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OBSERVATIONAL LEARNING OF A NOVEL LANGUAGE CONSTRUCTION

by

Gina Louise Kossuth

A Dissertation Submitted to the Faculty of the DEPARTMENT OF PSYCHOLOGY In Partial Fulfillment of the Requirements For the Degree of DOCTOR OF PHILOSOPHY In the Graduate College THE UNIVERSITY OF ARIZONA

1972
I hereby recommend that this dissertation prepared under my direction by Gina L. Kossuth entitled Observational Learning of a Novel Language Construction be accepted as fulfilling the dissertation requirement of the degree of Doctor of Philosophy.

Wayne R. Carroll
Dissertation Director

Nov. 1, 1971

After inspection of the final copy of the dissertation, the following members of the Final Examination Committee concur in its approval and recommend its acceptance:*

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SIGNED: Irene Louise Kossuth
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ABSTRACT

The relative effectiveness of modeling alone and a combination of translation and modeling on the performance of a novel language rule was studied in second and sixth grade subjects. Six sentences employing the novel language rule were demonstrated by an experimenter-model and subject's responses were scored for all-or-none performance of components of the novel rule in imitation and generalization phases immediately following the modeling presentation. The use of stimulus cards (pictures) during the modeling phase was also assessed. An analysis of variance revealed that the main effects for grade level, experimental treatment (modeling alone versus translation and modeling), pictures, sex, and phases (imitation and generalization) were all significant. There were no significant interactions. Sixth graders evidenced greater performance of the new rule than second graders, translation and modeling was found to be more effective than modeling alone, and pictures were found to facilitate performance of the new rule. Girls demonstrated greater new language rule performance than boys and performance of the rule was better during imitation than generalization.
INTRODUCTION

The effectiveness of exposure to modeled displays in facilitating the development of social response patterns has been demonstrated frequently. Recent investigations have indicated that moral judgments, putative emotional reactions, preference for immediate or delayed gratifications, and standards for self-reinforcement may all be acquired through exposure to models (e.g., Bandura, Grusec, and Menlove, 1967; Bandura and McDonald, 1963; Bandura and Mischel, 1965; Bandura and Rosenthal, 1966; Bandura and Whalen, 1966).

Within the area of language learning there has been, until recently, only minimal evidence on the effects of modeling because of the highly nativistic accounts of language acquisition provided by Menyuk (1963), McNeill (1970), and others. Such authors held that the generative nature of linguistic behavior, the speed of linguistic development between one and one-half and three years of age, and the steady increase in syntactic structure from two to seven years preclude anything but the most minimal environmental influences on language acquisition. Indeed, the literature is abundant with evidence supporting a biological or maturational account of language acquisition. For instance, McNeill (1970) has
pointed out several linguistic regularities in the speech performances of young children. In some descriptive data on the emergence of English inflections in the speech of two children he found that the order of emergence of noun and verb inflections was the same for the two children, even though the order of emergence was only weakly correlated with the frequency of these forms in mothers' speech.

Accordingly, nativistic accounts maintain that imitative learning cannot account for the acquisition of the essentials of language. Language is felt to be governed by sets of rules which enable the individual to generate novel grammatical utterances. Imitation, in the narrow sense of mimicking the behavior of a model, clearly is not consistent with this viewpoint. Yet, this is the definition of imitation to which the nativistic approach typically addresses itself.

In a second sense, imitation may refer to an individual's behavior being governed by the same rule that controls the model's behavior. In this sense, language is also acquired through imitation (McNeill, 1970). Ervin (1964) has suggested that while overt imitation cannot account for the rapid progress of children's grammatical skills in the early years, it may be important in comprehension, in the acquisition of vocabulary, or in the special conditions of classroom language learning.
There is no question that children imitate the speech of adults. At least 10 percent of children's speech at 28 to 35 months is imitative (McNeill, 1970). It is possible that adult syntactic forms are introduced into a child's speech through imitation.

