Black Mothers and Their Sons: Correlates and Predictors of Cognitive Development from the Second to the Sixth Year of Life

by

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Chapter I

Review of the Literature

A mother exerts a profound influence upon the emotional and cognitive development of her child. The nature of the influence is determined by the mother as an individual within her environment and by the mothering experience that she provides. Her behavior and affective communication shape and determine many aspects of the child's approach to the world. Her responses to the child affect behaviors as attention, expectancy, exploration, and achievement motivation. Her style of communicating establishes verbal patterns and problem solving abilities in the child. Her warmth, care, empathy, and reassurance or lack thereof affect the unfolding of the child's intrapsychic structures. The variables go on and on. Even a brief look at the vast literature on the relationship between mothering and a child's development illustrates the complexity of trying to sift out all the factors and their sequelae. Despite the difficulty of distilling these factors, the understanding of the process of mother-child interaction is central to the understanding of personality, behavior, and intellectual functioning. This understanding of the impact of the mother upon the child is particularly important for those groups who are at "high risk." The Black urban poor comprise one such group at risk. The pervasive influence of the culture of poverty, particularly the destructive effects of poor physical circumstances, disorganized family structures, inconsistent child rearing practices, and parental personality patterns have been described by the Joint Commission on the Mental Health of Children (1968).

One study in New York City attempted to assess the extent of mental impairment in a random sample of over 1,000 children of various socio-economic and ethnic backgrounds (Langner, Herson, Greene, Jamason & Goff, 1970). A preliminary analysis of 400 children found low income, absence of fathers, interruption of maternal care, quarrelsome homes and low parental education to be among the most significant associations with greater impairment. One of the most vulnerable and high risk groups were male children from low income Black families.

Others (Schaefer, 1969; Caldwell and Richmond, 1967) note that beginning around 15 months to 2 years the developmental curve representing disadvantaged groups begins to drop and from that time forward ability and achievement curves of socially deprived children will differ significantly from their less deprived age mates. As Schaefer notes in the 1969 report at the meeting of the American Association for the Advancement of Science, there is no evidence of social class or race related deficits on the Bayley Infant Scales before the age of 15 months. Something happens or fails to happen that leads to a decline in measurable abilities from this point on.

In an effort to understand exactly "what" about the environment of the urban Black is non-stimulating or "what" about the conditions of lower-class families has direct impact on cognitive development, the present investigation focuses on the lives of a group of Black mothers and their first born sons residing in the Harlem area of New York City. The study seeks to describe and delineate specific variables of early mothering and child development that are correlated with and predictive

of future intellectual functioning. It relates the findings of a previous longitudinal study of first born Black males between the ages of 14 and 22 months (Engel, Arkin & Nechin, 1975; Wieder, 1972) to the intellectual functioning of the same children at 5-1/2 years of age. It is felt that such longitudinal data are rare and important to the understanding of the development of Black children. Such data also have significant implications for the development of early intervention programs.

While the dominant theoretical framework for this study is an analytic one, social learning and developmental theories also contribute ideas and hypotheses for consideration. In order to facilitate thinking about those aspects of mothering and infancy that influence cognitive development, the review of the literature will be organized around four vantage points: (1) the developmental phase of motherhood, (2) the influence of maternal variables on cognitive development, (3) cognitive development in high risk groups, and (4) early cognitive stimulation.

Developmental Phase of Motherhood

In order to more fully understand the effect that a mother can have upon the cognitive-psychological development of her child, several factors of the mothering experience have to be considered. A mother's own upbringing including her relationships with parents and relatives, her own intrapsychic development, her social and cultural background, and her current environmental situation are all critical factors that influence her mothering.

When a young woman has her first child she enters a new stage of development--that of motherhood. Benedek (1970) sees pregnancy itself as a critical phase in the life of a woman. She states that it is a biologically motivated step in the maturation of the individual which requires physiologic adjustments and psychologic adaptations to lead to a new level of integration that represents development. Both the physiological and psychological are interwoven. Psychoanalytic investigation of pregnancy as a psychobiologic process reveals its significance for the individual and for the three generations which pregnancy links in sequence. The psychosexual maturity of the individual woman is the result of the girl's introjected developmental experiences and contributes to her motherliness. The most critical psychological precursor for her motherhood is her identification with her own mother. There is a nostalgia for her mother to relive in the union with the future child, a reversal of the original mother-child symbiosis (Benedek, 1970). If her relationship with her own mother was good and satisfying, then a woman's feelings about her new child tend to be positive. If she had a disturbing or very ambivalent relationship with her mother, then her perception might be distorted. She might expect the perfect child who would provide her with all of the gratification she missed as a child. She might also dread the coming of the baby, fearing a loss of herself in the process.

If the past is not favorably disposed the conflicts can be many. Within the pregnancy itself there is a "reactivation of the anxiety frustration, and pains referable to the pregnant woman's infancy and

her oral phase of development" (Benedek, 1970). Depending upon the mother's own satisfactions during these periods, she can approach motherhood with a positive or depressed outlook. Not only is the mother changed and filled with revived feelings, but so is the father to a different degree. Approaching parenthood can revive in him memories of his own childhood, his relationship with his mother, births of siblings, etc. He must also respond to the new dependent needs of his pregnant wife. If his own needs have been satisfied then there is less conflict, but if many of his own needs, particularly dependent ones, have been unmet, then there might be much conflict.

The birth of a child is a radical modification in the total life style of all concerned. Everyone has to alter his life to accommodate this clamoring, demanding new addition to the family. Tremendous demands are put upon the family economically by all the additional expenses, socially by the time required to care for the infant, and psychologically by the emotions and concerns involved in caring for a child.

As the child grows, transactional processes develop. These "transactional processes can evolve relatively smoothly until the child reaches the developmental level at which the parent, because of his own developmental conflict, unconsciously anticipates the child's conflicts and therefore becomes insecure in his response to the child's behavior" (Benedek, 1970). Conflict can arise at any level. There can be conflict right from the start over the oral dependent phase, or later in the anal or oedipal stages. Depending on the parent's

unresolved conflicts, there is potential for problems or success at all levels of the child's development.

From birth on an interactional interchange exists and continues on some level throughout the life of both parent and child. The mother's sense of herself as a mother depends upon the reactions and development of her child. The child can affect her motherliness, rewarding and stimulating her through his responses. He can also thwart and frustrate her, increasing her conflict and ambivalence. The child responds first to the satisfaction of his drives and later to his mother's responses. As he gets older the interaction becomes more complex. The child moves from his earliest drive determined state into symbiosis and then on to separation-individuation, into the oedipal, and latency stages. As this occurs the interaction with the mother continually shifts. She has to continually adapt with each stage of development. Proper nurture requires a parent to have the capacities, knowledge, and empathy to alter her ways of relating and her attitudes to the child in accord with his changing needs. The degree of constraint provided a 9-month old is unsuited for a toddler and the limits set for a 15-month old would restrain the development of a 3 year old. The capacity to nurture, or for a mother to be maternal is not an entity. Some mothers can nurture a child properly so long as he is completely dependent, but become apprehensive and have difficulties as soon as he becomes a toddler and can no longer be fully guarded from the dangers inherent in his surroundings. Some

have difficulties in allowing the child to form the erotized libidinal ties essential to the development of the pre-Oedipal child, whereas others have difficulties in frustrating the child's erotized attachment during the Oedipal phase. Some mothers cannot feel secure about the child's ability to manage without them when he must start school, (Lidz, 1970). The situation varies from parent to parent and from child to child. Some parents are more self assured and their circumstances facilitate the development of the mothering role. Other parents are conflicted and the development of the mothering role is hampered by environmental circumstances.

High Risk Motherhood - The Black Urban Poor

Black mothers who are poor and living in a urban ghetto have to face problems that most other mothers do not. These problems have both concurrent and historical roots. The overriding environmental factor is poverty. Because of their poverty many have to live in poor housing without the minimum materials to take care of, let alone play with and stimulate their children. Many young mothers have to live with other family members. The young child then is multiply mothered by a number of women staying in the same home. Frequently there is no husband or father, and if there is he sometimes has to stay away to meet welfare regulations. While such goals as more education, more opportunity, better health and happiness are shared with those of the larger society, parents from poverty backgrounds often lack the informational, economic, social and psychological

resources needed to implement their aspirations (Chilman, 1968). How do these factors influence the mothering process?

In his study on the families of delinquent children, Minuchin (1967) found that often the mothers seemed able to respond to and interact with their children only when they were submissive or requesting that some basic need be met. They seemed to conceive of themselves in the nurturing role only. They could minister to the children's nurturance needs, but when called upon to give guidance or to exercise control they were anxious and confusing in their behavior. As a group these mothers of delinquents seemed to see themselves as powerless, helpless, and overwhelmed by the children's demands. They, too, came from deprived families. They presented themselves as women with very low self esteem who were extremely dependent on outside anchorings for a definition of self. They saw themselves as incompetent and exploited. They validated themselves through their mothering role. Their children were important to them for their own identity. In other words, these mothers were not child centered but rather focused on the parent role. They tried to resolve the primary problem of defining a basic self identity through their role as a parent. The usefulness of children as sources of feedback and as extensions and reflections of self overrode any parental ability to perceive them as potential people.

Rainwater (1966) likewise found that for Black girls pregnancy often was the real measure of maturity, the dividing line between

adolescence and womanhood. Pregnancy was accepted as part of life and often had a liberating effect. The young woman no longer had to preserve her status as a single girl.

In a study of disorganized families, Pavenstedt (1967) found that mothers who attempted to achieve some identity through having a child did not respond differentially to their children and competed with them for need satisfaction. In both Minuchin's and Pavenstedt's studies, the inconsistency of the mothers who responded more to their own needs than to the children's did not allow for the children to develop a sense of effectiveness, control or self-worth.

Riese (1962), describing a group of low socio-economic mothers in Virginia, stated that the mothers she saw were often so dependent and helpless themselves that they were often not aware of their children's needs. Because of their own inadequacies and needs, they feared their children's growth and often impeded it.

Very frequently the young Black mother's dependency needs are exacerbated by the fact that she lives with her own mother and shares the care of her baby. Rainwater (1966) pointed out that this is common because of the mother's single status, young age, lack of money, or lack of housing. The conditions and situation for multiple mothering have been described by several researchers (Ladner, 1971; Marans and Lourie, 1967; Barglow, Bornstein, Exum, Write & Visotsky, 1968). The biggest conflict for the young mother is often over control of the baby. The daughter moving into a mother's role needs

to experience a growing sense of autonomy from her own mother in order to take jurisdiction over her growing child. Where this fails to happen she often relinquishes the care of her child to the grandmother. This type of shift increases her own dependency and puts her into competition with and for her own child.

Obviously the young Black mother faces situations not encountered by the larger segment of the population. But are these situations always negative? Reisman (1967) sees many successful adaptations. For instance, if the only way to maintain any semblance of family is through a network of mothers, aunts and grandmothers, then it is wise to form an extended matriarchal family to care for the children. Furthermore, Caldwell (1963, 1964) found that in comparing one-year olds brought up in polymatric and monomatric homes, there were very few significant differences. She felt that there was only a slightly more comfortable and involved relationship between monomatric mothers and their infants.

Allen (1970) critizes much of the research aimed at establishing personality correlates of the poor. He is primarily critical of the sweeping generalizations that many researchers make. He questions the lack of controls for the effects of the social class of subjects and investigators, the intelligence of subjects, and non-representative samples. He cautions the researcher to examine the individual variation within a group or between similar ethnic groups rather than

to make continual comparisons with the middle class.

This review of mothering is brief but it conveys the complexity engendered by the mother in her role as parent both in theory and actuality. It is obvious that a young woman brings to her role as a mother her own past with its successes and conflicts, combined with an existing set of circumstances of her present life. The task for the Black mother is often additionally compounded by poverty and the limitations it imposes.

Now the question arises: What specific effects do maternal variables have on the cognitive development of the young child? This question is partially answered in the next section.

Influence of Maternal Variables on Cognitive Development

Numerous studies have been carried out to study the relationship between maternal variables and child development. Child rearing, techniques, attitudes, personality variables, and socio-economic variables have all been related in one way or another to aspects of a child's development. What underlies most of these studies is the social interaction with the mother. Her acceptance or rejection, her own needs for dependence, her anxiety, her positive or negative attitude toward the child, her encouragement of self-reliance and independence, and her empathy have all been shown to have a relationship to a child's development. Many relate specifically to the cognitive functioning of the child. For instance, maternal responsiveness determines the child's approach to new tasks and situations.

In understanding the effects of maternal responsiveness, Lewis and Goldberg (1969) suggest that when the mother makes prompt, contingent, and consistent responses to his signals, the child learns that his behavior has consequences and his actions can control his environment. This belief leads to motivation which is a necessary basis for further learning--a generalized expectancy of similar control in a new and different environmental setting. Early response-contingent stimulation may thus become a perpetuationg condition for competence and information seeking, as well as for the formation of social relationships.

Clarke-Stewart (1973) related a set of variables that were subsumed under a concept of "optimal mothering" to cognitive development as measured on the Bayley. She found that for promoting a broad range of competencies, the mother's responsiveness to the child's social behavior may be the most significant. In her study of 36 mothers and their first born children (9-18 months old) her central findings revealed that the children's overall competence was highly related to maternal care. A cluster of infant variables which included measures of the child's competence in the areas of cognitive, language, and social development was strongly and positively related to a similarly complex maternal factor which included the dimensions of positive emotion, stimulation, and responsiveness.

Rotter (1966) sees the responsiveness of the mother as a reinforcement so that her responses strengthen the child's expectancy that

a particular behavior will elicit particular events. As the infant develops and acquires more experience he differentiates events which are causally related. These expectancies generalize and combined with specific expectancies act to determine choice of behavior. Rotter says that as a child has some belief in his own ability or skill to determine outcome of his efforts, the higher his need achievement. If the child sees reinforcement outside his own control or not contingent--so that he depends on chance, fate, powerful others or the unpredictable--then there will be less acquisitions of new behavior. Other researchers (Katovsky, Crandall, & Good, 1967; Crandall, Katovsky, & Crandall, 1965) found that school achievement could be predicted by the child's belief in internal or external control. In the 1967 study Katovsky et al. used a sample consisting of parents and 41 boys and girls ranging in age from 6 years, 10 months to 12 years, 5 months. They found that parents who encouraged the child's achievement behavior and the development of skills had children who relied on their own behavior and not external forces to determine the reinforcement they received. They also found from interviews and Parent Behavior Ratings that the parent who maintained a supportive, positive, nurturant relationship with the child was more likely to foster the child's beliefs in internal control than the parent whose relationship with his child was punitive, rejecting, and critical. The correlations between a measure of a child's inner control and parental behaviors went as high as .66 for parental approval. Between such items as

restrictiveness of regulations and severity of punishment and the child's inner control measure the correlations were .07 and -.17, respectively. As they pointed out, their study only investigated a few aspects of parental behavior that play a part in the development of children's beliefs in internal-external control.

These findings have an obvious consequence for school and learning. With a sense of control and ability to influence one's status through people, a child will approach school or a new learning situation with the aim of determining his own impact and his own influence.

Some have claimed that the reason for Black children's poor performances in school and on tests relates to a lack of a sense of internal control. They need constant structure and external reinforcement (Minuchin et al., 1967). This need relates to the inconsistency of reinforcement found in the home where impermanence and unpredictability reign. In the socialization of these children the families are characterized by impermanence, randomness, fast changes in mood, an accelerated tempo in interpersonal transactions, control boundaries that shift with the parent's mood, and lack of guidance and orientation to norms. The constant shifting of stimuli hinders the ability of the children to develop the object constancy for keeping hold of an object in thought. It also hinders the development of control over impulsivity.

But not all Black children fail tests and do poorly in school. Mackler (1970) studied a group of scholastically successful Black

students in the upper elementary grades of the public school system of New York. He found that the successful pupils exuded a certain self reliance. Their responses to various questions and hypothetical situations revealed that they felt that their future lay in their own hands and that it was up to them to get ahead or to fall by the wayside. They did not blame others for their shortcomings. As compared to less successful Blacks in the same schools, these high achieving students had parents who were continually interested in and in contact with both their school work and extracurricular activities. Mackler (1970), reviewing a number of studies of academically successful Blacks, came to the conclusion that the pattern of success for Blacks was no different from what one would see when looking at white middle class children. To do well academically, a youngster needed to have a good self concept, adequate controls, directed effort, and to be able to accept demands by authorities, notably teachers and parents. The relationships between parental attitudes and child rearing approaches and school success was not made clear in the studies cited by Mackler. In the light of the great number of studies portraying the negative socializing aspects of Black disadvantaged families on the poor school functioning of Black children, further exploration of the family variable for successful students would have been welcome. How do these students come to have such a positive view of themselves and their abilities to perform? What is it that starts the child off into a self perpetuating success cycle instead of a

self-defeating one?

Maternal Cognitive Style

Investigations of the cognitive style that is transmitted from the parent to the child have attempted to explore how a parent's cognitive approach to problem solving and intellectual tasks affects the cognitive approach of the child. In studying class differences in the socialization practices of Negro mothers, Kamil and Rodin (1967) found that while all the 41 mothers in the study had the same child rearing goals, i.e., qualities of honesty, happiness, obedience to parents, and a good education, there was a difference in the approach that mothers used in their efforts to influence their children. One group tended to use a more bilateral approach wherein they consulted with their children and offered explanations while the other group used a more unilateral approach that involved commanding the child what to do. These researchers found that bilateral influence was more likely to lead to inner controls because of an internalization process whereas a unilateral approach of commanding perpetuates the need for external controls. By appealing to status and authority the parents using the unilateral influence seemed to foster good behavior through obedience that depended on the presence of authority figures and not on the development of inner controls.

Minuchin (1967) graphically described how the urban slum families in his study transmitted a disruptive unfocused approach to problem

solving to their children. He stated,

> In the socialization of the child, these families seem to be characterized by two major features: parents' responses to children's behavior are relatively random and therefore deficient in the qualities that convey rules which can be internalized; the parental emphasis is on the control and inhibition of behavior rather than on guidance. One sees in these families patterns of parental reaction that operate like traffic signals: they carry the instructions of "don't" at the moment, but they do not carry instructions for behavior in the future. Because the child cannot determine what part of his behavior is inappropriate, he learns that the "dont's" of behavior are related to the pain or power of the mother or other powerful figures. Action oriented, impulsive reactions characterize the child who grows up in this environment, even at ages when more complex and reflective controls are possible. The kind of reactivity perpetuated in the child represents both an emotional organization and a cognitive style. The child is impulsive and global in his responses, tends to search the immediate reactions of others for clues to the solution of conflict situations, and remains relatively unexercised in the use of focal attention for observing himself or the specific characteristics of a situation.

Minuchin's description of the child brought up in the slums fits the one of the child who has very little sense of internal control and who must continually rely on the vagaries of external reinforcement.

Exploring specific aspects of this cognitive style, Hess and Shipman (1965, 1967, 1968a, 1968b, 1969, 1970) have investigated the effect of mothers' socialization and teaching strategies on the cognitive functioning of their children. Their studies are based on the arguments that early social experience shapes cognition, that the most significant figure in the organization of this experience is the child's mother or mother surrogate, and that the effects of her interaction with the child induce enduring forms of information processing in him.

It is Hess and Shipman's view (1967) that "the structures of the social system and of the family shape communication and language; and that language shapes thought and cognitive styles of problem solving by structuring and conditioning how the child learns and by setting limits within which future learning may take place." The social and family structures of the lower class groups foster the development of restricted alternatives for speech and action. This constriction in turn develops modes for dealing with stimuli that are impulsive rather than reflective, that deal with the immediate rather than the future, and that are disconnected rather than segmental. To clarify this theoretical stance, Hess and Shipman examined the cognitive aspects of exchange and the cognitive consequences to the child of the affective and control strategies employed by the mother. In interviewing, testing and observing mother-child interaction in structured problem solving situations, they showed that the mother's strategies have consequences for the cognitive structures (preferred response patterns) that emerge in the child and for his eventual educability in more formal, institutional instruction. One aspect of the study (Hess & Shipman, 1967) looked at two maternal strategies: 1) regulatory or control processes which orient the child toward cues in the environment; and 2) the patterning of stimuli by the mother which organizes information for the child. These patterns of stimuli included sequencing, orienting the child's attention, motivation, specificity of language, requesting feedback and screening distracting stimuli. They felt that

the most significant feature of the disadvantaged environment is a lack of patterns--repeated sequences of events that can be predictably related to other events--in the child's experience. They concluded from the observations of mothers teaching structured tasks to their children that in spite of a mother's good intentions, if she fails to inject sufficient cognitive meaning into her interactions with her child she may structure the interactions so that he not only fails to learn but develops negative responses to the experience. In this way a mother might induce negative attitudes, not by the child's imitating the mother or introjecting her views, but by his reacting adaptively to her well meant but harmful teaching behavior. The effects of this are discernible in the IQ level of the child, his ability to use verbal symbols, degree of comfort with adults outside his family, and performance on cognitive tasks unrelated to the usual maternal teaching situations (Hess & Shipman, 1967).

