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THE UNIVERSITY OF ALBERTA

RELATIONSHIPS BETWEEN MATERNAL CONTROL, COMMUNICATION AND COGNITIVE BEHAVIOR OF THE PRESCHOOL CHILD

BY

PAUL BRADY

A THESIS

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FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "Relationships Between Maternal Control, Communication and Cognitive Development of the Preschool Child," submitted by Paul Brady in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

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TO MY WIFE SHERRY

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ABSTRACT

The basic thesis put forth was that warmth of the mother-child relationship facilitates verbal and nonverbal participation of the child. How the child participates was expected to affect his achievement and learning style.

Thirty-two mother-child dyads from a representative middle socio-economic area of the City of Edmonton were selected. The children ranged between four years and four years and eleven months old and did not have any kindergarten experience. Videotape recordings of mother-child interactions were taken. The tapes were analyzed in terms of verbal and nonverbal variables that were hypothesized to be measures of warmth and the child's verbal and nonverbal participation. Separate measures of achievement, learning style and maternal attitude were obtained. The findings demonstrated that warmth as defined by mutual glances was negatively related to maternal control. Maternal control was found to be negatively related to verbal and nonverbal participation, reflectiveness, and achievement of the child. Mutual glances were positively related to these variables. Verbal and nonverbal participation of the child predicted achievement and learning style, respectively. Therefore warmth as a condition for facilitating participation of the child and his cognitive development seemed to be in line with the theoretical model.

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CHAPTER I

STATEMENT OF THE PROBLEM

The purpose of this research was to investigate the relationship of maternal control to children's cognitive development. The nature of the mother-child interaction should indicate the relationship that the implementation of maternal control has to the socialization of cognitive processes in children. What effect the type of maternal influence has on the child's cognitive development would seem to be related to how control is communicated to the child by the mother. Certain styles of maternal communication might be expected to facilitate or inhibit the child's cognitive growth.

There has been extensive documentation about inter-socio-economic class differences in children's cognitive functioning (Chapter II). However, relatively little is known about the factors accounting for individual differences in children's cognitive ability who come from a homogeneous social or educational background. An aim of this research was to investigate some of the environmental characteristics that lead to cognitive differences in children from a middle class socio-economic level.

Review of the research on mother-child interaction led the author to propose two maternal factors which seem particularly relevant to the exercise of control over the

child's interaction with his environment. First, the type of attitude of the mother appears to influence communication with the child, which, in turn, differentially affects how he interacts with his environment. Second, the nature of the maternal control language (verbal and non-verbal) seems to influence his cognitive performance.

In order to investigate maternal control a dimension encompassing both control and communication variables had to be selected. It was important that this dimension had relevance to the socialization of functional cognitive modes of children. Empirical evidence (Chapter II) indicated that parental restrictiveness was related to: the exercise of authority or control, the interaction with the authority figure, development of rigidity in cognitive functioning, and pathological behaviors connected with educational difficulties. A maternal control dimension correlated with parental restrictiveness, authoritarianism and the communication environment of the participants. A logical connection between maternal control, communication environment and learning was suggested.

Maternal behavior has been shown by Schaeffer (1959) to be represented by two bipolar dimensions of autonomy-control and love-hostility. However, Schaeffer's (1959) factor analyzed data were limited to social-emotional behavior. What appeared necessary was to investigate

cognitive aspects of maternal control behavior that seemed to be apparent (Baley and Schaeffer, 1960). The maternal control dimension (Schaeffer and Bell, 1958) combined with verbal and non-verbal communication variables appeared to incorporate both emotional and cognitive aspects of development.

Summing up, past research had not included maternal attitude viewed in a dynamic communication context. Verbal and non-verbal communication appeared to add a cognitive dimension to Schaeffer's (1959) social-emotional model of maternal behavior while simultaneously substituting specific parameters for the imprecise concepts of his existing model.

I. THEORETICAL MODEL

The theoretical model was constructed from various points of view that were presented in the review of literature.

It was assumed that the basic element for a child's cognitive and emotional growth was participation in a communication exchange with the maternal figure. Participation was dependent on the warmth, e.g., certain non-verbal variables, felt in the interaction of the mother and child. Figure 1 is a sketch of the model.

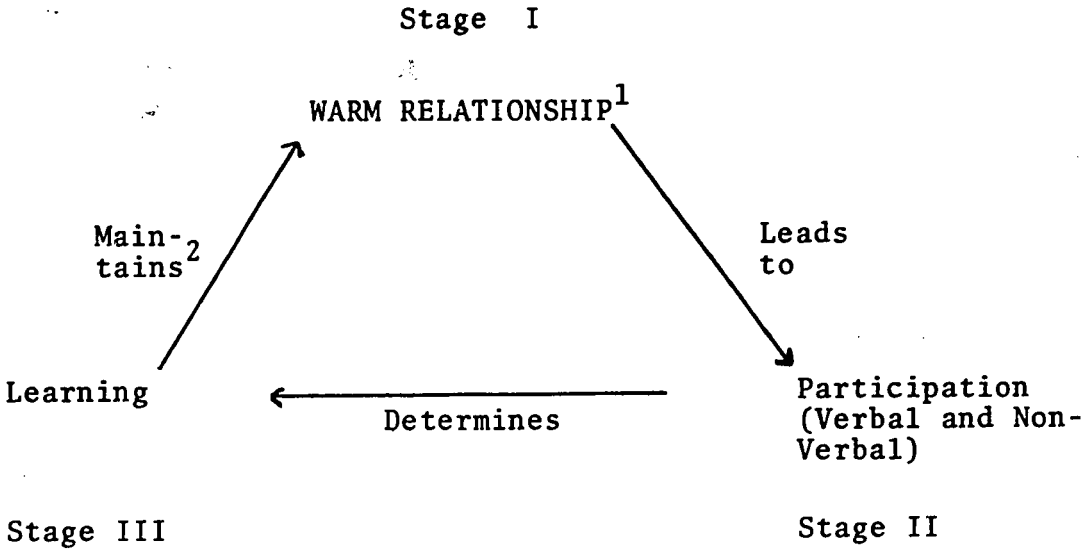

FIGURE I

THEORETICAL MODEL

A mother-child relationship may be antedated by particular maternal characteristics, e.g., maternal attitude, that determine the warmth of the interaction. One dimension of warmth may be reflected by the amount of visual interaction between the mother and child. High visual interaction between mother and child indicates warmth while low visual interaction might be expected in

---

[1]One of the assumptions of this study was the mother effect model of development (p. 11).

[2]The maintenance of the relationship according to the learning of the child was proposed but was not intended to be investigated by the present study.

relationships termed cold. Warmth would increase the child's verbal and non-verbal participation.[3] In turn the child's verbal and non-verbal participation will affect his learning. Learning should incorporate both process, e.g., learning style, and content, e.g., achievement. The nature of the learning experiences between mother and child will have effects on the maintenance of the warmth of the relationship.

Distortion, e.g., mother being the dominant verbal participant, of any one aspect of the cycle would be anticipated to affect the nature of the interaction at other points. For instance, if the mother's verbalizations are excessive compared to the child's own, this would affect other aspects of the cycle. Distortion could take place in any of the stages with anticipated effects at other stages in the cycle, e.g. more non-verbal participation than verbal.

The hypotheses outlined below were designed to test the theoretical model.

II. HYPOTHESES

The hypotheses tested the theoretical model in

---

[3]Since participation nonverbally involved visual interaction it appeared that Stage I and II were circular. However, clarification of this point is made in Chapter IV, page 58, after examining the data.

terms of maternal control and child's cognitive development. Refer to pages eight to eleven for definition of terms.

Hypothesis I: Visual behavior will be negatively correlated with maternal control.

Hypothesis II: The average number of words per communication unit for the child will be negatively correlated with maternal control.

Hypothesis III: Maternal control will be positively correlated with the discrepancy of the average number of words per communication unit of mother and child.

Hypothesis IV: The learning style and achievement of the child will be differentially correlated with maternal control.

(i) Response latency will be negatively correlated with maternal control.

(ii) Errors will be positively correlated with maternal control.

(iii) Achievement will be negatively correlated with maternal control.

Hypothesis V: Learning style and achievement of the child will be differentially correlated with visual behavior.

(i) Response latency will be positively correlated with number and duration of visual behavior units.

(ii) Errors will be negatively correlated with number and duration of visual behavior units.

(iii) Achievement will be positively correlated with number and duration of visual behavior units.

Hypothesis VI: Learning style and average number of words per communication unit for the child will be differentially correlated.

(i) Response latency will be positively correlated with average number of words per communication unit.

(ii) Error will be negatively correlated with average number of words per communication unit.

Hypothesis VII: Average number of words per communication unit for the child will be positively correlated with child achievement.

Hypothesis VIII: Learning style will be differentially correlated with child achievement.

(i) Response latency will be positively correlated with achievement.

(ii) Errors will be negatively correlated with achievement.

III. DEFINITION OF TERMS

Operational definitions for the terms used in this investigation are outlined below.

Maternal control. Maternal control was determined by the addition of the subscales of Schaeffer and Bell's (1958) Parent Attitude Research Instrument (PARI) that comprised the factor of approval of maternal control of the child. The mother's scores range from high to low control. (See Appendix A, p. 80, for delineation of the subscales).

Verbal communication. Verbal communication was measured by communication units, average number of words per communication unit, gross words, net words, mazes, one word communication units, and two word communication units. Only the first two terms were intended for investigation but their determination necessitated the use of the remaining terms.

Communication Unit (CU)[4]. Semantically, a CU was a subdivision of spoken language which cannot be separated further without loss of essential meaning. Syntactically, the CU was composed of an independent clause between two silences (Loban, 1963).

Average number of words per communication unit (AW/CU). AW/CU was the net words divided by the number of communication

---

[4]A more extensive linguistic definition is given in Loban (1963, p. 6-7).

units. AW/CU was considered a measure of language complexity and maturity. This was possible because AW/CU basically involved a simple, active, declarative sentence known as a minimal CU. Length of AW/CU was expanded by the collation of more than one minimal CU. This has been shown to be characteristic of older children (Hunt, 1965).

Gross Words (GW). GW was the total words spoken by each participant.

Net Words (NW). NW was determined by subtracting mazes, one word CU's, two word CU's, from GW.

Mazes (M). M were utterances that do not make semantic sense. They consisted of false starts in sentences or uncompleted utterances that cannot be classified by structural or semantic analysis of language.

One Word CU (1WCU)[5]. 1WCU's were distinct single utterances that were separated from CU's by a noticeable pause after expression.

Two Word CU (2WCU)[6]. 2WCU's involved an utterance having two words expressed together, but separated from a CU proper, by a noticeable pause after expression.

Nonverbal Communication (NVC). NVC was measured by visual behavior which was further classified into mutual

---

[5, 6] 1WCU and 2WCU were calculated because the task situations frequently involved utterances of this nature. It was felt that a high frequency of such utterances would affect the validity of the CU proper, unless they were partialled out.

glances, child-mother glances and mother-child glances.

Visual Behavior Unit (VBU). VBU involved the three units of visual behavior; mutual glances, child-mother glances and mother-child glances.

Mutual Glances (MG). A mutual glance involved direct eye-to-eye contact between mother and child.

Child-Mother Glance (CMG). CMG involved a glance by the child towards the face of the mother without the mother reciprocating the glance simultaneously.

Mother-Child Glance (MCG). MCG involved a glance by the mother towards the face of the child without the child reciprocating the glance simultaneously.

Learning Style (LS). In this study LS of the child was measured by response latency and number of errors elicited to a task involving identifying a standard stimulus design in an array of stimuli resembling the standard (See section on instruments for elaboration, p. 43).

Response Latency (RL). RL was the time in seconds taken to indicate the standard stimulus which was among an array of similar stimuli.

Error (E). E was the number of incorrect choices taken to identify the standard stimuli which was among an array of similar stimuli.

Achievement (A). A was measured by the sorting of blocks on the basis of color, shape and size, and verbal-

izations that indicate the comprehension of making each sort. The sorting was called objective sort and the verbalization of the reason for making the sort was termed subjective sort.

Objective Sort (OS). OS was the actual separation of the blocks into the three categories of color, shape and size.

Subjective Sort (SS). SS was the verbalization of the reason for making each separate sort.

