Child L1, Child L2 and Adult L2 Acquisition: Differences and Similarities

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Second language acquisition research often compares non-native acquirers (L2ers) with other learner populations. Such cross-population comparisons include: (i) child native language (L1) acquisition–child L2 acquisition (e.g. Gavryseva 2000; Weerman et al. 2003); (ii) child L2–adult L2 (e.g. Cancino et al. 1978; McDonald 2000; Montrul 2002; Weerman et al. 2003) and (iii) child L1–adult L2 (Cancino et al. 1978; Jordens 1988; Neelaman and Weerman 1997, a.o.). Focussing on the second of these comparisons, this paper presents an analysis of production data from English-speaking child and adult non-native acquirers (L2ers) of Dutch. The specific property of Dutch to be acquired, direct object scrambling over negation, is a phenomenon which instantiates interaction between different modules of language and as such, may be informative with respect to the syntax-semantics interface in L2 acquisition. On the basis of experimental data on the (non-) scrambling of definite DP objects, specific and non-specific indefinite DP objects, two claims are made: (i) English-speaking adult and child L2ers go through the same developmental sequences in their acquisition of direct object scrambling in Dutch, and (ii) non-targetlike scrambling results from missing syntactic knowledge.

The outline of this paper is as follows: section 1 explains the rationale behind the adult L2–child L2 comparison. This is followed in section 2 by a brief summary of scrambling over negation. Section 3 presents the subjects, methodology and results of the L2 experiment. In the discussion in section 4, we consider what the results tell us about L2 acquisition, what they tell us about L2 scrambling and how these results compare to L1 acquisition data.

1. Child L2–Adult L2 acquisition compared

For the purposes of the present paper, a child L2er will be defined as a second language learner who was first exposed to the L2 between the ages of 4 and 7 years. The lower boundary is set at 4 years as it is generally assumed that most of the child’s L1 is in place at this age. The upper bound fixed at 7 years because this has been suggested in the literature to be the start of a decline in non-nativelike attainment (*refs*).

The rationale behind the child L2–adult L2 comparison made here is based on work by Schwartz (1992; 2003a; 2003b). Child L2 acquisition, Schwartz claims, could provide the missing link in answering the question of whether adult L2 acquisition is driven by the same innate language acquisition device as L1 acquisition, namely Universal Grammar, or whether it is based on general learning mechanisms (e.g. distributional analysis, analogy and hypothesis
formation and testing (Bley-Vroman 1989); principles of information processing and general problem solving (Clahsen and Muysken 1989)). The argument works as follows: assuming that child L2 acquisition is driven by UG (based on evidence that young L2ers are generally more successful than adult L2ers, in terms of ultimate attainment (for example Johnson and Newport 1989 a.o. **other refs**)) and assuming that the general learning principles in question are only relevant to adult L2ers, comparing developmental sequences of child L2ers with those of adult L2ers, while holding the L1 constant, will provide evidence for or against UG involvement in L2 acquisition. If there is(n’t) L1 transfer, it should(n’t) be found for both groups. If UG is involved in adult L2 acquisition, similar developmental sequences between adult and child L2ers are predicted to occur. If adult L2 acquisition stems from something other than UG, i.e. general learning mechanisms, whereas child L2 acquisition stems from UG, dissimilar developmental sequences are predicted to occur.1 These predictions are tested with data from English-speaking adult and child L2ers of Dutch.

2. The syntactic and semantic properties of scrambling

Direct object scrambling in Dutch involves the movement of a direct object DP from its immediately preverbal base position (1) over a sentential adverb (2) (e.g. De Hoop 1992). For definite DP objects, this is generally optional.2

(1) Willem heeft twee keer [de bal] gegooid.
   William has two times the ball thrown
   ‘William threw the ball twice.’

(2) Willem heeft [de bal], twee keer t, gegooid.
   William has the ball two times thrown
   ‘William threw the ball twice.’

