Acquiring diminutive structures and meanings in Hebrew

An experimental study

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The chapter describes an experimental study of the acquisition of derivational diminutives in Hebrew. The study population consisted of 48 children in four age groups - 5–6, 7–8, 10–11, 12–13, and adults. Participants were administered two tasks: an explanation task, and a production task. The learning curves we uncovered begin in kindergarten, with less than one quarter correct productions and about one third correct explanations, and they rise steadily from age 7–8 throughout grade school, especially between ages 9–12. Only from age 12 do Hebrew speakers show that they have mastered the morphological, semantic, pragmatic, and cognitive factors that interact in understanding and producing diminutive forms. Diminutive derivational morphology is thus part of what is termed 'later language development', that is, linguistic acquisition during the school years.

1. Introduction

Diminutives have attracted considerable attention in recent research Documenting over 80 languages, Jurafsky (1996) identified "child-relatedness" as the core meaning of the diminutive derivation from which all other meanings and uses are derived. Semantically, diminutives mark 'small' or 'young,' while pragmatically they can mark affection, playfulness, endearment or contempt.

Diminutive forms occur early in child language at a period when morpho-syntax is not yet well established and morphological operations are largely absent (Clark 1993; Dressler 1994; Gillis 1997). One reason that diminutives facilitate acquisition is that in many languages they regularize irregular aspects of inflectional morphology. Moreover, diminutives occur with high frequency in CDS (Kempe, Brooks & Gillis, this volume), another facilitating factor in language acquisition. Diminutives are more frequent in languages where they lead to greater morphophonological transparency in gender marking (Kempe & Brooks 2001; Kempe, Brooks & Pirott 2001). Dressler

(1994), Dressler and Karpf (1995) demonstrate that extra-grammatical operations in the formation of diminutives characterize children's early productions, before the emergence of morphological rules at a stage when children rely on cognitive rather than specifically grammatical knowledge. Independent support for this idea is provided by data from different languages reported by Clark (1985, 1993).

Although diminutive formation in Hebrew is neither as central nor as rich and varied as in some languages (Ceccherini, Bonifacio & Zocconi 1997; Gillis 1997; Stephany 1997), diminutive devices constitute an established and well-documented part of Modern Hebrew morphology and lexicon in both spoken and literary usage (Sagi 1997). Besides, Hebrew is of interest in this respect since it has diverse means for diminutive formation, ranging from forms typical of early CDS to genuinely derivational processes that reflect key morphological properties of the language.

1.1   Borrowed Hebrew diminutives

Diminutive forms in Hebrew derive from two sources – foreign and native. Hebrew has borrowed diminutive suffixes mainly from languages with dominant diminutive systems such as Russian, Yiddish and Judeo-Spanish (Sagi 1997). Foreign-suffixed diminutives (such as *-uš, -le, -ka*) may be attached to both non-native and native bases. For example, Russian *-čik* occurs in both foreign-based *pónčik* 'doughnut-DIM [baby's nickname]' and native-based *šaménčik* 'fat-DIM' from *šamen* 'fat'; Judeo-Spanish *-íko* is attached to Hebrew *kof* 'monkey' to yield *kofíko* 'monkey-DIM' (Avineri 1964; Bolozky 1994), and is widely used to create nicknames such as *Fíko* from *Yosef(íko)*, *Saharíko* from *Sahar*[1]. The main function of these loan diminutives is to express familiarity, informality and endearment in child-directed and child-centered speech (Dressler & Merlini-Barbaresi 1994; Stephany 1997). They are not, however, productive beyond certain frozen forms, and are also restricted to the ethnic groups that make up Israeli society. The current study focuses on the acquisition of native Hebrew diminutives.

1.2   Native Hebrew diminutives

Native Hebrew diminutives are of special interest because they fall into two different classes, *juvenile* and *conventional-derivational,* which together represent the range of meanings typical of diminutives. The category that emerges initially in the speech of young children – *juvenile* diminutives – is a simplex morphological device constituting a bridge between inflection and derivation. In contrast, *conventional-derivational* diminutives emerge much later and deploy well-established, quite general Hebrew morphological devices.

The chapter starts with by summarizing Ravid's (1998) study of juvenile diminutives in early child Hebrew (Section 1.2.1) and then outlines the *conventional derivational* diminutive morphology of concern to the present study / at the focus of this

paper (1.2.2). Sections 2 and 3 describe an experimental study of the acquisition of conventional derivational diminutives in Hebrew.

1.2.1   *Juvenile diminutives*

Ravid's (1998) analysis of longitudinal data from eight normally developing, native Hebrew-speaking children between the ages of 1;5 to 5;6 showed that the overwhelmingly favored diminutive option among Hebrew-speaking toddlers is suffixation of nouns and adjectives by (unstressed) -*i* as in *xatúli* 'cat-DIM', *gadóli* 'big-DIM', or *masa'íti* 'truck-DIM' (see also Ravid & Nir 2000). This is the diminutive form, which, as in other languages, occurs early on in child language development, at a period when, as noted before, morpho-syntax is not yet well established. As in other languages, hypocoristic use (i.e. as an endearment or pet name) of unstressed diminutive -*i* is common in early child directed speech or baby talk, well-suited to conveying the intimate, playful atmosphere of endearment and attachment typical of a caregiver / child relationship (Berman 1985: 341–342; Stephany 1997). The interchanges in (1) and (2) are typical examples from the Berman and Ravid corpora.

(1)   Sahar and his mother talking about his diaper [Ravid corpus]:
       Sahar, 1;4.06
       *SAH: *itúli [xitúli]* [cf. adult *xitul*]
               Diaper-DIM
       *MEI: *xitúli xitúli meod ratuv.*
               Diaper-DIM, diaper-DIM very wet
               'Diaper, diaper (is) very wet'

(2)   Leor playing with his grandmother [Berman corpus]:
       Leor,   2;0
       *LEO: *sáfti torídi* [cf. adult *sáfta*]

       %mor: N-DIM   V,Imp
               granny-DIM take-down:FM
               'Granny, take (it) down'

(3)   Hagar asks for her bottle [Berman corpus]:
       Hagar 2;01
       *HAG: *ten ta^babúki [: et ha^bakbúki]* [cf. adult *bakbuk*]

       %mor: V   P:ACC   AR N-DIM
               give:Msc the-bottle-DIM
               'Give (me) the bottle'

(4)   Smadar describes a visit to the playground [Berman corpus]:
       Smadar, 2;01
       *SMD: *hayínu ba^gan ša'ašuim ha^gadóli, ve ve sixáknu ba^ ba^xol,*
       %mor: V   P&AR N+N   A-DIM   CONJ CONJ V P&AR P&AR N
               ve hitgalášnu ve hitgalášnu, ve az nasánu

%mor: CONJ V   CONJ V   CONJ! V

were,1st in-the-garden play the-big-DIM, and and played,1st,Pl in-the-sand, and slid,1st,Pl and slid,1st,Pl, and then drove,1st,Pl
'We were in the big playground, and and we played in the sand and we slid and slid, and then we drove'

Like most vocabulary items in young children's emerging lexicons, the nouns to which -*i* diminutives attach refer to people, animals and concrete, often countable objects (e.g., *ball, balloon, beetle, bottle, duck, elephant, kitty, clown, granny, pacifier, plastic bag, truck, sea*). They also attach to basic adjectives (*big, small, sweet*). The survey in Ravid (1998) shows that diminutivization by -*i* constitutes a transient, juvenile pathway into word formation in a number of senses. First, it is more pragmatic than semantic, taking the child's specific point of view and familiar context into account. The semantic change in forms such as *xitúli* 'diaper-DIM' is negligible; it almost amounts to calling it 'my dear diaper to which I am very much attached'. This inflection-like change is non-varying and predictable, and it can be applied to any singular noun without any of the restrictions of derivation. As noted by Gillis (1997:168), juvenile diminutives are gender-neutral: the suffix -*i* is equally applicable to masculine and feminine nouns as well as to adjectives. Moreover, juvenile diminutives have a special status in morphology as an operation that induces no category change beyond the shift from X to "small X" and "falls midway between inflection and derivation" (Anderson 1982; Spencer 1991:197).

