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Maternal Teaching Style And Its Effect On Reading Achievement

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MATERNAL TEACHING STYLE AND ITS EFFECT ON READING ACHIEVEMENT

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MATERNAL TEACHING STYLE AND ITS EFFECT ON READING ACHIEVEMENT

Abstraction of Dissertation

Purpose: The purpose of this study was to examine the relationship between Maternal Teaching Style (MTS) as an expression of elaborated and restricted language codes and reading achievement in the fourth, fifth, and sixth grades. MTS was measured through the use of an observation schedule in a setting where mothers taught their children simple tasks on the Etch-A-Sketch toy. Achievement was measured by the Metropolitan Achievement Test. A related purpose was to determine whether the differences between these two codes reflect differences in reading achievement by sixth grade and to examine the relationship of Bernstein's theory of the elaborated and restricted codes, social class and IQ.

Procedure: A random sample of 200 mothers was invited to participate in the study. From this sample, sixty mothers and their fourth, fifth, and sixth grade children were chosen. An equal number of boys and girls from working and middle-class environments were included in the total sample. Reading achievement test scores (for the fall of 1978) of these children were obtained from cumulative records after mothers and children had been tested to determine MTS.

The Statistical Package for the Social Sciences (SPSS) was used to analyze the data. First, the Chi Square test (X^2) was used to test the relationship between MTS and IQ, and MTS and Social Class. Second, the Pearson product-moment correlation was used to correlate IQ, MTS, and achievement on the Metropolitan reading total and subscores. Third, one, two, and three-way ANOVA's were computed to analyze the Metropolitan Achievement test scores. Fourth, the t-test was used to determine if differences between scores in each grade level were significant.

Conclusion: The findings of this study strongly supported the hypothesis that Maternal Teaching Style has an effect on reading achievement by sixth grade. A significant interaction was found between MTS x Class x Grade at the .02 level. MTS was found to be independent of IQ and social class as measured by traditional indicators. Bernstein's theory received some empirical support with the finding that IQ is independent of MTS. This supported his basic assumption that language is shaped by social class factors, and that language development is more related to social class than to IQ.

Recommendations: (a) Research is needed to determine how the curriculum should be modified or/and changed to accommodate the restricted code speakers' needs; (b) staff-development must be provided so that restricted code speakers may be instructed in a way that is more meaningful than is currently being used at school; (c) reading materials should be analyzed to determine linguistic biases or problems which could explain falling reading achievement test scores in children of the working class; and finally, (d) schools should build upon knowledge gained from this study, translate it into the appropriate reading materials and teaching techniques in order to increase each student's potential.

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INTRODUCTION

Volumes of recent research in reading achievement point clearly to the need for systematic approaches to studying reading in children from low income areas. Wolfe (1975) has shown the ineffectiveness of current reading programs despite massive expenditures by government at all levels: federal, state, and local. She found, for example, that 42% of third graders and 48% of sixth graders in New York could not read acceptably. California students' standardized test results (1976/77) have also evidenced similar overall decline in reading/language proficiency ("School Scores: Mt. Diablo Tests Just So-So," Contra Costa Times, September 4, 1977). Among factors cited as contributing to the general low level of reading achievement, has been the failure of many schools to work with disadvantaged, low income, and culturally/linguistically different children.

Jensen (1969) assessed the problem to be, in part, the result of the failure of schools to focus on the educational process of teaching more specific skills. He argued that compensatory education had been practiced for several years in cities across the nation, but had apparently failed to

remedy the educational lag of disadvantaged children. On the basis of compensatory education programs, nationwide surveys, and an evaluation of educational programs, the U.S. Commission on Civil Rights (1976) concluded that school programs involving expenditures for educational services designed to help disadvantaged children have failed to raise significantly the achievement levels of participating pupils. Low income and culturally/linguistically different children have been shown to fall behind their middle class peers in achievement during the middle grades, a fact which suggests that there are inappropriate reading programs currently being used with these children. One relatively undeveloped line of research suggests that varying linguistic environments in low and middle income families result in widely different levels of reading achievement in school. Another research suggestion is the existence of a relationship between linguistic codes learned before the child enters school and the ability to read. Further, current reading practices do not take into account the issue of whether the set of language rules learned in low income families differs from those embodied in a middle class school environment.

Bing (1963) found that compared to working-class mothers, middle-class mothers gave their children more verbal stimulation during infancy and early childhood and let their children participate more in conversations. The linguistic style used by middle-class mothers is hypothesized to be

closer to the linguistic style used by teachers and found in reading materials than that typical of working-class mothers. The middle-class mother elaborates and expands on statements that the child makes and engages in activities like those of the school (Entwistle, 1975). Hess (1965) stated that the hidden curriculum of the middle-class home inculcates a general expectation for success in school and gives practice in those skills that help children attain success. For the working-class mother, the language structure is less formally organized than that of the middle-class mother in relation to the emerging ability to read. If a relationship can be shown between linguistic environment and reading achievement, then two follow-up steps are suggested. First, middle-grade reading materials should be analyzed to determine linguistic biases or problems which could explain falling achievement test scores in children of the working class. Secondly, it may be possible to develop innovations in the structure of reading materials or at least to suggest the characteristics of needed changes. This would enable schools to move closer to the goal of equal educational opportunity by removing an apparent barrier to achievement in children of the working class.

How does the Maternal Teaching Style (or MTS) act to shape and/or depress the reading ability of the child by the time he/she enters grade six? The argument presented by Bernstein (1961) is that the social structure of the family shapes communication and language usage. Maternal

Teaching Style shapes the child's future ability to read; it expands or limits the range of linguistic experiences leading to the ability to read. In a Maternal Teaching Style-Restricted (MTS-R) structure, the kind of educational experience open to the child is restricted. Such constriction, then, precludes the child from reading acceptably at the beginning of reading instruction in school. The reverse appears to be true for the Maternal Teaching Style-Elaborated (MTS-E) family; the mother develops experiences in pre-school life that conform to what the school teaches and leads to acceptable reading achievement in the child.

Bernstein (1960, 1971) postulated a relationship between social class and language development. In his view (1961), language and language conditions structure how the child learns, setting limits upon future learning unless otherwise corrected through interventions made by the school. He described how the culture of a social group becomes a part of the individual through acts of speech. His theory centered upon the ideas of a linguistic code. Maternal Teaching Style refers to a range of possible speech alternatives for any situation which enables a speaker to take part in a particular verbal encounter. The child, through learning how to talk, negotiates verbally his/her position in a group and acquires an ability to act as a member of the group by learning a linguistic code.

Bernstein's Linguistic Code Theory

Bernstein's restricted/elaborated code theory is essentially a socio-linguistic theory of socialization, for it describes how the Maternal Teaching Style becomes a part of the child through acts of speech. From this perspective, Benrstein suggested that a child experiences language as a series of speech events from which a code is learned that guides the child in the selection of suitable linguistic possibilities. He (1970) described this process:

> As the child learns a specific code which regulates his verbal acts, he learns the requirements of his social structure . . . . Underlying the child's speech are choices which orient his social, intellectual and emotional referents (p. 87).

The restricted code (Bernstein, 1960, 1964, 1974, 1975) is an implicit code which expresses the shared meanings and assumptions of a group. This is the speech of daily life which makes a tacit assumption that the other person(s) in the communication share the same background knowledge. The restricted code, Bernstein suggested, is possessed and used by all to conduct daily life activities. It is characterized by its relatively simple syntax, redundancy, high predictability and is a code whereby all words and the organizing structures are directed to a group of speakers and listeners. Through this implicit code, nonverbal messages become a large part of the restricted code communication.

According to Bernstein (1970), the elaborated code arises whenever the intent of other persons cannot be taken

for granted and the speakers are forced to elaborate their meanings and make them both explicit and specific. Bernstein suggests that the speech produced by a speaker using an elaborated code will have greater complexity and detail. The speech is more precise, to the point, and more embellished. In the restricted code, the speech is simpler, less well constructed, and words are social counters. That is, they are nonverbally used to stand for many meanings known (possibly) to the participants but not given in the speech.

The elaborated code is characterized by its complex syntax and low predictability. Because of a greater number of syntactic options that are possible, the elaborated code permits a greater range of possibilities in organizing experience. The preparation of explicit meaning is the function of this code. General features of the elaborated code are that: it orients its user to separateness and differences from others; and it points to logical and conceptual speech (Cook-Gumperz, 1973; Banks, 1975; Bernstein, 1968, 1971).

The restricted code and the elaborated code are generative rules from which different communication performances can be generated. Speech from a restricted code tends to be fast, fluent, with reduced articulatory cues. Personal meaning, in this code, must be given nonverbally; the speaker relies on gestures to make a point. In the elaborated code, speech is slower, more verbally planned and organized as the interaction progresses. Although it may take nonverbal

communication forms, the individual need not rely on these to express meanings. Bernstein suggested that all members of society acquire a way of communicating which is consistent with the restricted code; but he stated that whether the child goes on to acquire, or have access to, an elaborated code, depends on particular social factors of the parents' social experience. It is at this point that Bernstein's theory most clearly becomes a socialization one.

Although the differences between the elaborated and restricted codes can be expressed as grammatical differences, it is an understanding of the codes' function in communication which is at the heart of Benrstein's theory. Fundamentally, the restricted code is a language of implicit speech (nonverbal, implied, not clearly stated); whereas, the elaborated code is explicit (precise, clearly stated). The restricted code is distinguished by its high degree of predictability; the elaborated code is marked by its low predictability. Apart from the lexical limitations of the restricted code, there are constraints on the syntactic level which reduce the possible range of verbal alternatives. Verbal alternatives of the elaborated code are many and varied and are characterized by complex syntax. Since the vocabulary is drawn from a narrow range, the speaker's intentions are relatively unelaborated verbally, and there is emphasis on concrete descriptive, tangible, and visible symbolism; whereas, for the elaborated code emphasis is on abstract symbolism. It should be noted, however, that

the elaborated code approximates a restricted code in certain situations where prior communication and common understanding can be assumed; e.g., in a peer group one can switch to the restricted code. The reverse generally is not possible for the restricted code speaker.

Speakers of the restricted code are often limited in the ability to formulate generalizations. Bernstein noted that precise formulations and generalizations were not required for speakers of this code to communicate ideas and relationships. He specified that the elaborated speaker was not limited in the formulation of generalizations, and that those whos shared this code conveyed meaning explicitly through verbal planning. Bernstein suggested that in some families the child acquires access to an elaborated code and learns how to verbally negotiate different relationships. He stipulated, however, that neither the restricted nor the elaborated code is necessarily better than the other in terms of its own possibilities, but he contended that the larger society may place different values on the kinds of experiences which different codes may elicit, maintain, and reinforce. The elaborated speaker learns, uses and responds to both language codes. The child who learns a restricted language has only learned to verbally respond to one code.

Although the restricted speaker may have been exposed to both language codes, the speaker cannot understand or differentiate effectively between the two. The restricted speaker has to mediate the elaborated code through the simpler

restricted language structure in order to make it personally meaningful. Where this translation cannot be made, the restricted code speaker fails to understand and is left puzzled. A child who experiences and acquires an elaborated code will be likely to develop intellectually and make higher reading scores than a child who acquires a restricted code.

In his analysis of language use and educability, Bernstein (1970) assumed that the environmental settings generated particular forms of communication which shaped the intellectual orientation of the child, including aspects of language structure, vocabulary, and speech systems (Bernstein, Hess & Shipman, 1975; Cook & Gumperz, 1965). It is proposed that the two distinct forms of language, the elaborated code and the restricted code, have come about because in different families different emphases are placed on the use of language. Bernstein sees these divergent linguistic styles as leading to an increase or decrease in educability. He does not specifically mention reading, but reading problems and reading failure may be a large component of the decrease in educational attainments.

Whether there is precisely a relationship between the home environment and the effects of Maternal Teaching Style on reading development is unknown; but the present study will examine this relationship. If a relationship is found, it will be the charge of schools to remove barriers to reading achievement through correct reading techniques and

definitive reading materials as they relate to the different Maternal Teaching Styles. Hess and Shipman (1965) pointed out that teaching styles of the mother shaped learning styles and information processing strategies in children. This finding not only supported Bernstein's theories, it also strongly suggested that research is needed to examine the potential relationship between MTS and achievement in school.

Statement of the Problem

Various pieces of research on reading achievement indicate that oral language is related to MTS. There is no evidence that has been verified by observation or experiment that specifically relates MTS to reading achievement. It is probable that MTS-Elaborated (MTS-E) learning environment will provide a linguistic setting which will result in higher reading achievement in the intermediate grades than will MTS-Restricted (MTS-R) environments.

From Bernstein's work, it appears that a relationship does exist between MTS and reading achievement. If this hypothesis is true, then it would follow that much of the difficulty encountered by restricted-code children (a fact well documented) in learning to read acceptably could be explained in terms of maternal linguistic style. This finding would have serious implications for children and teachers in all elementary schools. Specifically, this study will examine the relationships between MTS and

reading achievement in Grades four, five, and six. Without a clear understanding of the relationships, continued efforts to improve the reading achievement of the restricted speaker will probably fail. In other words, does MTS predict reading achievement? If so, how can the schools build upon this knowledge, translate it into the right materials and teaching techniques in order to enhance each student's reading potential?

The purpose of this study is to examine, specify and clarify the relationship between maternalteaching style and reading achievement in the intermediate grades. More specifically, this study will try to determine if MTS-E students will achieve higher reading scores (on the Metropolitan Achievement Test (MAT)) than MTS-R students in Grades 4, 5, and 6, regardless of gender and social class.

Procedure

From a random sample of 200 mothers, 60 mothers from restricted and elaborated environments (30 from MTS-R and 30 MTS-E) were chosen to participate in this study. Specifically, records of 60 children were paired with identified mothers exhibiting the MTS-R or MTS-E status as measured by Hess and Shipman's Etch-A-Sketch task. An equal number of boys and girls from MTS-R and MTS-E environments were included in the total sample. A nearly equal number of middle- and working-class students, as measured by traditional indicators of social class, were chosen. Reading achievement

scores of these students were obtained from their cumulative records for the Fall 1978 school term.

Mothers tested their children to determine MTS. An interview schedule was used; coded responses on the Etch-A-Sketch Task instrument were tabulated and responses were assigned to one of the designated two categories: MTS-R or MTS-E. Then, reading scores of the children on the Metropolitan Achievement Test were compared between MTS groups. A four-way ANOVA design was used in order to determine the effects of MTS, grade levels, social class, and gender as independent variables, with reading scores as the dependent variable.

Definition of Terms

The following definitions of terms are useful for this dissertation:

1. Code: Bernstein has defined code as a tacit rule system regulating the linguistic choices which a speaker makes in a wide range of situations.

2. Linguistic code: refers to a range of possible speech alternatives for any situation which engage a speaker to operate a particular encounter in which the speaker is engaged.

3. Elaborated code: is, essentially, the use of speech to express the speaker's difference from shared assumptions. Bernstein sees the elaborated code as being selected from a more complex range of thought patterns and alternatives.

4. Restricted code: is speech which relies on the social relationship of the speakers to achieve communication; i.e., the meaning of any statement is affected by the social relationship of the persons involved in the interaction. The meaning of a statement is inferred largely from the reference point of the personal relationship rather than the cognitive content of the message.

5. Maternal Teaching Style: refers to the way verbal strategies and syntactical structures are used by the mother in teaching her children. Basically, MTS refers to the way the mothers teach their children linguistically as determined by Hess and Shipman.

