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Formal, Lexical, and Semantic Factors in the Acquisition of Hebrew Resultative Particles

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1. Introduction

This study examines when and how Hebrew-speaking children learn to express the notion of **resultant endstate**.¹ Conceptually, this involves a causal chain, proceeding from an initial state in which an entity is situated, via an activity that incurs a change-of-state, leading to a resultant endstate. For example, if somebody is hungry—the initial state—he or she performs the activity of eating, and ends up *full*, *no longer hungry*, *satisfied*. The notion of resultativity can thus be expressed by single-word adjectives or past participles, and by prepositional or other phrases.

The study also relates to children's construal of **word-formation** processes in their language. Research has shown that from around 3 years of age, Hebrew-speaking children master the complex morpho-lexical operations involved in new-word formation: in deriving nouns from verbs (Clark & Berman 1984), verbs from nouns (Berman 1989, Berman & Clark 1993), and verbs from verbs (Berman 1993a).² That is, new-word formation in Hebrew, as in other languages (Clark 1993), is a rather late development compared with children's earlier command of grammatical categories like case-marking and inflections for tense or number and gender agreement (Berman 1985, 1993b).

The category of endstate resultatives is special from this point of view. It lies between grammar and lexicon, having a fully productive set of grammaticized forms. All transitive verbs have a perfective or resultative form, but this may not always be regular in morphophonological form, as shown by the examples of English past participles in (1).

(1) English Past Participle Resultatives:

Regular verbs: *boil/boiled*, *splash/splashed*, *wrap/wrapped*

Irregular verbs: *catch/caught*, *write/written*, *cut/cut*

In Hebrew, resultative verb forms also tend to the structurally productive, grammatical end of the lexical/grammatical continuum. Hebrew verbs are all formed in one of five morphological patterns, called *binyan* conjugations, three of which allow transitive verbs that take direct objects. Each of these three patterns has its own perfective alternant—in the form of the **passive participle**.³ The examples in (2) illustrate these forms.

(2) Hebrew Passive Participle Resultatives:⁴

Verb-Pattern <i>binyan</i>	Root	Gloss	Active Forms		Resultative/ Perfective	
			Inf.	Present		
<i>Pa'al:</i>	s-g-r t-p-s	close / closed catch / caught	<i>li-sgor</i> <i>li-tfos</i>	<i>soger</i> <i>tofes</i>	CaCuC	<i>sagur</i> <i>tafus</i>
<i>Pi'el:</i>	s-p-r p-r-q	cut (hair) break / broken	<i>le-saper</i> <i>le-farek</i>	<i>me-saper</i> <i>me-farek</i>	meCuCaC	<i>mesupar</i> <i>mefurak</i>
<i>Hif'il:</i>	s-t-r p-s-d	hide / hidden lose / lost	<i>le-hastir</i> <i>le-hafsid</i>	<i>mastir</i> <i>mafsid</i>	muCCaC	<i>mustar</i> <i>mufsad</i>

This paper focuses on forms illustrated in the rightmost column in (2), represented by a combination of root consonants "C" and affixal elements as **CaCuC**, **meCuCaC**, and **muCCaC**. These three patterns share the vowel *u*, which uniquely marks **passive** forms of Hebrew verbs.⁵ The questions addressed here are: When and how do children acquire grammatical marking of resultativity through these *u*-marked perfective participles, and is there any difference between how well they cope with these three sets of alternations?

2. Predictions

The study was guided by the following four predictions.

Comprehension before production: Children will understand the relevant forms before they are able to produce them. Studies in word-formation and other structural domains show that children can give an appropriate interpretation to novel forms of words and unfamiliar structures before they use them correctly in their own speech output (Clark & Berman 1987).

Productive use of *u*-form participles from age 3: At first, children will use periphrastic means to express the notion of resultativity, but by age 3, they will rely on *u* forms for this purpose. In this, they may demonstrate earlier command of resultative *u*-forms than other, less grammatically productive areas of new-word formation, e.g. deriving novel verbs from familiar nouns (Berman 1989, Berman & Clark 1993) and deriving novel nouns from familiar verbs (Clark & Berman 1984).

