The Acquisition of English Affixes Through General and Specific Instructional Strategies

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Numerous claims have been advanced about the effectiveness of techniques which may assist the learning of word structure and derivational morphology. The literature of classroom second language learning is also replete with counter claims about the effectiveness of formal instruction, those associated in particular with the notion that comprehensible input is best provided without overt focus on form. The present study compared the relative effectiveness of (a) general reading (non-form-focused) against (b) reading plus skill-building exercises organized around common English affixes (form-focused). The frequencies of affix recognition and production for one group of Japanese first-year university students which received only general reading were compared with those of another which received general reading plus skill-building. Comparisons were based on tests of general vocabulary, word recognition, and essay writing. Results of T-tests indicated some support for skill-building as measured by the use of learned affixes in such unrestricted tasks as essay writing. Performance on essays appears to improve if the affixes have been presented systematically and in salient positions in the lexical structure.

1. Introduction

The acquisition of morphology has for two decades been a focal point of second language acquisition (SLA) research. Throughout the seventies the literature on SLA was replete with studies on the relative difficulty and learnability of various grammatical morphemes in English. These studies examined the possibility of a systematic order of learning these grammatical morphemes which did not match the frequency with which they appeared in the input to the second language learners. Evidence that learners from different language backgrounds seem to acquire certain morphemes in an order unrelated to the order of input led some researchers (Burt, Dulay, & Krashen, 1982) to suggest the operation of a universal cognitive mechanism for SLA. While the infatuation with the order of grammatical morpheme acquisition dominated the interest of SLA specialists in the seventies, for first language reading researchers, a different, but related, interest in morphology became the center of attention. In the research on reading, it is taken for granted that the acquisition of basic grammatical morphemes

has already taken place. The area of interest here is how native readers expand their vocabulary and their knowledge of word structure.

Although the acquisition of grammatical morphemes by second language learners and the acquisition of derivational morphology by first language readers appear at first to be different processes, they are related by studies which examine the concept of teachability and implications of teachability for instructional practice. In the case of acquiring second language grammatical competence, a conclusion of the morpheme studies was that some morphemes at least could not be overtly taught (Krashen, 1982; Pienemann, 1985).

In first language vocabulary and word structure development, the question of teachability is also an issue—with widely varying opinions from experts in the field. Chall (1987), for instance, cites considerable evidence to suggest that direct teaching of vocabulary study is highly beneficial for both recognizing and understanding words. In a related review of the empirical evidence, Sternberg (1987) points out that instruction in certain strategies for inferring word meanings from context is effective for teaching readers to utilize context. Others, for example Tyler and Nagy (1989), entertain the hypothesis that knowledge of word structure—of derivational morphology—is "compartmentalized" and can therefore come under the purview of a conscious learning process, while word meanings—free morphemes—are best learned from the context in which they are first encountered, that is, through meaningful input. Nagy and Herman (1987) contend that incidental learning achieved through reading is a far more powerful source of information to first language learners than instruction about vocabulary.

The literature on the acquisition of morphology by second language learners is similarly without consensus. Well over a decade ago, Stephens (1977) argued for training second language learners to memorize a limited number of morphological distinctions that can aid them in reading more fluently. When the issue of actual acquisition of morphology is raised, however, the more recent research evidence suggests that instruction may not be effective. Felix and Hawn (1985),

for instance, find that learners acquire feature systems of morphemes and pronominals rather than complete morphemes and that what is acquired may be unrelated to instruction. Hyams (1986) argues that acquisition of derivational morphology may be more determined by the degree of markedness with respect to core features of the target language relative to the native language than by instruction. Here the notion of a universal constraint on learnability is used to predict the absence of certain morphological features in learner output.

The issue of input has also been of interest to second language researchers, although the precise nature of input has to date been unclear. For example, Lightbown (1985) suggests that even a high frequency of morphologically rich input leads to pseudo-acquisition: learners cannot monitor input well enough to acquire what is directed at them. Similarly, Pica (1985) finds that learners can infer the presence of only a relatively small number of morphemes with clear form-function relationships from the input. Explicit instruction of more complex morphological structures in Pica's study failed to aid the learners to acquire and produce them. Pica (1983) also contends that the apparent difficulty of certain morphemes may be a problem of context-dependence (cf. Sternberg, 1987; Tyler & Nagy, 1989).

The issue of task-dependence has been linked to inferences made about the difficulty of morphemes and associated rank orders of complexity. Abraham (1983) used three different tasks to examine the difference in applying the third-person singular morpheme, but could find no difference among the tasks (but see Tarone, 1988, which reports a significant degree of task dependence for use of articles). The issue of task (i.e., "context") is one that Koln (1982) addresses as well, noting that if observations of morpheme 'difficulties' are task-dependent, the entire notion of competence would have to be linked to precise definitions of the tasks which are used to observe the result of acquisition, a problem which Gregg (1990) argues merely produces measures of variable performance without tapping learners' underlying competence.