In a study by Bandura and Harris (1966) the role of modeling cues, reinforcement variables, and strong attentional set in altering children's syntactic style were assessed. For an extremely infrequent response, the passive construction, neither reinforcement nor modeling alone was effective in increasing the use of the construction in sentences created by second grade children in response to a set of simple nouns. When verbal modeling cues and reinforcement were combined with procedures to increase syntactic discriminability, however, the frequency of passive constructions increased. The most powerful treatment condition was one in which attentional set was induced, modeled passive constructions were interspersed with some sentences in the active voice so as to enhance differentiation of relevant grammatical properties, and both the model and the children were rewarded for passive constructions.

For a second more common construction, the prepositional phrase, reinforcement combined with attentional set was a sufficient condition to increase the children's usage of prepositional phrases. Modeling combined with attentional set and reinforcement was no more effective than attentional
set and reinforcement alone. Both of these groups, however, were superior to the control and model conditions.

Thus, for an infrequent construction such as the passive, reinforcement, modeling, and attentional set all serve to increase discriminability. For the relatively frequent prepositional phrase construction, modeling is not an important contributing factor but may serve a discriminative function signifying change in reinforcement contingencies (Bandura and Harris, 1966). The fact that subjects in the reinforcement and attentional set condition continued to produce prepositional phrases after the construction was no longer required, while children in the combination modeling and attentional set and reinforcement group showed no such perseveration, would point to this.

Odom, Liebert, and Hill (1968) performed two experiments, one of which was a replication of Bandura and Harris' findings concerning the combined effects of modeling, reinforcement, and attentional set on the production of familiar constructions, and another which assessed the combined effectiveness of these variables on the production of unfamiliar constructions (ungrammatical phrases).

In Experiment I, half of the subjects were exposed to and rewarded for production of grammatical prepositional phrases, while the remaining half were exposed to and rewarded for production of ungrammatical phrases. Both groups demonstrated an increase in the frequency of grammatical
constructions. The authors suggested that such results indicate that children adopt an active problem-solving strategy, modifying ungrammatical utterances to make them grammatically correct. Thus the combination of social-learning variables employed affected the production of constructions already present in the grammar of the child. This may be related to Menyuk's (1963) observation that the most frequent type of deviation from complete repetitions of modeled speech by children involve the use of rules which come earlier in the child's grammar than those used in the stimulus sentence.

Experiment II revealed that children could repeat ungrammatical phrases when instructed to do so. However, no children performed 100 percent correctly on this task. Spontaneous errors usually took the form of reordering the sentence to make it grammatical. The authors concluded that the crucial factors determining the behavior of the subjects in both experiments were cognitive in nature.

If the reordering strategy demonstrated in the last experiment represents an inability to abstract a new rule in a relatively brief training period, then successful repetition and production of the new construction might be thought to represent a strategy which is made possible by the development of abstract processes in the child. This hypothesis was tested by Liebert, Odom, Hill, and Huff (1969) in a study investigating the effects of age and rule familiarity
on the production of grammatical and ungrammatical constructions. It was found that the oldest group (14.1 years) performed best on measures of both repetition of modeled constructions and the production of novel sentences fitting the relevant construction rule. These results lent support to the original hypothesis that language learning is an active problem-solving process facilitated by well developed cognitive skills (Liebert, Odom, Hill, and Huff, 1969).

Grammatical structure is just one set of rules the child must acquire in language learning. Content, intonation, tense, and other formal properties of speech must also be mastered and often extrinsic incentives for performance, such as those used in the previous studies, are not provided the young language learner. Carroll, Rosenthal, and Brysh (1969) recently studied children's imitations of a model's sentence-structure, content, and use of present, past, or future tense verbs. Extrinsic incentives were not offered for responding. In contrast to a no-model control group, results revealed that exposure to modeling produced significantly more imitative changes in content, sentence-structure, and tense. In addition, the tense and sentence-structure effects were generalized to a new set of pictorial stimuli.

