TARBIAT MODARES UNIVERSITY

THE INTERNATIONAL JOURNAL OF HUMANITIES

Volume 27, Issue 3 (2020), Pages 1-99

The International Journal of Humanities is one of the TMU Press journals that is published by the responsibility of its Editor-in-Chief and Editorial Board in the determined scopes.
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Intl. J. Humanities (2020) Vol. 27 (3): (61-74)

Research Article

Plurals in Synthetic Compounds: Evidence from Persian-Speaking Children

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Received: 2019/2/8 **Accepted: 2020/1/7**

Abstract

This study investigates the morphological phenomenon known as *plurals-in-compounds effect* by analyzing responses given by 25 Persian-speaking children. The children, ranging in age from 3.5 to 13, were divided into six groups and asked questions like *what do you call someone who verb-s* [*regular/irregular*] *plurals?* that required them to form synthetic compounds such as *car-stealer*. Results indicated that when the nouns in the questions addressed to the children were regular plural, the non–heads in the compounds were predominately singular. Moreover, the children's responses to questions containing irregular nouns showed that they preferred non–compound *Agent* (*singular N*) over compounds containing either singular or irregular plural nouns. The findings are in line with the specifications of Kiparsky's (1982) level-ordering model which bans plural morphology inside compounds. It was also revealed that the children's compound construction relied on both structural and semantic constraints.

Keywords: First Language; Kiparksy; Level-ordering; Persian; Synthetic Compounds.

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Introduction

The nature of morphological rules and how they interact with and relate to a speaker's phonological, syntactic, and semantic rules and knowledge has been the focus of research for quite a long time (e.g. Anderson, 1982; Booij, 2012; Don, 2014; Goodluck, 1991; Gordon, 1985; Kiparsky, 1982, 1983, 1985; Lieber, 2015). One of the key debates in this regard has focused on the so–called *plurals-in-compounds effect* (Jaensch, et al., 2014), observed in many world languages where speakers disfavor regular plurals in compounds. Kiparsky (1982) accounted for the disfavor by proposing a model of organization of morphological rules that potentially regulates lexical word formation rules in the languages of the world. The model known as *level-ordering* is a hypothesis about the structure of Universal Grammar, an innate program for language learning (Chomsky, 2005). More specifically, level-ordering distinguishes several types of morphological rules and assigns them to different levels, stipulating that in forming a word, morphological rules of a particular level should be applied in the order specified by the model. Kiparsky believes "that languages may make greater or less use of the rule types of particular levels, and may distinguish a different number of levels" (Goodluck, 1991: 49), but the morphological rules of every language should follow ordered levels of application "such that rules at a later level may not be applied prior to those at a previous level" (Gordon, 1985: 74). The model predicts that regular plurals cannot appear in synthetic compounds, that is, compounds in which the head is derived from a verb via inflection and the non-head element functions as an object of the verb (Clark, 2003; Harley, 2009), because, as will be explained later in this article, lexical words are produced by three ordered *Levels* of rules and regular plurals, which are generated at Level 3, cannot be fed into compounding rule because compound–building rules operate on Level 2. Therefore, it is acceptable to say *doll-stealer* but not **dolls–stealer*. Moreover, irregular plurals can be used as the modifying noun in such compounds because irregular plurals are Level 1 rule and can provide the output for the compounding rule in Level 2. It is therefore possible to say either *mouse-catcher* or *mice-catcher*.

The present study is an attempt to investigate knowledge of these constraints in 25 Persian-speaking children aged from 3;5 to 6;5 and 10 to 13 by having them answer 45 specifically designed questions which elicited compounds with *N*(*singular/irregular plural*)*–verb–er* structure like *doll-stealer* and *books-writer*[1]. The findings could be significant in three aspects. First, there are very few studies applying Kiparsky's level–ordering model using data from Persian-speaking children. This study would make it possible to test whether children abide by the compounding constraints (i.e. the reluctance to use regulars in non-head positions) form the early years of first language acquisition. Second, unlike English, Persian does not have irregular plurals; the irregular plurals used in Persian have been borrowed from the Arabic language. It would be informative to find out whether Persian speaking-children use these irregular plurals as modifiers in the noun–noun compounds and whether the plurals would be subject to the specifications

[1] ب (books) is an irregular plural noun in Persian; it is not possible to show its irregular form in English.

of the level–ordering model. Finally, the study could demonstrate how semantic and grammatical information affect children's compound formation.