In related work examining mothers' teaching style, Bee and her coworkers (Bee, Nyman, Pytkowicz, Sarason, & Van Egeren, 1968; Streissguth & Bee, 1972) found two distinct patterns that also followed social class lines. They found that mothers tended to have clusters of behaviors. For instance, a mother who used more questions, more praise and less criticism, and less often interrupted a task, also tended to use positive feedback and questioning rather than statements in her teaching. These clusters or patterns were related to the successful cognitive performance of their 4 year olds. It was suggested that the

general structure offered by a mother may help the child to acquire learning sets (strategies) that will generalize to future problem solving situations (Bee, 1969). With another group of mothers (primarily lower class) there was a cluster of variables including demands, directions, and negative feedback that seemed to relate to ineffectual teaching. Children of these mothers performed poorly on cognitive tasks. In a sense it appeared that these mothers taught what not to do, at least in reference to global rules of conduct.

While these results support the previously cited Hess and Shipman studies, Bee adds a caveat about making the causal connection between maternal teaching style and cognitive development. An alternate explanation could be that mothers have learned what sort of performance to expect from their children under such circumstances and thus behave differently toward them. To some extent there must be a mutual adaptation (Streissguth & Bee, 1972).

Brophy (1970) presents further work on cognitive style. He states that until recently research in parental behavior concentrated primarily on the affective and disciplinary domains often in connection with such child variables as dependency and aggression. He feels that these studies dealt with reactive behavior and that when looking at studies of cognitive and verbal stimulation one is looking at more proactive behavior. This emphasis on the proactive leads to a model characterized by differentiation and elaboration in parental

behavior as opposed to a bipolar model which might have acceptance vs. rejection on either end. He recommends looking to the whole process of interaction. For instance, he found that the major difference between "good teaching" mothers and "poor teaching" mothers was that better teaching mothers used a greater repertoire of techniques, supplementary responses, and shaping behavior with pre-response activities, with a great use of verbal instruction; they led their child up to a response as opposed to showing him how to do it. This finding is in accord with others who feel that the crucial difference is not in the amount of stimulation, but in the way the stimulation is organized in the home (McCandless, 1967) or in the way the home environment fosters cue distinctions (Kagan, 1969).

Approaching maternal influence on cognitive development from a different angle, Witkin, Dyk, Paterson, Goodenough, and Karp (1962) attempted to relate perceptual difference in the cognitive styles of children to maternal behaviors. For instance, field independent boys who tended to resist social group pressure, to show consistency of behavior, and to use intellectualizations had mothers who encouraged greater autonomy and curiosity in early childhood.

It appears from these studies, then, that the mother can communicate to the child an approach to learning. She does this by reinforcing, praising, shaping responses, encouraging autonomous thought and structuring situations as well as serving as a model for the child. Her role as a mediator of stimulation is important. The children

described seemed to primarily benefit from structure, focused activity, and instructions provided by the parent. Where these were lacking, as in Minuchin's description of families in the slums, the children seemed to be predisposed to problems with any activity that was not constantly reinforced from outside authorities. The implications for early school performance and testing situations are obvious and underlined by Mackler's studies of successful Blacks.

Maternal Language and Cognitive Development

Interlaced with the mother's cognitive style is her language. Language is a set of hierarchically organized and interrelated but discrete phonological, syntactic, and semantic rules. As each new rule is acquired through experience, with the aid of exemplars, models, and active manipulation, the child evolves a new system and mode of processing otherwise random facts (percepts). Much developmental theory counts language as the major agency for enabling the young child to move from concrete, associational forms of learning and thinking to more complex and abstract forms of thought (Fowler, 1970).

Bernstein (1961, 1962) elaborated a theory of language as social behavior. Language structures and conditions what the child learns and how he learns, setting limits within which future learning may take place. He states that there are two forms of communications codes which often follow social class lines, a restricted one and an elaborated one. In the restricted code, there are stereotyped

cliche-ridden sentences that are limited and lacking in specificity and exactness needed for precise conceptualization and differentiation. The basic quality of this mode is to limit the range and detail of concepts and information involved. The elaborated codes on the other hand are more particular, more differentiated and more precise, permitting expression of a wider, more complex range of thought tending toward discrimination among cognitive and affective content. The effects of codes, elaborated or restricted, are not only upon the communication modes and cognitive--they also establish potential patterns of relation with the external world. Hess and Shipman (1965) related this social aspect of language to two types of family control, one oriented toward control by status or ascribed norms, the other oriented toward persons. They found that mothers who tended toward status-normative orientations and the use of imperatives rather than instructions in mother-child interactions had not developed an elaborated linguistic code but rather were restricted in language style. Conversely, mothers with a personal-objective or cognitive-rational orientation manifested elaborated language styles because these orientations not only permit but demand an elaborated linguistic code to deal with a wide range of alternatives. Correlations showed that a mother's status-normative orientation was negatively correlated with all measures of the child's ability and positively with the child's inability to explain the basis for his conceptualizations. Likewise, mothers high in imperative responses tended to have children

who were low in cognitive performance. On the other hand, mothers who tended to be high in personal-subjective or cognitive-rational orientation and mothers high in instructive responses tended to have children who were successful on the cognitive tasks (Hess & Shipman, 1967).

Rutter and Mittler (1972) feel that there are few differences between social classes for early language development but that there may be differences in wider language skills. These differences in usage are most marked with abstract functions and in the way in which language is used, rather than to language competence as such.

Olim (1970), in a study of maternal language and child cognitive development found that while the mother's IQ was a major predictor of the child's IQ, only the mother's language abstractions scores were significantly correlated with the child's ability for abstract conceptualization. In other words, where the mother tended to be concrete in her description so did her child. Olim suggested that a lack of maternal abstraction as found in lower class homes might have an effect on the child's potential for educability by reducing the available repertoire of verbal intellectualization.

Experimental investigation of the effect of the way adults talk to children (Cazden, 1966) suggested that in normal children with normal language competence, a rich, varied and informative verbal interchange without direct modification of the child's own utterances provides the best stimulus for syntactical development. Little is known

about the best stimulus for semantic and phonetic development.

Maternal language, then, is an important variable in determining the cognitive development of the child. The parent's speech not only directly affects the child's speech, but also his cognitive style of reasoning.

Cognitive Development in High Risk Groups

The Black urban poor have been considered a high risk group for many social ailments including poor intellectual performance both in and out of school situations. Much has been written about the destructive influence of the culture of poverty. The focus of many investigations, as has been obvious in the studies already presented, has often been on the deficits found in certain socio-economic or culturally deprived groups. The use of such global variables such as socio-economic status and/or cultural deprivation tend to mask underlying variables that better serve to explain the connections between particular mother-child variables. Individual variation within a class group would seem to be too large to feel comfortable with just class comparison, yet many are made without specification. Likewise, when talking of "cumulative deprivation" many fail to spell out just what effects are cumulative. Of course others do speculate and perhaps the specifics cannot be delineated as yet. It would appear, though, that researchers should look more to exactly "what" about the environment is non-stimulating or "what" about the conditions in a lower class family have direct impact on cognitive development. This caveat should be

kept in mind when reading those studies that emphasize socio-cultural divisions as opposed to individual differences.

Infant Studies Before Three Years of Age

Several studies of large groups of infants found no social class differences in babies before the age of 15 to 18 months (Bayley, 1965; Golden & Birns, 1968). While Golden and Birns' study of 126 Black infants from different social class revealed no significant differences on the Cattell and on the Piagetian Object Scale, they did report that the children from lower social class groups were more difficult to test. Since this study was part of a longitudinal project, follow-up testing of 89 of the children at 3 years of age on the Stanford-Binet revealed social class differences, with middle class children obtaining higher scores followed by working class, lower class/non-welfare, and lower class/welfare (Golden, Birns, Bridtes, & Moss, 1971). The combined Binet mean IQ's for the three groups were: middle class, 112; lower class/non-welfare, 103; and lower class/welfare, 94. A one-way analysis of variance resulted in highly significant SES differences in IQ (beyond the .05 level). In speculating on this finding, Golden et al. reasoned that since social differences in cognitive development emerge during a period of rapid language growth, that these differences may be due to differences in language ability. Furthermore, they reasoned that between 18 and 36 months of age there is a shift from pre-verbal or sensorimotor to the verbal or symbolic level of intelligence and that different

environmental conditions facilitate or retard development on these two qualitatively different levels of intelligence. For instance, the basic knowledge which children acquire about the world on the sensorimotor level--in terms of the dimensions which Piaget has described, such as object permenance, and spatial, causal, and temporal relations--may be acquired largely through their own direct experience and hence may be universal. During the third year of life, as children become increasingly capable of using language for these purposes, social class--and, in particular, the intellectual, verbal, and educational level of the parents--begins to make a difference in terms of facilitating a child's cognitive development. While the findings of this study were highly significant the use of the three class designations can be questioned. As Engel et al. (1975) pointed out, the variety of actual living standards is enormous among mothers on welfare; the pooling of meager resources can elevate the quality of life while social isolation can reduce the efficiency with which resources are used. Generally, welfare status obscures these as well as differences in educational level.

Wachs, Uzgiris, and Hunt (1971) state that while socio-economic status is a useful subject selection term, it tells the researcher little about the type of stimulation the child is being exposed to in his home situation. In their study they sought to find what home environmental factors, among disadvantaged children during the first two years, can be shown to be associated with the development of

intelligence. Using a group of 105 infants tested at five different age levels (7, 11, 15, 18, and 22 months) on the Uzgiris-Hunt (1966) scales, they found deficiencies in development of children from the disadvantaged background of poverty as early as 12 months. Among those items on which disadvantaged infants did significantly less well were those involving attentional capacity. It was suggested that because of the lack of redundance or repeated encounters with given sequences of events, disadvantaged children fail to develop a capacity to abstract and attend to those specific aspects of their environments crucial in the success of their actions. Others have attributed such deficiencies in the development of selective attention of disadvantaged children to the disorganized confusion of the circumstances in their homes (Klaus & Gray, 1968).

Wachs et al. also found significant differences between infants of middle class families and infants of disadvantaged families on the scale of vocal imitation (significant differences at .05 level using the sign test for matched pairs) at 15 and 22 months. These class differences in language development appear to be the early precursors of the later deficiencies in the linguistic functioning of disadvantaged children noted by Bernstein (1960) and Hess and Shipman (1965).

In examining the relationship between the child's assessed level of cognitive-psychological development and parental influences, Wachs et al. found that two factors stood out--intensity of stimulation and

verbal stimulation. High intensity stimulation from which the infant cannot escape and involuntary exposure to an excessive variety of circumstances negatively correlated with the infant's performance (-.67 for high noise level to -.42 for "child cannot escape noises in home"). The researchers suggested that the hampering effects of slum rearing may lie in stimulus bombardment of the child rather than in stimulus deprivation. Hypothesizing from this evidence, it appears that the relationship of level of stimulation to development may be curvilinear and that the rate of development may be a function of an optimal level of certain aspects of interaction with the environment. This finding may be related to Clarke-Stewart's (1973) "optimal maternal care" factor which consisted of a cluster of variables. The optimal maternal care was depicted as one which was not only loving, warm, non-rejecting, but also which was stimulating and enriching visually and verbally with appropriate materials. The "optimal" mother was one who behaved adaptively and responsively to her child's social demands and needs. Such responsiveness is not evident in Wachs' descriptions wherein the child cannot escape the noise of TV's, people, etc. around him. Wachs et al.'s other finding was a positive relationship between the degree of verbal stimulation and encouragement which the child receives from his parents and the child's level of cognitive-psychological development. Correlations were as high as .69 and .74 at 22 months between the child's performances and mother's vocalization or naming of objects. Inasmuch as those parents who

speak to their children and encourage their children to speak probably maintain a fair control of the noise level and organization of their homes, this positive correlation may reflect in part the effect of the factors concerned with over-intense and confused inputs.

Engel et al. (1975) also studied home factors. Using the same group of children from which the present study obtained its population, they found that among other items the amount of talk in the home had a positive correlation with performance on the Bayley Mental Scale at 14, 18, and 22 months (correlations reached as high as .48). For this same group of children, all of whom were from Black urban homes, many of which may have been classified as "disadvantaged," King and Seegmiller (1973) found that the hypothesis that Black male infants would begin to show a drop in Bayley Mental Scores below the standardization norms between 18 and 22 months was not supported. They also commented on the extreme variability in what was expected to be a homogeneous group. It was their hypothesis that this variability could be accounted for in part by a variety of environmental variables which would require further investigation.

Others have moved away from standardized measurements and looked at other variables. For instance, in one infant study researchers examined the rates at which an infant stops looking at a repetitive stimulus (Lewis & Goldberg, 1969) or how infants behave in the presence of different kinds of stimuli (Kagan, 1969; Kagan & Tulkin, 1971). They report that relative to infants from a lower middle socio-economic

group, infants from an upper middle socio-economic group were more responsive to schema discrepancy and possessed "richer nests of hypotheses" to use in evaluating stimulus input.

Integration of emotional components to cognitive development such as the necessity for attachment (Bowlby, 1965) and its relationship to cognition (Schaeffer, 1971) have also been shown to be connected with lower class maternal variables. Looking specifically at emotional supportive behavior that the mother brings to development, Caldwell and Richmond (1967) found that on a number of scales of affiliative maternal behavior, mothers who were rated lowest on these scales had children with lower IQ's at 12, 18, and 24 months. Similar associations were found for a series of scales measuring different facets of achievement motivation in the mothers. The significance of these results increased as the child approached two years of age. Related to these results may be Engel et al.'s (1975) finding that ratings of maternal responses to critical incidences of child rearing, were significantly correlated with the child's Bayley scores at 14 and 22 months of age.

Exploring maternal attitudes toward learning, Streissguth and Bee (1972) found that 70% of the middle class mothers in their study of 76 mother-child pairs indicated that they thought infants began learning and seeing as soon as they are born, while only 25% of the lower class mothers felt infants could learn that early and only 37% felt they could see at birth. They speculated on how the effects of such maternal attitudes, measurable as early as 2 weeks of age and

compounded across many months of infancy, could be an important factor in later IQ differences first measurable only after the onset of language. Still other studies have found differences in the maternal verbalization (Tulkin, 1972) and attentiveness (Rubinstein, 1967).

Studies of Children After Three Years of Age

As has already been pointed out, by the third year differences between social class become highly significant. Golden et al. (1971) found a 23-point mean IQ difference between children from Black welfare and Black middle income families at 3 years of age.

In a study employing the WPPSI, Black and white children drawn from a sample matched in age, sex, geographic region, rural urban residence, and father's occupation were compared by Kaufman (1972). All differences favored the white sample: 98V, 97P, 97FIQ versus 88V, 88P, and 87FIQ. Verbal and Full Scale IQ's were significantly higher at each of the three age levels (4 through 6).

Other studies of school age children have found that as Black children grow older, their average IQ decreases. Deutsch and Brown (1964) studied the IQ's of a large number of first and fifth graders in New York City. The investigators found that white children combined across all social classes have an average IQ of 103.88, whereas Black children from all social classes have an average IQ of 94.32. But how far can one generalize from these average IQ's? Can one say that Black urban children are uniformly deprived? What about those, like the children studied by Mackler (1970), who succeed? Again, more

attention to individual charactertistics in the disadvantaged population is needed.

Some investigators have begun to look at specific skills or the lack thereof found in disadvantaged children and their families. Rohwer (1971), in looking at deficits in conceptual skills, felt that it was not so much that lower class children did not have these skills, but that higher socio-economic class children have learned to supply the additional conceptual activity spontaneously. They have learned to elaborate the material they are presented to learn, whereas the low socio-economic Black children have not. These hypotheses relate to the previously cited work by Hess and Shipman (1965) and by Bernstein (1961).

Lower levels of achievement motivation and expectation for lower class children has also been found (Rosen, 1956, 1959). Such differences are intimately linked to variations in the way the child learns to perceive the environment and its rewards for achievement. Battle and Rotter (1963) showed that lower class Black children perceived themselves as having far less control over reinforcement in the environment than did middle class whites.

Klaus and Gray (1965) feel that disadvantaged children suffer from a cumulative deprivation. Such cumulative deficits result from the particular patterns of interaction of the child with adults. The lower class child gets little consistent reinforcement for behavior and what he does receive is of a non-verbal, non-specific, inhibitory nature.

It is their feeling that when these children come to school much of their behavior is not under adult verbal control. This in part may explain difficulty in testing these children.

The trend of these studies on the urban Black poor, while still somewhat entrenched in labeling everything by class and status, appears to be away from broad generalizations and toward more individualistic approaches. These attempts to understand differences in motivation, style, conceptual skills found in disadvantaged children are a step to clarify the specific cognitive-psychological relationships that exist between these children and their families. What is apparent is that poor, Black children generally perform less well on standardized tests and in school than their age mates. The reasons for this discrepancy seem to involve a number of variables, ranging from language and cognitive style to feelings of internal control and self-worth. All of these variables have a basic connection to the child's relationship to his parents.

Early Cognitive Stimulation

Intervention studies in which the mother's interactions with her child have been altered offer further insights about the mother's influence on her child's cognitive development.

Levenstein and Sunley (1968) worked with lower class Black mothers in the home using toys to stimulate verbal interaction. At the end of the study they found a 14-point difference in IQ between children who were stimulated by mothers and a control group. A larger study

(Levenstein, 1970) revealed similar findings. Unfortunately, maternal behavior was not evaluated so it is difficult to know whether the crucial factor involved in elevating the child's IQ was the extra attention or an actual change in the mother's behavior.

Karnes, Studley, Wright, and Hodgkins (1968) worked only with the mothers, instructing them in the use of materials to be used at home. They found a gain of 7.46 IQ points over an 11 week period which was greater than a control group. This result indicates a change of maternal behavior, although not specified, can have an effect on a child's performance.

Painter (1969), working with Karnes, used a cognitively oriented intervention program that did not use the mother as a mediating agent. She found that the intervention procedure produced a large increase in the level of functioning of the experimental growth on the Stanford-Binet, ITPA, and subtests of the Merrill-Palmer.

Schaeffer and Aaronson (1970) gave daily tutoring to lower class Black males from 15 to 36 months old. At each assessment other than the 14 month pretest the experimental group had a significantly higher IQ. Data on maternal variables to child performance showed that maternal hostility and child hostility recorded by the tutors were highly correlated and both were significantly correlated with infant task oriented behavior and mental test scores at 36 months. Infants who showed the greatest gains were those who had a positive relation with their mothers and who received tutoring.

Palmer and Rees (1969) trained lower class Black boys to discriminate dimensional concepts such as size, form, quantity, etc. Testing after eight months of training showed the training group outperformed the control group on 14 out of 16 assessment measures, with 9 of these being significant. Follow-up a year later showed that the treatment group was still superior on 10 out of 15 measures. It was the feeling of the investigators that it was not so important what is taught as the condition under which it is taught--specifically, the adult-child one-to-one relationship.

These studies provide further evidence that the early social interactions with the child can make a vast difference in his intellectual development. None yet specify the critical elements of adult behavior that are involved.

A Comment on Methods

The variety of methods used in the studies reported in this chapter are such to make comparisons difficult. Some have been based on global observations of mother-child interaction, others have relied on carefully manipulated and controlled variables, and still others have controlled for some variables while ignoring others.

In obtaining information about maternal variables, interviews, questionnaires, observations have all been used. Each method has its merits and defects. In obtaining information from interviews researchers have often found discrepancies in mothers' reports at two different points in time(Wernar & Coulter, 1962). Yet, as Smith

(1958) points out, interviews are often comparable to observations and easier to obtain. Observations themselves are subject to observer biases.

In many studies maternal variables are not clearly defined so that only general assumptions can be made or trends observed. What is needed, particularly in the area of cognitive functioning, is an examination of individual aspects of mothering in relation to cognitive development within an overall framework of environment, development and predicament.

Predictive research in cognitive development from infancy is particularly difficult because of the lack of adequately studied dimensions of early cognitive development as well as the fact that intelligence tests measure something different in infancy (developmental-sensorimotor adaptation) from what they measure later on (complex, symbolic functions). The attempts to use other measures, many based on Piagetian theory, indicate researchers' concern with determining more accurate precursors of later intellectual functions. The disadvantage of such varied cognitive tasks of course is the lack of standardization that would permit comparison. At this point in infant research, however, perhaps it is better to stimulate alternate ways of viewing cognitive development while being alert to the danger of making facile comparisons.

Lack of control for sibling order, for physiological impairment (particularly important when looking at lower class children who have a high risk of disability), for constitutional variations and for

particulars of environmental upbringing are other sources of error when testing children. With Black children the effect of white examiners on performance may also be a source for error.

Similarly, the use of white examiners to rate Blacks' language ability is open to debate. Some (Ginsberg, 1972; Houston, 1970) claim that Blacks have an equally complex use of language but it is not used by them in test situations. Perhaps language abilities have to be measured in a different milieu from the standard testing room situation.

In intervention studies several factors have often been ignored. For more complete data, reference to how long the effects endure and how these effects relate to other aspects of infant development are needed. There is also a need for identification of particular aspects of maternal behavior actually changed by the intervention and a focus on the interaction between the child's characteristics and responses with the mother's.

