The acquisition of "optional" movement

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Chapter 7

Triggered inversion in Hebrew

1. Introduction

In this chapter we investigate of the acquisition of an “optional” operation in Hebrew, based on an experimental investigation reported in Zuckerman (1996, 1997) accompanied by a new analysis. In the following sections the properties of this operation are presented and a doubt is raised with respect to the question of whether this operation is truly optional. The experimental investigation is then reviewed to show that children show a preference for the more economical order. The experiment consisted of a repetition task with five 3-4 year old Hebrew-speaking children.

1.1 Variation in the target grammar

The operation under investigation consists of a subject-verb inversion labeled (in Shlonsky 1997) as Triggered-Inversion, presented in (1) below.

(1)a. Etmol Dani nasa li-yrushalayim
     yesterday Dani went to-Jerusalem

b. etmol nasa Dani li-yrushalayim
     yesterday went Dani to-Jerusalem

‘Yesterday Dani went to Jerusalem’

Following Shlonsky (1997) (but see Borer 1995 for a different analysis) we assume that the variation in these structures results from movement of the finite verb (nasa ‘went’) from I to C under an XP trigger (a sentential adverb in (1), above) in spec CP. Therefore, with respect to economy, (1)a, which represents the verb in I, should be assumed to be more economical then (1)b, which includes an extra step of I-to-C movement. Both structures in (1) are perfectly grammatical and are assumed to be identical in meaning.
The triggered inversion is described (e.g. in Shlonsky 1987) as a V2-like operation, as it resembles the V2 operation characteristic of German and Dutch, in which verbs move obligatorily to C in the presence of a non-subject initial element. The trigger (the non-subject element in spec-CP) can be a sentential adverb (as in (1)), a topicalized NP or PP objects, a Wh-question, a relative operator, or other elements. Examples of each of these triggers are given in (2)- (5), below.

(2) NP (direct object)
   a. et ha-sfarim Dani sam al ha-madaf
      ACC the-books Dani put on the-shelf
   b. et ha-sfarim sam Dani al ha-madaf
      ACC the-books put Dani on the-shelf
   ‘The books Dani put down on the shelf’

(3) PP (indirect-object)
   a. al ha-madaf Dani sam et ha-sfarim
      on the-shelf Dani put ACC the-books
   b. al ha-madaf sam Dani et ha-sfarim
      on the-shelf put Dani ACC the-books
   ‘On the shelf Dani put down the books’

(4) Wh-question
   a. ma Dani sam al ha-madaf ?
      what Dani put on the-shelf
   b. ma sam Dani al ha-madaf ?
      what put Dani on the-shelf
   ‘What did Dani put on the shelf?’

(5) Relative operator
   a. ze ha-sefer she-Dani katav
      this the-book that-Dani wrote
   b. ze ha-sefer she-katav Dani
      this the-book that-wrote Dani
   ‘This is the book that Dani wrote’
1.2 The nature of the variation

The triggered inversion operation therefore appears to be optional. Shlonsky (1997) attributes the apparent optionality to a reflection of two distinct registers. Indeed the non-inverted form (the (a) sentences in (1)-(5) above) is prominent in spoken - colloquial Hebrew, while the inverted form is prominent in written-formal Hebrew. Thus, Shlonsky concludes that “triggered inversion is not an optional process but results from a blend of dialects” (pp. 149). With respect to the variation to which children are exposed, there seems to be a distinction between written language, in which the inverted form is prominent (in a count I have performed on 10 popular children-books, the proportion of the inverted form was 75% vs. 25% of the non-inverted form), and the spoken language. It is clear thus that children are exposed to both variants in their input.

Basing the explanation of the optionality in triggered inversion on the register distinction seems to be reasonable and can account for much of the variation presented above, but it seems insufficient. That is, although prominent, the inverted form is not exclusive to the written language. Na’ama Friedmann and Uri Sharoni (personal communication) have investigated samples of news broadcasts from two Israeli radio stations and one television station. They found that the inverted form was used in 87% of the sentences with a non-subject in the initial position. This shows that the non-inverted form (which appeared in 13% of the cases) is grammatical in the formal register. Furthermore, it is possible to construct one sentence that includes both inverted and non-inverted forms. This is demonstrated in (6) below:

(6) Etmol Dani kara et ha-michtav she-katav aviv
    yesterday Dani read ACC the-letter that-wrote his-father
    ‘Yesterday Dani read the letter that his father wrote’

Under the assumption that a mix of registers or dialects is not possible within one structure, the example in (6) shows that register distinction is insufficient to explain the variation between inverted and non-inverted structures.

