*AN EXPERIMENTAL ANALYSIS OF LINGUISTIC
DEVELOPMENT: THE PRODUCTIVE USE OF
THE PLURAL MORPHEME¹*

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Operant conditioning procedures were used to establish a generative use of the plural morpheme in the speech of a severely retarded girl. During training trials, reinforcement was presented contingent upon correct imitation of singular and plural verbalizations by the experimenter, in response to objects presented to the subject singly and in pairs. A generative productive plural usage resulted, the girl correctly labeling new objects in the singular or plural without further direct training relevant to those objects. After establishing the singular/plural usage, the contingencies were reversed (reinforcement of plural responses to single objects, and *vice-versa*). This produced a corresponding reversal of response by the child. The original usage was then recovered by returning to the previous contingencies. A second experiment analyzed certain error responses occurring during the first experiment, and further probed the generative nature of the subject's plural usage. It was found that errors were somewhat more likely to occur in the pluralization of words ending in vowels than of words ending in consonants. Furthermore, several words whose plurals had been learned according to the reversed plural rule, when examined later during reinforcement of normal plural usage, were found then to exemplify the normal rule being reinforced, yet without direct training.

As an area of human behavior, developmental linguistics has increasingly attracted the attention of theorists and researchers over the past decade. But research continues to lag far behind theory. Only recently have there been gains in the assessment of language behavior (Berko, 1958; Ervin, 1964; Spradlin, 1963, 1967). There are a few extant studies of the development of syntax and morphology; but these have been merely diary reports about single children (Velten, 1943; Leopold, 1953; Albright and Albright, 1958), or simple correlations of children's language with their age and sex (Berko, 1958; Ervin, 1964). There have been very few experimental attempts to analyze language development functionally (Risley, 1966; Bricker, 1967; Lovaas, 1967). Instead, recent efforts have focused primarily on theory (Skinner, 1957; Chomsky, 1957; Lenneberg, 1967).

The present study extended the experimental analysis of language development to the analysis of the plural morpheme, conceptual-

ized as a generalized, or generative, productive response class. The utility of the response class concept lies in its conceptual correspondence to the linguists' usage of "generative" language (Chomsky, 1957). In both cases, the term has been used to describe a significant fact of response development: that there often emerges from an organism more behavior exemplifying the dimensions of his experience than that experience has taught directly to him. Thus, Baer, Peterson, and Sherman (1968) have shown that directly teaching a non-imitative retardate numerous and diverse examples of imitation can result in the appearance of more (and quite different) imitations than were included in that training. The importance of the response-class phenomenon lies partly in the amount of new behavior produced, and partly in the fact that this new behavior can result from a properly unified sequence of instructions. This suggests that the complexity, diversity, grammatical, and generative characteristics of productive language also could be seen as response classes—*i.e.*, as highly generalized sets of vocal behaviors exemplifying the same dimensions, or rules, that characterized their training experiences,

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whether deliberately or accidentally. And, in fact, there have been several experimental uses of the imitative response class as an antecedent to the development of primitive but basic language behaviors. Thus generalized imitation has been applied effectively to language training by Bricker and Bricker (1966), Lovaas (1967), Baer *et al.* (1968) and Sailor, Guess, Rutherford, and Baer (1968). In their work, the model of reinforced imitative control suggested by Skinner (1957) has been realized for the problem of vocabulary development and the modest facilitation of verbal usage, in that simple forms of functional speech were established through reinforced imitation in retardates with little or no previous verbal behavior. Nevertheless, some theorists are skeptical of any primary role of imitation in language development (Chomsky, 1957; Lenneberg, 1967). Their central objection seems to revolve on the generative nature of language: the fact that spoken language contains many elements never taught directly, nor even experienced previously for later imitation. And it is true that the roles of differential reinforcement and imitative stimulus control in the acquisition of generative morphology and syntax largely remain to be demonstrated.

The present study was designed to provide a starting point for the experimental analysis of generative, productive morphological development. The plural morpheme was chosen as the unit of analysis because it exemplifies such a concept simply, and because of the relative ease with which imitative stimulus control of speech can be shifted to control by object presentation.

