

## Level-ordering Effect in SLA: Representation of L2 Inflectional Morphology

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### **0. Abstract:**

The dual-mechanism model of inflectional development (e.g., Pinker, 1991) suggests that regular inflections are learned as abstract rules whereas irregular morphemes are learned on an item-by-item basis. Similarly, the level-ordering model (Kiparsky, 1982) treats regular and irregular inflection differently in that application of irregular rules precedes that of regular ones.

Past research has investigated how regular and irregular plural nouns in English are acquired by employing the nominal compounding task. The level-ordering model predicts that irregular plurals are formed before compounding nouns, and the regular plural marking is applied after compounding. Therefore native speakers of English do not produce regular plurals inside compounds (e.g., \*rats-eater).

Results of previous studies show a difference between L1 learners and L2 learners. Gordon (1985) demonstrated that children as young as three distinguish regular and irregular plurals almost perfectly. On the other hand, Lardiere (1995a) and Murphy (2000) found that adult L2 learners often violate the constraints (i.e., they produce such compounds as \*rats-watcher), although they still allow irregular plurals in compounds significantly more often than regular plurals. The debate continues over whether or not the level-ordering constraints are available in SLA.

The purpose of this paper is to further investigate this issue. Synthetic noun compounds were elicited from nineteen Japanese adult learners of English by asking questions (e.g., What do you call someone who watches mice?). With regular nouns, the participants produced the plural 46% of the time; with irregular nouns, the plural was produced 84% of the time.

The results will be discussed in terms of whether the dual-mechanism and level-ordering models are applicable to SLA.

### **1.1 The dual-mechanism model of inflectional development (Marcus et al., 1992; Pinker, 1991; Pinker & Prince, 1988; Prasada & Pinker, 1993):**

- ◆ Regular forms result from the application of morphological rules.
- ◆ Irregular forms result from retrieving inflected word forms from the lexicon.

Pinker's predictions (1991, p. 532):

- (1) Irregular forms should be strongly affected by properties of associative memory such as frequency and similarity, whereas regular forms should not. -- *plural elicitation task* or *lexical decision task*
- (2) Irregular forms should be available as the input to other word-formation processes, whereas regular forms should not. -- *nominal compounding task*
- (3) Because regular and irregular verbs are subserved by different mechanisms, it should be possible to find one system impaired while the other is spared. -- subjects *with language impairment* of some sort



**2.2 Interpretations of the previous findings:**

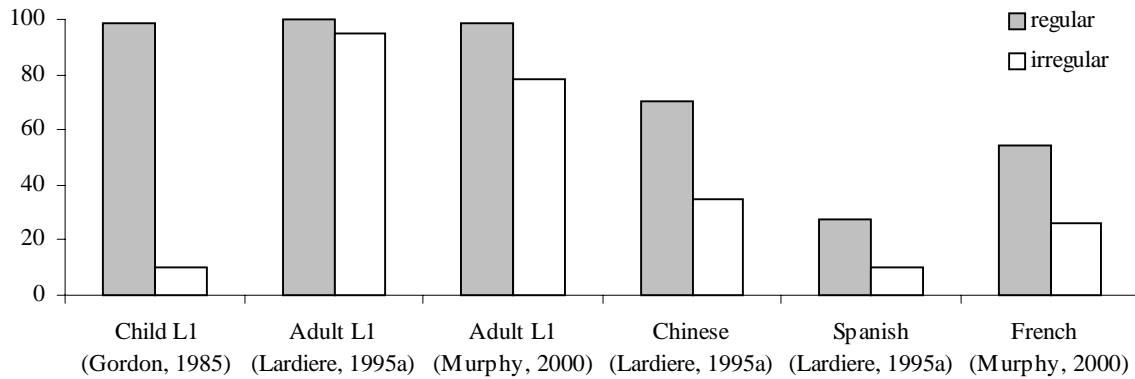


Figure 1. Percentage for omission of plural markings in previous studies

Lardiere (1995a, 1995b):

A significant difference between regular and irregular plurals does not mean that the level-ordering effect is available to L2 learners. Moreover, it is clear that L2 learners do violate the restriction by the level-ordering (i.e., regular plurals are *not* allowed inside compounds).

The significant difference may suggest that the dual-mechanism model is still functional in SLA.

Marcus (1995):

The fact that regular and irregular plurals are treated differently means that the level-ordering effect is functional. The absolute numbers are not crucial since there are always potential sources of "noise."

Murphy (2000):

The results appear to support the dual-mechanism model, but the fact that the plural marking was not consistent is problematic. Alternatively, a connectionist type single associative process can account for it as well.

**2.3 Deverbal compounds in Japanese:**

<i>Japanese</i>		<i>English</i>
N-V <sub>root</sub>		
<i>hae-tataki</i>	('fly hit')	<i>fly swatter</i>
* <i>hae-tati-tataki</i>	('fly-PL hit')	* <i>flies swatter</i>
<i>usi-kai</i>	('cow keep')	<i>cow herder</i>
* <i>usi-tati-kai</i>	('cow-PL keep')	* <i>cows herder</i>

This type of compounding is known to be very productive in Japanese (Sugioka, 1995-1996, p. 234). Japanese plural marking by suffixes like *-tati*, *-ra*, and *-domo*, is optional (Ishii, 2000), and non-head nouns inside Japanese deverbal compounds are not pluralized.

**2.4 Research questions:**

- (1) Do Japanese learners of English produce regular plurals inside synthetic compounds?
- (2) Do Japanese learners of English treat regular and irregular plurals differently when producing synthetic compounds?