Juvenile unconventional use of *u*-forms: Young children may alternate across conjugations to produce a meCuCaC form from a source-verb in the *pa'al* conjugation, or a CaCuC form from a source-verb in *pi'el*, rather than vice versa. With age, their *u*-form participles will comply with the grammatical system of verb-pattern alternations and with the established lexicon.

Differential treatment of the three forms: Children will have least difficulty with CaCuC or meCuCaC, and most with muCCaC. CaCuC seems easiest, because lexically it relates to verbs in the high-frequency, most basic pattern *pa'al* (Berman 1993b); morphologically it has canonic CVCVC syllable-structure. Yet meCuCaC is also morphologically transparent, and it obeys the principle of "formal simplicity" (Clark 1993), since it shares the familiar and salient prefixal *m*-present-tense marker with the active form of the verb (Berman 1983). The muCCaC form is

most complex: semantically, it is often based on a verb which is a causativized form of a verb in another conjugation; lexically, there are many gaps in the muCCaC form, which are often preempted by intransitive verbs in the *nif'al* conjugation (see fn. 5); and in form, muCCaC is perceptually opaque, since the *u*-vowel marker combines with the *m*-initial present-tense marker in a synthetic prefix, rather than being part of the stem as in CaCuC and meCuCaC.

3. Data Collection

The study has two main sources of data: resultative forms used by Israeli preschoolers in their naturalistic speech output and a structured elicitation test. Longitudinal speech samples show that Israeli children both understand and produce conventional, lexicalized *u*-forms in semantically appropriate contexts from as young as age 22 to 24 months, in forms like *katuv* 'written', *mekulka* 'broken, not working', *mudlak* 'lit, switched on'. They also commonly produce **unconventional** *u*-forms, like those illustrated in (3) from the naturalistic speech output of Israeli preschoolers.

(3) Unconventional *u*-forms in spontaneous usage:

1. Nir, b, 3;6	<i>ha-kafe</i>
The-coffee's	<i>shapuax</i>
spilt	cf. CaCuC <i>shafux</i>
2. Keren, g, 2;10	<i>ha-mecax sheli</i>
My forehead's	<i>kasuy</i> <i>be-se'ar</i>
covered with hair	cf. meCuCaC <i>mexuse</i>
3. Hagar, g, 2;10	<i>axshav hu</i>
Now it's	<i>meshutaf</i>
washed (of coin she had rinsed in basin)	cf. CaCuC <i>shatuf</i>
4. Shay, b, 5;1	<i>ani shomea she at</i>
I hear that you're	<i>meshu' Elet</i>
coughed = have a cough	cf. Active <i>mishta' el</i>
5. Yael, g, 4;6	<i>ani me'od</i>
I'm very	<i>me'ulevet</i>
offended (children had called her names)	cf. Middle <i>ne' elevet</i>
6. Shay, b, 4;10	<i>ha-raglayim yihyu</i>
my feet will-be	<i>mukfot mikor</i>
frozen+FM-PL from cold	cf. CaCuC <i>kfu' ot</i>

These "creative errors" show that 3-year-olds can express resultative end-states with semantically appropriate and phonologically well-formed *u*-participles, even though these are not always morphologically conventional or lexically established. We documented around 70 such innovative usages, of which the bulk (79%) were in either the CaCuC or the meCuCaC form—one-third and nearly a half respectively; less than a quarter were in muCCaC, like the last example in (3), or else in other, unconventional *u*-forms.

These findings are robust across different children, but they are based on an incidental sampling from longitudinal and diary records. In order to make more controlled comparisons across children speaking different languages, a test was constructed of both comprehension and production. The test was given to 60 children, 12 at each age-group aged from 2 to 7 years, and to 12 adults, all native Hebrew speakers of middle-class, educated backgrounds. As illustrated in (4), there were 4 classes of test items, one group in each of the three active

conjugations, which require CaCuC, meCuCaC, or muCCaC forms, and a fourth group of transitive verbs which have lexical adjectives formed from the same root.⁶

(4) Classes of Test Items (see fn. 4):

