74-25,550

THOMAS, Adele Kathryn, 1942-
THE MODIFICATION OF COMMUNICATION STYLE AND ACCURACY AMONG WHITE LOWER- AND MIDDLE-CLASS BOYS.

The City University of New York, Ph.D., 1974
Education, psychology

University Microfilms, A XEROX Company, Ann Arbor, Michigan

THE MODIFICATION OF COMMUNICATION STYLE AND ACCURACY AMONG WHITE LOWER- AND MIDDLE-CLASS BOYS

by

ADELE THOMAS

A dissertation submitted to the Graduate Faculty
in Education in partial fulfillment of the
requirements for the degree of Doctor of
Philosophy, The City University of New York

1974

This manuscript has been read and accepted for the Graduate Faculty in Education in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

7/1/74
date

Chairman of Examining Committee

7/1/74
date

Executive Officer

Professor Harry Beilin

Professor Phyllis Katz

Professor Alan Gross

Supervisory Committee

The City University of New York

ABSTRACT

THE MODIFICATION OF COMMUNICATION STYLE AND ACCURACY AMONG WHITE LOWER- AND MIDDLE-CLASS BOYS

by

Adele Thomas

Advisor: Professor Harry Beilin

The dual objective of the present study was to examine the nature of social class differences in communication style and accuracy and to investigate the extent to which communication style might be modified. In addition, an attempt was made to determine whether modification of style would affect subsequent decoding accuracy.

Two primary types of communication style--metaphorical and analytical--have been identified. Metaphorical encoding focuses on the whole stimulus, using imagery which goes beyond what is given in a picture. Analytic encoding focuses on parts of a stimulus, using concrete terms to specify how a stimulus appears. Previous research has noted that lower-class black and white children rely on metaphorical style almost exclusively although there is some evidence that they can use more precise description. In contrast, middle-class children have been characterized

by a dominant analytic style in which metaphor is also used to a lesser extent in order to elaborate description. The effectiveness of these two types of communication style has been estimated on decoding tasks, in which analytic description has been more accurately decoded by listeners than metaphorical description.

While lower-class children have appeared less fluent in the use of alternate communication styles than middle-class children, other research has indicated that lower-class children are as linguistically competent as middle-class children. However, research focusing on the extremes of lower- and middle-social class levels has noted linguistic differences not found when intermediate levels of those two class designations have been selected. Accordingly, the present study assigned subjects to social class status based on a seven-point scale of socio-economic status, in which subjects were not restricted to the extreme levels of that scale.

Few attempts have been made to investigate the degree fluency or flexibility in the use of alternate styles and the class differences associated with such style usage. Since three training techniques--modeling, negative feedback, and instructions--have been effective in varying degrees in modifying other aspects of language, a comparison of encoding style under these three treatments was expected to indicate the extent to which initial dominant style could be shifted, and the relative style fluency in two social classes.

The present research was executed in two parts--an assessment study of social class differences in initial encoding style and a training study to shift dominant encoding style. 156 white, lower- and middle-class ten-year-olds formed the original subject pool for which style was individually assessed. 120 subjects who used the metaphorical style in at least 60% of their initial encoding were selected for the training sub-sample, equally divided for lower- and middle-social classes. In each social class group individuals were randomly assigned to one of four training sessions. After training, a generalization task was administered. Finally, training subjects were given a decoding task in which decoding accuracy was measured by identification of the correct picture.

Results indicated no social differences in initial encoding style. The dominant style used by both social classes was metaphorical description. Training was effective in shifting dominant metaphorical style to the less frequent analytic style. Modeling was more effective than either negative feedback or instructions, which were both significantly more effective than no training. No social class differences were noted either in the training study or in subsequent decoding. Training effects did not transfer to a similar encoding task nor did any training method significantly alter decoding accuracy or latency of response in decoding. It was suggested that characteristics of the generalization materials may have accounted for the lack of transfer.

It was concluded that although there may be less social class disparity in communication style than previously considered, experimental procedures as well as sample selection may have accounted for present results. Lower- and middle-class children demonstrated fluency in the use of alternate encoding styles, suggesting that the construct of communication style may be task specific.

ACKNOWLEDGEMENTS

The support and advice of several people helped to bring this research to completion. I am especially indebted to Dr. Harry Beilin for his steady assistance and critical analysis from the initial formulation through the execution of this project. Dr. Phyllis Katz's advice was invaluable in helping to clarify many theoretical issues. Dr. Alan Gross provided constant support and statistical advice whenever I needed it. I am doubly grateful to have been a student under these three able teachers.

Particular thanks are due to Mr. Ronald Rogers, Superintendent, and the principals of the Galloway Township School District in New Jersey for their cooperation in providing subjects for this research.

Finally, special gratitude is reserved for my husband, Mark, for his knowledge and suggestions, as well as his patience and encouragement.

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

Chapter I

Introduction

A basic methodological problem for language research has been the identification of variables that will account for large portions of variance across a variety of linguistic measures. These measures have typically included indications of how much an individual language repertoire reflects some standard of vocabulary, phonology or word usage. Such criteria have also been related to comprehension by means of tasks requiring individuals to use words in different contexts. Social class has emerged as a strong classification variable in language research. Nevertheless, major theoretical shifts in the study of language have occurred which have made it necessary to re-cast many earlier conclusions about the nature of class-related language deficits and to reconstruct some aspects of methodology for the study of language. Developmental studies of emerging grammars (Bloom, 1970; Brown, Cazden & Bellugi, 1969), as well as detailed analyses of lower class grammars (Labov, 1967; Lawton, 1968; Moore, 1971; Williams, 1970) have indicated that on a syntactical level there is neither a lag in development nor are basic syntactic rules missing from the grammars of lower-class children. It has been concluded that it is not the absence of grammatical rules but the differing use of those rules in specific linguistic situations that characterizes class differences in language development (Cazden, 1972; Cole & Bruner, 1971; Lavatelli, 1971).

Thus, much current linguistic interest has centered on the communicative function of language in order to specify how individuals selectively apply the rules of their language in social interaction. This focus seeks to identify the skills and knowledge needed to adjust one's language to varying social demands. The task of communication has been considered to present several distinct cognitive and social demands for both speaker and listener. Research on the social component of communication has been concerned with such factors as status, motives and attitudes of both speakers and listeners (Hymes, 1971; Robinson, 1971). The cognitive dimensions have been considered by Moore (1971) to be threefold:

1. Speakers cannot rely on previously accumulated shared information.

2. The speaker is required to take his listener into account by specifically naming referents which are not present or about which his listener lacks information.

3. The bulk of the communication load falls on the language code itself, as opposed to such extra-linguistic activities as pointing, voice information, etc. (p. 21).

It is with respect to these cognitive dimensions of communication that the present study was designed. A communication problem was presented to children, such that each child had to describe an abstract stimulus from an array so that a future listener would be able to pick out that stimulus. Children's descriptions were then judged for aspects of style according to their use of analytical or metaphorical description and whether the whole or part of the stimulus was referred to in responding. This coding system developed by Heider (1971a) designated an analytical style as the use of physical referents in the stimulus while metaphorical style used description which went beyond what was actually present in the stimulus. Accordingly, several questions were raised which guided the planning and execution of the present investigation into styles of communication.

Research Questions

To what extent are differences in communication style a function of socio-economic status? Research on language codes (Bernstein, 1970) has suggested that the functions of language differ for lower and middle classes, and that the verbal strategies used by the two social classes are also distinct. The element of communication style, defined as the type of description given to objects or events, has also been associated with differing language function (Cazden & Brown, 1966; Cazden, 1968). When style characteristics (analytical-metaphorical; part-whole) were observed in groups of advantaged and disadvantaged children, clear-cut style differences emerged (Heider, 1971a). Nevertheless, questions may be raised about the generality of results when middle class representation has been restricted, for the most part, to children of highly educated professional parents. If class status estimates based on occupation are used in which an attempt has been made to obtain a more diverse sample of middle- and low-level parent occupations will differences in style of communication be observed?

A second area of questioning focuses on the fluency or flexibility with which an individual is able to shift styles. While a child may be disposed to use one dominant style of communication (analytical or metaphorical) is he fluent in the use of alternate styles?

Fluency may be defined as the degree to which the child is able to shift his dominant style (Cazden, 1972). In a natural communication setting an individual may emit infrequent verbal responses or a distinct language code in the presence of strangers, when the social situation is formal. On the other hand, when the situation is familiar or when the listeners are friends, the language style may be quite different (Labov, 1969). There is some evidence to suggest that the lower-class child is less able than his middle class counterpart to use more appropriate language styles when situations change (Lawton, 1964; Robinson, 1965). Is class an important variable when considering flexibility in style use in the context of the present study?

What experimental arrangements will facilitate style shifts? It would be desirable for experimental treatments to incorporate the cognitive demand features of a natural communication task and to specify systematic procedures for inducing style change. Such a design would more closely parallel natural language use and may provide some foundation for suggesting techniques to develop greater communication style fluency.

The present study was concerned with manipulations which might alter style use because of the implications of such findings for educational practice. Cazden (1972) and others (Heider, 1971a; Moore, 1971) have noted the value of emphasizing features of style in educational efforts and stressed the desirability of enhancing the child's use of several alternate styles. If style is related to communication effectiveness, techniques which facilitate style shifting might be profitably included in educational intervention programs which focus on developing communication skills.

It is also necessary to gauge flexibility in style use because style has been related to the accuracy with which one's message is received. A communication style which relies on subjective metaphor or imagery for description may not be as accurate as a verbal style which analyzes data to be conveyed in an objective fashion. The latter analytic style would be considered to take account of the cognitive demands of a communication task more efficiently than imagistic description (Cazden, 1972; Moore, 1971). This has been demonstrated in a variety of tasks and situations (Krauss & Glucksberg, 1969; Williams & Naremore, 1969). Language which specifies objects in elaborated, physical terms has been more accurately understood than idiosyncratic imagery. Therefore, research questions relating to accuracy are concerned with the extent to which class is a variable in message decoding accuracy and whether techniques used to facilitate style shifts also affect accuracy.

In summary, the present study investigated class differences in style of response in a standard two-way communication task. However, the present research was also interested in exploring methods to shift children's dominant styles to other less frequent styles as well as in investigating the effect of such training methods on accuracy in decoding messages. Before further specifying the research questions outlined above, it will be necessary to discuss the theoretical foundations, research and conclusions related to the concepts of communication competence in language performance.

Chapter II

Review of Related Research

Interest in the way children learn their native language, in particular interest in difference among ethnic groups and social classes of children, has suggested a revision of the notion of linguistic competence and performance (Cazden, 1966; Ervin-Tripp, 1969; Labov, 1969; Loban, 1963). The original theory of linguistic competence (Chomsky, 1965) focused on the intuitive knowledge of his language that each speaker possesses. Such knowledge was considered an innate capacity unaffected by constraints of memory, attention, or situation. Performance referred to the speech or verbal behavior resulting when internal linguistic knowledge was applied to particular events. While the distinction between knowledge and behavior remains heuristically valuable and has been incorporated into other interpretations of language development (Bandura, 1971; Sinclair-de-Zwart, 1969; Slobin, 1970), Hymes (1967, 1968, 1971) has suggested that this distinction be revised in light of cultural data. Such data have shifted focus to the interaction of the communicative function of language and its structure (Cazden, John & Hymes, 1972). It has been noted that within a language certain functions are assigned different values by the speech community and without considering these social factors, it may be impossible to account for grammatical or phonological characteristics within a speech community (Baratz, 1969; Entwisle, 1970; Ervin-Tripp, 1971; Labov, 1965, 1969; Slobin, 1967). Thus Hymes (1971) has essentially called for a more global definition of language under the label of communicative competence which includes tacit knowledge not only of the structure of language but also of its functional variation as determined by one's speech community. In supporting this view Ervin-Tripp (1971) has noted that language development involves more than grammar and phonology. A theory of language must also explain why children come to say the right thing in the right way at the right time and place as defined by their social group.

Although a precise model of communication competence has not been developed, four parameters of communication have been identified (Hymes, 1971). Communication is understood to require linguistic judgments based on the extent to which an event is considered a) formally possible, b) feasible in view of the means available (physical and social), c) appropriate with respect to context, and d) actually performed. In each of the four types of judgments, cognitive grammatical judgments are one component of competence while non-cognitive, social factors such as motivation and self-identity form another component. Within such a competency model, the dichotomy between performance and competence is attenuated so that performance variables involved in context and feasibility are viewed as contributory factors in general competence.

The concept of communicative competence has been helpful in further clarifying the controversy between less-language and different-language hypotheses (Cazden, 1966; Cole & Bruner, 1972; Labov, 1965). There is increasing evidence that conclusions about deficits in grammatical competence may be a function of difficulty in adequately defining experimental task and situation variables (Cazden, 1972; Robinson, 1965; Williams & Naremore, 1969). A clearer understanding of group differences may be achieved by specifying the social context of speech and the rules of speech conduct as well as grammatical aspects (Labov, 1970). The effect of such an analysis is to broaden the range of linguistic competence, by which different groups may be compared. In this sense, Cazden (1970) has noted that language-difference and deficit hypotheses are restrictive since they both tend to depict the child as learning to speak in only one way and both fail to account for the variety of language codes available for use by one speaker. Within the framework of communicative competence, deficit as an explanation for group difference is replaced by sociolinguistic or communicative interference (Hymes, 1967, 1971). Communication codes are viewed as unique to a speaker's social group such that intergroup communication may be affected by difficulty in breaking the other's code (Cazden & John, 1971; Hymes, 1964). Differences in intonation, phonetic features and gesture represent some possible sources of such interference (Goffman, 1963; Hurst & Jones, 1967; Labov, 1969).

The work of Bernstein (1962, 1964, 1970, 1971) may be considered to complement a theory of communicative competency. Bernstein has theorized that social relations and social class structure regulate the form of communication in order to maintain consistency between social role and its expression in speech. Thus,

> A social role is a constellation of shared learned meanings through which individuals are able to enter stable consistent, and publicly recognized forms of interaction with others. A social role can then be considered as a complex coding activity controlling both the creation and organization of specific meanings and the conditions for their

> transmission and reception (Bernstein, 1970, p. 30).

By studying children's and adolescents' speech and writing in different contexts, two types of language codes have been distinguished. A restricted code is characterized by a narrow range of semantic fields and simplified syntax. Speech often appears to be condensed, supported by non-verbal cues, discontinuous and implicit in meaning, requiring a low level of syntactic and vocabulary selection. In a restricted code the details of a communication appear obscured to a listener who is unfamiliar with the speaker's context. In the case of an elaborated code, predominantly used by middle-class speakers, communicative intent of the speaker is explicit and detailed for the listener. There is wide variation in syntactic selection requiring minimal use of non-verbal channels. These two codes have been conceived as ideal types by Bernstein, both of which may be available to an individual speaker but used selectively in different contexts. Nevertheless, Bernstein (1971) has suggested that the middle-class child may have greater flexibility of use for both codes while the working-class child is confined to a restrictive code. He has reasoned that in situations where new or individual meanings are to be communicated in which the speaker cannot assume similar intentions by a listener, greater explicitness in speech is required. If one's social role has few alternatives, meaning and language tend to be collective or communal. This has the effect of restricting syntactic or lexical selection. Individuals who habitually experience a narrow or closed role definition may find it difficult to communicate from the different vantage point of an elaborated code.

Data in support of the thesis of social control of language and code use have come from correlational studies of linguistic differences, school performance and parent-child interaction in an attempt to link variation in communication code to antecedent social influences (Brandis & Henderson, 1970; Gahagan & Gahagan, 1970; Robinson, 1971). Although Bernstein's research program (Gahagan & Gahagan, 1970) had difficulty in adequately specifying class variables, maternal attitudes, and in developing language tasks which were not differentially restrictive to either class, the results of the research program offered support for the theoretical code descriptions. Thus, differences in type of maternal control as well as class differences in the use of pronouns, nouns and adverbs were consistent with hypothesized code differences. Evidence that middle-class children were more apt than lower class children to switch form classes when context changed also supported Bernstein's code constructs (Brandis & Henderson, 1970). In addition, a language program intended to provide an opportunity for working class children to increase their use of an elaborated code has been considered initially successful (Gahagan & Gahagan, 1970).

Other reviews of subcultural differences in communication (Cazden, 1966; Moore, 1971; Williams, 1971) have noted greater use by middle-class pre-schoolers of nouns and precise pronouns of reference. Lower-class children relied more heavily on context for description so that listeners had to share that context in order to understand. Class differences have also been observed in noun phrase complexity, use of subordinate clauses and sentence length (Moore, 1971; Williams, 1971). Such data are considered to support Bernstein's hypotheses differentiating restricted and elaborated codes.

Nevertheless, Bernstein's sociological analysis of linguistic competence in terms of codes has been criticized (Baratz, 1970; Cazden, 1966; Cole & Bruner, 1972; Labov, 1970). However, the nature of the criticism suggests some misunderstanding of Bernstein's framework and of what is considered a vague and imprecise description of codes. Bernstein's theory has been used to associate class difference in linguistic performance to differences in underlying cognitive ability (Bee, 1969, Hess & Shipman, 1965). It is this relation of restricted code and maternal control to cognitive deficit which has been a prime source of objection. But as previously discussed, Bernstein's theory does not offer an explanation in terms of cognitive incapacity, rather it is concerned with social preference or orientation. In objecting to code labeling, Labov (1970) has noted that there is a discrepancy between the theoretical formulation of codes which stresses variation in communicative effectiveness and the actual linguistic data. The class differences in lexical and grammatical rules appear to constitute only minimal blocks to communication (Cazden, 1966, 1972; Weener, 1969). According to Labov (1970), the data of form class differences merely demonstrate that middle-class children are more verbose rather than more logical than lower-class children. Thus, Labov concluded that Bernstein's conception of differential social codes has no reality and tends to denigrate the complexity of lower-class language. While this conclusion seems unwarranted, the correlational nature of the research supporting code differences has been a limiting factor in offering information about the differential effect of the two codes in the process of the communicative act.

Other preliminary data on the linguistic environment of lower-class children suggest caution in characterizing that environment as "deprived" or non-verbal. Information about lower-class code use in a natural setting has been offered by Horner (1971) who presented a functional analysis of the use of language by two lower class, black pre-schoolers. Her results raise questions about inferences concerning lower-class parent-child relations and the use of language in the lower class home. Using radio transmitters sewn into the children's clothing, Horner was able to record speech events in two families without the physical intrusion of an experimenter. Contrary to expectation, both households were verbally active and there were many child-adult interactions. Because Horner's study was unique in applying an instrumental conditioning model to data analysis, her results cannot be adequately compared to other studies which report data in terms of frequency of form classes or communication accuracy scores. Nevertheless, Horner found some marked differences in the verbal repertoires of her two subjects. While one male child was verbally effective in "moving the world around (Horner, 1971, p. 189)," the female subject appeared verbally inefficient. Horner compared the interaction involved in the children's speech and concluded that while the boy's family appeared able to engage him in conversation which involved a mutual flow of information, the girl's family was less attentive to her need for information and seemed unable to understand her on many occasions. It is, therefore, not surprising that her repertoire consisted of unsuccessful demands for attention or repetitious play talk. Horner, while cautious in generalizing from a small sample, emphasized the diversity of styles which appeared in both lower-class children and pointed to the flexibility with which both children adapted to varying demands. Thus, it would appear that when observed in a variety of natural contexts, the lower-class child's language is not characterized by severe linguistic deficiencies and is adequate to meet the social demands of his environment.

The criticisms cited above and interest in the language of the disadvantaged (Williams, 1970) have raised the question of how much of code use is peripheral and what aspects actually facilitate communication. Although Bernstein's study group (Brandis & Henderson, 1970) has provided useful information about the grammatical aspects of codes and potential social influences in their development, other empirical data are required to evaluate the code constructs postulated by Bernstein in terms of their relative effectiveness in communication.

Communication Style and Accuracy

In reviewing the literature on communication effectiveness, Cazden (1972) noted that the scarcity of research in this area may be due to difficulty in specifying the many context variables surrounding a speech act. While several important investigations have been devoted to the development of communication skills (Flavell, 1968; Piaget, 1926, 1951) these inquiries have generally not been concerned with the effect of class, parent-child relations or prior learning experiences. Nevertheless, the work of "developmental naturalists" (Flavell, 1968) has provided understanding of processes involved in effective communication. Role-taking ability has been considered a necessary prerequisite for effective communication (Flavell, 1968; Piaget, 1951). In such a conception ability to take into account the attributes and capacities of a listener and to use this information in constructing a message poses difficulties in early childhood. Studies of perceptual role-taking have included tasks, which require a child to reconstruct a display as it would look to another person, from a different position or perspective. Results indicated marked improvement with age in ability to perform, when tasks required subjects to relay instructions, directions, or to consider what another person would do in some situation (Flavell, 1968; Piaget, 1951). At earlier ages (four to six), when role-taking ability was minimal in communication, the messages of children were little more than audible self-coding (Glucksberg, Krauss & Weisberg, 1966; Krauss & Glucksberg, 1969). The young child's message is characterized by inaccuracy in presenting an event, and takes no account of listener demands such as location of objects or the discrimination of necessary from trivial information (Flavell, 1968). Some class differences have emerged on communication tasks similar to those described above (Krauss & Rotter, 1968). Lower class six-year-olds were less able than middle-class counterparts to use precise language for reference and were poorer as both senders and receivers of messages even when listening to members of their own class.