There are, however, instances where interpretive differences arise between scrambled and non-scrambled variants, with the consequence that only one of the two is possible. In (3), the definite DP object has scrambled over the negator, niet, and as such, the utterance expresses sentential negation. The object in (4),

1. It might be objected that similar developmental sequences could also be the result of both groups using problem-solving or general learning mechanisms. If this were the case, we would expect the more cognitively mature adult L2ers to be more successful than the less cognitively mature child L2ers (Schwartz 1992: 8 footnote #6). In general, L2 data indicate otherwise, however.
2. There are several factors which affect native-speaker judgements of scrambled sentences, including: surrounding context, stress, the (in)definiteness of object (De Hoop 2000; Neeleman and Reinhart 1998; Reinhart 1995).
on the other hand, remains unscrambled and the meaning is one of constituent
negation, as indicated by the continuation.

(3)   Willem heeft [de bal], niet i, geGOOID       [sentential negation]
      William has the ball not thrown
      ‘William didn’t throw the ball.’

(4)   Willem heeft niet [de BAL] gegooid …       [constituent negation]
      William has not the ball thrown
      … hij heeft de FRISBEE gegooid
      he has the frisbee thrown
      ‘William didn’t throw the ball. He threw the frisbee.’

The difference in interpretation between scrambled and non-scrambled objects is
even clearer with indefinite DP objects (Diesing 1992; De Hoop 1992; cf. Ruys
1992). The non-scrambled variant in (5) refers to any ball, whereas the
scrambled variant in (6) can only refer to a particular ball.

(5)   Willem heeft [geen (niet+een) bal] gegooid       [non-specific]
      William has no (not + a) ball thrown
      ‘William didn’t throw a(ny) ball.’

(6)   Willem heeft [een bal] niet gegooid       [specific]
      William has a ball not thrown
      ‘William didn’t throw a (particular) ball.’

English, the L1 in question, does not have scrambling. The difference
between sentential and constituent negation with definite DP objects is realised
via stress, on the verb, in the former case (7), and on the object, in the latter (8).

(7)   William didn’t THROW the ball       [sentential negation]
(8)   William didn’t throw the BALL       [constituent negation]
      … he threw the FRISBEE

The difference between a specific and non-specific reading of an indefinite DP
object need not be overtly realised in syntax. Hence, (9) can mean that William
did not throw any ball or that he didn’t throw a particular ball.

(9)   William didn’t throw a BALL.

3. The study
3.1. Subjects
A total of 33 native-speakers of English were tested: 11 child L2ers and 20 adult L2ers. The age at time of testing ranged between 5 and 50 years, the age at time of first exposure between 4 and 32 years and length of exposure between 2 months and 27 years. All subjects were resident in The Netherlands and they had all had some instruction and varying amounts of naturalistic input. Eleven native speaker controls (average age 20;6) were also tested.

3.2. Methodology

A combination of a truth value judgement task and elicited production task ((partial) replication of Schaeffer (2000) on L1 Dutch) was used to obtain utterances where scrambling could (not) occur. There were six items in each of three conditions: definite DP (target: scrambled), specific indefinite DP (target: scrambled) and non-specific indefinite DP (target: non-scrambled). The verbs which were used were: lezen ‘to read’, opeten ‘to eat (up)’, vangen ‘to catch’, plukken ‘to pick’, uitknippen ‘to cut out’ and natekenen ‘to copy’. There were also 20 fillers. An example of the definite DP condition is given in (10).

Context: Bert is aan het knutselen. Hij wil iets uitknippen.

Bert is at the making-things he wants something out-cut

‘Bert is making things. He wants to cut something out.’

Bert: Kijk, een teddybeer. Nou, die vind ik helemaal niet mooi.

look a teddybear well that find I totally not pretty

‘Look, a teddy bear. Well, I don’t think that’s very pretty at all’.

Dus die ga ik NIET uitknippen.

so that go I not out-cut

‘So I’m NOT going to cut that out.’

Puppet: Bert gaat de teddy beer UITKNIPPEN.

Bert goes the teddybear out-cut

‘Bert is going to cut out the teddy bear.’

Experimenter: Nee hé? Wat gebeurt er echt?

no huh what happens there really

‘No, huh? What’s really going to happen?’