Intelligence. The child's intelligence was determined by the Van Alstyne Picture Vocabulary Test.[7] The mother intelligence was estimated by the vocabulary subtest of the Wechsler Adult Intelligence Scale.[8]

IV. DELIMITATIONS OF THE STUDY

(1) The study was delimited to the investigation of middle socio-economic class mothers and their four-year-old children; thirty-two dyads were selected.

(2) The study was delimited to showing correlations between events and therefore does not attempt to demonstrate causal occurrences.

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[7], [8] See the section on procedure and instrumentation for a more detailed description for uses of these tests.

V. ASSUMPTIONS

(1) It was assumed that the PARI was a valid indicator of an attitude of maternal control.

(2) This study assumed a parent effect model of communication.

(3) It was assumed that a quasi-naturalistic research methodology, such as the investigation of mother-child dyads, was more suitable for investigating this problem than other methodological approaches.

CHAPTER II

THEORY

Home Environment

In the past the study of home environment has largely been restricted to socio-economic status determined by crude indexes of father's level of education and annual income, etc. Farquhar (1965) states:

> "No serious scholar today is likely to believe that sociological characteristics ... social class, father's occupation, parent's education and type of dwelling, can become anything more than an approximating index of a child's home environment."

Elaborating on the difficulty of measures of SES Farquhar comments,

> "There must be other (other than SES[9]) more exact indicators of home environment which if identified and assessed can help explain why, within homes of the same social status, there is so much variation in certain behavioral characteristics among children."

Farquhar's comments indicate that the study of differences between socio-economic groups masks some of the intra-group characteristics that are important to the child's cognitive development. Wilkerson (1966) states that if one accepts the concept of homogeneity of effects within different social strata one question arises: "Why do some

---

[9]SES -- Socio-economic status; phrase added by author.

disadvantaged children perform much more satisfactorily in school than others from apparently comparable socio-economic circumstances?" (p. 280). Wiseman (1964) adds, "The use of blanket terms like middle-class conceals large differences, the intravariation is as great, if not greater there, than the intervariation between classes" (p. 47). For instance, Eells, et al., (1951) point out that there is a great loss of information when one takes the average.

> "... When high and low status groups are contrasted a considerable degree of overlapping of I.Q.'s is shown to exist with many low status pupils receiving higher scores than many of the high status pupils. Despite this, however, there are substantial differences in the average I.Q.'s for the two status groups, always in favor of the higher status pupils" (p. 164).

Wiseman (1964) extends this argument against the use of gross SES measures:

> "We must seek other variables before we can hope to understand the complexities of the impact environment has on educational opportunity and attainment.... We must now turn to research evidence dealing with factors other than economic" (p. 48).

Dave and Wolf (1964) attempting to overcome some of the difficulties involved in the use of SES measures have described home environments more carefully in terms of an educational index. In doing so they have accounted for environmental differences between socio-economic classes which render more accurate the prediction of academic

achievement and intelligence. The effectiveness of the investigation of environmental process variables between socio-economic groups as carried out by Dave (1963) and Wolf (1964) suggested a need for similar research methodology within a homogeneous social level. Wolf (1964) has pointed out the need for examining environmental data in relation to individual data. Both Dave (1963) and Wolf (1964) believe it was what the parents do rather than what they are that was the determining factor in the formation of the home environment. Wolf (1963) stresses that a home environment was best conceptualized in terms of sub-environments which related to the development of a particular characteristic. Wolf (1964) claimed:

> "It would seem to us that environments for the development and maintenance of such characteristics as dependence, aggression, dogmatism and others could be delineated and measured and systematically related to measures of that particular characteristic" (p. 499).

Schaeffer and Bell (1958) have developed an instrument measuring a host of maternal attitudes that might be considered representative of sub-environment influences.

Research in child development should attempt to incorporate these observations when studying children's cognitive performance.

Summarizing the research literature with an eye for

direction that research should take, several factors may be observed that need investigation. As has been pointed out, there is a need for the investigation of environmental data within a homogeneous social stratum in order to account for some of the differences in children's cognitive functioning. Restated, what are the psychologically relevant sub-environments, within a particular social environment that facilitate or inhibit a child's cognitive growth? How can these be effectively investigated?

Sub-environments

The selection of environmental factors that have important developmental consequences appears a formidable task. However, the author noted two trends in the psychological literature which are observable over the past years. One trend was to show the relationship between parental attitudes and how these parallel certain characteristics of their children. A more recent trend has been to study how the language of parents influences the child's cognitive development. The methodology employed has been to isolate a language or attitudinal dimension and show its relationship to specified characteristics of the child's development. Although both patterns of research have been heuristic neither have been very productive in terms of explaining how these characteristics are translated from parents to children. In order to do this the experimental

design must incorporate a better cross-sectional picture of such developmental sequences.

It was felt that maternal control had implicit suggestions as to the variables which have considerable developmental impact on the child's cognitive activity. Maternal language itself appears important. How the language meshes with the control dimension is less apparent, but equally in need of investigation. What seems necessary is to select a variable that encompassed both maternal language and maternal control. Investigation of research literature of the authoritarianism-dogmatism (Rokeach, 1960) and maternal control dimension (Schaeffer and Bell, 1959) seemed to involve both factors. Since dogmatism and maternal control are related (Rebhun, 1967) and dogmatism has a demonstrated relationship to cognitive functioning (Fillenbaum and Jackson, 1961, Rokeach, 1960), it was anticipated that maternal control would have relevance to cognitive growth. Consider Hess and Shipman's (1965) comment,

> "... The growth of cognitive processes is fostered in family control systems which offer and permit a wide range of alternatives of action and thought and that such growth is constricted by systems of control which offer pre-determined solutions and few alternatives for consideration and choice" (p. 869).

A more recent study of Hess and Shipman (1966) stated that an imperative maternal control style tended to discourage

questioning and cut off thought and a search for rationale. Furthermore, they pointed out that it was not so much the use of imperative control that adversely affected the child but that imperative control subjected the child to external versus internal control over his cognitive activity. How this came about in terms of the relationship between on the one hand verbal, as well as nonverbal language, and on the other hand the maternal control dimension, has not been investigated.

Maternal Control

The effect of maternal language on children's cognitive growth has been amply documented. This is not as true of the effects of maternal control and maternal language, jointly considered. Getzels and Jackson (1962) reported that parents of high I.Q. - low creative vs. low I.Q. - high creative children exercise greater control over their children. The children of the latter tended to be more flexible and playful. Starr (1965) after indicating a relationship between authoritarianism in parents and children reported that parents of more-or-less authoritarian children were more restrictive in dealing with their children. Furthermore, additional study of the parents demonstrated strict discipline to be significantly related to both authoritarianism and dogmatism of parents. Starr's (1965) findings were not connected with language

differences, but it might be inferred that restrictiveness and discipline are significantly related to language. Bernstein, as reported by Deutsch (1965, p. 79), indicated that a restricted linguistic code, characteristic of lower class mothers, was used as an explanation. The restricted code was given in the form of an imperative or partial sentence rather than in a more elaborated manner. This type of maternal code was closely related to their children's difficulty in coping with cognitive tasks. It appeared, therefore, reasonable to make a logical connection between dogmatism, maternal control and imperative language style.

Dogmatism has been shown to have an inverse relationship to problem solving and other cognitive skills (Fillenbaum and Jackson, 1961; Rokeach, 1960; and Klein, 1966). Socio-economic class level has been reported to have a positive relationship to cognitive proficiency (Hess and Shipman, 1965). Maternal control was related to socio-economic class (Bayley and Schaeffer, 1960), and dogmatism (Rebhun, 1967). However, an attitude of maternal control within any one particular SES level has not been studied.[10] Maternal control in parents tended to be perpetuated in children and depressed their cognitive functioning (Frenkel-

---

[10]Dogmatism was closely related to maternal control, however the maternal control dimension was more suitable for the present study of maternal characteristics, therefore a plausible equation was made to facilitiate interpretation of existing evidence.

Brunswik, 1948; Blum, 1954; Starr, 1964). Therefore, maternal control was expected to have more general application to problem solving difficulties, between and within socio-economic strata than measures of SES.

The series of studies by Hess and Shipman (1965, 1966) and Shipman and Hess (1965), dealt with differences between SES groups. Their findings on imperative maternal teaching styles had relevance for any particular social level. Using a verbal report method of data collection on the specific effects that mother-child exchange had for the child's educability Hess and Shipman (1966) demonstrated the result of an imperative maternal control system. They reported that the performance of children subjected to this maternal style was consistently poorer in cognitive functioning than a less imperative maternal style. Children who had an imperative maternal model tended to use more nonverbal responses and had poorer performance on the cognitive tasks. Shipman and Hess (1965) found the number of status-oriented and imperative message units negatively correlated to ability for categorizing stimuli. They posited that the level of conceptual functioning of the child was positively related to the communication environment.

Allen's (1957) research supported the communication environment as being important. He found that non-

authoritarian teachers were more likely to maintain a stable, harmonious and productive atmosphere in their respective classrooms than were authoritarian teachers. The outcome of a dogmatic environment was that it produced a child who related to authority rather than to rationale, became compliant and non-reflective and focused on immediate versus future outcome of his behavior (Shipman and Hess, 1965). Kohn's (1959) sociological analysis of the exercise of paternal authority supported this view. He found that discipline in middle class children was directed towards the development of internalized standards for behavioral direction as contrasted to lower class children who developed external sources for direction of their behavior. This finding supports Bernstein's (1960) and Hess and Shipman (1965, 1966) studies of social class differences in child control and the effectiveness of cognitive functioning for the child.

The type of social environment that was facilitative of cognitive growth was enlarged by the work of John and Goldstein (1964). Dealing with social conditions that influence language acquisition they discussed socio-economic class differences in a manner that made one seriously consider the extent to which a maternal control dimension would have improved their analysis. In terms of language acquisition they pointed to the following

factors as being important: availability of parents, language model, diversification of language, amount of interaction with parents, parental feedback, intrinsic variability of the home and listening of the parents. John and Goldstein (1964) reported that the child from a middle class culture learned by being heard, corrected and modified. The child from a lower socio-economic group received little verbal interaction and therefore learned most of his language by receptive exposure or by hearing rather than by a meaningful interaction.

Mother-Child Interaction

Although research in child development has emphasized the influence the mother has on her child (Wiseman, 1964; Lyle, 1964; John, 1963), the method of inquiry has not adequately investigated the social nature of their interaction (Hilton, 1967; Harris, 1966; Havighurst and Davis, 1955; Bookbinder, 1955). The emphasis of this research has been monadic, that is, verbal reports of mothers or older offspring, at the expense of ignoring what both mother and child do in a naturalistic interaction. Awareness of the narrowness of research in general was accented by Friedman's (1967) statement,

> "... Individualistic, intrapersonal, monadic, natural science perspectives on the psychological experiment and psychology need to be supplanted by interactional, interpersonal, dyadic, social science perspectives" (p. xi, preface).

Dave (1963) and Wolf (1964) suggested that research should be concentrated on what the parents do. To the extent that Bruner's (1966) generalization is valid, viz., that growth is contingent upon a tutor-learner interaction and without it growth is unable to proceed, this seemed particularly important. However, the practical difficulties of research in such a complex social setting would render the results uninterpretable (Rosenthal, 1966; Friedman, 1967). Research of Hess and Shipman (1965, 1966) has attempted to overcome these methodological difficulties. They used a combined method of verbal reports and interactional situations. However, when examining maternal control language they used the verbal report method. They say:

> "... It will be particularly important to examine these strategies (control strategies of the mother)[11] -- in the future a more representative and naturalistic mother-child interactional context" (p. 15).

Summarizing, it was necessary to follow these important research landmarks by investigating a mother-child dyadic interaction that reflected as closely as possible the natural aspects of their activity. Furthermore their activity needed to be ordered to provide interpretable results. It is unfortunately a handicap of research

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[11]Phrase added by author.

methodology that the naturalistic setting, in which interaction between mother and child usually takes place, does not lend itself to systematic analysis. One has to be satisfied with an approximation to that setting.