6. Middle class: in this study, the term middle class refers to the middle and upper segment of the middle class. Groups in that class consist of persons who have at least a high school education, pursue non-manual occupations, and/or hold professional, technical, or managerial jobs.

7. Working class: refers to the large segments of lower middle class and the lowest socio-economic strata. The working-class group consist of wage earners holding unskilled or semi-skilled jobs in the service or production sectors, the unemployed, and the poor; they are persons who dropped out of school or have, at the most, some high school education.

Summary

The purpose of this study is to provide new information about the relationship between Maternal Teaching Styles

and reading achievement of middle- and working-class children in the middle grades. This study will examine linguistic codes across social class and grade levels to see if they predict reading achievement.

The nature of linguistic codes and some of the research and controversy surrounding Bernstein's Theory will be discussed in Chapter II. Procedures will be described in Chapter III, results and interpretations reported in Chapter IV, and conclusions and recommendations will be drawn in Chapter V.

Chapter II

REVIEW OF RELATED LITERATURE

The purpose of this chapter is to review, analyze, and synthesize, where possible, the findings of selected research related to the learning of language, and the effects of maternal teaching style on reading. There appear to be no simple answers to the questions related to the early influence of language training and how it has contributed to classroom practice; however, related research on MTS and its effect on academic behavior has demonstrated that a relationship does exist between MTS and skills learned in reading.

This chapter will summarize research on linguistic code theory, maternal teaching style research, and Bernstein's theory. Readers should keep in mind that the theory is developed, but not yet supported by empirical studies. Data analyzed here are drawn from research conducted in Western Europe and the United States on children of working and middle-class families. The first section of the chapter will consider Bernstein's linguistic theory. It will define the elaborated and restricted language codes and specific attention will be given to the language differences.

Bernstein's Linguistic Code Theory

Basil Bernstein's theory linking language and the social environment is basic to the purposes of this study. His theory is based upon the idea of a linguistic code. Linguistic code refers to a range of possible speech alternatives for any verbal situation. The child, through learning how to talk, negotiates verbally a position in a group and acquires an ability to act as a member of the group. In Bernstein's terms, the child learns to regulate the social situation and acquires an orientation to certain social, intellectual, and emotional referents. In this way, the child's speech will be shaped by social perceptions and categorizations.

There are two major linguistic codes. Bernstein (1965) labels these elaborated and restricted. The basis of these two codes lies in different styles of socialization within the family. The terms elaborated and restricted seem to imply that the presence of one code means the absence of the other. This is not the case. Bernstein's intent was to specify different approaches to communication. One, the restricted, relies on the social situation of the speech interaction for the transmission of much of the message's meaning. In contrast, an elaborated code relies primarily on the verbal message to transmit meaning. Some speech situations rely upon the people interacting for their meaning, while others contain overtly verbal messages. For example, the meaning of the sentence "I love you" depends

on the people interacting for its meaning. If the people are husband and wife, the sentence has one meaning; if they are person and pet, it has another. An elaborated code message is explicit and less open to interpretation within a social situation. A sign saying, "Will the last person leaving please turn out the lights?" has fewer possible meanings. Perhaps Bernstein should have called these codes cognitive and social rather than elaborated and restricted. He started out calling them formal and public, which preserves the distinctions between codes better without suggesting a hierarchical relationship.

Bernstein's theory states that there is a fundamental difference between restricted and elaborated codes. This difference is not a matter of grammar, dialect, or slang, but rather of different uses of the grammatical system and vocabulary. The two codes are used differently because of the principles which underlie the particular choices that are made in speech. The restricted code essentially is characterized as a grammatically simple and rigid language drawn from a narrow range vocabulary (Bernstein, 1970). It is speech which relies on and expresses shared meaning and assumptions related to the social situation. The restricted speaker's intentions are relatively unelaborated verbally, and emphasis is placed on concrete, descriptive, tangible, and visible symbolism. Frequently statements show that reason and actions are often confounded; for example, a restricted code parent tells a child, "Shut up!," the child

responds, "Why?" and the parent responds, "Because I'm your Dad/Mom." Here the parent refers to the social relationship with the child as the logical basis for being quiet. The message using this logic of the social relationship is "I am your authority and you are my subordinate; therefore, you will do what I want."

The elaborated code, on the other hand, is characterized as having an accurate grammatical order which frequently includes logical relationships and the use of a discriminative selection of words. The elaborated speaker's language discriminates between the experience of self and others; the speaker elaborates meaning by making it verbally explicit and specific. In other words, reasons are linked to actions; for example, "Shut Up!" "Why?" "Because your talk is interfering with our discussion!" Here the logic used is based on the cognitive content of the message. The reason--interference with the discussion--is tied logically to the requested action--getting quiet. The question of authority may still be present in the relationship, but it is subordinate to the cognitive reasoning which structures the verbal message.

The Restricted Code

Research has shown that the restricted linguistic code is quite distinct from that of the elaborated linguistic code (Halsey, Floud, & Anderson, 1961, p. 299). General characteristics of the restricted linguistic code are listed:

1. Short, grammatically simple and unfinished sentences with poor syntactical form characterizes the restricted code.

2. Conjunctions such as, so, then, and because, are used repetitively.

3. Little use is made of subordinate clauses.

4. Frequently, an inability to maintain focus on a formal subject through a speech sequence is evident.

5. Frequently, a statement of fact is used both as a reason and a conclusion. This process is generally used to bring about an immediate termination of behavior or to initiate behavior. The legitimacy for the statement will reside in the form of social relationship which is nonverbally present (e.g., in a parent-to-child relationship or by a leader of a gang) rather than in reasoned principles. ("I told you so, because I am your father.")

6. The restricted code contains a large number of slang and dialectic phrases from which the individual chooses. It provides a language use that is descriptive rather than analytic.

7. The restricted code encourages immediacy of interaction. It is a linguistic form that "what is not said" is equally, and often more important than "what is said." (Of course, what is not said plays an important part in all communications.)

8. The individual qualification is implicit in the sentence organization; it is a language of implicit meaning.

9. Individual selections from a group of idiomatic sentences will frequently occur (Bernstein, 1961, p.297-8).

The restricted code is not necessarily the result of a limited vocabulary but arises out of a sensitivity to and a way of organizing and responding to experience. Thus, two children aged 4, one of whom comes from an environment in which a restricted code is used and the other from an

environment where the elaborated code is spoken, might share a similar vocabulary, but the way they relate the words they know will show differences (Halsey, Floud, & Anderson, 1961). The language code described here will rarely be found in the pure state (Halsey, 1961). Even if such an ideal language code were to be spoken, it would not be used in all situations.

The Elaborated Code

By contrast, the elaborated linguistic code is distinguished from the restricted linguistic code by some of the follow characteristics:

1. Accurate grammatical order and syntax regulate what is said.
2. Logical modifications (products of change) and stress are mediated through a grammatically complex sentence structure, especially through the use of a range of conjunctions and subordinate clauses.
3. Frequent use of prepositions that indicate logical relationship temporal and spatial continuity.
4. Frequent use of impersonal pronouns; e.g., it, one.
5. A discriminative selection from a range of adverbs and adjectives.
6. Expressive symbolism discriminates and distinguishes between meanings within speech sequences in fine gradations.
7. A language use that is inherent in a complex conceptual hierarchy for the organizing of experience.
8. The elaborated linguistic code is verbally explicit.

9. This speech code is one where the structure and syntax are difficult to predict, and the sentence organization and clarity of meaning makes it explicit.

10. In the process of the elaborated organization of words and structural connections, language learning is differentiated, made specific, and stabilized by being linked to a word range of vocabulary that is common and specialized (Halsey, Floud, & Anderson, 1961, p. 311).

In elaborated code, speech is more explicit; it is used to express the speaker's difference from the shared assumptions of the group in an attempt to make clear the exact meaning of communication. Bernstein suggests that all members of society first acquire a way of communicating which is consistent with a restricted code. All children learn first a "restricted code" in the family; some go on to have access to an elaborated code.

The restricted code experience is acquired by all children in their families, but not all children gain access to an elaborated code. The foregoing examples of disciplinary action in hypothetical families were intended to show this process. From this perspective, it appears that a child who experiences and acquires an elaborated code will be likely to develop intellectually and socially in a way different from a child who acquires a restricted one. Bernstein stated that the experience of the child is transformed by learnings generated by acts of speech, which, in reality, are shaped by the family's social structure. The significance of these codes lies in how they are valued in the social structure of the school.

Schools, Deficit Theory, and Language Codes

A number of scholars have directly challenged the belief that working-class children have less intelligence or are "deficient" in language relative to their middle-class counterparts. One of the clearest statements outlining the "deficiency" hypothesis and rejecting it is found in Labov (1969b). Labov's arguments are summarized briefly because of their relevance to this study, and because his views appeared to be representative of a number of scholars (Wolfram, 1979; Ervin-Tripp, 1971; Cazden, 1971; Baratz, 1969; Stewart, 1970).

Labov took his stand against those who argued that the restricted language code is an illogical form of speech, and that children from restricted environments receive very little verbal stimulation, cannot produce well-formed sentences, and are impoverished in their means of verbal expression. Such arguments were given by Bereiter and Engelmann (1966), who based their "academically-oriented" preschool program on the hypothesis that working-class children have very poor language skills. The basis of the deficit hypothesis essentially is: children from working classes have less language; they are verbally deprived, and what language they do have is badly formed, ungrammatical, and illogical. The significance of this position is that it was widely held by educationaists and formed part of the basis of projects like Operation Headstart and various Title I programs.

Labov argued both that the premises are false and that there is no foundation to the assertion that these children cannot produce well-formed, complete sentences. He contended that the restricted code is perfectly grammatical in the sense that it is regular and can be described according to a set of rules. Here Labov's argument is that the underlying system of the two codes is the same, and that the restricted code is not deficient, but simply different (Labov, 1967, 1968). This hypothesis has had a considerable effect on the direction of current linguistic research in concentrating on discovering what effects this difference in language code has on academic achievement and, subsequently, on learning to read. The code differences to which Labov has drawn attention in order to explain the widespread educational underachievement strongly associated with the restricted linguistic code, suggest that educational failure proceeds partly from the educational system itself (Labov, 1969).

Labov associated Bernstein with a deficit model; i.e., essentially the notion that working-class children have no language at all. This idea, inferred from Bernstein's writings, claims that much of the restricted linguistic code consists of a kind of incidental "emotional" accompaniment to action both here and now and that the elaborated code is detailed and flexible (Labov, 1969). The association of Bernstein with the deficit model appears somewhat unjustified, since Bernstein goes to some length to emphasize

that the restricted code should not be regarded as deficient, but as different from the codes available to speakers of an elaborated code. Bernstein clearly stated that one code was not better than the other; but that each code possessed its own possibilities (Bernstein, 1969). However, at many points in Bernstein's earlier work (1965), he made statements which appeared to claim that the restricted code was deficient; for example, the discussion about the restricted speaker's limited number of syntactic alternatives or the restricted speaker's limitations in expressing intent in a verbally explicit form (Bernstein, 1965).

The whole controversy between Bernstein and Labov centered upon the idea of deficit theory and the extent to which the restricted code was an inferior form of speech. However, Labov argued about racial and cultural differences while Bernstein spoke about class differences. The confusion of culture with race and social class seemingly misled Labov to classify Bernstein's approach, accounting for differential linguistic codes among working-class and middle-class children, as racist and stereotypical. It is important to note that Bernstein posited a relationship between class and codes but had no intention of being racist. His ultimate aim was for educators to develop and implement programs so that all students, regardless of linguistic differences, could have equal access to educational opportunities. Labov's similar aim was to help others understand that Black English was not in itself deficient as Englemann

and Berieter contended, but only different, and that the dialect had integrity and demanded linguistic ability of a high order.

Bernstein, agreeing that the codes were different, stipulated that neither code was necessarily better than the other in terms of its own possibilities, but the larger society placed different values on kinds of experiences which the different codes elicited, maintained, and reinforced. He suggested further that middle-class persons can and do use both codes and that individuals from the working class could be expected to be limited to a restricted code. And, because the language of school (curriculum) instruction is typically elaborated, it is crucial that the working class (or restricted code speaker) be helped to possess, or at least be oriented toward the elaborated code. Labov (1970) similarly saw strong school pressures militating against reading achievement for some ghetto children in schools. He pointed out that Black children, in using the restricted code, may be accused by the teacher of "lying"; whereas, the middle-class child using an elaborated language might say "There's another way to look at it" (Labov, 1968).

The contention basically is that the schools treated the restricted code as an educational deficit. Bernstein consistently denied that his intent was to convey any judgment of this kind; however, it appeared that his earlier writing clearly suggested accounts of inferiority, even if

they were unintended. Quoting Jensen's view of Bernstein's finding on educability, Labov also pointed to the fact that Bernstein had repeatedly stated that "schools" are predicated upon the elaborated code (Labov, 1969). However, no attempt was made to examine how language really was used in schools.

The Family and Language Codes

According to Bernstein, most people will use the speech code of the family group, especially the mother's speech code, unless they succeed--after overcoming cultural and educational obstacles--in joining another group or class (Olim, 1967). Valdimer (1967) further stressed that within the individual language, changes are minimal unless switches are made from one culture to another. Lawton (1964) argued that social class differences in language are already in existence at the age of 12 and that they become increasingly important by the age of 14. He concluded that the working class was verbally inhibited and further was dominated by concrete concerns.

Bernstein suggested that parental experience in education and child-rearing practices will have developed sociolinguistic code predominance and certain communicative competencies. He suggested that working-class parents are more likely to have developed a restricted code, and that middle-class parents are more likely to develop an elaborated code as well as a restricted one. The child's experience in

the family shapes academic (cognitive) experience. A child socialized into a restricted code would be less likely to acquire the other code, unless it is made available and transmitted by the school. Bernstein (1962b) notes:

> A child's social structure is transmitted essentially through the linguistic code generated by that structure. From this point of view, every time the child speaks or listens, the social structure of which he is a part is reinforced and his social identity is constrained. The social structure becomes for the child his psychological reality by the shaping of his acts of speech (Bernstein, 1962b, p. 221).

The parents' social structure is transmitted to the child as a range of speech choices, which are shaped by the socio-cognitive procedures through which the child perceives and interprets the world. The particular social experiences which sociologists refer to as "social class" shape the child's linguistic development.

Bernstein's research was supported by numerous studies done chiefly in the United States. Perhaps the best known is that done by Hess and Shipman (1965) who observed the interaction between mothers and their 8 to 9 year old children in experimental teaching sessions. Hess and Shipman reported that mothers induced and shaped learning styles and information processing strategies in children. They emphasized that middle-class mothers provided cognitively stimulating environments for their children; working-class mothers did not. The latter did not explicitly verbalize the meaning of their responses to the children's actions, questions, or statements or give highly detailed directions.

Consequently, the two codes verified by Hess and Shipman's study were found to be linked to socialization, particularly maternal teaching strategies, which they felt appeared to be highly correlated to the way the child learned to read.