Second, -*i* diminutives are context-bound in a very specific sense – the fact that the process applies to a particular item in a class, rather than to a whole category. For example, Leor referred to any grandma (such as the one in the story "Red Riding Hood") by general *sáfta*, and reserved the diminutivized form *sáfti* to his own grandmother. All innovative productions of *i*-diminutives are restricted in the same way and are in fact semantically under-extended (Barrett 1995): *masa'íti* 'truck-DIM' [cf. *masa'it*] is not any truck but 'my own beloved toy', and even the big-DIM [*gadóli,* cf. *gadol*] playground in Smadar's description is a specific, familiar playground. Diminutivization by -*i* may thus be regarded as a *personalizing* device, with the diminutivized item appropriated personally by of the interlocutor. This is probably why *i*-suffixed diminutive nouns are not pluralizable: while many are proper names (e.g., *Miryámi, Pútsi, Múshi*), others acquire a unique proper-noun denotation with the attachment of -*i,* e.g., *barvázi* 'duck-DIM', *píli* 'elephant-DIM', and their plural counterparts are ungrammatical.

Structurally, too, *i*-diminutivization is marked as a juvenile strategy. Hebrew linear operations on nominal stems overwhelmingly shift stress to the final syllable. Diminutivization by final -*i*, in contrast, leaves the original stem stress intact, and therefore makes no stem changes, e.g., *leycan / leycáni* 'clown / clown-DIM', *gamad / gamádi* 'dwarf / dwarf-DIM'. Preserving the original structure and stress pattern of the nominal stem is an early, well-attested childhood strategy in Hebrew (Ravid 1995).

From all points of view, juvenile -*i* diminutives thus constitute an immature morphological device that generates almost no phonological, grammatical or semantic

change in base forms. Juvenile *-i* serves first and foremost as a personalizing device for children (rather than denoting smallness and immaturity), and may thus facilitate the acquisition of noun and adjective reference. Given its extra-grammatical nature, juvenile *-i* may also serve as a channel into more conventional morphology (Dressler & Merlini-Barbaresi 1994; Kempe, Brooks & Gillis, this volume; Kempe, Brooks, Mironova & Fedorova 2003; Kempe, Brooks, Mironova, Pershukova & Fedorova 2005). Kempe (p.c.) has recently proposed that diminutives are guided by low-level prosodic processes that prefer coda-avoidance in the input to and speech of young speakers. This observation captures the essence of the Hebrew juvenile *-i* diminutive: By attaching to the ends of words, diminutive *-i* initiates a process of re-syllabification that allows for coda avoidance, and since this final CV is not stressed, it draws toddlers' attention to the preceding syllable which is both stressed and lengthened and often carries important lexical and inflectional information.

1.2.2   *Conventional-derivational diminutives*

The focus of the present study is on diminutive devices that emerge later in acquisition and constitute part of the conventional derivational system of Hebrew, rather than on the early-emerging diminutive forms reviewed above. Hebrew employs two structural devices in expressing conventional-derivational diminutivization – linear formation and reduplication (Avineri 1964; Schwarzwald 2004).

Linear formation

There are two productive diminutive suffixes in Hebrew that attach to noun and adjective bases: Feminine *-it* (e.g., *sak / sakit* 'sack / (plastic) bag') and masculine *-on* (e.g., *géšer / gišron* 'bridge / little bridge'), with the feminine variant *-ónet* (e.g., *kubiya / kubiyónet* 'small block'). Many of the forms created by linear suffixation by

   -it and *-on* predictably and transparently express a smaller object or a younger animal e.g., *mapa / mapit* 'tablecloth / napkin', *dégel / diglon* 'flag / small flag', *kélev / kalbon* 'dog / puppy'. They may also convey a lesser amount of a property, sometimes in deprecatory, informal, familiar sense, e.g., *tipeš / tipšon* 'fool / little fool' (compare Dressler & Merlini-Barbaresi 1994; Stephany 1997).

   These linear diminutivizers are, however, typical nominal derivational constructs in their unpredictable scope, non-automatic semantics, and nominal morphology (Bolozky 1994). They go beyond mere depreciation in amount, age, formality or seriousness of the base, and are clearly derivational in nature, and thus require familiarity with the Hebrew lexicon. Note the unpredictable meanings of the diminutivized nouns in Table 1, taken from Bolozky (1994) and Nir (1993). They all share the feature of 'smaller than the base form', but their conventional meanings are far from simply 'base + DIM'.

Table 1. Conventional-derivational linear diminutive suffixes in Hebrew

Base form	Gloss	Base + suffix -it	Gloss
kaš	straw	*kašit*	drinking straw
tav	musical note	*tavit*	tag
mapúax	bellow	*mapuxit*	harmonica
aron	closet	*aronit*	locker
kruv	cabbage	*kruvit*	cauliflower
Base form	Gloss	Base + suffix -on	Gloss
gan	kindergarten	*ganon*	nursery school
sahar	moon	*saharon*	Crescent-shaped jewelry
pakid	clerk	*pkidon*	bureaucrat
gag	roof	*gagon*	roof-rack
maxšev	computer	*maxševon*	pocket calculator

In fact, *-it* and *-on* are the two most productive suffixes in Hebrew (Nir 1993), and designate a number of semantic categories, such as instruments (*xalal / xalalit* 'space / spaceship', *safa / sfaton* 'lip / lipstick', *itur / iturit* 'tracing / pager'), and collective nouns (*milon* 'dictionary' from *mila* 'word' and *šeʔelon* 'questionnaire' from *šeʔela* 'question'). The diminutive meaning of bases suffixed by *-it* and *-on* is more readily accessible, but not always conventional. For example, *tiyulon* from *tiyul* 'hike' could in principle refer to a short trip and is often used to convey this meaning, but it conventionally designates a baby stroller.

Unlike juvenile diminutives, conventional diminutives such as *barvazon* 'duck-DIM' and *pilon* 'elephant-DIM', the conventional terms for a baby duck and a young elephant, are ordinary common nouns, and are pluralizable. Even as diminutivized nouns, they are not personalized and made unique. Moreover, linear diminutive suffixes, like all productive nominal suffixes and unlike *-i* diminutives, are stress-assigning. As a result, the stem may undergo the same morphophonological changes as those entailed by other nominal suffixes. For example, *kaf* 'spoon' undergoes stop / spirant alternation when pluralized (*kaf / kap-ot* 'spoon / spoons), when assigned genitive case (e.g., *kaf / kapo* 'spoon / his spoon'), or when diminutivized ('*kaf / kap-it* 'spoon / teaspoon').