In most instances, the basic elements for the development of complex integrated units of behavior are already present in a subject's behavioral repertoire as a result either of maturation or of prior observational learning or
instrumental conditioning (Bandura, 1969). Modeling procedures which demonstrate a complex behavioral pattern are conveying information to observers about several characteristics of the appropriate response. The observer must abstract common attributes of the modeled responses and formulate a principle for generating similar responses. The abstraction of rules from modeling cues was demonstrated in the Bandura and Harris (1966) study cited earlier. In that study, the syntactic style of children was manipulated through vicarious discrimination learning. Thus discrimination of the operations underlying the desired response is an important aspect in the development of a complex response pattern.

An important question in verbal learning concerns the conditions that facilitate abstraction of rules from verbal modeling cues. The rule underlying a model's response can be most readily discerned if its components are repeated in responses involving a variety of different stimuli (Bandura, 1969). In cases where the observer's behavioral repertoire is impoverished, or where the requisite components for the modeled responses are lacking, complex behavioral patterns are reduced to small subunits of behavior. Each of these subunits is then established through modeling. The demonstration of the component responses of a complex behavior is, thus, one way of increasing the discriminability of the desired response.
The present study investigated the relative effectiveness of modeling alone and a combination of translation (i.e., presentation of English equivalents) and modeling on the performance of a novel grammatical rule. The children were told that they would learn a funny new language and that they would be asked to make up sentences describing pictures which would be presented to them. Modeled sentences were created according to the following rule: sentences consisted of three words, a subject (S), a verb (V), and an object (O). The order of the three words was unimportant; that is, the words could be ordered as SVO, VSO, SOV, VOS, OSV, or OVS. The inflectional endings ub, um, and ul were to be added to the subject (actor), verb (action), and object (acted upon) stems, respectively. Thus a novel language construction consisting of known components (S, V, and O stems) plus arbitrary inflectional endings, was employed. Subjects were required to correctly identify the S, V, and O of a sentence and apply the appropriate ending to each word. Previous pilot research indicated that this construction was of zero probability in children's spontaneous speech and of very low probability in an experimental situation in which children were instructed to employ these inflectional endings. Therefore this study differed from earlier investigations in that the rule was a novel one for the children.

The two modeling procedures, modeling alone and the combination of translation and modeling, differed in that
modeling alone involved demonstration of the criterion response only, while the combination of translation and modeling enhanced discrimination of the new rule by actually performing the operation of translating an English sentence into its new language equivalent, according to the rule.

Another variable assessed was the use of the stimulus cards (pictures) during the modeling phase. Half of the subjects viewed the pictorial referents of the appropriate sentences as the sentences were presented, while the remaining half were exposed to an oral presentation of the sentences only.

When one listens to an utterance, the meaning of the utterance is derived from the relationship of the words in a sentence. Each word is interpreted according to its lexical identity (i.e., its dictionary meaning) and a lexical item may have several meanings. Therefore, the sentence helps the listener interpret lexical items according to the other words in the sentence (Menyuk, 1971).

Research in children's comprehension of the underlying relationships expressed in sentences indicate that very young children understand the subject-object relationship and that in carrying out a task in association with sentences, the subject-object relationship is interpreted as actor and acted upon. Huttenlocher and Strauss (1968) and Huttenlocher, Eisenberg, and Strauss (1968) have demonstrated that children can correctly manipulate objects
(i.e., block, toy truck, etc.) to describe sentences in which the subject-object relationships are varied.

How sentences are recalled (active or passive) can be manipulated by the use of pictures. Turner and Rommetviet (1968) presented preschool through third grade children with active and passive sentences and with pictures graphically representing the subject or object in these sentences, or the total content of the sentence. Pictures of the actor and the total sentence content caused active sentences to be recalled as active and passive sentences to be recalled as active, while pictures of the object caused passive sentences to be recalled as passive and active sentences to be transformed into passives. Attention, thus, can be focused on actor or object through the use of pictures, and influence the form in which sentences are recalled.