Hess and Shipman showed that there was a close relationship between maternal language behavior and cognitive performance. They also found that the more restricted a mother was in language, the more likely her child was to make a poor academic record upon entering school. Although this research was not concerned directly with reading, it suggested that the middle-class home inculcates a general expectancy for success in school and gives practice in those skills that help children attain academic success. Most of Hess and Shipman's work based on Bernstein's theory and cognitive findings about educability appeared to be congruent with research on skills which lead to reading. Hess (1967) noted that the most significant difference between working and middle-class children was the tendency for working-class children to feel less comfortable in the use of language than did children from middle-class homes. He also noted that children confined to a restricted code felt less efficacious in dealing with the educational system than children who spoke an elaborated code. Social class differences were limited at the third and fourth grades, but increased by sixth grade (Hess & Torney, 1967). According to Hess, the cognitive state of the restricted class speaker has a bearing on educational achievement and is

apparently related to cognitive maturity (1967).

Summary

In summary, the literature reviewed in this chapter yields little in the way of clear findings. There has been little empirical research performed to test Bernstein's theories. Most of the research has focused on elaborating various aspects of his theories. The empirical research which has been done at best is suggestive. None has directly focused on studying reading from his theoretical viewpoint, so there are no pertinent findings. The ambiguous state of knowledge resulting from limited research knowledge and limitations on available research has lead to controversy over the meaning of Bernstein's theories and claims. At best, the Labov-Bernstein controversy showed the difficulties involved in attempting to generate a new approach to studying the complex relationship between language, social class, and school achievement.

Chapter III

RESEARCH PROCEDURES

This chapter describes sampling procedures, experimental procedures, coding and scoring procedures, and outlines data analysis procedures used in the study of the effects of Maternal Teaching Style (MTS) and reading achievement. The study was designed to determine whether the MTS had any effect on a child's reading achievement test scores and how MTS affected sub-test and total scores on the Metropolitan reading achievement test (MAT). It also examines whether a difference existed between boys' and girls' MTS and reading achievement test scores.

Participants were selected to insure a cross sampling of socio-economic background of the study community, known hereafter by the fictitious name Appleby. Included in the study were middle-class and working-class mothers and children.

Sampling and Population

Schools were selected from two geographically and socially discrete areas in Appleby.

> The Appleby Unified School District, located in Appleby, California, has a population of 35,000. The school district consists of 9,548 students. Students attend eight K-6 schools, two junior high schools, one continuation school, and one high

> school. Master Plan for Special Education serves 14% of the school enrollment. There are three Title I schools. The district's enrollment includes thirteen percent Spanish-American, one percent Black, one percent Oriental, five percent American Indian, and eighty percent Anglo-Saxon. The community also has one non-public school facility consisting of 286 students. (Appleby Unified School District Report, 1979)

Sample selection began in September of 1978 and was completed by December, 1978. One neighborhood was predominantly working class and located in old Appleby; the second neighborhood was overwhelmingly middle class and was located in a well established affluent and newer part of town.

Family residences located near the river in old Appleby are in a well-established, but slum area. Large families or more than one family often lived in congested apartments or dilapidated single family residences with cottages or trailer housing located in the side or backyards for rental purposes. This working class community is characterized by persons who receive low annual incomes or are on welfare. Many of them hold unskilled jobs or are unemployed and have received little or no high-school education. The official description of schools in the working class sample reflects these points:

> Leland Elementary School, built in 1920, is the oldest elementary school in Appleby and has a school population of 470 students. Geographically, Leland is located in the oldest section of town. A large percentage of the students are receiving Federal, State, or County assistance. Fifty-seven percent (57%) of the students receive either free or reduced lunch and breakfast. The ethnic composition of this school includes 24% Mexican-American, 2% Black, 2% Asian, with the balance comprising

> Caucasian students. Approximately 32% of Leland's students are living with single parents and receive financial aid under A.F.D.C. Leland School serves 310 Title I students.
>
> The Atkinson School population of 428 is made up of approximately 75% white children, 9% Mexican-American, 11% Native American (1/16 or more Indian blood) and 5% others (Chinese, Japanese, Filipino, Black, Hawaiian, Vietnamese, and Spanish). There are no large groups of non-English speaking children. Approximately 15% of the pupils come from single parent homes; 40% come from homes with working mothers; and 15% of the pupils return home after school to homes without adult supervision. Ninety-six of the 503 pupils receive free lunches or milk (19%). Twelve percent of the pupils are on A.F.D.C. (Appleby Unified Report.)

The middle-class areas consist of well-established affluent neighborhoods with new housing. Higher priced apartments and condominiums are located in this community. Most of the children live in single family homes and come to school from two-parent families. About 33% come from families with both parents working. The bulk of families in the middle-class area range from at least high school education through college completion. They pursue non-manual occupations and hold professional, technical, skilled, or managerial jobs. The middle-class sample schools are described:

> Manzanita Elementary School was completed in 1973 and from its beginning has maintained a population of 805 plus students. A principal, vice-principal and twenty-seven classroom teachers serve grades K-6. The Manzanita students rank at the average ability level. Students are being assisted in Reading through Miller-Unruh funds. Most students live in residential home sites, with 52% of the families having mothers who are employed outside the home.

> Kennedy Elementary School's population is 773 students, with approximately 25% belonging to minority groupings. Approximately 45% are bussed. Most of the children come from two-parent families; with about 1/3 coming from families with both parents working. The majority of the parent population is considered middle-class.
>
> Cambridge Elementary School has a student population of 809. The area of residence includes single family homes, apartments, and tract homes at the edge of town. There are twenty-four teachers on the staff and two Reading Resource teachers for the primary grades. Cambridge ranks at the mid-level, or above, in academic standing in relation to the other schools in the district. The racial make-up of the school is compatible to all other schools in the district, with the exception of eight Cantonese-speaking students (Appleby Unified Report.)

Overview of Research Procedures

The steps in the research procedures included: (1) research assistants (RA) were chosen and trained to observe and train mothers to test their children using the Etch-A-Sketch Task instrument; (2) research participant population was selected; (3) a field test, using the Etch-A-Sketch, was conducted; (4) mothers were trained to administer the Etch-A-Sketch task to their children; and (5) the principal investigator used the Statistical Packaged for Social Science (SPSS) to analyze Etch-A-Sketch and Metropolitan Achievement Test results and interpret data. An independent groups ANOVA design (analysis of variance---2 x 2 x 2 x 3 completely randomized design) was used to determine the effects of maternal teaching style, with > 50% elaborated code utterances equaling the MTS-E, and ≤ 50% equaling the restricted (MTS-R) code classification; class (working/middle);

gender (male/female); and grade levels (fourth, fifth, and sixth) as independent variables and the Metropolitan Achievement Test sub-scores (vocabulary, word analysis, reading) and total score as the dependent variables.

Research Assistants

Five instructional aides were selected and trained as research assistants (RA's). They were local people who worked at the individual schools chosen for the study. It was felt that they could obtain more candid and valid information than outside researchers, and they were trained to observe and code mother-child interaction during the testing sessions. The RA's were trained by the investigator to observe rapidly occurring mother-child verbal/non-verbal interactions in test situations, monitor language and social behavior listed on the coding form, and check the correct task performed. Observations which did not fit into the preestablished form were written in the note section at the bottom of the form.

During the training, the study and the test procedures were explained to the RA's. RA's were familiarized with the Etch-A-Sketch (E-A-S) instrument and model tasks to be taught by the mother to child. All RA's were allowed to manipulate the instrument freely and note its possibilities and properties on their own. They constructed the models until they could do them with ease and to the satisfaction of the investigator. The research assistants spent 1 to 2

hours each time practicing conducting test sessions and coding observations. The RA's practiced on each other, the principal investigator, and a school principal. The principal investigator supervised and evaluated all coding by RA's until their scoring agreed with the principal investigator's.

In order to code language used by a mother in instructing her child, Brophy's (1970) coding scheme and Hess's (Note 1) directions were compiled into a single coding form (Appendix A) and used to record language styles. Each mother-child team was assigned a number of the coding form, and this number was used rather than names to identify subjects. The sample coding form contained predicted language statements and responses that the mother would make or observable behavior she would engage in while teaching her child the E-A-S task. Generally, all the information needed for coding was on the form (Appendix B); however, a comment section was added to the bottom of the coding form to provide for additional necessary information or comments. Sometimes it was necessary for the RA's to supply added information from observation.

The Etch-A-Sketch Task

The E-A-S task was to construct five figures designed by Hess and Shipman. These required a mother, in most cases, to exercise continued control over her child for periods as long as 1 hour. The task was designed to emphasize the mother's use of language with the child in order to

successfully reproduce a design. The Etch-A-Sketch is a toy sold commercially by the Ohio Art Company, Bryan, Ohio. One Etch-A-Sketch toy was required for each mother-child team.

The E-A-S instrument was tried out with 10 students drawn from the sample of potential participants in the study. The principal investigator's home was used as the field test site and transportation of the participants was provided by her. Subjects who were selected for the field test were not included in the later study because they were too familiar with the E-A-S instrument.

Research Participants

The children were samples from all of the working-class and middle-class students in the fourth, fifth, and sixth grades of the selected schools. Selection began with an examination of cumulative records located in the district office. These records were examined and analyzed in order to locate representative participants in terms of gender, social class background, and normal intelligence as measured by various IQ tests. Mothers with children in each type of school were contacted until a total sample of 200 parents and children was drawn. None of the 200 children had siblings in the sample group. An equal number of boys and girls from both working and middle-class schools were included in the initial sample.

A total of 95 parents from the initial 200 agreed to participate in the study. Of these, 10 parents and children participated in the initial field test, 25 dropped out for various reasons, and 60 participated as members of the final sample. As determined by the Otis Quick Scoring Intelligence test, the students were of average intelligence. The mean IQ was 105.9, with a standard deviation of 7.4. IQ scores ranged from 86, in the third stanine, through 121, in the eighth stanine. The mean IQ fell in the sixth stanine.

Contacting and Training Mothers

Two hundred mothers were interviewed by the principal investigator by phone and later contacted by letter. In order to assure consistency among NRA's when interviewing mothers, a form was developed and used as a guide (Appendix C and D). The guide listed key questions to ask and possible responses.

During the phone interviews, mothers were informed about the study, testing techniques, and procedures. Parents were also told about and invited to a training session designed to acquaint them with the E-A-S instrument.

Training Mothers

A meeting with the 200 parents of children initially selected to participate in the study was planned. A letter summarizing the phone interview, the purpose of the study, and the explanation of the E-A-S tasks was sent to prospective mother participants. Both mothers and fathers were

invited to attend the meeting. Obtaining cooperation of 200 mothers turned out to be more difficult than first anticipated; 95 mothers gave their permission to participate in the study rather than the invited number.

A sample of 60 mother-child teams continued to the end of the experiment. During the meeting, the objectives of the study and the mother's role were discussed. The E-A-S instrument and five task cards made from heavy manilla paper were handed to each mother. A demonstration of how the testing session was to be carried out was conducted by the principal investigator and the RA's. Mothers were familiarized with the test by practicing each task and using the E-A-S instrument freely. In order to assure that the mothers understood the testing process, they were asked to replicate a series of E-A-S tasks with the help of the RA's. At the end of the practice, each mother was thanked for her participation.

Testing Sessions

Special rooms were provided in each school for individual testing. In some schools these rooms were much quieter and more comfortable than in others. The test consumed a 1-hour period. Care was taken to treat all individuals alike with regard to the order of tasks administered and the time of day (between 9 a.m. and noon), with mothers conducting the test.

The task proper began when the child was present. The

child was seated to the right of the mother, since he/she was to use the knob on the right of the E-A-S (vertical lines). The RA sat across from the mother. After briefly outlining the task, the RA left the table and busied him/herself elsewhere for 3 minutes while the subject practiced. Upon returning, the RA presented models to be copied. The RA coded the language used by the mother to the child as precisely as possible while each task was completed to the satisfaction of the mother and child. The test ended when the fifth production was accepted by the mother. Each task was scored using the form presented in Appendix E. Data for each subject were recorded, coded, then analyzed.

Data Analysis

In order to determine whether MTS was elaborated or restricted, the total language frequencies under each category for the five Etch-A-Sketch tasks were added and total sums were computed. The percentage of elaborated code used by each subject team was obtained by adding the sum of the elaborated (E) code and the restricted (R) code; then by dividing E + R into E. Therefore, MTS = % elaborated score.

A crossbreak table with 24 cells was constructed of all possible combinations of levels of the four independent variables. The number of children in each cell of the crossbreak table for the entire sample is shown in Table 1.

TABLE 1

TOTAL SAMPLE CHARACTERISTICS, GRADE, GENDER, SOCIAL CLASS, AND MATERNAL TEACHING STYLE

Social Class	Grade Levels	Restricted		Elaborated		Sum
		Boys	Girls	Boys	Girls	
Working Class	4	2	0	4	4	10
	5	3	3	3	2	11
	6	2	4	1	2	9
Middle Class	4	4	4	0	2	10
	5	2	3	2	2	9
	6	4	2	3	2	11
Sum		17	16	13	14	N=60

The mean and standard deviation were computed for the IQ scores of the entire sample (see Appendix F). Next, two $\underline{X}^2$ tests were calculated to assess the relationships between MTS and IQ score, then MTS and social class. Pearson-Product correlation coefficients were computed to examine the relationships between MTS and Metropolitan Reading Test subscores and total scores; further t-test calculations were made to assess the realtionship between the Metropolitan scores and intelligence

as measured by the Otis. Separate ANOVAs were performed for each dependent measure, i.e., the Metropolitan reading subscores and total scores, and various combinations of the four independent variables: gender, social class, grade, and MTS.

Chapter IV

RESULTS AND INTERPRETATIONS

Introduction

Chapter IV contains results and interpretations of the findings relating to the differences in linguistic codes of the mother's teaching style (MTS), and to the effects of MTS upon reading achievement scores of children in the fourth, fifth, and sixth grades, using the three sub-test scores and the total score of the Metropolitan Achievement Test as dependent variables. An analysis of variance (ANOVA) statistical technique with four independent variables: gender, grade, class, and MTS, was applied to each of the dependent variables one at a time, with $p < .05$ as the level of significance.

Results

A Chi square ($\underline{X}^2$) statistic was used to test the significance of the relationship between IQ and MTS, and MTS and social class. There is no significant relationship (Table 2) between these two variables, so IQ can be considered to be independent of MTS. This finding supports one of Bernstein's basic assumptions, that linguistic code is independent of intelligence. This is apparently the first empirical support offered for this assumption.

Table 2

DISTRIBUTION OF CHILDREN BY MATERNAL TEACHING STYLE (MTS) AND OTIS I.Q. SCORE INTERVAL GROUPS

	OTIS I.Q.s				
MTS	85-94	95-104	105-114	115-121	Sum
Restricted	4	12	13	4	33
Elaborated	1	9	14	3	27
Total	5	21	27	7	60

$\underline{X}^2 = 1.83$, $\underline{df} = 3$, $\underline{p} = .61$

As Table 3 shows, a $\underline{X}^2$ was used to test the significance of the relationship between MTS and social class. There is no significant relationship between MTS and social class, which suggests that these two variables are independent of each other. This suggests that Bernstein's assertion that language codes are linked to social class may not obtain, at least when traditional demographic measures are used to define the differences between middle and working class. This suggestion must be tempered by the fact that only two levels of social class were included in this study. A relationship might exist if a greater range of classes was studied.