Mother-Child Communication

Interaction implies communication. Watzlawick (1967) has pointed out that all behavior is communication and one cannot not communicate. The need for communication was noted by Cherry (1957, p. 5). "Communication renders true social life practicable, for communication means organization. Communications have enabled the social unit to grow." However, Cherry was referring to larger portions of society, that is, village, town. Yet, this does not negate the applicability of his statement to smaller social contexts, that is, mother-child. He pointed out that communication means to share, to be one and to understand (p. 4). In order to understand one another it appears necessary to be able to translate what was communicated. What is communicated is dependent upon how it is communicated (Davitz, 1963).

Two modes of communication were considered important in any interaction, namely, the verbal and the nonverbal. A concern of this research was to demonstrate how these modes of communication influenced organization inherent in mother-child interaction. For instance, how did Cherry's (1957, p. 5) statement, "Communications have enabled the

social unit to grow" apply to this social context? What was the optimal amount of organization implicit in a mother-child communicational interaction that provided a meaningful cognitive or orectic experience for the participants, particularly the child? Although dyadic communication was both circular and complementary (Watzlawick, pp. 67-68), the assumption made was that the mother was the prominent organizer of the interaction, while the outcome was more profound for the child.

Communication is equated with organization (Cherry, 1957), and organization results in limitation (Haley, 1964), and limitation inhibits development (Hess and Shipman, 1966). This does not imply that any one of these factors independently lead to deleterious effects for the participants, but combined inappropriately certain developmental outcomes seem predictable. Outcome appears to be dependent upon how the organization inherent in communication is connected to control implemented by the mother over her child. For conceptualization, this was viewed in terms of the modes of communication between mother and child.

Verbal and Nonverbal Communication

Verbal communication refers to that aspect of linguistic interchange that is characterized by words or combinations of words. In verbal communication we are concerned with content or digital aspects of communication

(Watzlawick, 1967). Nonverbal communication refers to kinesics, paralanguage and extra-linguistic phenomena, such as, gesture or intonation patterns. Documentation of these distinctions were found in Ruesch and Kees (1959), Smith and Sustakowski (1963), Sebeok, et al., (1964), and many others.

The enthusiasm for studying the verbal and nonverbal aspects of communication has gained momentum during the last few years. This is especially so regarding the non-verbal aspects of communication. However, investigation of both modes appeared necessary in order to gain a fuller understanding of the "communication package" (Smith and Sustakowski, 1963). Sebeok, et al., (1964) emphasized this by suggesting there must be structural similarities in all modalities of communication. A study of communication necessitated the incorporation of both content and message, for one without the other increases the probability of misinterpretation (Ruesch and Kees, 1959). Ernest Sapir (1931) noted this phenomenon years ago as evidenced in his statement.

> "The importance of unformulated and unverbalized communications of society is so great that one who is not intuitively familiar with them is likely to be baffled by the significance of certain kinds of behavior, even if he is thoroughly aware of their external forms and of the verbal symbols that accompany them" (p. 76).

Sapir's observation of the need for awareness of understanding

the nonverbal aspects of codification was recognized by others. Birdwhistell (1959) pointed out that (cited from Friedman), "probably no more than 30 to 35 per cent of the social meaning of a conversation or an interaction is carried out by the words." Ruesch and Kees (1959) discussed generally how the nonverbal augments the impressions created by the verbal. They said:

> "By means of the duality of verbal and nonverbal communication the human being is able to create impressions based on differences between the things he says in words and the thing he communicates through action" (p. 86).

In other words, the nonverbal defines the congruency of the interpersonal interaction in terms of intrapersonal states of awareness. Watzlawick (1967) pointed this out by stating (p. 63):

> "Children, fools and animals have always been credited with particular intuition regarding the sincerity or insincerity of human attitudes, for it is easy to profess something verbally, but difficult to carry a lie into the realm of the analogic."

Watzlawick (1967) added to this (p. 36), "We are in constant communication, and yet we are almost completely unable to communicate about communication." Both the content of any message and the rules by which the message has to be interpreted need explication. Watzlawick (1967) says the content is likely to be verbal (digital) and the rules by which the message is interpreted will be nonverbal (analogical).

Sebeok, et al., (1964) believed that it was necessary to move the unconscious aspects of communication, that is, much of the nonverbal, into conscious focus. Recent research of Davitz (1964) on nonverbal communication indicated the feasibility of accomplishing this feat. He found that emotional meaning was reliably communicated. Davitz's findings indicated that elucidation of nonverbal communication added an important dimension to the interpretability of human messages.

Besides gaining better understanding of interaction messages other factors warrant the study of communication modes. First, Rosenthal (1966) and Friedmann (1967) have documented how nonverbal sources of information guide the outcome of research. Second, the verbal mode of communication developed from the nonverbal mode (Piaget, 1952; Luria and Yudovich, 1959; Bruner, 1966; and Ruesch, 1955). Third, studies on expressive language have left unexplained sex differences. Boys with poor language development are not as expressive as girls. However, boys with well developed language tend to be better than girls in expressing themselves (Loban, 1963). This list was only meant to be indicative and not exhaustive of the importance of gaining insight into communication modes.

Limitation and Communication Modes

How are the limitation aspects of communication

related to its verbal and nonverbal modes? Haley (1964) investigating family communication processes found that "as individuals the abnormals participate more unequally, as dyads they show an unequal distribution" (p. 63). He interpreted this to mean that limited opportunity for expression resulted in pathology. His results were statistically significant using an objective measure of frequency of utterance for any one person in a triad. Watzlawick (1967), has observed a similar communication phenomenon:

> "In any communicational sequence every exchange of messages narrows down the number of next possible moves. In the case of double binds, the complexity of the patterns is particularly constraining and only a very few reactions are pragmatically possible" (p. 217).

This situation has a familiar resemblance to Hess and Shipman's (1965) hypothesis that explains the inhibiting effects constraints have on cognitive development, that is,

> "The growth of cognitive processes is fostered in family control systems which offer and permit a wide range of alternatives of action and thought and that such growth is constricted by systems of control which offer predetermined solutions and few alternatives for consideration and choice" (p. 869).

Therefore, both cognitive and emotional development appeared related to the degree of environmental control and cognitive development.

Earlier a connection was mentioned between parental

control and restrictiveness. In terms of communication, Watzlawick's (1967) statement that one does not simply communicate but one participates in communication, becomes particularly relevant. For instance, not long ago, the Fels Institute found that children of permissive-democratic parents were active, assertive and outgoing. Did permissive-democratic parents mean those who allowed equal opportunity for the children to communicate in the family context? If so, the family myth, that a child's place was to be seen and not heard, was seriously questioned. Furthermore, it was possible to define interaction in the research of Eells, et al., (1951), Irwin (1960), Milner (1951), Deutsch (1965) as what a child hears and the opportunities offered and permitted for his responses to these verbal stimuli.

What is the nature of the communication allowed a child from homes having a restrictive or controlling parent(s)? Ruesch and Kees (1959), analyzing political systems explain that:

> "It has been widely noted how, under authoritarian regimes, human beings turn more and more toward the perception of the nonverbal, the evaluation of nonverbally codified things, and expression through gesture and action" (p. 5).

The exaggerated effect of this was seen in psychopathology, especially during the acute phase when there was a regression to nonverbal or analogic modes of

expression. Only when the circumstances improved were the verbal or digital modes effective as a means of communication (Ruesch and Kees, 1959). When verbal modes of expression are dominated by nonverbal does this delay the differentiation of verbal from the nonverbal? Shirley (1933a,b) reported a phenomenon resembling this. She said there was a cyclical relationship between linguistic and motor development such that speech was held in abeyance when motor development was most rapid. Perhaps the reverse of this is true, e.g., motor activity is suppressed when language development is rapid. If so, the result should be evident in language usage. Loban's (1963) study on the language of elementary children was illustrative of the connection between environmental restrictiveness (maternal control) and how the child will use his language. He says:

> "The child with less power over his language appears to be less flexible in his thinking, is not capable of seeing more than one alternative, and apparently summons up all his linguistic resources merely to make a flat dogmatic statement" (p. 54).

However, Loban's (1963) analysis of linguistic function provided a clearer link with children's thinking. He found that subjects with the greatest power over language used their language to express tentativeness more frequently than those with poor language. Hess and Shipman (1965),

found on the other hand, those children subjected to a restricted linguistic code were impulsive or passive. It seemed apparent that both tentativeness and impulsiveness were differentially related to maternal control. For instance, Hess and Shipman (1966) found through factor analysis that good performance on the 8-block test was negatively correlated with a tug-of-war factor (a non-attending child with an increasingly impellant mother). Relational responses, considered developmentally poorer (Kagan, Moss and Sigel, 1963), were related to impulsivity in the child, and to a tendency for nonverbal rather than verbal teaching by the mother, and to mother domination in the interaction setting (Hess and Shipman, 1966). The question arises whether all of these factors could not be predicted on the basis of parental control and its correlate, dogmatism. However, Kagan et al., (1964), in their study of impulsiveness, did not consider maternal characteristics.

The nature of nonverbal communication is not as apparent as the verbal aspect regarding maternal control. However, to the extent that maternal control (dogmatism) is related to a restricted linguistic code a preponderance of nonverbal exchanges between mother and child were expected (Bernstein, 1961). However, this will depend on

which of the nonverbal features are being singled out in an interaction. For instance, Watzlawick (1967) said that nonverbal aspects of communication defined the nature of the relationship between participants. To the extent that a power struggle exists between a mother and child (Hess and Shipman, 1966) nonverbal gestures expressing positive or warm emotions are not expected to be present. Exline (1963) found competition to inhibit mutual glances among high affiliators, and increase it among low affiliators. Although his research was confounded by need and sex differences, the effect of competition evidenced in a power struggle between parent and child might be expected to decrease mutual glances. This might be even more apparent if children of dogmatic controlling mothers are highly affiliative as well, Exline (1963) added:

> "The less affiliative person seems to respond to the challenge of the competitive situation in a more assertive fashion. Under such conditions the increased visual behavior could be interpreted as reflecting either greater self assertiveness, greater utility of the information or both" (p. 18).

Exline and Winter (1965) explained the decrease in mutual glances in terms of hiding of affect. They said that visual avoidance was linked with the arousal of painful affect. People, according to Exline (1965):

> "Showed striking differences in willingness to engage in mutual glances by those who were independently judged to differ in their desire to establish warm interpersonal relations" (p. 321).

Additional empirical support was provided by Exline and Winter (1965) who found positive comments increased the number of mutual glances while negative ones decreased glances. Likewise, Exline, Gray and Schuette (1965) found embarrassing topics decreased mutual glances in dyads. Both findings were interpreted as visual avoidance to hide affect.

Although family patterns have been discussed broadly in terms of warmth or coldness of affective relations no description of factors that account for these dimensions have been documented. For instance, the cross cultural research of Schofield and Sun (1960), who equated emotional warmth with permissiveness and emotional coldness with severity, found parental severity to be related to schizophrenia, withdrawnness, suspiciousness, shyness, emotional immaturity, sensitiveness and introvertedness. Here again, but in molar form, the connection between family interaction patterns and the outcome for the child's cognitive and emotional development was demonstrated.

Summarizing, the research literature suggests that "high control" by the mother results in the depression of cognitive and emotional growth. "Low control", where the child is offered and permitted an equal opportunity to express himself while interacting with his mother, enhances

cognitive and emotional growth. The best view of communication was felt to include both verbal and non-verbal aspects of an exchange. Therefore research attempting to account for differences in learning ability, should accommodate both aspects of mother-child communication in relation to maternal control. It was the intent of this research to investigate these combined factors.

CHAPTER III

METHODOLOGY

The Sample

The 1967 City of Edmonton census data were used to determine an area representative of middle socio-economic status. Thirty-two mother-child pairs were solicited by means of a telephone conversation. The voluntary nature of their participation excluded the possibilities of having a random sample. The descriptive data outlined below indicates the representativeness of this sample according to other standards (Hore, 1968; Blishen, 1958).