METHOD

Subject

A 10-yr-old girl, Janet, who had been institutionalized for the past 4 yr, had been assessed as functioning at the severely retarded level. She had previously undergone a verbal training program (Sailor *et al.* 1968) and had developed a small, well-articulated verbal repertoire of single words and simple phrases. Janet had been non-verbal until she participated in that program, except for reported attempts to say some words at the age of 2 yr. Thus, she was an excellent candidate for the present study: her verbal repertoire was meager, and (according to all known sources) she had not

been provided with any type of systematic training in the use of plurals.

Several tests before the study examined Janet's possible use of plurals. In these tests, Janet was shown an object and asked, "What do you see?" She was then shown two of these objects, and again asked, "What do you see?" This procedure was repeated with 10 different objects (and their pairs). In no case did she provide the plural form for any pair of these objects (exemplifying both regular and irregular plurals). Singular responses were given to both single and paired items.

EXPERIMENT I

Procedure

The study was conducted in a soundproof room connected by one-way mirror and intercom system to an adjoining observation room. Janet sat at a table beside the experimenter. Various reinforcers and objects to be used in the study were placed behind a partition near the experimenter but out of Janet's sight. An observer stationed in the observation room recorded data, as did the experimenter.

Stages. Experimental sessions were conducted twice daily and ranged in length from 15 to 45 min. Stimuli for the study consisted of various small objects which were placed on the table in front of the subject. The order of object(s) presentation followed a daily, three-stage sequence.

In Stage 1, Janet was shown a single object and asked, "What do you see?" If the object was correctly named in its singular form within 20 sec of its presentation, she was given a bite of food (ice cream, jello, chocolate or plain milk, or mixed fruit). If she failed to respond within 20 sec, the experimenter correctly labeled the object, withdrew it from sight for 10 sec, and then presented it again. This was repeated until Janet named the object correctly. (Janet seldom required more than one correction.) If Janet labeled the object incorrectly on its first presentation, the experimenter said, "No", and repeated the same procedure. Criterion performance for this stage of the training required three consecutive correct responses.

In Stage 2, Janet was presented with two of the same object and asked, "What do you see?" Reinforcement was contingent on a plural response. If Janet said the singular, the investi-

gator said "No", stated the correct plural label, and withdrew the objects for 10 sec. Again, criterion performance was three consecutive correct responses.

A random sequence of single and multiple (2) objects was presented in Stage 3 of the training session. Criterion performance for Stage 3 required a sequence including three correct singular responses intermixed with three correct plural responses, without intervening errors.

Table 1

Sample data sheet for the training of the productive plural morpheme, illustrating the order in which items were presented (singly or in pairs), and the recording and scoring of a performance to the criteria of plural acquisition.^a

Item: cup (s)			
Instructions to observer: star (*) response if correct; cross it (x) if incorrect			
Stage 1		Stage 2	
Present:		Present:	
*1. cup (etc.)		x1. cups (etc.)	
*2. cup		x2. cups	
*3. cup		*3. cups	
4. cup		*4. cups	
5. cup		*5. cups	
6. cup (etc.)		6. cups (etc.)	
Stage 3			
Present:			
*1. cup (etc.)	(etc.)	(etc.)	(etc.)
*2. cup			
x3. cups			
*4. cup			
*5. cups			
*6. cup			
*7. cups			
*8. cups			
*9. cup			
10. cups (etc.)			

^aThis sample data sheet shows that the subject met the singular criterion of three consecutive correct trials in the first three trials of Stage 1; that she met the plural criterion of three consecutive correct trials on trials 3, 4, and 5 of Stage 2; and that she met the mixed criterion of three singulars and three plurals intermixed without error on trials 4 through 9 of Stage 3. To meet these three criteria required $(3 + 5 + 9) = 17$ trials; of these 17, 14 were correct, yielding a percentage correct of 82. A plural shift was not recorded for this word, in that the subject did not make a correct plural response on the first trial of Stage 2. For early words, meeting these criteria typically would require many more trials in each stage, and a complete data sheet therefore included more entries of potential trials. These are indicated by (etc.) in this table.

Criterion for each stage was to be reached before the next stage was begun. Completion of the third stage constituted the end of a session. Each session was devoted to the training of the singular and plural labels of one item, and each session involved a new item not used before. (An exception to this will be noted in Exp. II, Condition V).

These three stages with their associated criteria were repeated for each item presented throughout each of the experimental conditions described below. Table 1 presents a sample data sheet illustrating the recording and scoring of data in these stages.

