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The GALA2005 Conference took place at the University of Siena from September 5 to September 10. We all, participants and organizers, share a very good memory of this event for both its intellectual quality and the friendly atmosphere which has characterized it during all three (rainy!...) days. The University of Siena is proud to have hosted this significant event.

I want to take the opportunity of these few lines to thank all the speakers and the participants who presented a poster, for their decisive role in enhancing the overall quality of the conference. Most of the presenters have then submitted their paper for publication in these Proceedings. The outcome is an extremely rich piece of work, which promises to become a crucial up to date tool for all researchers working on language acquisition and pathology from a theoretically sophisticated formal perspective. I sincerely thank all the authors for their contributions to this volume.

Finally, I want to thank the colleagues and the doctoral students who effectively participated in the various organizational steps during the preparation of the conference and during its development. In particular, my warmest thanks go to Giulia Bianchi and Giuliano Bocci for their excellent work as the main editors of the booklet of the conference. And, last but not least, I thank my co-editors of these Proceedings for the generosity and care which has characterized each and every aspect of their editing work. Without their enthusiastic and careful involvement this publication would have hardly seen the light.

Adriana Belletti
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1. Introduction

A number of recent studies have shown that children, crosslinguistically, tend to rely on resumption (resumptive pronouns (RPr), and resumptive DPs (RDPs)) in their early relative clauses (RC). This is particularly conspicuous in so-called "intrusive pronoun" languages (Sells (1984)), like English or French, where resumption is permitted only in positions disallowing (pied-piped) movement (i.e. islands). The extensive use of resumption alongside complete lack of pied-piping gave rise to various analyses bearing on the availability of $A'$-movement, the existence of linking operators, and the specification of the empty category in early RCs (Labelle (1990, 1996), Guasti & Shlonsky (1995), Pérez-Leroux (1995), Friedmann, Novogrodsky, Szterman & Preminger (to appear), among others).

Focusing on Hebrew, "a true resumptive language" (Shlonsky (1992)), the aim of the present study is to explore and explain where and why children acquiring Hebrew (or Arabic, Bshara (2004)) tend to omit obligatory RPrs or replace them by RDPs. Examples of children's production, including such errors are shown in (1).

(1) a. ha-ec she-ha-gamad tipes alav/*ø / *al ha-ec Hebrew
  the-tree that-the-dwarf climbed on-it / ø / on the-tree
  b. iz-zalami illi l-walad khaf mino/*ø / *min (iz)-zalami Arabic
  the-man that the-boy feared from-him / ø / from the-man

Nonetheless, our findings and analysis will shed light on the more general questions bearing on the production of RCs as well. But before that, a few words regarding the distribution of RPrs in Hebrew are in place.
As mentioned, unlike in languages such as English, where RPrs are used only as a salvation mechanism when movement is impossible, in Hebrew, they are obligatory for indirect object (IO) and PP extraction sites, ungrammatical in the highest subject position, and optional for direct objects (DO) and embedded subjects (Table 1).

Table 1. Distribution of RPr in Hebrew RC

<table>
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<tr>
<th>Extraction site</th>
<th>RPr</th>
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<tr>
<td>Highest S</td>
<td>Ungrammatical</td>
</tr>
<tr>
<td>Embedded S</td>
<td>Optional</td>
</tr>
<tr>
<td>DO</td>
<td>Optional</td>
</tr>
<tr>
<td>IO (Dative)</td>
<td>Obligatory</td>
</tr>
<tr>
<td>PP (Oblique and Locative)</td>
<td>Obligatory</td>
</tr>
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2. Method and Results

2.1 Methodology

Participants. 20 Hebrew speaking children aged 3;4-6;00 participated in the experiment. The children, all from middle SES, attended different preschools in the central region of Israel, and were tested individually in their respective preschools. All subjects showed normal language development and had no hearing impairment.