There are also, however, syntactic and semantic constraints on this operation. Recall that we argued earlier that if it could be shown that in specific contexts the
two optional structures differ from one another, either in meaning or grammaticality, then they cannot be said to be truly optional. The following examples show that indeed, even within the context of a formal register, differences in meaning and grammatical status can be observed between the inverted and the non-inverted form.

(7)  a. #? be-rosh ha-tahaluxa leytzan tza'ad
    in head the parade clown marched
  b. be-rosh ha-tahaluxa tza'ad leytzan
    in head the parade marched clown
    ‘At the head of the parade a clown marched’

(8)  a. #? et ha-neum ha-rishon Clinton nasa
    the speech the first Clinton gave
  b. et ha-neum ha-rishon nasa Clinton
    ‘The first speech Clinton gave’

(9)  a. be-emtza ha-ne’um Clinton nafal
    in middle the speech Clinton fell
  b. #? be-emtza ha-ne’um nafal Clinton
    in middle the speech fell Clinton
    ‘In the middle of the speech Clinton fell’

As long as the sentences above are pronounced without extra stress, 7a, 8a, and 9b, are very unnatural. The reason for the contrast between (7)/(8) and (9) is, in my opinion, related to focus and presuppositions. In (7), the word tahaluxa ‘parade’ presupposes the activity of marching and therefore the verb tza’ad ‘marched’ is fronted. In (9) the verb nafal ‘fell’ is not presupposed and therefore cannot be fronted. ((8) demonstrates that this effect is not restricted to the PP trigger).

Further, consider the examples in (10) below.

(10) a. bamisrad ha-ze anashim ovdim
    in office the-this people work
  b. bamisrad haze ovdim anashim
    in office the-this work people
    ‘In this office people work’
While the two sentences in (10) are supposed to be identical in meaning (since triggered inversion is said to be truly optional), they are not. The first sentence reflects a focusing of the verb and means, in this office people are working (and not playing). The second sentences, however, puts the focus on the subject and it means: in this office people are working (and not animals). This meaning difference leads to a difference in grammaticality status, when a conjunct is added which contrasts with one of the possible interpretations. This is demonstrated in (11), below:

(11) a. ?? bamisrad ha-ze anashim ovdim ve-lo xayot
    in office the-this people work and-not animals
b. bamisrad haze ovdim anashim ve-lo xayot
    in office the-this work people and-not animals

These examples show, therefore, that the inverted and the non-inverted variants are not true alternatives. Therefore, following the minimalist assumption that movement operations must be motivated by the presence of a formal feature, the hypothesis that follows is that a focus-related feature distinguishes the two “optional” structures. Proposals for the existence of focus-features are made in, e.g., Brody (1995) and Miyagawa (1997).

As in the analyses of the “optional” structures presented previously, I do not make a detailed analysis of the precise mechanism responsible for triggered inversion (as the main purpose of this dissertation is an experimental one) and offer only the observation that because a difference exists between the alternatives, they cannot be seen as truly optional. The conclusion of this section is, therefore, that triggered inversion in Hebrew is not an optional operation and that its apparent optionality is explained by a combination of a register distinction with the presence of a focus related feature.

1.3 Triggered inversion vs. quotative inversion

In Hebrew, as in English, an optionality of subject-verb inversion seems to exist in the presence of a fronted direct speech phrase. This is demonstrated in (12) below.
Collins and Branigan (1995) call this operation Quotative inversion. Although this operation resembles triggered inversion (or the Germanic V2 operation), I will claim in this subsection that they are different in two relevant ways. First of all, Collins and Branigan (1995) show that the quotative inversion operation differs from other cases of inversion in the presence of a trigger in spec CP (e.g. the possibility of a split quote, the ungrammaticality of this operation in the presence of negation). Secondly, as the inclusion of a direct speech clause within a sentence (in any position) is characteristic to the written language, it is expected to appear in Hebrew in the inverted form. As a result, regarding the input to which children are exposed, the subject-verb inversion can be seen as almost obligatory in children’s input. Indeed in the count I have performed in 10 Hebrew children books, mentioned above, there are 133 sentences with a direct speech clause in initial position and all of them (100%) include subject verb inversion as in (12b). This means that Hebrew speaking children are exposed to a very small number, if any, of structures of the (12a) type, as these never appear in the spoken language either. As a result, children might assume that with the presence of fronted direct speech clauses, unlike with other triggers, inversion is obligatory.