The work of Heider (1971a) and others (Brown, 1966; Heider, Cazden & Brown, 1969; Jarvis, 1968) has attempted to measure class differences in communication on an empirical basis, analyzing the message by content rather than syntactic class. In attempting to further explore the validity of Bernstein's formulation, Heider (1971a) investigated verbal messages, categorizing them according to units larger than grammatical or phonological classes. Language was observed in an on-going communication task so that speech products were obtained from listeners as well as speakers. This approach not only distinguished communication codes or styles but also the relative accuracy of those styles in the communication process.

Communication accuracy has been typically measured by the effect a speaker's message (encoding) has on a listener's decoding of it (Brown, 1966). A task devised by Krauss and Weinheimer (1964) has been taken as an operational definition of communication accuracy (Heider, 1971a). A speaker described one referent from an array to a listener who was separated by a screen or a lapse of time. The listener had to then decode the message in order to select the identical referent. Studies of coding have shown that accuracy increased with age (Glucksberg, Krauss & Weisberg, 1966; Krauss & Glucksberg, 1969). However results of class differences in coding have been contradictory, due to different experimental tasks employed and use of different classification schemes for locating low- and middle-class samples (Heider, 1971a; Lesser, Fifer & Clark, 1965).

Using arrays of abstract figures and faces, Heider (1971a) classified subject descriptions on the basis of the number of different things said about a stimulus, whether the whole stimulus or part of it was referred to in description, and whether the encoding used "descriptive" or "inferential" language. Encodings were descriptive if they described the physical properties of a stimulus. They were metaphorical or inferential if they went beyond what was given in the figure to infer attributes, feelings or similarity to other objects or people. In addition, other linguistic units such as adjectives, negatives, and clauses were also counted. Ten-year-old subjects were matched for sex within two socio-economic class categories. Children whose caretakers had a professional occupation and who frequented university recreation facilities made up the middle-class group. Lower-class children consisted of those living in a government housing project. Race was partially controlled. Black and white subjects were matched for lower-class status but not for middle-class status. While no sex or race differences were observed in encoding style striking class differences were noted. Middle-class subjects said more different things about stimuli, gave a greater percentage (53%) of part-descriptive units (PD) than did lower-class children (13%). The latter group, on the other hand, offered a significantly greater number (80%) of whole-inferential descriptions (WI) than did middle class subjects (33%). It was noted that for all subjects, stimuli were categorized as either whole and inferential or part and descriptive, so that these two dimensions were not independent. Verbal fluency defined as the number of different things said about a stimulus correlated positively with PD and negatively with WI. However, PD was not an artifact of fluency because difference in WI%-PD% remained even when only the first unit of encoding was considered. Fluency was not considered an artifact of using PD statments because subjects who gave many part units, gave more whole unit descriptions as well. It was concluded that fluency and part-description were separate variables whose correlation could not be predicted from the definition of each variable alone (Heider, 1971a).

A second experiment (Heider, 1971a) with the same subjects investigated the effects of class and encoding style on decoding accuracy. The statements subject to decoding were the encodings of the same sample, obtained at an earlier time. Subjects in this later phase were instructed to select the figures described by the various encodings. Some encodings categorized as predominantly WI or PD were reduced from their original form by eliminating extraneous units. This procedure tested the effects of redundancy on communication accuracy. It was found that encoding style was an important determinant of communication accuracy. Although length was not a factor, those descriptions that contained composite WI-PD units were best understood. Middle-class children were better encoders and decoders of both inferential and descriptive styles, while lower-class children performed better on the inferential encodings of middle-class children than on those of their own class. There was no general tendency for within-class coding to be superior to between-class. In addition, for all subjects, results indicated that PD preference in encodings correlated significantly with total decoding accuracy. No consistent race or sex differences were noted either in communication style or accuracy. Heider (1971a) has interpreted her results to suggest that the encoding style which contains a high proportion of units enumerating parts of the stimulus in physical terms was most effective in communicating to other middle-class subjects and was superior to any style used by the lower-class sample.

In attempting to account for such class differences in preferred encoding style, Cazden (1972) suggested that middle class children have been differentially "socialized to attributize or dimensionalize their environment, even when not required to do so (p. 194)." Nevertheless, a related study (Heider, Cazden & Brown, 1968) performed with a group of Heider's (1971a) original subjects indicated that middle-class subjects were not better able than lower-class subjects to convey to a listener criterial attributes needed to identify a target stimulus. However, middle-class subjects seemed more responsive to listener requests for help than lower-class subjects. Mean listener requests for information before accurate decoding was achieved was 3.56 requests for middle-class description and 6.11 requests for lower-class description (Cazden, 1972, p. 195). It would appear that class differences in aspects of style may not be stable across diverse situations, although middle-class subjects (from the same sample for two studies) did appear to adapt more readily to listener demands.

The definition of middle class as used in the Heider samples warrants comment. For the most part children of faculty and graduate-student parents who attended a university recreation facility made up the middle-class sample (Heider, 1971a). One may question the generality of these results to middle-class ten-year-olds since it is likely that such faculty children represent a small portion of the middle-class and may be unique in many aspects of education and child-rearing. One might argue that such university children may be unusually adept in both encoding and decoding of communication games such as those presented by Heider in two separate investigations. On the other hand, lower-class performance on the decoding task (Heider, 1971a) was not considered inadequate (48% correct) when compared to middle-class performance (58% correct). Further, Heider (1971a) observed that middle-class encoding was somewhat inefficient since their descriptions were three times longer yet only a small percentage better understood than lower-class encoding.

The import of Heider's research suggests that style is an aspect of communication related to the effectiveness with which messages are received. Nevertheless there is some question about the extent of social class differences in style usage. A primary concern is the problem of flexibility in the use of alternate styles under pressure to shift. Several authors (Cazden, 1972; Horner, 1971; Labov, 1970; Moore, 1971) have noted that middle-class subjects are more apt than lower-class subjects to shift modes of speech according to changing contexts. Are lower-class children less able to use an alternate style when directed to elaborate on prior descriptions? In order to conceptualize a design that permits analysis of the circumstances under which such a shift is more likely to occur, it is necessary to review some of the literature on social learning and language training.

Modification of Communication Style

Little is known about the origins of communication styles or the processes by which they develop or may be modified (Cazden, 1971; Heider, 1971a). Although Bernstein and his research group formulated tentative hypotheses about antecedent social relations, the learning processes involved in such interactions have not been specified. Therefore it will be necessary to review some research which has attempted to modify language and aspects of communication skills other than style in an effort to relate these findings to the investigation of communication style. The training studies reviewed have relied on techniques involving imitation, differential reinforcement, verbal-rule instruction or some combination thereof.

As part of an extensive investigation of role-taking and communication Jarvis (1968) examined training procedures to facilitate the acquisition of communication skills. The Jarvis design focused on the ability of the child to profit from negative feedback concerning the effectiveness of his messages. Children from second through eighth grade participated in a communication task in which subjects described a geometric design so that a listener could draw it. Regardless of description, each subject was informed that listeners were not drawing accurately. Subjects were asked to describe designs again so listeners could produce exact copies. Messages were coded for presence of design elements, size, position and color. It was found that subjects improved their description from the first to second message and the ability to profit from feedback in communication was a function of age. Younger subjects showed little improvement following feedback and made no use of size or position dimensions.

Fry (1968) presented fifth graders with varied repetitions of a single type of communication problem in which subjects either practiced as speakers, listeners, or alternated as both listener and speaker. Post-testing on standardized description tasks indicated no improvement as a result of training. The author concluded that communication skills may be resistant to short-term training in the laboratory or classroom. However, it was admitted that the unstructured training may have provided insufficient specification of the actual educational experiences of subjects during training.

Training procedures using verbal-rule instruction have improved performance in pluralization, conceptualization of number and variable use of questions (Beilin & Kagan, 1969; Rosenthal & Zimmerman, 1972). While the Beilin and Kagan study (1969) was interested in training results in order to elucidate the relationship between linguistic rules and parallel cognitive processes, it was proposed that verbal-rule instructions provided subjects a ready-made verbal strategy or algorithim for problem-solving. Nevertheless, the authors noted that use of the verbal rule did not imply understanding of underlying logical operations or of the meaning of the rule.

An effective method in developing communication skills has been an approach which combines instruction with specific exemplars (Moore, 1971). Gahagan and Gahagan (1970) have been initially successful in increasing the use of subordinate clauses as well as adjectives by experimental pre-schoolers through use of a game technique which employed structured repetition. Repetition was accompanied by teacher directions which presented the child with tentative strategies for solving communication problems. The Gahagan and Gahagan project, as well as other structured-learning programs (Moore, 1971) have had as a fundamental principle the presentation of diverse language models, accompanied by the opportunity for children to engage in a wide range of communication experiences. Although such programs have tacitly relied on the child's willingness and ability to imitate various linguistic standards, it has been difficult to separate the direct consequences of imitative learning from other training experiences. However other research has inquired into the specific influences of imitation on language development (Gewirtz, 1971; Sherman, 1971). Although such studies of imitation have generally been restricted to syntactic development, they are relevant for considering the modification of communication style.

The training of severely language deviant children has resulted in the development of generative speech repertoires in the areas of plurality, verb inflections and word combinations (Sherman, 1971; Whitehurst & Novak, in press). In studies reviewed by Sherman (1971) children "were taught by imitation and differential reinforcement procedures to respond verbally to related series of stimulus situations. In the process of this training, the children learned to produce novel responses never directly taught or modeled for them (p. 265)." The novel responses emitted by severely retarded or autistic children were described as internally rule-governed because subjects had been taught to match structural dimensions of the different speech patterns of a model rather than the specific content. Children then applied this strategy when presented with new stimuli (Sherman, 1971). It should be noted that imitation and differential reinforcement training procedures effective with severely retarded children may not be applicable to the modification of linguistic behavior of normal children. Further, the effects of imitation have not been successfully separated from the effects of reinforcement (Gewirtz, 1971). In order to clarify these issues, it will be necessary to further analyze other imitation research.

Brown and Bellugi's (1964) identification of "expansion" of children's utterances by parents as a possible mechanism in language development has added another dimension to the subject of modification of communication skills. A test of the influence of expansion was made by Cazden (1968) in which the effect of expansion of a child's utterance by an adult was compared to commenting by an adult. Commenting and expansion differed in that expansion used the original wording of the child's utterance while commenting departed completely from the child's original utterance. In a "linguistically deprived" school environment, pre-schoolers were assigned to three conditions: expansion, commenting, and a control group. Each group was exposed to daily, half-hour sessions with an adult for three months. In expansion, the adult systematically expanded (from the child's "dog bark" to "yes, the dog is barking") everything the child said. In commenting, the child's "dog bark" received, "yes, he's made at the kitty." On the basis of pre- and post-test measures of language development, Cazden (1968) found that the commenting condition was far superior to expanding and control groups. However, McNeill (1970) reported an unpublished study which contradicted Cazden's results. Using Cazden's categories plus another contingent expansion condition in which only clearly understood utterances were expanded, the study reported that both forms of expansion were superior to commenting. McNeill (1970) concluded that the effectiveness of expansion remains an open question.

From the training literature reviewed so far, a recurrent technique has been to have the child model or in some way imitate some criterion response, either overtly or covertly. Such a modeling process can be inferred from the expansion experiments, where it has been suggested that the child may covertly process the expanded sentence and store it for future use (Cazden, 1968). While the importance of a parental model in language development has been acknowledged (Ervin-Tripp, 1971; Moore, 1971; Sherman, 1971; Slobin, 1971), the importance of imitation has not been adequately established. Since imitation represents one means by which communication style may be effectively modified, it will be worthwhile to review the role of imitation in language learning.

Cognitive and Social Learning Conceptions of Imitation

Cognitive psycholinguists and learning theorists have held contradictory views on the nature of learning in language development (Slobin, 1971). Focus on internal, cognitive mechanisms and mediational processes such as a language acquisition device have been prominent in accounting for the development of grammar (Chomsky, 1965; Deese, 1970; McNeill, 1970). It has been further suggested that the failure to delineate precisely what components of the parent-child interaction are crucial for maximum arousal of language growth also supports the cognitive psycholinguistic point of view and minimizes the importance of imitation in language learning (Brown & Hanlon, 1970; Deese, 1970).

At the heart of psycholinguistic criticism of the role of imitation is a misunderstanding as to what that term denotes. For example, Slobin (1968) considered that imitation is insufficient to explain the child's linguistic competence:

> Discussions by linguists and later by psychologists, have emphasized that linguistic competence can only be successfully characterized in terms of a system of rules which can generate the essentially infinite number of possible sentences in a language. If a child were to spend a lifetime imitating the sentences he heard, we could never account for the outstanding ability of every human being to speak and understand sentences he has clearly never heard before but which are nevertheless acceptable as sentences of his language. And, indeed, recent careful observers of child language have heard the child speak many utterances which he could never have heard--which could not be imitations or reduced imitations of adult utterances--but which seem to be explainable in terms of an inferred structure, in terms of the child's idiosyncratic grammar (p. 437).

Clearly, imitation is viewed by Slobin as mechanistic mimicry which does not involve complementary cognitive processes of abstraction, inference or memory. However, imitation has been considered a valuable technique to uncover the basic structure of language rules (Slobin, 1967; Slobin & Welsh, 1973). While imitation is not considered an essential learning process by which language develops, by constraining children to imitate adult speech, one may observe consistencies which indicate differential difficulty levels in the acquisition of grammatical classes as well as the operation of cognitive rules followed in attempting to master adult language models (Blasdell & Jensen, 1970; Giattino, 1971; Keeny & Smith, 1971; Lippman, 1971). Imitation as a technique has also been useful in comparing the syntactic development of different language groups and of different classes within the same language group (Clay, 1971; Hall & Turner, 1971; Osser, Wang & Zaid, 1969; Nurss & Day, 1971). But, while useful as an experimental technique for uncovering language structure, imitation has been considered trivial as a mechanism for language growth (Slobin, 1967; Ervin-Tripp, 1971).

If one turns to social learning theory, a different conception of language learning may be found. Imitation, alternately labeled modeling or observational learning, has been considered a central process in early learning (Aronfreed, 1969; Gewirtz, 1971; Stevenson, 1972).

Imitation includes several processes by which change in an observer's overt behavior is effected through observation of another person or model (Flanders, 1968). Whitmore (1968) has detailed nine types of imitation according to whether or not the observer attends to cues of similarity or difference between model's behavior and his own. Aronfreed (1969) noted that imitation may be difficult to distinguish from closely related behavior classified as social facilitation or conformity. Bandura (1971) has made a similar differentiation by identifying three distinct patterns of imitative behavior. One pattern consists of a completely novel response produced by observing the performance of others. A second type may be classified as inhibitory-disinhibitory. This type focuses on socially forbidden responses, produced or restrained by the observation of rewarding and punishing consequences accompanying a model's actions. In a third type an existing response is prompted by the actions of a model. Thus, while neither novel nor forbidden, many responses already existing in an individual's repertoire can be elicited or increased. Within Aronfreed's (1969) framework inhibitory-disinhibitory and elicited responses are more likely under the control of external consequences and identified with social conformity situations. Both

Aronfreed and Bandura agree that imitation requires a two-phase process of acquisition and performance in which the sequence and pattern of model responses are said to be acquired on a symbolic level. Learning by imitation has occurred with great speed and accuracy so that Bandura (1965a) has considered it a case of no-trial learning. Although such a depiction is debatable, the rapidity with which imitational learning occurs as well as accuracy of reproduction when compared to the more gradual processes involved in instrumental conditioning have suggested it as a basic learning process.

Instrumental Conditioning Versus Social Learning Theory

Imitation was initially categorized as matched-dependent behavior by Dollard and Miller (1941). In two-choice discrimination problems, subjects observed models perform and after matching the model's response were rewarded. With consistent reinforcement, it was argued, imitation itself became a generalized behavior disposition. This conception of imitation has been criticized (Aronfreed, 1969; Bandura, 1969; Rosenbaum & Arenson, 1968; Walters, 1968). The Dollard and Miller research would be more accurately labeled discrimination-place learning, where the model served as a cue for the observer to produce a well-established response. It was also necessary for the observer to perform and to be reinforced before instituting the response. This gradual process which necessitates performance has been considered inadequate to explain imitational learning that may take place in the absence of cotemporaneous extrinsic reinforcement or the requirement to perform (Bandura, 1965b). Bandura (1971) has considered that while reinforcement may be important in facilitating the efficiency with which imitational learning occurs, cognitive variables are of primary importance in accounting for the acquisition of imitative responses. Bandura's theory of social (observational) learning explains that in imitation, a set of stimuli are presented by a model and, subsequently, either a) all aspects of the model's performance, or b) some selected dimensions of it are symbolically coded for later production. Case (a) which would define copying has not been of primary concern (Bandura, 1971). The ability to imitate a dominant characteristic which has been abstracted from examples of the model and the application of that characteristic to new instances are of basic interest (Bandura, 1965, 1971).

Nevertheless, instrumental and observational learning descriptions of these mediational processes are quite divergent. Instrumental conditioning approaches consider reinforcement contingencies to be the underlying process which establishes generalized imitation and a set to imitate in children (Baer, Peterson & Sherman, 1967; Brigham & Sherman, 1968; Parton, 1970; Peterson & Whitehurst, 1970; Waxler & Yarrow, 1970). Further, observational learning paradigms have been criticized for not implementing adequate controls over the prior learning experiences of subjects in order to "rule out the possibilities that either an organism may have learned to learn by observation or that stimuli provided under an experimental condition may have been conditioned to control the relevant response (Gewirtz, 1971, p. 298)." These criticisms have not been adequately dealt with by social learning theorists, perhaps because the degree of experimental control required to resolve the issues has not been adequate. It has been suggested that further imitation research with infrahuman subjects is needed in which reinforcement histories have been carefully recorded (Gewirtz, 1972).

In summary, Bandura's social learning theory, while presenting a limited explanation of basic processes underlying imitation, has been significant in pointing to the efficiency of imitational learning and its applicability across various behavior constructs, including aggression and conformity (Geshuri, 1972; Mischel, 1970; Simmel & Hoppe, 1968; Thelen & Stolz, 1969). Equally important, social learning theory has stressed the function of cognitive representation by which information presented by a model is first symbolically acquired (Aronfreed, 1969; Bandura, 1969, 1971; Flanders, 1968; Gerst, 1971). Modeled behavior has been considered to be coded and stored representationally within the existing cognitive structure of the observer, so that the products of imitational learning are abstract rules. These rules have a high order of generality rather than being isolated instances of mimicry (Bandura, 1971). In this sense, a social learning conception of imitation appears less limited than that depicted by cognitive psycholinguists and is compatible with the rule-learning strategy suggested by Slobin, 1968). As Bandura (1971) has noted:

> The differentiation made by psycholinguists between language competence and language performance corresponds to the distinction made between learning and performance in social learning theory. Another point of similarity is that neither approach assumes that observational learning necessitates performance. Finally, the basic rules or prototypes, that guide production of grammatical utterances are presumed to be extracted from individual modeled instances rather than innately programmed. People are

> innately equipped with information-processing capacities, not with response-productive rules (p. 35).

Studies of Linguistic Imitation

Most of the research on linguistic imitation with normal populations has to date focused on syntactic aspects. An early effort by Bandura and Harris (1966) sought to identify the effect of modeling, attention and reinforcement variables on syntactic forms as the passive voice and the prepositional phrase. Five groups of second graders were formed: control, modeling, modeling plus reinforcement (receipt of a star for some sentences), modeling plus reinforcement plus set (S was told to attend to rewarded and unrewarded sentences to determine what earned a star), reinforcement plus set. 20 word trials presented to subject and model were expanded into sentences, with models following a prearranged format. Results indicated that while reinforcement plus set were sufficient to increase usage of prepositions, children in the model plus reinforcement plus set condition generated significantly more passives than the other conditions. This increase represented freely generated passive sentences which were varied and only rarely duplicated the model's production.

Odom, Liebert and Hill (1968) sought to extend modeling to more unfamiliar syntactic constructions. While using a modeling design which incorporated a reinforcement component in all treatments, Odom *et al*. (1968) included ungrammatical prepositional phrases as a new rule (NR) to be learned. They found that second graders in the NR condition, while producing very few ungrammatical prepositional phrases, produced significantly more grammatical ones. In order to account for this result, the authors postulated an active cognitive process which transformed the ungrammatical forms. In a second part of their study, Odom *et al*. tested this hypothesis by imposing a further condition of repetition of modeled sentences. It was supposed that this repetition condition would allow experimenters to observe an active process of transformation if it occurred. While modeling training in grammatical prepositions increased the frequency of those forms, as predicted, the ungrammatical form was not repeated. Rather, subjects reordered their repetitions into grammatical constructions, despite modeling and reinforcement. Odom *et al*. concluded that active problem-solving strategies involving use of a previously learned rule were crucial in determining some aspects of verbal imitation in their experiment. A follow-up study by Liebert, Odom, Hill and Huff (1969) sought to investigate the developmental implications of the Odom *et al.* (1968) results. It was suggested that if the reordering phenomenon was dependent on prior language learning, then successful repetition would decrease with age. If the reordering strategy represented an inability to abstract a new rule in a brief training period, then successful production of unfamiliar constructions would increase with age. Using three age groups (5, 8, 11) and the previously discussed design with ungrammatical and grammatical modeled prepositions, the data revealed that the youngest and middle groups in the NR condition were less able than older subjects to produce ungrammatical phrases. On the other hand, older subjects were better able to abstract the new rule and were more apt to use it in constructing other phrases. These results were taken as support for the conclusion that a developmental problem-solving capacity facilitates the social learning of language and further buttressed earlier mentioned research on communication skills (Flavell, 1968).