Procedure. An elicited production task, involving at least three identical toy-figures participating in different actions was used in order to elicit the relative clauses (Hamburger & Crain (1982), Crain & Thornton (1998)). The experimenter maneuvers the toy props, while a blindfolded puppet tries to understand what goes on. Being blindfolded, the puppet needs the child’s help. Deictics cannot be used to identify one of the three objects, so the child has to use a relative clause to identify it. The present study included 12 stories targeting relativization sites where RPrs are obligatory:

4 stories targeting dative PPs (natan le-, 'gave to', azar le-, 'helped to')
4 stories targeting oblique PPs (paxad me- 'was afraid from [of]', nigen be- 'played music in [on]', ka'as al 'angered on [at]', ba'at be- 'kicked in [at]')
4 stories targeting locative PPs (leyad 'near', al 'on')

The stories were presented in a randomized order. Examples for the different PP extraction sites with an obligatory RPr are given in (2):
The children’s responses were analyzed for grammaticality, focusing on the use of RPrs, gaps and RDPs in their responses, for each item and within each category. Findings are given in percentage and raw numbers were applicable.

2.2 Results

The experiment yielded 180 RCs with PP relativization sites, distributed as follows: 65 with dative, 61 with oblique and 54 with locative PP relativization sites. Despite our wide age range, responses were qualitatively similar across the age-span and therefore are treated as a single group. Errors were found for 17 out of the 20 children.

The main finding of our study is that children treat the three relativization sites differently. There were no errors in RCs with a Dative PP (as has also been reported by Varlokosta and Armon-Lotem (1998)). While omission errors occurred in both RCs with oblique PPs and RCs with locative PPs, RDPs were found only in the latter. An accusative RPr was never used to replace a prepositional RPr. This is shown in Figure 1 giving the distribution of the responses by preposition type (in percentage):

![Figure 1. Distribution of responses by preposition type]
As shown in Figure 1, most of the responses involved RPrs; they were used at ceiling with dative PPs, and less with the other PPs. The mean omission rate in RCs with oblique PPs was 26%, and in RCs with locative PPs the mean was 20%. RDPs are found only in RCs with locative PPs and their mean rate was also 20%.

Figures 2 and 3 show that the error rate varies across the different prepositions. Figure 2 presents the distribution of responses for the 4 different prepositions of oblique PPs, while Figure 3 gives the error rate for the two locative prepositions used in the experiment. Findings are presented in percentage:

![Figure 2. Distribution of responses for Oblique PPs](image)

Figure 2 shows that while the mean omission rate in RCs with oblique PPs was 26%, omission rate varied from 5% for *ka’as al* ‘was angry at’ to 57% for *paxad me* ‘was afraid of’. It also shows that no RDPs were used with oblique PPs.
Figure 3 shows once more that the omission rate and RDP rate depend on the preposition (and the verb). Though both prepositions allow omissions and RDPs, *al* ‘on’ shows a higher error rate than *leyad* ‘near, next to’. That is, children used RDPs in 30% of their responses with *al* ‘on’, but only in 11% of their responses with *leyad* ‘near, next to’. Similarly, they omitted the RPr in 35% of their responses with *al* ‘on’, but only in 17% of their responses with *leyad* ‘near’.

### 3. Discussion

#### 3.1 The main questions

As mentioned earlier, our goal is to explain what underlies the omission of RPrs and the occurrence of RDPs in the acquisition of Hebrew relatives. Based on the above findings, achieving this goal amounts to answering the following questions: (i) Why are RDPs attested only in relatives with locative PPs? (ii) What is the source for the different omission rates in relatives with (oblique) PPs? (iii) Why is there no omission in relatives with Dative PPs?

#### 3.2 Background assumptions and main claim

Adopting the conventional analysis of RC formation (cf. Sells (1984)), Hebrew relative clauses are derived either:
(i) by movement of the null operator (Op) (3a) (or relative pronoun (3b, c)) (Hebrew does not allow P-stranding).
(ii) without movement, with the null operator (Op) base-generated in spec-CP binding an overt RPr in situ (3d, e) (Hebrew does not allow null resumptive PPs).