Table 4 examines the relationships between MTS expressed in percentile scores and reading achievement as measured by the Metropolitan Achievement Test reading subscores and total

Table 3

DISTRIBUTION OF CHILDREN BY MATERNAL TEACHING STYLE (MTS) AND SOCIAL CLASS GROUPS

	Social Class		
MTS	Working	Middle	Sum
Restricted	14	19	33
Elaborated	16	11	27
Total	30	30	60

$\underline{X}^2 = 1.68$, $\underline{df} = 1$, $\underline{p} = .19$

Table 4

CORRELATION COEFFICIENT, COEFFICIENT OF DETERMINATION, AND PROBABILITY OF CORRELATION COEFFICIENT OCCURRING BY CHANCE FOR MTS PERCENTILE (MTSPER) CORRELATED WITH VOCABULARY, WORD ANALYSIS, READING, AND TOTAL SCORES ON THE METROPOLITAN ACHIEVEMENT TEST (MAT)

Subscore and Total	Pearson Correlation Coefficient	Coefficient of Determination	Level of Significance
Vocabulary	$\underline{r} = 0.27$	$\underline{r}^2 = 0.07$	$\underline{p} = .019$*
Word Analysis	$\underline{r} = 0.24$	$\underline{r}^2 = 0.06$	$\underline{p} = .034$*
Reading	$\underline{r} = 0.25$	$\underline{r}^2 = 0.06$	$\underline{p} = .003$*
Total	$\underline{r} = 0.26$	$\underline{r}^2 = 0.07$	$\underline{p} = .002$*

*indicates significance at < .05 level

score. The table shows a significant relationship beyond the .05 level for all MAT subscores: vocabulary, word analysis, and reading as well as for the total score. The table also shows that MTS accounts for approximately 6 or 7% of the variance in reading achievement, depending upon which subscore is examined.

Table 5 displays the relationship between IQ and reading achievement. It shows that Otis IQ score accounts for approximately 11-14% of the variance in reading achievement, depending on which MAT subscore is examined. Thus, the IQ measure accounts for twice the amount of variance that is explained by MTS. The issue of whether IQ and MTS account for the same variance is beyond the statistical scope of this study; however, IQ and MTS are not significantly correlated. It is, therefore, likely that the two measures account for different portions of the variability in reading achievement test scores.

Table 5

CORRELATION COEFFICIENT, COEFFICIENT OF DETERMINATION, AND PROBABILITY OF CORRELATION COEFFICIENT OCCURRING BY CHANCE FOR OTIS IQ SCORE CORRELATED WITH VOCABULARY, WORD ANALYSIS, READING, AND TOTAL SCORES ON THE METROPOLITAN ACHIEVEMENT TEST (MAT)

MAT Subscore and Total	Pearson Correlation Coefficient	Coefficient of Determination	Level of Significance
Vocabulary	$r = 0.37143$	$r^2 = 0.13796$	$p = .00174$*
Word Analysis	$r = 0.34201$	$r^2 = 0.11697$	$p = .00374$*
Reading	$r = 0.33859$	$r^2 = 0.11464$	$p = .00407$*
Total	$r = 0.35896$	$r^2 = 0.12885$	$p = .00243$*

*indicates significance at < .05 level

Analysis of variance was employed to test the relationship between reading achievement and a number of independent variables. The measure of reading achievement used for the ANOVA in this chapter was the MAT Total score; ANOVA's using the subscores may be found in Appendix F. The independent variables included gender, social class, MTS, and grade level. MTS was dichotomized into MTS-Elaborated and MTS-Restricted by assigning all MTS percentile scores above 50% to MTS-E and those at 50% and below to MTS-R. The ANOVA subprogram of the Statistical Package for the Social Sciences (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975) was used with its Option 9 format because of empty cells and unequal and disproportional sample size in the cells.

Table 6 is the ANOVA summary table for the four independent variables. It shows that MTS is a significant source of variation in reading achievement as measured by the MAT Total score. Furthermore, the interaction of MTS by Grade level also proved significant beyond the .05 level. The inclusion of gender as an independent variable resulted in a number of empty cells and some unequal, disproportional cell sizes. This made statistical calculations beyond first order interactions impossible, so gender was dropped as an independent variable in order to examine higher order relationships.

Table 7 summarizes the ANOVA's performed after gender was discarded as an independent variable, leaving social class, MTS, and grade. The results show that both MTS and

Table 6

Analysis of Variance Summary Table
Metropolitan Total Score Dependent Variable

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance of F
Gender	145.358	1	145.358	0.251	0.619
Class	7.373	1	7.373	0.013	0.911
MTS	3742.563	1	3742.563	6.469	0.014*
Grade	2654.749	2	1327.374	2.294	0.113
Gender x Class	457.184	1	457.184	0.790	0.379
Gender x MTS	668.689	1	668.689	1.156	0.288
Gender x Grade	457.714	2	228.857	0.396	0.676
Class x MTS	136.339	1	136.339	0.236	0.630
Class x Grade	751.369	2	375.684	0.649	0.527
MTS x Grade	14750.670	2	7375.335	12.747	0.001*
Residual	26035.744	45	578.572		
Total	54657.733	59	926.402		

*indicates significance at < .05 level

Table 7

Analysis of Variance Summary Table
Metropolitan Total Score Dependent Variable
Total ANOVA of MAT Reading Scores by Class,
Grade, and MTS

Source of Variation	Sum of Squares	df	Mean Square	F	Significance of F
Class	19.519	1	19.519	0.040	0.843
MTS	2997.337	1	2997.337	6.120	0.017*
Grade	3861.075	2	1930.537	3.942	0.026*
Class x MTS	31.527	1	31.527	0.064	0.801
Class x Grade	593.556	2	296.778	0.606	0.550
MTS x Grade	15085.656	2	7542.828	15.401	0.001*
Class x MTS x Grade	4549.377	2	2274.689	4.645	0.014*
Residual		48			
Total	54657.733	59	926.402		

*indicates significance at < .05 level

grade level are significantly related to achievement as measured by the MAT Total score for reading. In addition, the interactions of MTS by Grade and of Class by Grade by MTS are significant beyond the .05 level. These results are depicted graphically in the following figures.

Figure 1 graphically depicts the significant interaction of MTS by Grade. It shows the mean reading achievement scores (MAT Total score) of MTS-E and MTS-R children in Grades 4, 5, and 6. The scores are expressed in percentiles. In general, the MTS-E students show a pattern of achievement which seems to increase between Grades 4 and 6, although it should be noted that the scores are for different groups of children in each grade and not a single group of children over a 3 year period. In contrast, the MTS-R reading scores seem to decline steadily between Grades 4 and 6.

Figure 2 depicts the significant three-way interaction of social class, MTS, and grade level. Once again, the mean MAT Total score for reading expressed in percentiles is used as the measure of achievement. In Grades 4 and 5 there seems to be no clear pattern; i.e., the various combinations of MTS and class seem to operate inconsistently. In Grade 6, a strong pattern emerges. MTS-E children far outscore MTS-R children; social class does not seem to affect the MTS-E children's scores, however the middle-class MTS-R scores are less than the working-class MTS-R scores. These suggested relationships were next tested to determine if the differences shown on the graphs were significant or could

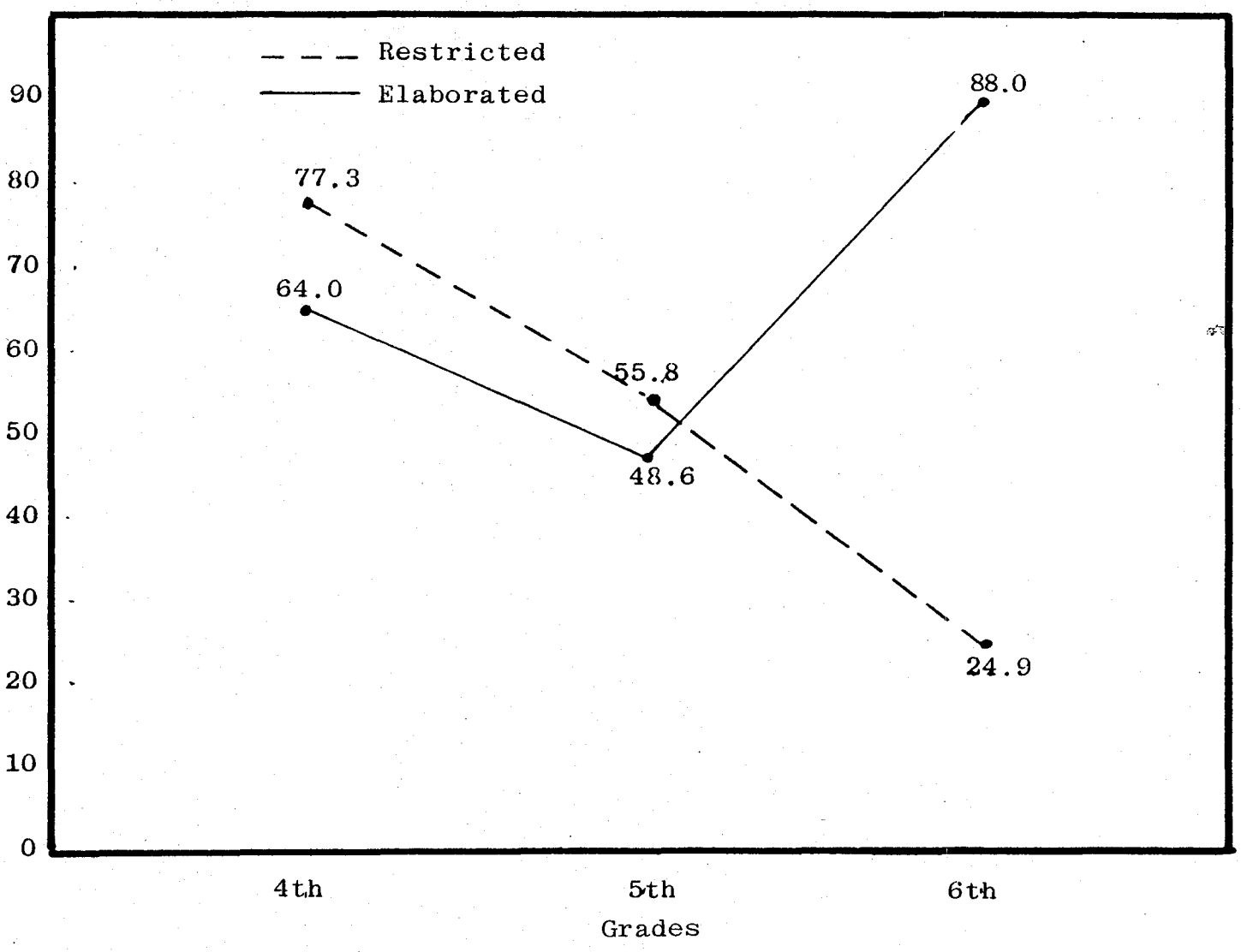

Figure 1. Graph of the interaction of school grade and MTS category by the Metropolitan Achievement Test Scores.

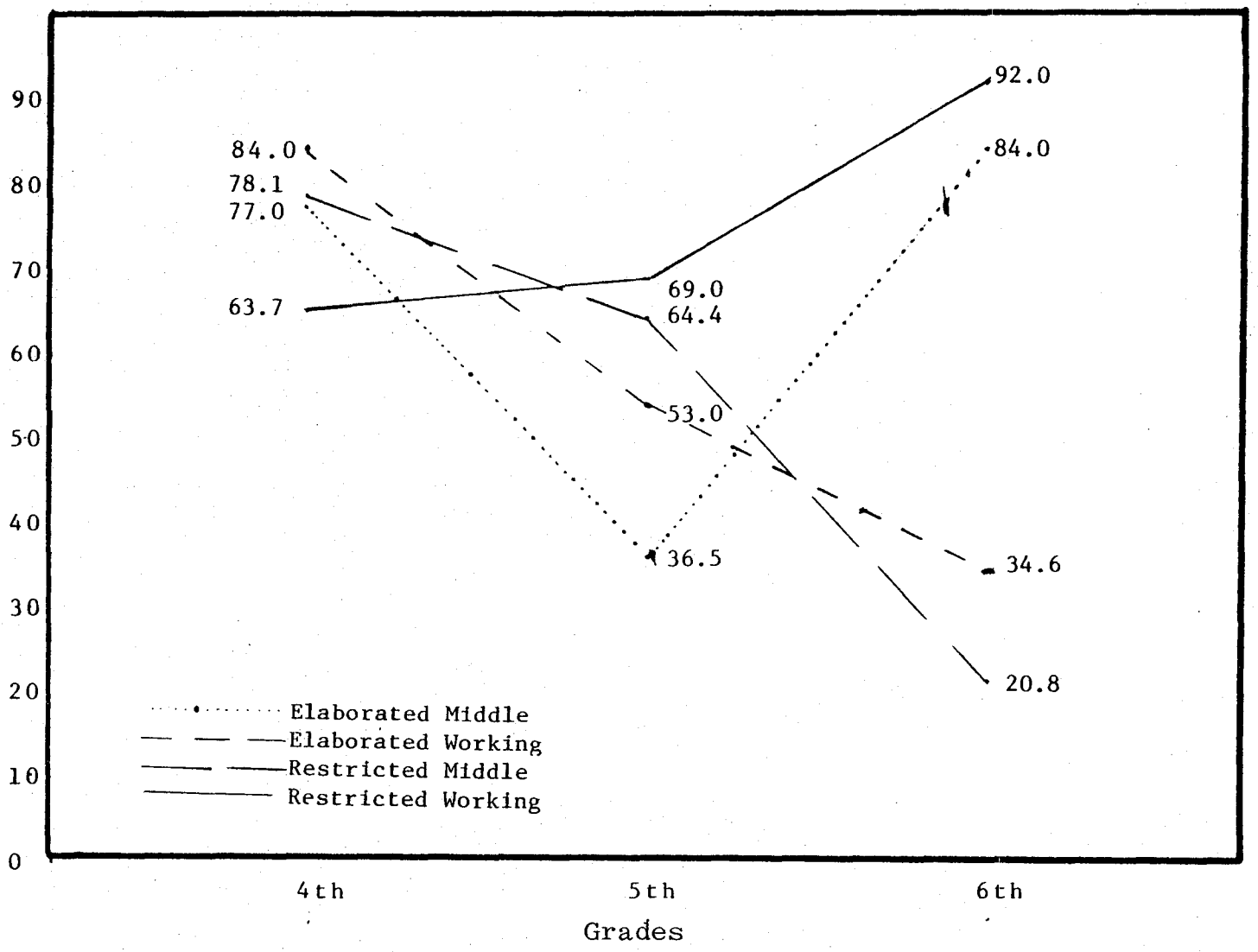

Figure 2. Graph of interaction of school grade by MTS category by social class by Metropolitan School Total Test Scores.

be attributed to chance.

Table 8 shows the t-tests for the significance of the difference between MTS Restricted and Elaborated means within each grade. The more stringent standard of .01 was used to minimize the possibility of finding significance because of chance in the multiple t-tests. The t-tests show that the fourth and fifth grade differences between MTS means apparent in Figure 1 can be attributed to chance. In other words, there are no significant differences in the fourth and fifth grades. The sixth grade scores show a significant difference between mean restricted and elaborated scores, with elaborated scores substantially higher.