TABLE I

DESCRIPTIVE SOCIO-ECONOMIC DATA

SES (Blishen Index)	Mean: 54 Range: 43 to 75	
Combined Average Number of Years Education for Mother and Father	Mean: 11.5 Range: 8 to 18	
Combined Income of Mother and Father	Under $5,000 per annum	N = 2
	Between $5,000 and $10,000 per annum	N = 21
	Over $10,000 per annum	N = 7

Socio-economic data indicated the sample was middle class. Hore's (1968) sample of high SES and low SES had average Blishen Indexes of 71.15 and 45.94, respectively. This sample had an average Blishen Index of 54 which fell between Hore's samples. The other two indexes of socio-economic status positioned themselves similarly in relation to Hore's sample (1968). The number of people earning over $10,000 per annum and the mean Blishen Index of 54 for the present sample indicated that the socio economic status was middle class. This seemed reasonable since the mean Blishen score was 50 and Hore's two groups of high and low SES included income levels over $10,000 and under $5,000 per annum.

The children ranged between 4 years to 4 years and 11 months. None of the children had had kindergarten experience. All the children were within a normal range of intelligence. There were seventeen boys and fifteen girls.

The number of subjects used for the various calculations varied due to technical difficulties. For instance, two children were not given the total learning style test. Videotape difficulties interfered with analysis of visual behavior in four cases, excepting mutual glance measure which was completed before the difficulty arose. Three audio tapes were erased which

decreased the N for verbal analysis of the children.

Procedure

Home visit. After getting the names of mothers having preschool children a telephone call to their residence was made to request their participation. Thirty-two volunteer mothers were obtained. The experimenter made a home visit to administer the Van Alstyne Picture Vocabulary Test to the children and the vocabulary sub-test of the WAIS to the mother. A suitable time was determined for the mother and her child to visit the university. A later visit was made to the home in order to obtain data for reliability of the learning style test.

University visit. The mother-child pairs were brought to the University by taxi-cab. The mother was taken to the experimental setting where she received tape recorded instructions (Appendix C, p. 98) of what she was to do during the experiment. Upon completion of the instructions her child was brought to the room for the experimental period. When they had finished all that was required at this time they were taken to individual cubicles for additional work. In the cubicle the mother answered the PARI and a small questionnaire regarding socio-economic background. The child was administered a test of his learning style during this same period. When all of the

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tests were complete they were taken home by taxi-cab.

Experiment proper. Videotape recordings of the experimental setting involving the mother-child interactions were made. Prior to the videotaping the mother received instructions by audio-tape recorder. Briefly, the mother was instructed that she and her child were to spend time playing with the toys,[12] that were on the table in front of them. Following the play period the mother was to teach[13] the child how to separate blocks on the basis of color, shape and size. After each separation the mother was instructed to ask the child his reasons for separating the blocks, e.g. for color -- "How do you know these blocks go there?" Upon completion of the block separating period three Children Apperception Test cards were given to the mother and she was requested to make up a story with her child about these cards. When the story telling period ended the mother and child were taken to the cubicles for the next phase of the experiment (see page 38).

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[12]The toys remained on the table during the rest of the experiment in order to create a situation where the mother had to exercise control over the child (see page 42).

[13]See Appendix C, p. 98 for teaching methodology.

Instruments

Van Alstyne Picture Vocabulary Test. This test is an easily administered measure of intelligence which was determined by having the child identify a picture presentation of a spoken word. It had sixty items that were presented in odd-even order. That is, all the odd items were presented first and then all of the even items. It had adequate concurrent validity with other tests. At the four-year-old age group it correlated .71 with the Stanford Binet. Although it does not report correlations with other tests for this age group, other age group correlations with other measures of intelligence range from .49 to .71. It has a split half reliability of .85 at the ages used for this study. The test was used only to insure that children well below average were not included in the study.

Wechsler Adult Intelligence Scale (WAIS). The vocabulary sub-scale was used as an indicator of the general order of intelligence for the mothers. The vocabulary subtest had a split half correlation of .95 (Spearman-Brown, corrected) and standard error of measurement of .67, for the age group 25-34 years. (The age group 25-34 years for the mothers was approximately what was expected for mothers having children four years old). The vocabulary scale had a correlation of .82 with full scale and was

exceeded only by information (r=.84). However, for the study of language, vocabulary seems more pertinent. Although Wechsler (1955) has pointed out that any one subscale is not an adequate estimate of intelligence, for the purpose of this experiment it was convenient for diagnosing individuals below average on verbal ability. In the sample only two individuals were found to have great difficulty with this verbal measure. These individuals were replaced.

Parent Attitude Research Instrument (PARI). The PARI is a bidimensional attitude scale developed by Schaeffer and Bell (1958). It described maternal social-emotional behavior on the dimensions of autonomy-control and love-hostility. The final most reliable one hundred and fifteen items used in the scale were chosen after item analysis of large pools of items. Internal consistency measures ranged from .34 to .77 for the various subscales. Test-retest reliability range from .44 to .79 for the various subscales. The items were cyclically arranged and grouped by fives to form twenty-three subscales (Appendix A, for subscales). Sixteen of the subscales loaded on a first factor named "Approval of maternal control of the child." The subscales loading on the first factor are 2-6, 10-12, 15-20, and 22-23 as they are positioned on the scoring sheet (Appendix A, p. 80).

Distracting Stimuli (Toys). Several attractive toys for four-year-old children were placed on a table in front of the mother-child dyad. The toys were a maze, a machine gun, a doll, Mr. Potato-Head and Creepy Crawlers. All toys used were available commercially. The purpose of the toys was to elicit controlling behaviours by the mother.

Sorting Task (Blocks). Twelve of the Vygotsky blocks were used to measure the child's ability to classify stimuli by color, shape and size. At the completion of each sort the child was asked by the mother to verbalize his reasons for making the sort the way he did. Two measures of his sorting ability were taken. The first measure was called "objective sort" (OS). The second measure was called "subjective sort" (SS). OS was simply the number of blocks correctly placed by color, shape or size. Therefore a child separating all the blocks correctly received a total score of thirty-six. Errors were deducted from the total score, therefore twelve misplacements yielded a score of twenty-four. SS was more difficult to determine. SS involved rating the child's verbalizations on a concrete to abstract continuum. Non-classifiable responses were scored zero, responses which involved some indication of a specific attribute were scored as one, e.g. "Because it is round." Responses

indicating a more general attribute were scored two, e.g. "Because they are all the same color." Responses indicating a more general attribute and elaborated by a specific attribute were scored three, e.g. "They are all the same size, these are little and small, these are big and thick." Both OS and SS were considered measures of cognitive achievement.

Story Task. (Children's Apperception Test - Supplement, CAT). Three of the CAT cards (Bellak and Bellak, 1957) were used during the story telling period. The mother was instructed that together she and her child were to make up a story about each card. Their responses were not intended for diagnostic purposes but merely to elicit mother-child verbalizations.

Learning Style.[14] The test of learning style involved twenty test cards. Each card had a standard design at the top and below it were several similar designs including one exactly the same as the standard design. The designs were ordered in such a way so as to facilitate odd-even presentation to a subject. Before beginning either odd or even presentations two example cards were given. After practicing on the sample cards the experi-

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[14]See Appendix D, p.101 for sample cards and methodology of Learning Style Test.

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menter presented each card and asked the child to identify the standard design in an array of designs. The time taken to make the initial selection and the number of errors made finding the correct design were recorded. The time and errors scores were considered a measure of reflectiveness (p. 10). Measures of internal consistency[15] for time and error scores yielded correlations of .85 and .48 respectively.

The Technical Arrangement

The Audio-Visual Media Department at the University of Alberta operated the recording equipment necessary to film the mother-child interactions. A model room was set up (Appendix E, p. 105). The television camera was set well back into the studio in order to make it as inconspicuous as possible. However, the mother and child were told during the home visit that videotapes would be taken, therefore they were aware of being taped. After a few minutes they seemed to ignore the camera. The camera was pre-focused on the mother-child dyad so as to bisect the space between them. The mother and child entered through a side entrance which avoided having them come into contact with any of the technical equipment. The experimenter operated a monitor and tape recorder just outside the model room. This allowed

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[15]Internal consistency was determined by Kuder-Richardson formula twenty.

him minimal contact with the mother after she entered the room, while simultaneously being able to see all that was going on.

When all the video-tapes were recorded playbacks necessary to analyze the nonverbal data were carried out. Simultaneously, scripts of the verbal material collected by audio tapes were typed by a secretary. Analysis of nonverbal behavior was facilitated by an interaction timer and counter developed and used at the University of Alberta by Hore (1968). The scripts were analyzed to get the various verbal language measures necessary for the study.

Statistical Analysis

The hypotheses were tested by Pearson-product moment correlations. Alpha levels of .10 and .05 were used to determine the statistical significance of the correlations. The hypotheses were directional therefore one-tailed tests were relied upon. An alpha of .05 has been popularly endorsed as an acceptable level of chance in making a type I error, however the .10 level has not. Any statement of making a type I error should take into account the current state of knowledge in a given area of research. In view of the exploratory nature of the research it was felt that a greater allowance for type I error was justifiable. Furthermore, any decisions to be made on the basis of the sampled relationships would be heuristic rather than

conclusive. An a posteriori examination of the numerous instances in which the results occurred in the predicted direction lends credence to taking a greater chance in reporting significant correlations due to sampling error.

CHAPTER IV

RESULTS AND DISCUSSION

I. RESULTS

Reliability

Reliability of the verbal measure of CU's was not calculated for the present sample. However, an earlier study of Hore (1968) which involved CU's indicated satisfactory inter-rater reliability (r=.84).[16] Reliabilities of the VBU's[17] were calculated by Spearman Rank Correlation Coefficient and are presented in Table II.

TABLE II

RELIABILITY FOR THE NUMBER AND DURATION OF VISUAL VARIABLES (N=5)

	Number	Duration
MG	0.95	0.94
MCG	0.83	0.39
CMG	0.92	0.67

[16] Hore and the author acting as raters determined this reliability coefficient.

[17] For clarification of abbreviations in this section the reader should refer to Definition of Terms (pp. 8-11).

It will be noted that with the exception of the duration of mother to child glances the reliabilities appear satisfactory for the VBU's.

Kuder-Richardson formula twenty was used to determine the internal consistency of the learning style test. The results appear in Table III.

TABLE III

RELIABILITY OF LEARNING STYLE VARIABLES (N=30)

Response Latency	Errors
0.85	0.48

Reliability of response latency seems satisfactory, however, errors do not tend to be as consistent as desirable.

Hypotheses

Hypothesis I. Visual behavior will be negatively correlated with maternal control.

TABLE IV

CORRELATIONS BETWEEN MATERNAL CONTROL AND NUMBER AND DURATION OF VISUAL BEHAVIOR VARIABLES

	Mutual (N=29)	Mother-Child (N=28)	Child-Mother (N=28)
Number of VBU's	-0.19	-0.11	-0.12
Duration of VBU's	-0.37**	-0.02	-0.17

** Significant at .05 level of confidence.

The correlation between maternal control and duration of mutual glances (-0.37) was significant at the .05 level of confidence. This was the only significent relationship for the data of Hypothesis I (Table IV). Correlations between maternal control, number of mutual glances (-0.19) and duration of child-mother glances (-0.17) approached significance. All correlations went in the predicted direction.

Hypothesis II. The average number of words per communication unit for the child will be negatively correlated with maternal control (N=29).

The correlation between maternal control and average number of words per communication unit of the child (-0.25) was significant at the .10 level of significance. Hypothesis II was confirmed.

Hypothesis III. Maternal control will be positively correlated with the discrepancy of the average number of words per communication unit between the mother and child (N=29).

The data failed to confirm this hypothesis when the correlation for the three contexts of play, blocks and stories were studied together. The observed correlation was 0.18 which did not reach significance at 0.10 level of confidence. Direction of the correlation was consistent with the prediction.

Hypothesis IV. The learning style and achievement of the child will be differentially correlated with maternal control:

(i) Response latency will be negatively correlated with maternal control.

(ii) Errors will be positively correlated with maternal control.

(iii) Achievement will be negatively correlated with maternal control.

TABLE V

CORRELATIONS OF MATERNAL CONTROL AND LEARNING STYLE AND ACHIEVEMENT OF THE CHILD

Learning Style (N=30)		Achievement (N=32)	
RL	E	OS	SS
-0.41**	0.47**	-0.36**	-0.07

** Significant beyond .05 level.

The data in Table V support Hypothesis III with the exception of the achievement measure SS. Response latency, error and achievement (OS) were significant beyond the .05 level of confidence.