Root	Gloss	Resultative Forms = Passive Participle		binyan Conjugation	NonResultative Verbs Infinitive	Active Participle
1. s-g-r g-z-r	close cut	CaCuC	e.g. <i>sagur</i> <i>gazur</i>	<i>Pa'al</i>	<i>ligzor</i> <i>ligzor</i>	<i>soger</i> <i>gozer</i>
2. s-r-q k-s-y	comb cover	meCuCaC	e.g. <i>mesurak</i> <i>mexuse</i>	<i>Pi'el</i>	<i>lesarek</i> <i>lexasot</i>	<i>mesurak</i> <i>mexuse</i>
3. s-t-r sh-q-y	hide water	muCCaC	e.g. <i>mustar</i> <i>mushke</i>	<i>Hif'il</i>	<i>lehastir</i> <i>lehashkot</i>	<i>mastir</i> <i>mashke</i>
4. y-b-sh r-t-v	dry wet	meCuCaC muCCaC	e.g. <i>meyubash</i> <i>murtav</i>	~ Adj <i>yavesh</i> ~ Adj <i>ratov</i>	<i>leyabesh</i> <i>lehartiv</i>	<i>meyabesh</i> <i>martiv</i>

Each test item had a set of 5 pictures, 3 cue pictures and 2 distractors. The first picture showed an object or person in an initial state, e.g. an apple, a dark room, or a boy dripping wet; the second showed some means of changing that initial state, e.g. a knife, a candle, or a towel; the third showed the resultant state, e.g. the apple cut in pieces, the room lit up, or the boy dry. Subjects were shown the picture sets and asked to interpret or to describe the resultant endstate for each set.

4. Findings

On the comprehension test, responses were counted as correct if the child chose the picture that depicted the target object in the resultant endstate described by the *u*-form of the verb. On the production task, three classes of responses were scored as **appropriate**, as shown in (5).

(5) Types of "Appropriate" Responses on Production Task:

	Input-Source	Output-Target	Child	Age
a. CORRECT = ESTABLISHED:	<i>ligzor</i> to close	<i>sagur</i> closed	Shay	2;6
	<i>lenapeax</i> to blow up	<i>menupax</i> blown up	Tomer	3;6
	<i>lishbor</i> to break	<i>shavur</i> broken	Roni	3;0
b. UNCONVENTIONAL = OTHER [+u]:	<i>lehavrish</i> to brush	<i>mesurak</i> combed	Daniel	2;3
	<i>lekacer</i> to shorten	<i>namux</i> short = low	Tal	2;4
	<i>leharkiv</i> to assemble	<i>mekurav</i> neared	Tal	3;6

c. PERIPHRASTIC	<i>lehalbish</i> to dress	<i>hilibshu oto</i> dressed + Pl him = impersonal	Ido	2;3
	<i>lexasot</i> to cover	<i>loh roim oto</i> not see + Pl him = you can't see him	Shiran	3;2
	<i>legaleax</i> to shave	<i>bli zakan</i> without (a) beard	Raviv	3;3

Results showed, first, that even 2-year-olds, aged from 24 to 30 months, could understand resultative *u*-forms nearly half the time, a proportion which rose to three-quarters by age 3 years. In contrast, only one-third of the 2-year-olds **produced** appropriate responses, almost none of them in the required *u*-form. By age 3, nearly half the children produced an *u*-marked participial form, although this was the correct alternant of the active input form only about half the time. The test findings thus confirm the first prediction, that children would understand *u*-marked resultative forms before they produce them.

The proportion of **appropriate** responses which were produced, showing that children can express resultativity in words, rose sharply between age 2 and 3 years, and less significantly between 3 and 4 years of age, with 5-year-olds reaching ceiling. Around 20% of these appropriate responses were periphrastic, non-*u* formed descriptions of the resultant endstate.⁷

Results of the production task also confirm the second prediction, that children will use the *u*-marked perfective participles productively from age 3 years, but not before. The 3-year-olds did significantly better than 2-year-olds at producing these forms (only 10% of all 2-year-old responses compared with around half those given by 3- and 4-year-olds, and around three-quarters from age 5 years up). Moreover, the proportion of [+*u*] forms out of total appropriate responses rose sharply between age 3 and 4 years to around two-thirds, and increased gradually from age 5 years up to around three quarters among the older children.