In the present investigation it is likely that the three words (e.g., such as pigul, talkum, lambub) in the novel sentence sounded "strange" to the child. Therefore, it was hypothesized that the concurrent presentation of the visual referent (stimulus picture) should have facilitated acquisition of the new rule by increasing discriminability of the actor, the action, and the acted upon.

Grade level was another variable assessed. Several investigations (Menyuk, 1964; Chomsky, 1969; Kessel, 1970) have revealed a developmental trend in linguistic competence. Menyuk's (1964) results indicated an almost steady rise in
the percentages of children using more and more complex sentences as an increasingly older population was observed. Moreover, the Liebert, Odom, Hill, and Huff (1969) study demonstrated that the oldest group performed best on repetition of modeled constructions and production of novel constructions fitting the relevant rule. The authors suggested an active problem-solving strategy to account for the observed differences in the three age groups (5.8 years, 8.4 years, and 14.1 years).

In the present study, children in the second and sixth grades were employed. It was predicted that the successful production of the novel construction in the various treatment conditions would be facilitated by higher grade level.

The present study departed from traditional social-learning methodology in the use of a single experimenter-model to conduct the subjects through the procedures. In all of the investigations previously cited, the model and the experimenter roles were separated. This separation of roles is in opposition to traditional methodology in verbal learning (and the usual conditions of classroom instructions) in which a single experimenter conducts the subject through the procedures. Rosenthal and Whitebook (1970) successfully replicated the major results of the Carroll, Rosenthal, and Brysh (1969) study with just one experimenter-model conducting all procedures. The authors posit that in conditions
involving the acquisition of rule-governed behavior, where
a) the task involves school-like content, and b) the sub-
jects are school age children in a school setting, where any
adult imposing such tasks is likely to be endowed with the
"teacher" role, one would expect little difference between
the results from experimenter plus model and experimenter-
model designs.
METHOD

Subjects

The sample comprised 100 children drawn from second grade (25 males and 25 females) and sixth grade (25 males and 25 females) classes in Tucson, Arizona. Subjects in each grade level were equally divided (5 males and 5 females each) among four experimental conditions and one control condition, yielding a total of eight experimental groups and two control groups.

Procedure

Children were brought into the experimental room individually and the experimenter-model described the experiment as a sentence game in which she would show the child a new language by means of which the child could make up sentences describing pictures that would be presented.

Modeling Phase

The Modeling Phase immediately followed the introductory remarks. The child was told that before he could play the game, the experimenter-model would play. All subjects were instructed to "listen carefully and try to figure out how the funny sentences are the same." The subject,
depending upon which group he was in, was exposed to one of the following treatments: a) the subject listened to the experimenter-model say an English sentence describing a picture which was simultaneously presented. Immediately after saying the English sentence the experimenter-model said a sentence in the new language describing the picture. In effect, the experimenter-model translated the sentence from English to the new language; or, b) the subject listened to the experimenter-model say an English sentence and its new language equivalent without the pictorial referent; or c) the subject listened to the experimenter-model say a sentence in the new language describing a picture which was simultaneously presented; or, d) the subject listened to the experimenter-model say a sentence in the new language without the pictorial referent. Six sentences were modeled for all groups. Subjects in a control condition bypassed the Modeling Phase.

The next two phases, Imitation and Generalization, were identical for all subjects in the experimental conditions. Subject's responses were recorded during Imitation and Generalization Phases only.

Imitation Phase

Immediately after the Modeling Phase, the subject was told that it was time for him to play the game. The experimenter-model presented, one at a time, the same six
pictures previously employed in the Modeling Phase. As each picture was presented the experimenter-model said, "What is this picture about?" and the subject was required to make up a sentence describing the picture.

Generalization Phase

This phase immediately followed the Imitation Phase and was a continuation of the same procedure. After the sixth picture of the Imitation Phase was presented and was responded to, the experimenter-model presented the first picture of the Generalization Phase. A total of six new pictures (never seen before) were presented, one at a time, and the experimenter-model asked the subject, "What is this picture about?" after each picture was presented.