Table 9 examines the significance of the triple interaction with multiple t-tests. The significance of the difference between each of the possible pairs of group means: MTS-R working class, MTS-E working class, MTS-R middle class, and MTS-E middle class, was tested. Because of the often very small sample size in each group and the unequal, disproportional distribution ranging from 2-8 cases in each cell, the power of the t-test is highly limited. This suggests that the level of significance should be raised to .10. However, since a large number of t-tests were performed, which suggests capitalizing on chance, the level of significance was left at .05 as a compromise. The results show that the mean scores in fourth and fifth grades all were drawn from the same population; i.e., there were no significant differences between them. The sixth grade results show

TABLE 8

t-TESTS OF TOTAL READING SCORES x MTS
FOR GRADES 4, 5, AND 6

Grade Levels	Pooled t value	df	2-Tail Probability	N_i
Fourth	1.20	18	0.242	10/10
Fifth	0.54	18	0.598	11/9
Sixth	-12.63	18	<.001	12/8

TABLE 9

t-TESTS OF ALL POSSIBLE COMBINATIONS OF MTS AND CLASS FOR GRADES 4, 5, AND 6

Code and Class Groups	Grade 4			Grade 5			Grade 6		
	t	df	2-tail p	t	df	2-tail p	t	df	2-tail p
MTS-RW & MTS-RM	.09	8	.933	1.44	9	.184	2.94	10	.015
MTS-RW & MTS-EW	.79	8	.455	1.04	9	.323	10.26	7	.000
MTS-RW & MTS-EM	.57	2	.625	.79	8	.455	12.2	9	.000
MTS-RM & MTS-EW	1.35	14	.197	.36	8	.732	9.63	7	.000
MTS-RM & MTS-EM	.21	8	.842	2.01	7	.084	12.38	9	.000
MTS-EW & MTS-EM	1.05	8	.326	1.65	7	.143	1.62	6	.156

significant differences between all pairs of means except MTS-E working vs. middle class means. Thus, the graph in Figure 2 is essentially one point at Grade 4, one point at Grade 5, and three points at Grade 6 (Elaborated, Restricted working, and Restricted middle, in order from high to low mean score). The implications of this will form the basis of some discussion in the next chapter.

Chapter V

DISCUSSION, CONCLUSION, AND RECOMMENDATION

This study sought a general verification of Bernstein's theory, which proposes, indirectly, a relationship between MTS and school achievement. The research sample for MTS study was composed of 60 mothers and their 4th, 5th, and 6th grade children, from two socio-economic classes: middle class, with some college education and/or skilled jobs, and working class, with some high school education. Data were presented to show that maternal teaching style has an effect on reading achievement in the classroom. By the sixth grade, MTS-R children tend to have lower reading achievement scores, while MTS-E relates positively to reading achievement.

All test and sub-test measures reported in the study showed consistent trends supporting the hypothesis that MTS affects reading achievement scores. The results of the study strongly support the hypothesis that MTS has an effect on Reading Achievement. MTS-E children scored significantly higher than MTS-R students by sixth grade; however, there were no significant differences between the mean reading scores of the MTS-E and MTS-R children in the fourth and fifth grades.

Discussion and Recommendations

Findings show a transition in the relationship between MTS and reading achievement between the fifth and sixth grade. The transition suggests that there is a curriculum problem. The achievement score change suggests that there may be an abrupt transition from Restricted to Elaborated codes in reading materials.

This opens up a whole new area in curriculum research. Reading curriculum materials are not currently analyzed in terms of language codes. Characteristics of language codes laid out in Chapter 2 should guide analysis of the reading curriculum. Once analyzed, the curriculum may be organized in a way to help these students with Elaborated code background as well as Restricted code background. The hypothesized transition in the nature of reading materials to heavier emphasis on elaborated codes may explain why some children stop learning to read at the fifth or sixth grade level. New materials may be needed in order to revise whole areas of learning disability instruction and remedial reading instruction.

Bernstein's theory is somewhat supported by the data that IQ seems unrelated to MTS. Bernstein suggested that language development is more related to social class than to intelligence. However, in this study MTS was statistically independent of both social class (two levels only) and of IQ. This suggests that the traditional indicators of social class are limited in terms of their use in education curriculum

and that social class could be defined by MTS rather than income, education, and/or occupation. A great deal of deliberation needs to go into thinking about these relationships and the way we implement them in educational curriculum.

Administrators, curriculum consultants, and teachers should keep these results in mind when helping youngsters who have not learned the elaborated language. Time might be spent in helping these children develop the elaborated code of language, while at the same time preserving their own restricted language until skill in using the elaborated code can be developed. One of the main challenges faced by educators is the development and utilization of a more effective instructional model. New materials for teaching language codes suitable to school instruction may be needed as well as training in the use of these materials.

A related issue which needs more research is the finding that sixth grade MTS-R working class readers score better than middle class MTS-R readers. There is no theoretical or practical explanation for this finding; it will remain an open issue until researched further.

Conclusion and Recommendations

This study strongly supported the hypothesis that maternal teaching style had an effect on reading achievement at the sixth grade; and that sixth grade MTS-R children showed low reading achievement scores; whereas, sixth grade

MTS-E children evidenced high reading achievement scores. There are strong reasons to expect that if a school's staff were trained to meet the linguistic needs of MTS-R students and appropriate materials were identified and used, the MTS-R students would dramatically increase their MAT reading scores.

It is recommended that further research independently verify the results obtained in this study. Should supporting data be obtained, a priority recommendation should be to identify MTS-R students, develop and implement programs to service the needs of these students, and evaluate the impact of their participation in programs designed to meet their linguistic needs. Considerable studies should be devoted to methods for collecting and reporting further information on the relationship of MTS category and reading achievement.

References

Adlam, D. S. Code in context. London: Routledge and Kegan Paul, 1977.

Banks, O. The sociology of education. New York: Schocken Books, 1976.

Baratz, J. C. A bi-dialectal task for determining language proficiency in economically disadvantaged Negro children. Child Development, 1969, 40, 889-902.

Baratz, J. C. and Shuy, R. W., Eds. Teaching black children to read. Washington, D. C.: Center for Applied Linguistics, 1969.

Baratz, S. S. and Baratz, J. C. Early childhood intervention: The social science base of institutional racism. Harvard Educational Review, 1970, 40, 29-50.

Bereiter, C., Washington, E., Englemann, S., and Osborn, J. Research and development programs on preschool disadvantaged children final report, O. E. Contract 6-10-235, Project #5-1181. Washington, D. C.: U. S. Department of Health, Education and Welfare, Office of Education, Bureau of Research, 1969.

Bernstein, B. A public language: Some sociological implications of linguistic form. British Journal Society, 1959, 10, 311-326.

Bernstein, B. Social class and linguistic development: A theory of social learning. In A. H. Halsey, J. Floud, and C. A. Anderson, Eds., Economy, education and society. New York: Free Press of Glencoe, 1961.

Bernstein, B. Social class, linguistic codes, and grammatical elements. Language and Speech, 1962, 5, 221.

Bernstein, B. Elaborated and restricted codes: Their social origins and some consequences. American Anthropologist, LXVI (December, 1964), Part 2, 55-69.

Bernstein, B. A bio-linguistic approach to social learning. In Julius Gould (ed.), Penguin survey of the social sciences. Baltimore, Maryland: Penguin Books, 1965.

Bernstein, B. A socioloinguistic approach to socialization: With some reference to educability. In F. Williams (Ed.), Language and poverty: Perspectives on a theme. Chicago: Markham, 1970.

Bernstein, B. A critique of the concept of compensatory education in class, codes, and control (Vol. 1). London: Routledge and Kegan Paul, 1971.

Bernstein, B. Class codes and control, Vol. 1: Theoretical Studies towards a sociology of language. London; Boston: Routledge and Kegan Paul, 1971.

Bernstein, B. Class, codes, and control: Applied studies toward a sociology of language. London; Boston: Routledge and Kegan Paul, 1973.

Bernstein, B. and Cook, J. Social control grid. Chapter 2, 1973.

Bernstein, B and Henderson, D. Social class differences in the relevance of language of socialization. In J. A. Fishman (Ed.), Advances in the sociology of languan. The Hague, Paris, Yeshiva University: Mouton, 1972.

Bing, E. Effect of child-rearing practices on development of differential cognitive abilities. Child Development, 1963, 34, 631-648.

Brandis, W. and Bernstein, B. Selection and control, teachers' ratings of children in the infant school. London and Boston: Routledge and Kegan Paul, 1974.

Brophy, J. and Good, T. Brophy-Good System. In A. Simon and E. Boyer (Eds.), Mirrors of behavior: An anthrology of observation instruments continued. Philadelphia: Research for Better Schools, Inc., 1970.

Bruner, J. S. Child care and social class. Unpublished manuscript, March, 1970.

Cazden, C. Sub-cultural differences in child language: An interdisciplinary review. Merrill Palmer Quarterly, 1966, 12, 195-219.

Cazden, C. The acquisition of noun and verb inflections. Child Development, 1968, 39, 433-48.

Coleman, J. C. The concept of equality of educational opportunity. Harvard Educational Review, 1968, 38.

Coleman, J. C., Campbell, E. Q., Hobson, C. J., McParkland, J., Mood, A. M., Weinfeld, F. D., York, R. L. Equality of educational opportunity. Washington, D. C.: U.S. Department of Health, Education and Welfare, U.S. Government Printing Office, 1966.

Cook, J. Familial processes of communication and control. In W. Brandis and D. Henderson (Eds.), Primary socialization, language, and education, Vol. 1: Social class, language, and communication. London: Routledge and Kegan Paul, 1970.

Cook, J. Social control and socialization. London: Routledge and Kegan Paul, 1972.

Cook, J. A. Language and socialization. In J. I. Roberts and S. K. Akinsanya (Eds.), Schooling in the cultural content anthropological studies of education. New York: David McKay Co., Inc., 1976.

Cook-Gumpserz, J. Social control and socialization: A study of class differences in the language of maternal control. London and Boston: Routledge and Kegan Paul, 1973.

Deutsch, M. and Brown, B. R. Social influences in Negro-White intelligence differences. The disadvantaged child. New York and London: Basic Books, 1967.

Deutsch, M. and Brown, B. R. The role of social class in language development and cognition. The disadvantaged child. New York and London: Basic Books, 1967.

Deutsch, M. and Brown, B. R. Communication of information in the elementary school classroom. The disadvantaged child. New York and London: Basic Books, 1967.

Deutsch, M. and Brown, B. R. Content of language acquisition. The disadvantaged child. New York: Basic Books, 1967.

Entwistle, D. R. Implications of language socialization for reading models and for learning to read. Journal of Educational Psychology, 1964, 55, 75-78, 101-158.

Entwistle, Doris R. Developmental sociolinguistics: Inner city children. American Journal of Sociology, 1968, 74, 37-49.

Ervin-Tripp, S. Language development. In Martin L. Hoffman and Lois W. Hoffman (Eds.), Review of Child Development Research (Vol. II). New York: Russell Sage, 1966.

Ervin-Tripp, S. M. Language development. In M. Hoffman and L. W. Hoffman (Eds.), Review of Child Development Research. Ann Arbor: University of Michigan Press, 1966.

Ervin-Tripp, S. Structure and process in language acquisition. 21st Annual Round Table: Monograph Series on Language and Linguistics. J. Alatis (Ed.), Washington, D. C.: Georgetwon University, 1970.

Ervin-Tripp, S. Social background and verbal skills. In R. Hurley and E. Ingram (Eds.), Language development: Models and methods. New York: Academic Press, 1971.

Ervin-Tripp, S. Social dialects in developmental sociolinguistics. In R. Shuy (Ed.), Sociolinguistics: A cross disciplinary perspective. Washington, D. C.: Center for Applied Lingusitics, 1971.

Ervin-Tripp, S. and Miller, W. The development of grammar in child language. In R. Brown and U. Bellugi (Eds.), Child Development Monographs. The acquisition of language, 1964, 29, 9-34.

Ervin-Tripp, S. M. and Slobin, D. I. Psycholinguistics. Annual Review of Psychology, 1966, 17, 435-4740.

Floud, J., Halsey, A. H. and Martin, I. M. Social class and educational opportunity. London: Heinemann, 1956.

Floud, J., Halsey, A., and Anderson, C.A. (Eds.). Education, economy and society. Glencoes: The Free Press, 1961.

Floud, J. and Halsey, A. H. The sociology of education: A trend report and bibliography. Current Sociology, Vol. VIII, 1958.

Gilley, M. Influence du milieu social et de l'age sur la progremon scolaire a l'ecole primarire. Bulletin de Psychol., 1967, 20, 802-805.

Halliday, M. A. K. The functional basis of language. In Basil Bernstein (Ed.), Class, Codes and Control Applied Studies Towards a Sociology of Language, Vol. II. London and Boston: Routledge and Kegan Paul, 1971.

Halsey, A. H. Sociology and the equality debate. Review of Education, 1957, 1, 14-15.

Hawkins, P. R. Social class, the nominal group and verbal strategies. London, Herley and Boston: Routledge and Kegan Paul, 1977.

Hess, R. D. and Shipman, V. C. Early experience and the socialization of cognitive modes in children. Child Development, 1965, 36, 869-886.

Hess, R. D. and Shipman, V. C. Maternal attitude toward the school and the role of pupil, some social class comparisons. 1966. (ERIC Document Reproduction Service No. ED 018 472)

Hess, R. D. and Shipman, V. C. Cognitive elements in maternal behavior. In J. P. Hill (Ed.), Minnesota Symposiam on Child Psychology, Vol. 1. Minneapolis, Minnesota: University of Minnesota Press, 1967.

Hess, R. D. and Shipman, V. C. Maternal attitudes toward the school and the role of pupil: Some social class comparisons. In A. H. Passow (Ed.), Developing Programs for the Educationally Disadvantaged. New York: Teachers College, Columbia University, 1968.

Hess, R. D., Shipman, V. C., Brophy, J., and Bear, R. Mother interaction. In I. Gordon (Ed.), Child Readings in Research in Developmental Psychology. Glenview, Ill.: Scott, Foresman, 1971.

Hess, R. D. and Torney, J. F. The development of political attitudes in children. New York: Doubleday, 1967.

Hess, R. D. Parental behavior and children's school achievement: Implications for Headstart. In E. Grotberg (Ed.), Critical issues in research related to disadvantaged children. Princeton, New Jersey: Educational Testing Service, 1969.

Hess, R. D. Social class and ethnic inlfuences on socialization. In P. Mussen (Ed.), Carmichael's manual of child psychology. (3rd ed.) New York: Wiley, 1970.

Jackson, J. D. Hess, R. D. and Shipman, V. C. Communication styles in teachers: An experiment. Child Development, 1965, 36.

Jenkins, J. and Palermo, D. The acquisition of language structure and monographs of the society for research. Child Development, 1964, 35, 29.

Kohn, M. L. Social class and parent-child relationships. In R. L. Coser (Ed.), An interpretation: Life cycle, and achievement in America. New York: Harper and Row, 1969, 21-42.

Labov, W. The effects of social mobility on linguistic behavior. In S. Lieberson, Exploration in sociolinguistics. The Hague, The Netherlands: Mouton & Co., 1966.

Labov, W. The logic of non-standard English. In R. D. Abrahams and R. D. Troike (Eds.), Language and cultural diversity in American education. Englewood Cliffs, New Jersey: Prentice-Hall, 1972.

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

Labov, W. The logic non-standard English. In F. Williams (Ed.), Language and poverty: Perspectives on a theme. Chicago: Markham Pub. Co., 1970.

Labov, W. The reading of the -ed suffix. In H. Levin and J. P. Williams (Eds.), Basic studies in reading. New York: Basic Books, 1970.

