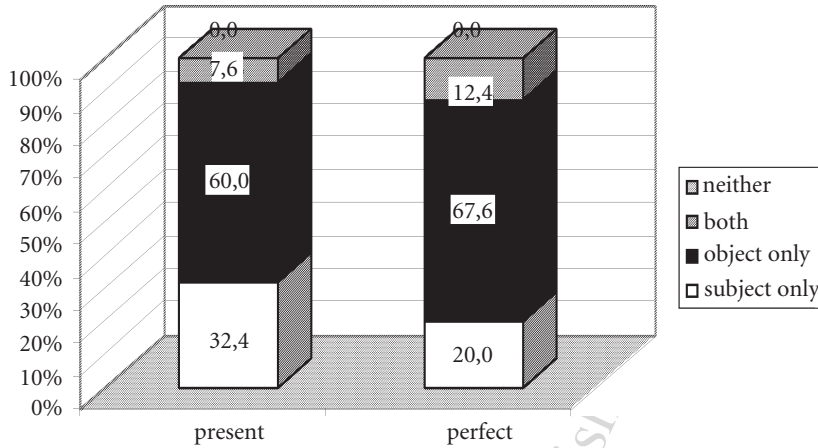


Figure 3. Interpretation task: Results of the Afrikaans learner group

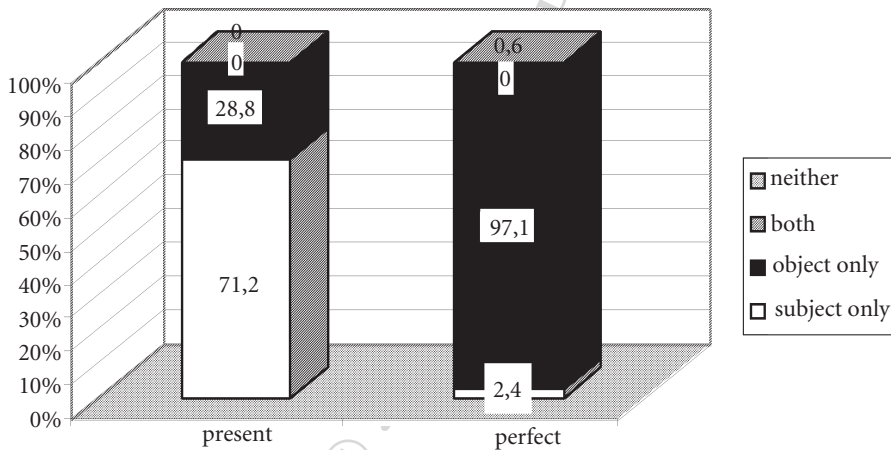


Figure 4. Interpretation task: Results of the English learner group

swer type according to tense condition, with a subject question interpretation being the most frequent answer type in the present tense condition, and an object question interpretation constituting the favoured answer type in the perfect tense condition. No significant differences were found between the native speakers and the Afrikaans learner group, except for the answer type ‘both’: the Afrikaans learners supplied both possible answers significantly less often than the native speakers, in both tense conditions.

As shown in Figure 2, the native speakers supplied both possible answers in 40-45% of cases. It appears, therefore, that the ambiguity of these questions is not always immediately obvious even to native speakers. In the cases where only one answer was provided, the object question interpretation was provided significantly more often

than the subject question one, in both tense conditions (present tense: 43.3% object questions vs. 16.0% subject questions; perfect tense: 47.3% object questions vs. 7.3% subject questions). This performance suggests that there is an overall bias towards an object question interpretation in this experiment, which was not expected. We believe that this bias is a result of the animacy of the noun phrases in the *wh*-questions used here. As discussed above, there appears to be a more general preference for animate NPs to be associated with the agent role. As the animal term in the experimental questions is always clearly [+animate] while the *wh*-phrase is underspecified for animacy, the animal term will be more readily associated with the agent role, and thus the subject, which leaves the *wh*-phrase for the patient, that is, the object. This distribution of thematic roles leads to an object question interpretation. It is this animacy-based preference that we believe underlies the native speakers' bias towards an object question interpretation, a bias that is independent of tense as it extends over both tense conditions.⁶

Interestingly, the same object bias can be observed in the Afrikaans learner group (see Figure 3). In cases where they did not provide both possible answers, these learners provided an object question interpretation significantly more often than a subject question one, also in both tense conditions (present tense: 60.0% object questions vs. 32.4% subject questions; perfect tense: 67.6% object questions vs. 20.0% subject questions). It appears, then, that the same animacy-based strategy is at work in the Afrikaans learner group, too. Overall, the most frequent answer provided by the Afrikaans learners in both tense conditions is an object question interpretation.