2. Skill-building and Comprehensible Input

In an extensive review of the literature on the teaching of vocabulary and spelling rules to first language speakers, Krashen (1989) points out that little evidence is available to suggest that skill-building instruction has any effect on subsequent attainment in vocabulary recognition or use. For Krashen, the most powerful alternative to skill-building, or overt instruction in vocabulary, and by extension, morphology, is the provision of plentiful and accessible reading materials, which is sufficient to provide contextualized and comprehensible input (Krashen, 1988).

Given the lack of consensus on the role of skill-building, formal instruction, and the use of tasks in the acquisition of second/foreign language morphology, a study was designed to address the issue of whether focussed, modular instruction in derivational morphology in a foreign language learning context would produce evidence that morphological structures can be learned through instruction and subsequently applied to tasks entailing both restricted and unrestricted use of the structures. The advantage of examining the effect of the skill-building in a foreign language context is that the influence of informal acquisition is minimized since the only readily available sources of input for learners are those which the teacher has organized in the classroom. The advantage of employing a measure of use which is unrestricted as to the use of specific morphemes is that learners' performance can be taken as a measure of which structures have been acquired over time.

3. The Study

3.1 Participants and Instructional Tasks

Members of two sections of English composition for non-foreign language majors at a Japanese university participated in the study. Group One (n = 30), the reading-only group, comprised of economics majors, read short stories written according to readability criteria (Parker, 1978) and then took short comprehension tests. Afterwards members of the group wrote short summaries of what they had read. Group Two, (n = 30), the word study group, made up of management

science majors, read the same short story series, but then completed short morpheme study exercises and tests which systematically reviewed complex words introduced in the reading selections before writing short summaries of the stories. The two groups differed only in that the word study group focused on word structure as part of their in-class practice. Both groups continued with the read-test-summarize sequence for one academic year—approximately 35 hours of instruction.

For both groups the reading input consisted of a controlled sequence of vocabulary and syntactic structures. In the case of vocabulary, the number of syllables was controlled as were the number and type of specific prefixes and suffixes. Each reading selection had these affixes introduced in the body of the story—the morphemes of interest in this study.

Although both groups were exposed to the morphemes in the context of the readings before attempting their respective exercises, only the Group Two members completed the skill-building module exercises designed to break down complex words and define the morphemes introduced in the lesson. The affixes introduced in the word structure reading and skill-building exercises and featured in the analysis of the English bound morphemes are listed in Figure 1.

Figure 1:
Bound Morphemes Introduced in Readings and Exercises

Prefixes	Suffixes	
de-	-able	-ion
dis-	-age	-ish
im-	-al	-ive
ir-	-ance	-less
mis-	-ant	-ly
non-	-ate	-ment
pre-	-ation	ness
re-	-ful	-ous
sub-	-ic	-ship
	-ify	

3.2 Hypotheses

The effect of skill-building exercises on English affixes was hypothesized to be evident in tasks involving recognition and production of word structure. To examine this possibility, tests of general vocabulary, a word well-formedness identification task, and an unrestricted production task, a free composition, were administered at various points during the term. The skill-building exercises were not expected to influence recognition of lexical items on the general vocabulary test since the test did not encompass the range of affixes presented during skill-building. No group differences, therefore, were expected to appear on the basis of the vocabulary test (Hypothesis 1). The effect of skill-building for Group Two was, however, expected to be evident in learning of well-formed, morphologically complex English words (Hypothesis 2) which would transfer to the skill of writing (Hypothesis 3). Figure 2 summarizes the three hypotheses.

Figure 2:
Hypotheses

Dependent Variable	Predicted Outcome
1. General Vocabulary	no difference
2. Well-Formedness	word study group > reading group
3. Morphemes in Essays	word study group > reading group

3.3 Instruments

At the outset of the study both groups were given the structure and vocabulary recognition subtests of the Comprehensive English Language Test (CELT) Form A (Harris & Palmer, 1982) in order to compare their level of proficiency in English. Results of unpaired T-tests of the mean scores are shown in Table 1. No significant differences were found between the two groups on these two measures of proficiency.

After the 11th and 25th weeks of instruction students in both groups were required to write expository essays about familiar topics. These essays were word-processed and analyzed with a word-search program

Table 1:
Results of Pre-test

		CELT A Structure	CELT A Vocabulary
Reading Group			
	Mean	41.14	30.07
	S.D.	8.86	4.18
Word Study Group			
	Mean	40.14	28.55
	S.D.	6.30	5.23
	T=	.503 (ns)	1.240 (ns)

designed to identify and tally instances of correctly used derivational morphemes (those listed in Figure 1). At the end of the term both groups also completed the CELT Form B Vocabulary Subtest, a test of general vocabulary knowledge, and a word well-formedness recognition task (Tyler and Nagy, 1989)—the Word Sense Test (see Figure 3) in which the learners determined whether or not the key words in a series of 50 sentences were morphologically well-formed. Figure 3 shows sample items from the word well-formedness task.

Figure 3:
Word Sense Test Samples

1. Patton showed great generalship during the North African campaign.

* 2. Workers with greater loyalment will receive rapid promotion.