Labov, W. and Cohen, P. Systematic relations of standard and non-standard rules in the grammars of Negro speakers project literacy report no. 8. Ithaca, New York: Cornell University, 1967.

Labov, W., Cohen, P., Robins, C., and Levus, J. A study of the non-standard English of Negro and Puerto Rican speakers in New York City. Phonological and grammatical analysis, Vol. 1. The use of language in the speech community, Vol. 2. Final Report of Cooperative Research.

Laing, R. D. and Esterson, A. Sanity, madness, and the family. Baltimore: Penguin, 1970.

Lawton, D. Social class language differences in group discussions. Language and Speech, 1963, 7(3).

Lawton, D. Social class difference in language development. Language and Speech, 1963, 6(2).

Lawton, D. Social class, language, and education. London: Routledge, Kegan Paul, 1968.

McKinley, D. C. Social class and family life. New York: Free Press, 1964.

Milner, E. A study of the relationship between reading readiness in grade-one school children and patterns of parent-child interaction. Child Development, 1951, 22, 95-112.

Mueller, Claus. The politics of communication: A study in political sociology of language, socialization and legitimation. New York: Oxford University Press, 1973.

Olim, E. G. Maternal language styles and their implications for children's cognitive development, expanded version of a paper presented at American Psychological Association, Chicago, 1965 (ERIC Document Reproduction Service No. ED 012 282)

Olim, E. G. Role of mothers' language styles in mediating their preschool children's cognitive development. School Review, 1967, 75, 414-24

Salvador, Minuchin. A project to teach learning skills to disturbed, delinquent children. American Journal of Orthopsychiatry, 1967, 37, 559.

Schatzman, L. and Strauss, A. Social class and modes of communication. American Journal of Sociology, 1955, LX.

Smith, D. Imperative issues in urban education. Teacher education: Issues and innovations. Washington, D.C.: American Association of College for Teacher Education, 1968, 50.

Waldimer, C. L. A key, public opinion and American democracy. New York: Knopf, 1961.

Wolfe, V. Daily News. New York, N. Y., 1975.

Wolfle, D. Educational opportunity, measured intelligence and social background. In A. H. Halsey, J. Floud, and C. A. Anderson (Eds.), Economy, education and society. New York: Free Press of Glencoe, 1961.

Wolfram. W. A. Socioloinguistic of Detroit Negro speech. Washington, D. C.: Center for Applied Linguistics, 1969.

Wolfram. W. Social dialect from a linguistic perspective: Assumptions, current research, and future directions. In R. Shuy (Ed.), Sociolinguistics, a crops-disciplinary perspective. Washington, D. C.: Center for Applied Linguistics, 1971, in press.

APPENDIX A

APPENDIX A

Brophy and Goods' Coding Instrument and Hess and Shipmans' Etch-A-Sketch Directions

Appendix A, provided for the reader's reference, is based upon the coding instrument which was used in this study. No efforts have been made to include all of the Brophy & Good coding forms. The combined coding form is in Appendix B.

THE COGNITIVE ENVIRONMENTS OF URBAN PRE-SCHOOL CHILDREN

Robert D. Hess, Principal Investigator

MANUAL OF INSTRUCTIONS

FOR ADMINISTERING AND SCORING

"ETCH-A-SKETCH" TASK

The measures described in this manual were developed in the project, Cognitive Environments of Urban Pre-School Children, supported by: Research Grant #R-34 from the Children's Bureau, Social Security Administration, and the Early Education Research Center, National Laboratory in Early Education, Office of Education, both of the U.S. Department of Health, Education, and Welfare; the Division of Research, Project Head Start, U.S. Office of Economic Opportunity; the Ford Foundation Fund for the Advancement of Learning; and grants-in-aid from the Social Science Research Committee of the Division of Social Sciences, University of Chicago.

THE COGNITIVE ENVIRONMENTS OF URBAN PRE-SCHOOL CHILDREN

The research sample for the Cognitive Environment Study was composed of 163 pairs of Negro mothers and their four-year-old children, from three socioeconomic classes, defined by father's occupation and parents' education: upper-middle, professional and executive, with college education; upper-lower, skilled and blue collar, with high school education; lower-lower, semiskilled and unskilled, with no greater than tenth-grade education; a fourth group included father-absent families living on public assistance, otherwise identical to the lower-lower class group.

Subjects were interviewed in the home, and mothers and children were brought to the University of Chicago campus for testing, when the children were four years old. Follow-up data were obtained from both mother and child when the child was six years of age, and again at seven years.

Principal Investigator for the project is Professor Robert D. Hess, formerly Director, Urban Child Center, University of Chicago, now Lee Jacks Professor of Child Education, School of Education, Stanford University.

Co-Investigator for the follow-up study is Dr. Virginia C. Shipman, Research Associate (Associate Professor) and Lecturer, Committee on Human Development, and Director, Project Head Start Evaluation and Research Center, University of Chicago, who served as Project Director for the pre-school phase of the research.

Dr. Jere Edward Brophy, Research Associate (Assistant Professor), Committee on Human Development, University of Chicago, was Project Director for the follow-up study and participated as a member of the research staff of the pre-school study.

Dr. Roberta Meyer Bear, Research Associate (Assistant Professor), Committee on Human Development, University of Chicago, participated as a member of the research staff during the pre-school and follow-up phases of the project and was in charge of the manuscript preparation during the write-up phase of the research.

Other staff members who contributed substantively to the project include Dr. Ellis Olim (University of Massachusetts, Amherst), who was responsible for the major analysis of maternal language; Dr. David Jackson (Toronto, Ontario), who was involved in early stages of development of categories for the analysis of mother-child interaction, and participated in the processing and analysis of data; Mrs. Dorothy Runner, who supervised the training and work of the home interviewers, acted as a liason with public agencies, and had primary responsibility for obtaining the sample of subjects; and Mrs. Susan Beal, computer programmer.

COGNITIVE ENVIRONMENT STUDY

"ETCH-A-SKETCH" TASK MANUAL

SUMMER 1967

INTRODUCTION

The "Etch-A-Sketch" task was the last of the three mother-child interaction situations to be completed during the subjects' second visit to the university, and was the final research measure to be administered. It was reserved for the end because it required the mothers to exercise continued tight control over their children for periods as long as one hour, so that in many cases subsequent activities would have been seriously affected by fatigue factors. The task was designed to emphasize the affective and control aspects of mother-child interaction, complementing the cognitive sorting tasks which placed a premium on information transmission.

MATERIALS

This task makes use of the "Etch-A-Sketch," a toy sold commercially by the Ohio Art Company, Bryan, Ohio. Two "Etch-A-Sketch" toys are required for the task if the subjects' productions are to be traced. Also needed are 5" by 7" pieces of very thin tracing paper (equal to the size of the "Etch-A-Sketch" screen) and a short (less than 5" long) straight-edge or ruler. With this equipment the subjects' productions may be traced and preserved for later scoring.

The models to be copied were drawn in black ink on white 3 3/4" x 5" cards. Below each model was written the maximum number of points allowed for a perfect copy of the design, an amount which equaled the number of lines in the design; these were used later when the mothers were asked to predict the number of points they could earn. The designs used in our task are shown at the end of this manual.

COGNITIVE ENVIRONMENT STUDY

"ETCH-A-SKETCH" TASK MANUAL

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Since only vertical and horizontal lines were used, each succeeding design differs from previous ones only in the length and number of lines and is therefore quantitatively but not qualitatively more difficult. The knobs never had to be used simultaneously or turned in both directions to make a specific line. All that was required to make a perfect line was to begin in the proper direction and to stop when the proper length was reached.

PROCEDURE

The mother was first familiarized with the toy while the child was not present. She was allowed to manipulate it freely and note its possibilities and properties on her own. The tester then asked her to construct a square, which the mother continued doing until she could do it easily without help.

The task proper began later when the child was present. The child was seated to the right of the mother, since he was to use the knob on the right (vertical lines). The tester sat across from the mother. After briefly outlining the task the tester left the table and busied herself elsewhere for 3 minutes while the subjects practiced. When the tester returned she presented the first model to be copied. The exact instructions were as follows:

> (Have mother make a square on the board before task begins. She should have reached that level of performance before she teaches the child in the interaction situation.)
>
> Interaction (place board in front of mother and child on the table)
>
> THIS IS AN ETCH-A-SKETCH. YOU CAN MAKE DIFFERENT SHAPES BY TURNING THE KNOBS. (Tester makes a square.) IN A FEW MINUTES, I WILL GIVE YOU 5 DRAWINGS TO COPY ON THIS BOARD, WORKING TOGETHER. MRS. _____, YOU ARE TO WORK THE LEFT KNOB, AND _____, YOU WORK THE RIGHT KNOB. (Tester points to the knobs as she talks.) YOU MAY NOT TURN EACH OTHER'S KNOBS, BUT MRS._____, YOU MAY GIVE ANY DIRECTIONS YOU WANT TO. I'M NOT QUITE READY TO BEGIN, SO YOU HAVE A FEW MINUTES TO PRACTICE USING THE BOARD.

COGNITIVE ENVIRONMENT STUDY

"ETCH-A-SKETCH" TASK MANUAL

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(3 minute practice period)

WE'RE ABOUT READY TO BEGIN. (Take board away. Present first model in front of mother and child.) HERE IS THE FIRST DRAWING I'D LIKE YOU TO COPY. TRY TO MAKE IT THE SAME SIZE, THE SAME SHAPE, EVERYTHING JUST THE SAME. AFTER YOU HAVE FINISHED, I WILL COPY IT ON A SHEET OF PAPER SO LATER I CAN SEE JUST HOW CLOSE IT COMES TO THIS DRAWING.

IF YOU MAKE IT JUST THE SAME AS THIS DRAWING, YOU GET 4 POINTS. IF IT IS NOT JUST THE SAME, YOU WILL GET FEWER POINTS. HOW MANY POINTS, FROM ZERO TO FOUR, DO YOU THINK YOU AND _____ CAN GET ON THIS FIRST DRAWING, WORKING TOGETHER?

YOU CAN REPEAT EACH DRAWING AS MANY TIMES AS YOU LIKE. AFTER EACH ATTEMPT, I WILL ASK YOU TO DECIDE WHETHER YOU WANT TO TRY IT AGAIN, OR WHETHER YOU WANT TO GO ON TO THE NEXT DRAWING.

FROM NOW ON, PLEASE DON'T SHAKE OUT THE BOARD, BECAUSE I MUST COPY EACH DRAWING YOU MAKE.

I'LL MAKE SURE THE LINE STARTS ABOUT HERE (point) SO YOU WON'T HAVE TO WORRY ABOUT THAT (start line slightly above center of board).

(Leave card with figure on it on table facing mother; do not present fresh board until decision is reached.)

Question: HAVE YOU DECIDED?
ARE YOU GOING TO TRY IT AGAIN, OR DO YOU WANT TO GO ON TO THE NEXT DRAWING?

(Use above question when necessary; i.e., when mother does not spontaneously give decision.)

The tester traced each production (as precisely as possible) while the subjects began a new attempt, at the same or the next design, using the alternate "Etch-A-Sketch". Each time a new design was attempted (not a repeat of the design) the tester ascertained a prediction from the mother. The task ended when the last production (last attempt at Figure V was accepted by the mother.

SCORING THE FIGURES

The "Etch-A-Sketch" productions are scored by comparing the traced figures to the standard models. Anyone tracing figures must be extremely careful to

make sure that the subjects' productions are traced exactly. Since points are deducted for "tails" extending from corners and for failure to close the figures, tracers should be familiar with the scoring system so that they do not inadvertantly lower scores by creating "tails" when tracing. The scoring system to be described below appears complicated at first, but in practice it is easily and reliably applied. By superimposing the tracings over 1/8 inch graph paper, the scorer can make the necessary determinations without requiring a ruler or other measurement devices (see attached graph paper with standard models). The scoring system used is as follows:

A. COMPLETE FIGURES

1. Determine a base line length. The base line length, plus or minus 1/16" is that length to which most of the lines of the figure correspond. It is the modal length. For example, if 8 of the 12 lines on the cross are between 15/16" and 17/16", the base length is one inch — the same as that for the model.

2. Count correct lines. Correct lines are those which are within 1/16" of the base length and which have no tails.

3. Adjust for base length. If the base length is the same as that for the model, deduct nothing. Otherwise, deduct 1 point for every 1/16" that the base length differs from the base length of the model.

4. Adjust for double tails. Deduct 1 additional point for every line on the figure which has two tails — one at each end.

EXAMPLE

Figure A (cross)		Figure B (cross)
1"	Base length	17/16"
8	# Correct Lines (proper length, no tails)	8
0	# Double Tails	2
-	Adjmt. for Base Length	-1
-	Adjmt. for Double Tails	-2
8	SCORE	8-1-2 = 5

COGNITIVE ENVIRONMENT STUDY

"ETCH-A-SKETCH" TASK MANUAL

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B. INCOMPLETE FIGURES

Occasionally subjects will accept a figure which is not closed (i.e., does not form a geometric polygon). These figures are scored in exactly the same way as complete figures, except that the scores may not exceed the following maximum values:

Figure	MAXIMUM SCORE
1.	0 + the number of attempts made
2.	1 + the number of attempts made
3.	2 + the number of attempts made
4.	3 + the number of attempts made
5.	5 + the number of attempts made

In practice it has been found that incomplete figures usually do not earn scores near the maximum. They are usually so poor that no credit can be given at all. The bonus for effort was used only twice in scoring 60 figures. Its main function is to discriminate a little more finely at the lower end of the distribution.

C. SPECIAL PROBLEMS AND CONVENTIONS

1. Any figure not attempted at all is automatically scored zero.

2. If one of the first 3 figures is so large that the adjustment for base length would produce a zero score, but still the figure is symmetrical and has no tails, credit is given. Score 1 point for the square, 2 for the L, and 3 for the T. If the figure is asymmetrical or has tails, score zero.

3. If a figure is essentially complete except for a failure of closure in one spot:

a. Ignore if the hole is less than 1/16".
b. Deduct 1 point if it is more than 1/16".
c. Deduct for a double tail if a line contains both a hole and a tail.

4. Occasionally two base lengths can be used for a given figure. Usually they yield the same score. If not, award the higher score of the two.

5. The L and the T present special problems because the lines are not of equal lengths. Special scoring models with larger base lengths are provided to facilitate scoring. Often it is necessary to score by subtraction rather than addition, deducting from the maximum score 1 point for each tail and 1 point for each 1/16" asymmetry (as when one side of the T is longer than the other).

If both methods are used, award the higher score.

6. Results show that scores tend to be low (averaging 25% of the possible total). Consequently it is recommended that credit be given in borderline situations (as when a line is exactly 1/16" too long). Whenever it cannot be unequivocally decided whether or not a line is correct, score it as correct.

PERFORMANCE MEASURES

A. SCORE

Total scores are obtained by summing the scores from the 5 designs (see Scoring Manual). The score used is the Best Possible Score obtained by summing the scores from the best attempt (highest score) at each design. Range = 0 - 50 points.

B. TOTAL PREDICTION = Sum of mother's predicted points for the 5 designs.

C. DISCREPANCY SCORE = Prediction total - Score total + 50.

The addition of 50 points converts all scores to positive numbers. If discrepancy scores are to be correlated with other variables, the prediction and score distributions should first be normalized before discrepancy scores are obtained.