The performance of the English learner group differs significantly from that of both the native speakers and the Afrikaans learners. The most marked difference lies in their performance in the present tense condition, where their most frequent answer type is the subject question interpretation (71.2%), an interpretation that native speakers and Afrikaans learners provided at much lower rates (16.0% and 32.4%, respectively). Moreover, only in the English learner group do we find a significant difference between performance in the present versus the perfect tense condition: whereas the subject question interpretation was their most frequent answer type in the present tense condition, object question interpretations were by far the most frequent answer type in the perfect tense condition (97.1%).

4.4 Discussion

First and foremost, the results of the production task confirmed that the learners in this study are at the initial state of L2 acquisition, and thus represent the right population for testing the three hypotheses under investigation – Full Transfer, Minimal Trees and Structural Minimality. In addition, the Afrikaans learners' production data provided evidence for the Full Transfer hypothesis, as only this hypothesis made the correct prediction with respect to word order.

The picture interpretation task was designed to obtain further evidence allowing to decide between these three hypotheses. As discussed in Section 3, there are only two

learner/tense-condition combinations for which all three hypotheses make principled predictions (cf. Tables 1–3 above): the English learners in the present tense condition, and the Afrikaans learners in the perfect tense condition. All three hypotheses predict that English learners of German will interpret the *wh*-questions in the present tense as subject questions only. This prediction was clearly borne out with the English learners providing a subject question interpretation in 71.2% of cases. The significance of this result is further underscored by the fact that we found a general bias in the opposite direction, i.e., towards object question interpretations, in this experiment. Moreover, neither the Afrikaans learners nor the native speaker controls provided subject question interpretations at high rates in this tense condition (32.4% and 16.0%, respectively). The performance of the English learners in the present tense condition can therefore be taken as support for all three of the hypotheses under investigation here.

In the case of the Afrikaans learners in the perfect tense condition, however, predictions differ: while both Minimal Trees and Structural Minimality predict that these learners will favour a subject question interpretation, Full Transfer predicts that Afrikaans learners will behave like native speakers and find the questions ambiguous. In this case, our results provide evidence against both Minimal Trees and Structural Minimality: contrary to their predictions, the Afrikaans learners provided a subject question interpretation in only 20.0% of cases. By far their most frequent reply was an object question interpretation (67.6%). In 12.4% of cases they checked both possible answers. One might argue that the fact that they detected the ambiguity only 12.4% of the time speaks against the prediction of Full Transfer. Note, however, that native speakers themselves checked both possible answers in only 45.3% of cases in this tense condition. While this is still a significantly higher rate than that in the Afrikaans learner group, it shows that the ambiguity of the questions in this experiment is not immediately obvious. Given that not even all native speakers immediately saw the ambiguity, it is perhaps not surprising that second language learners at the initial state only rarely detected it. Importantly, however, the Afrikaans learners behaved just like the native speakers in cases where they provided only one interpretation: they were much more likely to provide an object question (67.6%) rather than a subject question (20.0%) interpretation. The prediction of Full Transfer that the Afrikaans learners would perform like the native speakers is therefore borne out.

To sum up so far: while the evidence from the English learners in the present tense condition provides support for all three initial state hypotheses, the results from the Afrikaans learners in the perfect tense condition are contrary to the predictions of Minimal Trees and Structural Minimality, and support the Full Transfer hypothesis alone. As discussed above, neither Minimal Trees nor Structural Minimality can make principled predictions for the remaining two learner/tense-condition combinations. Full Transfer, on the other hand, can. Given that Full Transfer is the only hypothesis that has received full support so far, it is important to see whether its predictions in these remaining cases are also borne out.