The Liebert *et al.* (1969) study obscured the effects of imitation since it did not include a modeling-without reinforcement condition as one treatment group. It was difficult to determine the effects of linguistic imitation when modeling was confounded by instructions and reinforcement effects. More recent studies conducted with other age groups have successfully controlled reinforcement effects and demonstrated linguistic imitation in the absence of cotemporaneous extrinsic reward (Bufford, 1971; Carroll, Kossuth & Rogers, 1971; Carroll, Rosenthal & Brysh, 1972; Kossuth, 1971; Rosenthal & White, 1972).

In an attempt to study the role of modeling in the production of more complex, rule-governed linguistic performance, Rosenthal, Zimmerman and Durning (1970) investigated the effect of modeling on the modification of interrogative classes and general information-seeking. However, it is noteworthy that in an attempt to create a more complex linguistic task, the experiment departed from strictly grammatical material. Sixth-grade subjects formed four experimental groups representing separate interrogative categories. The class of question responses studied pertained to physical attributes, functional uses, causal relationships and value judgments of pictorial stimuli. In each of the four treatments a model consistently responded to various pictures with one of the question classes, followed by a subject's attempt. In addition, degree of explicitness in instructions was tested across question groups. Results indicated that each experimental group exposed to a particular question model increased the frequency of that question category, and each group exposed to its particular model significantly surpassed the other groups' production of that question class. Similar findings were found for second graders in another study (Rosenthal & Zimmerman, 1972). Rosenthal _et al_. (1970) concluded that observational learning modified the organization of conceptual skills since their question classes were abstract categories rather than concrete linguistic constructions.

The Rosenthal _et al_. study is directly relevant for the present investigation into those conditions which may modify communication style. The question classes used by Rosenthal _et al_. are similar to categories of communication style in that each question class was within the competence of sixth-grade subjects and there were selective preferences in question use during a baseline phase. Communication style has also been viewed as a preference (Cazden & Brown, 1966; Heider, 1971) although such preferences may be quite stable and resistant to change (Cazden, 1972).

It is appropriate at this point to distinguish between the effectiveness of modeling in modifying aspects of linguistic performance in contrast to its effect in facilitating the acquisition of basic linguistic capacity or competence. While in the studies described in this section, various target linguistic structures were infrequent in baseline, they did not represent infrequent structures in spontaneous speech (Brown & Hanlon, 1971; Slobin, 1971). The common appearance of prepositions, verb tenses and question markers among experienced children is not novel from this viewpoint. A more stringent test of linguistic imitation has been reported by Whitehurst and Novak (in press). These authors studied four young pre-schoolers under two conditions of imitation--modeling and imitation training. In modeling an adult described a set of training pictures with one of four phrase types in a sentence. The children did not respond during the models' presentation, rather each child performed on a second set of pictures for which no examples occurred. In imitation training, children responded to each of the training stimuli, for which rewards were given for correct response. Model responses were provided for incorrect replies. Further data indicated that prepositions and infinitives were common while appositives and participals were very rare in the base rates of three- and four-year-olds. Results of the two imitation procedures suggested that while modeling was effective for those phrases already within the children's repertoire, imitation training resulted in the selective use of every phrase type to which it was applied. The authors concluded that modeling may be effective only after the child is able to abstract the structural forms to be used in later imitation. While the Whitehurst and Novak study (in press) suggests that questions about how the child selectively abstracts dimensions of the model must be explored, this research provided support for a cognitive model of language learning which focuses on internal processes in the acquisition of new language skills.

Conclusions

At issue for the present study of communication style was the extent to which class differences occurred, as well as the extent to which features of style might be modified. Thus, the twofold intent was to assess initial encoding among two social classes and also to conduct a training study in order to gauge the stability of aspects of style when task characteristics were varied. For the first part of the study there was reason to expect no class differences in encoding style. Previously reviewed findings of social class differences in verbal strategy and style have been equivocal (Bernstein, 1970; Cazden, John & Hymes, 1972; Heider, Cazden & Brown, 1968; Heider, 1971a; Labov, 1970; Robinson, 1965). While lower-class subjects have used physical description and focused on criterial attributes when tasks required such responses, lower-class subjects have also demonstrated variety in their spontaneous verbal strategies. Further research into the development of semantic systems based on measures of word associations (Entwisle, 1970) has noted only slight differences in paradigmatic response associated with social-class status. It was concluded that the small differences reported were related to use of social class groups which represented intermediate rather than extreme positions in the social class hierarchy. Nevertheless a study of dialect differences among black and white middle- and lower-class subjects was made in which social class status was determined by a socioeconomic scale (Hall & Freedle, 1973). Subjects engaged in the communication task devised by Krauss and Glucksberg (1967).

In the Hall and Freedle experiment no attempt was made to delineate aspects of encoding style. Decoding accuracy was of primary interest with respect to its relationship to dialect differences. Both lower- and middle-class groups showed equal ability to decode descriptions. These findings are inconsistent with other data on class relationships in communication (Heider, 1971a). While Hall and Freedle (1973) did not elaborate on this discrepancy, they suggested that race and age were more robust variables than social class status. Further interpretation has been offered by Hess (1970) in a review of social class influences. Hess noted that findings of social class difference across a variety of cognitive-linguistic variables minimize complementary findings of the considerable amount of overlap and similarity between different social groups. It has been concluded that social class designations such as middle-class and lower-class represent multi-level designations which contain considerable intra-group variance and that such variance has been observed within single class levels (Crites, 1969; Hamburger, 1957; Hess, 1970). Therefore, in view of several inconsistent findings concerning social class effects related to communication skills, it was hypothesized that no social class differences in initial encoding would occur for two groups of lower- and middle-class subjects.

In considering the effects of training after initial assessment of encoding style, inferences might be made about the relative flexibility with which social classes shift style and may offer some direction for educational intervention. In some ways, training methods in the present investigation were considered tools for uncovering limitations in language style, similar to Slobin's (1968) suggested use of imitation with young children. However, the previous research review has noted techniques other than modeling which have also been successful in modifying aspects of communication. Task instructions which highlight procedural strategies or direct attention to relevant aspects of the task, as well as feedback have facilitated the occurrence of infrequent linguistic responses (Beilin & Kagan, 1969; Fry, 1968; Gahagan & Gahagan, 1970; Jarvis, 1968; Moore, 1971). The three training procedures have been understood to convey different information to a learner (Liebert & Swenson, 1971) so that modeling, instructions and feedback have been differently effective in facilitating learning (Beilin & Kagan, 1969; Zimmerman & Rosenthal, 1974). A comparison of three conditions presented to change type of word association (Masters & Branch, 1969) suggested that greatest immediate improvement was obtained from instructions followed by modeling and reinforcement. However, after a delay of several days subjects' associations showed greatest change under the imitation conditions. The authors concluded that word association may have been characterized by rote performance under instructions, while modeling and reinforcement provided subjects with organizational rules which aided in long term changes. It has also been suggested, following an information-processing approach, that modeling presents different and/or more complete information about how to respond than do certain kinds of instruction or feedback (Gerst, 1971; Liebert & Swenson, 1971; Parton, 1970). Because modeling presents specific exemplars from which to model new responses, it may be likely that this condition will generate greater style shifts compared to feedback or instructions. Feedback would be expected to produce more shifting from dominant style than instructions because the subject is presented with cues to alter responses on individual stimuli rather than with general procedural directions before entering the task. Thus with respect to the training study, modeling was expected to be more effective than negative feedback in modifying dominant encoding style. In turn, it was thought that negative feedback would produce greater style shifts among both classes of children than when social class assignment was not based solely on extreme positions (either upper-middle class or lower-lower class) no social class differences in initial encoding style would occur for two groups of lower and middle-class subjects.

In considering the effects of training after initial assessment of encoding style, inferences might be made about the relative flexibility with which social classes shift style and may offer some direction for educational intervention. In some ways, training methods in the present investigation were considered tools for uncovering limitations in language style, similar to Slobin's (1968) suggested use of imitation with young children. However, the previous research review has noted techniques other than imitation which have also been successful in modifying aspects of communication. Task instructions which highlight procedural strategies or direct attention to relevant aspects of the task, as well as feedback have facilitated the occurrence of infrequent linguistic responses (Beilin & Kagan, 1969; Fry, 1968; Gahagan & Gahagan, 1970; Jarvis, 1968; Moore, 1971). A comparison of three conditions presented to change type of word association (Masters & Branch, 1969) suggested that greatest immediate improvement was obtained from instructions followed by modeling and reinforcement. However, after several days' delay in recording responses subjects' associations showed greatest change under the imitation conditions. The authors concluded that word association may have been characterized by rote performance under instructions, while imitation and to a lesser extent reinforcement provided subjects with organizational rules which aided in long term changes. Similarly, what type of communication performance may be expected for two class groups under differential conditions of imitation, negative feedback and attentional instructions? Because modeling presents specific exemplars from which to model new responses, it may be likely that this condition will generate greater style shifts compared to feedback or instructions. Feedback would be expected to produce more shifting from dominant style than instructions because the subject is presented with cues to alter responses on individual stimuli rather than with general procedural directions before entering the task. Thus with respect to the training study, modeling was expected to be more effective than negative feedback in modifying dominant encoding style. In turn, it was thought that negative feedback would produce greater style shifts among both classes of children than direct instructions.

The relative modifiability of lower- versus middle-class linguistic style must also be considered. Since the two groups have been observed to differ in flexibility or the fluency with which they use different styles (Cazden, 1972; Heider, 1971a) it is likely that while imitation may be equally effective with lower- and middle-classes, feedback and instructions may be less effective with lower- than with middle-class children. The less fluent lower-class children may find it more difficult to produce an appropriate alternate response than the middle-class group when the feedback situation suggests that current modes of response are inappropriate but at the same time does not present a specific alternate response. This same reasoning suggests similar class differences may operate under the instructions condition. Therefore, style modification techniques were expected to produce differential effects across class such that, (a) no differences in modeling effectiveness were expected when lower- and middle-class groups were compared and, (b) feedback and instructions conditions would be less effective in shifting lower-class style responses than those of middle class subjects.

Since the PD analytic style was considered by

Heider (1971a) to be more efficient than WI metaphorical style in encoding and decoding accuracy, middle class subjects who are characterized by a high frequency of PD description may be less likely than lower class subjects to resort to WI description in a feedback situation, when the effect of feedback is to further shift style in the direction of increasing detail and more precise description (Flavell, 1968). There is also some evidence from related research on the modification of cognitive strategy and conceptual tempo (Laughlin et al., 1969; Ridberg, Parke & Hetherington, 1971) that more efficient constraint-seeking strategies and reflective conceptual tempo are less susceptible to modeling effects than simpler hypothesis-scanning strategies and impulsive tempo. As PD style has also been considered more efficient for communicative effectiveness, it might be expected that middle-class subjects would imitate a WI style less successfully than lower-class children would imitate the PD style. However, in the imitation research cited on cognitive strategy and conceptual tempo, responses were directed toward the correct solution of verbal and visual problems. Outcomes based on success or failure in problem-solving may have reinforced prior response tendencies and outweighed the influence of a model. In the case of modeling of communication style, there are no comparable discriminative stimuli for correct response. PD style has been termed more efficient than WI style only in respect to performance on a separate decoding task. It has not been considered more efficient than WI in terms of expressive features (Heider, 1971a). Based on this analysis, it was expected that class differences in style response would occur in a negative feedback condition because middle-class PD style users would be less likely to shift their more detailed style under that condition than WI users. Based on comparative studies of reinforcement, modeling and instructions (Fry, 1968; Jarvis, 1968; Masters & Branch, 1969), it was further hypothesized that generalization of encoding training would occur for both classes of children. The relative effectiveness of the three treatment groups would be in the order: modeling feedback instructions.

The extent to which a change in style will affect decoding accuracy may also be investigated. Heider (1971a) found that middle class decoding response latencies were longer for PD descriptions than for WI, while lower-class children tended to have the same response latencies for both WI and PD description (Heider, 1971a). Heider suggested that middle-class children use a serial processing strategy in successful decoding of PD description while the processing of WI encoding requires a more instantaneous selection of a whole figure, which seems to fit the WI description in a striking way. The use of different decoding strategies by lower- and middle-class children has found further corroboration in comparison of response latencies on visual and verbal problem-solving tasks (Heider, 1971b; Kagan, Moss & Sigel, 1965). Although one might speculate that differential processing strategies could lead to preferences in encoding style as well, not enough is known about the relation between encoding and decoding to support such speculation. However, within the present study, the question was raised whether modeling procedures directed toward changing predominant encoding style would affect decoding strategies. Imitative response patterns have been shown to generalize to other related activities (Liebert & Swenson, 1971; Rosenthal, Alford & Rasp, 1972). Studies of reinforcement and task instructions have also shown generalization effects (Masters & Branch, 1969; Parton, 1970; Thelen, 1970). A generalization task was included in the present study to observe possible transfer effects of the experimental treatments to a similar encoding task. However, it was also of interest to ascertain whether any changes occurred in decoding activity as well.

If a style shift which focused on parts of stimuli and physical dimensions carried over to the decoding task, continued focus on detail would be expected to result in longer response latencies, because of greater attention to parts of stimuli, as well as improved decoding scores. Modeling, feedback and instructions which emphasized detail would probably effect changes in latency and accuracy in decoding in the same order that these manipulations facilitated encoding. However, class may be an interactive variable. Research on cognitive tempo (Heider, 1971b; Ridberg et al., 1971) suggests that response latencies of "reflective" middle-class children are less susceptible to modification than those of lower class "impulsive" children. Therefore, lower-class children may demonstrate greater carry-over effects to the present decoding task than controls and middle-class subjects. Hence, the lower-class child whose style has been shifted toward greater detail and physical description might increase his response latency in decoding similar PD descriptions and further improve his accuracy on those items.

On the other hand, where treatments are directed toward eliciting metaphorical WI description, lower and middle class decoding latency and accuracy might be affected under instructions to produce quick responses with minimal study of stimuli. It is possible that in this condition a response set might yield interference effects in decoding accuracy and reduced response latency. Such a response set is not as likely under modeling or feedback which elicits metaphorical description, because these conditions do not directly affect the tempo of response. The hypotheses derived from consideration of the possible training effects on decoding accuracy may be summarized as follows:

> When style was shifted toward greater detail PD, lower-class subjects were expected to show increased decoding accuracy scores and longer response latencies in the order: modeling > feedback > instructions. While middle-class subjects were expected to respond like their lower class counterparts with respect to decoding accuracy across experimental treatments, it was thought that middle-class response latency would show no significant increase, compared to a control group.
>
> When style was shifted toward imagery WI and spontaneous response, both lower- and middle-class children under instructions to produce quick responses would more likely respond less accurately than no-treatment controls on

decoding and with reduced response latency. While modeling of metaphorical description might be expected to increase the decoding of these items, it was not considered likely that response latency would be affected. Negative feedback which served to allow a subject to reconsider his prior responses and re-inspect target stimuli should increase response latency and decoding accuracy, regardless of the style it was designed to modify.

Chapter III

Method

Using a standard communication task developed by Krauss and Weinheimer (1964), style of communication was studied in two groups of 60 lower- and 60 middle-class children under conditions of modeling, negative feedback, instructions and control. Subjects were randomly assigned to treatment conditions and baserates of initial encoding style were obtained. Following baseline assessment the Modeling Group was presented with a female model who used a style different from each subject's dominant style. For the Negative Feedback Group, subjects were told that their descriptions were not understood by a younger child. For the Instructions Group, subjects were directed to either focus on detail or freely associate in describing stimuli. A Control Group went through all phases of the experiment with no added directions. After exposure to experimental conditions all subjects were presented with another stimulus set of abstract stimuli in order to test transfer of previous encoding training. Finally, all subjects were presented with descriptions from other ten-year-olds of the first set of stimuli. The decoding task called for the selection of the stimulus which fit each description. Response latencies were recorded for each subject.

Subjects

156 white, ten-year-old boys attending eight elementary schools in Atlantic County of southern New Jersey comprised the experimental sample tested during October and November, 1973. Two public school districts which supervised six of the schools, serviced suburban and rural areas consisting of low- to upper-middle income population. In addition, two private schools served students from low- to middle-income populations. At each school, all ten-year-olds were initially stratified on the basis of income and parent (caretaker) occupation according to a revision of the Warner scale for rating socio-economic status (Crites, 1968; Hamburger, 1958). The Hamburger scale (1958) is a seven-point ordinal scale which ranks socio-economic status based on combined criteria of income, job responsibility, and occupational prestige. Parent occupation was supplied in each case from school records, supplemented by principals' knowledge of family background. Children rated lower class were those who participated in free lunch programs and/or whose father's (caretaker's) occupation was rated

6 or 7 on the Hamburger scale. It should be noted that principals explained that although many lower-class students were eligible for free lunch based on income, families often declined to participate because such programs were perceived negatively as "welfare." Appendix 1 summarizes the coding rules and seven occupational levels of the Hamburger scale by which judgments of class assignments were made. Appendix 2 details criteria for school lunch eligibility in Atlantic County, New Jersey.

79 boys, ranging in age from 9 years, 11 months to 10 years, 11 months (mean age, 10 years, 4 months) made up the lower-class group. 77 boys, ranging in age from 9 years, 10 months to 10 years, 11 months (mean age, 10 years, 5 months) comprised the middle-class group. Middle-class designation was based on ratings of parent occupations, from one through four on the Hamburger scale.

Percentage of agreement by two independent raters of sample parent occupations was 96.2% and 97.37% for lower- and middle-class ratings respectively. After discussion of controversial judgments, 100% agreement was achieved.

For the lower-class group of 79 boys, 32.9% were enrolled in free lunch programs. According to occupational rating 63.3% were judged at level 6, while 36.7% were rated at level 7.

For the middle-class group of 77 boys, 84.4% were rated at either level 3 or 4 (45.4% at level 3; 39% at level 4). 13% of middle class boys' parental occupations were rated at category 2, while only 2.6% fell at level 1. Typical occupations at levels 3 and 4 included independent businessmen, skilled craftsmen, technicians and management personnel. At levels 1 and 2, occupations such as accountant, pilot and engineer were typical. For the lower class group, typical level 6-7 occupations included farm workers, unskilled service and factory workers as well as seasonal, unskilled workers.

In addition 31 white, ten-year-old boys were subjects in preliminary testing during July and August, 1973, designed to obtain the lower and middle class encodings which formed the descriptions used for the decoding task. 15 boys ranging in age from 9 years, 10 months to 10 years, 10 months (mean age 10 years, 2 months), who attended a camp supported by federal funds for children of working welfare mothers, formed the lower class group. 16 boys aged 9 years, 8 months to 10 years, 11 months (mean age, 10 years, 5 months) who attended a private camp servicing an upper-middle income residential area made up the middle-class group. This sub-sample of 31 boys was presented with encoding stimuli in order to obtain an estimate of typical lower and middle class descriptions to be used in a decoding task with other samples.

The present study was formulated to investigate both overall class differences in communication style and to test the extent to which style might be modified. Thus in exploring the first question the school sample of 156 middle- and lower-class boys was used. The 31 camp subjects were not included since class assignment had not been based on occupation. In order to study techniques which might modify encoding style, 120 subjects, equally divided with respect to class and randomly assigned to four treatment groups, were separated from the pool of 156 subjects on the basis of initial encoding style. Percentage of response on use of imagery (I) or physical description (D) was used to determine dominant style. For 120 subjects at least 60% of initial encoding was devoted to description which focused on metaphor and subjective imagery or on physical, concrete description. These percentages of response selection criteria are consistent with Heider's (1971a) style distinctions. She reported overall group mean percentages of 55% for dominant PD style and 75% for dominant WI style. Thus, the 120 lower and middle class boys, individually selected for style modification treatments, were characterized by the (WI) style, ranging from 60% to 100%, in initial encoding.

Coding of Subject Descriptions

Subject descriptions were rated by two independent judges familiar with Heider's (1971a) rules for classifying encoding units. Heider's definition of an encoding unit together with style classification rules may be found in Appendix 3. Four elements of style were studied in encoding:

1. WI - an encoding unit, which refers to the whole stimulus figure. Use of inferential language to go beyond what is given in the figure to suggest objects or events with the figures "look like."
2. PI - an encoding unit which refers to only part of the stimulus figure and uses inferential description.
3. PD - an encoding unit which refers to part of the stimulus figure to describe physical properties such as its linear arrangement. (Physical description based on the entire figure (WD) was rarely used and was not considered in analysis).
4. Number of Units - Heider (1971a) described a unit as, "a single statement about the stimulus, a piece of information about the stimulus (p. 34)." A unit is not necessarily a sentence but rather

any "image of the cue figure which the subject conveys." A more detailed definition of what constitutes a unit is contained in Appendix 3. A unit score consisted of the total number of units used in describing the ten experimental stimuli.

In all conditions boys' descriptions for each stimulus were tallied according to frequency for the four outlined elements. For 120 subjects the same coding procedure was followed for baseline, treatment, and generalization phases.

Reliability of rater judgements of encodings - A reliability study was performed on a random selection of approximately one-fourth (48) of the total baseline encoding sample of 187 subjects, with equal representation for the two classes. Product-Moment correlation coefficients between two judges' responses were: (WI) = .88, (PI) = .90, (PD) = .94, Number of Units = .97. All reliability coefficients were significant at the .01 level.

Materials

A set of ten abstract line figures ("squiggles") developed by Krauss and Weinheimer (1964) was used with all subjects to estimate elements of style.

Ten figures from a set of 12 (Appendix 4) were considered the target stimuli. Each target stimulus was mounted on a 5 in. x 7 in. card and circled in red, while four other stimuli were arrayed about the target. Practice trials included two additional stimuli which were not used thereafter. Order of arrays was random as was the presentation of target stimuli across the three encoding phases. However, the same order was maintained for all treatments. Appendix 5 contains the order and sequence arrangements for encoding arrays.