D. TOTAL TIME (to nearest minute).

This seems to be the best measure of effort, since the total number of attempts is affected by the subjects' speed in making lines and by differences in how far the mothers will go with an imperfect figure before requesting a new board.

COGNITIVE ENVIRONMENT STUDY

"ETCH-A-SKETCH" TASK MANUAL

- 7 -

TEACHING MEASURES

A. PRACTICE PERIOD BEHAVIOR

The following categories of behavior were used in coding the subjects for their use of the practice period:

1. Practice - No Practice. "No Practice" means that neither the mother nor the child attempted to use the board, and that the mother accepts or condones this. She does not try to practice or to get the child to do so. They essentially ignore the board.

2. Child Practices - Child Does Not Practice. The purpose here is to determine those cases where the mother alone uses the board. She either plays with it herself or demonstrates it to the child, but she does not allow the child to use it himself. Another situation that is relevant here is the case where the child ignores or resists the mother completely so that he never actually practices (follows a direction). Here the mother lacks sufficient control over the child to be able to institute a practice session.

3. Mother Structures - Child Structures. The basic question here is: Does the mother express commands or expectations to the child regarding what she expects him to do? The child is structuring when:

a. He plays alone with the board, with mother's tacit approval.

b. He begins giving directions to the mother, and the mother follows them without giving any of her own.

The following situations are scored as cases where the mother structures:

a. When the child alone plays with the board, but the mother directs his lines.

b. When the child gives directions but the mother does, too (Mother allows him to direct, but will correct him or supercede his directions if

necessary). Here the mother is encouraging the child and allowing him some autonomy, but she retains the basic control.

4. Alternatives Under "Mother Structures"

a. Emphasis on drawing figures. For categories 1-3 below the mothers are concerned about drawing figures, and attempt to do so by guiding or directing the child. They are not satisfied with simply turning the button to make lines. "Practice" for these mothers means figure construction, not button turning. The mothers who are scored 4 and 5, on the other hand, are apparently satisfied with "turning the button" as the needed practice, since they typically do not guide the child's lines. Telling the child to reverse does not count as guiding if it is done only because the child has reached the edge of the board and does not know how to get the line to appear again.

(1). Mother Explains and/or Demonstrates the Board: Here the mother shows the child the relationship between the way the knob is turned (described as "toward you" or "this way", etc.), and the direction of the line on the board. Then the mother directs the child, "calling" these instructions. Another example which belongs here is when the mother does not give a complete or formal explanation but she predominantly directs the child by twirling her hand or by turning the child's button to start him. These are considered "demonstrations." If the mother turns the child's button herself (rather than let the child do it) or if she turns it only to get it away from the edge, this is NOT demonstration.

(2). Mother Uses Called Directions: This includes cases where the child is already familiar with the board and cases where the mother directs him AS IF he were. "Called Directions" means that the mother DOES NOT explain or demonstrate the knob-line relationship, but nevertheless gives specific

directions ("Now you make the top", "Now go up"). The mother's directions are purely verbal. If the mother twirls her hand to direct or turns the child's button to get him started, she is demonstrating, not calling.

(3). Mother Tells Child to Start, Stop, and Reverse: Here the emphasis is less clearly on figure drawing and more on button turning than in the above. In guiding the child the mother does not tell the child which way to turn BEFORE he turns. She simply tells him to turn. Then, if he goes the wrong way, she tells him to reverse. The mother may or may not label the figures they draw. Usually she tells the child only at the end. The point is that the child is not told to make a specific LINE; he is instead told only to turn. The direction of turning is not specified until after he begins, and is only implied if he goes in the "correct" direction. Regardless of the number or complexity of figures drawn, the rating is 3 if the mother sticks to this trial and error approach.

b. Emphasis on Turning the Buttons.

(4). Mother and Child Take Non-specified Turns: Here the mother does not guide the direction of the child's lines, even after the fact. She insists only that the child refrain from turning while she turns. Otherwise, she is satisfied with the child's lines, regardless of their direction. The child, in effect, never learns that a line should go one way and not the other. If the mother should tell the child to reverse only to get him away from the edge of the board, but does not guide him otherwise, the rating is still 4 and not 3.

(5). Mother and Child Turn Simultaneously. Here the mother demands only that the child turn the button. She seems satisfied as long as the child makes lines, any lines, on the board. The following instructions to the

child do not change the rating of 5:

a) The mother tells the child to reverse because he has reached the edge of the board.

b) She tells him to stop because she wants to shake out the board.

c) They take turns briefly but apparently by chance (i.e., the mother doesn't demand it, and they then return to simultaneous turning).

5. Single Score for Practice Period

Since mothers often vary in their practice period behavior so that they fall into two or more of the categories, some method of assigning a single score must be used. Possible choices include the coding of subunits of the practice period and averaging, coding the typical or modal behavior, and coding the highest level of behavior to appear. For the subjects of the Cognitive Environment Study the last method seemed most appropriate. In samples where the average level of ability or education of the subjects is higher, an alternative method may be preferred. In the Cognitive Environment Study each case was coded for the highest level category (lowest number on the list below) which applied at any time during the practice period.

1. Mother explains and/or demonstrates how to use the board.
2. Mother uses called directions, assuming that the child knows which way to turn.
3. Mother tells child to start and stop, and to reverse if he goes the wrong way.
4. Mother and child take non-specified turns. Mother demands only that the child follow start-stop directions.

5. Mother and child typically turn simultaneously. Mother does not demand that they take turns.

*6. Child takes initiative in directing lines, mother follows. Mother does not attempt to teach child or to direct his lines.

*7. Child practices alone.

*8. Mother practices alone.

*9. No practice.

B. SPECIFICITY OF DIRECTIONS

For each line that the child makes, the mother's direction (if any) may be coded for presence or absence of specificity. "Specificity" here refers to whether the direction of the line to be made (up or down) or of the knob to be turned (clockwise or counterclockwise) is indicated by the mother before the child begins to turn his knob. Specificity is coded "present" if the mother makes any attempt to specify which direction the child is to turn. Examples:

"Go up."
"Turn toward Mommy."
"Go the same way as last time."
"Turn like this." (demonstrating with hand motions)
"Come to this line." (or "my finger")

Specificity is coded as "absent" when the mother merely tells the child to turn without giving any indication of direction, or when she says nothing at all. Examples:

"Okay."
"Your turn."
"Now make your line." (without pointing or gesturing)

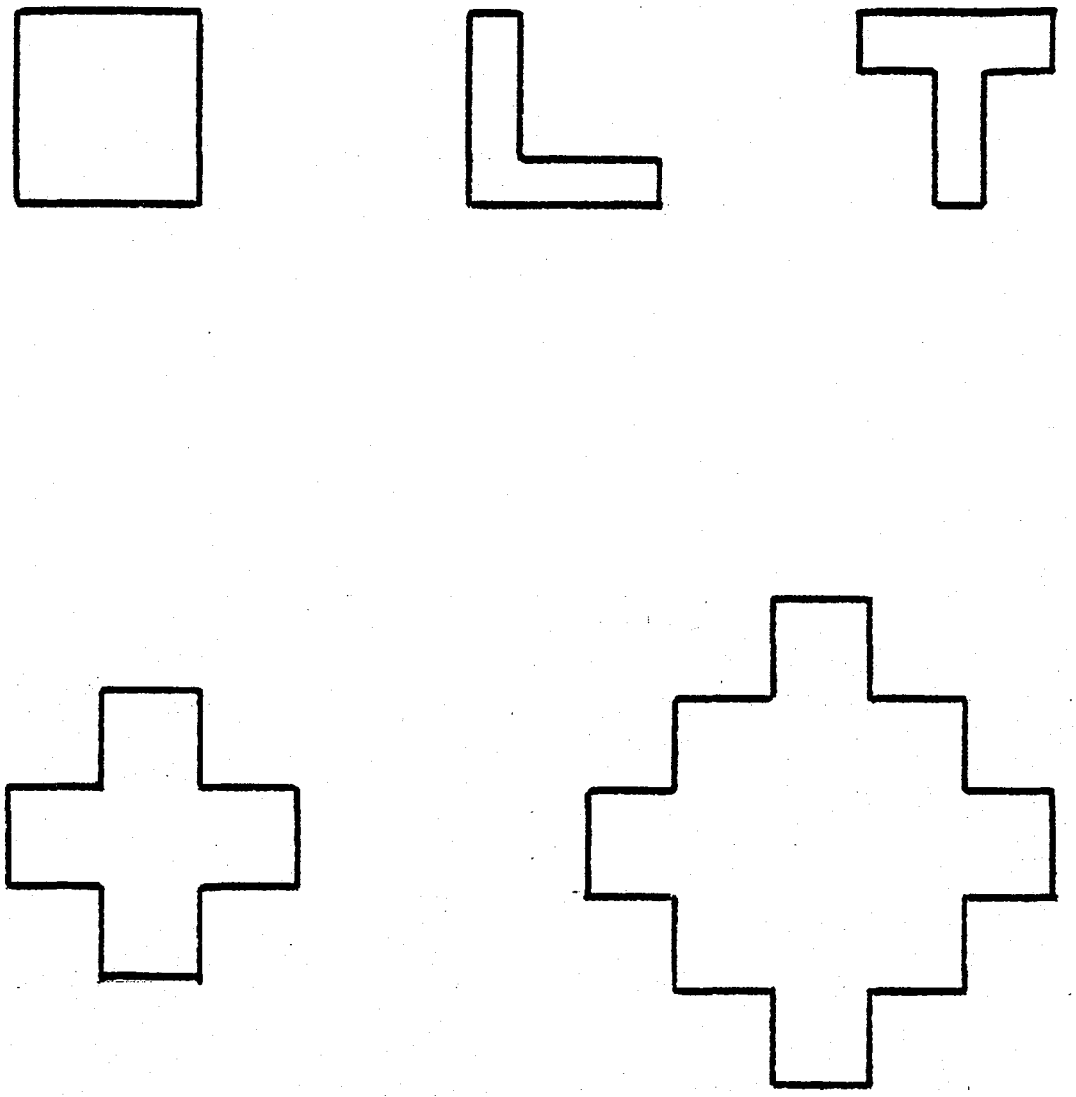
* Categories 6-9 were combined under the heading "Mother does not structure Practice Period."

Specificity must occur before the child indicates which way he is going to turn his knob. Confirmatory feedback ("Okay, keep going.") and correction ("No, the other way.") do not count.

Since subjects vary in the number of lines made, scores for specificity in directions must be based on a constant subsample or expressed as percentages before subjects can be compared. Our scores are based on a subsample of 25 directions (the total number of lines made by the child on the first attempt at each design; or, if the first attempt was incomplete, the first N lines he made on attempts at the design, where N = the number of lines to be made by the child on that design). An alternative method would be to code every line made by the child, and to compute the percentage preceded by specific directions from the mother.

C. USE OF THE MODELS

The design models (on 3 3/4" x 5" cards) were placed on the table by the tester and left for the mothers to manipulate at will. Mothers vary considerably in the degree to which they show the models to the child during figure construction. On each design the mother was coded for whether or not she showed the model to the child. "Showing" the model included holding it up for the child to see, pointing to it, or specifically telling him to look at it. The mother did not have to use the model for giving directions to be credited with showing it to the child; holding it up and saying, "We're making this," was sufficient. The score used was the total number of design models shown to the child (0-5, of a total of 5 designs).



DESIGN MODELS

FORM 4.1. Introducing Lessons, Activities, and Assignments

Observe the behavior when introducing activities and making assignments. For each codable instance observed, record the numbers (consecutively) of each category applicable to the behavior.

BEHAVIOR CATEGORIES	CODES	
1. Gushes, gives overdramatic build-up	1. 4	26. ____
2. Predicts that group will enjoy the activity	2. 1,3	27. ____
3. Mentions information or skills the group will learn	3. 1,3	28. ____
4. Makes no attempt to motivate; starts right into activity	4. ____	29. ____
5. Apologizes or expresses sympathy to group ("Sorry, but you have to . . .")	5. ____	30. ____
6. Bribes, promises external reward for good attention or work	6. ____	31. ____
7. Warns group, or reminds them, about test to be given later	7. ____	32. ____
8. Threatens punishment for poor attention or work	8. ____	33. ____
9. Presents the activity itself as a penalty or punishment	9. ____	34. ____
10. Other (specify)	10. ____	35. ____
	11. ____	36. ____
	12. ____	37. ____
	13. ____	38. ____
	14. ____	39. ____
	15. ____	40. ____
	16. ____	41. ____
	17. ____	42. ____
	18. ____	43. ____
	19. ____	44. ____
	20. ____	45. ____
	21. ____	46. ____
	22. ____	47. ____
	23. ____	48. ____
NOTES:	24. ____	49. ____
	25. ____	50. ____

APPENDIX B

APPENDIX B

3-15-78

M E M O R A N D U M

TO: Resource Aide

FROM: Bettye Greer

RE: Suggested Interview Questions

DATE:

Suggested interview comments and responses are listed:

1. Explain the study, testing techniques and procedures. Explain that participants will be familiarized with required tasks by practicing them.

2. Explain when and where tests sessions will be held.

3. Invite parents to training session to acquaint them with the Etch-A-Sketch Instrument.

4. Let mothers know that we would like to have them participate in the study.

5. Thank each parent for agreeing to participate in the study. Let the parents know that you will write a letter confirming this agreement and a summary of the phone conversation will be forthcoming.

BG/fs

APPENDIX C

The Etch-A-Sketch Task Coding Instrument

Appendix C provides a reference for coding based upon the instrument used for coding mother-child interaction during the Etch-A-Sketch task session. Specific information concerning this coding form may be found in Brophy & Good's book, "Mirrors for Behavior," and Hess & Shipman's E-A-S directions.

The cited combined coding form is not intended to suggest that the coding form should be limited to an observation of an Etch-A-Sketch task session only. Conceivably, this instrument can be used in the classroom if altered slightly.

School _____ Code Number _____
Test _____ Maternal Teaching Status _____
Date _____ Examiner _____

Form I. Introducing the Etch-A-Sketch Models and Assignments

Use: When the mother is introducing and participating in each model

Purpose: Observe the mother's language behavior when introducing models and making assignments. For each codable instance observed, record an X in the boxes of each category applicable to the mother's language behavior.