Of the two, Bolozky (1994) and Sagi (1997) claim that the unmarked or default Modern Hebrew diminutive device is *-on* or its feminine counterpart *-ónet* rather than *-it.* This seems to be true, since *-it* suffixation tends to designate highly specific meanings (Table 1), while *-on / -ónet* nouns and adjectives quite typically designate smaller versions of the base (e.g., *tipa / tipónet* 'drop / small drop', *dira / dirónet* 'apartment / small apartment') and express affection or depreciation (*metuka / metukónet* 'sweet:FM / little sweety'), as in other languages (1994:55).

Reduplication

A second adult conventional-derivational diminutive device is reduplication, e.g., *zkankan* 'short / sparse beard', from *zakan* 'beard', *kalil* 'airy, feathery', the diminutivized form of *kal* 'light' (Schwarzwald 2004). Reduplication is a non-concatenative morphological process in which some part of the base – consonants and vowels, syllables, morphemes, or the whole word – is repeated to the left, to the right, or inside the base, e.g., Agta *ulu / ululu* 'head/s'. It is a productive and varied process in many of the world's languages (Spencer 1991: 150–156).

Hebrew reduplication is a minor process in two senses:[2] First, it differs from the major word-internal morphological processes – nonlinear and linear affixation – in that it uses material from the base itself as an extra morpheme instead of joining together two morphemes. Second, left-to-right reduplication is generally restricted to diminutive expression in nouns and adjectives, e.g., *xatul / xataltul* 'cat / kitten', *sagol / sgalgal* 'purple / purplish' (Nir 1993).[3] The latter process takes a variety of forms, including reduplicating the last stem consonant (compare *kal / kalil* 'light / very light' above) and reduplicating root components, such as the last root consonant (e.g., *kidrer* 'dribble' with quadriliteral root *k-d-r-r* extracted with reduplication from *kadur* 'ball') or two consonants (e.g. *difdef* 'glance through a book' with reduplicated root *d-f-d-f* extracted from *daf* 'page'; *hidhed* 'to echo' extracted from *hed* 'echo'; *kivkev* ' to draw a dotted line' extracted from *kav* 'line'). These denominal verbs whose bases have two consonants denote a durative or repetitive action (Ussishkin 1999). The only current reduplicated template that resembles a non-linear pattern is the typically diminutive pattern $cc_1ac_2c_1ac_2$, as in *ktantan* 'tiny' from *katan* 'small', and its feminine version $cc_1ac_2c_1óc_2et$ (Bolozky 1994; Nir 1993). According to Bolozky (1999) the productivity of nominal reduplication is low. Howevwer, Graf (2002) has suggested that the principles operating behind nominal reduplication (templatic derivation) are very much active in the nominal system and in the language as a whole. Graf (2002) claims that the number of reduplicated tokens for adjectival items is much larger than the number of reduplicated tokens for noun items. From a semantic point of view there is no suffixal option for adjectives as attested for nouns with the diminutive meaning denoted by the reduplication pattern (reduplicated template). Note that diminutives can be stacked, with a linear diminutive suffix attached to a reduplicated stem, e.g., *znavnavon* or *znavnávčik* 'tail-DIM-DIM' reduplicated and suffixed respectively by Hebrew *-on* and foreign *-čik*, 'tail-DIM-DIM' from *zanav* 'tail'.

According to Bat-El (2004), reduplication is a strategy for word/stem formation in Hebrew, which has four such patterns: $c_1vc_2vc_{2C}$; $c_1vc_2c_3vc_{3C}$; $c_1vc_2c_{1C}vc_2$; $c_1c_2vc_3c_{2C}vc_{3C}$ (c stands for COPY). Contrary to Bolozky's (1999) claim that reduplication designates diminutives, Bat-El denies that the process is semantically predictive, since for her, structural similarity between semantically related forms does not necessarily entail a shared semantics. For example, the nominal suffix *-on* may carry a variety of semantic meanings (cf. *iton* 'newspaper' from *et* 'time' versus *dubon* 'teddy-bear-

DIM' from *dov* 'bear'). On the other hand, Bat–El acknowledges that the bulk of words in the pattern $c_1c_2vc_3c_{2C}vc_{3C}$ (e.g., *zkankan* 'beard-DIM') are indeed diminutives.

To the best of our knowledge, no systematic study has been carried out to date regarding the acquisition of Hebrew conventional-derivational diminutives. The current paper aims to provide initial information on children's perception and learning of linear and reduplicated diminutives.

2. Method

This is a first, and in a sense, exploratory experimental study of the acquisition of diminutive constructions in Hebrew. Hebrew diminutives, as explained above, are derivational entities, and therefore not expected to emerge in very young children, unlike *-i* diminutives of the type described in Ravid (1998). Since there is no systematic data available about the development of either the constructions or their meanings, we decided to focus on school-aged children as the domain of study.

2.1   Population

The study population consisted of 48 children in four age groups: kindergarteners aged 5–6, 2nd graders aged 7–8, 4th graders aged 10–11, 6th graders aged 12–13, and a control group of 13 adults. All participants were monolingual Hebrew speakers from middle-high SES background (the adults were all university graduates).

2.2   Research tasks and procedure

Participants were tested orally and individually in familiar surroundings. Each was administered two tasks in a fixed order. First, the *explanation task*, which required participants to explain the difference between two nouns (α.=.714). This consisted of 12 items – six task items and six distracters – each in the form of a pair of nouns – a base noun and its morphologically related diminutive form (see Table 2). For example, **What is the difference between *zanav* 'tail' and *znavnav* 'tail-DIM'?** Every two pairs of task items were interspersed with a distracter item, where participants were required to explain the difference between two nouns related either morphologically or semantically, e.g., **What is the difference between *boreg* 'screw' and *mavreg* 'screwdriver'? What is the difference between *tapuax* 'apple' and *agas* 'pear?** The distracter items were inserted to prevent participants from realizing the aim of the study and -- although they yielded fascinating responses – they were not analyzed in the current framework. The explanation task was preceded by one training on a non-diminutive item.

Table 2. The Explanation Task

Task item	Gloss	Targeted Response
	What is the difference between…	
1. *dag* and *dagig*	Fish and fish-DIM	*dag* is big / adult, *dagig* is smaller / younger, the young of the species
2. *kélev* and *klavlav*	Dog and puppy (dog-DIM)	*kélev* is big / adult, *klavlav* is smaller / younger, the young of the species
3. *séret* and *sirton*	Film and short film (film-DIM)	*séret* is longer / the full feature, *sirton* is shorter
4. *zanav* and *znavnav*	Tail and tail-DIM	*zanav* is of ordinary length, *znavnav* is smaller / shorter
5. *kaf* and *kapit*	Spoon and teaspoon (spoon-DIM)	*kaf* is of normal size, *kapit* is smaller and is used for tea, coffee
6. *axbara* and *axbarónet*	Mouse:FM and Mouse, FM-DIM	*axbara* is big / adult, *axbarónet* is smaller / younger, the young of the species

The *production task* was administered after the completion of the explanation task (α.=.816). Participants were asked to produce a diminutive form for an existing noun. This task also consisted of 12 items – six task items and six distracters. Task items consisted of a noun phrase describing a small or hypocoristic noun, and required participants to name it in one word (Table 3). For example, **what would you call / how would you say in one word <u>a small chair</u>?** Every two pairs of task items were interspersed with a distracter item, which required participants to produce different types of deverbal nouns following the design of Clark & Berman (1984), e.g., **What / how would you call in one word <u>a tool that breaks things</u>?** The distracter items had the same function of concealing the aim of the study, and were not analyzed in the current framework. The production task was preceded by one training on a non-diminutive item.

