INDIVIDUAL DIFFERENCES IN THE INTERACTIONS OF MOTHERS AND THEIR MENTALLY HANDICAPPED CHILDREN

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by

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Abstract

That mothers of mentally handicapped children are more directive than mothers of non-handicapped children has become a major theme in comparative research, with widespread theoretical and practical implications. This study used a correlational design to explore the nature of maternal directiveness within a sample of 25 mentally handicapped children, aged 2-5 years, and their mothers. A 15-minute semi-structured interaction was coded for each dyad, using a behaviour rating scale. The major findings were: (a) while maternal directiveness was not related to children's readability (signals), it was related to but other maternal behaviours; (b) individual differences were observed in the way maternal directiveness combined with other maternal behaviours; and (c) maternal interactional style was related to both children's on-going behaviours and developmental competence. These results are discussed in context of existing evidence, drawing implications for future research.

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CHAPTER I

Introduction

The purpose of this study was to explore further the dynamic relationship between mothers and their mentally delayed children. The majority of research has been contrastive, focusing on the negative connotations of maternal directiveness. This research was designed to examine individual differences in interactions as related to mothers' perceptions of children's signals, to unique maternal style, to children's behaviors and developmental competence. There is a need to address these variables and to challenge the homogeneity myth.

Several major conceptualizations of the mother-child relationship are discussed first. This is followed by an examination of the interactions of mentally handicapped children.

Conceptualizations of the Mother-Child Interaction

It has become accepted that children's early environment is of crucial importance to their subsequent social, emotional, linguistic, and intellectual development. The question now to be addressed is how, and in what ways, specific characteristics of the early interaction affect children's development. By identifying the significant factors in children's early life, we increase our understand-

ing, and ability to modify and facilitate their total development.

Parent-child interaction studies have evolved considerably from the early stimulus-response paradigm, whereby the parent provided the impetus for action and the child meekly reacted. Theory and research in the 1960's gave rise to the view of the child as an active information-processing organism (Parke, 1978). Bell's (1968) classic paper forever disputed the view of the child as a 'tabula rasa'. Studies proliferated on the child's ability to influence the relationship. Also, differences in infants' sensory thresholds, physiological rhythms, and their social, intellectual, and emotional behaviour have been well documented in the literature (e.g., Stone, Smith & Murphy, 1973).

Infant temperament, state, sex, and sensory capabilities are frequently studied as important variables which affect the parent-child interaction and subsequent development (Korner, 1971, 1974; Osofsky & Connors, 1979; Parke & Tinsley, 1987). Infant characteristics and behaviours which are atypical in some way may be hypothesized to influence the mother-child interaction. Infants who are inattentive or inactive, display inappropriate or deficient reactions to auditory or visual stimuli, or display unusual behaviours will influence this dyadic relationship. Furthermore, the child's own ability to interact effectively with the animate and inanimate world will be affected.

Although Bell (1968) and others concentrated mainly on child effects to offset the historical imbalance, it is now generally accepted that the relationship is bidirectional and of a reciprocal, mutual regulatory nature (Henderson, 1981; Osofsky & Connors, 1979; Parke, 1978; Thoman, Becker & Freese, 1978). With this acceptance of the bidirectional, cyclic nature of the interaction, the issues have become increasingly complex.

This research is guided by two main conceptualizations about the parent-child relationship. First, the family is viewed as a system of such complexity that it is virtually impossible to isolate causal relationships (Thoman et al., 1978). These authors' study of twenty mother-child dyads supported mutuality of the interaction, and how behaviour within a system is a reflection of ongoing adjustments made by each member of the dyad. The absence of assigning a causal role to one partner is a hallmark of interactional studies.

Bell (1971, 1974) posited two other principles which have guided interactional research. First, developmental changes in the child produce different effects on parents and each period of interaction then alters the status of the child. For instance, in the social interaction model the infant's condition normally develops from needing constant caregiving to increasing alertness. The parents can then enjoy spontaneous play which contributes greatly to early social and language development (Bruner, 1977). The infant contributes

to maintaining this social interaction by being generally responsive to the parents, learning new behaviours, and actively initiating social interactions. The child's maturational processes interact with the mother's caregiving and social stimulation.

Second, in Bell's (1974) homeostatic model, each participant has upper and lower limits of control related to the frequency, intensity, and situational appropriateness of behaviour by the other participant. When the upper limit for one participant is reached, that participant will react to reduce or redirect excessive or inappropriate behaviour of the other. When the lower limit is reached, the participant reacts by stimulating the other partner to increase insufficient or non-existent behaviour. A prime example of parental upper limits would be a parent who abuses a crying child, while a lethargic infant may lead the parent to provide more stimulation (lower limits). Infants also define their own limits by such behaviours as rejecting foods or not responding to tactile stimulation such as cuddling.

Furthermore, a variety of behavioral reactions may be elicited from a parental repertoire of responses which are hierarchically and sequentially organized (Bell & Harper, 1977). A child's behaviour would activate specific responses that exist within the parental repertoire. Using the example of the lethargic infant, the parent would theoretically use increasingly stimulating means to arouse the child. Thus, the

parent-child system is seen as reciprocal with each having the ability to affect the other.

A second conceptualization is that the mother is perceived by many as the most important mediator in a child's early life without denying the influence of other family members (Laosa, 1981; Osofsky & Connors, 1979). The mother not only directly influences the child's development by the very quantity and quality of involvement, but also mediates the child's interaction with the inanimate environment (Bradley & Caldwell, 1977; Clarke-Stewart, 1973; Elardo, Bradley & Caldwell, 1975; Henderson, 1981; Power & Parke, 1982).

The literature reveals several significant maternal characteristics and behaviours which are believed to influence the mother-child relationship and subsequent child competence. The majority of research has highlighted the positive role of maternal responsiveness, sensitivity, nonrestrictive control, stimulation and warmth as being facilitative of the 'average' child's intellectual, language and social competence (Ainsworth & Bell, 1974; Bell & Ainsworth, 1972; Bromwich, 1981; Goldberg, 1977; Lewis & Goldberg, 1969).

Cognitive competence is believed to be facilitated by a sensitive mother combined with non-directiveness in allowing the child freedom to explore the environment. Power and Parke's (1982) analysis of the play context found that the way a parent structures the child's early environment, such as

floor freedom, has implications for the child's cognitive development. The secure infant can use the mother as a base from which to explore the world (Ainsworth & Bell, 1974).

Other researchers have specifically studied the relationship between children's intellectual functioning and diverse maternal variables (Bayley & Schaefer, 1964; Belsky, Goode & Most, 1980; Clarke-Stewart, 1973; Elardo et al., 1975; Donovan & Leavitt, 1978). For example, a longitudinal study by Bayley and Schaefer (1964) found that maternal and child variables interact with the child's intellectual development over 18 years in a complex fashion.

This is consistent with Clarke-Stewart's (1973) classic study which found a strong relationship between children's overall competence and maternal care. She described an optimal maternal care factor which included positive emotion, verbal and non-verbal stimulation, and contingent responsiveness. Maternal restrictiveness (restraining, directing, caretaking, and reprimanding) was negatively correlated with children's mental development. Furthermore, maternal responsiveness was found to be highly correlated not only with the child's mental score but to language, social, and emotional indices of competence (Clarke-Stewart, 1973).

It may be, as Elardo et al. (1975) suggest, that different maternal variables are salient in different developmental areas, at different stages of life, and are somewhat dependent on child characteristics. For example, Korner and Thoman's

(1970) study of 64 healthy newborns found support for a relationship between maternal vestibular stimulation and infants' visual exploratory behaviour. However, the same type of stimulation had differential effects on the infants depending on their state at the time.

As is clear from the Clarke-Stewart (1973) and other studies, maternal variables influence not only children's intellectual functioning but other areas of competence. Social interactions in mother-child dyads is the major arena in which the child learns language skills (Bromwich, 1981; Bruner, 1975, 1977). Bruner (1977) posited that what the child learns about communication before language helps him crack the linguistic code. Specifically, the mother and child develop a variety of rules and procedures for operating jointly which precedes grammatical acquisition. These procedures initially center on caretaking activities but play later provides the context for numerous joint activities between mother and child. The acquisition of language depends on joint activities which are highlighted by the mutuality between parent and infant. In Ainsworth and Bell's (1974) review of studies, they propose that cognitive and social development are intimately related and that the mother-child interaction influences competence in both areas.

Dunst's (1985) conceptual model of parent-child interaction focuses on how the infant acquires social-communicative competencies as a result of the contributions by both parents

and children. The parent contributes by constantly monitoring the infant's behaviour and responding contingently and appropriately. The child's signals (e.g. crying) must be easy to read. The infant's social-communicative competencies are enhanced when he/she elicits consequences/outcomes in parental behaviour that are predictable and efficacious. In turn, the responsive infant elicits more parental interactive behaviour and increases the parents' sense of efficacy.

Sameroff and Chandler (1975) outlined three developmental models to explain child outcomes. In the main effect model, the child's constitution and the environment exert unilateral, independent influences on development. The interactional model predicts outcomes based on a combination of constitutional and environmental traits. The transactional model stresses the plastic, changing character of each and the processes in the transaction which maintain these traits.

Mutuality of the dyadic interaction appears to be another important variable which influences development. Osofsky and Connors (1979) posited that synchrony in the mother-child relationship may be an extremely significant factor. Regardless of the characteristics of each, an appropriate match is needed to foster the relationship which should occur early. Behaviour within the dyadic system is an expression of ongoing adjustments each individual member makes to the other. This mutuality has long been a consideration for children with developmental problems (Thoman, 1980). To promote optimal

child development, we need to consider each partner in the dyad, the mutuality of their behaviours, and the interactive context.

In summary, the emphasis of this research will be upon the mother-child dyad because of its historical, theoretical, and empirical significance. The mother is believed to have a major influence upon the child's total development. Maternal characteristics such as responsivity, non-directiveness, sensitivity and stimulation combine in complex ways with infant characteristics such as state, and sensory capabilities to influence child development in all areas. The parent-child relationship is conceived of as reciprocal and transactional, with each dyadic partner having the ability to influence the other. This makes causal relationships difficult to determine.