Model encodings - Two sets of encodings were prepared for the female model who demonstrated a style contrary to that used by subjects in baseline. For the 120 boys of the modification study, the model responded to each of the ten squiggles with a description of the entire figure, in physical concrete terms (units). Appendix 6 contains a list of both sets of WI and PD model encodings prepared for the model. It should be noted that the model continued to respond to the original set of 10 squiggles rather than a set of comparable novel stimuli. Since the experimental task focused on exposure to the different perspective presented by the alternate style of the model, it was considered that the stimuli themselves contributed no differential effects in eliciting style responses (Heider, 1971a). Similar assumptions have been made in several modeling studies where the model stimuli were the same as subjects' target stimuli (Laughlin et al., 1969;

Liebert & Swenson, 1972; Rosenthal, Zimmerman & Durning, 1970).

Generalization Task - The "squiggles" represent rather unique line drawings of an abstract nature (Cazden, 1972). Their salient feature is their novel and evocative quality which maintains a low probability of eliciting one particular referent or descriptive name (Krauss & Weinheimer, 1964). The purpose of the generalization task was to observe subject description using materials which were equivalent along dimensions of abstractness and evocativeness. Nevertheless, the interest in this part of the experiment was in testing the strength of training procedures to generalize changes in communication style to other novel stimuli which conserved the underlying dimensions of prior test stimuli. It seemed important that the generalization materials consist of ostensibly different pictures which were, at the same time abstract and evocative. The idea of extending the line drawings to different shapes was rejected because these new shapes would not be novel since they would represent the same type of figure to which newly acquired strategies might be applied. Therefore, items from the Meier Aesthetic Perception Test (1963) were selected for the generalization task. This test contains abstract and representational drawings and photographs used to estimate aspects of artistic aptitude. Of 20 abstract items ten black and white figures were selected based on a combination of simplicity and abstractness. Photographs were excluded. Items were evaluated for amount of shading, number and distinctiveness of shapes contained in each item, and degree of non-representation. Two raters other than the experimenter were presented with the criteria described above and were asked to select ten items which were ranked lowest with respect to shading and number of shapes but highest with respect to abstract representation and distinctiveness. The raters achieved 90% agreement, failing to concur on only one item. After discussion, they arrived at 100% agreement. When their ten selections were compared to those chosen by the experimenter using the standards described above, the rater selections and those chosen by the experimenter were the same.

Appendix 7 contains a sample of four of the ten generalization stimuli. These ten drawings comprised target generalization stimuli, each of which was mounted on paper 8 in. x 11 in. together with four other drawings of the set of ten. The target stimulus was identified by a red arrow, while four stimuli were arrayed around it. Order of arrays was random as was presentation of target stimuli.

The same order of presentation was maintained for all treatments. A list of stimulus arrays is presented in Appendix 8.

Decoding task - This task consisted of 20 trials in which subjects picked out the abstract stimulus which matched a verbal description. The ten original "squiggles" were thus presented twice on 20 trials. Each target stimulus was presented in scrambled order with four other abstract figures selected at random from the original "squiggles" set on cardboard strips 3 in. x 11 in. Appendix 9 details the composition of decoding arrays and their order of presentation.

The encodings used for the decoding task were based on the descriptions of the 31 preliminary testing subjects. Originally, encoding selection was to be based on a class analysis for mean description length and frequency of use of WI and PD styles. However, class data for these subjects indicated no clear-cut style differences. It is recalled that the purpose of the decoding task was to investigate the effect of shifting encoding style on the decoding accuracy of two encoding styles. Since no initial style differences were noted for class (N = 31) on PD-WI dimensions, encodings for the decoding task were selected at random for each of the ten stimuli from WI description of lower class boys (N = 15) and the available PD descriptions of middle-class boys (N = 16). Appendix 10 lists the twenty encodings presented during decoding. Order of presentation of encoding on this task was random, but constant for all treatment groups. Decoding accuracy was measured as the number of correct stimuli chosen for the 20 encodings. Sub-scores for WI and PD were also recorded. Response latency was measured with a stop watch as the time from stimulus presentation to initial response by each subject.

Procedure

All testing was conducted on the premises of the eight schools visited. Principals were cooperative in making rooms available to the experimenter, although the type of room varied from backstages to storerooms. However, testing was conducted in private, quiet rooms equipped with adequate lighting, tables and chairs. All sessions were tape recorded. Teachers sent students individually to the experimenter according to prearranged schedules. Prior to testing, students selected on the basis of class were randomly assigned to four treatment groups - modeling, feedback, instruction and control. Thus, teacher schedules consisted of subjects who had already been assigned to treatment groups.

In all conditions the experimenter explained that a game was being developed for use in school and because it was still in its "try-out stage," fourth and fifth graders were being asked to help in this trial phase. All subjects were asked if they wished to participate; in no case was there a refusal. Initial instructions were as follows:

> This game is called "match the pictures." I want you to tell about the picture in the red circle. Tell about it so that another boy could pick out just that one even when it is mixed up with these other pictures.

Two training trials followed in which difficulties in understanding were clarified. After this the baseline measure of encoding style was obtained in presenting the ten "squiggles" arrays to all treatment groups.

After the base rate of encoding response was obtained, while three treatment groups proceeded to new directions, a Control Group was readministered the squiggles by the experimenter with the instructions:

> In this set the figures have been mixed-up again. Tell about the one in the red circle so that another boy would pick out that one from the others on the card.

The generalization task was presented to the control group by the experimenter:

> Here are some new pictures. Describe each one that has the arrow pointing to it so another boy can pick out just that one from the rest.

Following generalization, the experimenter explained the decoding task to each subject in all groups as follows:

> I am going to read to you the way another boy described some of these pictures. See if you can pick out the one that fits. As soon as you think you have found the correct picture, point to it on your card. I will mark down the number of the picture you have chosen.

Modeling groups - Lower-and middle-class modeling subjects were introduced to the female model, a college sophomore, at the beginning of the session. It was explained to modeling subjects that the female model would also help in trying the "game." After baseline the experimenter addressed the model:

> Now, Edie, I would like you to try the game. Tell about each picture in the red circle so another person would pick out just that one. Let's (to subject) listen and watch Edie.

The female model then described each stimulus for the experimenter using the appropriate (PD) or (WI) style while the subject sat next to the model. On modeling subjects were instructed by the experimenter:

> Now it's your turn. The pictures have been mixed-up again. Tell about each picture so that another boy would pick it out.

The generalization and decoding tasks were presented after imitation in the same order and equivalent directions as for the control subjects.

Negative feedback groups - In this condition the assistance of a cohort was employed. Prior to the session, the cohort was advised that her job was not to talk during the session and to pretend she was playing the game when in fact she had no stimuli to work with. At the beginning of the session lower- and middle-class subjects were introduced to a female second grader. It was explained that she would also help try out the game. After base-line the experimenter stated:

> Now, I'd like you to play the game with Ann. You tell about the picture in the red circle so Ann can pick it out from her set of cards. Ann is younger than you are, so the game may be more difficult for her.

Each subject sat at a table with the cohort but was separated from her by a screen. Regardless of the subjects' first response, he was told that the assistant picked out the wrong one on the first three, the fifth, seventh, and ninth stimulus. The subject was asked to produce a second description in order to give the assistant another chance. The second description was used to test the effectiveness of the feedback manipulation. After feedback, the cohort left and generalization and decoding tasks were administered in the same manner as that described for control groups.

Instruction groups - After baseline procedures described above, for those subjects whose dominant encoding style was identified as (PD) the following directions were given by the experimenter:

> Here are some pictures again. I want you to describe each one as quickly but as accurately as you can. It is important to give your answers right away so just say the first thing that comes to mind about the picture.

For subjects whose dominant encoding style was identified as (WI) the following directions were given by the experimenter:

> Here are some pictures again. I want you to describe what is different about the target picture from the others above it, so that it would be very clear to someone else. Remember, take your time to describe the picture.

After instructions, the generalization and decoding tasks were presented as described for the control groups.

In order to gauge the effectiveness of instructions, the instructions for the two styles were reversed after the decoding task had been administered. It was expected that if instructions were influential, a reversal of instructions would restore the original dominant style.

Chapter IV

Results

An analysis of variance was made of class differences in initial encoding data (baseline). Training data were analyzed by a 4 X 2 X 3 factorial analysis of variance with repeated measures corresponding to four Treatment groups by two Social Classes by three Test Phases (baseline, testing, generalization). The factorial analyses of variance conducted on the WI encoding, the PI encoding, the PD encoding and the Total Unit data separately. For the decoding data, a two-way analysis of variance was performed for Social Class and Treatment effects on the latency of response and decoding accuracy data.

Social Class Effects in Initial Encoding

No significant social class effects were observed across four aspects of initial encoding style (see Appendix 11). Inspection of class means in Table 1 reveals that in baseline both class groups responded similarly with respect to the amount said about each stimulus, and the proportions of WI-PI-PD description. The subgroup of 31 subjects whose encodings were obtained for use on the decoding task was eliminated from analyses of baseline

TABLE 1

Baseline Encoding Style Under Two Selection Conditions

Natural Selection	Lower Class		Middle Class	
	X	SD	X	SD
WI	10.139	4.457	10.468	5.401
PI	3.228	3.258	3.234	3.280
PD	6.962	8.909	7.143	8.705
UNITS	20.215	8.541	20.844	8.510
N = 156	79		77	
60% Criterion				
WI	11.650	3.339	12.080	4.800
PI	2.483	3.039	2.560	2.800
PD	2.749	2.925	3.183	2.873
UNITS	16.750	5.330	17.830	5.860
N = 120	60		60	

class effects since social class assignment in this group was not strictly based on occupational rating. Thus, for the original pool of 156 subjects, both middle- and lower-class groups used WI encoding 50% of the time and PD description 34% of the time. These results were contrary to previous findings (Heider, 1971a) in which the WI-PD ratio was 33%-53% for middle-class subjects and 80%-13% for lower-class subjects. When 120 subjects were selected specifically for their dominant style using a 60% criterion, the relationship between PD and WI usage changed (See Table 1). The 60% criterion group (N = 120) used WI and PD description 68% and 17.1% of the time respectively, for both classes. The difference in WI-PD proportions between the sample based on natural selection and the sub-sample based on a 60% standard of usage of dominant style was significant ($\underline{z} = 3.05$, $\underline{p} < .01$).

After drawing 120 subjects based on the 60% criterion, the remaining 36 also differed markedly in style usage from the original sample ($\underline{z} = 3.74$, $\underline{p} < .01$). As Table 2 indicates for this latter group, physical description (PD) was the dominant style, used in 67.77% of encoding for middle-class subjects and in 64.2% of encoding for lower-class subjects. On the other hand, WI encoding was used 17.06% and 15.29% of the time by lower and middle

TABLE 2

Initial Encoding Style of Subjects Who Did Not Meet 60% Usage Criterion

		Lower Class	Middle Class
WI	$\bar{X}$	5.368	4.765
	SD	4.230	3.030
PI	$\bar{X}$	5.579	5.588
	SD	2.830	3.820
PD	$\bar{X}$	20.210	21.118
	SD	8.480	7.950
Units	$\bar{X}$	31.470	31.160
	SD	7.960	7.510
N =		19	17

class subjects respectively. There were no class differences in encoding within the subgroup of 36 subjects.

Further tests of class differences were made on initial encoding style for subjects classified in levels 1 and 2 contrasted with subjects in level 7 of the socioeconomic scale. Levels 1 and 2 corresponded to the upper class levels while level 7 corresponded to the lowest class level. Across four dependent encoding variables no significant class differences were found ($p > .05$). Inspection of class means (Table 3) indicates that subjects who were rated in the upper levels of social class status (N = 12) did not differ in descriptive style from subjects who ranked in the lowest level of social class status (N = 29).

TABLE 3

Encoding Style of Subjects Representing the Extreme Levels of Social Class Status

		Level (1 - 2)	Level (7)	t value
WI	X	10.67	10.36	.133*
	SD	7.39	4.45	
PD	X	3.75	3.08	.440*
	SD	3.52	3.14	
PI	X	4.17	2.72	.537*
	SD	3.46	2.63	
Units	X	22.58	19.60	.854*
	SD	10.43	8.86	

* $p > .05$

Effects of Training on Encoding Style

Since the focus of the training study was on change in communication style, the three testing phases representing repeated measures on individual subjects formed the basis of analyses. Tables 4 through 7 contain mean scores for each of the encoding variables across four treatment groups. Appendices 12 through 15 present the separate analyses of variance that we made for each of the four dependent encoding variables.

A consistent result across all four analyses was the significant effect of Test Phases (C), i.e., baseline, treatment, generalization, for WI (F (2,224) = 127.362, $p < .01$), PD (F(2,224) = 71.077, $p < .01$), PI (F(2,224) = 70.862, $p < .01$), and Units (F(2,224) = 26.779, $p < .01$). The Training Group effect (B) was significant for WI (F (3,112) = 7.778, $p < .01$) and for PD (F (3,112) = 2.703, $p < .05$). In addition there were significant Phases X Training interactions for WI (F (6,224) = 6.213, $p < .01$), PD (F(6,224) = 11.874, $p < .01$), and Units (F (6,224) = 2.348, $p < .05$). The Social Class main effect was not significant

TABLE 4

WI Encoding Across Three Testing Phases by Social Class and Training Group

		Baseline	Training	Generalization
Lower-Class Model	$\bar{X}$	11.13	4.47	4.87
	SD	4.05	2.83	1.81
Feedb.	$\bar{X}$	10.93	7.93	5.60
	SD	2.76	3.55	2.41
Instr.	$\bar{X}$	11.27	7.53	7.20
	SD	2.43	5.85	1.94
Control	$\bar{X}$	13.27	12.33	6.53
	SD	3.63	2.64	2.23
Middle-Class Model	$\bar{X}$	12.07	6.20	5.00
	SD	4.71	4.71	2.80
Feedb.	$\bar{X}$	11.33	8.67	5.27
	SD	4.19	4.15	2.34
Instr.	$\bar{X}$	11.40	7.87	6.20
	SD	4.03	4.57	2.54
Control	$\bar{X}$	13.53	11.67	6.40
	SD	6.15	3.54	2.87

TABLE 5

PD Encoding Across Three Testing Phases by Social Class and Training Group

		Baseline	Training	Generalization
Lower-Class				
Model	$\bar{X}$	3.33	12.80	7.27
	SD	2.53	5.43	3.60
Feedb.	$\bar{X}$	3.00	6.73	7.87
	SD	3.25	6.11	5.85
Instr.	$\bar{X}$	2.13	7.80	8.40
	SD	2.85	5.78	6.83
Control	$\bar{X}$	2.53	2.33	8.27
	SD	2.23	3.06	4.73
Middle-Class				
Model	$\bar{X}$	1.80	12.27	9.93
	SD	1.82	9.49	7.33
Feedb.	$\bar{X}$	2.87	4.93	9.07
	SD	.13	4.99	5.64
Instr.	$\bar{X}$	3.67	6.47	8.93
	SD	3.33	5.15	3.90
Control	$\bar{X}$	4.40	4.00	10.47
	SD	3.23	3.19	5.88

TABLE 6

PI Encoding Across Three Testing Phases by Social Class and Training Group

		Baseline	Training	Generalization
Lower-Class				
Model	$\bar{X}$	2.13	3.60	8.27
	SD	2.50	2.56	3.83
Feedb.	$\bar{X}$	2.73	5.60	8.13
	SD	3.63	4.56	5.15
Instr.	$\bar{X}$	2.87	3.20	5.73
	SD	3.93	2.86	4.45
Control	$\bar{X}$	2.20	2.53	7.40
	SD	1.90	3.18	4.91
Middle-Class				
Model	$\bar{X}$	1.93	3.33	7.60
	SD	2.22	2.55	4.58
Feedb.	$\bar{X}$	3.07	4.87	7.27
	SD	3.88	5.30	3.47
Instr.	$\bar{X}$	3.13	2.93	5.67
	SD	2.62	2.92	3.68
Control	$\bar{X}$	2.13	2.67	2.27
	SD	2.23	2.50	5.43

TABLE 7

Unit Encoding Across Three Testing Phases by Social Class and Training Group

		Baseline	Training	Generalization
Lower-Class Model	$\bar{X}$	16.67	19.67	20.20
	SD	3.99	5.58	4.52
Feedb.	$\bar{X}$	15.93	20.00	19.20
	SD	4.15	7.80	5.43
Instr.	$\bar{X}$	16.40	18.60	21.87
	SD	7.22	7.82	9.02
Control	$\bar{X}$	18.00	17.27	22.20
	SD	5.67	5.55	7.59
Middle-Class Model	$\bar{X}$	15.80	21.80	22.20
	SD	5.96	7.51	4.95
Feedb.	$\bar{X}$	17.27	18.40	21.60
	SD	4.91	6.67	6.85
Instr.	$\bar{X}$	18.20	17.53	20.87
	SD	5.94	3.91	5.46
Control	$\bar{X}$	20.07	19.20	23.13
	SD	6.30	6.76	6.71

in the modification of communication style. In addition, there were no significant social class interactions.

The interactions between Training (B) and Test Phases (C) are represented graphically for WI, PD, and Unit encoding in Figures 1 through 6 (PI encoding graphs in Appendices 16 and 17) in order to examine the nature of the interaction between training methods and phases (baseline, treatment, generalization). Inspection of WI-score profiles indicates that the three training groups (B1, B2, B3) decreased use of WI description from baseline across readministration and generalization. Compared to controls, (B4) the three training groups produced less WI encoding from baseline to treatment. Training group production of WI on the generalization task did not differ from control responses. Inspection of PD profiles (Figures 3 and 4) reveals that training groups increased PD description compared to controls but this differential effect was not sustained on the generalization task. Similar profiles for total unit encoding are presented in Figures 5 and 6. In Appendix 16 and 17 the profiles for PI suggest that baseline (C1) production of PI was similar for all groups. In the training phase (C2) all training groups increased use of PI description while the feedback manipulation resulted in more PI encoding than any other treatment.

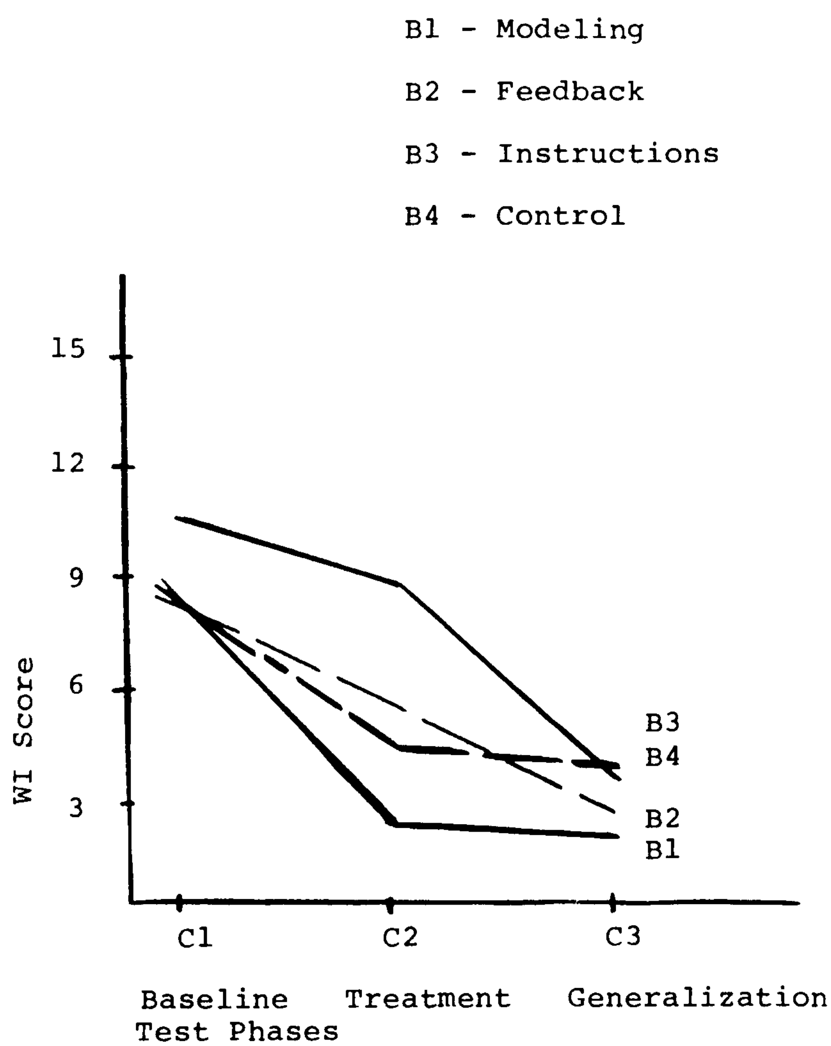


Figure 1 Effect of Treatment Groups (B) on WI Scores Across Three Test Phases (C).