Table 3. The Production Task

Task item	Gloss	Targeted Responses
	What would you call / How would you say in one word…	
1. kise katan shel bubot	A small doll's chair	*kis'on*
2. *xovéret ktana*	A small booklet	*xovrónet*
3. *xatul tinok*	A baby cat	*xataltul, xatulon*
4. *mišehi kcat šmena*	Somebody:FM who is a bit fat:FM	*šmanmónet*
5. *kubiya ktana ve-xamuda*	A small and cute cube / block	*kubiyónet*
6. *zakan katan*	A small beard	*zkankan*

2.3   Analysis

Scoring scales were constructed by the four authors for each of the tasks. The scales were adjusted until they accommodated all response types. All four authors rated 100% of the responses on the scoring scales. Inter-judge agreement was 91%. Cases in dispute were discussed until agreement was reached.

(i) Explanation scale. Explanation responses were rated on a 6-point scale:

0 – No response, repetition, irrelevant response. For example, *I don't know*

1 – No comparison, comparison on a non-linguistic basis. For example, *The Fish-DIM is the fish's friend; you can eat a fish and you can't eat a fish-DIM; There is no difference: a tail-DIM is the same as a tail.*

2 – Comparison on an inappropriate linguistic basis; hinted diminutive element. For example, *a film-DIM is maybe a cartoon; a film-DIM is one and a film is lots.*

3 – Ungrammatical structure of explanation or absence of comparative structure; bizarre element compared. For example, *the spoon-DIM has a thick round edge and spoon has a wider circle; small – big; a mouse:FM-DIM is less disgusting than a mouse:FM.*

4 – Hypocoristic diminutive used in explanation; comparison of non-canonical element; infelicitous or partial comparative structure. For example, *a dog is bigger, a dog-DIM is a cute puppy; A film-DIM is shorter; a tail-DIM is a short tail and a tail is a tail; a mouse:FM-DIM is a baby and a mouse:FM is a mother.*

5 – Correct response containing a full comparison of the canonical element. For example, *a spoon is larger than a spoon-DIM; the size, the age; Tail-DIM sounds like a short tail; a film is long – something like an hour or two, a film-DIM is a short film like a commercial.*

(ii) Production scale. Production responses were rated on a 6-point scale:

0 – No response, repetition, irrelevant response. For example, *I don't know.*

1 – Syntactic instead of morphological form; inflection instead of derivation. For example, *chairs; a bit bit fat; beards; a short beard.*

2 – Extant word, diminutive onomatopoeia. For example, *diary* (for small booklet); *miau – miau, sweety* (for baby cat); round (for a bit fat); *moustache, špic* 'pointy form' (for small beard).

3 – These responses all exhibited some serious structural lacunae: Non-derivational constructions (e.g., compounding, juvenile diminutives); infelicitous word structure. For example, *kise teatronim* (theatre-chair, for small doll's chair); *kóbi* (shortened *kubiya,* for small block); *xatuli* (childish *-i* added to *xatul,* for baby cat); *xavéret* (ill-formed *xovéret,* for small booklet).

4 – These responses were all appropriate, yet not complete. They included ungrammatical derivational forms; blendings; inappropriate suffix; ill-formed base; wrong inflection. For example, *ksinson* (ill-formed reduplicated *kise), barbise* (blend of *Barbi* and *kise,* for small doll's chair); *mini-buk* (for small booklet); *xatoltol* (ill-formed *xataltul*, for baby cat); *šmananit* (ill-formed reduplicated

šmena, with a diminutive suffix*), šmanmuda* (blend of *šmena* 'fat:FM' and *xa-muda* 'cute:FM', for a bit fat); *kubibub* (blend of *kubiya* and *buba* 'doll', for small block); *zakoni* (ill-formed double diminutive on *zakan*), *zaknun* (ill-formed reduplicated *zakan* for small beard).

5 – Correct response (targeted response or any other appropriate response with a diminutive device and a well-formed base obeying Hebrew morphophonological constraints). For example, *kisʾončik* (double diminutive for small doll's chair); *xovrónet, xovrit* (for small booklet); *xataltul, xataltulon* (for baby cat); *zkankan, ziknon* (for small beard).

2.3   Predictions

We assumed that the acquisition of conventional derivational diminutives is part of later, school-age linguistic development in Hebrew, and hence that kindergarteners would have only an initial and limited ability to explain and produce such diminutives. We further expected that morphological diminutive forming devices and their semantic and pragmatic functions would be more accessible to children as a function of age and schooling. We expected the explanations of older age groups to focus on the morphological link between item pairs, with more explicit reference to the diminutive device. We expected diminutive production in older age groups to follow Hebrew lexical conventions and to adhere to its morphophonological constraints. We expected the reduplicated form CC*a*CC*a*C to emerge later than the more transparent suffixes *-it* and *-on*.

3.   Results

Responses were analyzed in two ways: (i) a *lenient analysis* – by calculating success as an average on the scale. This analysis reveals children's morphological strategies in producing and analyzing diminutives; and (ii) a *stringent analysis* – by calculating success as the correct response only (5). This analysis examines the morpho-lexical knowledge necessary to produce and analyze correct diminutive forms. In both analyses, scores were converted into percentages.

3.1   Study tasks

Table 4 presents lenient and stringent scores on the two study tasks – explanation and production.

Table 4. Mean percentages and standard deviations of success (lenient and stringent analyses) on the Explanation and Production tasks, by age group.

Age group	Explanation		Production	
	Lenient scores	Stringent scores	Lenient scores	Stringent scores
Kindergarten	62.05	37.18	54.1	23.08
5-6	(20.03)	(28.18)	(24.35)	(25.94)
2nd grade	78.49	56.06	65.46	39.39
7-8	(18.34)	(23.89)	(23.86)	(21.44)
4th grade	86.94	63.89	75.56	44.44
9-10	(15.53)	(29.16)	(21.43)	(28.72)
6th grade	88.61	59.72	91.11	72.22
11-12	(11.59)	(29.69)	(7.43)	(19.24)
Adults	85.64	66.67	78.72	58.97
	(12.28)	(25.46)	(21.41)	(40.03)

Two-way analyses of age group (5) x task type (2) were conducted on the data in Table 4. The *lenient analysis* revealed an effect for age group ($F(4,56)=7.89$, $p<.0001$). The post-hoc Scheffé procedure ($\alpha =.05$) showed that kindergarteners (5–6), with the lowest scores, differed from all age groups above second grade (7–8). There was also an effect for task ($F(1,56)=7.95$, $p<.008$), showing that the explanation task scored higher (M=80.35%) than the production task (M=72.99%). No interaction emerged.

The *stringent analysis* revealed an effect for age group ($F(4,56)=4.87$, $p<.003$). The post-hoc Scheffé procedure ($\alpha =.05$) showed that kindergarteners (5–6), with the lowest scores, differed from the two oldest age groups, with the highest scores. There was also an effect for task ($F(1,56)=5.08$, $p<.03$), showing that the explanation task scored higher (M=56.7%) than the production task (M=47.62%). No interaction emerged.