The Dyad-At-Risk

Healthy development may be threatened if either the child's environment or the child is disadvantaged (Solnit & Provence, 1979). The vulnerable child, because of some deficit or weakness, has a narrower range of resources available to extract positive developmental experiences from the environment. The parent who is unable to respond with competence and affection to the child may "set up a deviant or impaired development that has its own momentum and pattern" (p-800). Conversely, the vulnerable child may activate

potential resources in the parents. The interplay between these developmental explanations is the focus of this research. A systematic analysis of the parent and child variables in the interactional process has implications for the child's developmental progress in all areas (Marfo, 1984).

This view is consistent with Sameroff and Chandler's (1975) model of development. They discussed two threats to the child's development; namely, reproductive casualty and caretaking casualty. The first refers to prenatal and perinatal complications which influence development. The second represents the quality of the environment to which the child is exposed. Both exist on a continuum of variability and are not independent. It is not feasible to predict developmental outcomes from only child or only parental characteristics but combinations of these dimensions. Also, specific transactions which occur in each dyad may alter the course of development.

Social interaction is the major setting where the infant learns and practices social, cognitive, and language skills (Bruner, 1975). Successful interaction is heavily dependent on the interactive capabilities of both partners and if these capabilities are delayed or distorted then the resultant interaction may be less spontaneous, less pleasurable and asynchronous (Goldberg, 1977; Thoman, 1980).

Social interactions of mentally handicapped children do differ from those of nonhandicapped children (Field, 1980;

Marfo, 1988; Odom, 1983; Walker, 1982). Odom (1983) posited that from birth, handicapped infants may lack the powerful elicitors of social interaction (e.g. smiles, gazes) found in nonhandicapped infants. Deficiencies/delays in vocal behaviour, conversational response skills and other sensory capabilities will affect the child's interaction with the environment (Marfo, 1988).

Field (1980) generalizes from a review of comparative studies that the interactions of high-risk infant-mother dyads are both quantitatively and qualitatively different. Quantitative differences would include increased stimulation while qualitative differences in interactions appear in the organization of the interaction, interpretation of signals, and the development of synchronous interactions. Examples include the child's failure to respond to parental initiations, asynchronous turntaking, and failure of the mother to accurately monitor the child's signals and pace her behaviour. Quantitative differences interact with these more subtle qualitative differences.

In a similar vein, Walker (1982) posited that the social interactions of handicapped children seem different in several ways: (a) mothers of mentally handicapped children may adopt a caretaking or teaching role; (b) there is less spontaneous, child initiated contact; (c) their interactions may be out of harmony; and (d) interactions with caregivers display unusual characteristics, e.g. extremes of activity and

inactivity.

Unlike Field (1980), Walker (1982) recognizes that while a handicapping condition presents impediments to pleasurable and growth-supporting social interchanges, variety is possible within these interchanges. Furthermore, parental adaptation to the present capabilities of the child may not necessarily be dysfunctional--a possibility which comparative studies would conceal.

Statement of Problem

Maternal influences on child development are more complex than gross caretaking patterns or measures of quantity alone would suggest (Clarke-Stewart, 1973). It is not sufficient to state that a specific amount of responsiveness will facilitate a child's overall competence, or maternal directiveness will retard a child's intellectual functioning. These are multidimensional concepts which interact in a complex fashion with the child's developmental status and needs.

A handicapping condition introduces another important variable into the mother-child relationship, which then alters the interaction. Comparative studies have generally depicted the interactions of mentally handicapped children and their mothers as being less than facilitative of optimal child development. These comparative studies also fail to consider the heterogeneity of mentally handicapped populations (Crawley & Spiker, 1983; Mahoney, 1983; Marfo, 1988).

There is a paucity of correlational research designs with the mentally handicapped which are essential to determine within-group differences. Furthermore, few studies exist which relate the mentally handicapped child's competence to the mother-child interaction. It is the thesis of this research that the interactions of mothers and their mentally handicapped children are truly heterogenous. The complexity of variables has been disguised by contrastive designs.

The purpose of this research was fourfold:

1. To examine how perceptions of children's readability (clarity of signals) relates to maternal interactional style.

2. To examine individual differences in a sample of mentally handicapped children and their mothers; specifically, to examine variations in maternal behavioral style.

3. To examine the relationship between mother-child interactions and children's behaviours.

4. To examine the relationship between mother-child interactions and children's language and cognitive competence.

Definitions of Terms

Maternal Directiveness is the term used to describe all verbal and nonverbal behaviours which a mother employs to control or direct the actions of her child. While directiveness may be a part of every mother's behavioral repertoire, mothers of mentally handicapped children are said to be

quantitatively more directive.

Maternal Intrusiveness includes all verbal and non-verbal behaviors which a parent exhibits to hinder, inhibit or disrupt the child's on-going behavior. It is not synonymous with maternal directiveness.

Child Development encompasses all the developmental domains of cognitive, social and language functioning.

Mental Handicap/Retardation refers to a variety of disabilities of no particular etiology. Included in this study are children with Down Syndrome (DS) and developmental delays. The mean cognitive Deviation Quotient (DQ) of the children was 60.

Parent-Child Interaction refers to all the verbal and behavioral exchanges between a mother and her mentally handicapped child. Focus is on the dyad rather than each member's separate contribution to the interactional process.

Readability means the extent to which children's social-communicative signals, i.e. smiles, distress, are clear to their mothers.

Research Questions

This investigation attempted to answer several specific questions:

1. What is the relationship between maternal perception of children's readability and maternal interactional style?

2. What is the nature of the interrelationship among

maternal directiveness, maternal intrusiveness, and other maternal behaviours?

3. To what extent are maternal interactional behaviours associated with (a) on-going child behaviours, and (b) child developmental status?

Limitations of the Study

This study is limited in several ways:

1. The small sample size may limit generalizations and the statistical procedures available for designating sub-groups.

2. The variety of handicapping conditions in the sample may confound results as specific medical problems are an added dimension in the interactive process. Each of these conditions may independently impact on the nature of the interaction, making it difficult to isolate the relative impact of either condition.

3. All of the dyads were involved in an early intervention program which stressed a teaching model. Results may not be comparable to dyads in other programs or with different early experiences.

CHAPTER II

Review of Related Literature

The present study examines maternal directiveness in relation to (a) children's readability, (b) other maternal behaviours, (c) children's behaviours, and (d) children's competence. In the review of the literature for this study, four major areas were investigated.

Relationship Between Children's Readability and Maternal Behaviours

While it would be erroneous to classify any group or population as homogeneous, there are several common characteristics of mentally handicapped children believed to influence mother-child interactions and subsequent development. It would perhaps be more appropriate to think in terms of a continuum of risk in which an individual child may share some of these characteristics, in various combinations, and to different degrees (Sameroff & Chandler, 1975). When considered within the context of a heterogeneous maternal interactional style, the possible combinations are enormous.

Notwithstanding this caveat, mentally handicapped children appear to differ from the 'normal' population in their social interactions. Rogers (1988) categorizes characteristics of disabled children under the following headings:

1. Disabled infants provide fewer and less readable

cues to parents.

2. Disabled infants avoid or terminate social interactions by fussiness or gaze aversion.

3. Disabled and at-risk infants demonstrate less positive affect, more negative affect, and a dampening, or less intense expression of affect.

4. Disabled infants show difficulties in turn-taking, creating asynchronous interactions.

That mentally handicapped children are less readable has been hypothesized as a major cause of atypical interactions (Dunst, 1985; Goldberg, 1977). In her theoretical model of social competency, Goldberg argued that an important element of maternal responsiveness is to provide contingencies which allow the child to develop a sense of efficacy or control over the environment. Parents' perceptions of their children are based on the infants' readability (behaviours which are clearly defined and provide distinctive signals and cues for adults); predictability (extent to which an adult can anticipate behaviours from contextual events or preceding behaviours); and responsiveness (quality and extent of infant reactions to stimulation). When the infant is difficult to read, unpredictable or unresponsive, the parent may respond in an unresponsive or ineffective manner.

In reviewing the literature on developmentally disabled children, Dunst (1985) interpreted mentally handicapped children's verbal and nonverbal behaviours in social interac-

tions as being difficult to read. This has implications for maternal responsivity and control techniques as mothers may tend to overcompensate for the child's unclear signals. Dunst adds that the more unreadable behaviours which an infant has, the more aberrant will be the acquisition of social-communicative competencies.

Support for Goldberg's (1977) and Dunst's (1985) theories is found in the literature on mentally handicapped children's interactions (e.g., Cardosa-Martins & Mervis, 1985; Emde, Katz & Garner, 1978; Sorce & Emde, 1982; Terdal, Jackson & Garner, 1976; Vietze, Abernathy, Ashe & Faulstick, 1978). Generally, all of these studies conclude that maternal responsiveness is intimately tied to the mothers ability to be able to read her child's signals. Such responsiveness promotes a variety of communicative and socially competent child behaviours. The atypical child who presents a blurred picture may be hypothesized to have problems in interactions and developmental outcomes. The parent of the mentally handicapped child may make adjustments in her interactive style when dealing with the child whose signals are difficult to interpret.

A second characteristic of mentally handicapped children is avoidance or early termination of interaction which may also be explained by the readability hypothesis. The child communicates a readiness for interactions through gaze, vocal, and nonverbal behaviours.

Several studies have examined the looking behaviour of

infants with DS (Gunn, Berry & Andrews, 1982; Jones, 1980). Both of these studies compared DS children with nonretarded children on looking behaviour. While DS children could engage in social/interpersonal eye contact, they exhibited difficulties with referential eye contact. This has a direct effect on the interaction situation because the mothers are not receiving the appropriate stimulus for providing sufficient feedback.