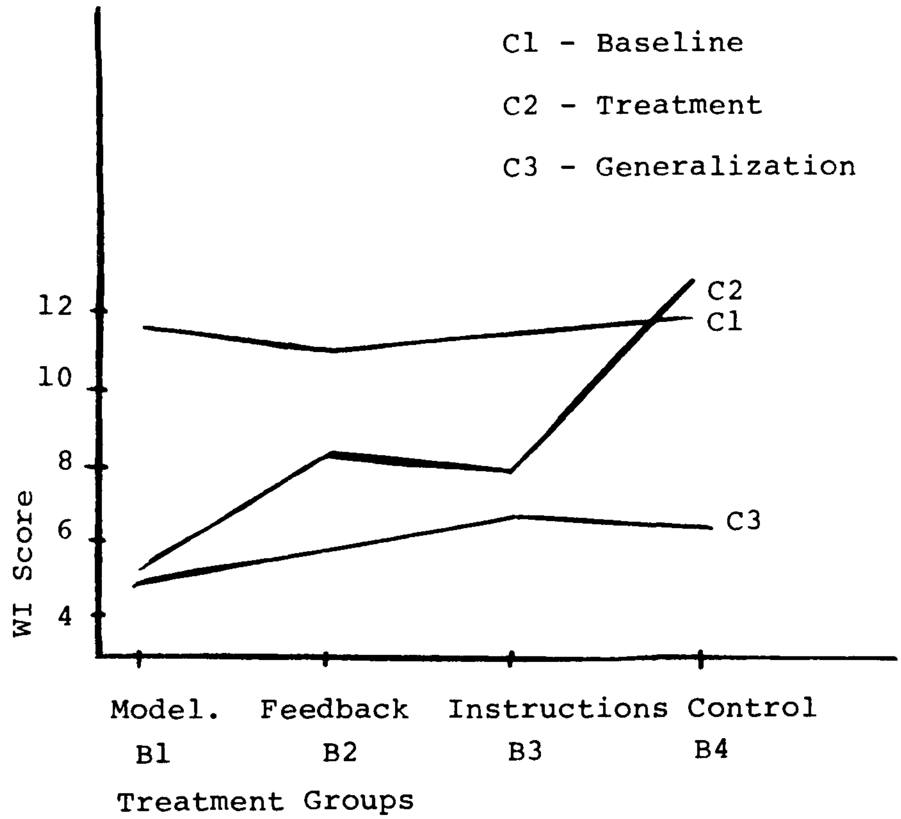


Figure 2

Effect of Test Phases (C) on WI Scores Across Four Treatment Groups (B).

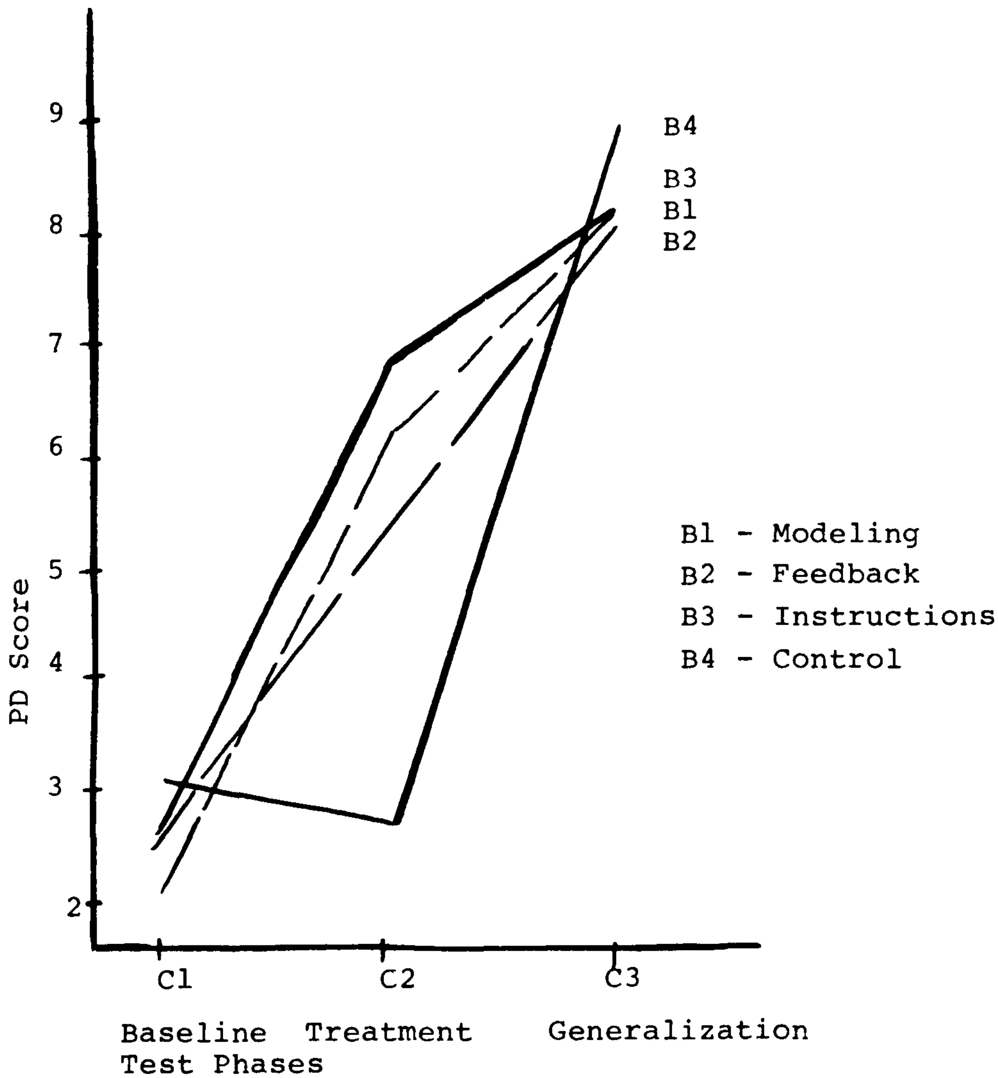


Figure 3 Effect of Treatment Groups (B) on PD Scores Across Three Testing Phases (C).

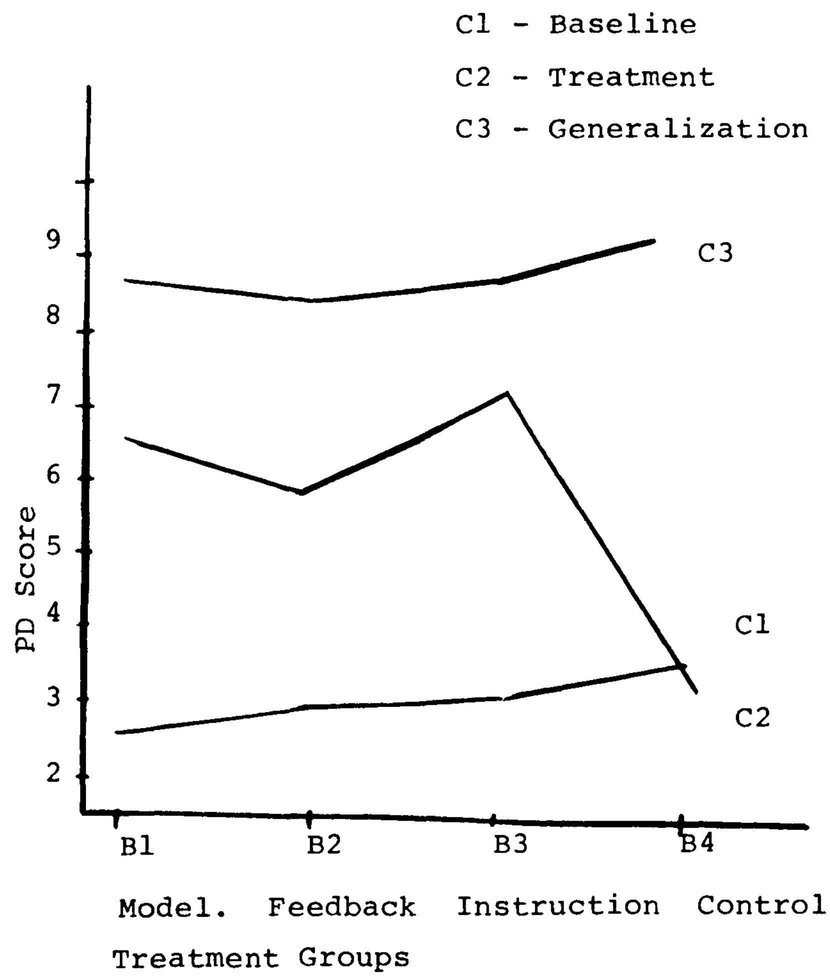


Figure 4 Effect of Test Phases (C) on PD Scores Across Four Treatment Groups

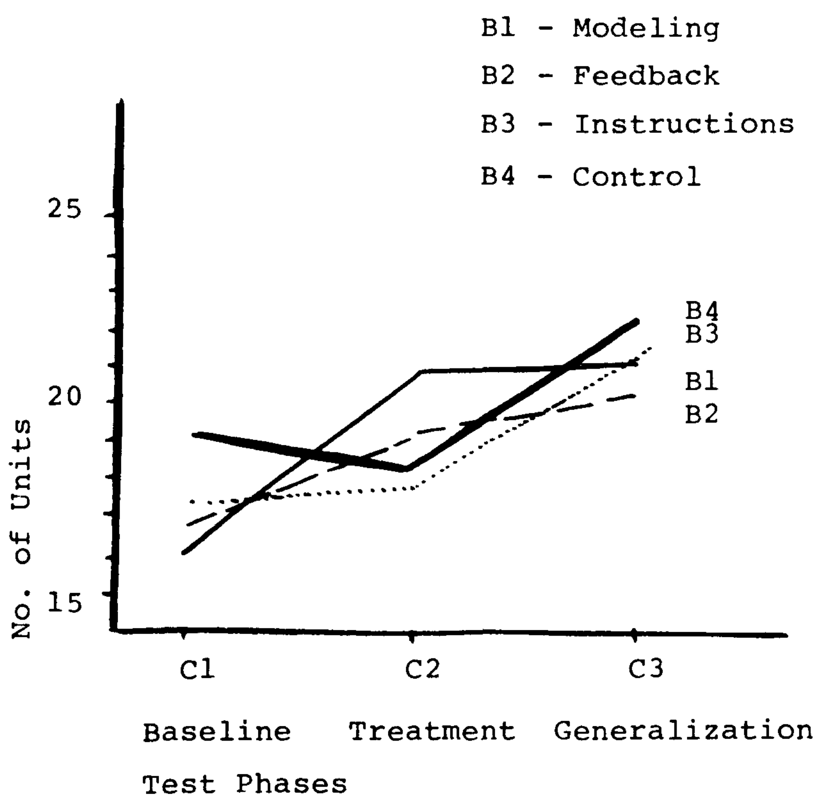


Figure 5 Effect of Four Treatment Groups (B) on Unit Scores Across Three Testing Phases (C).

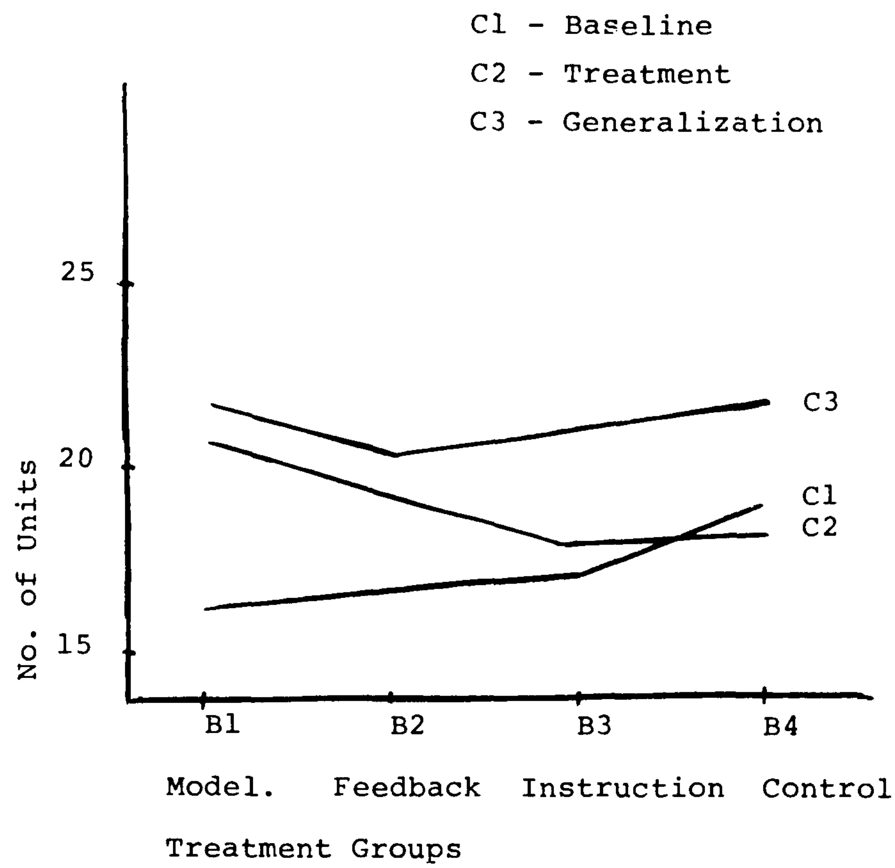


Figure 6 Effect of Three Test Phases (C) on Unit Scores Across Four Treatment Groups (B).

Because the overall BC interaction attained marginal significance ($\underline{F}$ (6,224) = 2.073, $\underline{p} < .10$), this result may be considered as a tendency only. The generalization task generated more total PI description than either the baseline or the treatment phase but training groups responded like controls in this respect.

Tests for simple effects (Appendices 18 through 20) were performed when overall analyses of variance indicated significant two-factor interactions. In addition Tukey tests based on cell means (Appendices 21 and 22) were made to pinpoint the source and direction of differences (Winer, 1971). Discussion of these results will follow for each of the separate aspects of encoding style.

WI Encoding

In the treatment phase (C2) the three training methods significantly decreased WI production compared to baseline responses and compared to controls (In Appendix 18, $\underline{F}$ (3,198) = 17.269, $\underline{p} < .01$). Inspection of WI encoding scores (Table 3) indicates that modeling inhibited WI encoding more than either feedback or instructions ($p < .05$) while no differences between feedback and instructions were found. On the generalization task, treatments produced no added effects over controls ($\underline{p} > .05$).

PD Encoding

In the treatment phase (C2), modeling, negative feedback and instructions significantly increased PD description compared to baseline encoding (F (3,194) = 18.375, $p < .01$). The order of effectiveness was: modeling greater than instructions greater than feedback. However the difference between feedback and control groups was not significant ($p > .05$). Further, compared to the training task, significantly increased production of PD description was found on the generalization task for all treatment groups ($p < .05$).

Number of Encoding Units

Training had no differential effect on total descriptive output when contrasted with controls at each of the three testing phases (Appendix 20). Tests of pair comparisons based on Unit scores that have been averaged across social class (Appendix 22) indicated that modeling and feedback groups increased unit output on the training phase ($p < .05$), while the instructions treatment did not generate additional encoding. On the other hand control subjects decreased overall description on readministration of the squiggles ($p < .05$). On the generalization task, instruction groups as well as control subjects produced significantly more total description compared to their output during the training phase ($p < .05$). Modeling and feedback groups did not produce more description on generalization (C3) than they did at training (C2).

Effectiveness of Instruction Treatment

The effectiveness of instructions designed to decrease the dominant WI style was measured by comparing the results of this manipulation with a reversal of instructions designed to elicit WI style (see Method section). Instructional manipulations did shift style selectively as noted by significant differences between the two types of instructions on WI encoding ($t(29) = 3.31$, $p < .05$) and on PD encoding ($t(29) = 6.16$, $p < .05$). PD instructions lowered WI description and increased PD description while WI instructions had the reverse effect.

Incidence of Exact Copying

For subjects in the Modeling condition, the frequency of exact copying of model descriptions was tallied for the treatment phase (C2). The mean frequency of copying for lower class subjects was 1.33 units or 6.37% of total encoding on the imitation task. Mean frequency of copying for middle-class subjects was .8 units or 3.6% of total unit description on the imitation task. Forty percent of lower-class subjects did not copy at all, while 60% of middle-class subjects did not copy ($p > .05$).

Decoding

The effects of class and training methods on decoding were analyzed for latency of response to PD and WI description as well as for decoding accuracy scores. Appendices 23 and 24 summarize the analyses of variance and indicate that neither class nor training procedures accounted for significant portions of the total variance in either latency or accuracy.

Inspection of means in Table 8 illustrates similar response times and accuracy scores for control and training groups. Significant differences in response time were noted for PD and WI descriptions ($t(119) = 13.85$, $p < .01$). Significant differences were also noted for decoding scores on PD and WI description ($t(119) = 7.88$, $p < .01$). It took longer for all groups to identify PD descriptions than WI statements, and PD descriptions were decoded less accurately than WI descriptions.

Summary of Results

The foregoing data analyses lead to the following

TABLE 8

Latency and Decoding Accuracy Scores by Social Class (LC - MC) and Training Group.

		PD Latency	WI Latency	PD Decode	WI Decode
LC Model.	$\bar{X}$	60.07	37.53	8.53	9.27
	SD	20.99	6.78	.92	.88
MC Model.	$\bar{X}$	67.13	40.33	8.20	8.93
	SD	21.71	12.36	1.37	1.03
LC Feedb.	$\bar{X}$	63.73	41.87	8.40	9.40
	SD	12.20	7.95	.83	.83
MC Feedb.	$\bar{X}$	64.73	40.93	8.13	9.53
	SD	10.38	9.22	.92	.64
LC Instr.	$\bar{X}$	68.13	44.87	8.53	9.20
	SD	34.82	16.13	.52	.78
MC Instr.	$\bar{X}$	55.20	36.00	8.53	9.47
	SD	19.17	8.35	1.19	.92
LC Control	$\bar{X}$	61.87	41.53	8.53	9.27
	SD	16.56	10.27	1.25	.08
MC Control	$\bar{X}$	65.27	42.47	8.40	9.40
	SD	37.35	18.49	1.18	.83

conclusions concerning hypotheses previously discussed:

A. Social class differences were not associated with four dimensions of communication style. Concerning social class effects a preliminary hypothesis stated that, using different methods to achieve social class assignment, no differences in encoding style would be found for two groups of lower- and middle-class subjects. This hypothesis was confirmed by present results.

B. A hypothesis related to training effects expected modeling to be more effective than negative feedback in modifying dominant encoding style. In turn, negative feedback was expected to produce greater style shifts than direct instructions. For WI style, modeling was more effective than either feedback or instructions, while the latter two treatments did not differ from each other. For PD description the order of effectiveness was modeling $>$ instructions $>$ feedback. The three training procedures did not significantly differ from no-training controls in total description (Units) and in the PI dimension. Therefore, this second hypothesis was partially confirmed. While failing to specify the order of effectiveness for instructions and feedback, the superiority of the modeling technique was supported.

C. Another hypothesis predicted that training procedures would have a differential social class effect on encoding style such that:

> No differences in modeling effectiveness would be expected when lower and middle class groups were compared. Feedback and instructions were expected to be less effective in shifting lower class style responses than in shifting middle class encoding response.

This hypothesis was not confirmed since class was not a significant factor in accounting for variance in any training procedure.

D. For no training procedure was transfer of training observed as measured by performance on the generalization task. In addition, the generalization task yielded more description across the four encoding dimensions than the training or "squiggles" task.

E. The intended effect of training was to shift the initial dominant style (WI) of both lower and middle class subjects to a PD style. With respect to subsequent decoding it was predicted:

> Compared to same-class controls, lower-class subjects in three training conditions would show increased decoding accuracy scores and longer response latencies in the order:

modeling>feedback>instructions. While middle-class subjects would respond like their lower-class counterparts for decoding accuracy across experimental treatments, middle-class response latency would show no significant increase compared to same-class controls.

Neither social class nor training was a significant factor related to response latency or decoding accuracy for PD or WI descriptions. In general, regardless of social class or training condition it took longer to identify a referent described in PD terms than in WI terms. Likewise, WI statements were more accurately coded than PD statements.

Chapter V

Discussion

While inferential description (WI) was a dominant style for middle- as well as lower-class subjects, analytic description (PD) was seldom used. In addition, both groups produced the same amount of description on the experimental tasks. There was a subgroup of 36 subjects who were characterized by a predominantly analytic style; but there were no class differences within this subgroup. When subjects in the extreme levels of middle- and lower-class status were compared, no social class differences were observed. Present findings confirmed other research on class differences in decoding accuracy and are consistent with data on style preferences in lower-class communication (Hall & Freedle, 1973; Heider, 1971a). However, the present results for middle-class subjects contrast with earlier research on communication style (Bernstein, 1967, Heider, 1971a). In those studies middle-class subjects produced more total description than lower-class counterparts and used an analytical style to a greater extent. Possible explanations for discrepancies between earlier findings and the present data may be found in sampling as well as in experimental procedures.

In comparing the present sample of level 1 and 2 children to Heider's (1971a) middle-class subjects, although the two groups were similar in social class status, there were differences in aspects of sample selection. In the present study both social class groups were found in the same schools and, in many cases, came from the same classrooms. Consequently, the experimental setting was the same for both groups. In the Heider study (1971a) middle- and lower-class samples were selected from separate and different settings. Lower-class subjects were sampled from and tested at poverty program offices which were used by those children. Middle-class subjects were tested at a university and children were solicited who used the university's facilities. It is suggested that the variable of communication style may be sensitive to slight differences associated with experimental procedures because dominant encoding style does not appear to be stable across various communication tasks. The training data indicated that encoding style in structured communication tasks can be modified, and both social class groups demonstrated flexibility in the use of an alternate style when requirements or materials changed. Thus, stability of a particular style for either lower- or middle-class subjects was not demonstrated. On the other hand, subjects appeared responsive to general or vague guidelines as typified by the Instructions treatment. If general task instructions and materials facilitated changes in style usage, it is also possible that other features of the experimental situation, such as differences in the degree to which the context of the experiment itself is the same for both social classes may also be related to style usage. Thus, the present findings on social class differences may be understood to complement earlier research (Heider, 1971a) and suggest directions for further research to clarify variables related to shared context which may mediate social class differences.