3.2   Further analyses

We examined the responses on the two study tasks for possible factors that might affect performance.
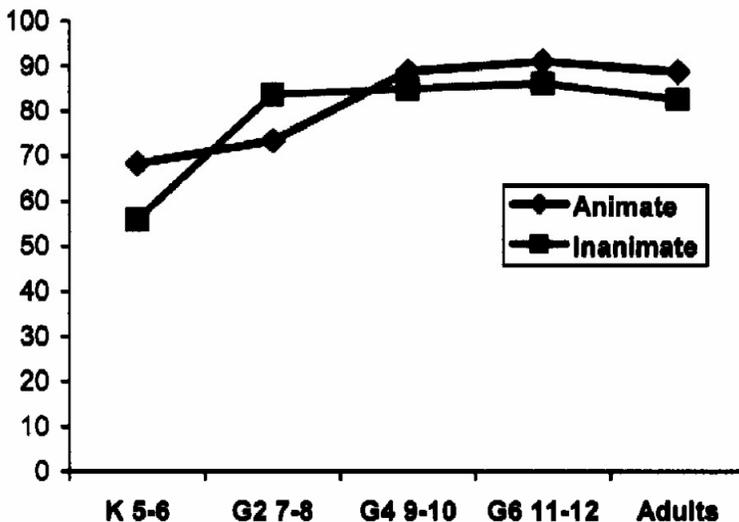
3.2.1   *Explanation: animacy*

A possible factor affecting success in the explanation task was item animacy, e.g., *fish* vs. *spoon,* with the idea that animate items might be easier to explain than inanimate ones. We focused on the lenient score (Table 5), since the stringent score did not permit such an in-depth analysis.

Table 5. Mean percentages and standard deviations of success (lenient analysis) on the Explanation task, by age group and animacy

Age group	Animate items	Inanimate items
Kindergarten 5-6	68.21 (29.46)	55.9 (14.54)
2nd grade 7-8	73.33 (22.31)	83.64 (17.73)
4th grade 9-10	88.89 (16.41)	85.0 (18.67)
6th grade 11-12	91.11 (11.13)	86.11 (14.06)
Adults	88.72 (16.19)	82.56 (16.45)

A two-way analysis of age group (5) x item animacy (2) was conducted on the data in Table 5. There was an effect for age group ($F(4,56)=6.04$, $p<.0001$), but no effect for animacy. However, a close-to-significant interaction of age group x animacy emerged ($F(4,56)=2.36$, $p=.065$), depicted in Figure 1.

Figure 1. Interaction of age group and item animacy in the explanation task

3.2.2   *Explanation: dimensions*

Two of the diminutives on this task – *tail* and *film* – are best explained in terms of length (though in different senses); three others – *dog, fish*, and *mouse* – share the

element of size or age; *spoon* is explained on the dimension of volume. A three-way analysis of age group (5) x item dimension (3: length, size/age, volume) was conducted on the data in Table 5. In addition to the effect for age group ($F(4,56)=5.63$, $p<.002$), there was an effect for dimension ($F(2,112)=11.04$, $p<.0001$): items differing in length (M=73.67%) proved to be harder than those differing in size/age (M=82.05%) and volume (M=88.59%). The interaction of age group x dimension emerged ($F(8,112)=3.99$, $p<.0001$), depicted in Figure 2, showed that it derives from the youngest group's performance on length items.
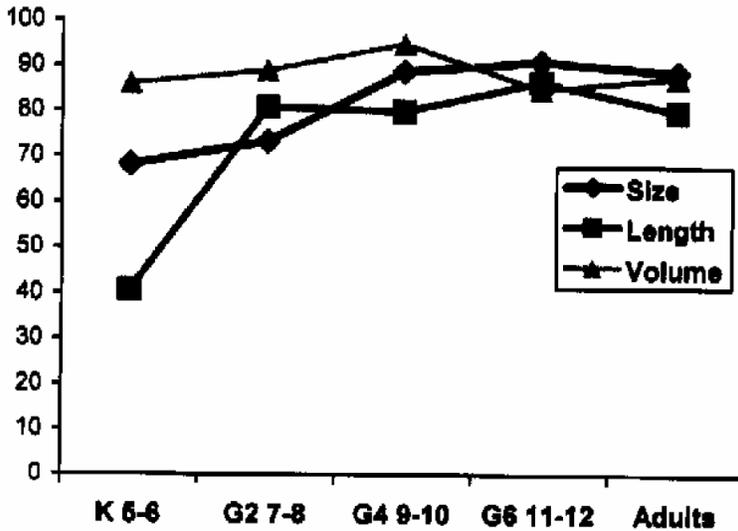

Figure 2. Interaction of age group and item dimension in the explanation task

Table 6. Mean percentages and standard deviations of success (lenient analysis) on the Production task, by age group and lexicalization

Age group	Lexicalized items	Non-lexicalized items
Kindergarten 5-6	54.87 (28.82)	53.33 (23.41)
2nd grade 7-8	55.76 (37.15)	75.15 (20.66)
4th grade 9-10	74.44 (26.49)	76.67 (25.35)
6th grade 11-12	87.78 (11.66)	94.44 (7.43)
Adults	76.92 (21.88)	80.51 (25.31)

3.2.2 *Production: Lexicalization*

A possible factor affecting success in the explanation task was item lexicalization, i.e., whether there was an extant diminutive form for that item in Hebrew. The idea was that lexicalized items might be easier to produce than non-lexicalized ones. We focused on the lenient score (Table 6), since the stringent score did not permit such an in-depth analysis.

A two-way analysis of age group (5) x item animacy (2) was conducted on the data in Table 6. There was an effect for age group ($F(4,56)=5.67$, $p<.002$), and a close-to-significant effect of lexicalization ($F(1,56)=3.68$, $p=.06$), showing that the *non-lexicalized* items task scored higher (M=76.02%) than the lexicalized ones (M=69.96%). There was no interaction.

4. Discussion

This is the first empirical investigation known to us of the development of conventional-derivational diminutives in Hebrew-speaking kindergarteners and school children compared with adults. Participants were administered an explanation task comparing base nouns and their diminutive forms, and then a production task which required them to produce the diminutive forms of base nouns. Analyses were conducted both on the average score on the scale (lenient analysis), as well as on the correct responses alone (stringent analysis).

On the whole, our results indicate that knowledge of conventional-derivational diminutive structure and meaning is indeed not an early acquisition in Hebrew. Unlike juvenile -*i* diminutives, the structures investigated in this study emerge in later childhood and improve with age and schooling. The learning curves we uncovered begin in kindergarten, with less than one quarter correct productions and about one third correct explanations, and they rise steadily from 2nd grade (age 7–8) throughout grade school, especially between 4th and 6th grade. In fact, only from age 12 do Hebrew speakers show that they have mastered the morphological, semantic, pragmatic, and cognitive factors that interact in understanding and producing diminutive forms. Diminutive derivational morphology is thus part of what is termed 'later language development', that is, linguistic acquisition during the school years (Berman 2004; Ravid & Zilberbuch 2003). Like acquisition of other derivational processes of word-formation, conventional diminutivization depends on both morphological and lexical knowledge, which require a long developmental route (Ravid 2004).

Both analyses – lenient and stringent – revealed that the explanation task was easier than the production task in most age groups. This appears counter to results of other studies reporting meta-linguistic explanation tasks, where young participants often found it easier to produce morphological forms than to explain them (Ravid & Malenky 2001; Seidman 2000). Even language teachers have been shown to be challenged by the requirement to provide explanations for linguistic phenomena in com-

parison to actually performing linguistic tasks (Ravid & Gillis 2002). However, in this particular case explaining diminutive semantics seems to be easier than producing a full range of Hebrew diminutive forms. We propose that unlike other derivational categories learned during the school years such as place, collective, and abstract nominalization (Ravid & Avidor 1998; Ravid, Avivi-Ben Zvi & Levie 1999), the semantics of diminutives is readily accessible to school-age children since it is scaffolded by the earlier juvenile 'proto-diminutive'. The long developmental history of diminutive production revealed in the current study can thus be attributed mainly to the array of formal diminutive options in Hebrew and to the need for mapping diminutive semantics on these different alternatives.