Control Group

Subjects in the Control Group viewed the same 12 pictures as the Experimental Groups in Imitation and Generalization, one at a time, and were asked to make up a sentence employing three words (which the experimenter-model gave the subject) and three endings (ub, um, and ul) in any order they wished. This provided a measure of the base rate of the use of the novel rule in sentences spontaneously created by children.
Experimental Phase and Design

The following is a detailed description, according to groups, of the various treatment procedures in the Modeling Phase:

1. Translation and Modeling (pictures): Subjects in this group viewed six pictures, one at a time, and listened to the experimenter-model demonstrate an English sentence describing the action in a picture, immediately followed by its new language equivalent. The experimenter-model said, "This picture is about _______ . In the new language we say _______. Remember, the order of the words is not important."

2. Translation and Modeling (no pictures): This condition was identical to (1), with the exception that pictures were not presented. Subjects listened to the experimenter-model say an English sentence, followed by a new language sentence describing a picture that the experimenter-model "had seen" and that the subject "will see later."

3. Modeling alone (pictures): In this condition, subjects viewed six pictures, one at a time, and listened to the experimenter-model demonstrate a sentence in the new language describing each picture, as it was presented. The experimenter-model said, "This picture is about _______. Remember, the order of the words is not important."

4. Modeling alone (no pictures): This procedure was identical to (3) with the exception that pictures were not presented. The experimenter-model demonstrated criterion
sentences, one at a time, describing the pictures that she "had seen" and that the subjects "will see later." The subjects were also told that the order of the words was not important.

The combination of four between-subjects variables, Grade Level (second and sixth grades), Experimental Treatment (Modeling alone and Translation and Modeling combined), Pictures, and Sex, and one within-subjects variable, Phases (Imitation and Generalization), yielded a $2 \times 2 \times 2 \times 2$ factorial design with one repeated measure. A separate control group was employed to provide a measure of the base rate of performance of the novel rule.

**Scoring of Responses**

Responses in Imitation and Generalization Phases were scored according to an all-or-none criterion for components of the new language rule. Each inflectional ending attached to the appropriate word was worth one point. Thus a perfect score in each phase (Imitation and Generalization) was 18 points (3 points per sentence and 6 sentences in each phase).

**Materials**

Twelve pictures (11" x 17") drawn from the Tell-Again Story Cards, Levels I and II (Louise Binder Scott), were employed as the stimulus items.
Sentences

Six modeled (new language) sentences were demonstrated by the experimenter-model. Since the new rule stated that the order of the words was not important, the order of the subject, verb, and object were counterbalanced in the six presentations as follows: SVO, SOV, VSO, VOS, OSV, OVS.

The Control Group received the same six orderings of subject, verb, and object. First the experimenter-model gave the three stem words (i.e., subject, object, verb) and then she gave the three endings to be applied (i.e., ub, ul, um).
RESULTS AND DISCUSSION

Results were scored to provide an all-or-none measure for the components of the new language rule. An analysis of variance consisting of four between-subjects variables (Grade Level, Experimental Treatment, Pictures, and Sex) and one within-subjects variable (Phases) was applied to this measure. The \( \bar{x} \) values for the response measure are presented in Table 1.

The analysis of variance revealed the significance of all five main effects (Grade Level, Experimental Treatment, Pictures, Sex, and Phases). There were no significant interactions (all \( F \)'s \(< 1.00 \)).

Sixth grade subjects produced significantly more new language rule sentences than did second grade subjects \( (F = 82.77, \text{ df} = 1/64, p < .005) \). There were significant sex differences, with girls demonstrating greater new language rule sentences than boys \( (F = 8.62, \text{ df} = 1/64, p < .005) \). The Translation and Modeling combined treatment was found to be more effective than Modeling alone in facilitating performance of the new rule \( (F = 65.58, \text{ df} = 1/64, p < .005) \) and the employment of pictures during the Modeling Phase likewise produced significantly better performance of the new language
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*TABLE 1*

MEAN SCORES FOR ALL-OR-NONE MEASURE IN ImitATION AND GENERALIZATION PHASES
rule than did the absence of pictures \((F = 14.51, \text{df} = 1/64, P < .005)\). Performance of the new rule was also found to be significantly better during the Imitation Phase than the Generalization Phase \((F = 28.01, \text{df} = 1/64, P < .005)\).