Target answer: Bert gaat de teddybeer NIET uitknippen.

Bert goes the teddybear not out-cut

‘Bert’s NOT going to cut out the teddy bear.’

Non-target answer: Bert gaat NIET de teddybeer uitknippen.

Bert goes not the teddybear out-cut
Spontaneous data were also collected using a picture description task (following Whong-Barr and Schwartz 2002). This was used to give an approximate indication of L2 proficiency in order to be able to infer developmental stages in the cross-sectional scrambling data. The proficiency scores (child/adult L2ers together) ranged from 0 – 28.63.

3.3. Results

3.3.1. Definite DP condition

We first consider the definite DP condition. The native-speaker controls scrambled virtually all (59/60 (98.3%)) responses which contained a definite DP and negation. The L2 results are given in Table 1 (see Unsworth 2003 for individual results).

Table 1. Scrambling of definite DP objects over negation

<table>
<thead>
<tr>
<th>Condition</th>
<th>Definite DP</th>
<th>Scrambling</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>+/-</td>
<td>+</td>
</tr>
<tr>
<td>Adults</td>
<td></td>
<td>0%</td>
<td>0/29</td>
<td>26.7%</td>
<td>4/15</td>
</tr>
<tr>
<td>subjects (n)</td>
<td>6</td>
<td>3</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>proficiency score (average)</td>
<td>15.74</td>
<td>21.70</td>
<td>25.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children</td>
<td></td>
<td>0%</td>
<td>0/34</td>
<td>38.9%</td>
<td>7/18</td>
</tr>
<tr>
<td>subjects (n)</td>
<td>8</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>proficiency score (average)</td>
<td>14.61</td>
<td>17.81</td>
<td>23.37</td>
<td></td>
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</tr>
</tbody>
</table>

Of the 33 adult and child L2ers, 12 always scramble, i.e. they are nativelike, producing utterances as in (11).

(11) Koekiemonster gaat [het boek] niet lezen
Cookiemonster goes the book not read
‘Cookiemonster isn’t going to read the book.’

When the L2ers fail to scramble, they produce two types of non-scrambled utterances:

(12) Koekiemonster gaat niet [het boek] lezen
(13) Koekiemonster gaat niet lezen [het boek]

In (12), the object remains unscrambled, which is not possible in this context. The word order in (13), Negation-Verb-Object, reflects the relative ordering of these elements in English, the L1. For this reason, it is assumed that utterances such as this represent a stage of L1 transfer.
It is those subjects who never scramble, i.e. who only produce utterances such as (12) and/or (13), who have the lowest average proficiency score (as calculated on the basis of the picture description task (see Unsworth 2003 for details)), namely 15.09 (range: 0-24.27). For those subjects who sometimes scramble, this score is slightly higher, at 19.47 (range: 14.26-27.86), and it is highest for those who always scramble, namely 25.47 (range: 20.63-28.63). There is a relatively high correlation between these proficiency scores and the scrambling results \( r = 0.61 \), (Pearson product-moment correlation). Consequently, the following developmental trajectory is proposed for the acquisition of scrambling over definite DP objects over negation:

(14)  
Stage 1: Negation-Verb-Object  
Stage 2: Negation-Object-Verb  
Stage 3: Object-Negation-Verb

Further support for this division into stages comes from the observation that (virtually) all subjects who produce Negation-Verb-Object never scramble.\(^3\) Instead, they either produce this order only or this order in combination with Negation-Object-Verb utterances. Similarly, subjects who scramble, i.e. produce Object-Negation-Verb utterances, either produce that order only or that order in combination with Negation-Object-Verb utterances. In other words, it seems that subjects pass through a Negation-Object-Verb stage, before scrambling consistently, as natives do.

There are children and adults in all three stages. The presence of only one child in the [+ scrambling] stage is a reflection of the difference in proficiency levels between the child and adult groups (child L2ers’ average proficiency score = 16.27 cf. adult L2ers’ = 22.09).