These findings are consistent with other studies of Hebrew word-formation, where the period between age 3 and 4 marks a major step forward in mastery of the relevant morphological alternations. On the other hand, unlike what I had predicted, 3-year-olds did **not** do better in producing *u*-marked resultative forms, which are grammatically fully productive, than they did on more innovative word-formation tasks which required them to fill lexical gaps. In studies where children were required to derive novel nouns from familiar verbs (Clark & Berman 1984), novel verbs from familiar nouns and adjectives (Berman & Clark 1993), and novel verbs from familiar verbs (Berman 1994), 3-year-olds coined morphologically appropriate forms over half the time in each case (between 55% and 59%). The 3-year-olds in the present study (aged 3;0 to 3;6) produced [+*u*] forms to a quite similar degree, slightly under half of their responses.

Third, as expected, children produced numerous **nonconventional** *u*-forms, for example, a CaCuC form from a verb in *pi'el* or the converse, a meCuCaC form from a verb in *pa'al*—as illustrated in (5-b).⁸ The proportion of

these noncanonic *u*-marked forms peaked at age 3, accounting for nearly half of the *u*-forms produced, and a third of all appropriate responses at this age. That is, the proportion of **correct** *u*-marked forms showed a clear developmental trend, from a low 4% of all 2-year-olds' responses to around one-quarter at age 3, 40% by age 4;0, and 60% among the 5-year-olds. This demonstrates that, during the period of acquisition of the system, between age 3 and 4, children master the structural devices of the grammar before they command the appropriate lexical matching between source and target forms.

A fourth prediction, relating to the same issue of the "matching" of input and output forms, was that children would find some forms easier than others, specifically, they would do better on CaCuC and meCuCaC forms than on muCCaC. This was confirmed by the higher proportion of the first two forms among the spontaneous innovations described at the beginning of this section. The test showed that children at all ages were best able to interpret items presented in the CaCuC form—the passive participle of the *pa'al*, most significantly among the 2-year-olds, with the difference decreasing from age 3 up. Otherwise, in **comprehension**, children succeeded overall equally well on the two *m*-prefixed passive participle forms—meCuCaC from *pi'el* verbs and muCCaC from *hif'il* verbs, across the age-groups.

In **production**, however, as predicted, subjects did far worse on the muCCaC form than on the other two. Here, children overwhelmingly favored CaCuC, both when it was compatible, in response to source verbs in *pa'al*, and when not, in response to verbs in the *pi'el* and *hif'il* patterns. Unlike the adults, nearly half of the children's *u*-marked responses were in CaCuC, followed by around one-third in meCuCaC, with a very low proportion of responses in muCCaC (only 15% of all *u*-marked forms from ages 2 through 7). Children's preference for CaCuC forms is also shown by the fact that 4-year-olds produced as many of them as did older children, but they produced relatively fewer meCuCaC and muCCaC. The difficulty of muCCaC forms is further demonstrated by the very low number of these forms produced by the younger, preschool children. Besides, the very few *u*-forms which were illformed, that is, which violated constraints on permissible Hebrew-verb syllable structure, were in the muCCaC form.

These findings are reaffirmed by comparison of source-conjugation / target-form **matching** across the age groups. The proportion of input/output mismatches was lowest for the *pa'al* / CaCuC pairing, next for the *pi'el* / meCuCaC pairing, and it was very high indeed (40% of such responses) for the *hif'il* / muCCaC pairing. Similarly, when providing an inappropriate, nonmatching *u*-form, muCCaC was hardly ever selected across the age-groups, compared with meCuCaC and CaCuC, in increasing order of preference.

These findings combine to yield a highly robust trend for preference of one *u*-form over another. As depicted in (6), CaCuC is favored over meCuCaC, and both these far precede muCCaC.

(6) CaCuC < meCuCaC < muCCaC

The test showed this ranking to apply across comprehension and production, across children in the different age-groups, across test items, in overall frequency with which a given form was produced, and in degree of match between source and target forms.