Research has found that mentally handicapped children vocalize less frequently, are less verbally responsive and more passive, and use more non-meaningful, echoic communication (Buckhalt, Rutherford & Goldberg, 1978; Cardosa-Martins & Mervis, 1985; Eheart, 1982; Hanzlik & Stevenson, 1986; Jones, 1980; Marfo, 1988; Marshall, Hegrenes & Goldstein, 1973). The mothers in these studies made concomitant modifications in their style.

In play situations, nonverbal behaviours followed a similar pattern (Cunningham, Reuler, Blackwell & Deck, 1981; Eheart, 1982; Stoneman, Brody & Abbott, 1983; Terdal et al., 1976). The children failed to respond to parental attempts to engage them, and they initiated significantly less interactions.

Thus, the mentally handicapped children in these studies were reported to be less responsive and active in the ways they communicate with their mothers. Differences in social interactions may result if the mother is unable to correctly

interpret the child's signals which are atypical. Successful interactions appear to evolve out of the contributions of both partners.

The third global characteristic, affect, is a potent social signal which children use to initiate and continue interactions. Dunst (1985) posited that if these affective behaviours are deviant or absent, and consequently less readable, then maternal responsiveness may be diminished.

The majority of research on the affective characteristics of mentally handicapped children has been limited to DS children, which reduces generalizability to other mentally retarded children. One exception was the Kasari (1985) report which compared 18 normal with 18 mentally handicapped children of no particular etiology. The handicapped children exhibited more negative affect and more looking away behaviours than did normal subjects in interactions with their mothers. Mothers were quantitatively more directive but not necessarily unresponsive.

Studies of infants with DS report less positive and more negative affect, as well as a dampening of all affective responses (Cicchetti & Sroufe, 1978; Emde et al., 1978; Marfo & Kysela, 1988; Sorce & Emde, 1982). Sorce and Emde (1982) imply that because the signals of DS children are more difficult to read, the mothers may be adapting to the situation by recalibrating their response thresholds downward, and would thus intervene more.

That high-risk infants "have less fun" during early interaction was demonstrated by Field (1983). The author suggests that the negative affective behaviours of the high-risk group may be due to excessive stimulation by mothers unable to interpret signals (e.g. gaze aversion) as needing a break to process information and modulate their arousal levels.

Finally, that mentally handicapped children show problems in turn-taking ability has been clearly demonstrated in the literature (Buckhalt et al., 1978; Cunningham et al., 1981; Eheart, 1982; Jones, 1980; Marfo & Kysela, 1988; Tannock, 1988a; Terdal et al., 1976; Vietze et al., 1978). Turntaking refers to the mutual exchanges between the mother and child, and successful social intercourse is dependent upon synchronized, reciprocal exchanges (Rogers, 1988).

Some research suggests that asynchronous interactions may be due to the severity of the mental handicap rather than diagnostic status alone. Cunningham et al. (1981), Terdal et al. (1976), and Vietze et al. (1978) all demonstrated that higher functioning mentally retarded children were more responsive to maternal style and interacted more frequently. Mothers of these children were also described as more responsive and their interactions more reciprocal. Marfo and Kysela (1988) provide support for qualitative differences in vocalization patterns as developmentally younger handicapped children displayed less synchronous responses to maternal

vocalizations.

These findings of less mutuality and synchrony in the interactions of mentally handicapped children may also be interpreted by the readability hypothesis. A plausible explanation is that if the behaviour of mentally handicapped children is difficult to read, parents may overcompensate during interactions, responding as if the onus for initiating and continuing the interaction is primarily based upon them (Dunst, 1985; Marfo, 1988). The label of directiveness may then be applied to mothers of mentally handicapped children.

In summary, interactions of mentally handicapped children whose cues are difficult to read, don't follow predictable patterns, and fail to respond appropriately, may differ from those of comparison groups. Maternal style variables such as directiveness, intrusiveness, and responsiveness may be expected to vary when children's signals are more difficult to interpret. Parents may make modifications in their interactive style based on the feedback received from their children. However, it has been implied in the literature that being different is synonymous with being negative, without regard to how individual maternal behaviours such as directiveness, are related to other maternal characteristics, such as sensitivity. The following section will address this issue.

Relationship Between Maternal Directiveness and Other Maternal Behaviours

The literature on mother-child interactions of normally developing and mentally handicapped children (e.g., Clarke-Stewart, 1973; Mahoney, Finger & Powell, 1985), suggests implicitly that directiveness and control are negative maternal interactional qualities while responsivity and sensitivity lead to increased child competence and mutually satisfying interactions. The implication is that these qualities are incompatible (Cunningham et al., 1981).

Some researchers suggest that mothers of mentally handicapped children are not only more directive but show less sensitivity to their children (Cunningham et al., 1981; Terdal et al., 1976). Cunningham et al. (1981) examined both linguistic and behavioral components in mother-child interactions. In the mentally handicapped group, the mothers were more directive in both the free play and task situations and less likely to respond positively to their child's compliance. Linguistically, the complexity of maternal speech was related to the child's MA (mental age). Terdal et al. (1976) found the mothers of both groups to be equally responsive but that the mothers of the retarded children provided poorly differentiated consequences to appropriate and inappropriate behaviours. They interpreted mothers responding more diffusely because the children's cues were difficult to read.

As Baumrind (1972) points out, clear and firm control

combined with warmth and sensitivity facilitates optimal development in normal children. Firm control does not imply a large quantity of rules or intrusiveness. Rather, the author found that warm, directive mothers (whom she calls authoritative, versus authoritarian) who were not restrictive, had socially competent and self-reliant children. Thus, while mothers of mentally handicapped children tend to be more directive, this does not preclude their being warm, sensitive, and responsive parents (Marfo, 1990).

Some research with nonhandicapped children suggests that maternal directiveness and sensitivity need not be incompatible. Schaffer and Crook (1979, 1980) examined the nature of maternal control techniques and how these were integrated with child behaviours such as compliance. Schaffer and Crook asked mothers to be directive in a laboratory play session. Their results revealed that mothers timed their controls so as not to overwhelm their children and that they were indeed sensitive to their children's behaviour. For younger children, mothers took more initiative, made more use of attention controls and expressed themselves more often by nonverbal means. Maternal sensitivity was evident as the mothers first engaged the children's attention, and then followed this by an action request. Thus, while mothers were very directive, they were also sensitive.

Both Bellinger's (1979) and Schneiderman's (1981) studies of mothers conversations with their normal children in

laboratory and naturalistic settings found evidence that mothers adjust their speech to the child's developmental level. When children failed to comply with inexplicit action directives, mothers changed to more explicit subtypes. Maternal speech to the youngest children was literal and referentially explicit, and action directives decreased with the children's age. Both authors posited that the mothers' adjustment to the children's speech may be systematic, based on sensitive perceptions of the child's cognitive and language ability.

These findings may be extrapolated to a developmentally delayed population; that is, that directive maternal speech and behaviour may be sensitive adjustments and developmentally appropriate. Directiveness should be considered within the context of other factors such as child behaviours, developmental status, chronological age (CA) and total interactional style.

Maternal directiveness is a multidimensional phenomenon in terms of the way it is defined, and how it is combined with other maternal and child variables (Crawley & Spiker, 1983; Girolanetto, 1988; Mahoney & Robenalt, 1986; Marfo, 1990; Marfo & Kysela, 1988; Maurer & Sherrod, 1987; Tannock, 1988b). In reviewing the literature on maternal directiveness with mentally handicapped children, Marfo (1990) suggests that the view of directiveness as an inherently negative interactional phenomenon, without regard to its context or function, is

simplistic.

Tannock (1988b) examined maternal directiveness and responsiveness in terms of different dimensions of directiveness--turntaking control, response control, and topic control. Her sample consisted of 11 DS and 11 nonhandicapped children matched on communication and developmental levels in a laboratory setting. Both groups of mothers used controls primarily to support and encourage their children's participation in the interaction. While mothers of DS children used more controls in most aspects of directiveness, they were not less responsive. As the author suggests, maternal directiveness in a complex issue and must be considered as to how this behaviour is related to the child's interactive behaviour.

Conversational patterns of normal and DS children were compared in a study by Mahoney and Robenalt (1986) using a turntaking paradigm. Twenty DS children aged two to three years old were developmentally matched with 20 nonhandicapped children and observed at home. The mothers of the DS children exhibited higher rates of both mands and turns but were equally responsive to their children's communication.

Maurer and Sherrod (1987) observed that parental directiveness and child passivity appear to be characteristic interactional patterns in dyads with handicapped children. However, it is necessary to examine the developmental patterns of verbal behaviours to determine how sensitive parents are to the changing language competency of their children. They

followed 6 DS and 4 nonretarded dyads matched on CA, MA, and verbal age over a two-year period. Specifically, they were interested in the context of maternal directives and considered both frequency counts and conditional probabilities in the use of commands and suggestions.

Although their study is based on a small sample, it is significant in that it reveals mothers vary their use of directives based on both context and child behaviours. Mothers of DS children issued directives significantly more frequently when the child played in an inappropriate manner and when they did not have the child's attention. Receiving directives increased the amount of functional play in children with DS at all ages, but no such effect was found for nonretarded children. Mothers of DS children were also more likely to issue a directive following noncompliance by their children, which increased their compliance rate more so than a suggestion. The patterns of change over time (e.g., decreased use of commands) were similar for both groups of parents but slower for the DS dyads, implying that the pattern of interactions is delayed, not deviant. The results support the contention that mothers of mentally handicapped children are directive, yet also sensitive and responsive, when considered within context of their children's behaviour.

These findings on directiveness and responsiveness are consistent with several other studies on the interrelationship of maternal behaviours. Marfo and Kysela's (1988) research

found that while mothers of mentally handicapped children were overall more dominant interactional partners, they were equally as responsive to their children's behaviours and vocalizations, and offered reinforcement when their children complied. Hence, only by considering maternal directiveness within an interactional context does the full extent of this dimension of maternal style become evident.