3.3.2. Indefinites

A word of caution is in order with respect to the results for the two indefinite conditions: both native-speaker controls and L2ers produced (legitimate) alternative answers which did not include the constituents necessary to determine whether scrambling had taken place (an indefinite DP object and negation). This means that there are fewer tokens and for some subjects, no data at all. Bearing this in mind, we first consider the specific indefinite condition.

Controls scrambled in 41 of the 43 (95.3%) responses with an indefinite DP and negation. The results for the L2ers are given in Table 2.

\(^3\) Two exceptions: one adult and one child who produce Negation-Verb-Object and Object-Negation-Verb utterances. Though these data are problematic for the analysis given here, the fact that the remaining 31 subjects pattern as given suggests that the developmental stages in (14) are along the right lines.
Table 2. Scrambling of specific indefinite NPs over negation

<table>
<thead>
<tr>
<th>Condition</th>
<th>Specific indefinite DP</th>
<th>0%</th>
<th>25%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrambling</td>
<td>-</td>
<td>0/15</td>
<td>2/8</td>
<td>18/18</td>
</tr>
<tr>
<td>% scrambled</td>
<td></td>
<td>5</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>subjects (n)</td>
<td></td>
<td>15.67</td>
<td>24.25</td>
<td>26.17</td>
</tr>
<tr>
<td>proficiency score (average)</td>
<td></td>
<td>0%</td>
<td>55.6%</td>
<td>100%</td>
</tr>
<tr>
<td>% scrambled</td>
<td></td>
<td>0/17</td>
<td>5/9</td>
<td>5/5</td>
</tr>
<tr>
<td>subjects (n)</td>
<td></td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>proficiency score (average)</td>
<td></td>
<td>18.76</td>
<td>17.96</td>
<td>23.37</td>
</tr>
</tbody>
</table>

Of the 21 L2ers who produced more than one token with indefinite DP, seven always scramble, as in (15):^4

(15) Koekiemonster gaat [een boek] niet lezen
Cookiemonster goes the book not read
‘Cookiemonster isn’t going to read a (particular) book.’

When they fail to scramble, L2ers produce two types of non-scrambled utterances, comparable to (12) and (13) for the definite DP condition:

(16) Koekiemonster gaat niet [een boek] lezen
(17) Koekiemonster gaat niet lezen [een boek]

Again, we find that the average proficiency scores for the different sub-groups increases as scrambling becomes more targetlike. For subjects who never scramble, this is 17.21 (range: 0-25.03). For those who sometimes scramble, the average score rises to 20.48 (range: 14.26-27.86) and again for those who always scramble, at 25.77 (range: 21.73-28.06). Hence, we suggest a similar developmental trajectory to definites, namely:

(18) Stage 1: Negation-Verb-Object
Stage 2: Negation-Object-Verb
Stage 3: Object-Negation-Verb

Once more, further support for these stages comes from the observation that all subjects who produce Negation-Verb-Object never produce Object-Negation-Verb, i.e. they never scramble. In other words, it is not the case that these two types of utterances co-occur. There are children and adults in all stages.

In the non-specific indefinite DP condition, the controls did not scramble in any of the 41 responses containing an indefinite DP and negation. The non-

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^4 Subjects who produced only one relevant token were excluded.
scrambled indefinite was almost exclusively realised as *geen* (39/41 (97.5%)), the suppleted form of *niet* ‘not’ and *een* ‘a’. Out of the 14 L2ers who produced more than one token with an indefinite DP, four produced non-scrambled utterances with *geen*, as in (19):

(19) Koekiemonster gaat [geen boek] lezen
    Cookiemonster goes no book read
    ‘Cookiemonster isn’t going to read any book.’

The remaining utterances included non-targetlike Negation-Verb-Object order, as in (20), or targetlike Negation-Object-Verb order, but without the suppletion of *niet* and *een*, as in (21).

(20) Koekiemonster gaat niet lezen [een boek]
(21) Koekiemonster gaat niet [een boek] lezen

Interestingly, only one of the 64 responses produced by the L2ers in this condition contained a scrambled object. That is, non-specific indefinites are more or less never scrambled.

