

# On Root Infinitives in Child Hebrew

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## 1. INTRODUCTION

This squib attempts to make two contributions to the study of Root Infinitives (RIs) in child language. The first, and more important, contribution is to show that Hebrew-acquiring children older than the age of 2 do not show an extensive use of RIs, whereas before age 2, they do produce a fairly robust number of RIs. This phenomenon resembles the production of RIs in early Russian but differs from the typical RI languages such as early Dutch, German, French, and the Scandinavian languages, which show productive use of RIs until at least age 3. Our second goal is to shed some light on the theoretical underpinnings of these similarities and differences.

The structure of the squib is as follows: Section 2 reviews the background for the issue of child RIs in general and child RIs in Hebrew in particular. Sections 3 and 4 describe the present study of child RIs in Hebrew-speaking children. Section 5 contains an empirical conclusion and a brief discussion in light of the theoretical claims made in Hoekstra and Hyams (1995).

## 2. BACKGROUND

### 2.1. The Root Infinitives Phenomenon

Many child languages exhibit matrix clauses in which the sole verb is morpho-syntactically nonfinite, a phenomenon we refer to as RIs. This phenomenon was first noted by Van Ginneken (1917) in Dutch child language, followed by Weverink (1989), Jordens (1991), and many others for other languages (Hyams (1994, 1996), Wexler (1992, 1994)). Whereas RIs are allowed in adult grammar only under special pragmatic circumstances, many early child grammars allow

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them quite freely, as is exemplified in (1). Notice that the RIs appear alongside finite clauses in the same stage of child language development, as is illustrated in the second column in (1).

(1) RIs = Root Infinitives (alongside finite sentences)

Dutch (Weverink (1989))

met stenen spelen	ik pak 't op
with rocks play-INF	I pick it up

German (Poeppel and Wexler (1993))

Wasser heinmachen	mein Hubsaubee had Tiere	din
water in.put-INF	my helicopter has animals	in.it

French (Haegeman (1996), Pierce (1989))

voir l'auto papa	Patsy est pas la-bas
see-INF the car daddy	Patsy is not down there

In the next sections we review some of the literature on RIs that is relevant for our discussion of RIs in Hebrew.

## 2.2. Child Languages With and Without a True RI Stage

Findings from numerous studies on RIs in child language point out that many but not all child languages display a robust RI stage. Sano and Hyams (1994) and Hoekstra and Hyams (1998) surveyed the literature and provided an overview of the child languages that show RIs productively and the ones that do not, naming these two categories RI child languages and Non-RI child languages, respectively. The chart in (2) contains their findings, with updated data for child Icelandic:

(2) Proportions of RIs in Child Language

Language	RI Languages			Non-RI Languages			
	Child	Age	% RIs	Language	Child	Age	% RIs
French (Pierce (1992))	Nathalie	1;9-2;3	49	Italian (Guasti (1994))	Diana	2;0	0
	Philippe	1;9-2;6	20		Martina	1;11	16
	Daniel	1;8-1;11	43			2;1	4
Swedish (Platzack, in Guasti (1994))	Freja	1;11-2;0	38	Italian (Schaeffer (1990))	Paola	2;0-2;5	7
	Tor	1;11-2;2	56		Daniele	1;7-2;6	8
	Embla	1;8-1;10	61		Massimo	1;7-2;6	4

(Continued)

Language	RI Languages			Non-RI Languages			
	Child	Age	% RIs	Language	Child	Age	% RIs
German (Weissenborn, in Guasti (1994))	S	2;1	46	Spanish (Grinstead (1994))	Gabriele	1;7-2;6	7
		2;2	40		Orietta	1;7-2;6	5
Dutch (Weverink (1989))	Laura	1;8-2;1	36		Elisabeta	1;7-2;5	10
	Tobias	1;10-1;11	36		Francesco	1;9-2;5	5
	Fedra	1;10-2;1	26		Damariz	2;6-2;8	5
Dutch (Haegeman (1995))	Hein	2;4-3;1	16		Juan	1;7-2;0	12
	Icelandic (Sigurjónsdóttir (1999))	Birna	2;0-2;3	32			2;1-2;4
		2;4-2;6	11	Catalan (Torrens (1992))	Guillem	1;11-2;6	3
English (Hoekstra and Hyams (1998))	Eve	1;6-1;10	78		Marti	2;0-2;5	3
	Adam	2;3-3;0	81	Japanese (Sano (1995))	Toshi	2;3-2;8	3
	Nina	2;4-2;5	75		Ken	2;8-2;10	8
				Masanori	2;4	10	
Overall range	11-18%			0-16%			
Average	44%			7%			