For the Afrikaans learners in the present tense condition, the prediction of Full Transfer was the same as for the perfect tense condition, namely that these learners

would perform like the native speakers, that is, find the questions ambiguous. As in the perfect tense condition, the results show that the Afrikaans learners did not detect the ambiguity often (7.6%, see Figure 3), which – as discussed above – is not surprising given that native speakers also failed to detect it in many cases. What is important, however, is that in this tense condition as well, the Afrikaans learners performed like the native speakers in providing an object question interpretation much more often (60.0%) than a subject question one (32.4%). The performance of these learners is therefore in accordance with the predictions of the Full Transfer hypothesis.

Finally, the prediction of Full Transfer for the English learners in the perfect tense condition was that they would provide an object question interpretation only. Our results provide overwhelming support for this prediction: in 97.1% of cases, the English learners provided this response. Thus the Full Transfer hypothesis of the L2 initial state is supported by the full range of results obtained in this experiment.

5. Conclusion

The experiment discussed in this paper was specifically designed to determine the amount of functional structure available to learners at the initial state of L2 acquisition, that is, to determine how much functional structure is transferred from the L1. The interpretation task in this study addresses one of the biggest problems researchers encounter in investigating the interlanguage grammars of beginner L2 learners: if these learners are tested “too soon”, they will not be able to perform most production and judgement tasks, but if they are tested when they are finally able to perform such tasks, it might be “too late”, that is, the learners are likely to have moved beyond the initial state. The interpretation task used here overcomes this problem by only requiring learners to answer simple, multiple-choice questions with the aid of pictures and with all vocabulary items at hand. Despite the minimal requirements for the learner, the results of this task bear directly on the predictions of three initial state hypotheses presented in the recent literature: Full Transfer, Minimal Trees and Structural Minimality.

In a first study, reported in Grüter (2004), a group of English-speaking learners of German at the initial state completed the same production and interpretation tasks, the results of which were argued to provide evidence in support of Full Transfer and against Minimal Trees. In the present paper, an additional group of initial state L2 learners of German completed these tasks, their L1 being Afrikaans, which differs from English in that it is identical to German with respect to the syntactic properties relevant to the interpretation task. The results from both learner groups were analyzed in view of the predictions made by Full Transfer, Minimal Trees, as well as an additional initial state hypothesis, namely Structural Minimality. Results from both the production and the interpretation task ran counter to predictions made by Minimal Trees and Structural Minimality, while the Full Transfer hypothesis was supported by the full range of results. Recall, however, that the wider aim of the experiment presented in this paper

was not merely to adduce evidence in favour of one hypothesis over the others, but to address the challenge presented in White (2003:75, see above) and present a novel methodology for tapping into L2 grammars at the very initial state, a methodology that we hope will be further improved and refined in future research.

Notes

1. Because different case-marking on the determiner would disambiguate the two interpretations in the case of masculine nouns, only feminine and neuter nouns are used in the experimental sentences.
2. We assume that the lexical constituents (the wh-phrase, the noun phrase and the lexical verb) will take precedence over functional ones in the competition for the three available positions in this tree. In consequence, the auxiliary *hat* will have to remain unanalysed.
3. Administering the Perfect Tense Condition as a disguised memory task served two purposes: first, to make the use of the perfect tense pragmatically more appropriate (as the picture being referred to is no longer within view when the question is asked), and second, to divert participants' attention away from language.
4. Following VYS's (1996a) procedure for analyzing agreement, only main verbs were considered, and verbs requiring suppletive forms such as *haben* ('to have') were excluded.
5. As in VYS (1996a), only main verbs were considered, and utterances consisting of a subject and a verb only were excluded.
6. If this explanation is on the right track, the observed object-question bias should disappear if the target questions are reformulated as in (i), where both DPs are [+animate].
 - (i) *Welches Tier beißt das Kamel?*
 which animal bite.3SG the camel
 'Which animal is biting the camel?' / 'Which animal is the camel biting?'

A replication of the present experiment using questions such as (i) would be a desirable task for future research.

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