Hypothesis V. Learning style and achievement of the child will be differentially correlated with visual behavior between mother and child:

(i) Response latency will be positively correlated

Hypothesis IV. The learning style and achievement of the child will be differentially correlated with maternal control:

(i) Response latency will be negatively correlated with maternal control.

(ii) Errors will be positively correlated with maternal control.

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Hypothesis V. Learning style and achievement of the child will be differentially correlated with visual behavior between mother and child:

(i) Response latency will be positively correlated

with number and duration of visual behavior units.

(ii) Errors will be negatively correlated with number and duration of visual behavior units.

(iii) Achievement will be positively correlated with number and duration of visual behavior units.

TABLE VI

CORRELATION OF RESPONSE LATENCY WITH NUMBER AND DURATION OF VISUAL VARIABLES

	MG (N=29)	MCG (N=28)	CMG (N=28)
Number	0.30*	0.17	0.32**
Duration	0.32**	0.02	0.47**

* Significant at .10 level.
** Significant at .05 level.

Table VI summarizes the data that pertain to Hypothesis V (i). Mutual glances and child-mother glances were the best predictors of response latency and were significant at .05 level of confidence, with exception of number of mutual glances which was significant at .10 level. Mother-child glances failed to support the predictions. All correlations went in the predicted direction.

TABLE VII

CORRELATION OF ERRORS WITH NUMBER AND DURATION OF VISUAL VARIABLES

	MG (N=29)	MCG (N=28)	CMG (N=28)
Number	0.09	-0.23	0.03
Duration	0.14	-0.03	-0.09

The data testing Hypothesis V (ii) are presented in Table VII. Hypothesis V (ii) was not confirmed.

TABLE VIII

CORRELATION OF CHILD ACHIEVEMENT WITH NUMBER AND DURATION OF VISUAL VARIABLES (N=29)

	MG (N=29)		MCG (N=28)		CMG (N=28)	
	No.	Duration	No.	Duration	No.	Duration
OS	0.14	0.22	-0.33	-0.44	-0.09	0.16
SS	0.13	0.15	0.20	0.09	0.15	0.22

Table VIII outlines the data for testing Hypothesis V (iii). The data were not consistent with the prediction. Number and duration of mother-child glances reversed the predicted direction.

Hypothesis VI. Learning style and average number of words per communication unit for the child will be differentially correlated.

(i) Response latency will be positively correlated with average number of words per communication unit.

(ii) Error will be negatively correlated with average number of words per communication unit.

TABLE IX

CORRELATION OF CHILD'S LEARNING STYLE AND AVERAGE NUMBER OF WORDS PER COMMUNICATION UNIT (N=29)

RL	E
-0.17	-0.07

The data summarized in Table IX failed to support Hypothesis VI.

Hypothesis VII. The average number of words per communication for the child will be positively correlated with child achievement.

TABLE X

CORRELATION OF CHILD ACHIEVEMENT WITH AVERAGE NUMBER OF WORDS PER COMMUNICATION UNIT (N=29)

	OS	SS
AW/CU	0.42**	0.11

**Significant beyond the .05 level of confidence.

The data summarized in Table X confirmed Hypothesis VII, in part. A significant relationship between "objective sort" and the average number of words per communication unit was obtained at .05 level of confidence. "Subjective sort" failed to be significantly related to child's average number of words per communication unit.

Hypothesis VIII. Learning style will be differentially correlated with child achievement.

(i) Response latency will be positively correlated with achievement.

(ii) Errors will be negatively correlated with achievement.

TABLE XI

CORRELATIONS OF LEARNING STYLE AND ACHIEVEMENT OF CHILDREN (N=30)

Learning Style	Achievement	
	OS	SS
RL	0.03	0.06
E	-0.16	-0.28*

*Significant at .10 level of confidence.

The correlation between error and achievement (SS) (-0.28) was significant at the .10 level of confidence. The remaining correlations did not attain the required levels of statistical significance. Hypothesis VIII was not

consistently upheld.

In examining the data some interesting observations were made. Summarized in Table XII, are relationships not predicted on an a priori basis. However, they invited attention in order to illuminate the theoretical model which was being discussed in this study.

TABLE XII

CORRELATION OF MATERNAL CONTROL WITH GROSS WORDS AND NET WORDS OF CHILD (N=29)

	Gross Words	Net Words
Maternal Control	-0.31*	-0.31*

*Significant at .10 level of confidence.

Maternal control related negatively to both gross words and net words the child used. The relationship was significant at an alpha of .10 on a two-tailed test (Table XII).

TABLE XIII

CORRELATIONS OF NUMBER AND DURATION OF MUTUAL GLANCES AND VERBAL AND NONVERBAL VARIABLES OF THE CHILD

	Number MG	Duration MG
Number CMG	0.76**	0.72*
Duration CMG	0.27*	0.17
GW	0.68**	0.65**
NW	0.64**	0.58**
AW/CU	0.14	-0.12

* Significant at .10 level.
** Significant at .05 level.

Table XIII presents some data that was necessary to investigate the proposed model. Mutual glances were significantly related to both child-mother glances and words spoken by the child. The average number of words per communication unit for the child were not related to mutual glances.

II. DISCUSSION

The results demonstrated various trends that support the theoretical model (Chapter I, p. 3-5). Although some of the hypotheses were not confirmed at an acceptable level of statistical significance the majority were in the predicted direction.

The model predicted three developmental stages. First, maternal attitude defined warmth in the mother-child relationship as reflected by their visual experiences. Second, warmth was seen as affecting verbal and nonverbal participation of the child. Third, verbal and nonverbal participation influenced the learning of the child in terms of what he learned and the style by which he learned.

The findings demonstrated that controlling mothers spent less time engaged in mutual glancing behavior (Hypothesis, I, Table IV). In terms of Exline et al., (1965) this indicated that the mother-child relationship lacked warmth. People, according to Exline et al., (1965), "showed striking differences in willingness to engage in

mutual glances by those who were independently judged to differ in their desire to establish warm interpersonal relations" (p. 321).

A plausible explanation for this phenomenon can be given. The attitude of controlling mothers was significantly related to dogmatism (Rebhun, 1967). Dogmatic parents held attitudes that encouraged their children not to intrude on their belief system (Rebhun, 1967). Rebhun's (1967) comment coincides with another statement by Exline et al., (1965),

> "Individuals whose composure is threatened by the nature of their interaction with another, may perhaps unconsciously signal a desire to maintain psychological distance" (p. 208).

In any event the controlling mother did not appear to have established a warm relationship with her child, as defined by time spent mutual glancing.

The remaining measures of visual interaction, as indicators of warmth in the relationship, did not support the proposed model (Hypothesis I, Table IV). Another interpretation of mother-child and child-mother glances was necessary. Hore (1968) suggested that mother-child glances may be classified as "help-giving". Support for this interpretation was provided by re-examination of the data in this study. Correlations of -.33 and -.44 were found between number and duration mother-child glances respectively, and achievement on the block sorting task.

This supported Hore's (1968) position, that the mother was in a state of readiness to give help when she recognized the child was having difficulty.[18] Child-mother glances were not as easily explained. However, child-mother visual interaction seemed to indicate that the child was able to use the help the mother provided. If this was the case it should reflect in his style of handling a learning situation. Child-mother glances predicted response latency which was considered the main index of learning style (Kagan, 1966).

Having found that mother-child and child-mother glances were not significantly related to a maternal attitude it helped clarify a difficulty with the model. Both stage I and stage II of the paradigm included visual interaction. Since there were not any other measures of nonverbal participation it might have been argued that no differentiation existed between the first two stages. However, duration of mutual glances was found to be inversely related to an attitude of maternal control whereas other visual variables were not. The data were consistent with the model which states that mutual glances (warmth) might be seen as a precursor to facilitating nonverbal

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[18]Other interpretations are available, e.g. the child has more difficulty when the mother is looking at him. This would be comparable to being made anxious by someone watching closely what you are doing and the anxiety interfering with the task.

participation, e.g., child-mother glances (help-using participation). Also, high mother-child glances appear to support Hore's interpretation of help-giving behavior. Stage I was considered to be a mutual relationship and stage II involved individually initiated participation. If this is so then warmth is a precursor to facilitating child participation, and is in line with the theoretical model I.

The model indicated a warm relationship should be followed by more participation (verbal and nonverbal) by the child. Subsequent investigation of the data confirmed this prediction. Mutual glances were related to verbal and nonverbal participation (Table XIII), with the exception of average words per communication unit of the child. The high correlation between mutual glances and child-mother glances may be spurious because visual behavior as a more general factor may account for both. The positive relationship between verbal and nonverbal forms of communication supports Hore's (1968) data. Furthermore, there was some indication that controlling mothers had children who engaged in fewer child-mother glances. However, this was not conclusive because of the probability of chance occurrence (alpha $>$ .10). However, there was less verbal participation by children of controlling mothers. This was demonstrated in two ways. First, the average number of words per communication unit was negatively correlated with maternal

control (Hypothesis II, p. 49). Average number of words per communication unit has been shown to be dependent upon verbal participation. Children from higher socio-economic background have generally had greater opportunities for verbal participation with an adult model (John and Goldstein, 1964). Likewise, children from higher socio-economic groups have more average number of words per communication unit (Hore, 1968). Second, subsequent exploration of the data demonstrated that the gross and net words of the child were negatively correlated with maternal control (Table XII, p. 55). Therefore it was assumed that warmth in the mother-child relationship is related to increased verbal and nonverbal participation.

Another measure of verbal participation did not support the model. Hypothesis III, which was a measure of the equality of the verbal participation, did not reach an acceptable level of statistical significance, although it was in the anticipated direction. This hypothesis was derived from Haley's (1964) suggestion that verbal participation was distributed more unequally in dyads of "abnormal" families. Perhaps the subjects of this sample were "normal", which would account for the lack of significance, but still retain the expected direction of Hypothesis III. Sampling from extreme ends of the PARI continuum might support Haley's (1964) work.

Stage III of the model stated that the learning of the child was influenced by how he participated verbally and nonverbally with his mother. Mothers high on the control dimension were found to have children whose performance was poor on the block sorting achievement task (Hypothesis IV, Table V). Furthermore, controlling mothers had children who were less reflective and made more errors on the Learning Style Test (Hypothesis III, Table V). The illuminating aspect of this finding arose from the modes of participation and their relationship to learning style and achievement. Verbal participation, as defined by the average number of words per communication unit, predicted achievement on the block sorting task (Hypothesis VII, Table X). Nonverbal participation as described by amount of child-mother and number of mutual glances predicted the response latency aspect of learning style (Hypothesis V (i), Table VI). A plausible explanation for this is that the style of learning was partially an affective reaction that might be called "impulse delay" or "response latency". "Impulse delay" was dependent upon a warm maternal relationship (high mutual glances) and an opportunity to "use-help" from this relationship (high child-mother glances). It was not appropriate to label response latency as solely affective but rather as bridging the gap between affective (mutual glances) and cognitive (child-mother or help-utilization) responses. Verbal participation however, was

more specifically related to achievement or language usage to solve a cognitive problem. Therefore the maternal relationship created a situation whereby help could be obtained when needed. When this was securely founded individually initiated activities could function on task mastery. Development proceeded from external control (mother relationship) to internal control (child's language).

Bernstein's (1961) postscript in DeCecco's book (1967) anticipated a similar position as reflected by his comment "a channel for the reduction of tension through verbal control is facilitated with the continued use of an elaborated code" (p. 103). Bernstein's (1961) position credited socio-economic background as the precursor to an elaborated linguistic code. He believed that higher socio-economic standing created different social relationships that led to the development of an elaborated code. In turn the elaborated code helped to achieve "impulse delay". In other words the child having an elaborated code would be more reflective, e.g. he could tolerate more tension between stimulus and response. The present findings suggested an alternative to Bernstein's position. From the data it is suggested that a warm maternal-child relationship might be a precursor to an elaborated code (Hypothesis II, p. 49). "Impulse delay" was not related to an elaborated linguistic code (Hypothesis VI, Table IX), but rather to a warm maternal relationship, e.g., high MG's, that allowed

the child to obtain help when needed (Hypotheses IV, V, Tables V, VI). Theoretically, the child could have become reflective because of the warm maternal relationship, rather than the elaborated linguistic code. Therefore a refinement of Bernstein's position would be to include warmth in the maternal relationship. However, lower socio-economic class mothers tend to be higher on maternal control than upper socio-economic groups. Therefore both positions converge more than at first appears. Maternal attitude and socio-economic background should be considered jointly when a theory of language is presented.