*Note.* Adapted from *Lingua*, 106, T. Hoekstra and N. Hyams, "Aspects of Root Infinitives," 81-112, Copyright 1998, with permission from Elsevier.

The chart in (2) shows that during the same age periods (1;6-2;6 / 3;0), children acquiring French, German, Dutch, English, and Scandinavian languages produce many RIs, whereas children acquiring Italian, Spanish, Catalan, and Japanese use hardly any.

Hoekstra and Hyams (1995) proposed that the RI stage in a child language results from the underspecification (or optional nonspecification) of the functional-head Number. Following Guéron and Hoekstra (1989), they assumed that in finite clauses there is a connection between a temporal operator (located in the Complementizer node) and the Tense position (a "tense-chain"), as is illustrated in (3):

(3)  $T_i F_1 \dots F_n \dots \text{Tense}_i \text{VP}$ 

If Number (one of the F-nodes in (3)) is unspecified in languages where only number morphology expresses finiteness (e.g., Dutch), this connection is interrupted and therefore not made visible, causing the verb to be nonfinite. Hoekstra and Hyams noted that languages vary with respect to the morphological expressions that are used to make the tense-chain visible. Some languages give overt manifestation of finiteness in terms of a number morpheme (e.g., Dutch). Others express finiteness with tense morphology (such as Japanese) and yet others, such as Italian, Spanish, and Catalan, through the expression of (at least) person morphology. The Number Underspecification Hypothesis would explain why children acquiring languages expressing finiteness with a morpheme other than a number morpheme—namely, a person and/or tense morpheme (Romance, Japanese)—do not go through a true RI stage: In these languages, the underspecification of Number does not break the tense-chain and therefore does not affect the expression of finiteness.<sup>1</sup>

## 2.3. The Interpretation of RIs

Besides the many studies on the syntactic properties of RIs in various languages, some research has been done on the interpretation of these forms. For example, Hoekstra and Hyams (1998) pointed out that it is an old observation that RIs typically have a modal, or irrealis, meaning (Van Ginneken (1917)), including deontic and boulemaic modality, expressing necessities and desires. Hoekstra and Hyams referred to this as the Modal Reference Effect (MRE) and argued that infinitival morphology yields a modal or irrealis interpretation, both in child and in adult grammar. Some illustrations from adult language are given in this reprinted example (8) from Deen and Hyams (in press):

- (8) a. John remembered to bring the wine.  
 b. Niet parkeren hier.  
    NEG Park-inf here  
    ‘No parking here.’  
 c. What to do?/ Che fare?  
 d. Non tornare a casa troppo tarde.  
    Not come-inf. home too late  
    ‘Don’t come home too late.’

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<sup>1</sup>German poses a potential problem for this analysis, because German marks number and person but does show a child RI stage. Hoekstra and Hyams (1995) solved this problem by proposing that German-acquiring children initially assume that German is a Number-only marking language and only later realize that it is a Person marking language as well. For a detailed discussion, see Hoekstra and Hyams (1995).

Deen and Hyams referred to Stowell's (1981) discussion of sentences such as the ones in (8) and claimed that

in sentences such as (8a) the infinitive *to bring* is unrealized at the moment of remembering; jussives as in the Dutch example in (8b) express necessity; expressions such those in (8c) *what to do, where to eat*, etc. in English and many other languages typically have a modal meaning, roughly 'what should we do,' 'where should we go,' etc.; and (8d) illustrates that in Italian and many other varieties of Romance negative imperatives are formed with the infinitive (Zanuttini (1997), among others). The appearance of an infinitive in these various kinds of irrealis contexts is unlikely to be a coincidence and the child data strongly suggest that whatever principle is responsible for the irrealis meaning in adult language is also present in child grammar. (Deen and Hyams (in press))

The issue of the modality of RIs plays a role in the discussion of our results.