5. Comparison of Three Resultative Forms

The question is **why** these forms manifest such differential behavior, when all three represent the same semantic notion of resultative endstate, and all are members of the same grammatical category, passive participles, which has only these three forms in Hebrew. I propose that the answer lies in a combination of factors, structural, semantic, and lexical. These conspire to make CaCuC most favored and to demote muCCaC to the level of lexical specificity rather than grammatical across-the-board application.

5.1 Structural Factors

The notion of “structural simplicity” has two facets: (1) the amount of formal **alternation** between different members of a given grammatical category, and (2) the formal **transparency** of the items which realize that category. The alternations relevant to the category under study here are shown in (7), which illustrates tense/aspect and voice marking in the three transitive *binyan* conjugations.

(7) Alternation of Forms in the Transitive Conjugations

	Infinitive	Active		Perfective	Passive	
		Present	Past	Resultative	Present	Past
<i>Pa'al</i> :	li-CCoC	CoCeC	CaCaC	CaCuC	niCCaC	niCCaC
<i>Pi'el</i> :	le-CaCeC	meCaCeC	CaCeC	meCuCaC = meCuCaC	CuCaC	
<i>Hif'il</i> :	le-haCCiC	maCCiC	hiCCiC	muCCaC = muCCaC	huCCaC	

In terms of source-target matching, meCuCaC is most straightforward, since verbs in *Pi'el*, both active and passive, show the least variation in syllable structure across their paradigms. CaCuC forms, in contrast, derive from the *Pa'al* conjugation which, as shown in the first line of (7), has a very different phonological structure, of prefix and stem, in infinitives compared with the present and past, and in active compared with passive forms. Also, meCuCaC shares the same prefixal *me-* in both active and passive, and children as young as age two recognize this as a marker of present tense.

However, the other structural factor, of formal **transparency**, can also explain favoring CaCuC. It is formally simpler than either meCuCaC or muCCaC, since it consists of the bare stem, with the CVCVC syllable structure canonical for Hebrew. The three forms in (6) can be ranked from most to least transparent in terms of *u*-placement, as follows. (1) **CaCuC** [=CVCuC] : the *u* is salient in forming the stem-final stressed syllable; (2) **meCuCaC** [=CVCuCVC] : the *u* is part of an unstressed medial syllable, between the prefixal present-tense participle-marking syllable *me-* and the stem-final syllable; (3) **muCCaC** [=CuCCVC] : the *u* is least distinctive, since it forms part of the prefix syllable combined with present-tense *m-*, and it is followed by a consonant cluster of the two initial root-consonants, blurring the borders between affix and stem. That is, muCCaC is opaque in form, since the *u*-vowel marker is incorporated into the *m*-initial present-

tense prefix, rather than being part of the stem as in CaCuC or meCuCaC. If, as I claim, children early on recognize *u* as a unique marker of perfectivity, the difficulty ranking in (6) reflects factors of perceptual salience.

5.2 Lexical factors

Patterning in the conventional lexicon also accounts for the favoring of CaCuC forms. Its source pattern, *pa'al*, has the highest frequency, of both type and token, in Hebrew usage, across populations and registers (Berman 1993b), and its verbs account for nearly all those commonest in everyday usage. In fact, most of the test items on which children did best on the comprehension test were in the CaCuC form, suggesting that the *pa'al* verbs on the test were particularly familiar to young children. Also, transitive verbs in *pi'el* and *hif'il* generally have related non-*u* adjectives, e.g. *ayef* 'tired', *xazak* 'strong' and *gadol* 'big', *xarif* 'sharp', respectively. Transitive verbs in *pa'al*, in contrast, take only CaCuC-form adjectives.