Dunnet's Test (Winer, 1962) was employed to make post hoc comparisons of the \(\bar{x}\)'s of the treatment conditions and the control condition. It was found that all experimental treatment conditions evidenced significantly better performance of the new language rule during both Imitation and Generalization (lowest \(P < .05)\).

The results of this study demonstrate that observational procedures produce rapid acquisition of a novel language construction. While the stem components of the new rule (i.e., the English word stems) were known to the child prior to the experiment, the combination of these stems with the arbitrary inflectional endings provided the basis for a novel rule. Bandura (1969) has stated that an empirically based criteria of novelty in the acquisition of a new or novel behavior pattern includes the following: 1) there is no indication that the organism has ever emitted the behavior under the control of the stimulus conditions under consideration, 2) when the organism has repeatedly failed to emit the response pattern under stimulus conditions which normally would have occasioned or elicited that response, were it, in fact, present in the organism's repertoire, and 3) when following treatment intervention for training of the response, the
organism demonstrates significant increments in the frequency of the response. Clearly, then, the preceding study has demonstrated the acquisition of such a new response pattern.

In addition, once the new language rule was acquired and applied to familiar material (i.e., the modeled pictures and sentences), it generalized to a new set of stimuli. Thus it cannot be argued that the children had simply copied the model's sentences. Carroll, Rosenthal, and Brysh (1969) also found that modeled tense and sentence structure forms were generalized by subjects to a new set of pictorial material. It appears that through exposure to the modeled material the children abstracted the rule by which the model created new language sentences to describe pictures, and the children then applied this rule to a similar situation in which they were requested to make up sentences about both familiar and unfamiliar pictures. The significantly better performance of subjects during Imitation than during Generalization can be attributed to the fact that the subjects had more exposure to the material presented in Imitation than in Generalization and may have employed recall of the model's sentences to enhance their performances during the Imitation Phase.

While Modeling alone provided information to the subject about the criterion response, the combination of Translation and Modeling provided additional cues which enhanced performance. Translation and Modeling combined actually demonstrated an underlying operation which facilitated
performance of the new rule (i.e., the translation from an English sentence into its new language equivalent). When a response is relatively explicit and has a high probability of occurrence in the subject's repertoire, modeling alone may be a quick method of altering performance. A response whose components are easily identifiable can thus be acquired observationally (Bandura, Ross, and Ross, 1963). Unlike some social responses which are readily acquired, language learning is more difficult because sentences represent complex stimulus patterns in which various components of the syntactic structure of the sentence are not easily discriminated (Bandura, 1969). The new language rule acquired by the subjects in the present study was relatively complex in that it required the child to identify the subject, verb, and object of a picture and apply the appropriate inflectional ending to each component. Since order of the three words was not important and since six different orders were modeled for the child, the child could not rely upon serial cues to apply the rule. Therefore it is probable that Translation and Modeling combined increased discrimination of the novel construction by identifying the English stems for subject, verb, and object, and demonstrating the hook-up of these stems with their appropriate inflectional endings in the new language sentence. Modeling and discrimination processes have previously been found to play an influential role in language development and it has been demonstrated that procedures which increase
discriminability of syntactic constructions will facilitate rule abstraction and performance of the desired response (Bandura and Harris, 1966).