2. Background

2.1. Kiparksy's Level–ordering Model

Kiparksy (1982) proposed a model of the organization of morphological rules, known as level–ordering, which distinguishes several types of morphological rules and places them onto different levels. The model stipulates "[W]ord–formation rules of affixation and compounding are applied at successive stages (or 'levels') in a particular order to derive morphologically complex words," (Lardiere, 1995: 20). In Kiparsky's model, the three types of morphological rule are ordered as represented in Table 1.

Table 1. Level-ordering framework (adapted from Goodluck 1991: 48)

Rules	Properties	Examples
Level 1	(a) Derivational, unproductive; semantically unpredictable (b) Inflectional, irregular (c) Phonological effects on the base form in many cases	–ion, ian, –ity, –th, in–, etc. mice, oxen, stood, etc verb presént → noun present
Level 2	(a) Derivational, productive; semantically predictable (b) Compounding and zero derivations in which there are no stress shifts	– –ness, –ism, –er, –ist, un–, etc. verb páttern → noun pattern
Level 3	Inflectional; regular	–s, –ed, –ing, etc.

Kiparsky's model makes a number of correct predictions about word formation in English. First, it predicts the affixes added to a basic word by a regular inflectional rule will occur outside affixes added by derivational rules. This is because regular inflectional rules are third–level rules in the model and such rules apply after derivational rules at first or second levels. Therefore, when a third level inflectional rule adds an affix to the end of a word, that affix will have to be added to the output of derivational rules. For example, the plural of *player* is *player-s* and not *play–s–er* because plural masker *s* is an inflectional affix which has to be added to the output of derivational rule (which adds agentive *er* to *play*).

Second, the model predicts that while the output of a regular inflectional rule cannot be used as the input to derivational rules, the output of irregular inflectional rules (such as the rules for irregular plurals) can. Therefore, in forming compounds, we cannot use regular plurals as the initial noun in compounds and constructions such as **rats–catcher*[2] would not be acceptable, even though we mean a person who catches *rats* in general not a person who catches a particular *rat*. However, if we want to refer to a person whose job is to catch *mice*, we can say either *mice–catcher* or *mouse–catcher,* although

[2] Asterisk (*) indicates an ungrammatical construction.

previous research has indicated that adult native speakers of English prefer the singular noun to irregular plural in compounds (e.g. Berent & Pinker, 2007; Cunnings & Clahsen, 2007; Haskell, et al., 2003; Seidenberg, et al., 2007). This is because the irregular plural *mic*e is available via Level 1 rule and can be used as the input to Level 2 processing.

Very few studies (e.g., Bahrami-Khorshid, 2016; Gholamalizadeh & Pirani, 2011) have employed the level-ordering model to analyze Persian morphological system. Bahrami-Khorshid (2016), for instance, used different syntactic, semantic and cognitive criteria to assess the efficacy of the model to explain the morphological behavior of fixed lexical expressions (e.g., idioms) in Persian. Although she found the model rather satisfactory in explaining the data, she argues that the level-ordering model needs to be revised as it has been developed based on English data and is hence more efficient in describing data from that language.

Before turning to the issue of the applicability of the level-ordering model to synthetic compounds in Persian, it is necessary to have a look at the pluralization and compound formation processes in Persian.

2.2 Pluralization and Compound Formation in Persian

Pluralization of nouns in Persian is mainly achieved by adding the inflectional suffixes ها /hɑː/ and ان /ɑːn/ to the base form of a noun as seen in these examples: [3]ر (boy), رها (boys); زن (woman, wife), زنان (women, wives). Traditionally, the plural suffix ها /hɑː/ was reserved for inanimate and abstract entities and ان /ɑːn/ for animate entities but the distinction is gradually disappearing especially in conversational usage with the suffix ها /hɑː/ being used for both types of nouns (Farshidvard, 2003). Compared with English, Persian enjoys a wider variety of affixes to form plural nouns and there are other less frequent suffixes to form plurals in Persian but the discussion would not be relevant here. One important difference between English pluralization and Persian pluralization is that in English plurals are formed either by regular rules which add *s* to the end of nouns (boy, boys), or by irregular rules which may change the vowel in the plural noun (man, men), add unproductive suffixes such as *en* to the noun (ox, oxen), or change nothing at all (*sheep* and *deer*). In Persian, however, plurals are the product of regular rules which add the inflectional suffixes ها /hɑː/ to the end of nouns (Farshidvard, 2003). Additionally, while in English uncountable nouns cannot be pluralized (water, *waters; rice, *rices), Persian allows for such nouns to be pluralized آب (water), آب ها (*waters); بـون (rice), برن ها (*rices). Persian also allows pluralization of nouns that are already plural like cattle and police to turn them into ههها (*cattles) and ها (*polices). Finally, there are irregular plural nouns in Persian, but these nouns are derived from the Arabic language and are not marked for plurality in a systematic way. These irregular plural nouns are made by changing their singular forms. Examples are ا م (name), ا ام (names), ر مه (fine), ار م (fines); د ن (religion), اد ان (religions).