Lexical accident also explains why we had a hard time finding enough *hif'il* conjugation verbs likely to be familiar enough to children for use on out test. The muCCaC form has many gaps in the established dictionary, unlike CaCuC and meCuCaC, which are lexically fully productive alternants of transitive verbs in *pa'al* and *pi'el*. One reason is that muCCaC is commonly preempted by intransitive change-of-state verbs in the *nif'al* pattern, which functions not only as a passive or medio-passive alternant of *pa'al*, but also as an intransitive alternant of causative verbs in *hif'il*. For example, causative *hivhil* 'startle' alternates with the change-of-state verb *nivhal* 'be startled, get a fright', and the associated muCCaC form *muvhal* is avoided; *he'eliv* 'insult' alternates with *ne'elav* 'be insulted', but there is no established muCCaC *mu'alav*; *he'elim* 'conceal, make disappear' has a counterpart in *ne'elam* 'disappear', but the muCCaC form *mu'alam* is not used. This asymmetry in the set of active-passive and causative-intransitive alternations provides a relatively productive lexical alternative for muCCaC, even though the *nif'al* forms neutralize the semantic distinctiveness of endstate resultativity. And it explains why all speakers to some extent, and children in particular, avoid muCCaC more than the other two [+u] forms.

5.3 Semantic and functional factors

Verb semantics and functional asymmetries can also account for the order of preference in (6). (1) CaCuC alone is restricted to perfective resultatives; meCuCaC and muCCaC also function as verbal (syntactic) passives in the present tense. That is, CaCuC has a functional uniqueness within the system of Hebrew tense/voice/aspect alternations. (2) As for meCuCaC, the *pi'el* conjugation is very widely favored for **denominal** verb formation (Berman 1989, Bolozky 1982). This in part explains the relatively high proportion of innovative meCuCaC forms in children's spontaneous usage, e.g. *meluman* 'lemoned = lemony' from *limon* 'lemon' [Varda, 5;7]; *mefurax* 'flowered = floral' from *perax* [Sivan, 4;0], *megusham* 'rained (on) = wet' from *geshem* [Avi, 5;4].). But it also explains the relative avoidance of meCuCaC for verb-based resultatives, as against purely verbal CaCuC. As for (3) muCCaC forms, these are semantically complex, since they are based on the *hif'il* conjugation, which contains almost no basic, or nonderived, verbs. Rather, *hif'il* most productively functions as the **causative** version of intransitive activity verbs in the *pa'al* conjugation. These factors are summed up in (8).

(8) Functional Load of Active vs Passive/Perfective Patterns:

Pa'al Active (Trans) > CaCuC Perfective

Pi'el Active ~ Noun > *Pi'el* Denominal > meCuCaC Perfective

Pa'al Active (Intr) > *Hif'il* Causative > muCCaC Perfective

It turns out that the **derivational path** of CaCuC forms is most straightforward, from the basic transitive source verbs to their perfective reflex; meCuCaC forms may be derived either directly from *pi'el* source verbs or via an additional process of denominal verb-formation; muCCaC forms are, again, most complex, since they are nearly always derived via causative versions of intransitive source verbs (in *pa'al* but often also in *nif'al*). Thus the functional as well as structural asymmetries noted earlier (see, too, fns. 5 and 6), explain the ranking charted in (6).

6. Conclusions

Results on acquisition of Hebrew resultative forms confirm findings for developmental patterns revealed by research on other aspects of Hebrew word-formation. First, age 3 years is the critical period for acquisition of this kind of knowledge, following on earlier command of inflectional systems. The 4-year-olds cope with these tasks much better than younger children in the **amount** of such forms which they produce, but their responses show the greatest variability and a high degree of idiosyncratic forms, symptomatic of the period when knowledge is being consolidated.

Second, comprehension precedes production here as in other similar domains; children are able to interpret the target forms before they can produce them. Moreover, correctness of the match between source items (active forms of verbs) and the target resultative forms has less of an effect in comprehension than in production. This is consistent with the observation that difficulty of input forms affects the formal **correctness** of innovative or productive lexical responses more than the extent of suitable responses produced in quantitative terms.

The ability to fully match input to output forms is a later, school-age acquisition. This finding for matching of input active verbs from three conjugations to three different [+u] resultative forms parallels findings for innovative denominal verb-formation in Hebrew: preschool children had great difficulty in assigning the exact consonant structure of familiar source nouns to the verbs they innovated from them (Berman 1989, Berman & Clark 1993). We explain this as a combination of two factors: processing difficulties in exact morphophonological matching of distinct input and output forms, on the one hand, and incomplete command of lexical convention, on the other. As these two types of ability and knowledge evolve with age, children approximate more closely the normative, adult matching between input and output forms, both structurally and lexically.