A second facet of the present class results was the high rate of unit description (20.2) by lower-class subjects when compared to Heider's lower class sample (8.9). It will be recalled that Heider's sample consisted of two groups of black and white lower-class boys and girls, who were contrasted with white, middle-class subjects. While the lower-class groups did not differ in encoding style across race or sex, there were clear-cut differences between lower- and middle-class styles (Heider, 1971a). It is reasonable to conclude that those variables concerned with sampling and experimental setting which were suggested to account for discrepancies between earlier and present middle-class results may also be applied to the lower-class dimensions of style usage.

Training Effects

The communication style depicted by the model had a significant effect on the encoding style of subjects and was more effective than either feedback or instructions. This finding supports other research which compared modeling to other methods of conveying response information (Bandura, 1971; Liebert & Swenson, 1971; Masters & Branch, 1969; Parton, 1970; Zimmerman & Rosenthal, 1974). In verbal modeling a pattern of the alternate encoding style was transmitted through the presentation of models' verbal description for each stimulus. The effectiveness of verbal modeling requires the subject to abstract, organize and symbolically recode elements of the pattern which are relevant (Flanders, 1968; Gerst, 1971). The modeling effect is also enhanced if there is a common dimension underlying the models' presentation since this facilitates the coding process for the subject (Liebert & Swenson, 1971). To the extent that the model's presentation in the present study focused attention on relevant aspects of the kind of response desired and modeled verbal description centered on encoding units which were restricted to analytic and physical terms, the modeling treatment conveyed more complete response information than feedback or instructions.

The effectiveness of the instructional treatment suggests that the less frequent encoding style (PD) was readily available to both classes of subjects. The PD instructions generally directed each subject to produce responses which were detailed and which focused on unique aspects of the target figure. Nevertheless, there were no standards to indicate that PD description was the proper strategy. By the fact that general instructions significantly increased PD encoding, it may be concluded that lower-class subjects were able to produce PD and may be considered to be somewhat fluent in the use of the alternate, less frequent PD style.

The apparent ineffectiveness of negative feedback in increasing PD description requires some explanation in light of other research which noted that negative feedback improved communication effectiveness and the learning of paired-associate responses (Jarvis, 1968; Masters & Branch, 1969). Jarvis' (1968) work is especially relevant because he found that children's descriptions of geometric shapes became more detailed and precise under negative feedback with a listener present. However, in the current negative feedback condition subjects were sensitive to the limited capacity of the younger listener and censored their own PD units as being too difficult for her to understand. Subjects then shifted to PI or WI description as a substitute means of clarifying the target figure. This tendency was apparent in the comparison of PI means for the treatment groups, ignoring class. While modeling and instruction groups gave 3.4 and 3.1 units of PI respectively, the feedback groups offered 5.4 PI units. Thus negative feedback appeared effective in shifting the style of both classes toward more detailed description. But the use of imagery remained as the dominant style, being more appropriate with the younger listener.

Changes in encoding style did not generalize to a new set of drawings. Explanation of these results may follow two different lines of reasoning. First, one might argue that the changed response pattern was task-specific and therefore training operations such as modeling did not alter fundamental cognitive representations of the encoding style relationships but rather represented instances of simple choice-matching in the modeling condition (Aronfreed, 1969). On the other hand, the generalization task consisted of drawings which contained shading and several abstract figures rather than single line drawings in the "squiggles" task. The generalization materials were selected both to test the transfer of training methods and to assess the stability of dominant style on another similar communication task. In this respect the present generalization task was more complex than other generalization tests of modeling effectiveness which were concerned exclusively with assessing transfer (Denny, 1972; Liebert & Swenson, 1971, Rosenthal, Alford & Rasp, 1972). These experiments used generalization materials which were, in essence, parallel forms of the experimental test. Because the present generalization stimuli were more difficult than the "squiggles", the second explanation may argue that failure to generalize was an artifact of the difficulty level of the materials rather than indicating failure to modify underlying cognitive dimensions related to dominant encoding style. Support for this latter explanation may be seen in the profile of means for analytic (PD) encoding in Figure 3. The increased production of analytic responses by the control group on the generalization task was significant (p .01). It would appear that the generalization materials introduced new communication requirements for subjects. It is also possible that the style shift which occurred from baseline to generalization was an artifact of the order of phases rather than the generalization materials. To clarify this issue, a counter-balanced design is recommended for future related studies.

Nevertheless the generalization materials were useful as a further indication of style flexibility. The treatment conditions served to create situations in which the less frequent analytic style was elicited. The fact that these manipulations were successful suggests that subjects' communication repertoires contained fluent use of PD and WI, with which subjects were able to interchange styles according to appropriate situations. Modeling was most effective because of its modeling presentations of specific strategies. The generalization results suggest that subjects were able to reorganize style characteristics to meet the demands of the generalization materials without the external guidelines offered by the three treatments. Thus it would appear that style is a function of context and task variables. Other research which has explored the relationship between context and communication has reported similar findings (Cazden, 1972; Hymes, 1971).

Neither social class nor experimental treatments produced carry-over effects on the decoding task. The two encoding styles (WI and PD) yielded significantly different response rates and decoding accuracy scores, which were unaffected by training procedures. The present study did not concern itself with Heider's (1971a) overall decoding finding that composite units containing WI and PD description were superior to either PD or WI alone. Results paralleling Heider's (1971) indicated that units composed of only inferential (WI) description were more accurately understood than description composed of only analytic (PD) units. Thus support was found for conclusions that two distinct types of information-processing strategy may be used in decoding analytic and inferential statements (Cazden, 1972). The fact that training had no subsequent effect on decoding might be explained either in terms of limited transfer of training or in terms of interference from the generalization materials which may have represented a different task.

Conclusions

The present research has bearing on concerns for the specification of the experimental setting in which adequate linguistic performance is assessed (Cazden, 1966, 1970; Cole & Bruner, 1971; Williams, 1970). Speakers and listeners in the communicative process appear sensitive to nuances and subtle changes (Fry, 1968; Horner, 1968; Moore, 1971). The context of a communication experiment as it is perceived by a subject may vary with personal expectations. The experiment itself may convey a different context in dealing with different groups of subjects. These implicit messages must be made explicit within the experimental setting so that social class relationships associated with issues of communicative competence can be clarified. Also, it should be noted that research on language style and communication has often sampled from an upper-middle-class professional population to arrive at global middle-class characterizations

(Brandis & Henderson, 1970; Heider, 1971a; Hess, 1970; Schoggen & Schoggen, 1968). Comparison between this subgroup and lower classes and subsequent identification of lower-class communication deficits may be overstated. In addition, the deficits observed might also apply to other middle-class children who have already been considered successful or adequate speakers and listeners by virtue of their class membership. It would appear that research is needed which assesses communication effectiveness within the substrata of the middle and lower classes in order to determine those prerequisite skills necessary for delivery of adequate messages and an accurate decoding of them.

The modeling technique was effective in shifting style, while instruction and feedback also had limited success. The ten-year-olds in the study appeared very much tuned in to the varying demands of the task and were able to produce different styles according to their understanding of task requirements. Was success in shifting style a function of communicative fluency, a function of familiarity with task requirements, or both? Laughlin et al. (1969), in attempting to modify information processing strategies, found that successful imitation among younger children of five years occurred only with simpler strategies.

Further research would be necessary to judge whether modeling techniques might also be limited with younger subjects directed to shift toward the more difficult analytical encoding style.

By ten years of age children's communication repertoires contain several styles which they are able to use selectively in different contexts. Do alternate analytical and metaphorical styles become available simultaneously or does one style originally take precedence? Research on the development of role taking ability (Flavell, 1968) suggests that analytical style is cognitively more difficult for the younger child. Nevertheless, there is little research on the pattern of development, the impact of parental teaching style and learning experiences on later communication style.

APPENDIX 1

A Revised Occupational Scale for Rating Socio-Economic Status

Martin Hamburger

May, 1957
Columbia University

Level is used to denote socio-economic status level, from 1 to 7, in terms of the criteria as outlined at each level. The lettered categories, from A to G, are occupational groups, and are adapted from Edwards and Warner.

LEVEL 1

A. Professionals: high level, high responsibility, usually requiring post-graduate training, often at the doctoral level. All occupations which normally achieve this status level for their members. Examples: lawyers, physicians, dentists, engineers, judges, school sup'ts., H.S. principals, airline captains, C.P.A.'s, Catholic priests, rabbis, Protestant clergy with Master's or Doctor's degree.

B. Semi-professionals: none (see Manual for exceptions)

C. Proprietors, Managers, Business Officials: Ownership or management of business valued at $150,000 or more. When enterprise is national in scale or has a number of plants or large offices, then regional or divisional managers are top-level executives with great deal of responsibility, and high pay, and (usually) large number of subordinates.

D. Clerical, Sales: Clerical-none. Sales-sales managers would be in (C). Top-notch salesmen (very high individual income) in securities, real estate, or life insurance.

E. Manual: none. Contractors are really in C, but if a contractor actually engages in manual work, then business value is used, and he is then dropped one level.

F. Protective and Service Workers: Protective - Police Commissioner, colonel and above in armed services. Service - none, except proprietors (C) of large service establishments.

G. Farmers: Value-acreage above $150,000. Gentlemen farmers, landowners who do not supervise directly operations on their property.

LEVEL 2

A. Prof.: those occupations requiring bachelor's degree, or (in some cases) master's. Prof. nurses (coll. degree), teachers with degrees, F.B.I. agents, chiropodists, pharmacists, ministers with college degree, editors (except for large newspapers or magazines who are level 1), optometrists, grad. librarians, prof. journalists, guidance counselors, accountants with bach. degree, social workers with M.A. (prof. training).

B. Semi-prof: undertakers, airline pilots.

C. Prop. mgr., bus. off.: business values at $50,000 to 150,000. Sales managers, hotel managers, dep't. managers of large businesses.

D. Cler., Sales - Buyers or purchasing agents, life insurance salesman, real estate sales.

E. Manual - none.

F. Prot. and Serv. - Prot: capt. or major or equiv., high police official.

G. Farmers V.A. (value-acreage) $75 to 150,000. Owner-manages and supervised his prop; rarely actively works on it. Employed-professionals and others in technical, advisory or administrative capacities.

LEVEL 3

A. Prof. - social workers (B.A. or less, but no prof.

training or equivalency). teachers without degrees, R.N., librarians (non-prof. training), ministers (non-college graduates), reporters on small or country newspapers, radio announcers (except networks, Level 2), county agricultural agents, laboratory technicians with B.A.

B. Semi-prof. clothe designers, commercial artist, architectural draftsmen, portrait or special (medical) photographers.

C. Prop. mgr. bus. off. - Bus. value: $10,000 to 50,000. Minor officials of business such as office managers.

D. Cler. Sales - auto salesmen, administrative secretaries, accountants or auditors (non degree).

E. Manual - none.

F. Prot. and Serv. - Prot: detectives, Lt. in Regular Army. Serv: Sup't. of buildings and grounds.

G. Farmers - $ 50 to 75,000 V-A. Owners: actively operates own land with one or more "hired hands," and seasonal help. Tenants: operates leased property. Employed: managers and supervisors on large property; have general responsibility for operation.

LEVEL 4

A. Prof. - none.

B. Semi-prof. - undertakers' assistants (trained, lab. technician (2 years training typical), dental hygienist, draftsmen, engineering aide, optician (perhaps manual), photographer, fingerprint technician.

C. Prop. mgr. bus. off. - Prop: bus. val.: $5,000 to $10,000. There are really no business officials at this level: they are either managers or clerical, sales.

D. Cler. Sales - Clerical: general bookkeeper, stenographer and secretary, bank teller, payroll agent, cashier, individual insurance collection agent, RR. ticket agent. Sales: traveling salesman (soft goods), ass't buyer, furniture salesman (inside).

E. Manual - must be highly skilled, equivalent to formal apprenticeship and/or self-employment, or responsibility--radio and TV repairman, master plumbers and electricians, maintenance electrician for a large plant, watchmaker, machinist, tool and dye maker, printer, factory foreman, trained airplane mechanic (engines), carpentry contractor who also works on jobs.

F. Prot. and Serv. - Prot: policemen and firemen. Serv. - RR. conductors, fancy cake bakers, chef in large restaurant, custodial 'engineer' in public building, dressmaker (?), custom tailor, dry cleaning expert.

G. Farmers - VA $30,000 - 50,000. Owners--operate own property with family and/ seasonal help. Tenants - operate rented prop. with one or more "hired hands/" Employed - foreman on large prop.

LEVEL 5

A. Prof. - or - B. Semi-prof. - NONE.

C. Prop. - Bus. value-up to $5,000 - small stands, etc.

D. Cler. and Sales: Cler. timekeepers, ass't. bookkeepers, typists, telephone operators, postal clerks. Sales-store clerks, salespersons, usually soft goods or portable goods.

E. Manual - skilled at journeyman's level - carpenter or carpenter rough, construction electr. telephone or telegraph lineman, automobile mechanic (engines). Factory - certain assembly and inspection jobs requiring considerable responsibility and training.

F. Prot. and Serv.: Prot - corporal or sgt. in Reg. Army. Serv. - barber, hair stylist, baker, cook, practical nurse, tailor, butcher, mail carrier, bus driver, waiter at fine restaurant.

G. Farmers: VA $15-30,000. Owners - operate own property and "hire out" to supplement income, but only in farm work. Tenants: operate rented prop. without paid help other than seasonal. Employed: farm foreman.

LEVEL 6

A. or B. or C. - none.

D. Clerical and Sales - dime-store clerks, shipping clerks, stock clerks, mail clerks, checkers at A & P, office boys, (bonded messengers?).

E. Manual - semi-skilled to low-skilled factory work - requiring relatively little training or experience - typical assembly line or operative work. In construction or other trades, helpers to semi-skilled craftsmen. Heavy labor if regular and stable, including miners.

F. Prot: soldier, general duty, night policemen. Serv. - bartender, waiter, short-order cook or counterman, manicurist, chauffeur, truck driver, taxi driver, gas-station attendant, shoe-repairman, janitor (not porter), butcher's helper, hospital attendant, longshoreman if reg. employment, elevator operator.

G. Farmers: VA $5 to 15,000-Owners-none. Tenants-who supplement by "working out," sharecroppers. Employed - established farm laborers.

LEVEL 7

A or B or C or D - none.

E. Manual - heavy labor not regular or stable; migratory labor (non-farm); odd-job man.

F. Prot. and Serv. - night watchmen, porters, garbage collectors, charwomen, messengers or delivery boys.

G. Farmers - VA $5,000 and below. Owners - none. Tenants - "squatters" or "nesters" and other non-paying tenants. Employed - migrant and seasonal workers.

APPENDIX 2

Family Size Income Scale
School Year 1973-1974

Family Size	Free Meals	Reduced Price Meals
1	$ 2740.00	$ 3280.00
2	3600.00	4320.00
3	4460.00	5360.00
4	5310.00	6380.00
5	6100.00	7320.00
6	6890.00	8260.00
7	7600.00	9120.00
8	8310.00	9980.00
9	8960.00	10,750.00
10	9600.00	11,520.00
11	10,240.00	12,290.00
12	10,880.00	13,060.00
Each additional family member . .	640.00	770.00

NOTE: Scale is based on gross income before deductions.

APPENDIX 3

RULES FOR CLASSIFICATION OF ENCODING
to accompany
STYLE AND ACCURACY OF VERBAL COMMUNICATION WITHIN AND BETWEEN SOCIAL CLASSES

Eleanor Rosch Heider

<u>Segmentation into Units</u>

A unit is a single "statement" about the stimulus, a piece of information about the stimulus. Simple examples: "He's mad." "His mouth's open.' "It looks like a bird." "It had two points on the bottom." A unit is not literally a "bit of information" but rather an <u>image</u> of the cue figure which the subject conveys. Thus, a description with qualifiers--for example, "He's quietly unhappy"--is classified as one unit though, in a strictly logical sense, modifiers such as "quietly" may provide information about the way in which he is unhappy not contained in the concept "unhappy" alone. Such modifiers can occur, not only in the form of adjectives and adverbs, but in more extended phrases, for example, "It looks like a dog with his mouth open," "A pole with flags on it, two little flags."

Though the boundaries of units may coincide with grammatical units, they also may not. Punctuation or grammatical connectives may or may not divide units. Examples where punctuation and connectives <u>do</u> divide units:

"Looks like a goat. Looks a little like a dress." "It looks like a horse-shoe, and it's got two loops up at the top." "He's got his mouth open wide, but you can't see any of his teeth." "He has a big head with a large right ear." "He looks like he's sad because his boss might have just fired him." Examples of punctuation or grammatical connectives which do not divide units: "He's sad. He looks that way a little." "He's mad, and he's just really, really mad." "He's made, but not as mad as he could get." "It looks like a spaceship because of the top." "A house with a pointy roof." These latter examples are classified as single units because the parts serve only to elaborate a single image, not to state different images. Note: repetitions count as only one unit.

Special units. (a) Conjoined units. In encoding the abstract figures, the subjects sometime state two separate images of the figure (usually of different parts of the figure) which they attempt to combine into a whole. For example: "It looks like a flying saucer with a wrench sticking out the bottom." "It looks like a car with a cup on top of it." Such encodings are classified separately as conjoined units. (Remember that elaborations of a single image as in the example given above are classified as a single unit). (b) Sub-units. Occasionally a subject presents an image for an abstract figure and then verbally "points to" its parts. Examples: "It could be a bird; the two points could be its mouth." "It looks like a house, the roof here." "It's a shirt, a sailor's shirt; the bump is the high collar." Those parts which, in this fashion, do no more than further specify the main unit are classified as sub-units.

Each unit is classified separately as to whether it refers to the Whole stimulus or a Part of the stimulus and

Classification as Whole or Part.

Each unit contains an image of the cue figure. This image can either be of the whole figure (examples: "It looks like an hourglass,") or of a part of the figure (examples: "The space in the middle is shaped like a heart.")

In regard to the abstracts. Any encoding which simply refers to the figure and does not specify either that it refers to a part or several parts of the figure is considered a Whole. The judgment must be made on the basis of what the subject has said; for example, if he has said that Abstract #2 "Looks like a flying saucer," this unit is classified as a Whole even though a Rorschach type enquiry might have revealed that he only meant the top part of the figure. Encodings which liken the whole abstract figure to a part of some object (e.g., "It looks like part of a key," "It looks like the head of a horse") are, for our purposes, Wholes.

When the target figure is compared to other figures, the rating is to be made on the basis of what is being said about the target figure--e.g., if all of the other figures are compared to a part of the target figure, it is a Part.

When the subject makes explicit that his image refers to a part (e.g., "The bottom part looks like a key," "In the middle there's a triangle") the unit is unequivocally a Part. When an abstract is described in terms of curves, lines, points, or dots it is always a Part and Descriptive. The rationale is that curves, lines, etc. are inherently parts of things. For the same reason edges, outsides, and insides are always Parts.

Special decisions: when the subject is attempting to describe the figure as a whole but does so in terms of sub-parts interacting, the unit is classified as a Whole. Examples: "It looks like a cup in a stand, a stand holding up a wine cup." "A skirt with an apron on it." "You could make it into the number '17'." On the other hand, when the encoding refers to several equivalent items in the figure without trying to turn them into a single image, the unit is classified as a Part. Examples: "It's got two triangles." "A 'V' and another 'V'." Designations that the image refers to the figure in some novel position (e.g., upside down, sideways, "looked at like this," etc.) make no difference in judging Whole or Part. Sub-units do not enter into any judgment of Part or Whole; only the original image of which they are specifications is judged a Whole or Part. Conjoined units are a special case and will be discussed at the end.