Compounding in Persian is not as structured as it is in English as there are many ways to form compounds in Persian (Farshidvard, 2003). However, one compound formation process that both languages share (and is of

[3] Persian is written and read from right to left.

interest to this study) is producing synthetic compounds. Examples of such compounds in English include door–keeper, gate–crasher, bell–hopper, meat-grinder and in Persian: از ا ت (watch–maker), م وه روش (fruit–seller). As mentioned above, the first element of such compounds tends to be a singular noun for the most part; it would be ungrammatical both in Persian and English to use the plural form of a countable noun in such cases: از ا ت‌ها *, (*watches-maker) even if by از ا ت (watch-maker) we might mean a person who makes (or repairs) watches in general and not a particular watch. Moreover, the non–head noun in these compound functions as the complement of the verb from which the final noun is derived (Berent & Pinker, 2007).

The present research aims to explore whether Persian–speaking children are aware of such morphological constraints, that is, whether they disfavor plurals inside synthetic compounds. It also examines whether the nature of plural nouns (regular versus irregular) affects the children's compound formation. Therefore, the following questions were addressed in this study:

1. Do Persian–speaking children between the ages 3.5 and 6.5 produce regular plurals inside synthetic compounds?
2. Do Persian–speaking children between the ages 10 and 13 produce irregular plurals inside synthetic compounds?
3. Is Persian-speaking children's compounding constrained by grammatical or semantic information?

3. Method

3.1. Subjects

This study was conducted with 25 Persian-speaking children between the ages 3.5 and 13. There were 11 girls and 14 boys, all from middle–class families. They were carefully selected and divided into six groups, with each group being one year apart in age: Group I (3.5 to 4.5), Group II (4.5 to 5.5), Group III (5.5 to 6.5), Group IV (10 to 11), Group V (11 to 12), and Group VI (12 to 13). Division of the children into such age groups would have allowed the researcher to determine changes in the semantic and grammatical features of the compounds as the children grew in age. Table 2 shows the distribution of the children in each group.

Table 2. The distribution of the children in each group

Age	Group I		Group II		Group III		Group IV		Group V		Group VI	
3.5–4.5	Boys	Girls										
	2	1										
4.5–5.5			Boys	Girls								
			1	2								
5.5–6.5					Boys	Girls						
					1	2						
10–11							Boys	Girls				
							4	3				
11–12									Boys	Girls		
									4	2		
12–13											Boys	Girls
											2	1

3.2. Materials

The researcher prepared 45 question sentences such as *what do you call someone who steals cars?* which compelled the children to produce compounds with *N*(*singular/irregular plural*)*–verb–er*

structure. The questions, all of which used plural nouns as object NP, were divided into nine groups, each containing 5 questions. The first 40 questions, which were addressed to groups I, II, and III, were formed using high frequency verbs. The frequency of the verbs was determined by first having the mothers of another 42 children, with similar characteristics to the target subjects, list as many as 30 verbs which they used frequently when addressing their children. The lists had 38 verbs in common. The mothers were then asked to rate the verbs on a five–point Likert scale from the least frequent to the most frequent. Ten verbs that were rated as the most frequent (48.83%) and frequent (35.62%) were utilized to construct the questions[4]. In addition, the nouns that served as objects in the questions (except for Group G questions) were semantically matched with the verbs. For instance, *clothes, cars, dishes, yards,* and *curtains* were used with the verb *wash;* similarly, *cars, houses, films, keys* and *watches* were used with *make*. A group of four linguists were consulted to ensure the natural associations.