These differences between quotative inversion and triggered inversion will become relevant in the experimental part of this chapter.

1.4 Prediction

We have concluded that the two variants of the non-subject initial structures, the inverted and the non-inverted, carry a subtle difference in meaning. It is reasonable to assume, however, that children fail to recognize this difference (as well as the register difference), and thus view the two “alternatives” as contradictory evidence for the rule of verb movement to C. In this case, the proposal made in Chapter 3 leads to the prediction that children will opt for the more economical of the two alternatives. Because the inverted variant includes an extra computational step
(movement of the verb from I to C), this variant is expected to be rejected. Children are therefore predicted to show a preference for the non-inverted form (1a).

In the next section I will review the results of a repetition experiment with the Hebrew triggered inversion structures and consider its implications for our main proposal.

2. Experimental investigation

The purpose of the experiment presented in Zuckerman (1996, 1997) was to investigate the ability of Hebrew-speaking children to produce the triggered inversion structure. As it is clear that such inverted structures are not common in the early speech of Hebrew speaking children, a repetition task was used. Recall that the inverted structure was said to be characteristic of the written language. For that reason the task was designed in the form of a story, in which the inverted form should be more natural.

Methods:

Subjects:
5 native Hebrew-speaking children, ages 3:6 to 4:3 (mean age 3:11), participated in the experiment.

Procedure:

The experimenter presented a puppet to the child and told her that it is shy and refuses to communicate with adults. The experimenter suggested that the puppet might respond to the child. After establishing that the puppet agreed to communicate with the child, the experimenter said he wished to tell the puppet a story and suggested that he could read it to the child, sentence by sentence, so that the child could repeat it to the puppet. The experimenter read the whole story to the child, and then read it a second time, giving the child the opportunity to repeat each sentence. Two stories were read in two different sessions. All together, the stories included 29 sentences of the triggered inversion structure, divided into the following categories, based on the trigger element in the initial position: sentential adverb, NP, PP, Wh-element and relative clause. In addition, the stories included three categories of control sentences: 10 non-movement sentences, in which the verb appeared in I, and 6 quotative inversion sentences (direct speech phrase as a
trigger, see (12b) above). In addition, the stories included 6 sentences with direct speech phrase as a trigger but with no subject verb inversion (see (12a) above) which represented a subject verb inversion obligatory in children’s input (see section 1.3 above).

Results:
In total, the children repeated 227 sentences, containing at least 20 sentences of each structure. Only those responses that included the trigger, the subject and the verb were counted as relevant. In these responses, the only error type that was made was a word-order error in which the verb was produced in a position different from its position in the stimulus sentence. These errors were divided into two categories: a SV (subject-verb) error in which the child produced an XP-S-V-... structure in response to a XP-V-S stimulus, and a VS error in which the child produced a XP-V-S structure in response to a XP-S-V stimulus.

The children’s responses are presented in Table 1, below:

<table>
<thead>
<tr>
<th>Stimulus</th>
<th>Correct/total</th>
<th>SV error</th>
<th>V S error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>44 / 44</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>TI (PP)</td>
<td>23 / 30</td>
<td>7</td>
<td>23%</td>
</tr>
<tr>
<td>TI (NP)</td>
<td>16 / 24</td>
<td>8</td>
<td>33%</td>
</tr>
<tr>
<td>TI (relative op)</td>
<td>6 / 24</td>
<td>18</td>
<td>75%</td>
</tr>
<tr>
<td>TI (adverb)</td>
<td>16 / 23</td>
<td>7</td>
<td>30%</td>
</tr>
<tr>
<td>Total TI</td>
<td>77/129</td>
<td>52</td>
<td>40%</td>
</tr>
<tr>
<td>DS +inversion</td>
<td>23 / 24</td>
<td>1</td>
<td>4%</td>
</tr>
<tr>
<td>DS – inversion</td>
<td>9 / 30</td>
<td>21</td>
<td>70%</td>
</tr>
</tbody>
</table>

The first column specifies the type of sentence the children were asked to repeat: TI stands for triggered inversion with the specific trigger type in brackets, DS stands for direct speech as a trigger where +inversion represents the quotative inversion variant (12b above) and -inversion represents the variant in which the verb remained in I (12a above) and control stands for the control sentences that included no movement.

The second column shows the number of items that were correctly repeated out of the total relevant responses for each item.
The third column shows the number and percent of word-order errors in which the verb was produced in post-subject position (I) while in the stimulus it appeared in a pre-subject position (C).

The fourth column shows the opposite error: producing the verb in a pre-subject position (I) when it appeared in the stimulus in a post-subject position (C).