Classification as Inferential or Descriptive

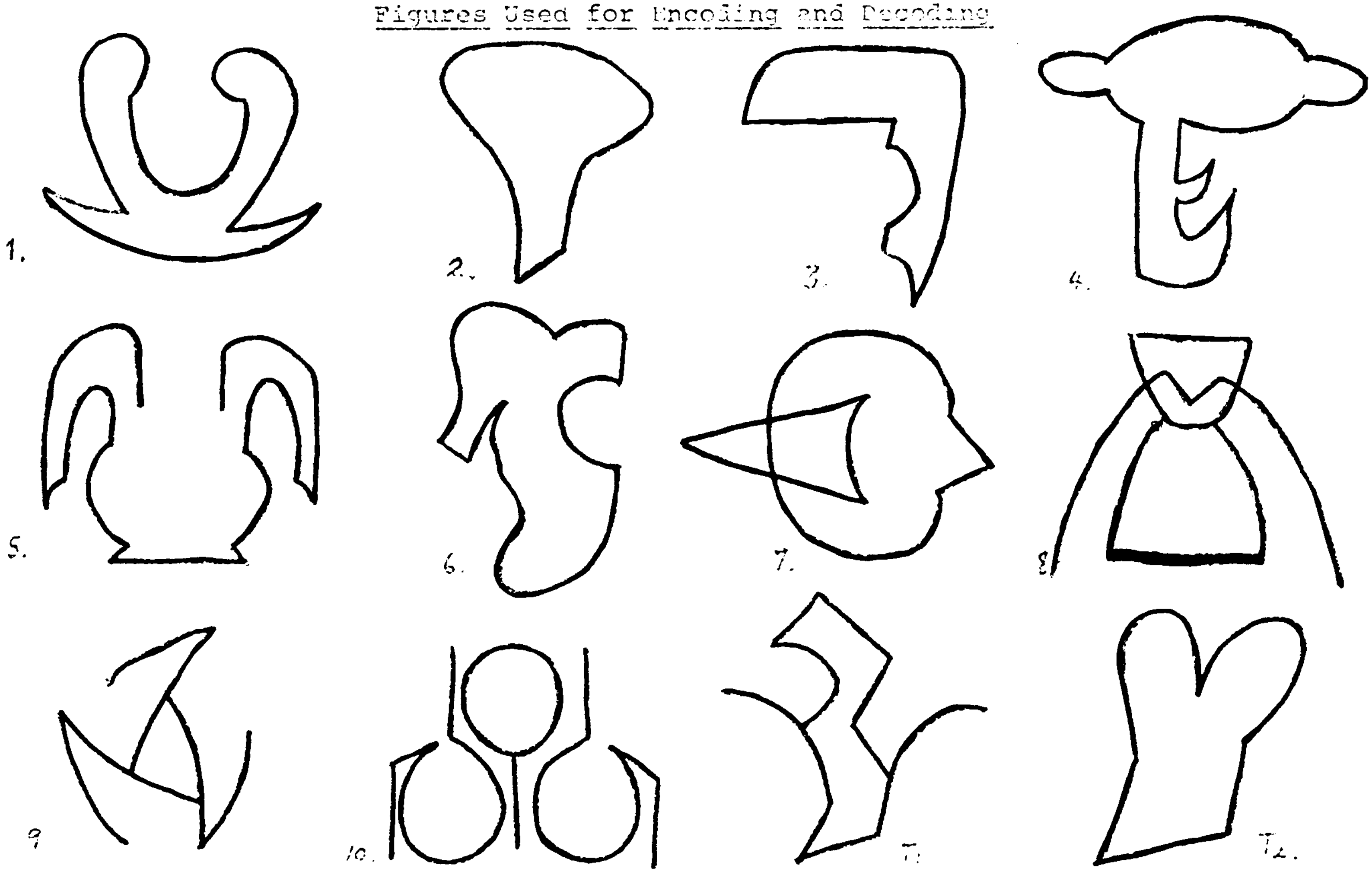
Encodings are Descriptive if they are composed of statements which seek to describe the physical properties of the stimulus face or figure; they are Inferential if they go beyond what is given in the figure to infer--for the faces, attributes of the man and his feelings; and for the abstracts, objects which the lines on the paper "look like." Wholes or Parts may be Inferential or Descriptive. Examples: (*a*) Inferential Whole--"He's mad." "It looks like a spaceship." (*b*) Inferential Part--"He has fire in his eyes." "It looks kind of like a shield in the middle." (*c*) Descriptive Whole--"Big head." "It looks like a square thing." (*d*) Descriptive Part--"His eyes are open wide." "Most of the lines in it are curved."

In regard to the abstracts. If the figure or a part of it is likened to any object which it is not, the coding is Inferential. Numbers and letters of the alphabet, including the letter "V", are to be classified as Inferential. If the figure or its parts are encoded in terms of the lines and their arrangement or of curves, points, dots, edges, outsides or insides, or if it is encoded in terms of properties which can apply to abstract line drawings as such (e.g., "straight," "stick out," etc.), the encoding is Descriptive. Geometrical figures (triangles, squares, etc.) are considered Descriptive. "Diamond" and "diamond shape" are to be considered geometrical figures and Descriptive. Descriptions of the outline of the figure in terms of "It goes in here and it goes out there" are to be classified as Descriptive and Part.

<u>Special problem in regard to conjoined units</u>. If the two images which have been "forced" together to make a conjoined unit are both Inferential and the two images together include the whole figure, then the conjoined unit itself is to be classified as a Whole. Example: "A cloud with a flag on it." However, if one of the images is Inferential and one of them Descriptive, it will be considered that even a "forced" unified coding of the entire figure has not been achieved. In such a case each image will be classified as a Part, and each will be classified as Inferential or Descriptive according to which it fits.

APPENDIX 4

Figures Used for Encoding and Decoding



APPENDIX 5

Composition of the Encoding Arrays

Baseline

Order No.	Array Stimuli	Target Stimulus
1	5, 2, 4, 3	1
2	9, 8, 10, 7	2
3	7, 4, 1, 5	3
4	10, 8, 1, 2	4
5	4, 8, 3, 6	5
6	9, 1, 7, 2	6
7	6, 3, 10, 5	7
8	9, 2, 10, 6	8
9	2, 1, 8, 7	9
10	5, 6, 3, 4	10

Treatment

Order No.	Array Stimuli	Target Stimulus
1	6, 2, 8, 7	5
2	4, 10, 9, 1	2
3	3, 6, 5, 2	8
4	1, 5, 9, 4	3
5	7, 9, 2, 5	1
6	10, 3, 8, 4	6
7	10, 7, 6, 1	4
8	4, 9, 8, 3	7
9	2, 6, 7, 3	9
10	5, 1, 7, 6	10

Generalization

Order No.	Array Stimuli	Target Stimulus
1	2, 10, 1, 3	7
2	7, 6, 9, 5	4
3	5, 8, 1, 4	9
4	2, 4, 7, 9	3
5	6, 3, 2, 10	1
6	9, 7, 8, 3	5
7	10, 6, 2, 5	8
8	3, 10, 4, 1	2
9	3, 4, 5, 9	6
10	7, 1, 8, 2	10

*Stimulus numbers in Baseline and Treatment refer to the numbered figures in Appendix 4.

Stimulus numbers in Generalization refer to the numbered drawings in Appendix 7.

APPENDIX 6

Composition of Model's Encoding Arrays

Order No.	Array Stimuli	Target Stimulus
1	10, 1, 9, 3	2
2	1, 5, 9, 6,	3
3	7, 9, 2, 5	1
4	4, 9, 8, 3	7
5	10, 2, 6, 1	4
6	3, 6, 5, 2	8
7	5, 1, 7, 6	10
8	2, 5, 7, 3	9
9	10, 3, 8, 4	6
10	6, 2, 8, 7	5

Models' (WI) Encodings

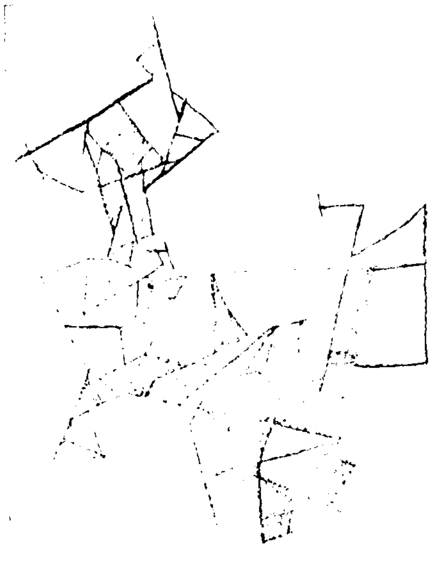
1. It looks like a gold tee or a glass jar.
2. Looks like a man's face or hair.
3. Like a "u" on a saucer.
4. Seems like a man's head with a pointy nose.
5. Like a flying saucer.
6. It looks like some sort of trophy.
7. It's like stoplights.
8. Shaped like a lot of seven's.
9. It looks like a high heeled shoe.
10. It's like a strange flowerpot.

Models' (PD) Encodings

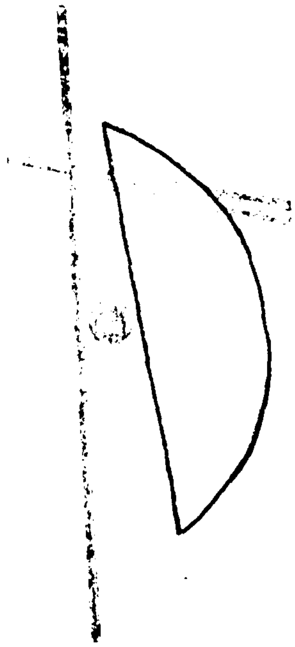
1. It's round with a straight part coming to an angle or slant at the bottom.
2. Has a long part sticking out on the left side, with a half circle in the middle plus angles and slants in there to.
3. Has two long curved shapes with rounded tops coming out of a bottom part that is pointed on each side.
4. Round like a circle except it has an angle on the right and a triable coming out of it.
5. This is a rounded figure on top with a spiked part sticking out the bottom.
6. Seems to have two curved parts connected to each other, with a pointed arch going through it.
7. Has one circle plus two unfinished circles.
8. A design made up of all pointy lines.
9. A figure with curves on top and bottom but has a half circle on the right side.
10. Has a rounded base but flat on the bottom, with long curved lines up and out of the top of it.

APPENDIX 7
Sample Stimuli From the Generalization Task

1.



2.



3.

4.

APPENDIX 8

Composition of Generalization Arrays

Order No.	Target Stimulus*	Array Stimuli*
1	115d	135b, 133d, 143a, 146d
2	120c	115d, 103c, 142d, 105a
3	142d	105a, 143a, 117d, 120c
4	133d	135b, 120c, 115d, 142d
5	143a	103c, 133d, 135b, 146d
6	105a	142d, 115d, 117d, 133d
7	117d	146d, 103c, 135b, 105a
8	135b	133d, 146d, 120c, 143a
9	103c	133d, 120c, 105a, 142d
10	146d	115d, 143a, 117d, 135b

* Stimuli are numbered according to the numbering scheme used by Meier (1963).

APPENDIX 9

Composition of Decoding Arrays

Order No.	Array Stimuli
1	2, 8, 1, 5, 9
2	5, 7, 3, 2, 9
3	10, 8, 4, 7, 6
4	1, 8, 10, 6, 4
5	1, 9, 5, 2, 10
6	6, 3, 8, 7, 4
7	8, 1, 6, 7, 2
8	9, 5, 10, 3, 7
9	6, 5, 3, 2, 9
10	1, 4, 10, 3, 8
11	8, 3, 10, 4, 1
12	2, 6, 9, 5, 3
13	10, 9, 7, 5, 3
14	2, 8, 7, 1, 6
15	7, 6, 3, 4, 8
16	10, 5, 9, 2, 1
17	8, 10, 4, 1, 6
18	4, 7, 10, 6, 8
19	9, 2, 7, 5, 3
20	5, 8, 9, 2, 1

APPENDIX 10

List of Encodings Used on Decoding Task

1. Different lines with a triangle in the middle and lines coming out that end in points.
2. A man's head with an arrow in it.
3. Two parts shaped like cups and lines coming out the top of one of them.
4. A bunch of lollipops.
5. Round on the top and pointed on the bottom.
6. Like an "e" with a cloud over it.
7. All curvy with a dent in one side.
8. A vase or a pot.
9. A long line on top with a half-circle on one side and a point on the bottom.
10. A horseshoe on a plate.
11. Flat on the bottom with two things curving on the sides.
12. Like a man's long nose.
13. A big curve on top and two points on the bottom.
14. A girl with no arms, dancing.
15. A round thing with loops on the sides and pointy things out the bottom of it.
16. A head with a neck.
17. Circles with lines sticking out of them.
18. A fancy cup or a person with an apron.
19. A circle with part of a triangle inside it.
20. Blades or arrows stuck together.

Appendix 11

One-Way Analysis of Variance due to Class for Four Initial Encoding Variables

	Source	Sum of Squares	df	Mean Squares	F
WI	Class	4.20	1	4.20	.172
	Error	3766.64	154	24.46	
	Total	3770.84			
PI	Class	.09	1	.09	.008
	Error	1645.61	154	10.67	
	Total	1645.69			
PD	Class	1.28	1	1.28	.016
	Error	11950.32	154	77.60	
	Total	11951.59			
UNITS	Class	15.43	1	15.43	.212
	Error	11193.47	154	72.69	
	Total	11298.90			

APPENDIX 12

Summary Analysis of Variance of Class, Training, and Phase Effects for WI Encoding

Source	S.S.	df	M.S.	F
WI				
A (Class)	4.011	1	4.010	
B (Training)	528.299	3	176.099	7.779*
A B	18.611	3	6.204	
Subjects Within Groups	2535.457	112	22.638	
C (Phases)	2171.489	2	1085.744	127.362*
A C	13.489	2	6.744	
B C	317.799	6	52.967	6.213*
A B C	11.622	6	1.937	
C x Subjects Within Groups	1909.587	224	8.525	
Total	7510.353	359		

* $p < .01$

APPENDIX 13

Analysis of Variance by Class, Treatment Groups, and Test Phases for PD Encoding

Source	S.S.	df	M.S.	F
PD				
A (Class)	25.069	1	25.069	
B (Training)	342.675	3	114.225	2.703*
A B	60.697	3	20.232	
Subjects Within Groups	4706.878	112	42.257	
C (Phases)	2158.539	2	1079.269	71.077***
A C	69.739	2	34.869	
B C	1081.817	6	180.303	11.874**
A B C	69.194	6	11.532	
C x Subjects Within Groups	3401.357	224	15.185	
Total	11915.165	359		

* $p < .05$ ***$p < .001$

** $p < .01$

APPENDIX 14

Analysis of Variance by Class, Treatment Group and Test Phase for PI Encoding

Source	S.S.	df	M.S.	F
PI				
A (Class)	7.803	1	7.803	
B (Training)	115.964	3	38.655	
A B	2.275	3	.758	
Subjects Within Groups	2456.620	112	21.934	
C (Phases)	1337.622	2	668.811	70.862*
A C	8.822	2	4.411	
B C	117.378	6	19.563	2.073
A B C	6.667	6	1.111	
C x Subjects Within Groups	2114.166	224	9.438	
Total	6167.317	359		

* $p < .001$

APPENDIX 15

Analysis of Variance by Class, Treatment Groups and Test Phases for Unit Encoding

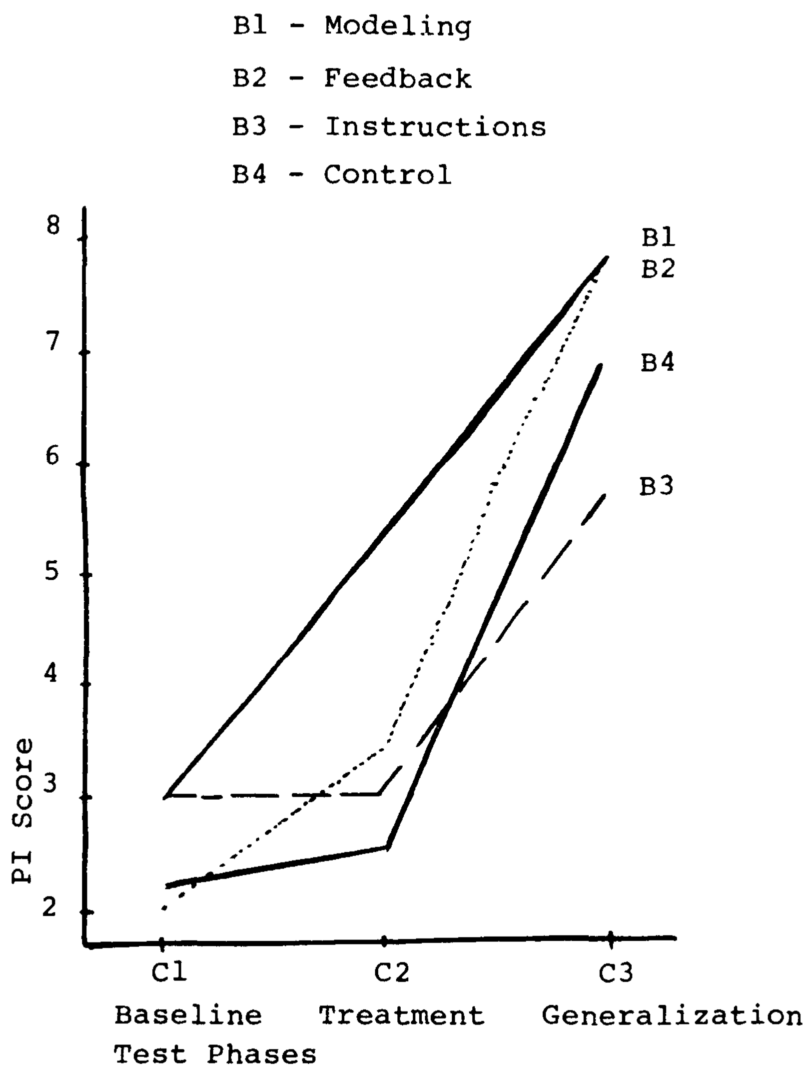
Source	S.S.	df	M.S.	F
Units				
A (Class)	63.336	1	63.336	
B (Training)	83.764	3	27.921	
A B	35.742	3	11.914	
Subjects Within Groups	8775.804	112	78.355	
C (Phases)	1023.622	2	511.811	26.779**
A C	10.755	2	5.377	
B C	269.244	6	44.874	2.348*
A B C	142.599	6	23.766	
C x Subjects Within Groups	4281.089	224	19.112	
Total	14685.952	359		

* $p < .05$

** $p < .01$

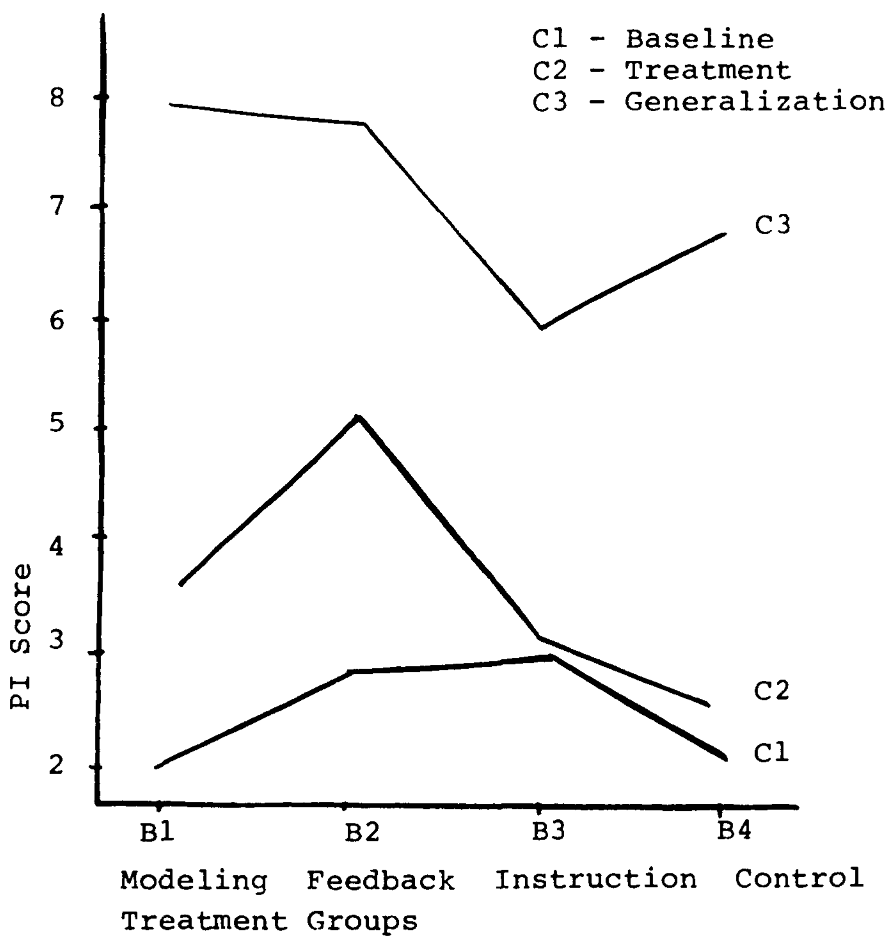
APPENDIX 16

Effect of Four Treatment Groups (B) on
PI Scores Across Three Test Phases (C)



APPENDIX 17

Effect of Three Test Phases (C) on
PI Scores Across Four Treatment Groups (B)



APPENDIX 18

Summary of Simple Effects of Training (B) and Phases (C) on WI Description

	Source	Sum of Squares	df	Mean Squares	F
WI	B at C1	95.050	3	31.600	
	B at C2	685.380	3	228.460	17.269*
	B at C3	63.350	3	21.110	
	Pooled Error	2619.342	198	13.229	
WI	C at B1	891.249	2	445.624	52.273*
	C at B2	481.760	2	240.880	28.255*
	C at B3	356.710	2	178.335	20.921*
	C at B4	721.462	2	306.731	35.980*
	Error Within	1909.587	224	8.525	

* $p < .001$

APPENDIX 19

Summary of Simple Effects of Training (B) and Phases (C) on PD Description

	Source	Sum of Squares	df	Mean Squares	F
PD	B at C1	12.409	3	4.136	
	B at C2	1334.520	3	444.840	18.375*
	B at C3	14.675	3	14.676	
	Pooled Error	2275.646	194	24.209	
PD	C at B1	1507.09	2	753.5'0	49.624*
	C at B2	459.650	2	229.820	15.135*
	C at B3	535.55	2	535.550	35.268*
	C at B4	733.427	2	336.713	24.150*
	Error Within	3401.357	224	15.185	

* $p < .001$

APPENDIX 20

Summary of Simple Effects of Training (B) and Phases (C) on Unit Description

	Source	Sum of Squares	df	Mean Squares	F
Units	B at C1	139.000	3	46.300	ns
	B at C2	152.600	3	50.800	ns
	B at C3	79.400	3	79.400	ns
	Pooled Error	6761.466	174	38.859	
Units	C at B1	451.400	2	225.700	11.81*
	C at B2	226.400	2	113.200	5.229*
	C at B3	280.180	2	140.090	7.299*
	C at B4	334.900	2	167.400	8.738*
	Error Within	4281.900	224	19.112	

* $p < .01$

APPENDIX 21

WI and Pd Encoding Scores for Four Treatment Groups over Three Test Phases Without Regard to Social Class.