Several of the hypotheses which failed to support the theoretical model merit discussion. The relationship between maternal control and "subjective sort" achievement was statistically insignificant. One explanation would be that four-year-old children were not able to use language effectively for explaining their behavior. This may be so even if they comprehended the task, because passive comprehension precedes the active use of language (Lewis, 1963). Further support for this explanation was derived from Hypothesis VII. Average number of words per communication unit was significantly related to "objective sort" achievement but failed to be related to "subjective sort" achievement. Only one finding contradicted this position. A significant negative relationship between errors (Learning Style Test) and "subjective sort" was

obtained. This suggested that the more verbally facile the child the fewer errors he made, a finding which is consistent with Kagan's data (1963). However, the evidence for this explanation is inconclusive, for instance, other correlations between learning style and achievement were not significant. Furthermore, Hypothesis VI, which measured language development, failed to predict either response latency or errors. Although no relationship between response latency and language development was expected (Kagan et al., 1964), a significant correlation between error and language development was. Therefore, either the communication unit was not a good measure of verbal development or the "subjective sort" was not a valid test. The author believes that the latter was a poor test in terms of the demands placed upon four-year-old children. The confusion regarding error and achievement measures requiring verbal ability was not resolved by this study, but remains consistent with the discrepancy in findings involving these variables (Kagan, et al., 1964; Campbell, 1968).

Hypothesis V (ii) predicted that errors would have been negatively related with visual behavior. Hypothesis V (iii) predicted achievement to be positively correlated with visual behavior. Neither hypothesis was confirmed. This was interpreted as meaning that errors and achievement were "more" cognitive than response latency. Therefore response latency might have been expected to relate "more"

to nonverbal-affective variables (Hypothesis V (i), Table VI), whereas error and achievement might have been anticipated to be related to verbal ability. "Objective sort" achievement was found to be correlated with average number of words per communication unit (verbal ability) (Hypothesis VII, Table X), however, errors were not (Hypothesis VI, Table IX). "Subjective sort" was significantly related to errors, however some question of the validity of this test was discussed. The importance of the failure to confirm the hypotheses remained in that they demonstrated the continuous nature of the learning process from nonverbal-to-verbal or affective-to-cognitive modes of development. For instance, response latency tends to be more an affective response which bridges the gap between information available and how information will be used. Kagan et al., (1964) has noted a similar possibility:

> "It is believed that further investigations of response uncertainty will provide an important bridge between the traditionally isolated domains of cognition and personality."

Errors and achievement however, appear to be further along the continuum towards the cognitive sphere of development.

Summing up, the model outlined for this study was mainly supported. One difficulty of the model was discussed. Findings that deviated from the model were explained in terms of test validity and cognitive development. Implications of the findings are discussed in the following chapter.

CHAPTER V

IMPLICATIONS

The findings are discussed in terms of general and developmental research implication. The theoretical model was used as a basis for suggesting ideas that influenced child-rearing practices and early childhood education.

General Research

Behavioral science presses for more objective indices of psychological dimensions. The understanding of nebulous terms like "warmth", "congruence" and "atmosphere" would be facilitated if they could be identified by observable behaviors. The present study demonstrated that visual interaction was related to a maternal attitude that correlated with dogmatism. Frequently, the authoritarian person has been described in terms of "warmth", "communication atmosphere", etc. (Allen, 1957 and Anderson, R.C. 1959). The discovery that visual interaction had a relationship to the psychological dimension of maternal control suggested that explanations of the dimension of authoritarianism were describable in terms of observable communication variables. A resolution between "humanistic" and "behavioral" psychology appears possible through the study of observable nonverbal characteristics of relationships. Future descriptions of

relationships might be reflected by such statements as:

Trainer Therapist: "How could you tell when your relationship warmed up?"

Trainee Therapist: "My client began to look at me more frequently."

or

Trainer Therapist: "Your client says he likes you."

Trainee Therapist: "I know but I'm not sure, because he never looked at me during the whole session."

In the first place knowledge of the nonverbal was important to the trainee's perception of warmth. In the second instance he was concerned about the congruity of what his client said in words, and how he behaved nonverbally. As Watzlawick et al., (1967) has said:

> "Children, fools and animals have always been credited with particular intuition regarding the sincerity or insincerity of human attitudes, for it is easy to profess something verbally, but difficult to carry a lie into the realm of the analogic" (p. 63).

Likewise, "atmosphere" has been an elusive term to describe. Yet, Allen (1957) emphasized its importance to learning. Classroom study should look at atmosphere via visual interaction between teacher-pupil and pupil-pupil relations. This would coincide with Rosenthal's (1966) demonstration of the effect that nonverbal communication has on children in a classroom. Therefore, future training of teachers might involve the study of nonverbal effects.

Developmental Psychology

Kagan et al., (1964) had difficulty relating their dimension of reflection vs. impulsiuity to the mainstream of psychological literature. The present study demonstrated an environmental correlate that connected Kagan's dimension to other psychological theories. Kagan et al., (1964) had not entertained the importance of the maternal environment to reflection. However, future research should adapt to include this finding.

A plausible connection between reflection and early environmental influences which determine a child's orientation to his environment can be made. Campbell (1968) reported that reflective children tend to make more head-eye movements on a discrimination task than impulsives. The present study found that reflectiveness was positively related to more eye-face movements involving a social object, e.g. a mother. Head-eye movements in Campbell's (1968) study involved a "nonsocial object" and in the present study involved a "social object". The importance of eye activity to learning and orienting to the environment has been pointed out (O'Bryan, 1969; Campbell, 1968). It may be that a warm maternal relationship is related to increased visual interaction with the "social" and "nonsocial" environment and hence learning. If a warm maternal relationship was not present opportunities to develop a "learning attitude" would not be present. This might especially be the case

when learning from others early in life was not available. As Robson points out,

> "If the face-tie is not established, or if its quality fosters disruption and distress, the infant will experience varying degrees of interference in forming his earliest -- and probably future -- human relationships" (p. 22).

Since growth is dependent upon a tutor-learner interaction (Bruner, 1966) then the ability to "use" the maternal relationship and perhaps other similar (authority) relationships would be greatly impeded.

Assuming a cold maternal relationship, certain personality outcomes for the child are predictable. Since the child finds it difficult to "use" social relationships he orients more to "nonsocial" objects. Fromm (1964) has described a life-orientation that might be expected. The orientation of a child who had experienced a cold maternal relationship might be necrophilous. On the other hand a warm maternal environment would result in a biophilous individual. Necrophilous individuals are more oriented to dead objects, e.g. "nonsocial" objects, whereas biophilous individuals are oriented toward live objects, e.g. social objects. The biophilous individual tends to be more open-minded and more apt to "change" than the necrophilous individual (Fox, 1969). At this point the connection between personality and cognition becomes more apparent. For example, reflective individuals who demonstrate greater

response latency might be described as "less certain". Dabrowski (1964) maintains that uncertainty is a prerequisite for personality change. "Uncertainty" or "tentativeness" has been demonstrated to be related to developmental level of language (Loban, 1963). Therefore the importance of the early nonverbal environment to personality and cognitive development might be assumed. This might be expected to be related to visual interaction with the environment which has been shown to be related to abnormality (Greenman, 1963), learning (Campbell, 1968, and the present study), the formation of social relationships (Robson, 1967; Exline et al., 1965), and general orientation towards life (Fromm). Visual behavior may be an important precursor to personality and cognitive development and change.

The Model

Applications of the theoretical model are described in terms of child-rearing practices and early childhood education in the following section.

Child-Rearing

The importance of allowing the child to participate in communicational exchanges should be "taught" to mothers. Both verbal and nonverbal modes of the child's expression should be encouraged. It could be pointed out that by certain "attentive behavior" (glances) the mother might indicate warmth to the child which may facilitate his

participation. Giving the mothers this form of organized activity should improve language development (Deutsch, 1965), while simultaneously providing opportunities for a closer affective relationship to develop. Improvement of the relationship might then be facilitated by the use of existing psychological knowledge during the participation, e.g. decision-making by the child (Blank and Solomon, 1967). An increase in creativity (Anderson, C.C., 1964) and a more internally directed child might be expected from using this approach (Harris, 1966; John and Goldstein, 1964; and Hess and Shipman, 1965).

Early Childhood Education

More generally this model might be applied to early childhood education. Verbal and nonverbal participation might be encouraged as forms of expressive behaviors. More emphasis could be given to expressive behaviors versus the present tendency to emphasize written or manual skills. Later in the educational process written skills could be introduced when the child's psychomotor abilities have developed more fully. More emphasis on expressive behaviors might lessen the difficulties many adults and older children find in expressing themselves to groups, an ever increasing cultural demand. Furthermore, passiveness of children which has been suggested to be related to impulsiveness (Hess and Shipman, 1967) might be decreased. Children early

in school may find written skills too discontinuous and impersonal, whereas expressive behaviors could be more easily personalized. As well, this might create a better situation for release of the great amounts of energy that children of this age have. Further ramifications of this approach seem to be related to development of expressive behaviors that are more likely to be satisfying to the parent than the early disconnected and poorly constructed pieces of art. All of these factors are probably important to the child enjoying the educational process and staying in it. Other practical implications are obvious, the most crucial perhaps being to decrease the pupil load on teachers so these forms of expressive behaviors could be encouraged. Blank and Solomon (1967) suggest that even one-to-one teacher-student relationships are possible. However, before any such steps are made these implications should be tested by careful research methodology.

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APPENDIX A

MATERNAL CONTROL QUESTIONNAIRE (PARI)

In cooperation with the University of Alberta, I am studying what mothers think about how children should be brought up. A lot is written on this subject in various newspaper and magazine articles. Frequently these articles are not in agreement. I thought it would be a good idea to find out what mothers themselves think. You can help in the study by passing on your own ideas. I will leave the form with you and return for it in approximately 20 minutes. Be frank and give your own personal views regardless of what others may think. So as not to use too much of your time we have a list of ideas which other mothers have contributed. You merely circle one of the four letters by each statement. Circle the large "A" if you strongly agree, the small "a" if you mildly agree, the small "d" if you mildly disagree, the large "D" if you strongly disagree. If you have any ideas which you feel should be included jot them down at the end. We would appreciate having them. Others who have given us their ideas say that it is best to work rapidly. Give your first reaction. If you read and reread the statements it tends to be confusing and you can't finish in the amount of time we have.

CHILD DEVELOPMENT

Read each of the statements below and then rate them as follows:

A	a	d	D
strongly agree	mildly agree	mildly disagree	strongly disagree

Indicate your opinion by drawing a circle around the "A" if you strongly agree, around the "a" if you mildly agree, around the "d" if you mildly disagree, and around the "D" if you strongly disagree.

There are no right or wrong answers, so answer according to your own opinion. It is very important to the study that all questions be answered. Many of the statements will seem alike but all are necessary to show slight differences of opinion.