(3) **RC formation in Hebrew**

| a. | ze ha-sefer Op, she-dan kara ti | this the-book that-Dan read |
| b. | ze ha-sefer (she)-oto, dan kara ti | this the-book (that)-it Dan read |
| c. | ze ha-sefer (she)-alav/Op, dan diber ti/*[al ti] | this the-book (that)-about-it Dan talked /about |
| d. | ze ha-sefer Op, she-dan kara oto_i | this the-book that-Dan read it |
| e. | ze ha-sefer Op, she-dan diber alav/*[PP e]_i | this the-book that-Dan talked about-it/ ø |

Given the above, combined with the (null) hypothesis that children derive RCs like adults (Guasti (2002)), we take omission of an obligatory RPr in children's data (4a) to be on a par with (3a), namely involving (Op)-movement to spec-CP (4b).

(4) a. ze ha-gamad she-shilgiya ka'asa alav/ø this the-dwarf that-Snowhite was-angry on-it/ø 

b. ze ha-gamad Op, she-shilgiya ka'asa ti

We hold that, as in adult grammar, Op moving to spec-CP is nominal (a bare DP, rather than a PP or a Case-marked DP) (Cinque (1990)) (also classified as PRO in Bennis & Hoekstra (1989), Den Dikken (1995), among others). In what follows it will be symbolized as Op/PRO. In contrast to adults, we assume that children's base generated operator is generalized, binding either a DP or a PP argument-variable, to the exclusion of a referential DP, which cannot serve as a variable (Fiengo and May (1994)) (this will be made explicit below). Finally, we assume some version of (lexical) V-P reanalysis to be employed by children. Specifically, a non-predicative preposition (i.e. a preposition not specifying a two-place relation) does not necessarily project. Rather, it is analyzed as part of the verb, with its content being deleted under recoverability. Consequently, our main claim is that omission of RPr in children's relatives in Hebrew has the representation in (5), involving lexical V-P reanalysis and syntactic Op/PRO-movement:

(5) \[ \text{CP Op/PRO}_i \ldots \text{[V+Po]} \text{[DP } ti_i] \]

With this in mind, let us turn now to the three aforementioned questions.
3.3 Locative vs. oblique PPs: the case of RDP

A locative PP can be an argument, receiving a Θ-role from the verb (6a), or a modifier (an adjunct) (6b). It is commonly assumed that a locative P is a predicate, and the following DP is its (Θ-) argument.

(6)  
   a. \([VP V^i_Θ [PP P^j_Θ DP^j_i]]\)    locative PP-argument  
   b. \([V^i[V^j [VP [PP P^j_Θ DP^j_i]]]]\)    locative PP-modifier  

An oblique PP, though a complement of the verb, is not its argument, i.e. the Θ-role of the verb is assigned to the nominal complement of P, not to the PP (7) (cf. Neeleman (1997), Botwinik-Rotem (2004)). (The semantic relation of an oblique P to its nominal complement is not easily identifiable (e.g. *Dan relies on Dina*), which is suggestive of the formal nature of this instance of P, arguably Case-related, Botwinik-Rotem (2004)).

(7) \([VP V^i_Θ [PP P DP^i_i]]\)    oblique PP  

RC formation of (6a) gives rise to two binding patterns (8). In (8a) the Op binds the PP-argument, whereas in (8b) it binds the DP-argument of P. Since the DP argument of P in (8a) is not bound by the Op, it is free and can be realized as a referential DP, namely an RDP.

(8)  
   a. Op^j_i  …  \([VP V^i_Θ [PP P^j_Θ DP^j_i]]\)    locative PP-argument \(\rightarrow\) RDP  
   b. Op^j_j  …  \([VP V^i_Θ [PP P^j_Θ DP^j_i]]\)    locative PP-argument \(\rightarrow\) RPr  

Relativization of the locative PP-modifier and of the oblique PP results in a single binding pattern (9), (10), respectively. As neither in (9) nor in (10) the PP is an argument, only the DP within the PP can be bound by the Op. Being Op-bound, namely a variable, it cannot be realized as a referential DP (i.e. an RDP).