4.1   The explanation task

The meta-linguistic explanation task required participants to explicitly state the relationship between the members of a pair of basic and diminutive nouns, for example, to specify the difference between *dag* 'fish' and *dagig* 'fish-DIM'.

Even the youngest group in the study, kindergarteners aged 5–6, revealed an awareness of the morphological relationship between nouns and their diminutive counterparts. Their responses in attempting to state this relationship, however, often veered towards number, the most expected inflectional property of the Hebrew noun, with plurality assigned either to the base or to the diminutive noun. Thus kindergarteners (and a few second graders) said (1) *dagig* (fish-DIM) *are many in the water and dag* (fish) *is one in the water;* (2) *dag is one and dagig is two / a few / many';* (3) *zanav* (tail) *is one and znavnav* (tail-DIM) *is two tails';* (4) *znavnav is a cute name and zanav is many znavnav;* (5) *sirton* (film-DIM) is one and *séret is many*. Two conflicting accounts come to mind here. On the one hand, the children who produced examples 1–3 may be relating to the fact that diminutives are longer words due to either reduplication or suffixation, and thus might express a larger number than the base nouns (similarly to what was found for preschoolers' writing – Levin & Korat 1993). On the other hand, responses such as 4–5 might be precursors of the prototypical *big* (base) / *small* (diminutive) relationship expressed by members of the pair. By assigning plural number to the base form our participants might be expressing its larger size.

Yet another phenomenon underscored developmental changes. Three of the task items were animate – *fish, dog, mouse*, and three – *tail, spoon, film* – were inanimate. The statistical analysis (Figure 1) revealed a changing pattern in development: Kindergarteners (5–6 year olds) found animate diminutives easier to explain than inanimate, while second graders (7–8 year olds) did better on inanimates. From 4th grade (9–10) up, there was no difference between the two semantic classes. A tentative explanation might be young children's sensitivity to animate objects, leading them to frame animate diminutives in terms of kinship relationships (*mommy, granny, daughter, cub*) and hypocoristics (*when you love somebody you say klavlav 'puppy'*). Older children's responses, in contrast, could reveal a growing perception of the fact that diminutives may also

apply to properties of inanimate objects. Thus, participants in the older age groups did not refer to animate diminutives in terms of kinship relations, but characterized them along the more objective lines of age (*young / adult*) and size (*small / big*).

The three inanimate items elicited a broader array of responses, demonstrating how diminutive semantics diversifies and becomes more multi-layered with age and schooling, and pointing at interesting structural and semantic directions for further studies of diminutivization in Hebrew. The reduplicated diminutive *znavnav* 'tail-DIM' was clearly strange for children and often elicited laughter and puzzlement (e.g., *I have never heard that word*). While kindergarteners (5–6) spoke of *znavnav* in hypocoristic terms, 2nd graders (7–8) were already able to relate to the size of a tail, but not to its length – the dominant feature from 4th grade on. The familiar household objects *kaf / kapit* 'spoon / teaspoon [spoon-DIM]' elicited only size-related responses up to 4th grade (9–10-year-olds), with function-related responses emerging in 6th grade (12-year-olds): "A teaspoon is for cornflakes, a spoon is for soup". But only adults explicitly related to the properties of volume and depth as differentiating between a spoon and a teaspoon. The item *séret / sirton* 'film / film-DIM' was especially difficult for kindergarteners, who could only relate to the screening context as a possible indirect expression of size: *séret is on TV / in the cinema, sirton is on the computer.* By grade school, children were able to relate directly to *duration*, the conventional difference between the members of this pair (*séret is long, sirton is short*), although a few second graders still referred to length by size, with a less specific term (*séret is big, sirton is small*), as in *zanav / znzvnav* 'tail / tail-DIM' above. Finally, *séret* is ambiguous in Hebrew between *film* and *ribbon*: A few kindergarteners preferred the more concrete sense of an article of clothing (*you put a ribbon on your head*) to the less concrete sense of *film* as a product that can be measured temporally.

From another perspective, we found that the semantic dimension along which the items differed affected diminutive acquisition: Diminutives differing in length, a cognitively and lexically specific dimension (*tail* and *film*), were more difficult than those differing in size (*dog, fish, mouse*, and *spoon*), although the kindergarteners alone found length (*long* vs. *short*) to be harder than the more general dimension of size (*big* vs. *small*). Moreover, recall that length was concrete in *tail* and temporal in *film*, suggesting an interesting direction for future research.

Older school children provided meta-linguistic commentary that testified to increasing cognitive abilities of executive control (Kluwe & Logan 2000; Rubinstein, Meyer & Evans 2001) and the effect of formal school instruction. When they reached the third item on the Explanation task, 4th graders (9–10 year olds) often made comments indicating their ability to extract the principle underlying all items, e.g., *again, it's the same – small, big; as I said before…; it's like 2, 6, 8… it's the same point…* By 6th grade (ages 11–12), children's responses contained terminology that clearly derived from formal school instruction, such as comments on the morphological structure of the task items (*axbara* [mouse:FM] *is in feminine form; the word itself lets you understand that this is a short tail; it's the same word, it's just a general name, a general word;*

séret / sirton ['film / film-DIM'] – *you can't say it's smaller, though we learned in Hebrew class that it means smaller.*

The formulation of explanations identified an interesting developmental contrast between adults and the rest of the age groups. Most responses took the form of a classical Aristotelian definition (Hull 1992): In response to a question such as *What is the difference between a fish (dag) and a fish-DIM (dagig)?* most participants would respond with a full proposition consisting of the given referent and a novel predicating adjective, e.g., *a fish is older and a fish-DIM is young*. It was only members of the adult group who were able to succinctly sum up the difference by an abstract nominal specifying the superordinate category, e.g., *the size, the volume, the depth, the length…* – instantiated by the task items, an ability that depends on both mature command of executive control as well as knowledge of abstract nominalization.

4.2   The production task

Participants' responses highlight the developmental path taken by Hebrew speakers in learning to express diminutive dimensions. Even the youngest age group avoided producing juvenile *-i* forms in response to target items – although they did so for some of the distracter items, where they produced forms such as *šokoládi* 'chocolaty', and *ayfáni* 'tiredy'. It seems that even kindergarteners are aware of the fact that conventionally derived diminutives do not include *-i*, which they use only when they feel called upon to innovate on items with no conventional target diminutive. Instead, they produced numerous non-derivational responses involving inflection (*beards, chairs, blocks*) and syntactically periphrastic constructions (*a lady who's a bit fat, pregnant fat, toy chair*).

Two response types emerged in grade school. One involved double diminutives marked by two devices, usually internal reduplication and an external suffix, e.g. *zkankon* for *zkankan* 'beard-DIM', or *kubkubit* for *kubiyónet* 'block-DIM' – some of them in fact acceptable as diminutive options in Hebrew, e.g., *xataltulon* 'tiny kitten' and *kisʾončik* 'chair-DIM' with two diminutive suffixes – Hebrew and foreign. Older grade schoolers and adults also employed blending for diminutivization

(Berman 1989) – *kubikat* (*kubiya* 'block' + *kat)* and *kaskat* (*kise* 'chair'+ *kat)* involving the high-register word for 'small' *kat; mini-xovéret, minivéret, (mini + xoveret* 'booklet'), *minikise* (*mini+ kise* 'chair') and *barbise (barbi* 'Barbie doll' + *kise* 'chair'). This finding, too, is consistent with previous indications that blending is a later language acquisition in Hebrew (Ravid 1990).