		Agree		Disagree	
1.	Children should be allowed to disagree with their parents if they feel their own ideas are better.	A	a	d	D
2.	A good mother should shelter her child from life's little difficulties.	A	a	d	D
3.	The home is the only thing that matters to a good mother.	A	a	d	D
4.	Some children are just so bad they must be taught to fear adults for their own good.	A	a	d	D
5.	Children should realize how much parents have to give up for them.	A	a	d	D
6.	You must always keep tight hold of baby during his bath for in a careless moment he might slip.	A	a	d	D
7.	People who think they can get along in marriage without arguments just don't know the facts.	A	a	d	D
8.	A child will be grateful later on for strict training.	A	a	d	D
9.	Children will get on any woman's nerves if she has to be with them all day.	A	a	d	D
10.	It's best for the child if he never gets started wondering whether his mother's views are right.	A	a	d	D
11.	More parents should teach their children to have unquestioning loyalty to them.	A	a	d	D
12.	A child should be taught to avoid fighting no matter what happens.	A	a	d	D
13.	One of the worst things about taking care of a home is a woman feels that she can't get out.	A	a	d	D

	Agree		Disagree	
14. Parents should adjust to the children some rather than always expecting the children to adjust to the parents.	A	a	d	D
15. There are so many things a child has to learn in life there is no excuse for him sitting around with time on his hands.	A	a	d	D
16. If you let children talk about their troubles they end up complaining even more.	A	a	d	D
17. Mothers would do their job better with the children if fathers were more kind.	A	a	d	D
18. A young child should be protected from hearing about sex.	A	a	d	D
19. If a mother doesn't go ahead and make rules for the home the children and husband will get into troubles they don't need to.	A	a	d	D
20. A mother should make it her business to know everything her children are thinking.	A	a	d	D
21. Children would be happier and better behaved if parents would show an interest in their affairs.	A	a	d	D
22. Most children are toilet trained by 15 months of age.	A	a	d	D
23. There is nothing worse for a young mother than being alone while going through her first experience with a baby.	A	a	d	D
24. Children should be encouraged to tell their parents about it whenever they feel family rules are unreasonable.	A	a	d	D

	Agree		Disagree	
25. A mother should do her best to avoid any disappointment for her child.	A	a	d	D
26. The women who want lots of parties seldom make good mothers.	A	a	d	D
27. It is frequently necessary to drive the mischief out of a child before he will behave.	A	a	d	D
28. A mother must expect to give up her own happiness for that of her child.	A	a	d	D
29. All young mothers are afraid of their awkwardness in handling and holding the baby.	A	a	d	D
30. Sometimes it's necessary for a wife to tell off her husband in order to get her rights.	A	a	d	D
31. Strict discipline develops a fine strong character.	A	a	d	D
32. Mothers very often feel that they can't stand their children a moment longer.	A	a	d	D
33. A parent should never be made to look wrong in a child's eyes.	A	a	d	D
34. The child should be taught to revere his parents above all other grown-ups.	A	a	d	D
35. A child should be taught to always come to his parents or teachers rather than fight when he is in trouble.	A	a	d	D
36. Having to be with the children all the time gives a woman the feeling her wings have been clipped.	A	a	d	D
37. Parents must earn the respect of their children by the way they act.	A	a	d	D

	Agree		Disagree	
38. Children who don't try hard for success will feel they have missed out on things later on.	A	a	d	D
39. Parents who start a child talking about his worries don't realize that sometimes it's better to just leave well enough alone.	A	a	d	D
40. Husbands could do their part if they were less selfish.	A	a	d	D
41. It is very important that young boys and girls not be allowed to see each other completely undressed.	A	a	d	D
42. Children and husbands do better when the mother is strong enough to settle most of the problems.	A	a	d	D
43. A child should never keep a secret from his parents.	A	a	d	D
44. Laughing at children's jokes and telling children jokes makes things go more smoothly.	A	a	d	D
45. The sooner a child learns to walk the better he's trained.	A	a	d	D
46. It isn't fair that a woman has to bear just about all the burden of raising children by herself.	A	a	d	D
47. A child has a right to his own point of view and ought to be allowed to express it.	A	a	d	D
48. A child should be protected from jobs which might be too tiring or hard for him.	A	a	d	D
49. A woman has to choose between having a well run home and hobnobbing around with neighbours and friends.	A	a	d	D
50. A wise parent will teach a child early just who is boss.	A	a	d	D

	Agree		Disagree	
51. Few women get the gratitude they deserve for all they have done for their children.	A	a	d	D
52. Mothers never stop blaming themselves if their babies are injured in accidents.	A	a	d	D
53. No matter how well a married couple love one another, there are always differences which cause irritation and lead to arguments.	A	a	d	D
54. Children who are held to firm rules grow up to be the best adults.	A	a	d	D
55. It's a rare mother who can be sweet and even tempered with her children all day.	A	a	d	D
56. Children should never learn things outside the home which make them doubt their parents.	A	a	d	D
57. A child soon learns that there is no greater wisdom than that of his parents.	A	a	d	D
58. There is no good excuse for a child hitting another child.	A	a	d	D
59. Most young mothers are bothered more by the feeling of being shut up in the home than by anything else.	A	a	d	D
60. Children are too often asked to do all the compromising and adjustment and that is not fair.	A	a	d	D
61. Parents should teach their children that the way to get ahead is to keep busy and not waste time.	A	a	d	D
62. Children pester you with all their little upsets if you aren't careful from the first.	A	a	d	D

	Agree		Disagree	
63. When a mother doesn't do a good job with children it's probably because the father doesn't do his part around the home.	A	a	d	D
64. Children who take part in sex play become sex criminals when they grow up.	A	a	d	D
65. A mother has to do the planning because she is the one who knows what's going on in the home.	A	a	d	D
66. An alert parent should try to learn all her child's thoughts.	A	a	d	D
67. Parents who are interested in hearing about their children's parties, dates and fun help them grow up right.	A	a	d	D
68. The earlier a child is weaned from its emotional ties to its parents the better it will handle its own problems.	A	a	d	D
69. A wise woman will do anything to avoid being by herself before and after a new baby.	A	a	d	D
70. A child's ideas should be seriously considered in making family decisions.	A	a	d	D
71. Parents should know better than to allow their children to be exposed to difficult situations.	A	a	d	D
72. Too many women forget that a mother's place is in the home.	A	a	d	D
73. Children need some of the natural meanness taken out of them.	A	a	d	D
74. Children should be more considerate of their mothers since their mothers suffer so much for them.	A	a	d	D

	Agree		Disagree	
75. Most mothers are fearful that they may hurt their babies in handling them.	A	a	d	D
76. There are some things which just can't be settled by a mild discussion.	A	a	d	D
77. Most children should have more discipline than they get.	A	a	d	D
78. Raising children is a nerve-wracking job.	A	a	d	D
79. The child should not question the thinking of his parents.	A	a	d	D
80. Parents deserve the highest esteem and regard of their children.	A	a	d	D
81. Children should not be encouraged to box or wrestle because it often leads to trouble or injury.	A	a	d	D
82. One of the bad things about raising children is that you aren't free enough of the time to do just as you like.	A	a	d	D
83. As much as is reasonable a parent should try to treat a child as an equal.	A	a	d	D
84. A child who is "on the go" all the time will most likely be happy.	A	a	d	D
85. If a child has upset feelings it is best to leave him alone and not make it look serious.	A	a	d	D
86. If mothers could get their wishes they would most often ask that their husband be more understanding.	A	a	d	D
87. Sex is one of the greatest problems to be contended with in children.	A	a	d	D

	Agree		Disagree	
88. The whole family does fine if the mother puts her shoulders to the wheel and takes charge of things.	A	a	d	D
89. A mother has a right to know everything going on in her child's life because her child is part of her.	A	a	d	D
90. If parents would have fun with their children, the children would be more apt to take their advice.	A	a	d	D
91. A mother should make an effort to get her child toilet trained at the earliest possible time.	A	a	d	D
92. Most women need more time than they are given to rest up in the home after going through childbirth.	A	a	d	D
93. When a child is in trouble he ought to know he won't be punished for talking about it with his parents.	A	a	d	D
94. Children should be kept away from all hard jobs which might be discouraging.	A	a	d	D
95. A good mother will find enough social life within the family.	A	a	d	D
96. It is sometimes necessary for the parents to break the child's will.	A	a	d	D
97. Mothers sacrifice almost all their own fun for their children.	A	a	d	D
98. A mother's greatest fear is that in a forgetful moment she might let something bad happen to the baby.	A	a	d	D
99. It's natural to have quarrels when two people who both have minds of their own get married.	A	a	d	D

	Agree		Disagree	
100. Children are actually happier under strict training.	A	a	d	D
101. It's natural for a mother to "blow her top" when children are selfish and demanding.	A	a	d	D
102. There is nothing worse than letting a child hear criticisms of his mother.	A	a	d	D
103. Loyalty to parents comes before anything else.	A	a	d	D
104. Most parents prefer a quiet child to a "scrappy" one.	A	a	d	D
105. A young mother feels "held down" because there are lots of things she wants to do while she is young.	A	a	d	D
106. There is no reason parents should have their own way all the time, any more than that children should have their own way all the time.	A	a	d	D
107. The sooner a child learns that a wasted minute is lost forever the better off he will be.	A	a	d	D
108. The trouble with giving attention to children's problems is they usually just make up a lot of stories to keep you interested.	A	a	d	D
109. Few men realize that a mother needs some fun in life too.	A	a	d	D
110. There is usually something wrong with a child who asks a lot of questions about sex.	A	a	d	D
111. A married woman knows that she will have to take the lead in family matters.	A	a	d	D

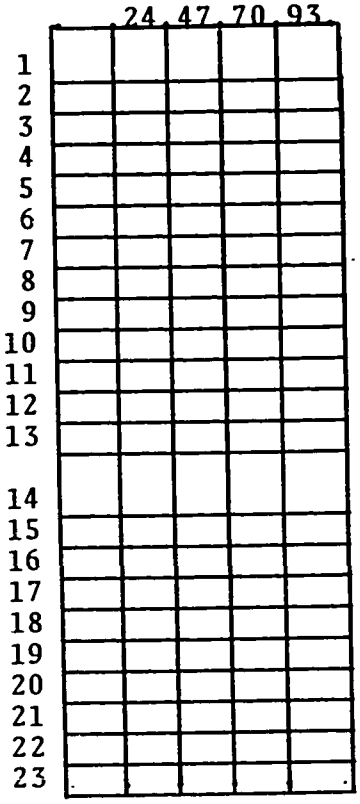
	Agree		Disagree	
112. It is a mother's duty to make sure she knows her child's innermost thoughts.	A	a	d	D
113. When you do things together, children feel close to you and can talk easier.	A	a	d	D
114. A child should be weaned away from the bottle or breast as soon as possible.	A	a	d	D
115. Taking care of a small baby is something that no woman should be expected to do all by herself.	A	a	d	D

SCORE SHEET FOR PARI

23 SCALE 5-ITEM QUESTIONNAIRE (FORM IV)

Name:_____ Date:_____ Number:_____

PARENTAL ATTITUDE RESEARCH INSTRUMENT



	Scale Score	Sub-Test Title
1	_____	Encouraging Verbalization
2	x[1] _____	Fostering Dependency
3	x _____	Seclusion of the Mother
4	x _____	Breaking the Will
5	x _____	Martyrdom
6	x _____	Fear of Harming the Baby
7	_____	Marital Conflict
8	_____	Strictness
9	_____	Irritability
10	x _____	Excluding Outside Influences
11	x _____	Deification
12	x _____	Suppression of Aggression
13	_____	Rejection of the Homemaking Role
14	_____	Equalitarianism
15	x _____	Approval of Activity
16	x _____	Avoidance of Communication
17	x _____	Inconsiderateness of Husband
18	x _____	Suppression of Sexuality
19	x _____	Ascendancy of the Mother
20	x _____	Intrusiveness
21	_____	Comradeship and Sharing
22	x _____	Acceleration of Development
23	x _____	Dependency of the Mother

Instructions:

Enter the number 4, 3, 2, or 1 in each square according to whether the response was Strong Agreement, Mild Agreement, Mild Disagreement, or Strong Disagreement respectively. Thus if the subject responded with Mild Disagreement to item #25, a 2 would be entered in the second cell of the second row. Total score is merely the sum of entries across rows. Since items are arranged in a cyclical order by scales all items in a given row belong to the same scale. Hence, summing across gives the score for that scale.

---

[1]Scales marked "x" were added to obtain maternal control score.