One major study of particular importance to this discussion, looked at maternal directiveness in conjunction with other maternal variables. Crawley and Spiker (1983) rated 10 maternal and 10 child behaviours in addition to one dyadic quality. Six maternal behaviours (directiveness, elaborativeness, sensitivity, stimulation value, mood, and mother appeal) were rated on a five-point Likert scale, while four maternal qualities (pacing, appropriateness, readability, and intrusiveness) were rated as dichotomous judgements. These dichotomous ratings were considered as separable components of maternal sensitivity and directiveness.

Crawley and Spiker's (1983) analysis consisted of correlating maternal multipoint ratings as well as providing descriptive analysis of the dichotomous ratings. The correlations suggested a sensitivity cluster of elaborativeness, stimulation value, positive affect, appeal and mutuality. While directiveness was negatively correlated with elaborativeness, it did not statistically relate to the other sensitivity behaviours. This suggests that directiveness may

not be an inherently negative aspect of interactions.

The authors further examined separate components of directiveness and sensitivity through descriptive analysis of the dichotomous ratings. The majority of the mothers were rated as satisfactory on developmental appropriateness, pacing, and readability, while only 44% were appropriate as regards intrusiveness. Additionally, examination of the subgroups suggested that mothers may be highly directive and highly sensitive, while some nondirective mothers may behave insensitively. Some nondirective mothers are intrusive while directive mothers are not necessarily intrusive. These results indicate that maternal qualities combine in diverse ways, and that directiveness and sensitivity are at least partially compatible.

As support for Crawley and Spiker (1983), but using a comparative analysis of 18 normal and 18 mentally handicapped children's interaction with their mothers, Kasari (1985) investigated variation in infant behaviours and maternal responses. In a laboratory setting, the dyads were videotaped during free play. Results confirmed previous findings that mothers of mentally handicapped children differed in the amount of their directive behaviour, such as increased lead-taking and controlling behaviours than mothers of normal children. However, mothers of mentally handicapped children were not less sensitive to their children's subtle cues. Ratings of quality (sensitivity, intensity) and appropriate-

ness (developmental match, contingency) of maternal interactions did not differ between groups.

Recent research is slowly accepting the view that directiveness and sensitivity are at least partially orthogonal dimensions of parenting style. Two studies (Davis & Oliver, 1980; Stoneman et al., 1983) actually found mothers of mentally handicapped children to be more responsive than mothers of nonhandicapped children.

Davis and Oliver (1980) matched eight mentally retarded and eight normal children on the basis of parental demographic characteristics and parental questionnaires about the children's behaviour. They found that mothers of the handicapped group spoke more frequently, were less directive (commands/prohibitions), and responded more frequently and quicker to their children's utterances than mothers of the nonhandicapped group. This latter finding was interpreted as an index of maternal responsiveness whereas an alternative explanation may be the mothers were faster paced and intrusive. Likewise, Stoneman et al. (1983) observed that while parents of DS children were more managerial and directive (commands/requests) than a CA matched sample of eight dyads in the home setting, they were extremely contingently responsive to their children's information-seeking and managing attempts. They explained the elevated parental responsiveness as either parents reacting to the perceived importance of their children's limited behavioral repertoire, or relating to the

children in a manner consistent with their developmental level. Different matching procedures, settings, participants, and definitions of directiveness may have resulted in opposing conclusions on directiveness.

Recent research does not support a unidimensional portrayal of maternal directiveness nor its traditionally negative focus. While some researchers (e.g., Mahoney et al., 1985) noted that control and directiveness result in children's lower cognitive functioning, they failed to consider the interactive context of the mother-child relationship. This would be in keeping with a transactional model of development. Directiveness cannot be considered in isolation from other maternal qualities such as sensitivity, nor without regard to the child's ongoing behaviours.

One of the principal weaknesses of comparative designs is the underlying assumption that mentally handicapped children and their mothers are an homogeneous group. However, marked individual differences do exist among children and parents which influences interactive behaviours and developmental outcomes. The following section addresses the issue of individual differences, with an emphasis upon the relationship between maternal and child behaviours. Maternal style variables such as directiveness and sensitivity may be expected to vary in the presence of a developmental disability--as inferred from both status characteristics such as IQ or language level, and from the more episodic behavioral inci-

dents.

Heterogeneity in Interactions of Mentally Handicapped Children

The vast majority of research into mothers' interactions with their mentally handicapped children has been of a comparative nature. Mentally handicapped children are matched with non-handicapped children on a variety of measures including CA, MA, and language levels. These studies assume or strongly suggest that mothers of mentally handicapped children are an homogeneous group. The main finding of these between-group designs is that the mothers are quantitatively more directive and controlling in their behaviours and language when interacting with their mentally delayed children (Breiner & Forehand, 1982; Buium, Rynders & Tenure, 1974; Cunningham et al., 1981; Eheart, 1982; Hanzlik & Stevenson, 1986; Kogan, Wimberger & Bobbitt, 1969; Marshall et al., 1973; Stoneman et al., 1983).

In general, these contrastive studies have found that mothers of mentally handicapped children exhibit a tendency towards a unique directive style of interaction involving more commands, increased lead-taking, increased control, and limited synchrony when compared to a sample of normal children matched on a variety of variables. Table 1 presents a summary of the findings of these between group designs.

This assumption of homogeneity is surprising given the range of capabilities of both mothers and children, as well as

Table 1

Contrastive (Between-Group) Studies of Mother-Child Interactions

Study	Sample (Children)	Matching Criteria	Observational Context	Analysis	Behaviours Measured	Relevant Findings
Breiner & Forehand (1982)	8 DD & clinic referred x = 58.4 8 clinic referred, non-compliant x = 54.5 8 non-clinic referred, noncompliant x = 55.0	CA SES Sex	Home (no structure)	Frequency counts and some sequential analysis	Maternal rewards, commands and contingent attention; child compliance	Mothers of DD children were more verbally directive and positive. Their children were less compliant to total commands but not to concise commands
Buckhalt, Rutherford & Goldberg (1979)	10 DS x = 13.5 months 10 N x = 12.5 months	CA Sex	Laboratory (free play and structured tasks)	Frequency counts of single behaviours	Maternal verbal and nonverbal behaviour, child responsiveness	Mothers' language complexity increased with child competence (MA). Mothers equally responsive but DS children were less responsive except in visual regard.
Burium, Rynders & Turnure (1974)	6 DS x = 24 months 5 N x - 24 months	CA Family variables	Laboratory (structured tasks)	Frequency counts	Maternal vocalizations	Mothers of DS children spoke more and used simpler language.

KEY

DS	=	Down Syndrome	DD	=	Developmentally Delayed
N	=	Normal	MR	=	Mentally Retarded
X	=	Mean	MLU	=	Mean Length of Utterance

Study	Sample (Children)	Matching Criteria	Observational Context	Analysis	Behaviours Measured	Relevant Findings
Cardoso-Martins & Mervis (1985)	5 DS (21.5 - 37.1 months) 15 N (12.1 - 36.8 months)	CA MA Preling-uistic measures	Home (free play)	Frequency counts	Maternal vocalizations	Mothers of DS children used more directives (imperatives) and play was mother-led. Heterogeneity in maternal style was observed.
Cunningham, Rueler, Blackwell & Deck (1981)	18 MR (28-96 months) 18 N (18-54 months)	MA Sex SES	Laboratory (free play and structured tasks)	Antecedent-consequent coding	Maternal commands/control; child compliance	Mothers of MR children more directive in both situations and less responsive in task situation. The MR children were less interactive and responsive. No difference in complexity of maternal speech between groups as measured by MA. Mothers of higher MA's in MR group were less responsive
Davis & Oliver (1980)	8 MR x = 41 months 8 N x = 12 months	Family variables Language ability Parental question-naire	Laboratory (free play)	Frequency counts and content analysis	Maternal language	Mothers of MR children spoke more, were less directive, and responded quicker to their children
Eheart (1980)	8 MR x = 46 5 months 8 N x = 27 2 months	Play behaviour	Laboratory (free play)	Frequency counts	Maternal initiations of responses	Mothers of MR children were more directive and initiated more interactions. Children were less responsive and more passive
Garrard (1989)	26 DD (2 5-3 years) 26 N (4 5-5 years)	Sex Language levels	Home (free play)	Frequency counts	Maternal verbal directives' commands	Mothers of DD children used more directives beyond children's language ability indicating directiveness was a deterrent to language acquisition. Some variance in DD dyads existed

Study	Sample (Children)	Matching Criteria	Observational Context	Analysis	Behaviours Measured	Relevant Findings
Gutmann & Rondal (1979)	21 DS (38-144 months) 21 N (20-32 months)	Family variables Language levels (MLU)	Home (free play)	Frequency counts and content analysis of verbal operants	Maternal and child vocalizations	Speech of mothers of DS children is quantitatively and qualitatively different, but not necessarily inappropriate. Mothers of DS emitted fewer mands and decreased mands with children's language levels. DS children initiated less and were more echoic. As MLU increased for both groups, the total verbal response classes increased.
Herman & Shantz (1983)	12 MR x = 10 years 19 N x = 10 years	CA Sex	School (free play, teaching task, and cooperative task)	Rating system	Maternal directiveness (directing, inferring & restricting) and maternal encouragement	Mothers of MR children were generally more directive on all tasks but some variety was noted according to the context. The MR children were deficient in problem-solving ability.
Jones (1980)	6 DS (8-24 months) 6 N (8-24 months)	MA Sex SES	Home (free play) 3 month period	Microanalysis of antecedents and consequences	Mother-child eye contact, child's vocalizations; interactive context	Mothers of DS children were more directive and also more supportive. Children exhibited poor referential eye contact and were more repetitive (provided fewer social cues). Interactions more mother-led but children were involved.
Kogan, Wimberger & Bobbitt (1969)	6 MR (3-7 years) 10 N (4-5 years)	None	Laboratory (free play)	Contingency analysis and behaviour ratings	Mothers' and children's behaviours of status (control), affection and involvement	Mothers of MR children were more directive and affectionate. Their children were less active. There was less synchrony in interactions.