In the present investigation pictures also increased discriminability of subject, verb, and object. Prior research has revealed the superiority of pictures and objects over words in facilitating performance on recall tasks (Scott, 1967). Various interpretations of this effect have been proposed. It is likely, as Underwood (1952) has stated, that symbolic representations of stimulus items (i.e., words) are less distinctive during learning than perceptual representations (i.e., pictures). The results of Paivio (1969), Bugelski (1970), and others have indicated that nonverbal imagery, as well as verbal processes, may account for the superiority of pictorial material in facilitating performance in recall. If such additional nonverbal cues were provided by the pictures in the present investigation, it seems likely that this information should have increased both discrimination of subject, verb, and object stems and recall of these stems during the Imitation Phase when the pictures were again presented. In addition, one would suppose that the initial ease of discrimination of these stems would facilitate more rapid acquisition of the rule which involves the pairing of these stems with the arbitrary inflectional endings.

The superiority of sixth graders in both Imitation and Generalization Phases was predicted on the basis of
previous developmental data concerning the acquisition of syntax in children cited earlier. It was noted that children's speech approximated adult patterns more and more closely with increasing age. Liebert, Odom, Hill and Huff (1969) also found that older subjects performed significantly better on measures of both repetition of modeled constructions and the production of novel sentences fitting the relevant construction rule. They accounted for these results by postulating that language learning is an active problem-solving strategy facilitated by well developed cognitive skills. Thus the significantly better performance of the sixth grade children in the present investigation may be due partially to their obviously greater exposure to and familiarity with linguistic material as well as their superior problem-solving ability.

The sex differences reported in this study are also consistent with previous developmental evidence concerning language development (Carmichael, 1954). However, Menyuk (1964) found no significant differences in the use of several language construction rules by boys and girls from three to seven years of age. Thus it is possible that the significant sex differences in the present investigation may be idiosyncratic to the particular group of children studied.

In the present investigation it was demonstrated that modeling procedures can facilitate the acquisition of a novel language rule. Many psycholinguists have stated that
imitative learning plays only a small role in the acquisition of language by the child. A typical characterization of imitative processes in language learning is provided by Chomsky (1964) who holds that past the earliest stages, it is a mistake to assume that much of what the child learns is acquired by imitation. Since many psycholinguists define imitation in terms of "mimicry" of the model's utterances, they clearly limit those situations in which modeling may influence language acquisition. However, a social-learning view of imitation (Bandura, 1969) includes modification of response patterns without overt practice of the modeled responses and without reinforcement to either model or subject. In addition, the social-learning view of imitation includes the acquisition of novel responses which are based upon abstraction of a model's rule for generating behavior (Bandura and Harris, 1966).

The rules governing a child's language performance have been found to undergo progressive changes from at least two to ten years of age (Menyuk, 1964; Kessel, 1970; and Chomsky, 1969). The discrepancies between adult language and children's language and the progressive changes toward adult forms in children's language with increasing age lend support to the notion that what the child is modifying and developing is a rule governed system for language generation. In the present study the subjects brought certain prior language rules and linguistic experiences with them to the
experimental setting. The English stems of the new rule sen-
tences were already familiar to both second and sixth grade
children. However, as the result of exposure to a model dem-
onstrating a novel construction, the children acquired the
novel rule and used the new rule to create sentences describ-
ing both familiar (modeled) and unfamiliar material. There-
fore, if one accepts that language behavior is rule-governed,
little disparity appears to remain between the psycholinguis-
tic interpretation of language acquisition and the social-
learning viewpoint concerning the influence of modeling
processes on language performance.

Since modeling paradigms have been found to be effec-
tive in facilitating performance of both novel language con-
structions and constructions already present in the subject's
repertoire (Bandura and Harris, 1966; Odom, Liebert, and Hill,
1968; Liebert, Odom, Hill, and Huff, 1969; Carroll, Rosenthal,
and Brysh, 1969), it is clear that a social-learning frame-
work can provide much relevant information concerning linguis-
tic behavior. In particular, this approach may illuminate
the extra-linguistic factors operating in language performance,
such as consequences to the model and observer, the affective
relationship between model and observer, and procedural vari-
ables concerning the presentation of modeled language dis-
plays. Obviously such research would be relevant to problems
involving language acquisition in the school setting, and to
second language learning, as well as to the language behavior of the culturally disadvantaged.
REFERENCES