Finally, the oft repeated criticism of the blanket use of socio-cultural divisions for making generalizations is underlined. As several researchers have pointed out, individual differences are too varied and too great to make facile categories and judgments. More careful specification for group demarcations and more individual studies are needed.

Implications for the Present Study

In this review of the literature which only taps a portion of the mother-child research that has been conducted, many maternal variables have been linked to the cognitive development of the child. Specific variables such as language, cognitive style, verbalization, child rearing approaches, and maternal concern and empathy have been culled out of the data to illustrate their particular relationship to cognitive functioning in the child. Black families have often been found to be deficient in many of these variables. The present study arises out of a need to clarify some of the relationships that exist between a Black mother and her child living in an urban ghetto. The aim of the study is not to compare Black mothers and children with white families, but rather to compare Blacks with each other over a period of time. The stress is upon individual differences within a specific population of Black mothers and their sons. It is hoped that such individual comparisons will provide information about why under similar circumstances some Black children do well and why some fail; why some mothers are able to cope and impart skills and strengths that help their children to succeed while others with the same intentions are unable to accomplish this.

This study traces the course of cognitive development from 14 months to the sixth year of life in an attempt to determine the reported cognitive deficit that is first seen in the second year of life and continues downhill thereafter (Schaefer, 1969). Having once

established the fate of cognition, the situational correlates and predictors in terms of the home, personal histories, language abilities, and personalities of mothers will be explored. It is hoped that the relevant data will help to fill a void in the understanding of how a large segment of the population copes with their children, the pressures of urban life, and frustrations of unmet economic necessities.

Chapter II

Methods

This study is a follow-up study of a larger investigation of maternal stimulation and infant cognitive development during the second year of life. The infancy study consisted of three independent parts:

(a) Infant testing at 14, 18, and 22 months;

(b) Home observations of mother-infant interaction at 14, 18, and 22 months;

(c) Maternal interviews at the time the babies were 14 months old.

While the current investigation involves the study of mother-child variables in the fifth year of life and attempts to understand processes that have occurred between the ages of 3 and 6, data from the infancy study will be used both to determine their predictive values and to provide a more complete picture of the mothers and their children. Each section that follows will be divided into the infancy study and the follow-up study in order to provide complete information on the collection and analyses of data.

The Subjects

Subject Selection

Infancy Study

The original study included 51 mother-son pairs who were selected from birth records in the Bureau of Records of the City of New York. Selection was based on the infants, all of whom were Black, male, first born, of native American parents. Prospective subjects had to

have an Apgar rating of 8 or better, a birth weight of 5 pounds or more, with no congenital disease at birth. The birth record had to show that there were no maternal diseases or drug addiction at the time of pregnancy. Of the 51 mothers who brought their infant sons for the initial cognitive testing, 44 gave complete and audible interviews.

Follow-up Study

Of the original 44 mother-son pairs who gave complete audible interviews, the present investigator was able to locate 22 mothers and sons who were still living in Harlem, and who were willing to participate in the follow-up study. One other mother refused to participate, two others had moved South and sent notes that they could not come. The remaining 19 could not be located.

Description of Mothers

Complete descriptions of the mothers in the original investigation are found in the studies of Engel, Nechin, and Arkin (1975) and Wieder (1972). For the follow-up study the mothers ranged in age from 21 to 38, with an average age of 25. They had their first child at an average age of 19.4. The youngest gave birth at 15, and the oldest at 32.

As a group they are fairly well educated: 86% had completed the eleventh grade, 68% had completed high school, and 32% had some education beyond high school. On the extremes one mother had only finished the eighth grade while another one was in her second year of graduate work.

Eight mothers, 36%, are presently working, seven are on welfare,

two are in school (one of these is also on welfare), five are supported by husbands, and one by her parents.

Seven of the mothers (32%) are married to the fathers of their first child, two are still with the father but living separately in order to maintain welfare regulations, making nine families who have had the same father (41%). Two are living with new boyfriends. Two have been married and divorced a second time and one is living with her husband's brother. Two others have had long term relationships of at least three years with boyfriends from whom they are now separated. The ramaining four date but have had no steady boyfriends.

Fifteen of the mothers live in a nuclear household. Seven of these live only with their children. Seven others live with relatives or have relatives other than the husband or boyfriend living with them.

Six mothers now have three children, and seven now have two. Nine mothers, or 41%, only have the one son.

Description of the Children

At the time of testing, the 22 children ranged in age from 5 years, 3 months to 6 years,1 month, with a mean age of 5 years,7 months.

Three children were about to enter kindergarten while 19 were beginning the first grade. All but one had been to day care or nursery school before attending public school. The mean number of years in school at the time of testing was two years, with a range of zero to three. The majority, 15, (68%) came from nuclear families where the mother was the primary caretaker. The remaining 7 came from homes where there was one or more caretakers living with them.

Procedure

Infancy Study

For the infancy study mothers were initially contacted by a letter briefly explaining the purpose of the study. The letter was followed by a home visit by a member of the project; none of the interviewers or the infant testers made home visits in order to preserve independence of the three original projects. Following the home visit, the mother was asked to bring the baby to the project offices for two testing sessions at the end of which an appointment was made to interview the mother alone. At the time of the fifth contact with the mother, an interview was conducted and tape recorded with her permission. The mothers received five dollars for each contact they had with the project. (Previous studies using these data have been completed and are in process: Engel, Nechin, and Arkin, 1975; Wieder, 1972).

Bayley Scales of Infant Development and Uzgiris-Hunt Scales were administered to the children at 14, 18, and 22 months of age. The results of these testings have already been published (King & Seegmiller, 1973). Since the N decreased from 51 at the 14-month testing to 27 at the 22-month testing, there are variations in the number for data reported in both the infancy and the follow-up studies.

Follow-up Study

For the follow-up study all the mothers were contacted by a letter explaining the purposes of the study, the fact that cab fare would be

provided and that for each contact a subject would receive a fee of ten dollars. All the mothers were asked to come to the University for an interview about their lives with their sons from the ages of 22 months to 5-1/2 or 6 years. They were also requested to bring their sons for the administration of the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) and Piagetian tests. The present investigator was not given access to any of the infancy data--neither the Bayley scores nor the maternal variables--to avoid contamination. He interviewed all the mothers while two psychologists, hired for the purpose, tested the boys, administering the WPPSI, two Piagetian tasks (one-to-one correspondence and selection of dichotomy) and a short child interview (see Appendices IV and V).

The Instruments

Maternal Interview

Infancy Study

An extensive open-ended interview consisting of close to 100 questions was conducted when the children were 14 months old (see Wieder, 1972, for complete details). It was developed and revised on a pilot group of mothers. Through these questions the interviewer sought to explore the mother's psychosocial history, the development of the baby, and the mother-child relationship. Following the transcription of the taped interviews, each one was evaluated and coded to elicit an array of maternal variables which could be related to the children's development (Wieder, 1972).

Follow-up Study

In an effort to be consistent with the previous study and in order to obtain the richness and detail of information that only an interview can provide, a follow-up maternal interview consisted of 52 open-ended questions, some requiring brief responses, others calling for more elaboration (see Appendix I). It was developed from the previous maternal interview and from five pilot interviews with mothers who had 5 year olds.

The interview began where the previous one left off, covering the child's developmental history, his habits, mode of relating to the mother, other adults and children, the effects of schooling and his process of learning. The mother was encouraged to imagine the child's future, both in terms of practical matters like jobs and attainment as well as in terms of the kind of person he was likely to become and why. Other questions also focused on the mother, on her life and her job. Each interview was followed by the Psychological Mindedness interview (see below and Appendix II).

Each interview was taped and transcribed. It was then listened to by another person who corrected the transcription.

The interviews were then coded and analyzed by the present investigator. Following the line taken by Wieder (1972), interview analysis was conducted on two levels (see Appendix VI), The first level involved recording factual information such as years of education, occupation, or number of people living in the home. The second level

involved fitting information into pre-existing categories related to such dimensions as reasons for particular child rearing practices, concerns about the future, attitudes toward school and learning, activities with the child, and likes and dislikes.

Psychological Mindedness Questionnaire

The concept of psychological mindedness was first discussed in relation to the outcome of psychotherapy with adults (Wallerstein, Robbins, & Sargent, 1956; Waldhorn, 1967; Namum, 1968; Applebaum, 1970). Gough (1968) spoke of psychological mindedness as a measure of the degree to which the individual is interested in and responsive to the inner needs, motives, and experiences of others. Translating this into maternal psychological mindedness it had been observed in the pilot work for the infancy study that some mothers thought of the infant as primarily a physical reality while others conceived of him as a psychological reality (the original scales were developed by Engel, 1975). To elicit data from each mother relevant to psychological mindedness, it was defined along three continua: the mother's affective responsiveness to the child, her concept of developmental change, and her concept of behavior shaping. In both the original and follow-up study, ten critical incidents were selected from pilot interviews to obtain relevant data for all mothers. In the infancy study the incidents involved babies of 14 months, while in the follow-up study the incidents dealt with 5-1/2 year olds (see Appendix II). Following each of the ten critical incidents the mothers were asked

to explain why they thought the child might act in the way described and how they would handle a similar situation. Their responses were recorded and transcribed. Each of the ten responses for each mother was then detached, coded, randomized, and rated.

In both the original and present studies each response was scored on three 7-point scales where each of 7 points was defined (see Appendix III). The Affective Responsiveness Scale reflected the degree to which a mother recognizes that the child's moods are variable and that there may be several emotional reasons for the behavior. The Scale of Developmental Change reflected the degree of understanding of age or stage appropriateness even if the word "stage" is never used. The Scale of Behavior Shaping reflected a mother's understanding that behavior can be molded or influenced by her through a variety of methods, none of which is likely to work on a single try. The overall PM score was the mean of scores of each of ten responses on each of the 7-point scales. It is important to point out that in the infancy study high interjudge reliability (.80 to .90) existed provided that judges' backgrouunds were fairly homogeneous, i.e., clinical psychologists working with children. When other professionals such as psychiatrists or teachers were used, there were high correlations between each other but not with the child psychologists.

For the follow-up study three advanced students specializing in clinical child psychology were hired to make psychological mindedness ratings of the mothers' responses to the critical incidents. Inter-

judge reliability was established by randomly taking 15% of the responses to be coded, and having them scored by two separate raters. This procedure was followed for each of the three scales. The inter-judge correlations for the three scales ranged from .86 to .92 (Table I). The individual ratings were then sorted so that each mother had ten ratings on three scales. Means were calculated for each scale, yielding three scores--an affective responsiveness score, a developmental change socre, and behavior shaping score. These three scores were then combined to obtain a mean psychological mindedness score for each mother. The intercorrelations among these three psychological mindedness scales (Table 2) seemed to justify this pooling of scores and the use of the mean PM score for later statistical comparisons.

Maternal Language Analyses

Since most of the mothers in the original study were unwilling to take a WAIS, and since richness and structure of language are often very close approximations to intelligence test achievement, linguistic analyses were made on the original maternal interviews, obtained when the children were 14 months old. The method of linguistic analysis is summarized in Engel et al. (1975) as follows: Since interviews varied greatly in length, that of the shortest interview, 33 pages, was taken as the limit for analyses. Beginning with the third page, every subsequent third page was analyzed. To obtain a measure of the richness of vocabulary, each noun, verb, and modifier initially used by the subject was recorded on an index card. The cards were alphabetically arranged. Each subsequently used noun, verb, and

Table 1

Interjudge Correlations for Ratings of Psychological Mindedness of Mother's Responses to Critical Incidents when the Children were 5 1/2

Psychological Mindedness Scale	Interjudge Reliability
Affective Responsiveness	.86
Concept of Developmental Change	.89
Concept of Behavior Shaping	.92

Table 2

Intercorrelations of Three Scales of Psychological Mindedness in Mothers of 5 1/2 Year Old Boys (n=22)

	Affective Responsiveness	Concept of Developmental Change	Concept of Behavior Shaping	Mean Psychological Mindedness
Affective Responsiveness		.79**	.80**	.95**
Concept of Developmental Change			.76**	.91**
Concept of Behavior Shaping				.92**

** $p < .001$ two tailed

modifier was checked against the cards, and if the mother under assessment had not used that word before, a new card with the new word was added to her deck. In this way a rarity index for each noun, verb, and modifier could be computed, depending on the frequency with which it was used in our group of subjects. For example, if only one mother had used the word "travel", she would have received a score of 42; if two mothers had used this word, each mother would have received a score of 41. Having thus translated the infrequency of usage into numbers, where the greater number represents a more unusual or rich use of language, relative to this group, one simply added each mother's richness score for nouns, verbs, and adjectives. Richness scores intercorrelated as follows: nouns and verbs, .77; nouns and modifier, .68; verbs and modifier, .64. All three correlations were significant beyond the .01 level. For this reason the three richness scores were pooled into one, by taking the mean of the three for each subject.

Another linguistic measure was the number of compound sentences on every third page of the interview. A third measure of language quality was that of overall grammatical competence. For any one of ten examples of good grammar the mother received one score, +1; for any one of five instances of bad grammar, she was given -1. The total was her grammatical competence score. The correlation between compound sentences and grammatical competence was .69 ($p < .001$). Thus, these

were averaged and each was taken as a measure of syntax.

In addition to the richness of vocabulary and the syntax scores, the length of the interview was used as a measure of talkativeness in interaction with an adult. Nancy Kalish Landen, Ph.D. (Dept. of Psychology, California State University at Sacramento, California, 95819) helped to develop these measures and to quantify the verbal data in the above manner.

Testing of Cognitive Development of Children

The Bayley Scales of Infant Development

Results of the original infant testing have already been reported in King and Seegmiller (1973). In this part of the original study infants were tested on the Bayley and Uzgiris-Hunt Scales (Uzgiris & Hunt, 1969) at 14, 18, and 24 months. They found that for the longitudinal sample (those completing the tests at all three ages) there was a significant short term predictability. A correlation of .62 was found between 14 and 18 months of age and one of .70 was found between 18 and 22 months of age. The correlation between 14 and 22 months was .57. They commented that these results were similar to those reported by Bayley (1933) and showed that the test had a significant short range predictive validity.

The standardization sample for the Bayley, while accounting for Blacks, contained very few of the population of this study (Bayley, 1933; Bayley, 1969). However, for the longitudinal group in King and Seegmiller's infant testing, the mean was significantly

higher than Bayley's standardization sample at 14 months. By 18 and 24 months of age the mean dropped close to the standardization sample. While the decrease was significant, these results did not support a hypothesis that the cognitive development of Black infants decreases to a level below the norm by 24 months of age.

The short range correlations on the Bayley psychomotor scale were lower than for the mental scale. There was a correlation of .17 between 14 and 18 months, .38 between 18 and 22 months, and .42 between 14 and 22 months. The means at all ages were consistently higher than that of the standardization sample, again rejecting the hypothesis that Black infants are or become inferior to infants in general.

These results were in line with Golden and Birns (1968) who found no significant difference between Black children in middle and low socio-economic strata up to and including the second year when they tested them on the Cattell Infant Intelligence Scale and the Piaget Object Scale. The infants as in the present study were tested at 14, 18, and 24 months.

Speculating on the "good" showing of these infants, King and Seegmiller (1973) suggested that this may have occurred as a function of "selection", where those with the brighter babies continued in the study. They did note that even for such a "selected" group the progressive increase in variability which they found from age to age was impressive.

They stated:

> It is striking that in this sample stringently selected according to parity, ethnicity, and geography, we observed such a full range of abilities by 22 months. It is reasonable to expect that such a group being relatively homogeneous, would show a smaller standard deviation than the heterogeneous representative standardization sample. Since the longitudinal sample (those coming at 22 months as well as at 14 and 18 months) is even more selected than the total sample (if for no other reason than their willingness to continue in the study), the progressive increase in variability is more impressive. It is our hypothesis that this variability is accounted for in part by a variety of environmental variables.

Wechsler Pre-School and Primary Scale of Intelligence and Piagetian Tasks

For the follow-up study cognitive measures on the children included the Wechsler Pre-school and Primary Scale of Intelligence (WPPSI), two Piagetian tests (one-to-one correspondence and selection of dichotomy), and a brief questionnaire designed to elicit the child's verbal ability and verbal concepts (see Appendices IV & V). The WPPSI was chosen because of Psychological Corporation's advice that the WPPSI is more adequate than the WISC at the overlap ages (5 to 6-1/2) and because of its excellent standardization which includes a proportionate sample that takes into account urban-rural residence, parents' occupational level, and white and non-white races. A comprehensive review of the use of the WPPSI, its standardization, reliability, and comparison to other tests is given in Woo-Sam and Zimmerman (1973). In their summary they state,

> unquestionably the WPPSI is one of the best standardized tests available for the measurement of young children. The scale has adequate reliability and validity, even perhaps surpassing the WISC at the younger age level. It correlates consistently well with other measures of intelligence and appears to be widely accepted and used.

For the administration of the WPPSI two advanced clinical psychology students were hired and trained so that their approach to testing was as similar as possible. Each observed the other during pilot testings and discussed differences until they felt that their administrations on each subtest was comparable. During the actual testing, the child worked in a room adjoining the one where his mother was being interviewed. Each child was allowed free access to visit his mother at any time. Breaks were permitted and a snack of cookies and milk was available when the child seemed to need a rest.

The testing period lasted from an hour and a half to two hours, including the Piagetian tasks and the interview. The Piagetian tasks consisted of the test for one-to-one correspondence and the test for selection of dichotomy (see Appendix V). It was expected that at the age of the sample (5-1/2 to 6) that most of the children would be transitional (Piaget, 1965) and that these tests might serve to differentiate rates of cognitive development. A slightly comparable but more extensive combination of Piagetian tasks with intelligence test to predict school achievement was conducted by Lester, Muir, and Dudek (1970). They found that the Piaget tests at this stage

(kindergarten) seemed to measure a range of structures wider than that of the traditional IQ test and were good predictors of school achievement in grades 1 and 2.

The final part of the testing included the interview which was derived from five pilot interviews with 5 year old boys (Appendix IV). The purpose of this interview was threefold: to obtain a verbal record of the child which could be compared to his mother's interview in terms of affectivity, to get a picture of how a 5 year old views his immediate world, particularly his relationship to his parents, and to explore the possibilities of using this type of instrument as a cognitive measure. The interview was introduced as a radio program that wanted to learn about 5 year olds. All the interviews were recorded and transcribed. The interviews were then coded by the present investigator for affective responses to parents, ability to answer and describe items or situations, and perception of self.

Chapter III

Hypotheses and Results

The major hypotheses explored in this follow-up investigation emerged from the data of the infancy study of the development of first born Black males and their mothers (Engel et al., 1975; Wieder, 1972). The larger infancy study involved the collection of data by several means: home observations, infant testing, and maternal interviews. These data were used to examine a variety of maternal and infant variables to determine their relationship to the course of cognitive development of the infants. Parallel dictions, postdictions, and predictions were made. Other studies involving maternal control, maternal time sense, and maternal language evolved from the data collected.

The present study focuses on predictions of cognitive development at 5-1/2 years made from infant and maternal variables assessed at 14, 18, and 22 months, and parallel dictions made from maternal variables assessed at 5-1/2 years. Clinical material from interviews will also be explored both to provide a more complete picture of the mother-child variables as they relate to and affect cognitive development and to suggest hypotheses for future research.

In the data analysis several types of correlations were used. Pearson product-moment correlation coefficients were calculated on the continuous data in the major hypotheses. Point biserial correlations and Kendall's rank order correlations were used where variables from the interview data and Piagetian tasks were dichotomous

or ranked. For rank order correlations, the continuous data, consisting of WPPSI IQ scores, were ranked on a 12-point scale, with 1 being the lowest rank and 12 being the highest, and with 5-point intervals between the ranks. Additional relationships between data were determined by partial and step-wise multiple regressions.

When reporting levels of significance, a one-tailed test is used only where previous evidence predicted unidirectional results. In all other cases two-tailed tests of significance are used. For predictive data from the study N's will vary. This is explained by the fact that all the 22 boys evaluated in the follow-up were tested at 14 months, but only 19 were tested at 18 months, and 17 at 22 months.

Descriptive Findings

Before proceeding to the major hypotheses, several findings describing the current sample will be presented. The boys' performance on the WPPSI, a verbal IQ mean of 101.9 (S.D. of 14.2, range of 86-140), a performance IQ mean of 98 (S.D. of 13.8, range of 74-130), and a full scale IQ mean of 100 (S.D. of 14.39, range of 81-131), is comparable to the WPPSI's standardization mean of 100 with a standard deviation of 15 (Wechsler, 1967). When placed in the classifications designated by Wechsler (1967), there is a slightly skewed distribution of scores approaching the normal curve, with the majority falling into the average range (Table 3). While this distribution is similar to the standardization sample, there are no scores in the defective range. This finding probably reflects

Table 3

Distribution of Full Scale WPPSI Scores of the 5 1/2 Year Old Follow Up Group According to Wechsler's (1967) Classifications (n=22)

IQ	Classification	Frequency	Per Cent of the Sample
130 & above	Very Superior	1	4.5
120-129	Superior	2	9.1
110-119	Bright Normal	2	9.1
90-109	Average	10	45.5
80-89	Dull Normal	7	31.8
70-79	Borderline	0	0
69 & below	Mental Defective	0	0

the original infant screening procedure, which eliminated any children with possible defects.