Study	Sample (Children)	Matching Criteria	Observational Context	Analysis	Behaviours Measured	Relevant Findings
Leifer & Lewis (1984)	4 DS (18-23 months) 6 DS (3.5-4.5 months) 4 N (18-23 months)	CA Language level (MLU)	Laboratory (free play)	Sequential analysis	Children's verbal and nonverbal responses	Directive questions produced most action and appropriate responses in all groups. Language development of DS children both delayed and different. The language matched DS children had superior responses and were more active in turn-taking, even though responses were inappropriate.
Mahoney, Fors & Wood (1990)	18 DS (2-3 years) (a) turn-balanced x = 29.8 months (b) turn-imbalanced x = 30.6 months 18 N x = 15 3 months	Develop-mental age Expressive language level Sex Family variables	Home (free play)	Frequency counts	Turntaking, behaviours of both, measured singly	Mothers of DS children were more directive, and requested more difficult actions. Interactions were mother-led The children did not differ in level of interactive behaviour No group differences in responsiveness. Turn-imbalanced mothers manded more.
Mahoney & Robenalt (1986)	20 DS (a) x = 24 months (b) x = 36 months 20 N (a) x = 14 8 months (b) x = 16 5 months	Develop-mental age Expressive language level Sex Family variables	Home (free play)	Frequency counts	Turntaking behaviours of both, measured singly	Mothers of DS children showed an imbalance of turns and used more mands The DS children spoke more, and used more nonmeaningful speech Mothers of DS were equally responsive but more dominant.

Study	Sample (Children)	Matching Criteria	Observational Context	Analysis	Behaviours Measured	Relevant Findings
Marfo & Kysela (1988)	9 DD (intervention group) 9 DD (nonintervention) 9 DD (short intervention) 18 N (2 groups, CA & MA) All = (4-24 months)	CA MA	Home (free play)	Frequency and sequential and correlational analysis	Maternal and child verbal and nonverbal behaviours	Quantity: Mothers of DD children used more physical contact and less positive gestures, related to MA and not status. But some mothers were more instructing and looked at children more as a unique style. Quality: Interactions more mother-led in DD dyads Mothers equally responsive
Marshall, Hegrenes & Goldstein (1973)	20 MR 20 N All = 36-60 months	CA	Laboratory (free play)	Frequency counts and classification of verbal operants	Maternal and child verbal operants	Mothers of MR children manded more often and used fewer conversational behaviours Children more echoic. The N children used more mands, tacts and interverbal responses.
Maurer & Sherrod (1987)	6 DS 4 N All = 12-36 months	CA MA Verbal age Family variables	Home (free play)	Frequency counts and context coding	Maternal implicit and explicit directives; children's mood, play behaviour and compliance	Mothers of DS children used more directives in similar situations but differences disappeared when matched on MA or verbal age. Mothers more directive when DS children played inappropriately or didn't comply. Explicit directives were more facilitative. All parents decreased commands with children's age.

Study	Sample (Children)	Matching Criteria	Observational Context	Analysis	Behaviours Measured	Relevant Findings
O'Kelly-Collard (1978)	6 DS x = 38 months 6 N x = 18 months	Mental age Language age Sex SES Family variables	Home (free play and structured task)	Frequency counts	Maternal language	Both groups of mothers increased directives in structured situation. No major difference in quality of linguist environments.
Rondal (1977)	21 DS (3-12 years) 21 N (20-32 months) (3 groups of 7 each)	Language level (MLU)	Home (free play, no structure)	Frequency analysis	Maternal and children's linguistic behaviours measured separately	Maternal speech similar in both groups. No differences in controls/directives. Maternal differences found at different language levels, not related to status.
Steneman, Brody & Abbott (1983)	8 DS 8 N All = (4-7 years)	CA Family variables	Home (free play, both parents in different combinations)	Interval and antecedent-consequences coding	Parental managerial roles	Mothers of DS emitted more managerial, teaching and helping behaviours, as well as being more positive verbally and behaviourally DS children were less responsive and active Mothers were more responsive to children s information-seeking behaviours than controls
Tannock (1988a&b)	11 DS (15-57 months) 11 N (10-22 months)	Develop-mental age Language level Family variables	Laboratory (free play)	Frequency counts and antecedent-consequences analysis	Mothers' and children's turntaking control, response control, topic control and reciprocity	Mothers of DS children took more turns and were more controlling of topic No group differences between children in these areas. No differences in mothers or children in response control Mothers of DS exhibited higher levels of interactive behaviour Both groups used controls to involve children in the interaction

the complexity of factors which impact on interactional style such as socio-economic status, contexts, and belief systems. Also, it has been assumed that the same standard for effective interactions applies equally for non-handicapped and mentally handicapped groups. Mahoney (1983) considers this extraordinary in view of the special needs of mentally handicapped children and the variation within normal and handicapped groups.

Even in comparative studies, researchers have often commented on the great variability of the handicapped groups (Cardosa-Martins & Mervis, 1985; Eheart, 1982; Garrard, 1989; Gutmann & Rondal, 1979; Maurer & Sherrod, 1987). For example, Maurer and Sherrod's research found that variability within a handicapped group was reduced when children were matched on MA and verbal age rather than CA, indicating the impact of these variables on parental directive behaviour. Furthermore, their study was significant in highlighting the role of children's behaviour, e.g. compliance, in eliciting maternal directive behaviour.

In the search for individual differences, yet still employing a comparative research design, several studies have focused on specific characteristics which differentiate groups of mentally handicapped children and their mothers (Brooks-Gunn & Lewis, 1984; Davis, Stroud & Green, 1988a, 1988b; Hanzlik & Stevenson, 1986; Terdal et al., 1976; Vietze et al., 1978; Wasserman, Shilansky & Han, 1986). The studies reviewed

Table 2

Contrastive Studies Examining Individual Differences

Study	Sample (Children)	Matching Criteria	Observational Context	Analysis	Behaviours Measured	Relevant Findings
Brooks-Gunn & Lewis (1984)	56 DS 21 DD 34 CP 4 age groups: 3-7 months (n = 17) 8-16 months (n = 27) 17-27 months (n = 39) 26-36 months (n = 28)	CA MA	Laboratory (free play)	Frequency counts and some sequential analysis	Both mother and child responsiveness (proximal, distal and total)	Maternal responsivity more related to MA and behaviourial repertoire than CA. Group differences found in type of responsivity, e.g proximal and distal behaviour
Davis, Stroud & Green (1988a)	5 DS x = 39 0 months 6 CP x = 32.0 months 4 MISC x = 47.5 months 5 nonspecific DD x = 38 4 months	Language levels SES Develop-mental age	Home and laboratory (free play and instruction task)	Frequency counts, content analysis and some sequential analysis	Maternal speech	No group differences in directiveness or quantity of speech. No correlation between maternal and child language variables Group 3 showed more synchronized interaction Quality of maternal speech differed between Groups 3 and 4. Group 4 children had poor language ability. Differences observed in interactions in different contexts
Davis Stroud & Green (1988b)	10 DD x = 38 6 months 10 physical intell delay x = 15 2 months 10 N x = 36 4 months	Family variables Language levels	Home and laboratory (free play and structured task)	Frequency counts	Maternal speech in different contexts	Mothers of DD were more directive (commanding) in free play but not during instructional sessions Mothers were equally sensitive and synchronized to their children's behaviour. Mothers matched language to children's level, not diagnosis

Study	Sample (Children)	Matching Criteria	Observational Context	Analysis	Behaviours Measured	Relevant Findings
Hanzlik & Stevenson (1986)	10 DD x = 21.8 months 10 CP x = 21 months 20 N 8-36 months	MA CA	Home (free play)	Antecedent and consequent coding	Maternal commands, child compliance	Mothers of CP infants used more commands than DD and both used more than N group matched on CA. Differences disappeared in MA matched groups. Mother of CP were more physical Children more compliant when commands used.
Petersen & Sherrod (1982)	10 DS & language delay (25-38 months) 10 language delay (24-48 months) 10 N (18-30 months) (Each group divided into high and low MLU)	Language level (MLU)	Home (free play, no set toys)	Frequency counts of language categories	Maternal language categories (e.g. MLU, request behaviours)	Mothers of DS used more semantically unrelated speech to child's activity then to N group but no difference to language delayed group. Mothers of Group B were less responsive and more physical. All mothers increased language complexity according to child's level.
Terdal, Jackson & Garner (1976)	42 DD (a) 15 low MA (x = 4 yrs, 1 mo) (b) 12 mid MA (x = 6 yrs, 4 mo) (c) 15 high MA (x = 9 yrs, 4 mo) 40 N - 3 age groups (a) x = 2 yrs, 8 mo (b) x = 4 yrs, 10 mo (c) x = 6 yrs, 11 mo	MA	Laboratory (free play and structured tasks)	Response class matrix for analyzing antecedent-consequents	Maternal directiveness/ commands, interactive efficiency for both	Mothers of low MA were more directive than others and controls. Mothers equally responsive. Low MA children were less responsive and interactive. Mothers of DD children gave poorly differentiated consequences to appropriate and inappropriate behaviours.

Study	Sample (Children)	Matching Criteria	Observational Context	Analysis	Behaviours Measured	Relevant Findings
Vietze, Abernathy, Ashe & Faulstick (1978)	28 DD (a) low MDI x = 28.8 months (b) high MDI x = 18.4 months 48 N (seen 3 times) at 2.5, 6.5 and 12.5 months)	None	Home (free play and regular routine)	Transactional coding scheme and analysis of conditional probabilities	Maternal and child verbal and nonverbal behaviours	Maternal dominance in N dyads decreased with age, and interactions became more balanced. The DD group showed reciprocal vocalizations but at a later time. Differences found between low and high MA children in contingent responding, but no differences in mothers.
Wasserman, Shilansky & Hahn (1986)	6 severely MR, physical handicap 6 borderline MR, physical handicap 6 N, physical handicap 6 N, no handicap (see 3 times at 12, 18 & 24 months)	Sex SES CA	Laboratory (free play and separation)	Rating scale	Maternal behaviours of attention-management and orders	Mothers of more retarded children were more initiating, less responsive, and used more attention-management behaviours. Mothers equally reinforcing and positive in interactions. Mothers react to quantity and quality of children's behaviours.