Conditions. In Condition I, Janet was trained to respond correctly with singulars or plurals when presented with single objects or pairs of objects, respectively. In Condition II, the reinforcement contingencies were reversed, such that she then was required to give a plural response to single objects and a singular response to pairs of objects. Condition III returned to the normal contingencies originally used under Condition I. The objects used for the three conditions in Exp. I, as well as the five conditions in Exp. II, are presented in Table 2.

Irregular and different plurals. During Condition III, Janet was shown five objects whose labels are governed by irregular or different plural rules than her training had embodied (e.g., man-men, leaf-leaves, glass-glasses). These probes were conducted to determine if her experimental plural training would control her production of normally irregular plurals, and thus substantiate the original observations that she did not have a prior plural usage. These probes were conducted at the ends of five consecutive sessions late in Condition III, one object per session. Correct responses to single object presentations were reinforced; responses to pairs were never reinforced.

RESULTS

Reliability. A basic point in a study of this form is whether the critical response, the addition of an /-s/ or /-z/ sound at the end of certain words, was measured reliably by the observing techniques used. The detection of that response was made by the experimenter, who did or did not deliver reinforcers accordingly. The reliability with which he did this was checked by a second observer, watching and listening from the adjoining room. Listening

to the intercom reproduction of Janet's voice, the observer scored all her responses as singular or plural as they occurred, attempting always to anticipate reinforcement (if it occurred).

Table 2

Object labels for the eight conditions in experiments I and II.

EXPERIMENT I		
Condition I*		
cup /s/	boat /s/	nail /z/
hat /s/	bag /z/	plate /s/
pen /z/	spoon /z/	egg /z/
book /s/		
Condition II		
block /s/		
fork /s/	clip /s/	stick /s/
stamp /s/	ring /z/	spool /z/
key /z/	nickel /z/	car /z/
card /z/	can /z/	airplane /z/
button /z/	bottle /z/	camel /z/
balloon /z/	cigar /z/	lion /z/
Condition III		
truck /s/	dime /z/	clock /s/
cap /s/	tack /s/	bolt /s/
pipe /s/	dollar /z/	dog /z/
goat /s/	sack /s/	flag /z/
lid /z/	soap /s/	nut /s/
EXPERIMENT II		
Condition IV		
shoe /z/	bow /z/	screw /z/
checker /z/	tree /z/	tie /z/
lei /z/	radio /z/	
Condition V		
duck /s/	record /z/	clip /s/
rabbit /s/	board /z/	can /z/
hook /s/	bug /z/	stick /s/
bead /z/	jack /s/	car /z/
Condition VI		
straw /z/	domino /z/	cow /z/
tee /z/	fly /z/	tray /z/
Condition VII		
rock /s/	pod /z/	pipe /s/
dart /s/	peg /z/	jack /s/
gun /z/	hat /s/	cup /s/
Condition VIII**		
pō /z/	dā /z/	dī /z/
spī /z/	stō /z/	stū /z/

*Objects listed under each condition are presented vertically in order of presentation.

**Nonsense labels represented by "junk" items.

Of the 1345 singular or plural responses emitted by Janet throughout the study, the experimenter and observer disagreed on their singular or plural form only once. In that case, later recourse to the tape recording of the session showed that the experimenter was correct in his judgment, and that Janet had been treated correctly on that trial.

(This high reliability of scoring need not be expected in all such cases. Janet presented an unusually clear articulation of /s/ and /z/. Other children observed in similar situations sometimes present /th/ or /sh/ sounds which make for considerably more observer disagreement.)

Productive plural acquisition. The final stimulus control sought in this study was one in which Janet would produce a correct singular label when presented with one item, and a correct plural label when presented with two (or more) of the item. It was desired that this control eventually be displayed immediately after Janet had learned any new label in the singular form. When she had advanced to the point that her new language acquisitions were automatically organized into their correct singular and plural forms, without direct and specific training in their pluralization, she could then be termed grammatically generative for that limited example of grammar.

Two measures of this generative characteristic were derived from Janet's performance. One was based on the number of trials required to bring her to the multiple criterion of singular-plural usage for each new word she was taught; the other simply measured the probability that on the first presentation of items in pairs (rather than one at a time) she would consistently shift to their plural label without training or correction.

The first measure was calculated as a percentage of correct response displayed in achieving the criteria required by Stages 1, 2, and 3 throughout training. The number of responses required to meet the three criteria specified for each new word was divided into the number of correct responses made in reaching that criterion, as explained in the note accompanying Table 1.