Although the mean IQ scores and the standard deviations are close to the standardization sample, they are above other research findings using the WPPSI with Black and "disadvantaged" samples. For instance, Kaufman (1972), testing Black and white children drawn from the standardization sample and matched on age, sex, geographic region, rural-urban residence, and father's occupation, found the following mean scores for Black children: verbal IQ--88; performance IQ--88; and full scale IQ--87. Matching for socio-economic status, Fagan, Broughton, Allen, Clark, and Emerson (1969) reported no significant differences in IQ scores attributable to race for 32 five year old children in day care. However, the mean IQ's for this group of Black and white children were verbal--88, performance--88, and full scale--87. Likewise, Barclay and Yates (1969) tested 50 Head Start Black and white children and found no significant difference between Black and white disadvantaged children after eight months in Head Start. Again, their findings were lower than the standardization sample's with a full scale IQ of 94 for whites versus 93 for Blacks.

It would appear then that while the WPPSI IQ scores of the present sample are in line with the standardization sample, they are from 7 to 12 points higher than the scores achieved by comparable ethnic and socio-economic groups. In this sense, the description of

the sample is also a finding which counters the generalization that Black disadvantaged children perform poorly on standardized IQ tests.

Since only 22 of the possible 42 children from the infancy study were retested, it seemed possible that only a select group has been re-evaluated. Comparing the means of the Bayley scores of the 5-1/2 year olds' longitudinal sample with those who were not evaluated at 5-1/2 revealed no significant differences at 14, 18, or 22 months on either the mental or motor scales ($t = 1.5$, $df = 40$, $p > .10$; $t = .69$, $df = 29$, $p > .10$; $t = .74$, $df = 27$, $p > .10$ for the respective ages on the mental scale, and $t = .74$, $df = 40$, $p > .10$; $t = 1.34$, $df = 29$, $p > .05$; $t = 1.62$, $df = 27$, $p > .05$ for the respective ages on the motor scale). Since there were no significant differences between those who came for the follow-up at 5-1/2 years and those who did not, perhaps as has already been suggested the original selection process which specified Black male first borns with Apgars of 8 or better, birth weights of 5 lbs. or more, with absence of maternal disease, and no congenital disorders, provided a superior Black sample. This hypothesis had first been suggested by King and Seegmiller's (1973) study on the infants. They reported that the mean score of the infants at 14 months was significantly higher than the mean of the Bayley standardization sample at 14 months and then dropped closer to the standardization mean at 18 and 22 months. While the mean scores for the group is right at the standardization mean of 100, the extreme variability for such a homogeneously selected group is noteworthy. For the WPPSI full scale there was a range of 50 points

with a minimum score of 81 and a maximum of 131. Furthermore, while the standard deviation of 14.4 was almost identical to the standard deviation of the standardization sample, the fact that such variability occurred in a small sample, homogeneously selected for birth order, ethnicity, geography, and health does suggest the hypothesis that a variety of environmental factors may have played a part in the cognitive performance of these children.

The differences between several maternal variables were likewise examined to determine if the mothers in the follow-up were representative of the original sample. Comparisons between means on the three language variables and the psychological mindedness variable between those who came to the follow-up study and those who did not revealed no significant differences. The t test values were as follows: talkativeness--$t = .36$, $df = 40$, $p > .10$; quality of syntax--$t = .275$, $df = 40$, $p > .10$; richness of vocabulary--$t = .4$, $df = 40$, $p > .10$; psychological mindedness assessed at 14 months--$t = .32$, $df = 40$, $p > .10$). Thus, while it seemed likely that this follow-up sample would be more highly selected just by the fact of their willingness to attend, it appears that they were fairly representative of the original sample on the main variables that were assessed.

Major Hypotheses and Results

Hypothesis I: Bayley Scores obtained when the boys were 14, 18, and 22 months of age will show significant and positive relationships

to Wechsler Preschool and Primary Scale of Intelligence scores at the age of 5-1/2.

This hypothesis was partially upheld. It was true for all three age levels of the Bayley Mental Scale (Table 4). All correlations between the WPPSI IQ scores and the Bayley Mental Scores were in a positive direction and all but the correlation between the WPPSI verbal and the 18-month Bayley mental score reached beyond the .05 level of significance.

In contrast, the correlations between the Bayley motor scale scores and the WPPSI scores were insignificant. Previously, King and Seegmiller (1973) had found that for this sample the short range predictive validities for the psychomotor scale were markedly lower than those for the mental scale.

Additional correlations between Bayley Mental Scores and sub-scale scores of the WPPSI reveal positive and significant associations on all the sub-scales (Table 5). The increase of the associations of the Bayley scores at 22 months with the verbal sub-scales of information, vocabulary, and similarities suggest the increasing importance of language in the 22-month assessment.

The correlations reported here are exceptional when compared to other studies on the predictability of school age intelligence from infant tests. Reviews of the literature in infant testing (Bayley, 1970; Rutter, 1970; Stott and Ball, 1965; Thomas, 1970) tend to agree with Bayley's summarization that "it is now well established that test scores earned in the first year or two have relatively

Table 4

Correlations Between Scores on the Bayley Scales of Infant Development at 14, 18, and 22 Months and WPPSI Scores at 5 1/2 Years

	Bayley Mental Scale			Bayley Motor Scale		
	14mos. n=22	18mos. n=19	22mos. n=19	14mos. n=22	18mos. n=19	22mos. n=17
WPPSI Verbal	.48*	.36	.57**	-.17	-.06	-.04
WPPSI Performance	.47*	.53**	.61**	.10	.15	.15
WPPSI Full Scale	.51**	.47*	.63**	-.05	.04	.05

*p $<$ .05 level one tailed
**p $<$ .01 one tailed

Table 5

Correlations Between Bayley Mental Scores at 14, 18, and 22 Months and the Sub-Test Scores on the WPPSI at 5 1/2 Years

	Bayley Mental 14 Months n=22	Bayley Mental 18 Months n=19	Bayley Mental 22 Months n=17
Information	.48*	.35	.55*
Vocabulary	.42*	.40*	.61**
Arithmetic	.34	.40*	.35
Similarities	.25	.20	.49*
Comprehension	.47*	.08	.37*
Animal House	.42*	.30	.59**
Picture Completion	.14	.40*	.31
Mazes	.48*	.45*	.44*
Geometric Design	.48*	.67**	.57**
Block Design	.41*	.39*	.57**

*p < .05 level one tailed

**p < .01 level one tailed

little predictive validity (in contrast to tests at school age or later) although they may have high validity of the children's cognitive ability at the time."

McCall, Hogarty, and Hurlburt (1972) point out that it is something of an overstatement to say that there is "no prediction" from the infancy period IQ but the size of the relationship is not particularly impressive. In their study they combined the correlations of a number of different studies and found that in predicting 5-7 year IQ's from infancy data there was a median of .30 for four studies predicting scores from the 13-18 month age range. Despite the question of combining data from different studies that used different tests and methods, McCall et al. suggest that these data give a descriptive impression of the level of prediction for normal children.

Studies involving subjects having extremely low infant scores or subjects having known or suspected abnormalities have often found higher correlations than those having normal subjects. For example, Werner et al. (1968) correlated the score on the Cattell Infant Scale given at 20 months with 10-year primary ability scores. They found that while the correlation for a normal group of children was .49, those subjects scoring below 80 on the infant test had a correlation of .71 with 10-year Primary Mental Ability Scores. In a series of reports, Knobloch and Pasamanick (1960, 1963, 1967) have shown that the predictions from the Gesell given within the first

year of life to childhood IQ is much better for a clinical population than for a normal group. For example, the correlation between 40-week Gesell and 3-year Gesell was .74 for a group of 48 infants considered abnormal, but only .43 for a group of normal children. They also indicate that prediction between infancy and childhood IQ's on the Stanford-Binet are higher for those infants scoring below 80 than for those scoring above 80 (r = .70 and .48, respectively). Greater predictability for 4-year old Binet scores from low scores on the Bayley have been reported (Ireton, Thwing, & Gravem, 1970). Testing 536 children at 8 months and then again at 4 years, they found the highest correlations between babies who scored low on the Bayley and the 4-year old Binet. For the normal scoring infants there was no significant prediction of 4-year Binets. It is likely that these findings reflect the fact that gross pathology in the form of handicaps permits less response to the environment. In other words, maximum stability might be found with autistic, deaf, and blind children who are limited in the stimulation they can take in.

Since the sample for the follow-up study was highly selective to eliminate, among other factors, any organic deficits, it does not fall in that group of studies involving clinic populations. Perhaps part of the explanation for the high correlation of this sample with their later IQ's lies in the instruments of measurement. For the most part, Bayley scores have been correlated with Stanford Binets on the 4-6 year age levels. The present study is the only one known

to the author to correlate Bayley scores with WPPSI scores. Even the hypothesis that Bayley scores predict better for WPPSI scores than for other measured scores is open to question. Researchers have found substantial correlations between the Stanford-Binet and the WPPSI. Median correlations for 15 studies are as follows: $r = .80$ for the full scale, $r = .78$ for the verbal scale, and $r = .66$ for the performance scale (Woo-sam & Zimmerman, 1973). However, as Woo-sam and Zimmerman point out, the IQ's on the Stanford-Binet are consistently and significantly higher by a median of 7 IQ points. This might explain some of the difference. Only a comparative study using multiple tests would clarify this issue.

The mixing of different infant and different school age tests makes any definitive statement about the predictability of cognitive performance on a school age IQ test from an Infant Test of Development difficult. Nevertheless, faith in the predictive value of the Bayley Mental Scales for school age WPPSI IQ's is certainly supported by the findings of the present study.

Hypothesis II: Psychological Mindedness in mothers assessed when the infants were 14 months old (at the onset of the study) will predict WPPSI scores at 5-1/2 years.

Mean Psychological Mindedness assessed when the infants were 14 months old did indeed correlate with WPPSI verbal, performance, and full scale scores at the .05 level of significance (Table 6). Of the three individual scales, affective responsiveness correlated

Table 6

The Relationship Between Psychological Mindedness in Mothers Assessed When the Child Was 14 Months With WPPSI Scores at 5 1/2 Years (n=22)

	Psychological Mindedness Scales			
	Affective Responsiveness	Concept of Developmental Change	Concept of Behavior Shaping	Mean Psychological Mindedness
WPPSI Verbal	.35	.35	.32	.43*
WPPSI Performance	.48*	.35	.27	.46*
WPPSI Full Scale	.44*	.38*	.32	.48*

* $p < .05$ one tailed

most highly with both the performance and the full scale scores. This finding would suggest that for purposes of prediction the affective responsiveness scale turns out to be the most powerful scale of the three.

The mean of the follow-up groups' Mean Psychological Mindedness at 14 months as rated on the three 7-point scales was 3.2, with a minimum of 2.27, a maximum of 4.5, and a standard deviation of .67. To understand what these numbers mean, let us look at a few examples that illustrate the contrast between high and low scorers. A highly rated response (6 on a 7 point scale) was given by one mother:

> I: This baby used to be very friendly, he knew the people next door and some of the relatives. He also knew the man in the store, but one day he would have nothing to do with them. He hid his face when he saw them and wasn't friendly at all. (See Appendix II for reference and additional questions.)
>
> M: Maybe he did something naughty and didn't want somebody to know about it, and he probably felt that everybody knew, because children think like that. You know they really do, and probably he just felt guilty about it and he's afraid that you could see the guilt and so he hid his face.
>
> I: What could the mother do about this?
>
> M: Sit down and try to talk and see what he did. You know because sometimes it's very small things, sometimes kids that do that if they know that they're supposed to go to the potty, and they forget and then they don't want to come out and they don't want to see anybody.

This mother is empathic and expresses an understanding of complex feelings in her child and her self.

A low rated response (2 on a 7 point scale) might be

like the following:

I: Here was this baby who had his toys but he would not share them. When the neighbor brought her baby to play with him, he would want all the things to himself and if the other baby got anything he would yell about it. How come he did this? What could the mother do about it?

M: Maybe try to explain to him to share a little bit, don't just let him be selfish like that.

I: Why do you think he acts this way?

M: Is probably very selfish. Maybe he's used to having everything and he's probably not used to other children.

Here the mother explains the child's behavior but appears to have very little true understanding of the child's possessiveness or territorial feelings.

Since psychological mindedness scores also had positive and significant relationships with two of the three maternal language scores assessed at the same time (Table 7) a partial correlation controlling for richness of vocabulary and quality of syntax was performed. Because these language variables were considered to be a measure of maternal, verbal intelligence, it was thought that psychological mindedness might just be a reflection of the verbal intelligence of the mother. The partial correlations (Table 8), while reduced in absolute value, are still significant beyond the .05 level between the mean psychological mindedness score and the WPPSI performance and the WPPSI full scale scores. The correlations between the affective responsiveness scale and the WPPSI performance and WPPSI full scale scores also maintain significance at the .05 level. These findings support the thought that psychological mindedness may be an

Table 7

Correlations Between Psychological Mindedness in Mothers Assessed when the Child was 14 Months with Maternal Language Measures (n=22)

	Psychological Mindedness Scales			
	Affective Responsiveness	Concept of Developmental Change	Concept of Behavior Shaping	Mean Psychological Mindedness
Quality of Syntax	.38	.33	.51*	.50*
Richness of Vocabulary	.48*	.22	.29	.42
Talkativeness	-.05	-.19	.10	-.06

*$p < .05$ two tailed

Table 8

Partial Correlations of WPPSI Scores at 5 1/2 Years with 14 Month Psychological Mindedness Controlling for Richness of Vocabulary and Quality of Syntax (n=22)

	Psychological Mindedness Scales			
	Affective Responsiveness	Concept of Developmental Change	Concept of Behavior Shaping	Mean Psychological Mindedness
WPPSI Verbal	.24	.26	.16	.29
WPPSI Performance	.45*	.27	.11	.37*
WPPSI Full Scale	.37*	.29	.16	.36*

*p $<$ .05 level one tailed

approach to a concept of maternal intelligence or maternal effectiveness which is distinct from general intelligence. They also support the hypothesis that psychological mindedness assessed when the child is an infant can be used to predict 5-1/2 year old intelligence scores.

Hypothesis III: Maternal language variables assessed from interview material obtained when the children were 14 months old will have a positive relationship with WPPSI scores at age 5-1/2.

Correlations of the three language variables with WPPSI scores indicate that only the quality of syntax had both a positive and significant relationship to the WPPSI verbal IQ and the WPPSI full scale IQ (Table 9). Two other measures--richness of vocabulary and talkativeness--bear a positive relationship to the WPPSI verbal score but at a lower level of significance ($p < .10$). The same is true of the relationship between quality of syntax and the WPPSI performance IQ. The remaining correlations are statistically not significant.

Since it had been previously reasoned (Engel et al., 1975) that of the three verbal measures derived from the interview, the mother's syntactical sophistication would come closest to a measure of intelligence, it would appear that there was a direct relationship between the mother's verbal intelligence and the children's intelligence on the IQ test. Previous research indicates that correlations between verbal intelligence test scores of mothers and young children tend to be higher for girls than for boys and that they seldom explain

Table 9

Relationship Between Maternal Language Variables Assessed when the Child was 14 Months Old with WPPSI Scores at 5 1/2 Years (n=22)

	Ouality of Syntax	Richness of Vocabulary	Talkativeness
WPPSI Verbal	.39*	.30	.32
WPPSI Performance	.34	.20	-.07
WPPSI Full Scale	.39*	.27	.15

* $p < .05$ one tailed
** $p < .01$ one tailed

much of the variance among children. Olim (1970) correlated the verbal intelligence scores (WAIS) of 163 Black mothers and their 4-year old children, using subjects from various social classes. He found a correlation of .30 between verbal WAIS scores and Binet scores. This correlation, albeit significant beyond the .001 level, held only for girls; for boys it was only .15. The correlation for the present group of boys using quality of syntax as the mothers' verbal measure were larger and more significant (Table 9).

Although it is impossible to separate language ability from verbal intelligence ratings or scores, these language scores may also be seen as a measure of the mother's verbal facility to express herself. In other words, they are reflective of the mother's expressive cognitive style. As such, they may relate to Hess and Shipman's (1967, 1969) breakdown of maternal language into restricted and elaborated language styles. In the present study mothers with more elaborate speech may offer more complex methods of handling learning situations and more alternate approaches to problem solving. This in turn would lead not only to increased verbal facility in the children, but also to increased ability on other tasks. Some confirmation of this expectation is found in the correlations between the quality of syntax and the subtests of the WPPSI (Table 10). Not only are there high correlations with such verbal subtests as information and vocabulary but also with the performance subtests of picture

Table 10

Correlations Between Language Variables Assessed at 14 Months with Sub-Test Scores on the WPPSI at 5 1/2 Years (n=22)

	Quality of Syntax	Richness of Vocabulary	Talkativeness
Information	.39*	.36*	.32
Vocabulary	.38*	.29	.13
Arithmetic	.35*	.26	.13
Similarities	.13	.02	.11
Comprehension	.31	.27	.43*
Animal House	.31	.25	.08
Picture Completion	.38*	.09	.02
Mazes	.35*	.19	.18
Geometric Design	.33	.27	.04
Block Design	.02	.01	.11

*$p < .05$ level one tailed

completion, mazes, geometric design, and animal houses. The comparatively low correlations between the quality of syntax and the subtests of similarities and block design are not in line with the others. These subtests require a certain amount of abstract ability which may be influenced by the child's stage of cognitive development. At 5-1/2 the boys were at the height of the concrete operational stage with very few abstract abilities. Thus, while increased ability was related to more elaborate maternal speech it may also have been limited by the child's developmental stage.

Hypothesis IV: Psychological Mindedness in mothers assessed when the children were 5-1/2 years old will correlate with WPPSI scores at age 5-1/2.

For the follow-up psychological mindedness scales administered when the children were 5-1/2 years old, there were positive and significant correlations between the mean psychological mindedness and the WPPSI verbal IQ and the WPPSI full scale IQ, but not for the performance scale IQ (Table 11). A further inspection of the results indicates that each individual scale related to a significant degree with the verbal WPPSI score and that the concept of developmental change appears to have the greatest individual pull, followed by the affective responsiveness scale.

The mean of all the mothers' Mean Psychological Mindedness at 5-1/2 years as rated on the three 7-point scales was 3.6 with a minimum of 1.9, a maximum of 5.0, and a standard deviation of .72. The critical incidents presented for the 5 year old psychological mindedness,differed from the 14-month old questionnaire. To illustrate,

Table 11

Relationship Between Psychological Mindedness in Mothers Assessed when the Child was 5 1/2 Years with WPPSI Scores at Age 5 1/2 (n=22)

	Psychological Mindedness Scales			
	Affective Responsiveness	Concept of Developmental Change	Concept of Behavior Shaping	Mean Psychological Mindedness
WPPSI Verbal	.43*	.54**	.49*	.51*
WPPSI Performance	.29	.34	.15	.28
WPPSI Full Scale	.39*	.47*	.35	.44*

* $p < .05$ one tailed
** $p < .01$ one tailed

two responses to the 5-year psychological mindedness will be given.

A highly rated response (6 on the 7-point scale) was given by a mother who responded to this question about nightmares:

> I: Now there was this other boy who kept waking up in the night crying and yelling. He kept saying that he saw things in the room that were after him.
>
> M: Get him a night light. What I have done is I turn on the light and I shown him that there is nothing in there when the lights are off. And if that doesn't help then I will turn on the bathroom light which gives light into his room, or if he goes to the extreme I will go in my room which is next to his and I will say, "I am in the room next to yours; nothing can come past me into your room." I'll calm him down but stay in there and he has to know that nothing in there is going to hurt him. The fact that I am there in the room next to his to protect him and also there is nothing there to hurt him. I am there somewhere but not directly with him.
>
> I: How come a child might react like this?
>
> M: He could have looked at a picture on television. His parents could have had an argument or his mommy didn't pay attention to him. Now he is either going to get the attention that he wants; maybe this is the only way he is going to get some attention. He has to give an excuse why he wants you in the room--something scaring him. "Come over and calm me down." "Tell me that you want me as much as I want you." Just let him know that you are there.

As in the 14-month psychological mindedness, a high rating is given for her empathic understanding of complex behavior in the interrelationship with herself and the child.

A very low rated response (2 on the 7-point scale) was the following:

> I: Now there was this boy who always made up stories about things that did not really happen. He always insisted that they were true.
>
> M: I don't know. He live in a make-believe world. Have to try to break him out of the habit about making up stories.

I: What might you tell the mother to do?

M: I don't know. Try to break him out of the habit.

Here the mother's emphasis is on control with very little understanding of the processes that may be going on within the child.

Because of the very strong relationship between language variables and the 5-year old psychological mindedness (Table 12), partial correlations controlling for the language variables were calculated (Table 13). These partial correlations reveal that the 5-year old psychological mindedness is partly dependent on language. However, the correlation between the mean psychological mindedness and the WPPSI verbal scale, and the correlations between the concept of developmental change and the WPPSI verbal and WPPSI full scale retain a .05 level of significance. For the 5-year psychological mindedness scales one can then say that there appears to be a type of maternal intelligence that is distinct from a verbal intelligence but overlapping with it. These measures of psychological mindedness can be used to parallel-dict the child's performance on the WPPSI at 5-1/2 years of age.