The fifth column shows whether the number of errors produced is significant with respect to the control sentences, based on a 2×2 chi-square test comparing each category to the control.

Discussion

The results show that the children have a problem with the triggered inversion operation, even within a context of formal language. In all the triggered inversion structures the children failed to repeat correctly a significant number of times, and instead produced the verb in I, thus ‘returning’ the verb to its post subject position.

Based on this finding, two conclusions can be drawn concerning triggered inversion. The first is that children view the two alternatives as related to each other, since they convert one to the other (and do not make any other errors). The second is that they show a clear preference for the non-inverted form, even in the context of a repetition task in which the inverted form is presented to them by the experimenter. This conclusion represents a clear fulfillment of the prediction made above and of the main proposal of this study.

The comparison of the triggered inversion structures with the direct speech structures sheds more light on the underlying preferences of Hebrew-speaking children. If the results of the triggered-inversion responses can be interpreted as a failure to produce inversion, the results of the direct-speech categories (shaded rows in table 1) show that children are perfectly capable of performing inversion and moreover that they prefer it to non-inversion in this structure. As shown in table 1, the children correctly repeated 96% of the direct speech + inversion (as in 12b) structures. In the direct speech - inversion structures (12a), they did this in only 30% of the cases, instead raising the verb to a pre-subject position-- making an error opposite to the one made in the triggered inversion structures. At first glance, this error seems to be a counter-example to the proposal and predictions made in this dissertation, that children prefer the inverted-less, more economical alternative. However, recall that we claimed in section 1.3 above that in the input Hebrew speaking children receive, the quotative-inversion structure appears to be obligatory.
This is because direct speech in general appears only in the written language, in which inversion is highly prominent. This was shown by the sampling of children’s books, in which an exclusive use of the inverted structure in direct speech sentences was found.

The comparison of the triggered inversion results with those of the quotative inversion, makes two contributions to our general topic of investigation.

Recall that we have made a distinction, regarding the role of economy in acquisition, between the ‘global’-comparative approach, and the ‘local’ approach. According to the local approach (Platzack 1996, van Kampen 1997), children begin with an initial tendency to avoid movement. As a result, structures that include movement operations are expected to be problematic. According to the global approach (Clark and Roberts 1993, the current proposal), children mark a structure as non-economical only with respect to another alternative (derived from the same numeration) in their input. This means that movement operations are not expected to be generally problematic, but hindered only when another, more economical alternative exists. The present results support the global approach because they show that children can employ the movement operation of subject auxiliary inversion successfully when it seems to be obligatory (quotative inversion), but at the same time disfavor it when it has a more economical counterpart (triggered inversion).

The results of the current experiment also contribute the observation that children learn from written formal registers, which appear only in books or formal environments (and thus, rarely in child-directed speech). As was the case in the acquisition of Wh-questions in French, presented in chapter 5, Hebrew-speaking children appear consider formal register a legitimate source of input. Operations associated with a formal register are referred to many times as ‘marked’ and as difficult to acquire. In the case of quotative inversion, however, children evidently acquire such a structure rather easily. Therefore, the fact that triggered inversion is problematic for children, as shown in this experiment, cannot be attributed simply to the fact that it belongs to formal register. The comparison of triggered inversion and quotative inversion supports a (‘global’) economy-based explanation of children’s preferences.
3. **Summary and conclusions**

In this chapter the “optional” operation of triggered inversion in Hebrew was investigated. We have seen that the two variants that seem to stem from one numeration can actually be shown to be different. Therefore, they were assumed to be distinct from each other, based on a focus-related feature that is present in one of the variants but absent in the other. We also considered the register-related difference between the two structures and concluded that it explains some, but not all, of the variation.

With respect to the acquisition of triggered inversion structures, we have seen that children view the inverted form as problematic and prefer to produce the non-inverted form. Under the assumption that children fail to identify the subtle focus-related and register-related differences between the variants, the finding that children prefer the non-inverted alternative supports the general proposal of this dissertation and the specific predictions it entails for Hebrew. Furthermore, a comparison to the acquisition of inversion in a fronted direct speech clause (quotative inversion) has shown that it is not inversion per se that is problematic for children, but only an inversion that has a more economical alternative in the input. This supports the comparative ‘global’ notion of economy, presented in chapter part I of this dissertation.

Further research of inversion in Hebrew, might shed more light on phenomena revealed in this chapter, such as the difference in responses to the various triggered inversion structures, as well as the meaning differences between the two “alternatives” of triggered inversion.