The second measure was scored as a successful plural shift if, on the first item of Stage 2 (when first shown the current item as a pair of objects), Janet correctly supplied the plural label. Any error or failure on this trial caused

the item to be scored as an unsuccessful plural shift, as explained in the note accompanying Table 1.

The changes in percentage of correct response over the trials and conditions of the study are shown in Fig. 1. A score of 100 means, of course, that no errors were made in achieving the three criteria of productive plural usage. Thus, these scores indicate productive linguistic behavior. To the extent that scores approach 100, they reflect a correspondingly high efficiency of Janet's learning to use singular and plural forms correctly for that item.

Figure 1 shows that productive plural usage was achieved by the third word of Condition I and maintained for the remaining seven words of that condition. Upon reversal of the contingencies of reinforcement, Janet's percentage of correct response dropped markedly, but gradually rose as she began to develop a re-

versed singular-plural usage. The tenth word presented in Condition II, once labeled for Janet by the experimenter, was used correctly thereafter without error; of the nine further words presented during Condition II, six were similarly used without error, the other three showing minimal errors before reaching the multiple criterion. With the return to the normal contingencies of everyday English in Condition III, Janet almost immediately recovered her previously mastered singular-plural usage, and 11 of the 15 words presented during Condition III were used productively (*i.e.*, in correct singular and plural forms without error). Errors with the other four words again were minimal.

In terms of the all-or-none measure of plural shift displayed during the first trial of every Stage 2, Janet showed similar evidence of the development, reversal, and recovery of a productive linguistic class of plurals. Figure

Fig. 1. Percentage of correct responses for three experimental conditions. In Conditions I and III (solid dots) the graph represents percentage of correct responses for those objects trained under standard or normal productive plural usage. (See Table 1 for an example of percentage calculation.) In Condition II (open dots) the graph represents percentage of correct responses on those objects trained under reversed contingencies of reinforcement, and in this case indicates reversed productive plural usage (calculated in the manner identical to Conditions I and II).

2 shows the cumulative number of successful shifts made over the trials of Conditions I, II, and III. The last eight items of the 10 in Condition I showed plural shifts; the 19 items of Condition II yielded 12 shifts during the last 13 items; and all 15 items of Condition III gave rise to plural shifts.

Probes of irregular and different plurals. During Condition III, five words representing irregular plurals or different plurals than her training had included, were presented, once each, interspersed with the other items. (Data from these probes were not included in the results graphed in Fig. 1 and 2.) To the presentation of two men, Janet's response was "mans"; to two children, her response was "childs"; and to two leaves her response was "leafs". (In this last case, there was perfect agreement between experimenter and observer on the fact that both the /f/ and /s/ sounds in the plural were unvoiced.) When presented with two-item pairs that in English would require an /ez/ pluralization, glasses and boxes,

Janet simply repeated the singular for these presentations. In addition, on one such trial she had a tantrum. [Note Sailor *et al.* (1968) for an analysis of Janet's tantrum behavior; it appeared that her tantrums were often used as escape responses to avoid or terminate conditions of difficulty.]

EXPERIMENT II

With one exception, the items used in Exp. I had labels that ended in a consonant. The possible significance of this fact was noticed in Session 45, when Janet showed a currently unusual decrement in performance with the label, "shoe". Her percentage of correct response dropped from its previously near-100% level to 76%, and she failed to make a plural shift in Stage 2. Consequently, Session 45 was made the first session of a second experiment, aimed primarily at examining the possibility that the terminal sound of a label could affect Janet's ability to use its singular and plural forms correctly and productively. The second

Fig. 2. Cumulative number of plural shifts for the three conditions. A plural shift was recorded for Conditions I and III (solid dots) if Janet correctly supplied the plural label on the first item of Stage 2 when first shown a pair of objects. A shift was recorded in Condition II (open dots) if Janet gave a singular response when first presented a pair of objects in Stage 2.

experiment was also designed to probe the nature of Janet's current generative plural usage: Was she so generative that she would reorganize without error the labels she had learned according to a reversed plural rule in Condition II? And would her generative use of plurals extend beyond the pair as the basic example of plurality?

Procedure

The basic procedures of presenting items and scoring Janet's responses to them were identical to those used in Exp. I. The major variations of this second experiment were the nature of the label endings used, their choice from previous parts of Exp. I, or their presentation in trios instead of pairs to exemplify the plural case.