KEY

DD	=	Developmentally Delayed	MR	=	Mentally Retarded
DS	=	Down Syndrome	N	=	Normal
MLU	=	Mean Length of Utterance	MDI	=	Mental Development Index
CP	=	Cerebral Palsy	X	=	Mean

in Table 2 have compared children with various handicapping conditions, or differentiated children according to the degree of mental handicap. Many have found great variation in maternal interactional style and children's behaviours.

Brooks-Gunn and Lewis (1984) studied three groups of handicapped children ranging in age from 3 to 36 months: DS (N=56), developmentally delayed (N=21), and Cerebral Palsy (N=34). There were significant group differences and the mothers of the developmentally delayed children (who also evidenced higher mental functioning) were more responsive than the other two groups. Maternal responsiveness was primarily related to the child's behavioral repertoire, as inferred from MA rather than CA or handicapping condition. Maternal behaviour was not related to diagnostic category except in two incidents: the CP mothers showed more proximal behaviours, e.g., kissing, and the mothers of the developmentally delayed children were more distally responsive, e.g. vocalizing, smiling.

Brooks-Gunn and Lewis (1984) posited that different aspects of maternal interactional style may be related to different features of children's behaviour. While responsiveness may be closely related to general functional level, other features of maternal style, e.g., stimulation efforts, may not be. Even within categories of maternal behaviours, such as responsiveness, there are different levels as in the case of proximal and distal behaviours.

Davis et al. (1988a) compared the maternal linguistic environment of children with various types of mental handicap. Twenty dyads matched on CA and linguistic ability, were subdivided into four groups: five DS, six CP, four miscellaneous of known or tentative diagnosis, and five nonspecific with developmental delays of unknown etiology. There were significant differences in developmental ages between the groups.

Overall, there were few differences between groups but those found were consistent across situations and statistically strong. In both free play and instruction situations, Group Four mothers were most repetitive, used more incomplete, less complex and fewer utterances, engaged the child's attention and used praise more frequently. In contrast, the mothers in Group Three used more complex, less repetitive, and more complete language. There were more synchronized interactions between mothers and children. The DS group was most like the CP group in comparing maternal variables, with no differences in directiveness or quantity of speech. This suggests there are more important determinants of the interaction than just the diagnosis of CP or DS. Differences between mothers may be a complex function of several factors, and the authors suggest it may be more salient to study variability between parents rather than controlling for gross variables such as IQ level or diagnosis.

In another study, Davis et al. (1988b) explored differ-

ences in the maternal linguistic environment of children with and without mental retardation in free play and instruction situations. Employing 30 dyads, they formed three groups: (a) 10 children with moderate to severe mental handicaps, (b) 10 children with physical or intellectual problems individually matched on language ability, and (c) 10 children with no developmental problems matched on CA to the first group. In free play, the mothers of the mentally retarded children used shorter utterances and more commands than language ability-matched groups. However, differences in directiveness disappeared in ability matched groups during instructional sessions. The assumption of directive mothers is severely challenged when the context of the interaction and more appropriate matching criteria is considered.

Similarly, Wasserman et al. (1986) examined 24 dyads divided into four groups on the basis of two risk factors: cognitive and physical disability. The four groups were: (a) severely retarded children with physical handicaps; (b) borderline retarded children with physical handicaps; (c) nonretarded physically handicapped children; and (d) non-retarded, nonphysically handicapped children. From videotapes of free play interactions, they concluded that the mothers of the more severely retarded infants were more initiating, less responsive, and used more attention-management behaviours. Diversity in maternal behaviours was due to the behavioral correlates of low IQ in their children rather than their IQ

score which was unknown to the mothers. Results were explained in terms of Bell's (1977) theory that mothers adjust their behavioral repertoire to elicit higher levels of children's responsiveness.

Terdal et al. (1976) also looked at differences between and within groups of developmentally delayed children of no particular etiology. The group was subdivided according to low, middle, and high MA to assess changes in interactional patterns due to developmental levels. Of particular significance to this discussion, mothers of the low MA group were significantly more directive than all other groups. This suggests that mothers respond to their children's inadequate responding behaviour by increasing structure. Their study also supports the heterogeneity of mothers within handicapped groups.

In contrast, Vietze et al. (1978) found no differences between mothers of high and low functioning children although the lower functioning children were less responsive. The different contexts, analysis employed, and behaviours studied may have contributed to the divergent findings.

Recent research into intra-group differences using correlational designs has disputed the notion that mothers of mentally handicapped children are an homogenous group (Cheseldine & McConkey, 1979; Crawley & Spiker, 1983; Mahoney, 1983; Mahoney, 1988a; Mahoney et al., 1985). Table 3 provides a summary of these individual difference studies.

Table 3

Correlational (Within-Group) Studies of Mother-Child Interactions

Study	Sample (Children)	Matching Criteria	Observational Context	Analysis	Behaviours Measured	Relevant Findings
Cheseldine & McConkey (1979)	7 DS x = 62.5 months	Expressive verbal ability MLU	Home (free play)	Coding of utterances for function, interactive value and MLU	Parental language at pre- and post-intervention	Children who improved had nondirective parents. Individual parents spontaneously chose different strategies to teach a language objective to their children
Crawley & Spiker (1983)	18 DS x = 24.2 months	Developmental age x = 15.8 months	Home (free play)	Global rating scale	Maternal and child behaviours	Variations found in maternal directiveness, sensitivity, and elaborativeness. Mothers also varied their style based on children's behaviour. Directiveness was not related to child competence, except to child interest/initiative.
Mahoney (1983)	2 DS x = 12 months	MDI x = 53.5	Home (free play from age 14 to 24 months, 6 observations)	Frequency counts and sequential analysis	Maternal language (MLU, syntactic integrity, function and topic)	Mothers differed in their speech to children on several parameters. Maternal language changed as children age. Quality of maternal speech is not a developmentally stable concept.

Study	Sample (Children)	Matching Criteria	Observational Context	Analysis	Behaviours Measured	Relevant Findings
Mahoney (1988a)	60 MR (90% DS) 1-3 years (a) x = 12 6 months (b) x = 24 5 months (c) x = 36.9 months	MDI x(a) = 7.3 mo x(b) = 15.1 mo x(c) = 19 3 mo Receptive language/ expressive language (a) x = 8.7 mo/ x = 7.3 mo (b) x = 15 3 mo/ x = 13 1 mo (c) x = 19.4 mo/ x = 19 4 mo	Home (free play)	Frequency counts and factor analysis	Both behaviourial styles and language; mother-child recipro ly	Maternal speech was adjusted to the cognitive and communicative level of child. Mothers varied in directiveness and sensitivity More responsive children had more responsive mothers.
Mahoney, Finger & Powell (1985)	Same as above	Same as above	Home (free play)	Global rating scale and factor analysis	Maternal behaviours - child oriented, quantity of stimulation and control	Using same sample as above mothers become more responsive and sensitive with children's age Maternal style was related to children's cognitive status Maternal control (directiveness and insensitivity) was negatively related to intelligence Higher functioning children had nondirective mothers

KEY

DS = Down Syndrome
MLU = Mean Length of Utterance
X = Mean
MR = Mentally Retarded
MDI = Mental Development Index

Crawley and Spiker (1983) adopted the stance that comparative studies conceal individual differences among mothers of mentally handicapped children. Furthermore, such designs are incapable of interpreting the significance of group differences (i.e. do differences represent parenting deficiencies or facilitative adaptations?). Their study involved 18 two-year old DS children and their mothers in a free play situation in which each partner's global characteristics were rated. Significant variations among mothers were found in such dimensions as directiveness, sensitivity, and elaborativeness. Mothers also varied their behaviour as a function of the child's interactive behaviour. Although causal relationships could not be determined, the more directive mothers had children who initiated less interactions and showed less interest in the interaction. Crawley and Spiker's study provided strong support for the heterogeneity of maternal behaviours, especially as related to children's behaviours.

Mahoney (1983) compared the language of two mothers of DS children who were matched on several variables considered important to language development, such as CA, MA, and language levels. One mother consistently produced more complex and better formed utterances, more information requests and responses to the child's utterances, and more responses that continued the child's topic. The second mother dominated the communicative exchange, changed her syntax more

during the year, used more social speech and nonverbal communication, and produced more utterances unrelated to the child's topic.

Mahoney's (1983) study showed that mothers differed in their speech to children. They also changed their language as children age, suggesting that the quality of maternal language is not necessarily a developmentally stable phenomenon but changes as the parent adjusts to the child. Differences between mothers were not solely due to their children's vocalizations or mental development.

> These results indicate that the practice of analyzing the language of mothers of mentally retarded children as a group phenomenon ignores the potentially important individual differences that exist within this group. Even though many of these mothers may have difficulty interacting with their children, this is not a general characteristic of all mothers of mentally retarded children. (p. 74)

Mahoney (1988a) examined maternal communicational style in a play situation with 60 one-to-three year old mentally retarded children. The children were divided into three groups matched on CA, MA, and language levels. He found that maternal speech was adjusted to the communicative and cognitive competence of the child, but there was a wide range of maternal directiveness and responsiveness independent of their children's stable characteristics. In general, group differ-

ences in maternal communication style seemed to parallel age differences in children's communication. Thus, there was considerable variability in the manner in which mothers and their retarded children communicated.

This was consistent with the Mahoney et al. (1985) findings using the same sample but employing a behaviour rating scale. Mothers changed their style of interaction by becoming more sensitive and responsive as their children aged. In still another study, Mahoney (1988b) observed differences in maternal directiveness were related to how involved the children were in the interaction. Likewise, Tannock's (1988a, 1988b) contrastive study concluded that directiveness was primarily used to encourage the child's participatory behaviour.