The only statistically significant difference in the production task was related to lexicalization: The three lexicalized items (*cat-kitten, fat-fatso, beard-small beard or goatee*) scored lower than the three non-lexicalized items (chair-small chair, booklet-small booklet, block-small block). Though no interaction emerged, Table 6 shows that the kindergarteners, with lowest scores, were the only group that was not adversely affected by item lexicalization. Two explanations are suggested for this finding. One is the nature of the task, which called for morphological operations on the stem rather than

lexical retrieval. Thus, even those participants who knew the conventional diminutives tended to perform creative, innovative manipulations on the given stem (e.g., adult blend *šmanmuda* – a combination of *šmanmónet* 'fatso' and *xamuda* 'cute').

A second explanation relates to the fact that the three lexicalized items had reduplicated forms (*xataltul* 'cat-DIM', *šmanmonet* 'fat-DIM-DIM'), and *zkankan* 'beard-DIM') – which is the least accessible diminutive structure. Reduplication, as noted, does not take either of the major word-formation forms in Hebrew: It does not resemble linear formation, where a suffix attaches at the end of a stem (e.g. *pax-it* 'can-DIM'), nor can it be considered non-linear formation, where a consonantal root is combined with a pattern (e.g., *p-r-k* 'part' + CéCeC fi *pérek* 'chapter'). Reduplication works more like a prosodic than a morphological process, by amplifying word segments such as syllables and single consonants (e.g., *xalak* 'smooth' – *xalaklak* 'slippery'). Reduplicated segments do not have morphological status, since no morpheme boundaries can be identified in reduplicated structures. This makes reduplicated diminutive structures a different class of items than more mainstream diminutive structures, and hence less accessible to children, who do not have an overview of word-formation processes in Hebrew.

On the other hand, use of reduplication emerged quite early. A qualitative analysis of responses tentatively points at two age-related levels of reduplicated production interacting with item familiarity (i.e., the extent to which children were familiar with the lexical item). Younger, less linguistically adept language users (mostly kindergarteners and 2nd graders), produced innovative, ill-formed reduplicated diminutives that fail to follow the conventional CC*aCCaC* or CC*aCCóCet* structures – both for target items requiring reduplicated and non-reduplicated structures. Examples of this strategy include: *xavarbaronit* and *xovréret* from *xovéret* 'booklet', for target *xovrónet* 'booklet-DIM'; *kobikobi* from *kubiya* 'block', for target *kubiyónet* 'block-DIM'; *xatoltol* from *xatul* 'cat', for target *xataltul* 'booklet-DIM'; *zaknanon* from *zakan* 'beard', for target *zkankan* 'beard-DIM'; and *šmenanit*, *šmanmena,* and *šmanmanmónet* from *šmena* 'fat', for target *šmanmónet* 'fat-DIM'. Interestingly, in a study of deverbal noun coinages, Berman (2000) found that 4-year-olds – more than younger or older children – often used this same device for innovating nouns. In contrast, older, more sophisticated and literate participants were able to perform correct reduplication on items where this was required. Mature Hebrew speakers might be more aware of prosodic restrictions on Hebrew reduplication, which prevent its application to longer words such as *xovéret* and restrict it to bi-syllabic words such as *zakan* (thanks to Irit Katzenberger for this insight).

Reliance on lexical items from the established lexicon was evident among both kindergarteners and adults, but in different ways. Kindergarteners occasionally produced concrete lexical alternatives for the required diminutives, e.g. *maxbéret* 'notebook' for *xovéret* 'booklet', or *gur* 'baby animal' for *kitten* and *puppy*. But adults produced lexically specific and appropriate items such as *pinkas* 'small notebook', *yoman* 'diary', or *alon* 'flyer', in some cases giving words that are structurally related to diminutives, e.g., *šrafraf* 'stool', a reduplicated form, or *alonit* 'flyer-DIM' for *xovéret*.

Here, too, older participants made meta-linguistic comments about the task, especially 4th and 6th gradeschoolers. For example *I'll look for something with mini-*(6th grade); *šmanmana* 'fat-DIM', *but it doesn't count as making it up* (4th grade); *cute directs me towards the suffix-on, kubiyónet* 'block-DIM' (adult).

Item familiarity interacted with other factors in the production task. Of the three lexicalized and reduplicated items, *zkankan* 'beard-DIM', the least common and most high-register item, was also the hardest, eliciting many alternative ill-formed responses such as *zakikon* (kindergarten), *zakóni* (2nd grade), *zakon* (2nd & 6th grade), *zaknan* (2nd & 4th grade), and extant *safam* 'moustache'. Of the three non-lexicalized items, all taking the suffix *-on*, the most difficult was *xovrónet* 'booklet-DIM': It likewise elicited many non-conventional responses such as *xovran, xavéret, xovróti* (a combination of plural and juvenile diminutive), as well as *maxbéret* 'notebook' from the same root.

Finally, the qualitative analysis of participants' responses indicates that Bolozky (1994) is correct in viewing *-on* rather than *-it* as the structure most identified with diminutive meaning in Hebrew. As noted earlier, both *-on* and *-it* have other derivational meanings such as instrument and collective. Nonetheless, responses with *-it* were fewer and emerged relatively later than *-on* (and reduplicated) responses, e.g., *kubit* 'block-DIM' for *kubiyónet* and *xovrit* 'booklet-DIM' for *xovrónet*. Hebrew speakers evidently tend to regard *-on* suffixation and reduplication, both of which have masculine and feminine versions, as target devices for expressing diminutive semantics, whereas *-it* remains strongly associated with feminine marking (e.g., in common girl's names like *Ronit, Dorit, Galit*) and only marginally connected with diminutiveness.

Notes

1.   Stress is marked only penultimately.

2.   Thought historically well established, deriving from Mishanic Hebrew, spoken in the Second Temple era (Avineri 1964).

3.   Reduplication in the verbal system is enabled in extracting consonantal skeletons from words and creating a new root by reduplicating the third and last consonant, e.g. root?-v-r-r in *ivrer* 'brought fresh air in' from *avir* 'air'; root t-x-n-n in *tixnen* 'planned' from *toxnit* 'plan'. The result is not diminutive, although the process originally carried a diminutive function (Sagi 1997).

References

Anderson, S.R. 1982. Where's morphology? *Linguistic Inquiry* 13: 571–612.

Avineri, Y. 1964. *Yad ha-lashon.* Tel Aviv: Yizre'el. [in Hebrew]

Bat- El, O. 2004. Consonant identity and consonant copy: The segmental prosodic structure of Hebrew reduplication. In *Perspectives on language and language development,* D. Ravid and H. Bat-Zeev Shyldkrot (eds), 25–34. Dordrecht: Kluwer Academic Publishers.

Barrett, M. 1995. Early lexical development. In *The handbook of child language*, P. Fletcher and B. MacWhinney (eds), 362–392. Oxford, UK: Blackwell.

Berman, R.A. 1985. *Acquisition of Hebrew.* Hillsdale NJ: Earlbaum.

Berman, R.A. 1989. The role of blends in Modern Hebrew word-formation. In *Studia linguistica et orientalia memoriae Haim Blanc dedicata*, P. Wexler, A. Borg and S. Somekh (eds), 45–61. Wiesbaden: Harrassowitz.

Berman, R.A. 2000. Children's innovative verbs vs. nouns: Structured elicitations and spontaneous coinages. In *Methods for studying language production,* L. Menn, and N. Bernstein-Ratner, (eds), 69–93. Mahwah NJ: Erlbaum.