BEHAVIOR CATEGORIES	CODES (Six task) 1	2	3	4	5	6
1. Gushes, gives overdramatic build-up						
2. Predicts that the child will enjoy the activity						
3. Mentions information or skill the child will learn						
4. Makes no attempt to motivate; starts right away into the activity						
5. Apologizes or expresses sympathy to child ("Sorry, but you have to...")						
6. Bribes, promises external reward for good attention or work						
7. Warns child, or reminds him/her about task						
8. Threatens punishment for poor attention or work						
9. Presents the activity itself as a penalty or punishment						
10. Praises progress in specific terms						
11. Criticizes performance or indicates weaknesses in specific terms						
12. Praises good attention or good behavior						
13. Criticizes poor attention or misbehavior						
14. No general evaluation of performance made						
15. Mother thinks out loud as child attempts to solve a task or think through a model						
16. Mother allows child to hear the steps he or she goes through, or explains them when giving directions for a task						
17. Mother talks down to child, sermonizes or gripes when child makes a mistake or fails to complete a task						
18. Mother explains and/or demonstrates the board						

		1	2	3	4	5	6
19.	Mother does not explain or demonstrate knob/line relationship, but gives specific directions ("Now you make the top," "Now go up.")						
20.	Mother's directions are purely verbal						
21.	The mother directs the child "calling" the instructions						
22.	The mother does not give a complete or formal explanation						
23.	The mother directs the child by twirling her hand (demonstration)						
24.	The mother directs the child by turning the button (not a demonstration)						
25.	The mother tells the child to reverse because he/she has reached the edge of the board.						
26.	The mother tells the child to stop because she wants to shake out the board						
27.	The mother tells the child to start/stop or to reverse if she/he goes the wrong way						
28.	The mother demands only that the child follow start-stop directions						
29.	The child is not told to make a specific line, instead he is told only to turn (trial & error approach)						
30.	The mother and child take non-specified turns						
31.	The mother does not guide the direction of the child's lines						
32.	The mother uses "called" directions assuming that the child knows which way to turn						
33.	The mother praises the child's lines regardless of their direction						
34.	The mother praises the child as long as the child makes lines on the board						
35.	The mother (structures) expresses commands or expectations to the child regarding what she expects him/her to do						
36.	The child gives directions to the mother; the mother follows without giving any of her own						
37.	The child takes initiative in directing lines, the mother follows						
38.	The mother does not attempt to teach the child or direct his lines						
39.	The child practices alone, ___ the mother practices alone ___						
40.	Neither the mother nor the child practices						

NOTES: _____

APPENDIX D

The Restricted and Elaborated Coding Forms

The Restricted and Elaborated Coding instruments, which are included in the following pages of appendix, are designed to assess (1) the mother and child's verbal/nonverbal interaction during the Etch-A-Sketch task session, and (2) the overall MTS language style. Moreover, this instrument was used together with the Metropolitan Achievement Test and it allowed the investigator and members of the dissertation committee to determine the percentage to which each subject used an elaborated code.

Computation for elaborated percentile is noted at the bottom of each coding form.

School _____ Code Number _____
Test _____ Maternal Teaching Status _____
Date _____ Examiner _____

Form 1: Introducing and giving the Etch-A-Sketch Models and Assignments

Used: When the mother is introducing and participating in each model

Purpose: Observe the mother's language behavior when introducing models and making assignments or giving directions. For each codable instance observed, record an X in the boxes of each category applicable to the mother's language.

Please rank each item on a five point scale. Rank the items based upon your observation.

BEHAVIOR CATEGORIES	T1	T2	T3	T4	T5
1. Gushes, gives overdramatic build-up					
2. Predicts that the child will enjoy the activity					
3. Mentions information or skill the child will learn					
4. Makes no attempt to motivate; starts right into the activity					
5. Apologizes or expresses sympathy to the child ("Sorry, but you have to...")					
6. Bribes, promises external reward for good attention or work					
7. Warns child, or reminds him/her about task					
8. Threatens punishment for poor attention or work					
9. Presents the activity itself as a penalty or punishment					
10. Praises progress in specific terms					
11. Criticizes performance or indicates weaknesses in specific terms					
12. Praises good attention or good behavior					
13. Criticizes poor attention or misbehavior					
14. No general evaluation of performance made					
15. Mother thinks out loud as child attempts to solve a task or thinks through a model					
16. Mother allows child to hear the steps he or she goes through, or explains them when giving directions for a task					
17. Mother talks down to child when child makes a mistake or fails to complete a task					
18. Mother explains and/or demonstrates the board					

		T1	T2	T3	T4	T5
19.	Mother does not explain or demonstrate knob/line relationship, but gives specific directions ("Now you make the top," "Now go up.")					
20.	Mother's directions are purely verbal					
21.	The mother directs the child "calling" the instructions					
22.	The mother does not give a complete or formal explanation					
23.	The mother directs the child by twirling her hand (demonstration).					
24.	The mother directs the child by turning the button (not a demonstration)					
25.	The mother tells the child to reverse because he/she has reached the edge of the board					
26.	The mother tells the child to stop because she wants to shake out the board					
27.	The mother tells the child to start/stop or to reverse if she/he goes the wrong way					
28.	The mother demands only that the child follow start-stop directions					
29.	The child is not told to make a specific line; instead, he is told only to turn (trial and error approach)					
30.	The mother and child take non-specified turns					
31.	The mother does not guide the direction of the child's lines					
32.	The mother uses "called" directions assuming that the child knows which way to turn					
33.	The mother praises the child's lines regardless of their direction					
34.	The mother praises the child as long as the child makes lines on the board					
35.	The mother (structures) expresses commands or expectations to the child regarding what she expects him/her to do					
36.	The child gives directions to the mother; the mother follows without giving any of her own					
37.	The child takes initiative in directing lines; the mother follows					
38.	The mother does not attempt to teach the child or direct his lines					
39.	The child practices alone___; the mother practices alone ____					
40.	Neither the mother nor the child practices					

NOTES: _____

School _____ Code Number _____
Test _____ Maternal Teaching Status _____
Date _____ Examiner _____

Form 1: Introducing and giving the Etch-A-Sketch Models and Assignments

Used: When the mother is introducing and participating in each model

Purpose: Observe the mother's language behavior when introducing models and making assignments or giving directions. For each codable instance observed, record an X in the boxes of each category applicable to the mother's language.

Please rank each item on a five point scale. Rank the items based upon your observation.

BEHAVIOR CATEGORIES	T1	T2	T3	T4	T5
1. Gushes, gives overdramatic build-up					
2. Predicts that the child will enjoy the activity					
3. Mentions information or skill the child will learn					
4. Makes no attempt to motivate; starts right into the activity					
5. Apologizes or expresses sympathy to the child ("Sorry, but you have to...")					
6. Bribes, promises external reward for good attention or work					
7. Warns child, or reminds him/her about task					
8. Threatens punishment for poor attention or work					
9. Presents the activity itself as a penalty or punishment					
10. Praises progress in specific terms					
11. Criticizes performance or indicates weaknesses in specific terms					
12. Praises good attention or good behavior					
13. Criticizes poor attention or misbehavior					
14. No general evaluation of performance made					
15. Mother thinks out loud as child attempts to solve a task or thinks through a model					
16. Mother allows child to hear the steps he or she goes through, or explains them when giving directions for a task					
17. Mother talks down to child when child makes a mistake or fails to complete a task					
18. Mother explains and/or demonstrates the board					

		T1	T2	T3	T4	T5
19.	Mother does not explain or demonstrate knob/line relationship, but gives specific directions ("Now you make the top," "Now go up.")					
20.	Mother's directions are purely verbal					
21.	The mother directs the child "calling" the instructions					
22.	The mother does not give a complete or formal explanation					
23.	The mother directs the child by twirling her hand (demonstration).					
24.	The mother directs the child by turning the button (not a demonstration)					
25.	The mother tells the child to reverse because he/she has reached the edge of the board					
26.	The mother tells the child to stop because she wants to shake out the board					
27.	The mother tells the child to start/stop or to reverse if she/he goes the wrong way					
28.	The mother demands only that the child follow start-stop directions					
29.	The child is not told to make a specific line; instead, he is told only to turn (trial and error approach)					
30.	The mother and child take non-specified turns					
31.	The mother does not guide the direction of the child's lines					
32.	The mother uses "called" directions assuming that the child knows which way to turn					
33.	The mother praises the child's lines regardless of their direction					
34.	The mother praises the child as long as the child makes lines on the board					
35.	The mother (structures) expresses commands or expectations to the child regarding what she expects him/her to do					
36.	The child gives directions to the mother; the mother follows without giving any of her own					
37.	The child takes initiative in directing lines; the mother follows					
38.	The mother does not attempt to teach the child or direct his lines					
39.	The child practices alone___; the mother practices alone ____					
40.	Neither the mother nor the child practices					

NOTES: _____

APPENDIX E

A Sample Letter Written to Prospective Parent Participants

Included in appendix is a sample letter addressed to prospective parents (of students whose names were randomly selected from cumulative folders) to participate in the MTS study.

Although the letter was addressed to both parents, only mothers were invited to participate in the study. Fathers, however, were invited to participate with the mothers in the training sessions.

December 27, 1978

Mr. & Mrs. E. Berras
3716 Barriston Dr.
Antioch, California

Dear Parents of Barbara Berras,

Your help is urgently needed.

Thank you for volunteering to take part in a research project of major importance that will hopefully benefit your child as well as the Antioch School District. The project is aimed at, as explained to you by phone, improving the reading program and materials used at school.

You will be trained to administer the Etch-A-Sketch task to your child. For your participation, you will receive a per dium directly from me. Please keep track of your mileage and any other expense claims resulting from this project.

Training sessions will take place at Fremont School, on January 5, 1976; and at my office on January 14th, at 10:00 a.m. Sessions will last about two hours. If you cannot attend, please call me at 667-6110.

Thanking you in advance for your participation and very important contributions to this research. You may be assured that your names will not be used and that after the data are transferred to computer cards, the test will be destroyed, and your anonymity will be guaranteed.

Sincerely,

s/ Bettye J. Greer

Bettye J. Greer
Projects Coordinator

APPENDIX F

Analysis of Variance

The ANOVA's were computed to analyze the Metropolitan Achievement test scores. Total scores are included in Appendix E, and sub-total scores are placed in Appendix F.

Analysis of Variance
Summary Table
Vocabulary -- Dependent Variable

Source of Variation		Sum of Squares	df	Mean Square	F	Significance of F
Single Effects						
Sex		389.104	1	389.104	0.568	0.455
Class		466.224	1	466.224	0.680	0.414
MTS		2894.807	1	2894.807	4.225	0.046*
Grade		2113.507	2	1056.754	1.542	0.225
2 Way Interactions						
Sex	Class	201.036	1	201.036	0.293	0.591
Sex	MTS	1053.721	1	1053.721	1.538	0.221
Sex	Grade	345.004	2	172.502	0.252	0.779
Class	MTS	170.450	1	170.450	0.429	0.620
Class	Grade	244.425	2	122.212	0.178	0.837
MTS	Grade	14688.535	2	7344.268	10.719	0.000*
Residual		30832.078	45	685.157		
Total		58122.600	59	985.129		

Analysis of Variance
Summary Table
Reading -- Dependent Variable

Source of Variation		Sum of Squares	df	Mean Square	F	Significance of F
Single Effects						
Sex		19.388	1	19.388	0.029	0.866
Class		840.309	1	840.309	1.257	0.268
MTS		5053.569	1	5053.569	7.562	0.009
Grade		1443.082	2	721.541	1.080	0.348
2 Way Interactions						
Sex	Class	554.584	1	554.584	0.830	0.367
Sex	MTS	344.387	1	344.387	0.515	0.477
Sex	Grade	1836.052	2	918.026	1.374	0.264
Class	MTS	94.286	1	94.286	0.141	0.709
Class	Grade	2174.133	2	1087.066	1.627	0.208
MTS	Grade	13133.967	2	6566.984	9.827	0.000
Residual		30073.158	45	668.292		
Total		58652.583	59	994.112		

Analysis of Variance
Summary Table
Word Analysis -- Dependent Variable

Source of Variation		Sum of Squares	df	Mean Square	F	Significance of F
Single Effects						
Sex		409.604	1	409.604	0.816	0.371
Class		0.115	1	0.115	0.000	0.988
MTS		2112.277	1	2112.277	4.210	0.046
Grade		1641.909	2	820.954	1.836	0.206
2 Way Interactions						
Sex	Class	383.597	1	383.597	0.765	0.387
Sex	MTS	94.110	1	94.110	0.188	0.667
Sex	Grade	745.133	2	372.567	0.743	0.482
Class	MTS	826.825	1	826.825	1.648	0.206
Class	Grade	144.309	2	72.154	0.144	0.866
MTS	Grade	5682.235	2	2841.117	5.663	0.006*
Residual						
Total		37568.733	59	636.758		

Analysis of Variance
Summary Table
Total -- Dependent Variable

Source of Variation		Sum of Squares	df	Mean Square	F	Significance of F
Single Effects						
Sex		145.358	1	145.358	0.251	0.619
Class		7.373	1	7.373	0.013	0.911
MTS		3742.563	1	3742.563	6.469	0.014*
Grade		2654.749	2	1327.374	2.294	0.113*
2 Way Interactions						
Sex	Class	457.184	1	457.184	0.790	0.379
Sex	MTS	668.689	1	668.689	1.156	0.288
Sex	Grade	457.714	2	228.857	0.396	0.676
Class	MTS	136.339	1	136.339	0.236	0.630
Class	Grade	751.369	2	375.684	0.649	0.527
MTS	Grade	14750.670	2	7375.335	12.747	0.000*
Residual		26035.744	45	578.572		
Total		54657.733	59	926.402		

Analysis of Variance
Summary Table
Vocabulary Dependent Variable

Source of Variation			Sum of Squares	df	Mean Square	F	Significance of F
Single Effects							
Class			265.209	1	265.209	0.419	0.520
MTS			2857.817	1	2857.817	4.518	0.039
Grade			3351.015	2	1675.507	2.649	0.081
2-Way Interactions							
Class	MTS		43.338	1	43.338	0.069	0.795
Class	Grade		406.044	2	203.022	0.321	0.727
MTS	Grade		14547.085	2	7273.542	11.499	0.000
3-Way Interactions							
Class	MTS	Grade	2698.069	2	1349.035	2.133	0.130
Residual			30361.408	48	632.529		
Total			58122.600	59	985.129		

Analysis of Variance
Summary Table
Word Achievement Dependent Variable

Source of Variation	Sum of Squares	df	Mean Square	F	Significance of F
Single Effects					
Class	7.909	1	7.909	0.018	0.894
MTS	1776.284	1	1776.284	4.045	0.050
Grade	2670.007	2	1335.003	3.040	0.057
2-Way Interactions					
Class MTS	506.626	1	506.626	1.154	0.288
Class Grade	230.624	2	115.312	0.263	0.770
MTS Grade	5843.678	2	2921.839	6.653	0.003
3-Way Interactions					
Class MTS Grade	3356.814	2	1678.407	3.822	0.029
Residual	21079.167	48	439.149		
Total	37568.733	59	636.658		

Analysis of Variance
Summary Table
Reading Dependent Variable

Source of Variation	Sum of Squares	df	Mean Square	F	Significance of F
Single Effects					
Class	464.605	1	464.605	0.806	0.374
MTS	3125.476	1	3125.476	5.423	0.024
Grade	2523.092	2	1261.546	2.189	0.123
2-Way Interactsion					
Class MTS	10.819	1	10.819	0.019	0.892
Class Grade	1190.136	2	595.068	1.032	0.364
MTS Grade	14414.688	2	7207.344	12.505	0.000
3-Way Interactions					
Class MTS Grade	5323.622	2	2661.811	4.618	0.015
Residual	27664.983	48	576.354		
Total	58652.583	59	994.112		

Analysis of Variance
Summary Table
Total MAT Dependent Variable

Source of Variation	Sum of Squares	df	Mean Square	F	Significance of F
Single Effects					
Class	19.519	1	19.519	0.040	0.843
MTS	2997.337	1	2997.337	6.120	0.017
Grade	3861.075	2	1930.537	3.942	0.026
2-Way Interactions					
Class MTS	31.527	1	31.527	0.064	0.801
Class Grade	593.556	2	296.778	0.606	0.550
MTS Grade	15085.656	2	7542.828	15.401	0.000
3-Way Interactions					
Class MTS Grade	4549.377	2	2274.689	4.645	0.014
Residual	23508.083	48	489.752		
Total	54657.733	59	926.402		