Relationship between the Two Measures of Psychological Mindedness

Psychological mindedness was assessed at two periods. It was predicted that there would be no association between the two assessments. This null hypothesis was accepted in 9 and rejected in 7 of the 16 correlations (Table 14). There were significant correlations for the means of the three scales and for the concept of development

Table 12

Correlations Between Psychological Mindedness in Mothers Assessed when the Child was 5 1/2 with Maternal Language Measures at 14 Months (n=22)

	Psychological Mindedness Scales			
	Affective Responsiveness	Concept of Developmental Change	Concept of Behavior Shaping	Mean Psychological Mindedness
Quality of Syntax	.61**	.63**	.65**	.68**
Richness of Vocabulary	.55**	.67**	.50*	.61**
Talkativeness	.20	.44*	.46*	.38

*p $<$ .05 two tailed
**p $<$ .01 two tailed

Table 13

Partial Correlations of WPPSI Scores at 5 1/2 Years with 5 1/2 Year Psychological Mindedness Controlling for Richness of Vocabulary and Quality of Syntax (n=22)

	Psychological Mindedness Scales			
	Affective Responsiveness	Concept of Developmental Change	Concept of Behavior Shaping	Mean Psychological Mindedness
WPPSI Verbal	.26	.44*	.32	.37*
WPPSI Performance	.15	.22	.09	.10
WPPSI Full Scale	.22	.36*	.14	.27

*$p < .05$ level one tailed

Table 14

Correlations Between Psychological Mindedness in Mothers Assessed when the Child was 5 1/2 with Psychological Mindedness in Mothers Assessed when the Child was 14 Months (n=22)

Psychological Mindedness at 14 Months	Psychological Mindedness at 5 1/2 Years			
	Affective Responsiveness	Concept of Developmental Change	Concept of Behavior Shaping	Mean Psychological Mindedness
Affective Responsiveness	.24	.29	.21	.26
Concept of Developmental Change	.62**	.54**	.41	.57**
Concept of Behavior Shaping	.35	.21	.36	.34
Mean Psychological Mindedness	.50*	.43*	.41	.49*

* $p < .05$ two tailed
** $p < .01$ two tailed

change scale. It appears then that there is some consistency in a mother's psychological mindedness over time. This is true despite the fact the the mothers were responding to two different sets of critical incidents. The positive correlations for the concept of developmental change may reflect the mother's ability to change and shift in her responses to the child as he changes and grows. The nature of the scale (Appendix III) to the mother's sensitivity to developmental stages and growth may be more attuned than the other two scales to the mother's shifting behaviors and responses as the child grows. The affective responsiveness and behavior shaping scales, on the other hand, may be tapping different responsiveness in the two time periods. A mother's affective responsiveness to a small dependent baby is likely to be quite different from her affective responsiveness to a rambunctious, contrary 5-year old. The same is true of behavior shaping. A mother does not use the same techniques to stop a crying infant as she might to quell a screaming 5-year old in the midst of a tantrum. These differences may explain the lack of correlation from the 14-month to the 5-1/2 year assessment on these two scales.

Multiple Regression Analysis

Briefly summarizing the data that have already been presented, Bayley mental scores, maternal psychological mindedness, and the maternal language variables of quality of syntax and richness of

vocabulary assessed in the child's infancy all predict WPPSI scores at 5-1/2. Each variable on its own accounted for a part of the WPPSI variance. The Bayley mental score at 22 months proved to have the highest correlation, r = .63, which accounted for 40% of the variance of the relationship with the WPPSI full scale. While the other variables of psychological mindedness and the two language variables of quality of syntax and richness of vocabulary overlapped, it was felt that each accounted for some unique part of the experience between mother and child that related to his cognitive functioning on the WPPSI. Accordingly, a stepwise multiple regression was set up to determine the combined predictability of these variables. It should be noted that the decision to use this multiple regression was not made until some of the data had already been analyzed and thus the need for two tailed tests of significance. The regression was calculated in accordance with the procedure described in Nie, Bent, and Hull (1970). The findings indicated that the adding of just the 14-month mean psychological mindedness with the Bayley mental scores increases the predictability of the WPPSI scores at age 5-1/2 to a significant degree (Table 15). The addition of the maternal language variables (Table 16) seems to add from 1 to 3 points to the correlations after psychological mindedness has already been added to the regression equation. These results suggest the combination of Bayley mental scores with psychological mindedness rating to more accurately predict subsequent cognitive performance at school age. As seen from the table, Bayley mental scores even at 14 months combined with mothers' mean psychological mindedness predicts 5-1/2 year old WPPSI scores with a correlation of .61. Using the 24-month Bayley

Table 15

Multiple Regression Correlations of WPPSI Scores at 5 1/2 Years with 14, 18, and 22 Month Bayley Mental Scores and 14 Month Psychological Mindedness

	Bayley Mental 14 Months MPM 14 Mos. n=22	Bayley Mental 18 Months MPM 14 Mos. n=19	Bayley Mental 22 Months MPM 14 Mos. n=17
WPPSI Verbal	.56 **	.50 *	.63 **
WPPSI Performance	.57 **	.64 **	.67 **
WPPSI Full Scale	.61 **	.60 **	.69 **

*p $<$ .05 level two tailed
**p $<$ .01 level two tailed

Table 16

Multiple Regression Correlations of WPPSI Scores at 5 1/2 with 14, 18, and 22 Month Bayley Mental Scores, 14 Month Mean Psychological Mindedness, Richness of Vocabulary, and Quality of Syntax

	Bayley Mental 14 Months MPM 14 Mos. Rich. Voc. Qual. Syn. n=22	Bayley Mental 18 Months MPM 14 Mos. Rich Voc. Qual. Syn. n= 19	Bayley Mental 22 Months MPM 14 Mos. Rich. Voc. Qual. Syn. n=17
WPPSI Verbal	.58**	.52*	.64**
WPPSI Performance	.59**	.65**	.70**
WPPSI Full Scale	.62**	.61**	.71**

*p < .05 level two tailed
**p < .01 level two tailed

score with the mother's psychological mindedness and her language measures, both assessed when the child was 14 months old, yields the high correlation with the WPPSI full scale of .71. In light of the difficulty in predicting subsequent performances from infancy data these are indeed significant correlations. As a point of comparison, the reliability of the WPPSI at 5-1/2 years ranges from .81 on the subtests of information to .97 for the full scale (Wechsler, 1967). The fact that the correlations with the combined infant and maternal data are not far from these reliability coefficients further supports the use of such data for prediction of WPPSI scores.

Piagetian Tasks

Since it was felt that Piaget's theory of development might add another dimension to the assessment of cognitive development of the 5-1/2 year olds in the present study, two Piagetian tasks--one-to-one correspondence, and selection of dichotomy (see Appendix V)--were administered to each child. These two tasks were selected from a potentially larger battery (Piaget, 1959, 1966; Flavell, 1963). Only two tests were selected because of time limitations. Other studies (Meuron & Auerswald, 1969; Lester, Muir, & Dudek, 1970) have used the same and related Piagetian measures for diagnostic and predictive studies.

Because of the age of the present sample it was expected that the majority would be pre-operational in regard to conservation with some in the transitional stage on the one-to-one correspondence. In other words, they would be bound by perceptual cues and unable to

reason logically so that they would lack the ability for transformations and reversibility (Piaget, 1959). Similarly, for spontaneous classifications on the dichotomy (Appendix V) it was expected that the majority would spontaneously select one criterion and that for indirect criteria most would have difficulty shifting classification criteria. The results bear out these predictions (Tables 17 & 18). On the one-to-one correspondence only one child had conservation, while four others were transitional. In the selection of dichotomy no child made all three criteria in classification, but many--50%--were able to make two classifications when questioned in the indirect classification procedure.

Since the relationship between performance on Piagetian tasks and cognitive performance as assessed on a standardized IQ test was of interest, the null hypothesis in regard to the association between these tests and the WPPSI performance was stated. Kendall's tau correlations were calculated. The results indicate that all the correlations were positive and five of the nine reached significance at the .05 level of significance or better (Table 19). It would appear then that these two tasks have a positive relationship with the WPPSI performance, with the brighter boys tending to be both transitional in conservation and to have more ability to classify objects.

Since the measures related to the children's intelligence, the question of their association to psychological mindedness and language

Table 17

Number and Per Cent of Boys Rated Performance in Three Categories of Conservation on the One to One Correspondence at Age 5 1/2 (n=22)

No Conservation	Transitional	Conservation
17	4	1
77.3%	18.2%	4.5%

Table 18

Number and Per Cent of Boys for Five Criteria of Performance in the Classification of Spontaneous and Indirect Dichotomy at Age 5 1/2 (n=22)

	No Selection	Color Only	Shape Only	Color & Shape	Color, Size, & Shape
Spontaneous Selection	1	15	3	3	0
	4.5%	68.2%	13.6%	13.6%	0
Indirect Selection	3	8	0	11	0
	13.6%	36.4%	0	50%	0

Table 19

Association of Performance on One to One Correspondence, Spontaneous Selection of Dichotomy, and Indirect Selection of Dichotomy with WPPSI Scores at Age 5 1/2 (n=22)

	One to one Correspondence	Spontaneous Classification of Dichotomy	Indirect Classification of Dichotomy
WPPSI Verbal	.42*	.52*	.41
WPPSI Performance	.37	.45*	.37
WPPSI Full Scale	.39	.55*	.44*

* $p \leq .05$ two tailed
** $p \leq .01$ two tailed

scores arose. The null hypothesis was stated that there would be no significant association between mean psychological mindedness at 14 months, language measures of richness of vocabulary, and quality of syntax, and mean psychological mindedness at 5-1/2. While all of the correlations were in a positive direction, they were not significant for the .05 level two-tailed test (Table 20). The correlations with the psychological mindedness scores and the performance on the Piagetian tasks were as high as .39 and .35. If three more pairs had been added to the sample the correlation of .39 would have been significant at the .05 level. This suggests that for a fair number of mother-child pairs, the more psychologically minded mother tended to have a child who performed on a higher developmental level on conservation and classification tasks.

Children's Interview

Each of the 22 boys was interviewed following the testing (see Appendix IV). It was originally thought that this interview might provide further information about both the child's cognitive functioning and his relationship to his mother. These interviews were primarily coded by the investigator to elicit information about the child's perception of his parents (Appendix VI). The coded responses to the questions were correlated with the boys' cognitive performance in order to determine if there was an association between the children's intelligence and their ability to express different attitudes toward their parent. Only two of the coded attitudes toward parents had a positive association to the child's measured

Table 20

Correlations Between Performance on Piagetian Tasks and Mean Psychological Mindedness at 14 Months, Mean Psychological Mindedness at 5 1/2 Years, and Maternal Language Measures (n=22)

	Mean Psychological Mindedness at 14 Months	Mean Psychological Mindedness at 5 1/2 Years	Quality of Syntax	Richness of Vocabulary
One to One Correspondence	.39	.39	.34	.29
Spontaneous Selection of Dichotomy	.35	.25	.22	.01
Indirect Selection of Dichotomy	.24	.21	.08	.02

intelligence (Table 21).

The child who saw emotional attributes in his mother and the one who was more able to describe what makes his mother happy tended to have higher IQ's. In other words, the child who in describing what his mommy was like said, "she sometimes gets angry" or "she is happy and gets excited when daddy comes home" seemed to also do better on the WPPSI. It is interesting to note that both of these variables involve an empathic affective response of the child to the mother. Perhaps the child's response is related to the mother's affective responsiveness, which was the scale that had the greatest pull in predicting both infant and childhood intelligence scores. There are indeed positive correlations between these child responses and the mother's affective psychological mindedness ($r = .36$, $r = .38$ for the two responses). It would appear, then, that the mother who is more in touch with her affective responses to her child encourages him in turn to be more expressive. Of course it could be equally true that the more emotionally responsive child elicits more emotional responses from his mother. At any rate, there seems to be a positive association between the child's and the mother's affective responsiveness. Other positive correlations between the child's responses to interview questions and his IQ are found between WPPSI scores and the number of items a child likes best, and his rated ability to describe a dream. Both of these positive correlations seem to relate to the child's verbal facility to name and describe.

Table 21

Relationship Between Child's Responses Coded from a Questionnaire to His Performance on the WPPSI at 5 1/2 Years (n=22)

	WPPSI Full Scale
Child describes emotional attributes in mother	.48*
Child describes what makes his mother happy	.34
Child can describe a dream	.36
Number of items the child liked best	.32
Child describes functional attributes in mother	-.30
Child expresses resentment of parental punishment	-.35

$p < .05$ two tailed

Negative correlations were found between WPPSI scores and the child's perception of his mother in functional terms (e.g., "she cooks," "she cleans," "she washes the dishes"), and the child's perception of being restricted and punished ($r = -.40$ and $r = -.38$, respectively). Again, interpretation of these findings is difficult and relies on speculation. Inspection of tabled data indicated that a child who saw his mother in functional terms--as a cook, clean-up person, etc.--often could not describe other attributes that she might possess. Since less bright children had less verbal facility, perhaps this negative association merely reflects a lack of verbal description. Also, it might reflect the mother's narrow view of herself that she has conveyed to the child. The child does not have a well rounded view of his mother and in turn other people or objects in his environment. In home observations in the infancy study, Engel et al. (1975) found that while the observation, "mother unavailable" related to low Bayley scores, the observation of "mother talks to infant" related to high Bayley scores. Perhaps a housekeeping mother who only cooks, cleans, and watches TV is a low talker who is unavailable to her child much of the time. Again, this is only clinical speculation and open to further inquiry.

Maternal Interviews

The maternal interviews were coded by the investigator both to give a composite picture of the urban Black mother's experience and

to determine the aspects of mothering that were associated with cognitive development (Appendix VI). While most of this material will be reserved for the clinical discussion section, a brief summary of significant findings is as follows: There were no significant correlations between the child's performance on the WPPSI and the mother's working or financial status. That she was on welfare or had been working since his infancy seemed to have no significant relationship to his IQ. Also, her marital status, whether separated, married, or single had no direct bearing on the child's performance on the WPPSI or the Piagetian tasks. Whether a mother sent her child to day care or Head Start or kept him at home until kindergarten also had no significant effect on the boy's WPPSI performance. The only "basic" facts from the 5-1/2 year interview that had positive, significant relationships were the mother's age and the mother's level of education, with correlations of .61 and .40, respectively. In other words, the older, better educated mothers had brighter children at 5-1/2 years. The only series of replies that seemed to have direct connection to the child's WPPSI performance were those dealing with control. For instance, mothers who insisted on interpersonal rules having to do with how to act with other people, and those who enforced social rules, such as manners, respect for other people's possessions, had children who performed better (correlations of .40 and .41, respectively, with the WPPSI full scale).

Conversely, there was a negative correlation between WPPSI scores

and mothers who said that they restricted exploration ($r = .47$). Again, these correlations merely suggest that a mother who is more interpersonally oriented conveys this attitude to the child and encourages him to be in tune with other people. He in turn is then ready to make a good beginning in school, where he has to be responsive to the teacher's directions and to other children's activities. There is also the suggestion that a restrictive maternal attitude may restrict the child's approach to people and new situations. Again, more exploration of these maternal influences on children's cognitive style would be required before more definitive statements or hypotheses could be made.

For the most part, most of the maternal attitudes towards learning and child rearing showed little association to the children's performance. More sophisticated analyses and alternate approaches to interview coding might be considered for teasing out the variables that have an impact on the child. In many ways this type of interview data has more descriptive utility than predictive purpose. Such descriptive material provides a framework for and gives some perspective to the correlational data. It fills out the picture of the life of a mother and child and often provides clinical material that helps to explain particular performances and behaviors. In the next section several portraits using this descriptive data will be presented.

Chapter IV

Discussion: Portraits of Black Urban Life

The results presented in the previous chapter arose out of a quantitative methods of ordering specific aspects of Black mothers and their children's cognitive development. They do not provide a complete picture and while they demonstrate the extreme variability of the group of mothers and children they do not explain the reasons for it. To further understand the cognitive data and to integrate it with the relationship that exists between a Black mother and her son living in an urban ghetto, individual portraits of mother-child pairs shall be considered.

Portrait I

Calvin and Mrs. W.: Calvin had the lowest scores on the WPPSI with a full scale score of 81, a verbal score of 90, and a performance score of 76. Examining the results of the infant testing, Calvin's scores on the Bayley mental had plunged from 116 at 14 months to 76 at 22 months. His mother's psychological mindedness score when he was 14 months old was one of the lowest (2.27, where the mean was 3.2 and the standard deviation was .67). Using the regression formula from the previous section, a combination of his low score at 22 months and his mother's low psychological mindedness would have predicted that Calvin would be having some difficulty at school age.

How is the dramatic drop in the Bayley score at 22 months followed by the mediocre performance on the WPPSI at 5 years to be understood in the context of this child's experience with his mother? What is

life like for this little boy and his mother?

When first interviewed when Calvin was 14 months old, Mrs. W. was living alone and was on welfare. She was 18 years old, unmarried, with little contact with the boy's father. She depended very heavily upon her mother for advice and support with her baby. She was worried about spoiling her son and incurring her mother's disapproval. Her approach to problems in child rearing seemed to be very erratic. For instance, she would alternate between harshness and permissiveness in the toilet training. Sometimes she would just let it go. Other times she would "put him on the potty and dare him to get up and he would cry and cry and cry."

Mrs. W. also expressed great conflict about wanting to mother her child and to work outside the home. When she stayed home by herself she felt very empty. She herself stated, "It feels kind of dead. It feels like I'm useless." In many ways she appeared to be fighting depression about her "lost future" and her sense that other people thought she was stupid and useless. Mrs. W. appeared to be very ambivalent in her relationship to her son. The most significant conflict was one in which she differentiated between provocative, manipulative, and punitive behavior and permissive, indulgent, and seductive behavior. This was evident in her descriptions of her interaction with her child. He would do something naughty like knocking a dish off the table or teasingly block her view of the TV. He then would receive a scolding and/or spanking. Following this he would kiss his mother and repeat the misbehavior, procuring

another round of punishment, kisses, and so on.

At 14 months, one has a picture of a mother who is conflicted and unsure of her mothering role. She seems to convey this uncertainly to her child through a series of mixed and ambivalent messages.

What is happening now that the child is 5-1/2? Mother and child arrive for their follow-up interview session on time. Mrs. W. is very directive with her son with numerous orders to behave. She is a descriptive speaker and launches immediately into detailed sketches of her life. She has two more children, a boy of 4 years and a boy of 17 months. She maintains she could "care for five children and it wouldn't be that bad." The father of the last two children has been with the family for four years and Calvin thinks of him as his father. There is some confusion about the real father since Mrs. W. had told Calvin he was dead, only to have him turn up for a visit. In explanation she said, "Well, he might as well be dead for all he sees you."

She is on welfare and works sometimes as a cashier. Her man friend also contributes to the household. Mrs. W. claims it is tight but the children all have food and clothing so that they are "making it". She gave up the idea of a full time job because by the time she made all the child care arrangements she would not have any money left.

When speaking of Calvin she is most proud when he remembers things she has told him to do. She worries about his learning, saying

that she hopes he can keep up. He has been in a day care center for two years and now attends a public kindergarten. She put him in day care at her mother's recommendation and because "it was there." She is aware of her own frustrations in teaching him and stops when she feels like she is becoming upset with his slowness. Her greatest annoyance at the moment is his inability or refusal to tie his own shoes. When asked about her future expectations, she replied that she hopes that Calvin will go to college and become a basketball player or a doctor.

Mrs. W.'s primary worry, however, is the environment. She feels he will do OK in school but the drug addicts all around frighten her. A lot of men she knows are junkies and it bothers her that her kids see drugs on the street every day. She would very much like for her children to get out of Harlem and find a better life. She is very restrictive about their going out on their own. She does not permit this for fear one might wind up "shot to death."

At the same time that Mrs. S. worries about the influence of the street, there is evidence of a lack of supervision in the home. Calvin has set fire to his bed while playing with matches and has burned himself on the stove. Both he and his brother drank a bottle of bleach. The younger brother was sick for two months in the hospital with what Mrs. W. called typhoid fever.

Calvin himself is an active boy who talks as fast as his mother, often slurring and stuttering his words. It is hard for him to

sit still. He is constantly moving around prying, putting things in his mouth, and singing nursery rhymes. He finds it difficult to focus on the WPPSI tasks and sometimes appears confused. He has elaborate fantasies about fires and sometimes regresses to baby talk. Though difficult for him, he is able to describe some aspects of his mother. For the most part he is concrete and limited in his observations. When asked what makes his mommy happy, he replies, "Is a go bowling and is a knock all the pins down, her happy." She gets angry "every time [his] father curse her out" and he can best help her if [he] "clean up the room by [him]self but [he] doesn't like to clean up the room." He is very concerned with being beaten and the necessity of fighting back. "If people hit me, I hit them right back. If they gonna catch me, pick up a bottle, pick up a big, big bottle this high to drop on them." One wonders how this active, aggressive child will make it in school where he has to sit and be attentive to the teacher.