Berman, R.A (ed.). 2004. *Language development across childhood and adolescence: Psycholinguistic and crosslinguistic perspectives.* Amsterdam: Benjamins.

Bolozky, S. 1994. On the formation of diminutives in Modern Hebrew morphology. *Hebrew Studies* 35: 47–63.

Bolozky, S. 1999. *Measuring productivity in word formation: The case of Israeli Hebrew.* Leiden: Brill.

Ceccherini, M., Bonifacio, S. and Zocconi, E. 1997. Acquisition of diminutives in Italian (Sara). In *Studies in pre- and protomorphology*, W.U. Dressler (ed.), 157–163. Wien: Österreichische Akademie der Wissenschaften.

Clark, E.V. 1985. The acquisition of Romance, with special reference to French. In *The crosslinguistic study of language acquisition,* D.I. Slobin (ed.), 687–782. Hillsdale NJ: Erlbaum.

Clark, E. 1993. *The lexicon in acquisition.* Cambridge: Cambridge University Press.

Clark, E. and Berman, R.A. 1984. Structure and use in acquisition of word-formation. *Language* 60: 542–590.

Dressler, W.U. 1994. Evidence from the first stages of morphology acquisition for linguistic theory: extragrammatical morphology and diminutives. *ALHafn* 27: 91–108.

Dressler, W.U. and Karpf, A. 1995. The theoretical relevance of pre- and protomorphology in language acquisition. In *Yearbook of Morphology 1994*, G. Booij and J. v. Marle (eds), 99–122. Dordrecht: Kluwer Academic Publishers.

Dressler, U.W. and Merlini-Barbaresi, L. 1994. *Morphopragmatics: diminutives and intensifiers in Italian, German, and other languages*. Berlin: Mouton de Gruyter.

Gillis, S. 1997. The acquisition of diminutives in Dutch. In *Studies in pre- and protomorphology*, W.U. Dressler (ed.), 147–156. Wien: Österreichische Akademie der Wissenschaften.

Graf, D. 2002. A Study of Nominal Reduplication in Modern Hebrew. Proceedings of the 18th meeting of The Isaraeli Association of Theoretical Linguistics. Bar-Ilan University.

Hull, D.L. 1992. The effect of essentialism on taxonomy: two thousand years of stasis'. *The Units of Evolution*: 199–225.

Jurafsky, D. 1996. Universal tendencies in the semantics of the diminutive.   *Language* 72: 533–578.

Kempe, V. and Brooks, P. J. 2001. The role of diminutives in Russian gender learning: Can child-directed speech facilitate the acquisition of inflectional morphology? *Language Learning* 51: 221–256.

Kempe, V., Brooks, P. J. and Pirott, L. 2001. How can child-directed speech facilitate the acquisition of morphology? In *Research on Child Language Acquisition: Proceedings of the 8th conference of the International Association for the Study of Child Language,* M. Almgren, A. Barrena, M.J. Ezeizabarrena, I. Idiazabal, and B. MacWhinney (eds), 1237–1247. Medford, MA: Cascadilla Press.

Kempe, V., Brooks, P.J., Mironova, N. and Fedorova, O. 2003. Diminutivization supports gender acquisition in Russian children. *Journal of Child Language* 30: 1–15.

Kempe, V., Brooks, P. J., Mironova, N., Pershukova, A. and Fedorova, O. 2005. Playing with the endings of words: The effect of switching between simplex and diminutive forms of a noun on morphology acquisition in Russian. Paper presentation, IASCL conference, July 25–29, Berlin.

Kluwe, R. and Logan, G.D. (eds.). 2000. Executive control. [Special issue]. *Psychological Research* 63 (4).

Levin, I. and Korat, O. 1993. Sensitivity to phonological, morphological, and semantic cues in early reading and writing in Hebrew. *Merrill-Palmer Quarterly* 39: 213–232.

Nir, R. 1993. *Word-formation in Modern Hebrew*. Tel Aviv: The Open University. [in Hebrew]

Ravid, D. 1990. Internal structure constraints on new-word formation devices in Modern Hebrew. *Folia Linguistica* 24: 289–346.

Ravid, D. 1995. The acquisition of morphological junctions in Modern Hebrew: the interface of rule and rote. In *The development of morphological systematicity: a cross-linguistic perspective,* H. Pishwa and K. Maroldt (eds), 55–77. Tubingen: Gunter Narr.

Ravid, D. 1998. Diminutive -i in early child Hebrew: an initial analysis. In *Studies in the acquisition of number and diminutive marking,* S. Gillis (ed.), 149–174. Antwerp: Universiteit Antwerpen.

Ravid, D. 2004. Later lexical development in Hebrew: derivational morphology revisited. In *Language development across childhood and adolescence: Psycholinguistic and cross-linguistic perspectives,* R.A. Berman (ed.), 53–82. Amsterdam: Benjamins.

Ravid, D. and Avidor, A. 1998. Acquisition of derived nominals in Hebrew: Developmental and linguistic principles. *Journal of Child Language* 25: 229–266.

Ravid, D. and Gillis, S. 2002. Teachers' perception of spelling patterns and children's spelling errors: A cross-linguistic perspective. In **Consistency in writing systems**, M. Neef, A. Neijt and R. Sproat (eds), 71–95. Tübingen: Niemeyer Verlag.

Ravid, D. and Malenky, A. 2001. Awareness of linear and nonlinear morphology in Hebrew: A developmental study. *First Language* 21: 25–56.

Ravid, D. and Nir, M. 2000. On the development of the category of adjective in Hebrew. In *From sound to sentence: Studies on first language acquisition*, M. Beers, B. van den Bogaerde, G. Bol, J. de Jong, and C. Rooijmans (eds), 113–124. Groningen: Center for Language and Cognition.

Ravid, D. and Zilberbuch, S. 2003. Morpho-syntactic constructs in the development of spoken and written Hebrew text production. *Journal of Child Language* 30: 395–418.

Ravid, D., Avivi-Ben Zvi, G. and Levie, R. 1999. Derivational morphology in SLI children: structure and semantics of Hebrew nouns. In *New directions in language development and disorders,* M. Perkins and S. Howard (eds), 39–49. New York: Plenum.

Rubinstein, J.S., Meyer, D.E. and Evans, J.E. 2001. Executive control of cognitive processes in task switching. *Journal of Experimental Psychology: Human Perception and Performance* 27: 763–797.

Schwarzwald, O.R. 2004. Comments on Hebrew reduplication. *Mehkerey morashtenu* 2–3: 251–261. [in Hebrew]

Seidman, O. 2000. Morphological and phonological perception and the development of writing from kindergarten to first grade. MA thesis, Department of Communications Disorders, Tel Aviv University.

Sagi, H. 1997. Selected morpho-syntactic changes in literary translations of Sholom-Aleichem from Yiddish into Hebrew: a study of the influence of Yiddish on the structure of Modern Hebrew. Unpublished doctoral dissertation, Bar Ilan University.

Spencer, A. 1991. *Morphological theory.* Oxford, UK: Blackwell.

Stephany, U. 1997. Diminutives in early child Greek, a preliminary investigation. In *Studies in pre- and protomorphology,* W.U. Dressler (ed.), 147–156. Wien: Österreichische Akademie der Wissenschaften.

Ussishkin, A. 1999. The inadequacy of the consonantal root: Modern Hebrew denominal verbs and output-output correspondence. *Phonology* 16: 401–442.