#### 2.4. Hebrew Verbs

Hebrew is particularly interesting for Hoekstra and Hyams's (1995) Number Underspecification Hypothesis because it has relatively rich verbal inflection, comparable to, say, languages such as Italian and Spanish. The crucial question is which morphosyntactic features this rich verbal inflection expresses.

In the present, Number, (nongrammatical) Gender, and Tense, but not Person, are marked. This is illustrated in (4):

(4) <i>kotev</i>	<i>kotevet</i>
write-mas.sg.-present	write-fem.sg.-present
'I/you/he am/are/is writing'	'I/you/she am/are/is writing'
<i>kotvim</i>	<i>kotvot</i>
write-mas.pl.-present	write-fem.pl.-present
'We/you/they are writing'	'We/you/they are writing'

Present tense is marked by the vowel pattern *o-e* (with the *e* sometimes phonologically reduced); feminine singular is marked by the suffix *-et* and feminine plural by the suffix *-ot*.

In past and future tenses, all forms are marked for Number, Person, and Tense and most of them also for Gender, except for first-person singular and plural. An illustration is given in (5):

(5) <i>katavta</i>	<i>katavt</i>
write-2masc.sg-past	write-2fem.sg-past
'You wrote'	'You wrote'

katavtem	katavten
write-2masc.pl-past	write-2fem.pl-past
'You wrote'	'You wrote' (literary style)

Past tense is marked by the vowel pattern *a-a* (with the second *a* sometimes phonologically reduced); second person is marked by the suffix *-t*. Gender and number are marked together by one suffix—for example, in second-person past, masculine singular is marked by the suffix *-a* and masculine plural by *-em*. Thus, Hebrew marks its verbs for more than Number only. Hoekstra and Hyams's hypothesis therefore predicts that Hebrew child language does not show a robust RI stage.

Let us now consider our Hebrew child language data.

### 3. METHOD

We collected language samples of 15 monolingual Hebrew-speaking children between ages 1;09 and 3;01. Recordings were made at the children's homes and transcribed by native speakers of Hebrew. They were coded by Dorit Ben Shalom, a native speaker of Hebrew. Excluding repetitions, false starts, and rote-learned material, there were approximately 100 analyzable child utterances per sample. The samples were transcribed in CHILDES format (MacWhinney and Snow (1990)) and coded according to a system developed by Schaeffer and Ben Shalom. Altogether, 598 matrix verbs were coded.

Each matrix verb in a child utterance was first coded as either finite or infinitive. RIs were further divided into ones that are used in an adultlike way versus ones that would not be used by an adult. In addition, the "childlike" RIs were categorized as having either a modal or a descriptive interpretation. It should be pointed out that adult Hebrew allows RIs with a modal interpretation in several pragmatic environments, such as the ones in (6). Such modal RIs were coded as adultlike RIs.

#### (6) Modal questions

- a. Ma laasot?  
what do-INF  
'What should I do?'
- b. Lasim et ha-xultza ba-kvisa?  
put-INF definiteness marker the-shirt in-the-washing  
'Shall I put the shirt in the washing machine?'

#### Imperatives

- c. Lo lidrox al ha-deshe!  
not step-INF on the-grass  
'Don't step on the grass!'

- d. Lashevet, bevakasha!  
 sit-INF, please  
 ‘Please sit down!’

Not all RIs with a modal interpretation are adultlike, however. We used native speaker judgments (taking the context into account) to decide whether an RI was modal in an adultlike way or in a “childlike” or non-adultlike way.

## 4. RESULTS

### 4.1. Hebrew Child Language: RI Stage or Not?

Our prediction—that Hebrew child language is not a Number-only marking language and therefore does not show a true RI stage—was tested by counting all RIs that occurred in the transcripts, distinguishing between adultlike RIs and non-adultlike RIs. Of all the children, there were 7 who never produced an RI. Taking into account that the children who did not produce any RIs might be simply beyond the RI stage and in order to stack the cards against our own prediction, we report the number of RIs only for the children whose transcripts contained at least one RI (note that the inclusion of all the children would have made percentages lower).