	Baseline	Treatment	Generalization
WI	$\bar{X}$	$\bar{X}$	$\bar{X}$
Modeling	11.80	5.33	4.93
Feedback	11.13	8.30	5.43
Instruction	11.33	7.70	6.70
Control	13.40	12.00	6.47
PD			
Modeling	2.57	12.53	8.60
Feedback	2.93	5.83	8.47
Instruction	2.90	7.13	8.67
Control	3.47	3.17	9.37

APPENDIX 22

Unit and PI Encoding Scores for Four Treatment Groups over Three Test Phases Without Regard to Social Class

	Baseline	Treatment	Generalization
Units	$\bar{X}$	$\bar{X}$	$\bar{X}$
Modeling	16.23	20.73	21.20
Feedback	16.60	19.20	20.40
Instruction	17.30	18.07	21.37
Control	19.03	18.23	22.67
PI			
Modeling	2.03	3.47	7.96
Feedback	2.90	5.24	7.70
Instruction	3.00	3.07	5.70
Control	2.16	2.60	6.83

APPENDIX 23

Analysis of Variance by Class and Training for Decoding Accuracy Scores

	Source	Sum of Squares	df	Mean Squares	F
WI	Class (A)	.009	1	.009	ns
	Training (B)	2.463	3	.821	ns
	Interaction (AB)	1.553	3	.518	ns
	Error	81.566	112	.728	
	Total	85.592	119		
PD	Class (A)	215.987	1	215.987	ns
	Training (B)	1260.688	3	420.229	ns
	Interaction (AB)	3273.090	3	1091.030	ns
	Error	60503.225	112	540.207	
	Total	65252.990	119		

APPENDIX 24

Analysis of Variance by Class and Training for Latency Scores on the Decoding Task

	Source	Sum of Squares	df	Mean Squares	F
WI	Class (A)	66.254	1	66.254	ns
	Training (B)	283.237	3	94.412	ns
	Interaction (AB)	359.430	3	119.810	ns
	Error	15854.671	112	141.560	
	Total	16563.592	119		
PD	Class (A)	35.652	1	35.652	ns
	Training (B)	464.751	3	154.917	ns
	Interaction (AB)	324.689	3	108.229	ns
	Error	62839.400	112	561.006	
	Total	63664.492	119		

BIBLIOGRAPHY

Aronfreed, J. The problem of imitation. In L. P. Lipsitt and H. W. Reese (Eds.), Advances in child development and behavior. Vol. 4, New York: Academic Press, 1969, pp. 210-319.

Baer, D. M., Peterson, R. F., & Sherman, J. A. The development of imitation by reinforcing behavioral similarity to a model. Journal of Experimental Analysis of Behavior, 1967, 10, 405-416.

Bandura, A. Vicarious processes: a case of no-trial learning. In L. Berkowitz (Ed.), Advances in experimental social psychology. Vol. 2, New York: Academic Press, 1965, pp. 1-55. (a)

Bandura, A. Influence of model's reinforcement contingencies on the acquisition of imitative responses. Journal of Personality and Social Psychology, 1965, 1, 589-595. (b)

Bandura, A. Principles of behavior modification. New York: Holt, Rinehart & Winston, 1969.

Bandura, A. (Ed.) Psychological modeling: conflicting theories, New York: Aldine-Atherton, 1971.

Bandura, A. & Harris, M. B. Modification of syntactic style. Journal of Experimental Psychology, 1966, 4, 341-352.

Baratz, J. C. A bi-dialectical task for determining language proficiency in economically disadvantaged Negro children. Child Development, 1969, 40, 889-901.

Bee, H. L. Social class differences in maternal teaching strategies and speech patterns. _Developmental Psychology_, 1969, _1_, 726-734.

Beilin, H. & Kagan, J. Pluralization rules and the conceptualization of numbers. _Developmental Psychology_, 1969, _1_(6), 697-706.

Bernstein, B. Social class linguistic codes and grammatical elements. _Language and Speech_, 1962, _5_, 221-240.

Bernstein, B. Elaborated and restricted codes: their social origins and some consequences. In J. Gumperz and D. Hymes (Eds.), The ethnography of communication. _American Anthropologist_, 1964, _66_(6), 55-69.

Bernstein, B. A sociolinguistic approach to socialization: with some references to educability. In F. Williams (Ed.), _Language and poverty: perspectives on a theme_, Chicago: Markham Publishing, 1970, pp. 25-62.

Bernstein, B. Language and roles. In R. Huxley and E. Ingram (Eds.), _Language acquisition: models and methods_. New York: Academic Press, 1971, pp. 67-72.

Blasdell, R. & Jensen, P. Stress and word position as determiners of imitation in first language learners. _Journal of Speech and Hearing Research_, 1970, _13_(1), 193-202.

Brandis, W., & Henderson, D. _Social class, language and_ communication, Beverly Hills, Calif.: Sage Publications, 1970.

Brigham, T. A. & Sherman, J. A. An experimental analysis of verbal imitation in preschool children. Journal of Applied Behavior Analysis, 1968, 1, 151-158.

Brown, R. From codability to coding ability. In J. Bruner (Ed.), Learning about learning: a conference report, Washington, D. C.: U. S. Department of Health, Education & Welfare, 1966.

Brown, R. & Bellugi, U. Three processes in the child's acquisition of syntax. In E. Lenneberg (Ed.) New directions in the study of language. Cambridge: MIT Press, 1964, pp. 131-161.

Brown, R. & Hanlon, C. Derivational complexity and order of acquisition in child speech. In J. R. Hayes (Ed.), Cognition and the development of language. New York: John Wiley & Sons, 1970, pp. 11-53.

Bufford, R. K. Discrimination and instructions as factors in the control of non-reinforced imitation. Journal of Experimental Child Psychology, 1971, 12(1), 35-50.

Carroll, W. R., Kossuth, G. L., Rogers, C. A. Observational learning of a verbal discrimination. Psychological Reports, 1971, 29(3-2), 1047-1050.

Carroll, W. R., Rosenthal, T. L., Brysh, C. G. Social transmission of grammatical parameters. Journal of Educational Psychology, 1972, 63(6), 589-596.

Cazden, C. B. Subcultural differences in child language. Merrill-Palmer Quarterly, 1966, 12(3), 185-220.

Cazden, C. B. Three sociolinguistic views of the language and speech of lower class children. _Developmental Medicine and Child Neurology_, 1968, _10_, 600-612.

Cazden, C. B. The neglected situation in child language research and education. In F. Williams (Ed.), _Language and poverty: perspectives on a theme_, Chicago: Markham, 1970.

Cazden, C. B. The hunt for the independent variables. In R. Huxley and E. Ingram (Eds.), _Language acquisition: models and methods_, New York: Academic Press, 1971.

Cazden, C. B. _Child language and education_. New York: Holt, Rinehart, & Winston, 1972.

Cazden, C. B. & Brown, R. Coding skills of elementary school children. Paper presented at the meeting of the Society for Research in Child Development, Los Angeles, 1969.

Cazden, C. B. & John, V. P. Learning in American Indian Children. In M. L. Wax, S. Diamond, & F. O. Gearing (Eds.), _Anthropological perspectives in education_, New York: Basic Books, 1971, pp. 252-272.

Cazden, C. B., John, V. P. & Hymes, D. _Functions of language in the classroom_, New York: Teachers College Press, 1972.

Chomsky, N. _Aspects of the theory of syntax_. Cambridge, Mass.: MIT Press, 1965.

Clay, M. M. Sentence repetition: elicited imitation of a controlled set of syntactic structures by four language groups. _Monographs of the Society for Research in Child Development_, _36_(3), 85 pp.

Cole, M. & Bruner, J. S. Cultural differences and inferences about psychological processes. _American Psychologist_, 1971, _26_, 867-876.

Crites, J. O. _Vocational Psychology_. New York: McGraw Hill Book Co., 1969.

Deese, J. _Psycholinguistics_. Boston: Allyn & Bacon, 1970.

Denney, D. R. Modeling and eliciting effects upon conceptual strategies. _Child Development_, 1972, _43_, 180-823. (a)

Denney, D. R. Modeling effects upon conceptual style and cognitive tempo. _Child Development_, 1972, _43_, 105-119. (b)

Dollard, J. and Miller, N. _Social learning and imitation_. New Haven: Yale University Press, 1941.

Entwisle, D. R. Semantic syst ms of children: some assessments of social class and ethnic differences. In F. Williams (Ed.), _Language and poverty: perspectives on a theme_. Chicago: Markham Publishing, 1970, pp. 140-152.

Ervin-Tripp, S. Sociolinguistics. In L. Berkowitz (Ed.), Advances in experimental social psychology. Vol. 4. New York: Academic Press, 1969, pp. 91-165.

Ervin-Tripp, S. Social background and verbal skills. In R. Huxley & Ingram (Eds.), Language development: models and methods. New York: Academic Press, 1971. (a)

Ervin-Tripp, S. Social dialects in developmental socio-linguistics. In R. Shuy (Ed.), Sociolinguistics: a cross-disciplinary perspective. Washington, D. C.: Center for Applied Linguistics, 1971, pp. 35-64. (b)

Flanders, J. P. A review of research on imitative behavior. Psychological Bulletin, 1968, 69(5), 316-337.

Flavell, J. H. The development of role taking and communication skills in children. New York: John Wiley & Sons, 1968.

Fry, C. L. Training children to communicate to listeners. In J. H. Flavell, The development of role taking and communication skills in children. New York: John Wiley and Sons, 1968, pp. 209-221.

Gahagan, D. M. & Gahagan, G. A. Talk reform: exploration in language for infant school children. Beverly Hills, California: Sage Publications, 1970.

Gerst, M. S. Symbolic coding processes in observational learning. Journal of Personality and Social Psychology, 1971, 19, 7-17.

Geshuri, Y. Observational learning effects of observed reward and response patterns. _Journal of Educational Psychology_, 1972, _63_(4), 374-380.

Gewirtz, J. L. Conditional responding as a paradigm for observational, imitative learning and vicarious reinforcement. In H. W. Reese (Ed.), _Advances in child development and behavior_. Vol. 6, New York: Academic Press, 1971, 239-270.

Giattino, J. The influence of sentence length and sentence structure on elicited imitation in preschool children. _Dissertation Abstracts International_, 1971, _32_(6-B), 3689.

Goffman, E. _Behavior in public places_. New York: Free Press of Glencoe, 1963.

Glucksberg, S., Krauss, R. M. & Weisberg, R. Referential communication in nursery school children: method and some preliminary findings. _Journal of Experimental Child Psychology_, 1966, _3_, 333-342.

Hall, W. and Freedle, R. A developmental investigation of standard and non-standard English. _Human Development_, 1973, _16_, 440-464.

Hall, V. C. & Turner, R. R. Comparison of imitation and comprehension scores between two lower-class groups and the effects of two warm-up conditions on imitation of the same groups. _Child Development_, 1971, _42_(6), 1735-60.

Hamburger, M. Realism and consistency in early adolescent aspirations and expectations. Doctoral dissertation Columbia University, Ann Arbor, University Microfilms 1958. (58-2588)

Heider, E. R. Style and accuracy of verbal communications within and between social classes. _Journal of Personality and Social Psychology_, 1971 18(1), 33-47. (a)

Heider, E. R. Information processing and the modification of an "impulsive conceptual tempo." _Child Development_, 1971, _42_, 1276-1281. (b)

Heider, E. R., Cazden, C. B. and Brown, R. Social class differences in the effectiveness and style of children's coding ability. Project Literacy Reports, No. 9. Ithaca, N. Y.: Cornell, University, 1968.

Hess, R. Social class and ethnic differences on socialization. In P. H. Mussen (Ed.), _Carmichael's manual of child psychology_. New York: John Wiley, 1970, 457-558.

Hess, R. D. & Shipman, V. Early experience and the socialization of cognitive modes in children. _Child Development_, 1965, _36_, 869-886.

Horner, V. M. The verbal world of the lower-class three year old: A pilot study in linguistic ecology. Doctoral dissertation, University of Rochester, 1968.

Hunt, J. McV. and Kirk, G. E. Social aspects of intelligence: Evidence and issues. In R. Cancro (Ed.), _Intelligence: Genetic and environmental influences_. New York: Grune and Stratton, 1971, pp. 262-307.

Hurst, C. G. & Jones, W. L. Generating spontaneous speech in the underprivileged child. _Journal of Negro Education_, 1967, _36_, 362-367.

Hymes, D. Introduction: toward ethnographies of communication. In J. Gumperz & D. Hymes (Eds.), The ethnograpy of communication. _American Anthropologist_, 1964, _66_ (6), 1-34.

Hymes, D. Models of the interaction of languages and social setting. _Journal of Social Issues_, 1967, _23_, 8-28.

Hymes, D. The ethnography of speaking. In J. Fishman (Ed.), _Readings in the sociology of language_. The Netherlands: Mouton & Co., 1968, 99-138.

Hymes, D. Competence and performance in linguistic theory. In R. Huxley and Ingram (Eds.), _Language acquisition: models and methods_. New York: Academic Press, 1971, pp. 3-28.

Jarvis, P. E. Modification of communicative behavior. In J. H. Flavell, _The development of roletaking and communication skills in children_. New York: John Wiley and Sons, 1968, pp. 184-207.

Kagen, J., Moss, H., and Sigel, I. Psychological significance of styles of conceptualization. _Monographs of the Society for Research in Child Development_, _30_(4), 1965.

Keeny, T. & Smith, N. D. Young children's imitation and comprehension of sentential singularity and plurality. _Language and Speech_, 1971, _14_(4), 373-382.

Kossuth, G. L. Observational learning of a novel language construction. _Dissertation Abstracts International_, 1972, _32_(11-B), 6621.

Krauss, R. M. & Glucksberg, S. The development of communication: competence as a function of age. Child Development, 1969, 40, 255-266.

Krauss, R. and Rotter, G. Communication abilities of children as a function of age and status. Merrill-Palmer Quarterly, 1968, 14, 161-173.

Krauss, R. and Weinheimer, S. Changes in the length of reference phrases as a function of social interaction. Psychonomic Science, 1964, 1, 113-114.

Labov, W. Stages in the acquisition of standard English. In R. Shuy (Ed.), Social dialects and language learning. Champaign, Ill.: National Council of Teachers of English, 1965.

Labov, W. The social stratification of English in New York City. Washington, D. C.: Center for Applied Linguistics, 1966.

Labov, W. The study of non-standard English. Washington, D. C.: Center for Applied Linguistics, 1969.

Labov, W. The logic of non-standard English. In F. Williams (Ed.), Language and poverty. Chicago: Markham Publishing, 1970.

Laughlin, P. R., Moss, I. L. & Miller, S. M. Information-processing in children as a function of adult model stimulus display, school grade and sex. Journal of Educational Psychology, 1969, 60(3), 188-193.

Lavatelli, C. S. (Ed.) _Language training in early childhood education_. Illinois: University of Illinois Press, 1971.

Lawton, D. Social class language differences in group discussion. _Language and Speech_, 1964, _7_, 183-204.

Lesser. G. S., Fifer, G. and Clark, D. H. Mental abilities of children in different social and cultural groups. _Monographs of the Society for Research in Child Development_, _30_(4), 1965.

Liebert, R. M., Odom, R. D., Hill, J. H. & Huff, R. L. Effects of age and rule familiarity on the production of modeled language constructions. _Developmental Psychology_, 1969, _1_, 108-112.

Liebert, R. M. & Swenson, S. A. Abstraction, inference and the process of imitative learning. _Developmental Psychology_, 1971, _5_(3), 500-504.

Lippman, M. Z. The acquisition of noun modifiers: relative clause and descriptive adjective. _Dissertation Abstracts International_. 1971, _31_(12-B), 7634.

Masters, J. C. & Branch, M. N. Comparison of the relative effectiveness of instructions, modeling and reinforcement procedures for inducing imitative behavior. _Journal of Experimental Psychology_, 1969, _80_(2), 364-368.

McNeill, D. _The acquisition and development of language_. New York: Harper and Row, 1970.

Meier, N. C. The Meier Art Tests: II Aesthetic Perception. Iowa City, Iowa: Bureau of Educational Research and Service, 1963.

Mischel, W. Sex typing and socialization. In P. H. Mussen (Ed.), Carmichael's manual of child psychology. Vol. 2. New York: John Wiley & Sons, 1970, 3-73.

Moore, D. R. Language research and preschool language training. In G. S. Lavatelli (Ed.), Language training in early childhood education. Illinois: University of Illinois Press, 1971, 3-49.

Nurss, J. R. & Day, D. E. Imitation, comprehension and production of grammatical structures. Journal of Verbal Learning and Verbal Behavior, 1971, 10, 68-74.

Odom, R. D., Liebert, R. M. & Hill, J. H. The effects of modeling cues, reward, and attentional set on the production of grammatical and ungrammatical syntactic constructions. Journal of Experimental Child Psychology, 1968, 6, 131-140.

Osser, H., Wang, M., & Zaid, F. The young child's ability to imitate and comprehend speech: a comparison of two subcultural groups. Child Development, 1969, 40, 1063-1075.

Parton, D. A. Imitation of puppet as a function of modeling praise, and directions. Journal of Experimental Child Psychology, 1970, 9, 320-329.

Piaget, J. The language and thought of the child. New York: Harcourt, Brace and World, Inc., 1926.

Piaget, J. *Play, dreams and imitation.* New York: W. W. Norton and Co., 1951.

Ridberg, E. H., Parke, R. D., & Hetherington, E. M. Modification of impulsive and reflective cognitive styles through observation of film mediated models. *Developmental Psychology*, 1971, *5*(3), 369-377.

Robinson, W. P. The elaborated code in working class language. *Language and Speech*, 1965, *8*, 243-252.

Robinson, W. P. Social factors and language development in primary school children. In R. Huxley and E. Ingram (Eds.), *Language acquisition: models and methods*. New York: Academic Press, 1971, pp. 49-66.

Rosenbaum, M. E. & Arenson, S. J. Observational learning: some theory, some experiments, some data, In E. Simmel, G. Hoppe, & G. Milton, *Social facilitation and imitative behavior*. Boston: Allyn and Bacon, 1968, pp. 111-134.

Rosenthal, T. L., Alford, G. S. & Rasp, L. Concept attainment generalization and retention through observation and verbal coding. *Journal of Experimental Child Psychology*, 1972, *13*, 183-194.

Rosenthal, T. & White, G. M. Initial probability rehearsal and constraint in associative class selection. *Journal of Experimental Child Psychology*, 1972, *13*(2), 261-274.

Rosenthal, T. L. & Zimmerman, B. J. Instructional specificity and outcome expectation in observational induced question formulation. *Journal of Educational Psychology*, 1972, *63*(5), 500-504.

Rosenthal, T. L., Zimmerman, B. J., Durning, K. Observationally induced changes in children's interrogative classes. Journal of Personality and Social Psychology, 1970, 16, 681-688.

Schoggen, P. H. and Schoggen, M. F. Behavior units in observational research. Paper presented at Symposium on Methodological Issues in Observational Research. American Psychological Association, San Francisco, 1968.

Sherman, J. A. Imitation and language development. In H. W. Reese (Ed.), Advances in child development and behavior. Vol. 6. Academic Press, 1971, pp. 239-270.

Simmel, E. C., Hoppe, R. A., Milton, G. A. Social facilitation and imitative behavior. Boston: Allyn & Bacon, 1968.

Slobin, D. I. (Ed.) A field manual for cross-cultural study of the acquisition of communicative competence. Second draft. Berkeley, Calif.: University of California, 1967.

Slobin, D. I. Imitation and grammatical development in children. In N. S. Boulter & H. Osser (Ed.), Contemporary issues in developmental psychology, New York: Holt, Rinehart & Winston, 1968.

Slobin, D. I. Suggested universals in the ontogenesis of grammar. University of California Language-Behavior Research Laboratory, Working Paper No. 32, April, 1970.

Slobin, D. I. (Ed.) *Ontogenesis of grammar: a theoretical symposium*. New York: Academic Press, 1971.

Slobin, D. I. & Welsh, C. A. Elicited imitation as a research tool in developmental psycholinguistics. In D. I. Slobin and C. A. Ferguson (Eds.), *Studies in child language and development*. New York: Holt, Rinehart & Winston, 1973, 223-238.

Stevenson, H. W. *Children's learning*. New York: Appleton-Century Crofts, 1972.

Thelen, M. H. Long-term retention of verbal imitation. *Developmental Psychology*, 1970, *3*(1), 29-31.

Thelen, M. H. & Stolz, W. The effect of vicarious reinforcement on imitation in two social-racial groups. *Child Development*, 1969, *40*(3), 879-888.

Waxler, C. Z. & Yarrow, M. R. Factors influencing imitative learning in preschool children. *Journal of Experimental Child Psychology*, 1970, *9*, 115-130.

Weener, P. D. Social dialect differences and recall of verbal messages. *Journal of Educational Psychology*, 1969, *60* 194-199.

Whitehurst, G. J. and Novak, G. Modeling, imitation training and the acquisition of sentence phrases. *Journal of Experimental Child Psychology*, in press.

Whitmore, J. B. Toward an understanding of imitation. In Simmel, Hoppe & Milton (Eds.), Social facilitation and imitative behavior. Boston: Allyn & Bacon, 1968, pp. 217-239.

Williams, F. Language and poverty: perspectives on a theme. Chicago: Markham Publishing, 1970.

Williams, F. & Naremore, R. On the functional analysis of social class differences in modes of speech. Speech Monographs, 1969, 36, 77-102.

Winer, B. J. Statistical principles in experimental design. New York: McGraw-Hill Book Co., 1971.

Zimmerman, B. J. and Rosenthal, T. L. Conserving and retaining equalities and inequalities through observation and correction. Developmental Psychology, 1974, 10(2), 260-268.