4. Discussion
4.1. Child L2–Adult L2 acquisition compared

The results presented above suggest that English-speaking adult and child L2ers of Dutch pass through the same stages in their acquisition of the production of the (non-) scrambling of definite DP objects and specific indefinite DP objects with respect to negation. Given the assumptions outlined above, this constitutes support for the claim that UG drives adult L2 acquisition.

4.1. Comparison with L1 acquisition

This section compares the L2 data with relevant L1 data on two points: (i) developmental sequences and (ii) the correlation between (no) scrambling and the production of bare nouns.

L1 Dutch children have been observed to go through three stages in their acquisition of scrambling of definite DP objects over negation. First, they do not scramble at all, producing Negation-Object-Verb utterances (based on individual data, kindly provided by J. Schaeffer, p.c.). Consequently, they start to scramble, but fail to do so consistently, and finally, they scramble in a target-like fashion (Schaeffer 2000).

In terms of developmental stages, therefore, the child L1 data and the adult/child L2 data are both similar and dissimilar. The child L1 stages are similar to the later adult and child L2 stages. Note that the non-scrambled order, Negation-Object-Verb, has also been observed for L2ers with different L1s acquiring German (Turkish, Romance) (e.g. Clahsen 1988). Where the L1 and
the L2 data differ is the L2ers’ initial Negation-Verb-Object stage. This word order pattern, claimed to be due to L1 transfer, has also been found for L1 English/Romance L2ers of German (e.g. Clahsen 1988; Felix 1977). The observation that both adult and child L2ers exhibit this pattern shows that there is transfer in child L2 as well as adult L2 (Haznedar 1997; Schwartz 2003a).5

The second point of comparison between the L1 and L2 data is the correlation between (no) scrambling and bare nouns. Schaeffer (2000) observes that 53% (27/50) of the DP objects produced by 2-year-old children (n=7) were bare nouns and of these 27 bare nouns, 24 (89%) were not scrambled. Of the 108 DP objects produced by the 3-year-olds (n=13), 30 (22%) were bare; 70% (7/10) of the bare nouns were non-scrambled.6 The observation that bare nouns tend not to be scrambled is not replicated in the adult/child L2 data. There are very few bare nouns (2.1% (6/288) of all DPs, produced by one adult and 2 child subjects). Thus, it appears that the L2 acquisition of scrambling by English-speaking L2ers is not linked to the acquisition of (properties) of the determiner (as suggested for L1 acquisition by Schaeffer 2000). This could plausibly be the result of transfer from L1 English, which generally requires overt determiners. However, the similarity between the child L1 and adult/child L2 developmental sequences undermines the link between the acquisition of scrambling and the acquisition of properties of the determiner (see Unsworth 2003; Unsworth to appear).

4.3. Syntactic and semantic properties of L2 scrambling

The acquisitional task for the English-speaking L2er of Dutch is to map a given meaning to a particular syntactic form. For sentential negation (with a definite DP) and the specific interpretation of the indefinite DP, this mapping should be to the scrambled form, whereas the interpretation involving constituent negation (with a definite DP) and the non-specific interpretation indefinite DP should be mapped to the non-scrambled form.

In the L1, English, these interpretational differences are expressed, if at all, not with different syntactic forms, but with different stress patterns (see section 1). Therefore, the syntactic-semantic mapping the L2ers need to make in Dutch cannot be made on the basis of their L1.

We suggest that (at least in production), when L2ers fail to scramble, and consequently produce Negation-Object-Verb utterances,7 this results from missing syntactic knowledge, i.e. the lack of a scrambling rule in their interlanguage grammar, plus the mapping to semantics which this requires.

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5 A lack of sufficient indefinite object DP data for L1 children means that unfortunately, a comparison is not possible for this type of scrambling.
6 The discrepency between the number of bare nouns (30) and the number of bare nouns which are not scrambled (10) is in Schaeffer (2000).
7 Negation-Verb-Object utterances are assumed to be the result of L1 transfer, coupled with no scrambling.
Once this syntactic form is acquired, it is mapped onto semantics in a targetlike fashion. In other words, the failure to produce the targetlike syntactic form does not necessarily mean that the interpretation associated with that form is absent. Until the L2ers have acquired the appropriate syntax, they realise these meanings in different (non-targetlike) ways.