(9) Op^j_j  …  \([V^i[V^j[V^i [VP [PP P^j_Θ DP^j_i]]]]]\)    locative PP-modifier \(\rightarrow\) RPr  
(10) Op^j_j  …  \([VP V^i_Θ [PP P DP^i_i]]\)    oblique PP \(\rightarrow\) RPr  

To sum up, an RDP occurs only in relatives with locative PPs, as only when the locative PP (which functions as the argument of the verb) is relativized binding of the DP is obviated. In this respect, it is worth noting that the clearly limited distribution of RDPs in Hebrew cannot be accounted for either by Pérez-Leroux’s (1995) proposal that views the empty category in children’s RCs as resulting from movement but having the status of a Null Constant, equally realizable by RPrs and RDPs, or by the head-raising analysis in Guasti and Shlonsky (1995), where RDPs are assumed to move at LF (for the sake of argument, we can assume that movement out of a PP is possible at LF). Both
proposals predict a much wider distribution of RDPs than is actually attested. Regarding Pérez-Leroux's (1995) proposal, our findings suggest that children acquiring a "true resumptive" language like Hebrew know from the start that pronouns, but not referential DPs, can function as semantic variables. Therefore, the use of RDPs in child Hebrew is restricted to syntactic contexts where binding of the RDP is obviated.

3.4 Omission of RPr

3.4.1 Locative PPs

In our proposal, Op/PRO-movement that gives rise to relatives without an RPr can take place if the P is analyzed as part of the verb and not projected. As this kind of V-P reanalysis is reasonably limited to non-predicative prepositions (i.e. Ps that are not Θ-assigning), it is unlikely to target the P of a locative PP-modifier. The DP complement of this P is necessarily Θ-marked by the P. Omission of the locative RPr, thus, is most likely to result from perceiving the locative P of the PP-argument (6a) on a par with an oblique P, namely not as a Θ-assigner (7), resulting in the derivation given in (11):

(11) Op/PRO₁ … [VP [V_{Θi} + P_{locΘ}] [DP t₁]]

Viewed this way, a locative PP has, in principle, three possible analyses. It can be analyzed as the argument of the verb (12a), as its modifier (12b), or as its (obligatory) PP-complement (12c) (borrowing the term from Neeleman (1997)). In (12a, b) P is a Θ-assigning predicate, not undergoing reanalysis. (12a) can give rise to an RDP, (12b) is the RPr representation, and (12c) underlies omission of the RPr:

(12) a. Op₁ ... [VP V_{Θi} [PP P_{Θj} [DP RDP_j]]] locative PP-argument
b. Op₂ ... [VP V_{(Θi)} [PP P_{Θj} [DP RPr_j]]] locative PP-modifier
c. Op₁ ... [VP [V_{Θi} + PØ] [DP t₁]] locative PP-complement

To what extent a locative P is susceptible to be analyzed as a non-Θ-assigning P depends on the P itself, and on its combination with the verb.

Table 2. Distribution of responses with locative PPs

<table>
<thead>
<tr>
<th></th>
<th>RPr</th>
<th>RDP</th>
<th>ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>tipes al ('climbed on/up')</td>
<td>35%</td>
<td>30%</td>
<td>35%</td>
</tr>
<tr>
<td>kofec/omed/yoshev leyad ('jumps/stands/sits near')</td>
<td>72%</td>
<td>11%</td>
<td>17%</td>
</tr>
</tbody>
</table>

As shown in Table 2, children's performance regarding tipes al ('climbed on/up') is distributed almost evenly between the options in (12). The preposition al in
this context is clearly locative, projecting a locative PP that can be analyzed either as the argument of *tipes* ('climbed') or as its modifier. Moreover, its combination with the particular verb is unique (13a) vs. (13b):

(13) a. *ha-yeled tipes al*/leyad/*meal*/mitaxat ha-bait*  
    the-boy climbed on/near/above/under the-house
b. *ha-yeled yashav al*/leyad/*meal*/mitaxat ha-bait*  
    the-boy sat on/near/above/under the-house

Since, when combined with *tipes*, the content of *al* ('on') is fully recoverable, the plausibility of the analysis in (12c) is on a par with (12a,b), resulting in the evenly distributed performance. In contrast, *leyad* ('near') is much less likely to be reanalyzed giving rise to (12c), as its content not being fully determined by the verb, is not easily recoverable. Consequently, the omission rate of the RPr is much lower (17%). From the fact that the rate of the RDP is rather low as well (11%), we can deduce that the PP headed by *leyad* ('near') is analyzed correctly by most children as a modifier (12b).