The findings from these correlational research studies challenge the homogeneity myth that mothers of mentally handicapped children are uniformly directive. The studies examining individual differences have also demonstrated that mothers vary their behaviour on the basis of their children's behaviours, developmental competencies, age, and medical etiology. The following section deals in greater detail with the relationship between maternal directiveness and children's competencies.

Relationship Between Maternal Directiveness and Child Competence

The literature reveals that mothers of mentally handicapped children are more directive than comparison groups. However, the question has not been addressed as to how much, in what interactive contexts, and whether directiveness facilitates or impedes child development (Marfo, 1990). There is a paucity of research studies relating the cognitive, linguistic, and social competence of mentally handicapped children to maternal interactional style.

While several studies suggest that mothers of mentally handicapped children employ a directive style to ensure the child's participation in the interaction (Mahoney & Robenalt, 1986; Tannock, 1988b), there are varying opinions as to whether such a style promotes development. The implication is that a highly directive style will inhibit the child's initiative and response patterns.

Some studies (Kasari, 1985; Leifer & Lewis, 1984; Maurer & Sherrod, 1987) do suggest that maternal directiveness with mentally handicapped children is developmentally appropriate. Leifer and Lewis (1984) divided 14 dyads into three groups: four nonretarded children, four retarded children matched on CA, and six retarded children matched on expressive language levels to examine their conversational abilities. The 18 to 23 month old DS children all produced more appropriate responses following directive questions, and when matched for

language level, the retarded children showed superior response skills. This is consistent with Maurer and Sherrod (1987) who found that mentally handicapped children increased their compliance and appropriate play following an explicit directive but not an implicit directive.

There are only five studies, all correlational, which have directly investigated the relationship between the development of mentally handicapped children's competence and maternal directiveness (Crawley & Spiker, 1983; Herman & Shantz, 1983; Mahoney, 1988a; Mahoney et al. 1985; Mahoney & Powell, 1985).

Herman and Shantz's (1983) definition of directiveness included three components of directing, interfering and restricting. Twelve 10 year old mentally retarded children were chronologically matched with 19 nonretarded children, and their interactions examined in three contexts: free play, a teaching task, and a cooperation task. The results indicated that the mothers of mentally retarded children who were more controlling and directive had children who were deficient in social problem-solving skills. There was a positive correlation between maternal interactive play and encouragement with problem-solving ability. No relationship existed between the two interactive styles of directiveness and maternal encouragement. Although mothers of mentally handicapped children were directive in every situation, an observed trend was to be less directive during free play suggesting that the mothers

were not solely oriented to the child's deficit but also to the context. The authors concluded that maternal controlling behaviour is a poor elicitor of reflective cognitive ability in mentally retarded children.

In the Herman and Shantz (1983) study, a maternal directive style was found to be negatively related to children's cognitive ability. However, their definition of directiveness includes both directive and intrusive behaviours which are not necessarily synonymous (Crawley & Spiker, 1983). Also, using CA matches does not consider if maternal directive behaviour was developmentally appropriate. The authors also admitted to heterogeneity of style and context within this sample.

In a correlational study of 60 mother-child dyads, Mahoney et al. (1985) used a global rating scale to relate maternal behaviours to children's intellectual competence. A factor analysis of the original 18 maternal behaviour items clustered behaviours into three areas: (a) Child Oriented/Maternal Pleasure, (b) Quantity of Stimulation, and (c) Control, which loaded positively on directiveness and achievement orientation and negatively on sensitivity.

One major finding of this study was that maternal behavioral style is significantly related to children's cognitive status. In fact, ratings of maternal style accounted for 23% of the variance in children's developmental status as measured by MDI (Bayley's Mental Development Index).

Many of the behaviours associated with Factor 1 (Child Oriented/Maternal Pleasure) including sensitivity, enjoyment, and responsiveness were related to positive child development. On the other hand, Factor 3 (Control) was negatively related to the cognitive development of mentally handicapped children. Factor 2 (Quantity of Stimulation) was also negatively related but not significantly. Mothers whose children had the highest Bayley scores were sensitive, responsive, and non-directive.

In the Mahoney et al. (1985) study, it may have been the combination of high directiveness and insensitivity which contributed to lower cognitive competence. Given the heterogeneity of mothers, it is possible that other combinations may have revealed different results.

Mahoney (1988a) also analyzed mothers' communicative style with the same sample of children. Maternal style accounted for 73% of the variance in children's nonverbal communication; 53% of the variance in children's verbal communication; and 27% of the variance in children's behavioral responsiveness. Mothers who were highly responsive and attentive to their children's communication had children with the highest expressive language age scores and who spoke more frequently. Conversely, mothers who were unresponsive and directive tended to have children with lower scores and were the least communicative.

Based on their previous work, Mahoney and Powell (1988) developed the Transactional Intervention Program (TRIP)

designed to promote child competence by fostering a responsive parenting style and decreasing directiveness. The relationship of TRIP strategies to developmental gains was significant. Children of parents who were high in TRIP implementation made relative mental development gains that were 48% greater than those of children whose parents were low in TRIP implementation. However, the effectiveness of TRIP was mediated by the affective characteristics of parents. Children of highly affectionate parents achieved developmental gains that were 27% greater than children of low affect parents. Correlational analysis did not reveal factors other than TRIP that could explain the differences in development attained by the children during intervention. Thus, warm, sensitive and responsive parents who were low in directiveness had children who achieved greater cognitive gains.

Girolametto (1988) randomly assigned 20 developmentally delayed children and their mothers to a treatment program designed to train parents to use conversational skills considered essential to the development of reciprocal social interactions and language development. The mothers in the experimental group increased their responsivity and decreased their topic control. This resulted in their children increasing turntaking ability but no change was observed in their topic control or langauge scores, suggesting that increased maternal responsivity and decreased control does not have a linear effect on children's initiating behaviour. Girolametto

also found that both groups of mothers were equal in responsiveness to their children's turns, but the experimental group mothers responded contingently to their children's uninvolved behaviours significantly more than the controls.

Crawley and Spiker (1983) did not find any correlation between children's cognitive competence and maternal directiveness. They used two indices of cognitive development: a hypothetical child competency cluster of play maturity, social initiative, and social responsivity behaviours, as well as MDI. Directiveness was not related to any of these variables, whereas these child behaviours were positively correlated to MDI. The only maternal behaviours related to MDI were stimulation value and appeal, while a sensitivity cluster (sensitivity, elaborativeness, and stimulation value) was positively related to the child competence behaviours. Child competence variables (MDI and behaviours) were positively related to mutuality, suggesting that higher functioning children had more synchronous interaction with their mothers.

The authors also examined MDI in relation to their subgroups. Mothers who were highly sensitive, stimulating, and directive tended to have higher functioning children. Sensitivity alone does not explain enhanced cognitive development, nor does directiveness necessarily inhibit mental functioning in DS children. They suggest an optimal combination of directiveness and sensitivity may provide the most conducive environment for positive development, and these

qualities combine in complex ways.

Unique differences in mothers occurred independently of their children's developmental level within the three age groups in the Mahoney (1988a) study. It may be that the children's ongoing interactive behaviours partially accounted for such variance. Crawley and Spiker (1983) found that the more directive mothers had children who exhibited less interest in the interaction. This interpretation is in keeping with the transactional model of development; that is, the more episodic, behavioral incidents also contribute to interactive style and developmental outcomes as well as trait characteristics such as intelligence levels.

While theory and research from the literature on normally developing children suggest that a sensitive, nondirective parenting style favors positive child development, is it possible to linearly transfer such findings to a mentally handicapped population given their special needs and characteristics? The literature reviewed in this section is nebulous in making definitive conclusions. Most of the studies reviewed found a negative correlation between maternal directiveness and child developmental level but Crawley and Spiker's (1983) research, and perhaps Girolametto's (1988) as well, casts doubt on this relationship. Rosenberg and Robinson (1988) speculate that the effect of maternal directiveness on the development of mentally retarded children is likely mediated by maternal responsiveness. That mothers of

mentally handicapped children may be both directive and sensitive is intuitively appealing and supported by research. The search for how directiveness is combined with other maternal and child variables may lead to a better understanding of child developmental outcomes.

In summary, it appears that maternal style variables are related to mentally handicapped children's cognitive, social and linguistic competence. It is extremely difficult to determine causal relationships in interactional studies. Does the mother's behavioral style foster or inhibit a child's progress, or do low functioning children elicit a particular interactive style? It is probably a combination of the two explanations which contribute to the child's ultimate development.

Significance and Rationale of the Present Study

Research into mother-child interactions has the ultimate goal of identifying which features of the interaction can lead to positive child development and mutually satisfying interactions. The literature reviewed has suggested that mentally handicapped children, when compared to nonhandicapped peers, are less responsive, initiate less interactions, and provide fewer readable cues. Mothers of mentally handicapped children are generally portrayed as being more directive and less sensitive to their children's signals. This research was designed to more fully explore the relationship between

maternal behaviours and their perception of children's cues.

The vast majority of research into this area has been of a comparative nature--implying that all mothers of mentally handicapped children are similar in their interactional style. This correlational study seeks to describe how heterogeneous these mother actually are. They are not simply reacting to a diagnosis, but may adjust their behaviour based on children's behaviours, developmental competencies, and a host of factors. Most of the contrastive studies reviewed in Tables 1 and 2 examined maternal and child behaviours separately, and not in an interactive context.

Traditionally, maternal directiveness has been equated with intrusiveness and insensitivity, but a growing body of theoretical and empirical literature has challenged this assumption (Crawley & Spiker, 1983; Kasari, 1985; Marfo, 1990; Tannock, 1988b). Not only may mothers vary their behaviour as a function of child variables, but it may be too elementary to consider one interactional characteristic such as directiveness, without regard to how it is combined with other maternal behaviours. This research is intended to show that maternal directiveness is not incompatible with mother maternal qualities such as sensitivity and responsiveness.

Finally, there is a paucity of research into the issue of how maternal directiveness is related to child competence. Only the Crawley and Spiker (1983) study has actually examined how directiveness interacts with other maternal behaviours to

influence child development. Further research is needed into this relatively unexplored domain.