What are the explanations for his behavior? Mrs. W. obviously loves her child. In many ways she is very sensitive to him and the learning difficulties he has. She is aware that she can't push him too far or he will "turn off." Yet she has no consistent plans for helping him or encouraging his work. As she herself says, "like I love my kids more than anything in the world and there ain't nothing I wouldn't do for my three kids, but even though I love them up to the

point that I would do anything, you find your own self neglecting them in different ways not knowing it and not meaning it." Life is a struggle. She is only 23 with three active boys. She means well but it is hard to follow through with one child sick and the other messing up the room. She is sensitive to the problem, the need for attention and supervision, but it is hard to always give it.

Portrait II

Mrs. H. and her son Noel are at the opposite end of the continuum. Noel was one of the higher scoring boys on the WPPSI with scores in the bright normal range of intelligence--119 on the verbal scale, 116 on the performance scale, and 119 on the full scale. These scores could also have been predicted from the infancy data and the 14-month maternal psychological mindedness and language measures. At 14, 18, and 22 months he had scores of 119, 116, and 119, respectively, on the Bayley. His mother's mean psychological mindedness at the time he was 14 months old was 4.17, or 1-1/2 standard deviations above the mean for the follow-up sample. Her language scores were also among the highest.

Are these scores reflective of a different life style and a different relationship from the one described for Calvin and Mrs. W.? Like Calvin's mother, Mrs. H. has been through a number of changes since she was first interviewed. She has left her night job in a Wall Street office and is currently in the second year of a post-graduate program for medical technologists. She has remarried and

divorced for a second time. Her second marriage only lasted a few months before she realized "he was like having a second child." At the time of her remarriage and divorce, Noel was 4-1/2 to 5 years old. She was very concerned about the effect of all these "changes" on Noel but she explained the situation to him so he would not "think it was his fault." She occasionally sees Noel's father but his visits are unpredictable. Her current life is hectic but well planned. She has each weekday scheduled down to the minute to make everything work. She obviously likes the work she is doing and is proud of her accomplishments. Her one reservation is the lack of time she has with Noel. He often stays with her mother and she has to continually battle to assert her own motherhood. Her mother is too soft, giving in to Noel and ruining her efforts at discipline. At the same time she is resentful, she is also grateful because she could not make her schedule work without the help of her mother.

She is ambitious for herself and for her son. She wants the best schooling for him and has had him in a private nursery since he was 3 years old and plans to send him to a private school next year. She is very sensitive to the fact that he needs extra attention to do well and hopes she can get him into a school where there are smaller classes. She goes over his work with him and encourages him all the time. At the same time that she stresses her desire for a good education for him, she does not want (her) ambitions to interfere with his development. He has to be independent. "He has to live with himself.

I'm his mother, but at this certain stage and after a certain amount of years with me, he's going out on his own. He has to live with Noel; I don't want him to live to please me, by no way." In part this attitude has to do with her own upbringing, as she says, "...I know I made quite a few mistakes in my life, trying to please my parents and I'm not gonna give him the same hang-ups I had, doing things I thought would give them pleasure."

With her own increasing independence as a wage earner and Noel's development as a "reasoning" person she seems to be more comfortable with her mothering role. She often did not know what to do with him as a baby and in some ways was threatened by his infant dependence. When he became sick she panicked and gave over his care to her mother and her younger sister. This increased her conflict with her family and her own guilt that "he did not have a whole family." She sees him more as a person now, not a dependent baby that complicated her life. She says, "We've gone into a different realm, because I can't think of him anymore as a baby... He's a thinking being now, he reasons and it's not just a one-to-one thing, say where I put [him] there to eat and he finishes. I have to reason with him as a human being, another person."

What of Noel, this 5-1/2 year old "person"? He is bright and attractive. The examiner is charmed by his manner and his verbal ability. He is curious and cooperative, eager to see what the next task is. He likes talking into the tape recorder and is very articulate in his descriptions of his mother. When asked what she does,

he replies, "She goes to work and she takes X-rays. And she X-rays arms and legs and your head and sees what is wrong with it." He knows when his mother is happy because "when we go out she laughs and someone does something...[she] claps her hands", and when she gets angry "she says 'Get over here'. Yeah, but she don't give me a spanking, she just tells me 'Get over here.'" He seems to enjoy the whole session and his poise goes beyond his 5-1/2 years. He leaves the examiner with a good feeling about him and herself.

Both of these women have been through many changes over the five years that their sons have been living. Both have had struggles with the men in their lives and with feelings of inadequacy that often centered on what they thought their own mother's perceptions were. Yet Noel's mother seems to be more in tune with the changes he is going through, and with his needs as an individual in his own right. Her success in finding a career for herself dovetailed with his beginning school and likely contributed to the positive experience and reinforcement she has been able to give. It is difficult to ascertain the effects of the multiple mothering, but it is an obvious area of conflict for Mrs. H. What is most clear is her desire for education and independence of thought and action in her child--qualities she desires for herself. She is aware of his growth and more comfortable with him now that he can talk and reason. Her encouragement of discussions in the home and her respect

for his capacity to think are reflected in Noel's ability to handle the test situations with enjoyment and curiosity.

Portrait III

Mrs. H. had been able to handle school and work while spending time with her son and letting him know she cared and was there for him. Other mothers are less successful in accomplishing this balance. Take Miss S. She is a young, attractive Black woman with a collegiate look. She is finishing her last year at City University with a major in education and Black studies. Both of her mean psychological scores assessed when her son was 14 months and 5-1/2 years were above the mean for the follow-up group. Likewise her richness of vocabulary language was above the group mean and her quality of syntax was right at the mean. From these data alone one might expect that her child would be one of those who was average or above. Yet Kerry's scores on the WPPSI place him in the dull normal range of intelligence. He has a WPPSI verbal IQ score of 89, a performance IQ score of 86, and full scale IQ score of 86. While his mother's scores would not have predicted this poor showing his Bayley scores would have. At 14 months his Bayley mental score was only 90. This fell to 78 at 18 months, and then went up slightly to 81 at 22 months. Why this consistently poor showing from a child of an "above average" mother?

Part of the explanation may be found in the interview material. Her pregnancy was unexpected and unwanted. She was only 17 and still in high school. She experienced a post partum depression that lasted for two days during which time she felt indifferent toward her baby.

She quickly acquiesced to her own mother taking the more active role in the direct care of Kerry. She acted as though Kerry were not entirely hers but her mother's. She felt burdened and fatigued with being a mother, working, and going to school. She seemed to be competent in taking care of his basic needs and intellectually knew what to do, but she took very little joy in being with her baby and stimulating him.

Four and a half years later, the situation is much the same. Since Miss S. goes to school full time and works, the grandmother is the primary caretaker. Miss S. has little to do with him and is caught up in her own worries. In response to a question about how mothers can help their children to learn, she states, "You be thinking about too many other things. Sometimes you even say, 'I don't even care if [he] don't learn.' If I could just...I don't know... If you is thinking about every day and how you're going to live that day you don't have time to deal with him. Maybe when they get older things will be better."

She longs for a family life and envies a friend who has a husband and can afford to stay home and spend time with her child. She herself exists on welfare and money from a school program. Although she had expected to marry Kerry's father, he fathered another baby with a woman down the street and she wants nothing to do with him now. She feels that she has missed something by not having a family life for herself and her son. As she states, "When you are not there,

all you know is that one day you have a baby and when you turn around that child is 5 years old. You don't know what happens in-between."

She is sensitive to the fact that her son is insecure and that in part he gets this from her. She says, "There's always fears when he is around me. And like I have a lot of fears, too, I know. And I can see them coming out in him and that's bad too..." She describes her own desperation and how it is contagious with Kerry: "...Like I'm really nervous, and I was going through this thing that I was trapped. I was just trapped. Like where I lived I was trapped. I can't get out, you know. And all I was thinking, 'I wanna move, I wanna move.' This is all I wanna do--I wanna move.' Then I see him sort of say, 'I'm gonna move. I'm tired of living here, I wanna leave.' And I see these things coming out in him."

Kerry himself is an anxious child who seeks out many cues from the examiner as to how he is to behave. He has particular difficulty dealing with the emotionally laden interview questions. He refuses to speak about his grandmother, stating, "I hate to say something about my grandmother because she might get angry at me." When asked to tell about mommies he replied, "My mommy beat me." When asked to tell more, he stated that "she sits on the stoop...[She] come upstairs and lay down and look at TV and cook some breakfast." During the session he sometimes withdraws and the examiner feels his resentment.

Although it is in part speculation, Kerry seems to be a child

who is suffering from his "unwanted" position within the family. While his relationship with his grandmother is not clear, he seems to be afraid of her and is tied with his mother to form a pair of resentful siblings. The atmosphere in the home certainly is not conducive to learning and growth. Miss S. is primarily focused on her own predicament and while sensitive to her effect on her child, she cannot get "out of herself" to help him.

These three mothers have much in common. They all would be classified in lower class socio-economic group even though both Mrs. H. and Miss S. are obtaining an education that might lead them up the social class ladder. They are all women who have had problems with their men, struggling to find ways to raise their children by their own resources. All have depended on their mothers in some way and at some time for assistance in raising their children. They have much in common with the other 19 mothers in the study in their fear of the street, their concern about money, and their aspirations for a good education for their children.

What is more striking than the similarities among all 22 women, however, is the individuality of their lives and the lives of their children. While the statistics bring them together and provide a means of making generalizations and predictions, specific information found only from the clinical material can provide explanations for why some predictions work and why some fail. Kerry is a case in point. The clinical data provides information that clarifies why this little boy with a psychologically minded and highly verbal

mother does so poorly. The home pressures on him are too great.

Yet his case only explains his performance. What about Philip? His mother comes to her 10 a.m. interview drunk and distracted. She uses her subject money to go buy a can of beer. At 22 years of age she looks like she is 60 with no teeth and sores on her face and arms. Yet Philip is a delightful child who achieves an average WPPSI IQ of 96. He is the first grandson and is cared for by a loving grandmother. Perhaps that explains his performance. Only meeting with his grandmother might provide an explanation.

With each interview it becomes clear that no two children have been brought up under the same circumstances. One child lives with his grandmother all week, spending the weekends with his mother. Another at 5 years old is sent out to the street to care for his two younger sisters while his mother sleeps upstairs. Several have fathers to whom they can turn for additional adult support. Some have been to private schools, others to Head Start and still others have had no formal schooling.

The same individuality is true for the mothers. Each one's experience with her 5 year old has been different. Some like Mrs. H. are more able to enjoy their sons now that they are older and more independent. Others like Mrs. B. find it difficult to let their sons go. In response to a question about the differences between her son now and when he was a baby Mrs. B. replies, "I guess he is

more human now. And a baby seems so pure and you care for them and, well, he always was but now more so, he is human...Like when you give your kids to school and you hand over the education to them and you don't know what they are doing then that's hard...And you hand over your kid and it is like taking part of you...." There is a note of nostalgia in this mother's voice for her child's babyhood. She had trouble weaning him from her breast at 16 months and she continues to hang on to him now that he is of school age. She would prefer to keep him home and feed him her knowledge. She also has a 22 month old boy whom she continues to breast feed, refusing to stop despite her husband's demands. Obviously her experience is different from the many mothers who had their children in day care or Head Start at 2-1/2 and 3.

These brief glimpses into the lives of the women and their sons suggests the great variability in environmental stimulation that exists for them. Such descriptive material emphasizes the need to consider the powerful between-child or between-mother differences that are present even in a homogeneously selected group. Each of the 22 mothers in this follow-up study have experienced childbirth and the raising of a child for five years. Yet each has had a unique experience with her son. What they have provided for their children is also unique and determined by a multitude of factors both past and present. Exploration of these factors

that make up their day to day lives adds to the understanding of the relevant dimensions that affect child development. It is obvious from the data of this follow-up study that no across the board generalizations can be made about life for a Black mother and child living in an urban ghetto. The results pertaining to the major hypotheses need to be viewed in the context of the interactive life of a mother and child for them to have their full meaning.

Chapter V

Discussion: Summary and Implications

The results of this study provide information about specific maternal and infant variables that predict and correlate with measures of the child's intellectual development. The descriptive material fills in the gaps between the numerical findings and emphasizes the surprising amount of variation in the lives of this small group of Black mothers and their sons.

The question of cognitive deterioration over time that has often been attributed to Black populations was not found in this follow-up sample. The mean score on the Bayley in the infancy study at 22 months was 100 (King & Seegmiller, 1973). At 5-1/2 years the mean IQ on the WPPSI for the follow-up group was again 100. Despite the fact that the Bayley and WPPSI tap different skills and abilities that are developmentally dependent, there is a consistency in performance for this group that holds up over time. This finding argues against the generalization that Black disadvantaged children do not perform well on standardized tests and that their IQ performances decrease as they get older. The fact that the 5-1/2 year WPPSI scores were significantly correlated with the Piagetian tasks adds support to the reliability of the intellectual assessment of the children. Within this small follow-up sample of 22 children, a range of 50 points on the WPPSI full scale with a minimum of 81, and a maximum of 131, suggests that there be a closer examination of individual differences before generalizations are made about Black disadvantaged groups.

The major hypotheses and results demonstrate that several variables from both infant data and maternal data assessed in the child's infancy correlate with and predict the fate of cognitive development at 5-1/2 years. Bayley mental scale scores at 14, 18, and 22 months all correlated with the 5-1/2 year old WPPSI at the .05 and .01 level of significance. The relatively high correlations (up to .63) support the use of the Bayley for predicting school age WPPSI IQ's.

The maternal attribute of psychological mindedness assessed when the child was 14 months old also correlated with the child's performance on the WPPSI at 5-1/2 years. Partial correlations showed that while this psychological mindedness was partially determined by maternal intellectual ability as seen on language measures, it was also an approach to maternal intelligence or effectiveness that was distinct from general intelligence.

The language measures of quality of syntax and richness of vocabulary assessed when the child was 14 months likewise had significant correlations with WPPSI scores at 5-1/2 years. These language measures perhaps relate directly to verbal intelligence and may indicate the positive relationship between a mother's intelligence and her child's intelligence.

Combining infant Bayley scores, maternal psychological mindedness assessed at 14 months, and maternal language variables assessed at 14 months in a stepwise multiple regression increased the correlations between them and WPPSI scores to a significant degree. This combination of several factors assessed in the child's infancy appears to be a method for obtaining highly significant predictions of a child's

intellectual performance on the standard WPPSI four years later. Whether these variables would predict a child's performance on other tests is a question for further studies. The use of the Piagetian tasks in this follow-up study and data from the WPPSI manual (Wechsler, 1967) do suggest that there is a high correlation between the WPPSI and other measures of intelligence. Perhaps the addition of other tests including more Piagetian measures would shed more light on the thinking process underlying the results of this study. Such an approach has been suggested by Voyat (1969), who emphasizes the use of a Piagetian approach to obtain a descriptive measure of intellectual functioning. He states that since the interests of the Piagetian tasks lie in the description of the mechanism of thinking, they permit an individual, personalized appraisal of functioning and potentialities that is free from cultural bias such as might be found in a Black group. Since this follow-up study has emphasized individual differences, the additional use of other Piagetian tasks may have provided more information about the interchange that existed between specific mother-child pairs.

Further investigation of psychological mindedness revealed that maternal measures assessed at 5-1/2 years parallel-dicted the child's WPPSI performance at 5-1/2 years. In turn, the 14 month and 5-1/2 year psychological mindedness were significantly correlated suggesting an internal consistency in a mother's responses to her child as he matures and grows.

The use of the children's interview in the present study was an attempt to obtain more information about this interaction of a mother and child from the child's point of view. The finding that the child who was able to verbalize his impression of his mother's feelings also performed better on the intellectual tasks suggests an affectional component to cognitive development. Since the child's affective responsiveness correlated with the mother's affective responsiveness ($r = .36$ and $.38$), a hypothesis can be made that in a situation where there is an affective, empathic interchange between parent and child, expressiveness is encouraged. This expressiveness is seen in both the child's and the mother's verbal responsiveness.

The maternal interview yielded rich descriptive data which gave perspective to the numerical results. These interview data also highlighted and stressed the individuality that exists even in a small population homogeneously selected. Several specific findings revealed that the mothers who were older and who had more education at the time of the follow-up study had brighter children. There were also positive correlations between aspects of maternal control and the child's cognitive functioning. It appeared that mothers who encouraged more responsive attitudes to other people had brighter 5 year olds while those who emphasized restrictions on the child had 5 year olds who performed less well. Further exploration of these variables as they pertain to specific cognitive abilities would be recommended for future studies.

Evaluation of Methods

The complexity of determining and understanding the variables that affect the cognitive development of a young child in the context of his relationship with his mother, requires the collection of data from several vantage points. The infancy study accomplished this through the use of home observations, interviews, and infant testing. The follow-up study was more limited in its financial resources and emphasized maternal interviews, psychological mindedness interviews, and the testing of the children. The effectiveness of these means of collection of data are discussed below.

Maternal Interviews

The interviews provided descriptive data rich in the detail of Black urban life. They set the tone for the exploration of life for a mother and child. They, however, were time consuming and expensive to obtain and transcribe. The task of analyzing them in any amount of detail was prodigious and open to errors on the part of the investigator who made all the ratings. More accurate and reliable analysis of such data could be obtained with two independent raters who were not contaminated by other data in the study. Perhaps more sophisticated methods of interview analysis would also have teased out more specific relationships between a mother's words and her son's performance. In the same vein, a more specific, limited interview might have elicited information that was easier to analyze.

The question of the reliability of interview data has been discussed previously. The effect of a white male interviewer may also have had an influence that is not obviously evident. While most of the mothers

seemed to be comfortable and even enjoyed the interviews, others were obviously more reticent. Whether this reticence was a reaction to the interview situation or the interviewer is not clear. Studies determining the differential effects of color and gender of the interviewer would have to be conducted to ascertain their influence on a mother's performance.

Despite its limitations, the interview provided detailed information not available through other methods. Its integration with other data as in this study shows its greatest worth.

Psychological Mindedness

The critical incidents of psychological mindedness offered a method to tap a specific maternal variable. Its adaptability from the 14 month to the 5-1/2 year assessment suggests its usefulness as a tool for measuring a mother's responsiveness to her child as a psychological being. As with any instrument which requires independent ratings, the reliability of the psychological mindedness scores have to be considered. In both the 14 month and the 5-1/2 year psychological mindedness high inter-rater reliability was found if the raters all came from the same background. If backgrounds varied the interjudge reliability dropped. This indicates a subjective element in the ratings. Perhaps with more refinement, with the addition of practice sessions to obtain consistent reliability, and the establishment of norms, the psychological mindedness critical incidents could be used by different groups of people in day care, nurseries, and schools. (Some of this work is currently being conducted by Mary Engel, City University of New York)

The Testing of the Children

The use of any one test at the exclusion of others presents a situation in which only a specific type of intellectual functioning is measured. The WPPSI measures the child's verbal and performance abilities in visual organization, verbal comprehension, and undifferentiated memory (Woo-Sam & Zimmerman, 1973). It is very well structured and related to school achievement. For instance, Dokecki, Frede, and Gautney (1969) found a correlation of .77 between the WPPSI and the Metropolitan Readiness Test. As pointed out earlier, it does not provide an understanding of how intelligence functions. The use of the Piagetian measures in this study was a step to add to the picture of intellectual functioning. A more varied group of tests over several testing periods would have provided more information of the process of intellectual functioning in these children. Such information would have been valuable to further understand the mother's influence on her child's cognitive processes.

As with the mothers, the use of only white examiners with no counterbalancing for differential reactions to color was not possible. How this factor may have affected the performance of some of the children is not clear. For the most part the children developed good rapport with the examiners and seemed to work to capacity.

For 5-1/2 year olds, the testing session which included the WPPSI, Piagetian measures, and the children's interview was overly long. Several children became cranky and overtly angry when pushed to answer the interview questions at the end. For future studies, two separate testing sessions would be recommended.

The use of only the Bayley for predictive purposes can be considered somewhat limited. As Wieder (1973) points out in her study, the Bayley mental and motor intelligence scores must be considered critically and as only one aspect of infant development. She suggests that rather than critically differentiating intelligence scores, it may be more useful to think of the test as an overall measure of adaptability that shifts as the child grows.

At 6 months, the child is predominantly an explorer of perceptual consequences: he studies the perceptual-cognitive information or uncertainty in his environment. An important aspect of this exploration is the contingent consequences to his physical interaction with his environment. By 12 months, his environment is more likely to include social beings with whom he engages in reciprocal imitation of sensorimotor and rudimentary verbal behaviors. As his ability increases to symbolize mentally, his language improves and he continues to imitate the verbal-vocal social behavior of adults as well as to demonstrate skills in vocabulary, comprehension, and production. By 24 months, the dominant theme has evolved into grammatical fluency and production (McCall, 1975).