3. Tameness is a valued characteristic of pets.

4. The relative valuation of the yen and dollar change almost every day.

* 5. Pollution influences the atmospherely changes we see increasingly in Japan.

* 6. The cooks were not prepared for the amount of butterance in the kitchen.

* 7. The government wants to forestify the areas which have been clearcut.

* indicates items with inappropriate affixation

4. Results and Interpretation

The hypotheses were tested with both recognition and direct performance tasks. Table 2 shows the means, standard deviations, and tests of mean differences for the recognition tasks. Tests of general vocabulary knowledge evinced no significant differences between the two groups, a result supporting the first hypothesis, although performance on the direct test of morphological knowledge—the Word Sense Test—also failed to distinguish between the groups, a result which offered no support for the second hypothesis.

Table 2:
Results of Reading and Word Recognition Tests

	Word Sense	CELT B (Vocabulary)
Reading Group		
Mean	23.60	32.07
S.D.	7.81	10.88
Word Study Group		
Mean	24.65	32.13
S.D.	5.62	9.27
T=	-.590 (ns)	-.022 (ns)

It should be recalled that the hypotheses listed in Figure2 indicate a predicted ordering of mean differences between the two groups. The results presented thus far indicate that instructional activity which focused on skill-building was largely without effect in the present study. In the case of the test of general vocabulary, which included a broad sample of English vocabulary items, it may be supposed that the word study which was accomplished did not correspond to the limited range of items available for analysis during the test: Specific knowledge gained during skill-building thus would not be expected to transfer to a general measure which does not test for such knowledge. An alternative explanation for the results on the vocabulary test is that both groups

would have obtained an equivalent amount of exposure through the reading practice and thus that their scores would have been indistinguishable.

The Word Sense Test (which also failed to produce significant group differences) contained a variety of affixes attached to root words; to this extent the test content more closely approximated the kinds of items which were incorporated into the skill-building exercises. The lack of group differences may indicate that very few of the items, whether well-formed or ill-formed, were analyzed for morphology, or that both groups of learners relied equally well on their recollection of whole words to distinguish words from non-words. These possibilities suggest that skill-building may have to contend with the forms and persistence of prior learning on recognition tasks.

The final assessment of morphology skill-building in this study, the comparison of group differences in the use of the key affixes in the essays, was considered an important test of the third hypothesis in that transfer of the skills built in the word study exercises should be observable in direct production tasks if indeed acquisition has taken place. Two independent tests, one for prefixes and the other for the suffixes, were used in the analysis of the production tasks, the results of which are summarized in Table 3.

Table 3:
Transfer to Composition Tests

	Mid-term Prefixes	Mid-term Suffixes	Final Prefixes	Final Suffixes
Reading Group				
Mean	.200	5.8	.467	3.9
S.D.	.484	.3	.860	4.0
Word Study Group				
Mean	.167	5.0	.900	3.4
S.D	.531	3.5	1.02	2.4
T	.254 (ns)	.859 (ns)	-1.77*	.576

* significant difference at $p < .05$

Table 3 shows that, in the transfer to essay writing, only one of the criteria, the greater frequency of prefix use in the compositions of the Word Study Group, supported the third hypothesis. Although there was no difference at mid-term in the relative frequency of affix use between the groups, there is some weak evidence that the effects of skill-building do eventually turn up in student writing. Slobin's (1973; 1985) concept of operating principles in first and second language development may be of some help in explaining the group difference associated with the production of prefixes. Clahsen (1990) and Anderson (1988), for example, invoke Slobin's principle of formal determinism to account for why some grammatical structures are more easily retained from input than others:

> When the form/meaning relationship is clearly and uniformly encoded in the input, the learner will discover it earlier than other form/meaning relationships and will incorporate it more consistently within his interlanguage system. (Anderson, 1988, p. 86)

Even though the learners in the Word Study group had the benefit of skill-building exercises focusing on derivational morphology, the reading exercises they also engaged in may have included suffixes which were obscured in complex words so that the key suffixes were less salient in the input than were the relatively more exposed prefixes. The prefixes may thus have been easier to recall for use during production because of their exposed position in the input.

5. Summary and Conclusion

This study found no evidence for the claim that general reading provides a better basis for vocabulary growth in a second language than skill-building. The study found, to the contrary, some evidence to support the use of skill-building exercises in derivational morphology to the extent that items are identified in coherent texts and that affixes occupy salient positions in the lexical items introduced in the texts. That is to say, the utility of affix study lies in the contextualized presentation of clearly and consistently encoded items with a conspicuous position in word structure. In contrast to Krashen's (1989) claim that skill-

building is generally ineffective, this study found limited support for explicit instruction in derivational morphology. Evidence for the effective learning of derivational morphology, however, must be obtained from appropriate sources, including what have been referred to here as unrestricted production tasks which allow the learner opportunities to produce affixes in a meaningful context.

Further efforts to replicate and verify the results of this study will be necessary before strong claims about the utility of skill-building can be made on the basis of empirical evidence. This is, in fact, a general caution for all studies in the area of classroom second language learning which deal with the relative effectiveness of instructional variables.

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