APPENDIX B

RAW DATA

Mother	Maternal Control Scores	Number of MG	Duration of MG
1	208	17	6
2	194	22	9
3	203	4	2
4	211	51	32
5	148	92	74
6	155	39	38
7	153	37	24
8	131	32	15
9	225	14	5
10	116	29	19
11	162		
12	205	12	6
13	201	39	14
14	183	4	3
15	212		
16	207	31	19
17	164	22	16
18	156	69	41
19	251		
20	151	8	4
21	128	24	11
22	166	31	11
23	167	5	3
24	230	28	13
25	143	41	29
26	161	21	14
27	203	12	6
28	195	11	5
29	206	33	9
30	213	58	4
31	185	11	2
32	209	37	13

RAW DATA

Mother	Number M-C Glances	Duration M-C Glances	Number C-M Glances	Duration C-M Glances
1	136	32	7	2
2	85	39	22	5
3	62	51	6	2
4	117	93	46	7
5	251	147	94	4
6				
7	69	36	40	9
8	73	76	24	7
9	76	15	14	5
10	92	90	18	6
11				
12	88	45	22	7
13	1	152	55	9
14	62	19	30	6
15				
16	129	138	28	4
17	135	112	29	8
18	175	65	64	13
19				
20	70	57	18	4
21	152	132	56	11
22	67	60	45	17
23	92	52	14	3
24	115	44	67	14
25	111	71	35	12
26	99	62	20	5
27	37	17	29	6
28	35	5	33	7
29	110	59	44	5
30	93	132	38	6
31	169	112	42	8
32	263	400	48	9

RAW DATA

VERBAL DATA FOR CHILDREN

	GW	NW	AW/CU
1			
2	529	394	5.79
3	338	227	4.07
4	727	505	4.59
5	1266	914	4.45
6			
7			
8	603	452	5.87
9	203	126	4.34
10	574	286	4.53
11	733	592	5.74
12	636	451	4.21
13	798	585	5.27
14	372	289	4.98
15	498	378	4.78
16	490	392	5.59
17	1296	1052	5.65
18	1528	1285	5.63
19	888	632	4.15
20	568	460	4.55
21	790	640	5.03
22	795	674	4.88
23	323	262	5.03
24	704	530	4.90
25	732	573	5.20
26	716	479	5.50
27	408	264	5.50
28	282	178	4.04
29	647	508	6.59
30	533	428	4.86
31	380	270	4.50
32	419	284	4.50

RAW DATA

LEARNING STYLE AND ACHIEVEMENT DATA OF CHILDREN

	RL	E	OS	SS
1	59	17	36	5
2	78	17	36	4
3	76	24	27	0
4	71	15	36	6
5	119	16	36	7
6	107	11	36	1
7	107	11	30	5
8	73	14	29	0
9	70	17	30	4
10	66	6	36	4
11	159	3	36	6
12	48	17	36	5
13	71	28	36	2
14	42	16	30	0
15			32	2
16	64	15	28	0
17	130	3	15	0
18	217	13	27	1
19			0	0
20	113	11	36	7
21	114	9	26	4
22	232	12	29	1
23	101	12	29	1
24	42	20	24	1
25	45	26	36	0
26	48	19	23	0
27	72	14	36	8
28	62	14	36	0
29	71	21	26	3
30	42	39	12	1
31	81	16	36	2
32	63	11	12	5

APPENDIX C

INSTRUCTIONS

Please listen carefully to these instructions.

Because the instructions are long a summary of them is available to you. See the card beside you marked "Instructions". When you bring your child to this room after hearing these instructions this is what I would like you to do. First, let your child get used to the room. He may explore the room. Do this until you hear a bell.

Second, sit your child in a chair marked "C" and you sit in your chair.

Third, tell the child what each one of these toys do. For example, the gun shoots, the pop-a-ball pops up a ball, the blocks can be piled, the doll can be dressed, and the maze -- the wooden box has two knobs that can be turned to prevent the silver ball from falling through the holes. Now spend some time yourself finding out what these toys do.

Four, both of you play with these toys but remain seated until you hear another bell.

Fifth, when the second bell rings place the maze over beside the gun and put the blocks in a clear spot in front of you.

Six, now show your child how to separate the blocks on the basis of color. The square holes can be used to put the separated blocks in. Now you practice separating the blocks by colour. Place the different coloured blocks in different holes. When you are showing your child how to do this and he finishes, ask him, "How do you know these blocks go here?" Try and get him to tell you that it is because they are a different colour. For example, "all blue", "all orange", etc. When he is finished tell him why he separated the blocks, ring the bell, and I will come in.

Seventh, now when you hear a bell show him how to separate all the blocks on the basis of shape. Each different shape going into a different hole. You try it now. The circles go in one hole, triangles in another, rectangles in another and the odd-shaped ones in another. When your child completes this, once again ask him, "How do you know these blocks go there?" Try and get him to

tell you why he separated the blocks the way he did. After he tells you ring the bell and I will come in.

Eight, when you hear the next bell, show him how to separate them on the basis of size. This part is usually more difficult. However, notice, that on each group of blocks of a different size there is a name, for instance, 'lag', 'Bik', 'mur', 'cev'. All the blocks of 'lag' are different from those of a different name. All the 'lag' are tall and large, all the 'Bik' are thin and large, all the 'cev' are thin and small, and all the 'mur' are tall and small. You go ahead and separate the blocks.

You may teach your child to use the name on top of the blocks but he should also understand the difference in size. When he has finished separating the blocks, ask him: "How do you know these blocks go here?" Try and get him to tell you that it is because these are different in size, for instance, big and large, etc. When he has finished telling you, ring the bell. For each different separation you may show the child but then let him do it. For instance, you may give him an example but actually placing the different colors in different holes. However, after you show him place all the blocks back in front of him. If your child does not separate the blocks correctly you may correct him by telling him, but do not remove the blocks yourself.

Keep sitting and work as quickly as possible. All right the instructions are finished and you may go and get your child. Remember to look at your instruction sheet if you have any difficulty remembering what to do next.

Thank you.

A P P E N D I X D

LEARNING STYLE TEST

Materials

Stopwatch, tally sheet, stimulus shield.

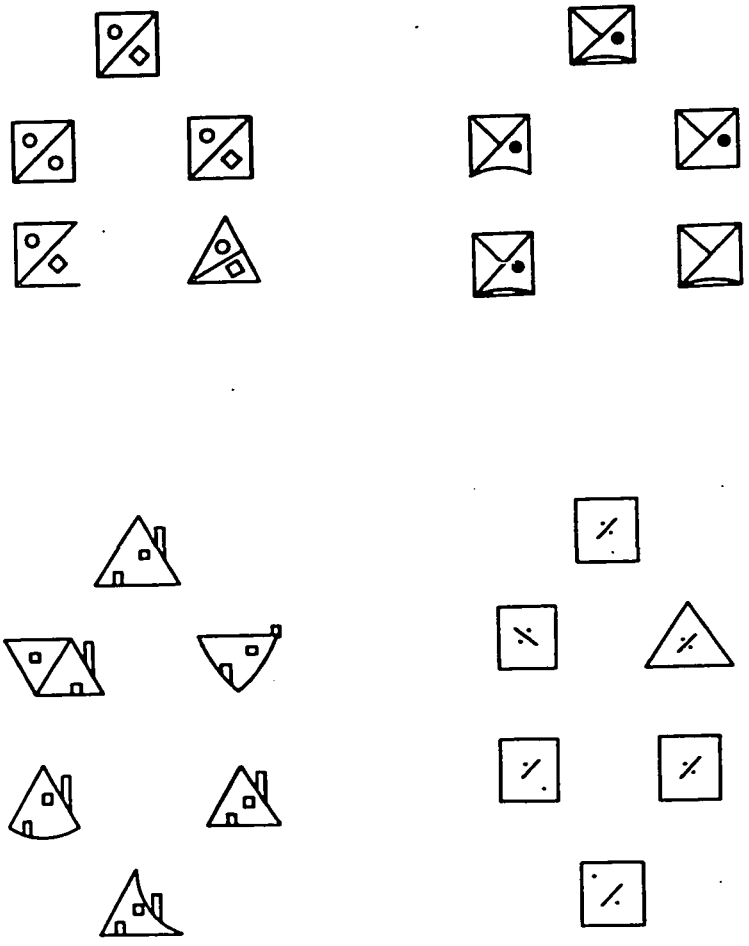
Instructions

Place the sample card in front of the subject(s) with the array of designs shielded from his view but the standard design visible to him. Tell the S, "listen carefully to what I say. I am going to show you a picture and I want you to find another one just like it down here (point to array of designs underneath the shield). Look carefully and find a picture just like this one (point to the standard design). When you find the one just like this one (point to standard) put your finger on it." Let the S practice on the sample cards. If he makes any error correct him. If the S makes the correct choice say "yes" and go on to the next card. If the S fails to make the right answer say "no". Continue until he makes the correct choice.

Note

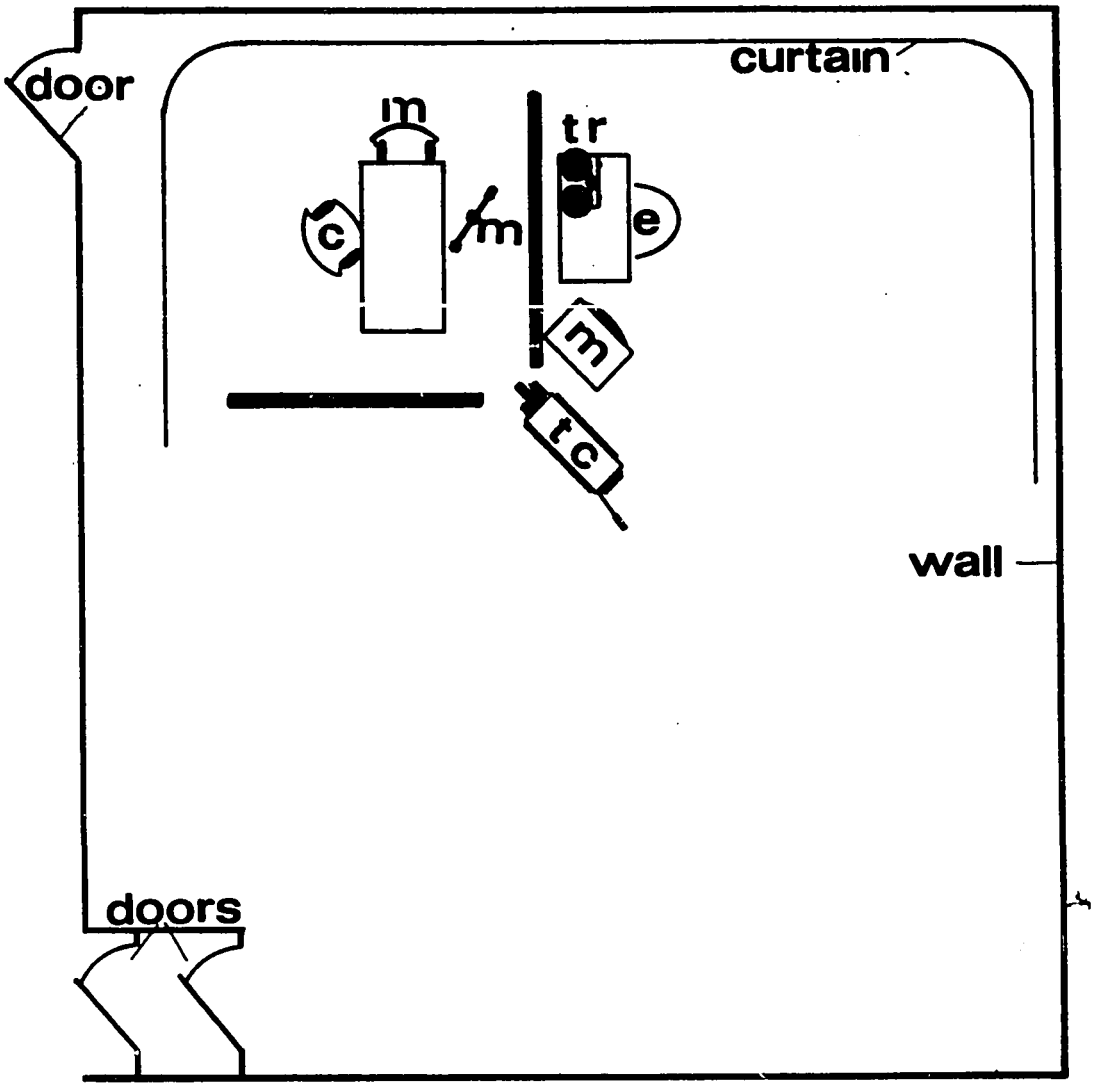
The test is designed so that an odd-even order of presentation is possible. This is convenient for obtaining internal consistency measure. Also, the odd-even order of presentation progresses from simple to more complex designs. Therefore, if all designs are to be given during one setting too many conservative failures are avoided.

SAMPLE OF CARDS FROM LEARNING STYLE TEST



APPENDIX E

THE TECHNICAL ARRANGEMENT



key

tc	TELEVISION CAMERA
m	MONITOR
e	EXPERIMENTER
tr	TAPE RECORDER
c	CHILD
m	MICROPHONE
m	MOTHER