Group A questions (i.e. questions 1 to 5) were formed using the five most frequent verbs *eat, wash, make, paint* and *steal*. Starting with the high frequency verbs would not only put the children at ease but also make it possible to see how they would cope with compound formation when the questions are formed using different verbs. Moreover, 20 filler questions were systematically interspersed among the target questions to reduce the possibility of children detecting any patterns in their answers. Each of the five verbs in Group A was then used to form the questions in Group B to F. Group G questions (questions 31 to 35) were formed using the verbs in the Group A, with the difference there was no natural semantic association between the verbs and the objects and the resultant jobs/activities were odd or impossible. The purpose of these questions was to see if and how children would generalize the compound formation rule to such grammatically possible yet semantically anomalous cases. Group H questions were constructed with five frequent verbs (i.e. *cook, sew, bake, cut* and *destroy*). Each question in the group has two possible answers, one of which is a grammatically possible but unconventional compound noun and the other which is a conventional yet a non–compound noun. The aim was to find out which answer the children were most likely to come up with. Four points need to be made clear regarding the questions. First, few of the questions had real job/activity titles as their answers; the majority were possible but non–existing. For example, although آشپز (cook) is a real job title in response to what do you call someone who cooks food(s)?, شکلات ور (chocolate–eater) in response to what do you call someone who eats chocolate? is not. Second, questions 13 and 40 began with *what*. This was done to see whether children paid any attention to the [–/+] human feature of the agent and whether it affected their response in any way. Third, for Persian–speaking children, eating *bananas* and *carrots* are associated with monkeys and rabbits, and the two nouns were included in questions nine and ten to find out if collocational effects

[4] Verbs such as *see, pour, beat/hit,* and *kill* were also rated as highly frequent but the researcher decided not to use them because they either did not lend themselves well to *N*(*singular/ irregular plural*)*+verb+er* responses or were not appropriate to be used with children (e.g., kill).

could be observed, even though the questions asked about a human.

As mentioned earlier, Persian does not have irregular plurals of its own and the ones that are used in the language with varying frequency have been borrowed from the Arabic language. Persian–speaking children begin learning these plurals a few years after they start school and some of these plural nouns are learned late into teens; therefore, it was not possible to ask the first three groups of children questions containing such plurals. The researcher, with help from four linguists, collected a list of 20 irregular plurals that were thought suitable for children between the ages of 7 and 13. The researcher then asked 18 children between the ages of 7 and 13 if they knew those plural nouns. It was determined that none of the children below the age of 10 knew the meaning of the plurals. The researcher then selected five plurals that were known by all the children between the ages of 10 and 13 and constructed Group I questions, questions 41 to 45, with 10 filler questions interspersed among them. The five selected plural nouns were وم (sciences), تاب (books), مواد (materials), وا (furniture), and ام (signs). The questions asked the children about various jobs, some of them rather odd (i.e. questions 43 and 45), to find out whether the children would use irregular plurals in forming synthetic compounds and how this process was affected by the semantics of the questions.

3.3. Procedure

The questions to children in groups I, II, and III were presented by their mothers who were assured about the confidentiality of the data collected. Moreover, pseudonyms were used throughout the study to preserve all children' personal information. Initially, the children required some training to have their attention and answer the questions consistently. The mothers also gave the children little verbal and non–verbal rewards to encourage and keep them interested in the activity. In cases where the children did not reply to a question, or when their reply was either wrong or "I don't know", the moms were told to repeat the question up to three times before moving on to the next one. The questions for the children between the ages of 10 and 13, those that contained irregular plurals, were asked by the researcher himself who also obtained the permission of the children's parents prior to asking the questions. The question and answer sessions were audio–recorded and then transcribed. The responses were analyzed and later manually coded based on a scheme which will be explained below.

4. Results and Discussion

The researcher solicited the help of two linguists who analyzed the structures in the children's responses and developed an inclusive 16–category coding scheme to classify the responses. Due to the nature of the plural nouns used in the experiment, only 13 of the categories were applicable to Groups I, II, and III and seven categories were applicable to Groups IV, V, and VI. The responses were then independently coded by the two linguists. Each response by the children was put under a specific category. The total number of responses under each category was then calculated and an interrater reliability of .81 was initially obtained. The raters then discussed cases of differences until perfect agreement on the categorization was reached. The raw frequencies in each category and the corresponding percentage of them were calculated for the six groups and

descriptive statistics was used to summarize the data.