Terminal vowels. Item labels with terminal vowels (e.g., bow, tree, straw, fly, etc.) were presented in Conditions IV, VI, and VIII. Item labels with terminal consonants were presented during Conditions V and VII (as they had been during Condition III of Exp. I). Otherwise, the words were quite similar in length and difficulty of pronunciation to the words used in Exp. I.

Generative probes. The final four sessions of Condition V were given over to the presentation not of new words, but of previously mastered words from Condition II. In Condition II, it will be recalled, Janet was learning a reversed plural rule: single objects were labeled with a plural phoneme, and pairs of objects were labeled in the singular. Four words (one for each of these sessions of Condition V) were chosen which Janet had correctly pluralized according to that reversed rule, and without error. Thus, these were four words which in Condition II had testified to the generative nature of Janet's reversed plural usage. The question of interest was whether she would use them now according to the currently reinforced plural rule (the conventional rule), or according to the rule under which she had previously acquired them (the reversed rule).

The final four sessions of Condition VII presented Janet with new items to learn, as before; however, during Stage 3 of these performances, when she was displaying highly generative plural usage, trios of the items being labeled were interspersed with the usual pairs, approximately half of the time. The question of interest was whether Janet would

respond to a trio as a plurality, inasmuch as her past training had exemplified plurality exclusively by pairs of items.

A summary of procedures for the eight experimental conditions of Exp. I and II is presented in Table 3.

RESULTS

Reliability. The reliability estimate reported in Exp. I was derived from the total number of responses Janet made throughout this study; thus it applies equally to Exp. II (one disagreement among 1345 observer judgments about singular or plural usage).

Terminal vowels. Figure 3 presents again the percentage of correct responses for Condition III of Exp. I as a baseline, as well as the percentage of correct responses for Conditions IV through VIII of Exp. II, session by session. A comparison of those conditions involving terminal consonants (III, V, and VII) with those conditions involving terminal vowels (IV, VI, and VIII) suggests that the terminal sound of a label did slightly affect Janet's performance in the productive differentiation of its singular and plural usage. She achieved errorless performance on 26 of the 32 items involving terminal consonants, but on only eight of the 20 items involving terminal vowels. (That pattern of results, if judged suitable for statistical analysis by chi-square, would yield a value of 8.9 which for one degree of freedom is significant beyond the 0.005 level. However, in that the frequencies involved represent successive performances by the same subject, their independence from one another, and thus their suitability for such an analysis, may be questioned.)

Generative probes. Sessions 61 through 64 of Condition V involved terminal consonant labels which Janet had learned earlier under the reversed contingencies of Condition II, in the first experiment. Figure 3 shows that Janet's previous, reversed learning (singular response for pairs, plural response for single items) appeared to have no effect on her current performance in Condition V, when reinforcement was contingent on conventional plural usage (i.e., singular responses for single objects, plural responses for two objects). Conventional rather than reversed usage was observed in every case.

Janet's generalization of plurals to more than two objects was examined in Sessions 76

through 79 of Condition VII. Figure 3 shows completely errorless performance during those sessions, indicating that her plural usage did generalize immediately to trios of objects.

DISCUSSION

The primary finding of Exp. I showed that a productive use of plurals can be taught to a severely retarded child simply through imitation and differential reinforcement during a brief series of examples. The acquisition of conventional plural usage in Conditions I and III, and its reversal in Condition II, exemplify those learning theory approaches which postulate the primary roles of imitation and environmental reinforcement in the development of morphological rules. Such approaches are sometimes contrasted with other theories which minimize the role of imitation and learning in the development of grammar (*e.g.*, Chomsky, 1957; Lenneberg, 1967). It should be emphasized, of course, that the present study simply established the feasibility of developing a single productive language class by imitation and differential reinforcement. It does not establish that other productive classes are equally simple to establish by these tech-

niques, nor that the usual child necessarily develops his language classes in this way. It does show that it is possible to do so. It should also be remembered that although Janet required only three examples of singular and plural usage with differential reinforcement to exhibit a productive usage of singulars and plurals thereafter, this rapidity must to some extent depend on the very extensive training she had experienced previously in the development of imitation and labeling (*cf.* Sailor *et al.* 1968). Perhaps 100 experimental hours had been invested into that earlier development. Without so much previous training and her resultant efficiency of learning labels, Janet's acquisition of a productive plural usage might well have taken many more examples.