### 3.4.2 Oblique PPs

The content of an oblique P is fully recoverable from the verb (e.g. *ka'as al*/be*/me*, 'angered on/*in/*from'), and arguably, it is not involved in Θ-assignment. Therefore it can undergo the V-P reanalysis assumed here (which in turn underlies RPr-omission). The distribution of responses with oblique PPs (Table 3) suggests, however, that this may not be the only factor that plays a role in the omission of RPrs.

#### Table 3. Distribution of responses with oblique PPs

<table>
<thead>
<tr>
<th>Oblique PP</th>
<th>RPr</th>
<th>Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>ka'as al</em> ('angered on [at]*)</td>
<td>95%</td>
<td>5%</td>
</tr>
<tr>
<td><em>ba'at be-</em> ('kicked in*)</td>
<td>82%</td>
<td>18%</td>
</tr>
<tr>
<td><em>nigen be-</em> ('played music in [on]*)</td>
<td>66%</td>
<td>33%</td>
</tr>
<tr>
<td><em>paxad me-</em> ('[was] afraid of/from*)</td>
<td>43%</td>
<td>57%</td>
</tr>
</tbody>
</table>

Following Botwinik-Rotem (2004), the internal arguments of verbs occurring with oblique PPs in Hebrew are Goal or Subject Matter (SM), rather than Theme or Experiencer (14). The latter are the only internal arguments realized in adult Hebrew as bare (accusative) DPs (i.e. DO), undergoing Op-movement in RC formation. The former (IO) relativize without movement, by means of RPr.

(14) a. *dan ba'at be-*azar *le-yosi* [Goal]  
D---kicked in/-helped to-Yosi
'Dan kicked/helped Yosi.'

b. *dan ka'as al/paxad me-yosi*[SM]
   Dan angered on/feared of/from Yosi
   'Dan was angry at/afraid of Yosi.'

c. *dan raxac et yosi*[Theme]
   Dan washed Acc Yosi
   'Dan washed Yosi.'

d. *dan hifxid et yosi*[Experiencer]
   Dan scared Acc Yosi
   'Dan scared Yosi.'

Judging by their adult-like performance regarding *ka'as al* ('angered at'), we assume that children are aware of the distinction between the Theme/Experiencer (realizable as bare DPs) on the one hand, and Goal/SM on the other hand. That is, since the internal argument of *ka'as* is SM, rather than Theme, it is not relativized via Op/PRO-movement (and V-P reanalysis).

Given this and the claim that omission of RPr involves Op/PRO-movement, we suggest that omission of RPrs realizing Goal and SM results from perceiving them on a par with Theme/Experiencer. In what follows we elaborate briefly on what can possibly bring this about.

### 3.4.2.1 Interpretation of certain Θ-roles

Following Reinhart (2002), Θ-roles are not atomic notions, but rather clusters of two binary specified (±) Θ-features:

(15) /c = cause change
/m = mental state relevant

Some Θ-roles are fully specified, whereas others are not (i.e. only one of the features has a specific value, the value of the other feature is not determined). Theme, Experiencer, Instrument, as well as the object of a locative P (Marelj 2004), belong to the former (16a), Goal and SM exemplify the latter (16b):

(16) a. Theme/object of $P_{loc}$ [-c-m]
   Experiencer [-c+m]
   Instrument [+c-m]

b. Goal [-c]
   SM [-m]

The interpretation of the fully specified Θ-roles is fixed, as both their features are specified. In contrast, the underspecified clusters have some freedom of interpretation, as their non-specified feature is assumed to be consistent with either value. Thus, a Θ-cluster like [-c] corresponding to the
traditional label Goal, is, in fact, consistent with either [-c-m] or [-c+m] interpretations, and the SM cluster [-m] is consistent with either [-c-m] or [+c-m] interpretations. If children have not yet mastered this distinction (i.e. assignment of a fully specified Θ-cluster vs. consistency with a fully specified Θ-cluster), they are expected to apply relativization via Op/PRO-movement not only to fully specified arguments, but also to underspecified ones (e.g. to the Goal of *ba’at be-*, or to the SM of *paxad me-*).