This suggests that children early on acquire command of the structural, grammatically-constrained systems of their language—whether for consonantal root extraction in new-verb formation, or for *u*-marking in forming passive participles. It takes much longer for them to further constrain these processes by lexical convention and normative matching of input-output forms.

Results of this study are compatible with a view of language development I have argued for in different domains—null subjects (Berman 1990), verb-argument relations (Berman 1993b), and narrative structure (Berman 1988). The case of Hebrew resultatives further demonstrates that acquisition of linguistic knowledge cannot be explained in monolithic terms. Rather, multiple mechanisms and a confluence of cues apply both in initial entry into a linguistic system and across the course of development. Here, perceptual salience, formal simplicity of the alternation between source and target forms, semantic transparency and functional uniqueness (of the *u*-forms), combine with the lexical factors of familiarity and convention to explain children's construals of endstate resultatives in Hebrew.

NOTES

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² Derivation of compound nouns in Hebrew is a rather later development (Berman 1987, Clark & Berman 1987).

³ These participles also serve as the passive forms in the Hebrew *benoni*, literally 'intermediate', present tense (Berman 1978, Gordon 1981) in two of the three transitive-verb conjugations: the *pi'el* and *hif'il*. Verbs in the *pa'al* conjugation have a separate form for the resultative participle and for the syntactic passive in the present tense.

⁴ Transcription is a broad phonetic rendering of current everyday pronunciation, except for the historical forms of the root elements. This yields several non-normative forms which are typical of standard spoken Hebrew, as well as of children's usage, though not approved by the Hebrew language establishment, e.g. infinitive *lifos* 'should be' *litpos* with a medial, syllable-initial stop; the medial *r* of *me-furak* requires vowel-lowering to *me-forak*; and the normative form of passives and resultatives based on the *hif'il* conjugation is often *moCCaC*.

⁵ In fact, only but not all passive forms of Hebrew verbs are *u*-marked. A historical asymmetry between forms in the *pa'al* pattern compared with *pi'el* and *hif'il* (see fn. 3) accounts for the fact that the passive of *pa'al* is constructed in a separate, non-*u*-marked conjugation, *nif'al*. Compare, for example, *pa'al* active *lišgor*, *soger* 'close' / *nif'al* passive *nišgar* 'be-closed', *li-tfos*, *tofes* 'catch' / *niṭpas* 'be caught'.

⁶ Causative verbs which have related lexicalized (nonpassive-form) adjectives occur in only the two strictly transitive *binyan* conjugations, *pi'el* and *hif'il*; corresponding adjectives with transitive verbs in *pa'al* are always in *CaCuC*.

⁷ Nonmorphological strategies used by children to express an endstate include responses such as the following: (1) Resultative descriptions—e.g. *im xitul* 'with a diaper' for *lexatel* 'to diaper' [Yael 2;7, Tal 3;6]; *lemala* 'high up' for *leharim* 'to pick up' [Tomer 3;6]; (2) appropriate non-*u* adjectives e.g. *gadol* 'big' for *lenapeax* 'to blow up' [Daniel 2;3], *naki* 'clean' for *lištof* 'to wash' [Adit 3;2]; and (3) forms in other intransitive conjugations, e.g. in the *nif'al* form, with a change-of-state sense, *nishpax* intransitive 'spilt, got spilled' from *lishpox* 'to spill' [Shaul 2;1, Uri 2;5, Tom 2;1].

⁸ Other examples are: *Pa'al ligzor* > *meguzar* 'cutten' [Yaniv 3;4]—cf. conventional *gazur*; *Pi'el lexatel* > *xatul* 'diaperied' [Vered 5;2], *muxtal* [Yoxay 5;3]—cf. *mexutal*; and *Hif'il leharkiv* > *merukav* [Omer 3;2] 'assembled' or *rakuv* 'rotten' [Orit 4;1]—cf. *murkav*.

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