Experiment II investigated several variables relevant to the plural response class. Results from this part of the study suggested that Janet had more difficulty (in terms of correct response) on those words with terminal vowel endings. A tenuous explanation for these results is offered, however, when one considers the fact that the regular plural morpheme is composed of several phonemes (*i.e.*, /s/, /z/, and /ez/). Cofer (1963) suggests that those words requiring a /z/ phoneme—voiced con-

Table 3

Summary of procedures and type of word ending for the eight conditions of Experiments I and II.

Condition	Procedure	Word Ending
EXPERIMENT I		
I	Reinforcement of normal plural usage	consonant only
II	Reinforcement of <i>reversed</i> plural usage	consonant only*
III	Reinforcement of normal plural usage; probes for irregular and different plurals	consonant only
EXPERIMENT II		
IV	Reinforcement of normal plural usage	vowel only**
V	Reinforcement of normal plural usage; re-presentation of four words originally trained as reversed plurals	consonant only
VI	Reinforcement of normal plural usage	vowel only
VII	Reinforcement of normal plural usage; presentation of object trios in addition to singulars and pairs	consonant only
VIII	Reinforcement of normal plural usage using nonsense syllables, half with initial /s/ sounds, half without	vowel only

*One word (key) used in this condition had a vowel ending.

**One word (checker) used in this condition had a consonant ending.

Fig. 3. Percentage of correct responses for Condition III of Exp. I plus Conditions IV through VII of Exp. II. Line graphs with solid dots indicate those conditions (III, V, and VII) involving words with terminal consonant endings. Words or nonsense syllables terminating in vowel sounds are depicted by the line graphs with open dots (Conditions IV, VI, and VIII).

sonants and vowels—encourage the expression of this sound, because the final position of the speech mechanisms in producing the word thereby permits continuity in the plural formation (p. 179). For example, there is no break in the air flow when one adds the /z/ phoneme to the vowel-ending word “tree”, whereas the addition of an /s/ phoneme requires a pause, and then articulation of this sibilant. It is possible that, in the course of the training conditions in Exp. I, Janet had learned to articulate only the /s/ phoneme in the production of plural words. Indeed, four of the first five words trained in Condition I required an /s/ ending. This possibility is further substantiated by the tape recordings made during the experiment which indicated the subject was, in fact, pausing and accentuating the /s/ phoneme on those vowel-ending words which normally require the /z/ phoneme. However, it should be noted that Janet

apparently had little trouble with those words ending with voiced consonants which, like vowels, normally require a /z/ phoneme. (The question of phoneme ending, /s/ or /z/, as a product of differential reinforcement is currently being pursued in a further study.)

A confounding variable which may have adversely affected Janet's performance on certain words, and especially those words ending in vowels, was the initial sound of the word. As data were being collected there was at least a subjective opinion of the experimenters that Janet had more difficulty pluralizing words with an initial /s/ sound. For example, inspection of Condition VIII shows a slight decrement in performance on those three nonsense syllables starting with an /s/ phoneme and ending in a vowel sound (Sessions 81, 83, and 85) as opposed to those syllables starting with the consonants /p/ and /d/ and ending in a vowel sound (Sessions 80, 82, and 84). The

influence of the initial /s/ phoneme on pluralization was further checked by reviewing Janet's performance on all previous words of the study (except the reversed plurals of Condition II). It was found that Janet achieved completely correct performance on only 45% (4/9) of those words starting with an initial /s/ phoneme, but on 74% (42/51) of all words without an initial /s/ phoneme. The type of word ending (vowel or consonant) was ignored when computing these percentages. (A chi-square value computed for these data was not statistically significant— $X^2 = 3.14$, $P < 0.10$ for 1 d.f.) Thus, neither explanation adequately treats the data and the subject's reduced performance on vowel ending words remains unaccounted for pending further experimentation.

The errorless performance by the subject during Condition V on those words previously trained in reversed plural usage (Condition II) suggests that learning a new productive class (in this case normal plural usage) can "automatically" overcome prior contrary learning experiences. However, investigation of the range of conditions under which this is true remains to be done.

Generalization of plural usage to trios of objects in Condition VII supports the basic results in Exp. I and extends them: Janet had learned a thoroughly generative morphological rule through imitation and differential reinforcement.

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