To test the early sensorimotor development, a number of scales based on Piagetian concepts have been developed (Uzgiris and Hunt, 1966; Bell, 1970; Decarie, 1965; Mehrabian and Williams, 1971). A review of the studies using these scales is found in Uzgiris (1975). She concludes that the available literature on infant functioning during the sensorimotor

period demonstrates that an orderly sequence is manifested in the achievement of a number of competencies particularly, object concept development. The regularity of these sequences and their high correlation with chronological age are among the most consistently reported findings. The relationship between measures of sensorimotor functioning and other psychometric tests, however, has been inconclusive and few studies have considered the relationship over time. Wachs (1975) obtained correlations between the Infant Psychological Development Scales at various ages in the second year and the Stanford Binet at 31 months. He found that at each successive age level, a greater number of scales were significantly related to the Stanford Binet at 31 months.

King and Seegmiller tested the children in the present study at 14, 18, and 22 months on the Infant Psychological Development Scale (IPDS). Correlating these scores with the Bayley scores at the same age level, they found that at 14 months Bayley's Mental Scale scores correlated with most of the IPDS scores except for Object Permanance and the two vocal imitation scales. The different measures were practically unrelated to each other at 18 months. At 24 months, scores on the Development of Means, the Development of Schemes, and the Vocal Imitation Scales correlated with Bayley's Mental Scale scores. Correlating the IPDS scores for the children in the current study with their performance on the WPPSI may have yielded some information of the relationship between early sensorimotor intelligence and subsequent intellectual development. A statistical analysis of this data is planned.

Many factors have to be considered in looking at this task of determining the effect of sensorimotor intelligence on subsequent intellectual functioning. Uzgiris (1975) suggests that one consider the domains or even specific contents in which an individual excels as well as the solidity of such excellence, i.e. its breadth over diverse tasks. Similarly individuals might differ in their readiness to organize their constructions upon exposure to special situations providing supports for higher level functioning, i.e., there may be differences in openness to developmental change that are related to environmental and interactional experience.

Obviously, then, infant intelligence is not a simple unitary measure that permits simple prediction to later intellectual development. If one, however, looks at the relationship between specific early skills and specific aspects of later intelligence there might be more meaningful bases for prediction. We might expect that certain aspects of early development would not be related to later intellectual abilities, while other aspects might be essential building blocks for later symbolic capacities (Yarrow and Pederson, 1975). Differences in temperament, motivation, development of object relations, and parental behavior have recently been found to relate to later cognitive development. Some of these aspects and their relationship to the present study will be discussed below.

Relationship of Present Study to Other Studies Delineating Variables that Influence Cognitive Development

The thrust of the present study and other recent research has been on the interactive effects that exist for the child and his environment. The child's influence on his world begins long before he can walk and talk. The infant is not a passive object waiting to be imprinted with the knowledge of the world. "The infant affects his environment, not simply by selectively filtering stimulation through his individualized sensitivities, but also by reaching out and acting on his environment. He learns about the world through his active manipulation and exploration of inanimate objects, and he elicits stimulation from caregivers and others in his environment by his signals and the quality of his responsiveness to their responsive behavior to him." (Yarrow, et al, 1975) By his active exploration of objects, his initiative, and his responsiveness to people, the infant exerts a powerful effect on his environment and in this sense determines the continuity of his experience.

Early differences in temperament have been noted by several researchers. Escalona (1968) found that inactive babies show more sustained visual attention and do more tactile exploration of the immediate environment - up to at least eight months - than do active babies. In contrast she reported that active babies, between the ages of 4 and 12 weeks tend to develop responsiveness to relatively distant stimuli earlier and acquire locomotion and the capacity for purposive

manipulation of objects somewhat sooner. The effect of such constitutional differences on later cognitive development needs to be explored. Less active infants may be less responsive to test stimuli in early months and earn lower scores on infant tests, but they may be acquiring information and developing skills that serve them well at a later period.

Bayley and Schaefer (1964) reported that for the sample of boys in the Berkeley Growth Study, those, whose mothers evaluated them positively, granted them some autonomy, and expressed affections for them were happy, positive, calm infants. These boys tended to earn below average scores on the Bayley tests in the first year but made rapid gains in the next few years. Conversely boys who scored high in the first year were active, unhappy, and negative with mothers who were hostile and punitive. These boys tended to have low IQ's after 4 years. It is difficult to sort out the cause and affect. Did the active boys' temperament lead their mothers to be hostile because of their activity or did the hostility stimulate the babies to activity in the first year?

Work by Brazelton's group at Children's Hospital in Boston (Als and Lewis, 1975) has explored the infants' contribution to the mother-child interaction from the first days of contact. The child's responsiveness - his body movements, facial expression, physical contact, vocalizations, etc. - subtley reinforce the mother in her contact with him. Als, et. al. (1975) studied a group of underweight newborns. They found that underweight babies who were otherwise normal - full term, with Apgars of 7 or better, and with no birth complications - showed

marked differences in reflexive behaviors and in interactive behaviors. This group of underweight newborns differed from their full weight peers only in terms of Ponderal index (ratio of the percent of body weight to the cube of the body's length). In addition to poor tone, very low activity levels, poor hand to mouth coordination, a poor defensive reaction, these babies as a group had poor responsiveness. They did not lock into social stimuli easily and did not interact in a focused and modulated manner with animate or inanimate objects. They did not mold when picked up and they gave the impression of being stressed when handled. There was a sense that these babies were impressively overwhelmed by the environment and could not properly screen out stimuli.

Parental reactions to the underweight babies tended to emphasize how undemanding their babies were. They rarely cried nor did they seem to want to be played with or to be fed and they were happiest if left alone. On follow-up at nine months, eight of the ten babies in the study were described by their parents as difficult to live with. They were easily over-stimulated, continuously on the go, unpredictable in terms of sleeping and eating patterns, intense and generally reactive. The interaction set up by these oversensitive babies may have far reaching implications for future development. Als et. al.(1975) felt that the reaction of the caretaker to an unattractive, largely unresponsive, fragile baby who gives the message of wanting to be left alone is that of anxiety and feelings of frustration and inadequacy which, in turn, increase the normal tension accompanying child care. This tension then adds to the already poor state organization of the child. It has been

suggested that these difficult babies who are oversensitive to stimulation may lead susceptible mothers to abuse them.

Sameroff and Chandler (1975) presented a transactional model that ascribes consistency both to organismic variables and to caretaking environments that support and maintain responses in the system. For example, infants with difficult temperaments are more likely to evoke assaultive behavior from their caretakers, whose battering increases the probability of more maladaptive behavior by the infants and so forth.

The focus of such infancy studies is on the parental responsiveness to the child and the interactive pattern that is established. In the present study, the assessment of psychological mindedness taps the mother's responsiveness to her child. Such responsiveness while influenced by the mother's personality, and experience also must reflect, in part, the child's impact on the mother. The interviews suggest that some children were perceived as continuously difficult:

> He's a little monster.... He climbs all over everything. He throws things. He eats everything, cigarette ashes, you know, anything.... I guess he is like in general, like all bad babies, he's so bad! (Weider, 1973).

One wonders if the above-described child was a difficult baby from the start who heavily influenced his mother's responses. Psychological mindedness assessed from birth on might be a means of determining some of the baby's impact on the mother. While the present study found a significant relationship between psychological mindedness assessed at two periods of time (14 months; 5-1/2 years), some mothers'

psychological mindedness shifted significantly. How these changes were related to the temperament or responsiveness of different children is open for investigation. Repeated measures of psychological mindedness in conjunction with behavioral assessments of the infant might provide additional insights to the child's influence on the mother as it affects her psychological responsiveness to him, and in turn, their interactive relationship.

The interactive responsiveness has ramifications for the child's cognitive development. Some researchers have noted the importance of the infant's or child's responsiveness during the testing. Golden and Birns (1972) suggested that one of the best predicters of later intelligence test scores is positive affect during the testing. Generalizing from this finding, one would predict that an infant who is interested in problems at the first testing is more likely to have mastered solutions to these problems at a later date than an infant who shows no interest at the first testing. Haviland (1975) suggests the importance of including some measure of "affect" in infant assessment. Such "affect" has also been viewed as motivation as seen in the child's interest in exploring stimuli. Such motivation is inherent in information processing. Researchers have noted a motivational character in the infant's first orienting responses to stimuli and to changes in stimulation, in his efforts to maintain perceptual contact with familiar objects, and in his shift in interest to exploring novel objects (Yarrow and Pederson, 1975). Motivation represents the infant's relationship with the environment. If the infant interacts actively with people

and explores objects, a sequence of interactions may be set in motion that is in some measure self reinforcing and self perpetuating.

It is interesting to note at this point, that in the present study, the test examiners' reports often included their reactions to the children whom they were testing. It was apparent that the "affect" or motivation of the child during the testing situation influenced the examiner and perhaps the test results. Such remarks as "delightful to work with" or "impossible child who would not accept limits" suggest qualitative differences in interaction during the testing situation. Such behavioral aspects have long been noted by psychologists and have implications for the child's interactions in the school setting.

Implications for Intervention

Most intervention programs to improve cognitive development have been aimed at children of low socio-economic status who as a group have been shown to perform poorly in school and on school-related tests of intellectual ability. It is naive to think that all such children need and can benefit from the same type of intervention. The results of the present study indicate that in a Black urban group, most of whom would have been classified (according to financial and educational levels) as a group needing intervention, the variability amongst individuals is significant enough so that no single type of intervention could be recommended. Many of the children were doing well and apparently would not have required educational planning. Some of these bright children, however, given the brief clinical

appraisal that could be done, seemed to be struggling with intrapsychic conflicts which might interfere with their later functioning. For example, Damon had the highest score on the 5-1/2 year old WPPSI, yet he had great difficulty in his kindergarten class. He refused to participate in group activities, broke other children's toys, and had tantrums that required his removal from school. His mother was an over-protective woman, who breast fed Damon beyond his second year and suffered extreme anxiety when Damon first went to school. She often hung around outside the classroom hoping to get a glimpse of Damon. While performing well on the test, Damon appeared to be very anxious and concerned lest his mother learn that he had given a wrong answer. Clearly psychological, rather than cognitive, intervention would be recommended for this mother-child pair.

Other children were not doing so well intellectually. Several had already dropped to a low level of intellectual functioning (32% had scores in the dull normal range of intelligence) that did not bode well for future school success. For them, some type of intervention might have been beneficial, but what type of intervention and at what age should it be given?

Golden and Birns (1976) point out in a review of the relationship between social class and intelligence, that the evaluation studies of Head Start and related programs have been disappointing. Even where there is initial success in raising intellectual levels, the differences seem to wash out after a year or two of regular schooling. This fact has led some researchers to aim their intervention at pre-school children.

Reviewing a number of these early intervention studies, Golden and Birns (1976) conclude that while there may be little difference between early and later intervention programs in terms of IQ scores, it is possible that programs that begin earlier in life may have more long term effects. This makes sense, particularly, in terms of the previous discussion of interactive effects. The earlier a child feels himself as someone who can affect his environment to get responses and answers, the more confidence he will have to explore and investigate new situations.

Heber et al. (1972) conducted an intervention program using 40 "high risk" families where the mothers had Wechsler Adult Intelligence Scale IQ scores under 80. Heber reasoned that the children of such mothers were more susceptible than children of poor mothers of normal intelligence. The program began when the children were 3 months old and continued until they were 6 years old. The program included: (1) family intervention which consisted of vocational training for the mothers, as well as helping them to improve their reading, homemaking, and child rearing skills and (2) infant intervention which involved placing the babies in a structured day care program all day, 5 days a week. 12 months of the year, from 3 months to 6 years. The data showed that at 66 months the experimental group had a mean IQ of 124 and the control group a mean score of 94 - a difference of 30 points. In looking at test scores at 6, 10, 14, 18, and 24 months, both experimental and control groups were comparable up until 18 months when the experimental group began to exceed the control group. The gap between the two groups steadily increased from this point on with the biggest increase between 18 and 24 months. The experimental children also showed marked superiority

to the control group on other measures of learning and problem solving. One of the interesting findings of the Heber study was that in mother-child interaction situations, the mothers did not differ in teaching or verbal ability but the children in the experimental group substantially increased the level of verbal communication and exchange of information with their mothers (e.g. by asking more questions) which in turn resulted in faster and more successful learning (Golden and Birns, 1976). This latter finding is interesting in terms of the infancy studies (Als and Lewis, 1975) where the mother shifts her responsiveness to the child's activity. One wonders how the mothers' responsiveness was affected by an increased level of verbal communication from their children. Again on-going measures of the mother's psychological mindedness might have illuminated shifts in her psychological responsiveness to her child and provided more information about the dynamic interplay between mother and child.

In their review, Golden and Birns (1976) indicate that the variability in time of intervention, focus of intervention, duration of intervention, content and methods used, and populations studied prevent definitive statements or recommendations. It did appear that intervention involving work with the mother as well as the child encouraged longer lasting effects than those involving just children (Heber et al., 1972; Levenstein, 1970; Schaefer, 1970). It is possible that these programs involving mothers provide more pervasive and enduring effects on aspects of the children's personality or cognitive style that may be important for learning and academic success. Shifting the mother's style of interacting with her

child, encourages the child to shift his approach to her and to the demands she puts on him. This in turn affects his approach to others in his environment. A mother's increased feelings of self-worth and sense of accomplishment in being able to work with her child cannot be overlooked. Her sense of herself as a "successful" parent is an important variable, and may be partially reflected in her psychological mindedness ratings. The establishment of a "Head Start" for parents as has been suggested by Engel et al. (1975) may be a means of early parent intervention that can alter the on-going interactional learning process between parent and child.

Taking the cue from the present investigation where individual differences were apparent on both maternal and children's variables, future investigations would do well to study individual differences among those mothers and children involved in intervention programs. Where one family might require massive inputs in language development, structuring routines and limit setting, another family might simply require materials and basic instructions on how to use them. Still other families might have financial difficulties that have to be settled before any educational inputs could be given while others might need psychotherapeutic intervention. One should consider, however, that the effects of any intervention, no matter how good at the time, are difficult to sustain without long-term input. To swoop in and provide stimulation and change for a brief period of time, only to throw the child back into a poor school system with no additional supports certainly invites a washing out of any obtained improvements.

The stress on looking at individual differences both in terms of research and intervention cannot be emphasized enough. While an individual approach may be expensive, in the long run, it may prove to be more productive than the generalized approach of pouring money into a project because "they need help".

There are no simple answers when it comes to determining the effects of varying environments on varying individuals. The present study does underline the effects of maternal variables, particularly language and psychological mindedness, on the cognitive development of a group of Black children. A mother's responsiveness to her child as seen in her psychological mindedness also demonstrates the impact of the child upon his mother, and when combined with infant and child variables suggests the interactive process that exists for them. The challenge for researchers of cognitive development seems to lie on two fronts: (1) the further delineation of those factors in the interactive process between mother and child that most directly influence cognitive development, (2) the exploration of intervention strategies that can alter or affect this interactive process and the subsequent cognitive development of the child. Such studies need to include both normal and deviant children of various socio-economic and ethnic backgrounds and of varying ages viewed under a variety of circumstances in the home and in structured activities. While most psychological studies, this one included, seek to find unifying factors or significant differences between or within groups

of people, the present study strongly argues for the exploration of individual differences as a means of putting statistical data into perspective.

APPENDIX I[1]

Maternal Interview

Begin by saying something like the following:

We would like to understand what kind of life mothers have with their oldest sons. We have some questions to ask about your son and your life with him. In answering these questions you should know that everything is kept confidential. But if we ask anything that you don't wish to talk about, we can skip such a question. Remember, these questions pertain to your first born son.

Instead of writing down everything that we say, we use this tape recorder. This way we are sure to remember everything we talked about.

Interview Questions

1. Can we start with asking you what major events have happened in your life since you last came here when your son was a baby? (If hesitates or does not understand give an example, such as if someone had a major illness, or if the family moved, or if the mother had gone back to work, or if there have been marital problems or if the husband has been promoted on his job).

*2. What kind of things bring you the most happiness with your son?

*3. What kind of things are most difficult with him?

*4. Knowing other mothers and their kids, how does your child compare to theirs?

*5. Can you tell me how things might go from day to day? Like, what would be an example of how life is at your house?

6. How has he changed over the last year as he has gone from 4 to 5?

7. How does he get along with other children?

8. Is he the same with boys and girls?

*9. What kind of toys and games does he like to play with?

*10. Is there or was there anything that he was attached to, like a blanket or a toy that he carried with him?

*11. For what kind of things might he get love and praise at home?

1 Starred items were also asked on the 14 month interveiw which was devised by Serena Wieder, PhD and Mary Engel, PhD, Department of Psychology, The City College of the City University of New York, Psychological Center, 3332 Broadway, New York, N.Y. 10031 (NIMH Grant No. MH 17580-01 and the Grant Foundation)

*12. What are the rules for him? Like, what kind of things isn't he allowed to do?

*13. Does he seem to like men or women better?

*14. How does he react to men?

*15. How does his father feel about him?

*16. What contact do they have? What do they do together? How do you think his father and he are alike?

*17. How are they different?

*18. How is he like you? Are there ways in which he is different from you?

*19. Does anyone else help you take care of him? Who?

20. Do you work now? What do you do? When did you decide to go back to work? How come then?

21. What are your present sources of income? Does his father contribute to his son's support?

22. What is the hardest thing about working and being a mother?

23. Is your son in school now? Did he go to day care or to nursery school before this school?

24. How did you pick the school or center that he goes to?

25. How do you feel about what he learns there?

26. How did your son feel or react when you left him at school for the first time or left him with others for the first time?

* 27. What makes your son happy and how would he show this?

* 28. How does he show that he is angry? What gets him angry?

* 29. How does he show love and affection?

* 30. Are there things that he is afraid of?

* 31. Does he have trouble sleeping?

32. Do you remember when he was finally toilet trained? Was he hard to train?

33. Does he ask a lot of questions?

34. Does he know the difference, or has he asked about the difference, between boys and girls?

35. Does he ask where babies come from?

*36. He is pretty young now, but have you thought about what he'll be like when he gets older?

*37. How far would you like him to go in school?

*38. So, have you thought about what you would like him to be when he grows up?

*39. Are there things that you worry about as he grows up? What problems might he have?

*40. What kind of a life should he have?

41. Do you feel that he will want the same thing that you want for him?

*42. Does his father say what he would like him to do or to be?

*43. Do you think that there are things that mothers can do to help their children to learn?

44. What kind of things have you taught him to do? Is he easy or hard to teach?

45. Do you have any worries about his learning?

46. Do you have any thoughts or concerns about him going into first grade in public school next year?

47. So let's see--how many are there in your family now?

48. Do you think that you will have other children?

49. What would you say is the most important job of being a mother?

50. Would you say that your feelings about your son have changed since you were here last when he was a baby?

51. Is there anything that you might like to add that would help us to understand mothers and their sons, something I haven't touched upon?

52. Was your experinece in having and caring for the second or third child different from that with your first child? In what ways? How did your son react to the second child?

53. In what ways is being the mother of two different than it was when you had just one child?

54. If there are siblings, what are their names, sex, and ages?

APPENDIX II

Psychological Mindedness in Mothers

The critical incidents used to assess psychological mindedness in mothers when the child was 5-1/2 years old were developed from six pilot interviews with mothers of five year olds. The format was modeled on the critical incidents that were administered when the child was 14 months old. A copy of the 14 month old psychological mindedness questionnaire is included. In both the original and this follow-up study, the psychological mindedness questionnaire directly followed the maternal interview.

Psychological Mindedness in Mothers of 5-1/2 Year Olds

Introduction: I am going to give you some situations involving mothers and their five year old sons. After each one, I would like you to tell me why you think the child is acting in the way described and then how you would recommend that the mother handle the situation.

1. There was this boy who did not want to go to school. He only wanted to stay at home and he cried and cried whenever he had to go to school.
   How come the child acted in this way?
   What could the mother do?

2. Now there was this boy who kept waking up in the night crying and yelling. He said that he kept seeing things in the room that were after him.
   How come the child acted in this way?
   What could the mother do?

3. Now there was this boy who always made up stories about things that did not really happen. He always insisted that they were true.
   How come the child acted in this way?
   What could the mother do?

4. Now there was this boy who took candy and gum from the grocery store when his mother was not looking. She did not know about it until they got home.
   How come the child acted in this way?
   What could the mother do?

5. Now there was this boy who kept getting into fights with his younger brother. Like, he would take his bottle and toys away and tease him until he cried?
   How come the child acted in this way?
   What could the mother do?

6. Now there was this boy who always made a fuss when he was out with his mother. Like, he would make a big scene on the bus or in the street.
   How come the child acted in this way?
   What could the mother do?

7. Now there was this boy who was all alone and he didn't like to do anything. He often looked sad and he sat in the house and hardly ever played with anyone.
   How come the child acted in this way?
   What could the mother do?

8. O.K., now there was this boy who swore and cursed with vile language every time that he bumped into something or fell down.
   How come the child acted in this way?
   What could the mother do?

9. Now there was this boy who always insisted on doing things his own way. He often did the opposite of what he was told to do.
   How come the child acted in this way?
   What could the mother do?

10. Now there was this boy who always wanted to be with his mother. He even wanted to sleep in the same bed as his mother.
   How come the child acted in this way?
   What could the mother do?