Prima facie, the results in Table 1 seem to confirm our prediction: The total number of RIs (adultlike and non-adultlike) is 21 of 307 matrix verbs, which amounts to the low percentage of 7%. Only 14 (5%) of these are non-adultlike RIs, that is, RIs that would be inappropriate in adult Hebrew, which are the ones we concentrate on in this study.

Some examples of non-adultlike Hebrew child RIs are given in (7):

- (7) a. AD, 2;01  
 \*CHI: Lashevet al ha-shulxan.  
 %glo: sit-INF on the-table  
 %tra: ‘I would like to sit on the table.’
- b. AM1, 2;01  
 \*CHI: Malon lauf.  
 %glo: balloon fly-INF  
 %tra: ‘The balloon is flying.’
- c. AT, 2;08  
 \*CHI: Lasim raxok!  
 %glo put-INF far  
 %tra: ‘Put it away!’

TABLE 1  
Properties of RIs and Finite Verbs in Children Who Produced RIs

<i>Children (Age / No.)</i>	<i>All RIs</i>		
	<i>Adultlike RIs</i>	<i>Non-Adultlike RIs</i>	<i>Finite Verbs</i>
1;09–3;01 / 8	2% (7 / 307)	5% (14 / 307)	93% (286 / 307)

*Note.* RI = Root Infinitive.

TABLE 2  
Proportions of Root Infinitives in Null-Subject-Licensing Versus Non-Null-Subject-Licensing Contexts in Rhee and Wexler's Data, in Percentages

<i>Children (Age / No.)</i>	<i>Root Infinitives</i>		<i>Finite Verbs</i>
	<i>Non-Null-Subject-Licensing Context</i>	<i>Null-Subject-Licensing Context</i>	
1;1–1;11 / 12	22 (36 / 167)	0 (0 / 167)	78 (131 / 167)
2;0–3;3 / 24	6 (52 / 943)	0 (0 / 943)	94 (889 / 943)

*Note.* From "Optional Infinitives in Hebrew," by J. Rhee and K. Wexler, 1995, *MITWPL*, 26. Copyright 1995 by MITWPL. Adapted with permission.

#### 4.2. Rhee and Wexler (1995)

Contrary to our findings, Rhee and Wexler (1995) claimed that Hebrew-speaking children do go through an RI stage (or Optional Infinitive Stage, as Wexler called it). They examined 43 transcripts from 26 children between ages 1;1 and 3;3 (Berman (1992)). Their findings are represented in Table 2.<sup>2</sup> These numbers raise the obvious question of the mismatch between our results and those of Rhee and Wexler. To explore this issue, we re-analyzed all the RIs in the transcripts analyzed by Rhee and Wexler.

One difference between our findings and theirs is that, contra Rhee and Wexler's claim, native Hebrew judgment indicates that most of the RIs in Rhee and Wexler's transcripts have a modal (expressing a necessity or a desire) rather than a descriptive reading. Rhee and Wexler's reason for not including RIs with a modal reading concerns the acceptability of certain modal RIs in adult Hebrew (cf. the examples in (6)). Nevertheless, this does not mean that all modal RIs in child Hebrew are adultlike and should therefore be excluded from the analysis, as Rhee and Wexler did. We thus examined all the RIs in the files analyzed by Rhee and Wexler and used native intuitions to divide them into descriptive and modal readings and into adultlike and non-adultlike. This re-analysis revealed only 16 descriptive RIs in the Rhee and Wexler files, of which 8 are ambiguous between

<sup>2</sup>Rhee and Wexler (1995) also counted RIs only in transcripts of children who produced at least one RI.

TABLE 3  
Proportions of RIs and Finite Verbs in Children Who Produced RIs  
in Schaeffer and Ben Shalom's Data, in Percentages

<i>Children (Age / No.)</i>	<i>All RIs</i>		<i>Finite Verbs</i>
	<i>Adultlike RIs</i>	<i>Non-Adultlike RIs</i>	
1;09 / 1	0 (0)	17 (3)	83 (15)
2;01-3;01 / 7	2 (7)	4 (11)	94 (271)
Total	2 (7 / 307)	5 (14 / 307)	93 (286 / 307)

*Note.* RI = Root Infinitive.