We take the attested omission of locative PPs (e.g. *tipes al*, 'climbed up') and of the PP realizing the Instrument Θ-role ([+c-m]), (e.g. *nigen be-*, 'played music on') to indicate that at some stage children may apply relativization via Op/PRO-movement to any fully specified argument (rather than only to Theme and Experiencer), provided that the P can be reanalyzed with the verb.

It should be noted that the arguable relevance of the thematic role to the omission of an RPr is assumed here to be secondary. Once the option not to project a non-predicative (oblique) P (i.e. the [V+Pø] representation) ceases to exist, relativization via Op-movement will be applicable only to bare DPs, regardless of their thematic role (assuming that the accusative marker *et* is not P).

### 3.5 The dative RPr (which is never omitted)

The dative morpheme *le-* ('to') in Hebrew is not a syntactic head P, but rather a Case-marking affix of the DP (Landau (1994), Botwinik-Rotem (2004)). The status of the dative *le-* as a nominal affix prevents it from being analyzed as part of the verb. Therefore, a dative argument in Hebrew is never a bare DP. Since the omission of an RPr crucially involves Op/PRO-movement, and since Op/PRO cannot be conceived with a non-bare DP, omission of the dative RPr is not attested.

### Summary

Assuming that children acquiring Hebrew derive RCs essentially like adults, we analyzed the omission of obligatory (oblique and locative) RPr in the acquisition of Hebrew RCs as Op/PRO-movement enabled by a particular and clearly limited version of V-P reanalysis. Both the availability of V-P reanalysis and children's conception of the kind of argument that can be relativized via Op/PRO-movement (a fully specified bare DP) give rise to the deviations attested in the acquisition of Hebrew RCs, namely the omission of obligatory RPrs, to the exclusion of the dative RPr. The attested distribution of RDPs supports our assumption that children acquiring Hebrew know that a referential DP, unlike an RPr, cannot be a variable, allowing it only in contexts where its binding by the base-generated generalized Op can be obviated.
Notes

1 For further discussion bearing on the optionality of RPr, see Sharvit (1999), Shlonsky (1992) and references cited therein.
2 The derivation involving movement of the RPr (3b, c), not being attested in children's data, is not addressed here. Note that in Hebrew the relative operator is homophonous with a pronoun rather than with a wh-phrase. Whether the fronted RPr is a moved operator or rather a sub-case of topicalization is debatable (Borer (1984) vs. Doron (1982), Shlonsky (1985)).
3 The status of the locative PP depends on the verb (e.g. put vs. sleep), or on the verb-PP combination (e.g. sleep in bed vs. sleep in the forest) (for further discussion see Hornstein & Weinberg (1981), Baker (1988) and references cited therein).
4 It seems unreasonable to attribute the attested variability to the P-morphemes, as quite distinct omission rates are attested with the same P-morpheme (e.g. ba'at be- (17%) vs. nigen be- (33%); tipes al (35%) vs. ka'as al (5%)).
5 The exceptionally high omission rate with paxad me- ('was afraid of') is probably due to an additional and independent factor. The combination of me- ('from/of') with a pronoun is morphologically irregular and quite complex (e.g. me + hu ('he') → mimeno ('from him') vs. be + hu → bo, leayd + hu → leyado) (Dromi (1979)). Thus, it is reasonable to assume that the omission of this RPr results, to some extent, from avoidance of it. (It is therefore highly desirable to check the omission rate of this RPr in clearly directional contexts (e.g. ha-gamad she-dan barax mimeno, 'the dwarf that Dan escaped from him').)

References


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