Psychological Mindedness in Mothers of 14 Month Olds[1]

1. This baby's mother decided to feed him. She put him on her lap and began to give him some food. Suddenly he didn't want it, threw it on the floor and started to cry.
   How come he did this?
   What could the mother do about it?

2. There was this baby who didn't want to go to sleep. Right after his mother put him to bed, he slipped out and started to want things. It was already late at night and he just wouldn't stay put.
   How come he did this?
   What could the mother do about it?

3. Here was this baby who knew how to let his mother know when he needed to go on the potty, but often he didn't let her know and just did it anywhere.
   How come he did this?
   What could the mother do about it?

4. Here was this baby who never cried, and never laughed, and didn't like to play. He just wanted to sit in the corner and not be bothered. He would make noises for himself, but that's about all he ever did.
   How come he did this?
   What could the mother do about it?

5. Here was this baby who had his toys but he would not share them. When the neighbor brought her baby to play with him, he would want all the things to himself, and if the other baby got anything he would yell about it.
   How come he did this?
   What could the mother do about it?

6. There was this baby who woke up during the night, upset and screaming. This happened not just one night, but several times, waking up screaming in the middle of the night.
   How come he did this?
   What could the mother do about it?

1 The critical incidents items and the rating scales were developed by Mary Engel, Ph.D., Department of Psychology, The City College of The City University of New York, Psychological Center, 3332 Broadway, New York, N.Y. 10031 (NIMH Grant No. MH 17580-01 and the Grant Foundation).

7. There was this baby who didn't want his mother to go out. He always wanted to be near her, wouldn't stay with anyone else, wouldn't even make up with anyone else.
   How come he did this?
   What could the mother do about it?

8. This baby always pulled things off the table, tore up the newspaper, broke things, and wanted to have his way.
   How come he did this?
   What could the mother do about it?

9. This baby used to be very friendly--he knew people next door, and some of the relatives, and also knew the man in the store. But now he would have nothing to do with them--he would hide his face when he saw them--and isn't friendly at all.
   How come he did this?
   What could the mother do about it?

10. This baby was always trying to climb up on things, and to see what was in the cupboards. He liked to open closets and boxes, and look to see what he could find.
   How come he did this?
   What could the mother do about it?

APPENDIX III

Rating Scales for Psychological Mindedness

With minor variations (changing the word "baby" to "child") the same scales were used to rate the mothers' responses to the critical incidents when the boys were 14 months old and when they were 5-1/2 years old. The scales were developed by Dr. Mary Engel, from pilot studies on twenty mothers.

Affective Responsiveness

Scale Point

1. Evidence that mother sees the child as having moods or feelings is totally absent. Her response to his behavior is as though he had no emotions or feelings, or heavy emphasis on control by the mother.

2. There is a recognition of physiological states which imply affect. The mother indicates that the child's behavior may be motivated by hunger, fatigue, pain and she gives some implication of the feeling states that results from such physiological states. Restatement of affective words contained in the interview questions also rate 2, provided there is no further evidence of appreciation of feelings in the response.

3. The mother suggests ego states which may be affective in nature, albeit she does not elaborate on the emotion involved. She might say the child's behavior is due to forgetting, exploring, not being used to something, not caring, being selfish, being spoiled, not wanting to be bothered, etc. But do not get seduced by the use of these words. To rate 3, the description does not tell you what the attendant feelings of the child are. If specific feeling states are mentioned, or exploring, not caring, etc., are elaborated, or if the interaction is spelled out, or if historical context is given, consider higher ratings.

4. Mother refers to a specific emotion or mood state in connection with the child's behavior. The reference may be casual, and may be embedded in an otherwise "lower level" response. The feeling states she describes or refers to are fairly simple affects: scared, lonely, wanting attention, unfriendly, happy, unhappy, etc. She does not spell out how these emotions affect or determine child's behavior, but the reader knows what the affect is. The maternal act is fairly simple and general.

Scale Point

5. Mother's understanding of the child's feeling state is mirrored either in what maternal behavior she recommends, or what kind of criticism of maternal behavior she offers. There is now the implication that the mother's reactivity may explain or change the child's behavior: if he does not play, he should be stimulated; if he seems apathetic, he should be taken to a doctor for mental reasons; or if he is frightened, he should be quieted, picked up.

6. The mother places the child's behavior in the total context of the relationship with the mother. She relates his behavior to situational features, or to habitual aspects of his life, or to his history. She can explain that his reaction is due to never having become used to something, to over-attachment, to his general tendency to spite, tease, annoy, please, test limits, assert his will, etc. The mother's response is interlocked with the child's feeling state. Include responses where mother shows understanding or affective relationship of child with objects.

7. Mother recognizes that child's moods are variable and that his feelings are changeable. Or, she is able to understand very complex feelings like guilt, or she gives several emotional reasons for the child's behavior. She may explain that the child is a complex emotional person, or this understanding may be deduced from the maternal behavior she describes. Complexity is the keynote in 7. Rate multiple, sophisticated, or highly sensitive and intuitive responses here.

Developmental Change

Scale Point

1. The mother's response is devoid of any references to the child's developmental status or to developmental change. If there is any general reference to immaturity or to age, rate higher.

2. The main theme of the response is that children behave immaturely because they have not yet learned or have not been taught to act differently. If the child's behavior is explained only by such reasons as: hasn't learned, is too young to know, should be shown how, is not (yet) used to this, he just is like that, rate scale point 2. In such responses the developmental point of view is barely present. There is only a faint implication that the behavior is subject to change.

3. Here, general reference to immaturity as a reason for the behavior is more explicit than in 2: he is too little, he is only a child, children don't understand, can't talk, can't think, need attention, etc. Reference to change is still only by implication, but the immaturity of the child is more in the foreground than in responses rated 2.

4. Multiple references to child's immaturity lend responses in this category more sophistication; child's inability to comprehend or to understand something is given increasing emphasis. The response however, still contains no explicit statement of change with development.

5. Unelaborated but unmistakeable reference to child changing with increasing age: he might outgrow some habit; he might act differently when he is older, etc. Include also references to the past, i.e. when the child was younger...and therefore acted differently. Also consider such ideas as "Even though he is young...."

6. The child's age is a major determinant of how the mother construes the behavior, how she understands him or how she would act toward him. She might say that noxious behaviors or unpleasant habits are due to the age of the child and therefore, the mother should take this into account.

7. The mother specifies that certain behaviors are stage appropriate. She recognizes that there is some kind of built-in time scheme to developmental changes, that some habits, behaviors, and acts are normal at one time and not at another. A high 6 might be rated 7.

Caution: The mere use of the word "stage" does not make a 7, because some mothers use the word "stage" without the developmental context.

Behavior Shaping

Scale Point:

1. There is no evidence in the response that the mother sees herself as a shaper of the child's behavior. She may act in some direction, but she is not the agent of trying to alter the child's behavior.

2. The mother indicates that she might do "something" about the child's behavior. She uses words like "teach him," or "explain to him," or "show him," in a very vague, colloquial way so that we do not really know how or what she would do. Or, the primary emphasis may be on physical ministrations like feeding as a way of altering behavior.

3. The response reveals that the mother thinks of the behavior as a single, isolated incident to be responded to with a single act: if he cries, pick him up; if he wants it, give it to him or do not give it to him; if he is naughty, hit him. The content of her behavior and that of the child is not relevant for your rating. Focus on the manner in which the behavior is conceptualized and what she thinks should be done about it. If a single isolated incident is responded to with numerous possibilities, consider a higher rating. For example, if in the example provided for this rating the mother would add playing with the child, feeding him, amusing him by various means, in addition to calming him down, the response would not exemplify 3.

4. Here behavior shaping is put in a developmental context. For example, she might see punishing some act as part of a general program to eradicate this act, "Every time..." or "never" are ideas which occur here. But even where these words of continuity are not used, there is evidence that the mother has a sense of policy about behavior shaping.

5. Here the choice of the mother is not to intervene, interfere, or shape the behavior. She is molding behavior by suggesting that refraining from action is the best thing to do. This is not the apathetic or passive mother, but one who gives a reason for allowing things to take their course, or for the child to have his way.
Non-interference in the setting of integrated multiple ideas should be rated 7.

6. The mother's response emphasizes gradual learning on the part of the child, either through repeared experiences or through explanations geared to his level. Thus, the view of the child is that of a learner who can be taught by small increments; gradual introduction to certain realities; verbal explanations; demonstrations; demonstrations by the mother that something can be done, or that it can be done in a different manner.

7. Ratings of seven may be assigned to a "high" 6. Mainly, this category refers to responses which contain multiple ideas. For example, the mother might say she would shape the behavior by 1) prohibiting what she wants to alter, 2) offering a substitute object of activity, and 3) diverting the child's attention from the issue so as not to magnify it. Such multiplicity of ideas is not just a "laundry list" of possible alternatives lacking in conviction, but the various ideas are integrated to produce a truly superior response. They may appear in the form of an "if...,then..." proposition. If one of the ideas is on a simple, naive, low level, but co-exists with higher responses, you may rate 7. For example, take him to a doctor and if nothing is wrong physically, then... adding other possible interventions.
The policy of non-interference (5) may be included here if there is evidence that the mother is aware of the limits to non-interference and to her own influence over the child.

APPENDIX IV

Children's Interview

The children's interview was used as an attempt to gather information about a five year old's view of his parents, particularly his mother. It was developed from five pilot interviews with five year old boys.

Begin by saying: "Now we are going to play a game in which I interview you. I want to learn about how it is to be a five year old boy and you can help me by answering my quesions as best as you can."

1. What things do five year olds like the best?

2. What are the things that they don't like?

3. How about mommies? Can you tell me about your mommy?

4. Now could you tell me about your daddy?

5. What makes your mommy happy? How do you know when she is happy?

6. What makes your mommy angry? What does she do?

7. How do you help your mommy?

8. Does your mommy ever cry? Tell me about when she does.

9. What do you do to show someone that you love them?

10. What makes you afraid?

11. What do you do when someone makes you mad or angry? What gets you angry?

12. What do you do when you have a bad dream? Tell me about a dream you had.

APPENDIX V

Piagetian Tasks

In order to obtain an additional measure of the five year old's cognitive development, two Piagetian tasks were administered following the WPPSI. The following outlines the administration of these two tasks:

DICHOTOMY: A CHANGE OF CRITERIA

Material:

2 large red circles (of the same size)
2 large blue circles

2 small red squares (of the same size)
2 small blue squares

Presentation:

Place the figures in disorder before the child and ask him to describe them.

Part 1: Spontaneous Classification

Ask the child: "How could you put these figures together so that they go well together." Or: "Put the ones a lot alike together." Or: "Separate those that are different."

Ask the child why he put the ones he chose together: "Why did you put them like that?"

If there is spontaneous classification go to Part 3.

Part 2: Indirect Dichotomy

Say: "Make two families, one here and one there." Encourage the child without telling him the criteria.

When he has finished ask him how he got his families, "Why like that?" "What would you call this one?"

Help him if he cannot answer:

(a) If a child has placed the figures in subsets, say: "Well, what would I call these all together?"
(b) Take only one figure and say: "How is this one?" "Why did you put it over here?

Justification: Take one figure and place it in the other stack: "If I take this one out of here and put it here, will it be right?" "Why?"

Part 3: Second Criteria

Ask the child to arrange the figures another way.

Part 4: Third Criteria

Ask the child to arrange them in still another way. (Three criteria for classification should be reached.)

In addition, if thought necessary ask the child the three ways he arranged the figures.

ONE-TO-ONE CORRESPONDENCE

Material:

9 sheep
12 of another animal (dogs)

Presentation:

(1) The experimenter asks the child how many sheep there are.

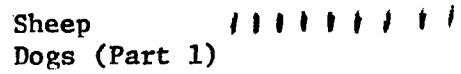
(2) He then arranges or orders the sheep in front of the child, such that they are side by side with a 4 cm. interval between each sheep. The dogs are put in disorder in front of the child.

Part 1:

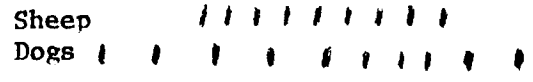
The investigator says to the child, "Take enough dogs for these sheep. Put one dog in front of each sheep. Put them together so that we have only one dog for each sheep."

Part 2:

The experimenter leaves the sheep as they are, but extends the dogs in space. Whereas in Part 1 the rows should be arranged like this:



For Part 2, the configuration is as follows:



He then asks: "Is there still one sheep for each dog?" "Are there more sheep or more dogs? How do you know?"

Part 3:

The investigator asks the child: "If we put them as before, would we now have one sheep for each dog?: Then he rearranges them as in Part 1.

Part 4:

He leaves the dogs, and extends the sheep in space as in Part 2, then he asks the same questions as above.

Ref: J. Piaget, The Child's Conception of Number
Routledge and Kegan, Paul, London, 2nd Edition, 1961.

APPENDIX VI

Coding for Maternal and Children's Interviews

Both the maternal and children's interviews were coded to elicit information about the mother and her interaction with the child. The coding system was devised and conducted by the author.

Maternal Interview

1. What brings happiness

talks of achievements	4
emotional responses	5
just being him	6
activities together with family	7
acting grown up	8

Difficulties

2. Fights too much

no	4
yes	5

3. Won't listen

no	4
yes	5

4. Learning problems

no	4
yes	5

5. Social adjustment problems

6. Doesn't fight enough. Won't stand up for self.

7. Comparing child to others

compares favorably	4
compares negatively	5
just the same	6
favorable and negative	7

8. Favorite fame or toy

has none	4
toy, like car	5
game activity	6
many things	7

9. Transitional object

did not have one	4
had one	5
still has one	6

10. Mother's description of child's behavior with other children

aggressive	4
withdrawn	5
isolated	6
mixed	7
gets on well	8

11. Child gets along best with boys or girls

girls	4
boys	5
both	6
neither	7

12. For what does the mother give praise

praises school work	4
performance on a task (tieing shoes; cleaning up)	5
for learning something new	6
combination	7

Discipline

13. Restricts activities

no	4
yes	5

14. Rules about other people (how to act with sister)

no	4
yes	5

15. Going outside alone

no	4
yes	5

16. Social rules (waiting, manners)

17. Preference for men or women

men	4
women	5
both	6

Males with whom child has contact

18. Father

no	4
yes	5

19. Uncles

no	4
yes	5

20. Grandfather

no	4
yes	5

21. Friends

22. Regularity of contact with father or stepfather

no contact	4
irregular	5
regular	6

23. Father's feeling toward son

little interest	4
accepts but little contact	5
positive	6
very positive	7

24. Caretakers

mother only	4
mother and other relatives	5
mother and babysitter	6

On work

25. Mother presently working

not working	4
full time	5
part time	6
worked since child a baby but not now	7

26. Mother returned to work or school when child was how old

Give age in months

27. Mother's occupation

student	4
office worker	5
sales person	6
teacher	7
professional	8
other	9

Sources of income

28. Mother's employment

no	4
yes	5

29. Husband's job (husband living at home)

no	4
yes	5

30. Other family

no	4
yes	5

31. Father absent but sends money

no	4
yes	5

32. Public assistance

no	4
yes	5

Schooling of child

33. Age at which child began school (in months)

34. Attended Head Start

no	4
yes	5

35. Attended day care or nursery

no	4
yes	5

36. Attended kindergarten

no	4
yes	5

37. Evaluation of what child learns in school

negative	4
positive	5
very positive	6
mixed	7

What makes child happy

38. Child gets his own way

no	4
yes	5

39. Allows for happiness without specifying

no	4
yes	5

40. Getting gifts, toys, etc.

no	4
yes	5

41. Being with people (mother or father)

no	4
yes	5

42. Specific activity (playing games, etc.)

no	4
yes	5

43. When praised or rewarded

44. How child shows his anger

no anger reported	4
facial and body movement; sulks	5
mild tantrums	6
serious tantrums	7

45. How child shows love and affection

says "I love you"	4
hugs and kisses	5
both	6

46. Things child afraid of

nothing	4
animals, dogs	5
the dark, heights	6
people	7
nightmares	8
other	9

47. Trouble with sleeping

no trouble	4
trouble	5
some trouble	6
when younger	7

48. When child toilet trained (in months)

49. Difficulties with toilet training

no problems	4
great problems	5
some problems	6

50. Mother's handling of sex question

gave direct answer	4
evaded question	5
assumed he knew	6
let someone else tell	7

51. Mother's handling of the baby question

gave direct answer	4
evaded question	5
assumed he knew	6
let someone else tell	7

Mother's worries and concerns

52. Doesn't worry

no	4
yes	5

53. Worries, but does not specify

no	4
yes	5

54. Drugs

no	4
yes	5

55. Violence and aggression in environment

no	4
yes	5

56. Social problems (adjusting)

no	4
yes	5

57. Vulnerable to negative influence of peers

no	4
yes	5

58. Economic or financial stress

no	4
yes	5

Mother's prediction of what child will be like

59. Mother cannot say or guess

no	4
yes	5

60. Intelligent, quick learner, clever,ccurious

no	4
yes	5

61. Pleasant, happy, loving, well disposed

no	4
yes	5

62. Mean, ill tempered, stubborn, sly, mischevious

no	4
yes	5

63. Lady killer or other sex focused role

no	4
yes	5

64. Refers to a specific goal for child

no	4
yes	5

65. Predicts future family life for son

no	4
yes	5

66. How far she wants him to go in school

high school	4
college	5
professional school	6

67. Mother's desire for son's future occupation

business	4
skilled labor	5
athlete	6
artist or musician	7
doctor or lawyer	8
policeman or fireman	9

68. Father's occupation

student	4
unemployed	5
other (laborer)	6
store clerk	7
bus driver, truck driver	8
skilled trade	9
policeman	10
artist, musician	11
professional	12
business executive	13
service	14

69. Father's whereabouts

lives with family	4
in city but does not see	5
lives outside city	6
deceased	7
in city and visits	8

70. Mother's marital status in relation to father at time baby 14 months

unmarried	4
divorced	5
separated	6
married to father	7
married to another	8
living with boyfriend	9

71. Mother's marital status at time child is 5-1/2

unmarried	4
divorced	5
separated	6
married to father	7
married to another	8
living with boyfriend	9

72. Concept of how mothers can help their children to learn

can teach numbers and letters	4
can stimulate generally by taking places, example	5
combination	6

73. On teaching child

easy to teach	4
hard to teach	5
neither easy nor hard	6

74. Worries about learning

worries about specific task	4
worries about adjustment	5
worries about what others will do to him	6
worries about school performance	7
no worries	8

Number of people in the family

75. Child's brothers

no	4
yes	5

76. Child's sisters

no	4
yes	5

77. Father

no	4
yes	5

78. Boyfriend

no	4
yes	5

79. Grandparents

no	4
yes	5

80. Uncles and aunts

no	4
yes	5

81. Nieces and nephews

no	4
yes	5

82. Total number of people in the house, including mother and son

83. Plans to have more children

no	4
yes	5

84. Blank

85. Mother's level of education

86. Importance of being a mother

providing and protecting	4
teaching new things	5
giving love and security	6
taking time with child	8
combination	9

87. Mother's age at birth of child

88. Mother's present age

89. Child's age in months at time of retesting

90. Number of years child in school at retesting

91. Mother's attitude toward teaching

negative	5
positive	6
indifferent	7

92. Total number of children

Children's Interview

1. Number of items they like best

2. Object choice

toys, things	4
interpersonal with someone	5
activities (tag, etc.)	6
combination 4 & 5	8
combination 4 & 6	9

3. Object choice for "least"

toys, objects	4
interpersonal	5
activity	6
combination 4 & 5	7
combination 4 & 6	8

About mommies

no mention of this	3
mentions this	4

4. Functional attributes
   (Cleaning, cooking)

5. Physical attributes

6. Emotional attributes

7. Interactional with child

8. How feels about mommy

positive feelings	4
negative feelings	5
both	6
no sense of feeling	7

About daddies

no mention	3
mentions	4

9. Functional attributes

10. Physical attributes

11. Emotional attributes

12. Interactional with the child

13. How he feels about daddy

positive feelings	4
negative feelings	5
both	6
no sense of feeling	7

14. Ability to describe mother when she is angry

cannot describe	4
can describe	5

15. Ability to describe what makes her happy

cannot describe	4
can describe	5

17. Relationship of mother's feelings

child relates to own activity	4
child relates to outside factors	5
relates to father	6
combination of own activity and other	7

18. How child helps mommy

physical help (cleaning up)	4
affectionate, emotional help (by loving her)	5
giving gifts	6
being obedient, being good	7
combination	8
cannot say	9

19. How child shows love and affection

physical show (hug)	4
verbal show (I love you)	5
action (do something for)	6
being good	7
combination	8
cannot describe	9

Things that make the child afraid

no evidence for	3
evidence	4

20. Imaginary things (monsters

21. Animals

22. Parents (spankings)

23. Diffuse fears

24. Other people

Things that make the child angry

no evidence for	3
evidence for	4

25. Parents doing something to them

26. Other kids doing something

27. Restrictions, punishments

28. Blank

29. Ability to describe a dream

cannot describe	4
can describe	5

Dream content

no evidence of this	3
evidence of this	4

30. Physical attack from animals or about animals

31. Physical attack from monsters or about monsters

32. About people

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