TABLE 4  
Proportions of RIs and Finite Verbs in Children Who Produced RIs in Rhee  
and Wexler's Data, in Percentages (Recoded by Schaeffer and Ben Shalom)

<i>Children (Age / No.)</i>	<i>All RIs</i>		<i>Finite Verbs</i>
	<i>Adultlike RIs</i>	<i>Non-Adultlike RIs</i>	
1;1-1;11 / 12	3 (7 / 209)	27 (57 / 209)	69 (145 / 209)
2;0-3;3 / 24	2 (22 / 1269)	5 (64 / 1269)	93 (1183 / 1269)
Total	2 (29 / 1478)	8 (121 / 1478)	90 (1328 / 1478)

*Note.* RI = Root Infinitive.

an RI and a finite form or an imperative. In other words, the 90 RIs found by Rhee and Wexler are by far not all descriptive.<sup>3</sup> Most non-adultlike RIs had a modal interpretation. In our own data, we detected only one descriptive RI; all the rest had modal interpretations. Note that most RIs we have found in both our own and in Rhee and Wexler's data have a modal interpretation, which is consistent with Hoekstra and Hyams's (1998) MRE (see section 2.3).

Nevertheless, the modality issue just described does not have a direct bearing on the mismatch between the child RI numbers in the two studies because most of Rhee and Wexler's modal RIs are still not adultlike—that is, they would not be used as such by adult speakers. According to our methodology, such RIs should be counted. The difference between the number of child RIs in the two studies must thus lie elsewhere. A second option is that the crucial factor contributing to the difference is the age of the children sampled. To explore this possibility, we divided our own transcripts into the same two stages as Rhee and Wexler did: younger than age 2;0 (including age 1;11) and older than age 2;0 (including age 2;0). From this re-analysis (of both our own and Rhee and Wexler's data) a different picture emerged: The number of child RIs in both of Rhee and Wexler's age groups is still somewhat higher than in our own data, but overall, the percentages

<sup>3</sup>Note that this implies that, if Rhee and Wexler (1995) had really counted only the descriptive RIs (as they intended to), they would not have found a RI stage, not even in the youngest children.

are rather comparable at this point. This is shown in Tables 3 and 4.<sup>4</sup> Thus, it seems that child Hebrew does display a fairly robust number of child RIs, but this phenomenon is restricted to very young ages (below the age of 2). In this sense, child Hebrew is not comparable to child Dutch, German, French, and certainly English, which contain relatively long developmental stages with robust numbers of child RIs, often until at least age 3.

## 5. DISCUSSION

From the results presented in section 4, we can draw the main empirical conclusion in (9):

- (9) Hebrew-speaking children younger than age 2;0 produce a fair amount of RIs. After age 2;0, the proportion of RIs is negligible.

Interestingly, the Hebrew RI numbers are very similar to those in child Russian. As shown in the chart in (10), Bar-Shalom and Snyder (1998) and Brun et al. (1999) reported significant numbers of RIs in early Russian, peaking at age 1;8–1;9. After this age the proportions of RIs decline dramatically.

### (10) RIs in Russian child language

Russian (Bar-Shalom and Snyder (1998))	Varya	1;6–1;9	21%
		1;10–2;4	4%
Russian (Brun et al. (1999))	4 Children	Tanya 2;5–2;8	9%
		1;6	20%
		1;7	32%
		1;8	33%
		1;9	28%
		1;10	16%

These findings are consistent with our own preliminary data on RIs in early Russian: One Russian-acquiring boy produces 47% to 18% RIs between the ages of 1;8 and 1;10. By age 1;11 this has dropped to 5%. Another (older) Russian-acquiring boy produces merely 9% to 2% RIs between the ages of 2;2 and 2;5.

Examining the Russian verbal paradigm we see that, similar to Hebrew, Russian is not a Number-only marking language. In the present, Number and Person are marked, and in the future, Person, Number, and Tense are marked. An illustration is provided in (11):

<sup>4</sup>The majority of the non-adultlike RIs indeed appear in what Rhee and Wexler (1995) called the “non-null-subject-licensing contexts,” or rather, in a present-tense context. We believe that this is an artifact of the RIs having a modal interpretation, which typically occurs in present-tense contexts.