Analysis of the children's responses in groups I, II, and III revealed that 37.50% of the responses were of the *N*(*singular*)*–verb–er* type, indicating that the children in part reduced pluralized nouns to singular forms in forming compounds (see Table 3).

Table 3. Descriptive statistics for each response type (Groups I, II, and III)

Categories	Frequency	Percentage
N(singular)–verb–er (e.g., toy-stealer)	135	37.50 %
Agent (singular N) (e.g., dad)	95	26.38%
Agent (verb–er) (e.g., stealer)	30	8.33%
Irrelevant (e.g., I don't know)	25	6.94%
N(singular)–verb–ing or verb–ing– N(singular) (action) (e.g., doll stealing or painting of house)	20	5.55%
(S with a singular noun as subject/object) (e.g., I lick ice-cream)	16	4.44%
Object (singular N) (e.g., doll)	11	3.05%
N(singular) or N(singular)–verb–ing (place) (e.g., confectionery or confectionery selling)	8	2.22%
Verb–er– N(singular) (e.g., stealer of doll)	8	2.22%
Agent (plural N) (e.g., thieves)	5	1.38%
Verb–er– N(plural) (e.g., stealer of dolls)	3	0.83%
(S with a plural noun as subject/object) (e.g., ants eat everything)	3	0.83%
Object (plural N) (e.g., dolls)	1	0.27%

The non-compound *Agent* (*singular N*) was the second most frequent category (26.38%). The children realized the answer to the questions is an agent or an instrument, but they did not fashion their response in the *N*(*singular*)*–verb–er* structure, either because they did not have sufficient metalinguistic knowledge to create synthetic compounds or the single word alternative was of higher frequency and of more pragmatic salience to them. So in reply to question 39 (*What do you call someone who cuts hair*(*s*))*?*, 7 out of 9 children responded آراش ر (barber), which is a familiar and tangible word to the children than the rather unconventional مو وتا ن (hair–cutter). The *Agent* (*verb–er*) category was the third most frequent category of responses (8.33%), with the children in Group II producing this response type more than the other two groups (13.00%) (see Table 4). This could be another indication of the children's attempt to form compounds but that they were hampered by their lack of linguistic ability and resorted to the second best option which was creating an agentive construction with the verb they heard in the questions. It is also interesting to note that even when the children failed to produce a compound and instead produced a non–compound agentive noun as their response, that noun was almost always singular; only 3.31 % of the total responses contained plural nouns (3.31 % is the addition of the percentages for the last four structures in Table 3 that contain plural nouns).

In order to check the probable differences among the three age groups, frequency counts and percentages were calculated for each age bracket separately (see Table 4). A

closer look at the table shows that Group III produced the *N*(*singular*)*–verb–er* responses more than Group II and I (55.46%, 34.95% and 19.26% respectively), suggesting that children of older age had superior metalinguistic skills, that is, they know that plural nouns are not allowed in synthetic compounds. Therefore, the answer to the first research question (i.e. Do Persian–speaking children between the ages 3;5 and 6;5 produce regular plurals inside synthetic compounds?) seems to be negative as the children did not favor compounds containing plural nouns in synthetic compounds.

Table 4. Descriptive statistics for each group's response type

Categories	Frequency			Percentage		
	Group I	Group II	Group III	Group I	Group II	Group III
N(singular)–verb–er	21	43	71	19.26%	34.95%	55.46%
Agent (singular N)	25	38	32	22.93%	20.90%	25.00%
Agent (verb–er)	4	16	10	3.36%	13.00%	7.81%
Irrelevant	11	9	5	10.09%	7.31%	3.90%
N(singular)–verb–ing or verb–ing – N(singular) (action)	13	4	3	11.92%	3.25%	2.34%
(S with a singular noun as subject/object)	12	3	1	11.00%	2.43%	0.78%
Object (singular N)	10	1	0	9.17%	0.81%	0.00%
N(singular) or N(singular)–verb–ing (place)	5	3	0	4.58%	2.43%	0.00%
Verb–er– N(singular)	0	3	5	0.00%	2.43%	3.90%
Agent (plural N)	2	3	0	1.38%	2.43%	0.00%
Verb–er– N(plural)	0	2	1	0.00%	1.62%	0.78%
(S with a plural noun as subject/object)	1	2	0	0.91%	1.62%	0.00%