**3. The present study:**

**3.1 Method:**

Participants: Nineteen native speakers of Japanese, 16 female and three male, enrolled in the undergraduate or graduate programs at the University of Hawai'i at Manoa.

Materials: Similar to Gordon (1985) and Lardiere (1995), but each word appeared twice to increase the total number of items. Also, pluralia tantum (e.g., pants, people, etc.) were excluded from the analysis.

Sample question: "What do you call someone who watches mice?"

**3.2 Results:**

Main results:

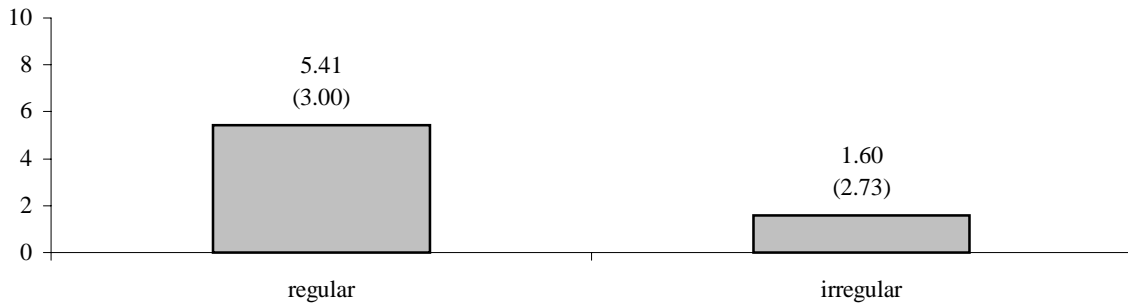


Figure 2. Means and standard deviations for singular nouns produced ( $k=10$ )

Summary: (Correct) use of regular singular nouns: 54%  
 one sample  $t$ -test (compared to the native-speaker norm: 10):  
 $t(18)=-6.657, p<.001$   
 → Level-ordering is *not* available to L2 learners?  
 They omitted more regular plurals (54%) than irregular plurals (16%).  
 paired  $t$ -test:  $t(18)=6.969, p<.001$   
 → The dual-mechanism model is functional in SLA?

Individual words:

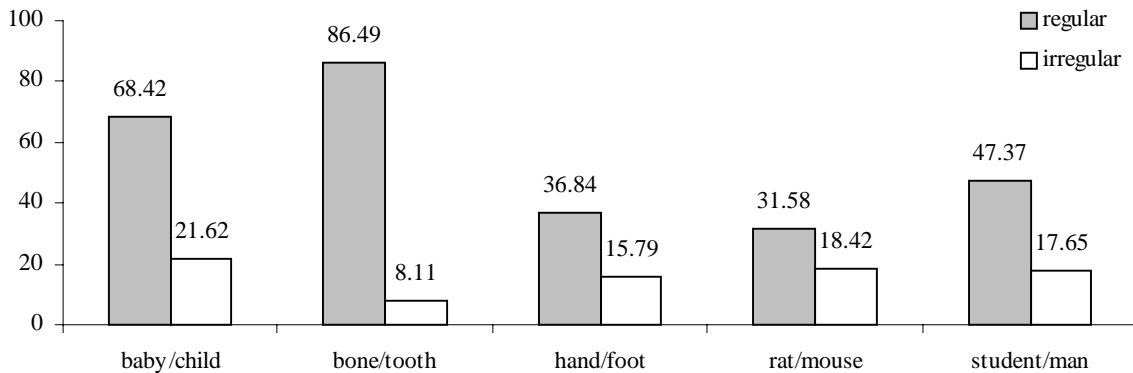


Figure 3. Mean percentage for singular nouns produced ( $k=10$ )

**4. Discussion:**

RQ 1: Do Japanese learners of English produce regular plurals inside synthetic compounds?

Yes. → Morphological level-ordering does not seem to be available to L2 learners. Marcus's (1995) claim for the availability of the level-ordering effect (see 2.2) does not seem to be plausible (see below).

RQ 2: Do Japanese learners of English treat regular and irregular plurals differently when producing synthetic compounds?

Yes. → Although L2 learners seem to be insensitive to level-ordering, they may still know something about the difference between regular and irregular plurals. A theory is needed that accounts for this differentiated treatment of regular and irregular plurals by L2 learners.

Murphy (2000) suggests that an associative model of language learning (e.g., a connectionist model) may be able to handle it without distinguishing the regulars from irregulars. She claims that "the distinction between the regulars and irregulars may not be due to some innately specified morphological constraint, but rather it may be due to the overwhelming pattern in the input that there are no regular plurals found in the middle of words" (p. 187). This proposal is not plausible since it does not provide explanation for the clear difference between native speakers and nonnative speakers. In other words, it cannot account for (a) the fact that even young children distinguish regulars from irregulars very clearly (Gordon, 1985), and (b) the fact that even some very advanced L2 learners violate the constraints (seven of the participants of this study had the TOEFL scores higher than 600).

A theory that allows two separate routes for language acquisition, one for L1 and the other for L2, may be needed (e.g., Bley-Vroman, 1989)?

**5. Conclusion:**

Whether morphological level-ordering is innately available or not (see Clahsen et al., 1992, Lardiere, 1995a, 1995b, and Marcus, 1995, for debates), it is important to note that native speakers of English, whether children or adults, *do not* produce regular plurals inside synthetic noun compounds. It should also be noted that some very advanced L2 learners fail to perceive such constraints and therefore they *do* produce regular plurals inside compounds, though not always. This violation of the constraints is observed with learners from different L1 background (Lardiere, 1995a, Murphy, 2000, and the present study). An SLA theory is anticipated that accounts for this difference between native speakers and nonnative speakers.

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