- (11) pishet                      pishut                      napishet                      napishut  
 write-3 sg-pres    write-3-pl-pres    write-3sg-fut    write-3pl-fut  
 'S/he is writing' 'They are writing' 'S/he will write' 'They will write'
- prihodit                      prihodyat                      pridyot                      pridut  
 come-3 sg-pres    come-3pl-pres    come-3sg-fut    come-3pl-fut  
 'S/he is coming' 'They are coming' 'S/he will come' 'They will come'

In the past tense, most forms are marked for Number, Gender, and Tense. This is illustrated in (12):

- (12) pisal                      pisala                      pisali  
 write-mas.sg-past    write-fem.sg-past    write-pl-past  
 'I/you/he wrote' 'I/you/she wrote' 'We/you/they wrote'
- prishol                      prishla                      prishli  
 come-mas.sg-past    come-fem.sg-past    come-pl-past  
 'I/you/he came' 'I/you/she came' 'We/you/they came'

Thus, both Hebrew and Russian child language provide counter-evidence against Hoekstra and Hyams's (1995) hypothesis that only Number-only marking languages exhibit an RI stage. Yet, children acquiring Number-only marking languages produce RIs for a much longer period of time. The question of why some languages (e.g., child Russian and Hebrew) have an early RI stage and other languages (e.g., child Dutch, German, etc.) have a more prolonged RI stage is an interesting one and has not been addressed in the literature to our knowledge.

In line with recent work on the interaction between syntax and pragmatics in child language (such as Avrutin (1999), Schaeffer (1997, 1999, 2000)) and connecting back to the earlier Hoekstra and Hyams (1995) account, we suggest that the seemingly special status of Number has to do not with Number itself, but rather with the deictic properties of other syntactic features on the verb, namely Tense and Person.

The term *deictic* can be characterized as "those features of language which refer directly to the personal, temporal or locational . . . characteristics of the situation within which an utterance takes place, whose meaning is thus relative to that situation; e.g. now/then, here/there, I/you, this/that" (Crystal (1997, 107)). Number has no deictic counterpart, because the cardinality of a set is not a property of the situation. On the contrary, Tense and Person map onto deictic concepts such as when the event takes place (time) and who the discourse participants are (speaker/hearer status), respectively. Both time and speaker/hearer status are characteristics of the situation, and thus deictic. Assuming that deixis is part of pragmatics, we argue Tense and Person (but not Number) *morphology* represent the most transparent "bridges" between syntax and pragmatics. We suggest that acquiring these bridges serves as a facilitator for the acquisition of obligatory finiteness, that is, for the obligatory anchoring of the event in the discourse. Adult

languages that show *overt* tense and person morphology, such as Hebrew and Russian, make the connection between syntax and pragmatics salient, facilitating early acquisition of obligatory finiteness. Languages that do not express these bridges so clearly, such as the Germanic languages and French, do not provide as clear a trigger, causing a delay of the acquisition of obligatory finiteness.<sup>5</sup>

In conclusion, we claim that Hebrew- (and Russian-) speaking children, as well as Dutch-, German-, French-, Scandinavian-, and English-speaking children all proceed through an RI stage, but that Hebrew (and Russian) acquiring children leave the RI stage earlier because the deictic correlates of Tense (time) and Person (speaker/hearer) features provide clearer triggers for finiteness, perhaps because of a more visible tense chain à la Hoekstra and Hyams (1995). Future research should reveal whether this also holds for the languages previously characterized as non-RI languages—Italian, Catalan, Spanish, and Japanese.

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<sup>5</sup>We leave open here the question as to how obligatory finiteness is eventually acquired in Number-only marking languages in the sense of Hoekstra and Hyams (1995). For a language like German, it may be that the later-learned parts of the paradigm (e.g., second person; see footnote 1 and Hoekstra and Hyams (1995) for discussion of the role of second-person morphology) eventually make salient a Person contrast that can act as a trigger of the same sort as in Hebrew and Russian, just at a much later age. For "pure" Number-only marking languages, such as Dutch, perhaps morphosyntactic evidence suffices, at a certain fairly late age, for learning that finiteness is obligatory.

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