In answer to Group H questions, that is, questions 36 to 40 which could have two possible answers, one of which is grammatically possible yet unconventional compound and the other which is a conventional yet non–compound noun), the children mainly preferred the conventional non–compound nouns (66.66%) over the unconventional compound ones (17.77%). This suggests that the frequency of the conventional non–compound nouns affected the children's decision–making as they largely preferred the conventional non–compound nouns. So, in answer to question 38 *What do you call someone who bakes bread*(s)*?* six out of the nine children answered نانوا (a baker), a conventionally used noun, rather than نون ز(bread–baker), a compound noun which sounds rather unusual to Persian speakers. It should be noted that the conventional non–compound nouns seem to be a late acquisition and correlate with the frequency of usage and age of the children as the nouns were largely the

answers given by the children in Group III (see Table 4).

The children paid attention to the [–/+] human feature of the agents in the questions. This could be seen in differential responses to questions 2 (*What do you call someone who washes dishes*?) and 13 (*What do you call something that washes dishes?*). Their answers to questions 2 and 13 consisted of six and two [–] human agents respectively, indicating that the children realized their answers to question 2 had to be a [+] human agent and to question 13 a [–] human agent. Below are the different answers that Hadis (4;5) gives to the two questions:

Question 2: *What do you call someone who washes dishes?*

Answer: *Mom.*

Question 13: *What do you call something that washes dishes?*

Answer: *[A] scrub brush*

This conclusion is further supported by looking at the children's responses to question 40 (i.e. *What do you call something which destroys houses?*). Out of nine, five children answered the question using [–] human agent.

Turning to children's responses in Groups IV, V, and VI, it was revealed that 40% of the total responses were of the *Agent singular N* (*verb–er*) type. This finding suggests that the children gave primary importance to meaning in answering the questions but were mindful of the grammatical structure of their answers and tried to come up with a noun that was derived from the verb used in asking the questions. When they failed to incorporate the verb in their answers, possibly because the answer would sound weird, they chose a noun that was semantically possible as the answer to the question, so *Agent* (*singular N*) was the second most frequent answer (28.74 %) (see Table 5).

Table 5. Descriptive statistics for each response type (Groups IV, V, and VI)

Categories	Frequency	Percentage
Agent singular N (verb–er)	31	40.00 %
Agent (singular N)	23	28.74 %
N(irregular plural)–verb–er	9	11.25 %
Irrelevant	8	10.00 %
Verb–er–N (irregular plural)	4	5.00 %
N(singular)–verb–er	4	5.00 %
(S with a plural noun as subject/object)	1	1.25 %

Given these findings, the answer to the second research question (i.e. Do Persian–speaking children between the ages 10 and 13 produce irregular plurals inside synthetic compounds?) seems to be negative as the children preferred non–compound single nouns (i.e. *Agent* (*singular N*)) over *N*(*singular/irregular plural*)*–verb–er* compounds. Moreover, the findings from the analysis of the data provided by the children in this study suggest that the answer to the third research question (i.e. Is Persian–speaking children's compounding constrained by grammatical or semantic information?) is both, that is, the children's morphological processes relied on both structural and semantic constraints.

To check the probable differences among the three age groups, frequency counts and percentages were calculated for each age group separately (see Table 6). The table shows that Group VI produced the *Agent* (*singular*)*–verb–er* response more than groups V and IV (52.94%, 31.03% and 38.23% respectively). This could be taken as the older children's superior metalinguistic knowledge in that they responded in a way that the agent noun was derived from the verb used in asking the questions. Another interesting finding was that the children preferred the singular form of the irregular plurals in the synthetic compounds (compare the frequency of singular nouns and irregular plurals in the responses).