Evidence for such an analysis of the L2 data comes from two observations: (i) when scrambled utterances are used, they are used to express targetlike meaning; (ii) when non-scrambled utterances are used, they are used to express meaning associated with scrambled utterances in native adult Dutch, i.e. sentential negation/specific indefinite.

Once L2ers start scrambling, it is not the case that they simply scramble anything: non-specific indefinite DP objects are not scrambled. Furthermore, similar scrambling behaviour is observed in those conditions where scrambling is expected: 8/11 subjects who always scramble definite DP objects always scramble specific indefinite DP objects, too, and 4/7 subjects who scramble definite DP objects sometimes also scramble specific indefinite DP objects sometimes. Thus, it is not the case that L2ers scramble on the basis of some definite-indefinite distinction (although it should be noted that scrambling of indefinites does appear to lag behind scrambling of definites for some L2ers).

When L2ers produce non-scrambled utterances, they use them to express the meaning associated with scrambled utterances in native adult Dutch, i.e. sentential negation/specific interpretation of the indefinite, rather than with the meaning associated with non-scrambled utterances, i.e. constituent negation/non-specific interpretation of the indefinite. This is observable in the stress patterns the L2ers use and the alternative answers which they produce.

The stress patterns in all of the non-scrambled utterances, given in (22) and (23), is consistent with sentential negation, not with constituent negation, i.e. sentential stress is placed either on the negator or the verb, not on the object.

(22) a. Koekiemonster gaat NIET lezen het boek
    b. Koekiemonster gaat niet LEZEN het boek
(23) a. Koekiemonster gaat NIET het boek lezen
    b. Koekiemonster gaat niet het boek LEZEN

Thus, when L2ers do not have the language-specific means to express meaning, i.e. moving the object to the left of a sentential adverbial, they appear to rely on their L1, in this case, they shift sentential stress (see Unsworth 2003).

As noted in section 3.3.2, in the specific indefinite DP condition, subjects (and controls) often produced alternative utterances which did not include the constituents necessary to determine whether scrambling has taken place. These utterances are nevertheless informative as they tell us how the L2ers interpreted the scenario presented in this condition. All of the alternative utterances, exemplified in (24), are consistent with the specific interpretation of the indefinite.

(24) a. Koekiemonster gaat NIET het boek lezen
    b. Koekiemonster gaat niet het boek LEZEN
To summarise: when English-speaking adult and child L2ers produce non-scrambled utterances of the type Negation-Object-Verb, they do so as a result of missing syntactic knowledge. Once they acquire this knowledge, they map it to semantics in a targetlike fashion.

5. Conclusion and future directions

To conclude, we outline three predictions made by the given analysis:

(i) L2ers with L1s which allow scrambling, such as German, should not go through a no scrambling stage in the acquisition of the production of scrambled DP objects over negation in Dutch because they can transfer the option of scrambling available from their L1.

(ii) The production of scrambled indefinite DP objects over adverbials other than negation should pattern similarly to scrambling over negation because the claim made here is that non-targetlike scrambling is due to a problem with syntax, rather than a problem with negation.

(iii) English-speaking L2ers who are at the stage where they produce scrambled definite DP objects should also produce utterances containing non-scrambled definite DP objects in contexts where these are possible in the target language, because the claim is that once they scramble, they relate this to the correct interpretation. They should therefore also know that the non-scrambled variant is possible in such cases.

References


Child L2–Adult L2 acquisition compared The results presented above suggest that English-speaking adult and child L2ers of Dutch pass through the same stages in their acquisition of the production of the (non-)scrambling of definite DP objects and specific indefinite DP objects with respect to negation. L1 Dutch children have been observed to go through three stages in their acquisition of scrambling of definite DP objects over negation. However, the similarity between the child L1 and adult/child L2 developmental