Table 6. Descriptive statistics for each group's response type

Categories	Frequency			Percentage		
	Group IV	Group V	Group VI	Group IV	Group V	Group VI
Agent singular N (verb–er)	13	9	9	38.23%	31.03%	52.94%
Agent (singular N)	9	11	3	26.47%	37.93%	17.67%
N(irregular plural)–verb–er	4	3	2	11.76%	10.34%	11.76%
Irrelevant	5	1	2	14.70%	3.44%	11.76%
Verb–er–N (irregular plural)	2	2	0	5.88%	6.89%	0.00%
N(singular)–verb–er	0	3	1	0.00%	10.34%	5.88%
(S with a plural noun as subject/object)	1	0	0	2.94%	0.00%	0.00%

5. Conclusion

The findings of the present study in general support Kiparsky's (1982) level–ordering model which bans plural morphology inside compounds. It became clear that once children have learned what the regular rules for word formation in their language are and have also learned which items are exceptional; the constraints imposed by the general form of the model will automatically apply when children produce novel words through operations such as compounding. This process may also be sensitive to the constraints of conventional usage as we saw in the children's answers to Group H questions. Finally, it is recommended that future research adopts the Stratal Optimality Theory (Kiparsky, 1998, 2000), a more up-to-date version of the level–ordering model, to describe the morphological behavior of synthetic compounds in Persian. This is particularly important because it has been shown that the level-ordering model has problems accounting for cases where semantically empty plural suffixes appear on the compound non-head (e.g., buildings-inspector). This is also true for semantically non-empty plural suffixes in compounds (e.g., programs coordinator since program coordinator is understood as concerning only one program) (see Katamba & Stonham, 2006; Selkirk, 1982 for more information). Lardiere (1995) also holds that the theory cannot satisfactorily account for compounds in languages other than English which allow

regular plurals in non–heads of compounds. Furthermore, Nicoladis (2005, p. 333) argues that "there is no clear explanation according to this model for the inclusion of –ing in some English compounds (like 'hummingbird' and 'ironing board') and non–plural –s (as in 'foolscap' or 'townspeople')."

It has also been suggested that children's avoidance of regular inflection in noun–noun compounds is evidence for dual–mechanism theory of lexical representation (Pinker, 1991, 1999; Pinker & Prince, 1988). The theory holds that regular (rule–governed) and irregular (exception) lexical items are processed by categorically different innate mechanisms (rule–induction versus rote learning). Moreover, Haskell et al. (2003) maintain regular/irregular dichotomy is unjustified; they showed that regular plurals, albeit in a small proportion, do appear in children's compounds despite the prohibitions laid down by the dual–mechanism model. Haskell et al. propose an alternative explanation, namely *constraint satisfaction model*, and suggest that children may learn the dissociation between regular and irregular plurals in compounds not only through naturally occurring compounds in English but also from more general properties of language such as semantic and phonological factors (see Berent & Pinker, 2007) for the counterargument).

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نشان جمع در ساخت مرکب:
شواهدی از کودکان فارسی‌زبان

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تاریخ دریافت: ۱۳۹۷/۱۱/۱۹ تاریخ پذیرش: ۱۳۹۸/۱۰/۱۷

چکیده

این پژوهش پدیده ساختواژی مشهور به «اثر ساخت مرکب بر تظاهر نشان جمع» را بر روی داده‌های زبانی ۲۵ کودک فارسی‌زبان بررسی می‌کند. کودکان در محدوده سنی ۳٫۵ تا ۱۳ ساله به شش گروه سنی تقسیم شدند و به سئوالاتی مانند «شما به کسی که Xها (هر اسم جمع) را انجام می‌دهد چه می‌گویید؟» پاسخ دادند که آنها را به ساخت اسم‌های مرکبی نظیر «ماشین‌دزد» وادار می‌کرد. نتایج حاکی از آن بود با وجودی که اسم‌های مورد سئوال صورت جمع داشتند (ماشین‌ها)، کودکان سازه اسمی غیرهسته در ساخت مرکب را به‌صورت مفرد تولید می‌کردند (ماشین‌دزد). هم‌چنین، در مواردی که معادل بسیط واژگانی در مفهوم عاملی در زبان وجود داشت، پاسخ کودکان از ترجیح کاربرد صورت فاعلی بسیط به‌جای ساخت مرکب حکایت داشت (پلیس به‌جای آدم‌زندان‌کن). یافته‌های این پژوهش به‌طورکلی مدل «ترتیب‌بندی سطوح» کیپارسکی (۱۹۸۲) را تأیید می‌کند که کاربرد نشانهٔ جمع درون ساخت مرکب را منع می‌کند. همچنین مشخص شد که کودکان در تولید ساخت‌های مرکب به هر دو نوع محدودیت‌های ساختاری و معنایی توجه دارند.

واژه‌های کلیدی: زبان اول، کیپارسکی، ترتیب‌بندی سطوح، اسم مرکب، زبان فارسی.

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