CHAPTER III

Methodology

Subjects

Recruitment.

All of the dyads in this study were participants in the Direct Home Services Program (DHSP), which is a home-based early intervention program for families with developmentally delayed infants and pre-schoolers. It currently serves 300 families throughout the province of Newfoundland and Labrador, by providing the professional services of Child Management Specialists (CMS). Each CMS has a maximum caseload of 13 children and visits the homes regularly to teach parents appropriate methods to facilitate their children's development. It is based on the curriculum model of intervention and emphasizes skill teaching. Under this model, children are assessed by a variety of measures, specific skills are targeted, and teaching methods are modelled by the CMS for implementation by the parent(s).

This current research grew out of a pilot study undertaken by Dr. Kofi Marfo of the Department of Educational Psychology at Memorial University. Having obtained permission from the provincial governing authority, Dr. Marfo met with the Child Management Specialists and enlisted five volunteers to recruit families and conduct part of the data collection. The purpose of the study was explained to the parents by the

CMS and by a standard letter from Dr. Marfo describing the two major objectives: (a) to increase understanding of how children's developmental problems affect the way they interact with adults, and (b) to gain a better understanding of the problems faced by these families. Permission to videotape the interactions was obtained from 25 families out of an original target number of 30. Participation by the parents was completely voluntary, and in compliance with the Ethics Review Committee of the Faculty of Education, Memorial University of Newfoundland.

Description.

Twenty-five mother-child dyads served as the subjects for this study. While the full quota of 25 dyads was employed in the videotaping phase, developmental data was not available for all of the children. Hence, there is full data on only 21 dyads. Only natural families participated, including one grandmother who was the child's primary caregiver.

Three of the dyads came from a large city (St. John's, n=3), while the remainder were located in smaller towns of comparable size (Harbour Grace, n=14; Whitbourne, n=5; and Bell Island, n=3).

Most of the mothers in this study were married (72%). Over 68% had educational backgrounds from the junior high level to vocational school. The average age was 29.1 years, with a standard deviation of 4.6 years, ranging from 22 to 38

years old. Family income was not reported. All were Caucasian.

The children fall under the rubic of "developmentally delayed" as this is the main criteria for their participation in the DHSP. However, a wide range of physical, mental, social and language impairments are evident in this sample. The majority of the children manifest slow language and intellectual impairment of no specific etiology. Table 4 provides a summary of the children's handicapping conditions.

Table 4

Description of Children's Handicapping Conditions

Label	Frequency	Percentage
Down Syndrome	5	20
Spina Bifida	2	8
Hydrocephalus	1	4
Cerebral Palsy	4	16
Visual Impairments	1	4
Speech Delay	2	8
Developmental Delay	8	32
Spina Bifida and Hydrocephalus	1	4
Speech Delay and Ricketts	1	4
Totals	25	100

The children ranged in age from 30 to 70 months, with a mean chronological age of 45.5 months. Their mean communicative and cognitive age equivalents, as measured by the Battelle Developmental Inventory (Newborg, Stock & Wenk, 1984), were 23.62 (SD = 9.74) and 28.62 (SD = 12.74) months respectively. These age equivalent scores are translated into developmental quotients (DQ) in Table 5, which offers a more complete description of the children's developmental status. The BDI has a mean DQ of 100 and a standard deviation of 15.

Table 5

Description of Children's Developmental Status

Variable	Mean	Standard Deviation	N Cases
CA[1]	45.5	12.5	25
Developmental Quotient (DQ)	59.8	13.3	21
Receptive Communication Score	52.0	11.3	21
Expressive Communication Score	50.0	15.6	21
Total Communication Score	50.3	12.6	21
Sex (a) Females			10
(b) Males			15

Note[1] Age in months

Instruments and Procedures

Videotaping of interactions.

The CMS worker who was familiar with the family undertook the videotaping to minimize the effect of strangers on the interaction. Written instructions to the CMS (Appendix A) asked that the videotaping occur in the dyad's own home, preferably the living room area unless a more appropriate setting was determined. Actual videotaping involved both a free play situation and two structured tasks (a three-minute stacking task at the beginning, and a two-minute task at the end in which the mother had to enlist the child's help in putting the toys away).

The main variable in this research was the mother-child interaction during the free play session which lasted approximately 15 minutes. The dyads were provided with a standard set of toys as follows:

Stacking rings and rod	Stacking blocks
Xylophone	Brush/comb/mirror set
Ball	Picture Book

Toy vehicle with moving parts (The Donut Truck)

Pull toy telephone car

Each dyad could choose the manner of play and the amount of toys used. The only restriction was that mothers were to confine the interaction to a small area of the room. Procedures were also outlined for dealing with disruptions to ensure an accurate time schedule.

Coding of videotaped interactions.

The mother-child behaviour coding system used in this study was developed principally by Dr. Kofi Marfo, in collaboration with this author. It was based on global rating scales devised by Crawley and Spiker (1983) and Mahoney et al. (1985). It consists of six child behaviours, nine maternal behaviours, and one mutuality rating, all employing a five-point Likert scale. Ratings were based not on specific incidents but on the quantity of behaviors and general tone of the interaction. The complete rating scale with definitions of each behaviour is included in Appendix B.

Molar ratings condense classes of a behaviours such as directiveness. They allow observers to make judgements based on a number of behavioral acts involving both members of the dyad. Errors in ratings are minimized by well-defined categories and observer training (Rosenberg & Robinson, 1988).

Observer training and reliability.

Two coders trained for approximately twenty hours in the use of the behaviour rating system. Rater one (the author) was unaware of the developmental scores of the children or family status characteristics. Rater two was a fourth year psychology student experienced with developmentally delayed children. She was both unaware of the developmental scores of the children and blind to the purposes of the study.

During the initial phase of training, disagreements were

resolved 100% by discussion. In the latter phase of training, nine videotapes (from an American study) were coded independently. During the actual coding of videotapes for this study, interrater reliability was obtained on a random selection of 15 dyads. Agreement within one scale point was assessed formally using Finn's (1970, 1972) procedure for ascertaining the reliability of categorical data. Finn's r's were in the good to excellent range: .85 to .96 for children's behaviors and .75 to .93 for maternal behaviors. Table 6 gives a breakdown of inter-rater agreement for each interactional behaviour.

Administration of instruments.

Data was collected on the intellectual and language functioning of the children to determine any relationship between these variables and maternal style. This assessment was completed independently of the videotaping by a research assistant with a Masters degree in speech therapy and some experience with parent-child interaction research.

Relevant to this research, the Battelle Developmental Inventory (BDI) was administered to all children. The BDI is a useful measure for obtaining developmental information about children from birth to eight years. The BDI covers five domains of which two were used in this study: cognitive and communication. The cognitive domain assesses conceptual skills including perceptual discrimination, memory, reasoning

Table 6

Inter-Rater Agreements for Behaviour Rating Scale

Behaviours	Percentage of Agreement
Child Behaviours	
Play Maturity	95
Interest	96
Social Initiative	96
Social Responsibility	85
Object Initiative	93
Affect	94
Maternal Behaviours	
Warmth	89
Sensitivity	89
Stimulation Value	85
Responsiveness	89
Elaborativeness	77
Wait Time	75
Pacing	89
Directiveness	89
Intrusiveness	85
Mutuality	93

and academic skills, and ability to grasp concepts and draw relationships among objects. The communication domain measures receptive and expressive communication skills. Receptive skills involve the ability to discriminate, recognize, and understand sounds, words, nonverbal signs and gestures. Expressive skills involve the ability to produce and use sounds, words, and gestures in order to relate information to others. Each BDI took approximately thirty minutes to administer.

A short questionnaire using a five-point Likert scale was given to the parents assessing how well they are able to read their children's cues. This scale is included in Appendix C. A reliability analysis of the Readability Scale produced a standardized Cronbach's Alpha of.78.

Research Design

This study was designed to examine the interactional process by identifying the factors which mediate the reciprocal influences on the mother-child dyad. By examining the interrelationship between complex variables, it may be possible to specify conditions for optimal child development.

Therefore, the design employed in this study is correlational and differs from most research which has centered on comparing the interactions of mentally handicapped children and their mothers with a nonhandicapped group. Currently, we know more about between group differences than

we do about variations within groups of dyads with handicapped children.

Following the arguments of Crawley and Spiker (1983), a comparative design often fails to distinguish the individual differences within the handicapped group, and may perpetuate the homogeneity myth. A correlational study of within-group differences can have useful implications of designing interventions for individual dyads.

Data analysis.

Pearson product moment correlations were performed to determine the interrelationships among the maternal and child behavior ratings and the children's developmental status.

The use of multiple correlations gives rise to the possibility that some findings may occur by chance. One way of addressing the problem would be to adjust the alpha level. However, given the nature of this study and small number of subjects, this procedure was not utilized.

Finally, the relatively small sample size precluded use of statistical measures. References to maternal subgroups and behavioral clusters are purely descriptive. They are included to add force to the data or provide a meaningful grouping.

CHAPTER IV

Results and Discussion

This chapter presents the results of statistical analyses of the data obtained in this study and a discussion of relevant findings.

Question 1

What is the relationship between maternal perception of the child's readability and maternal interactional style?

This first question concerns the relationship between how well mothers understood their children's signals and maternal characteristics. Specifically, it was anticipated that children whose cues/signals were difficult to interpret, would have more directive, and perhaps, less sensitive mothers.

Pearson correlation coefficients were obtained on 18 dyads who had completed the Readability Scale, relating maternal behaviours to the children's readability. Results are presented in Table 7.

As expected, mothers who perceived their children's cues to be easily readable were more warm, sensitive, responsive, elaborative, and allowed more wait time in their interactions. There was also more mutuality in the interactions of these dyads.

These findings are generally consistent with both the theoretical and empirical literature (Brooks-Gunn & Lewis,

Table 7

Correlations Between Perceptions of Children's Readability and Maternal Interactional Style

		Readability	Significance
1.	Warmth	.56	.008**
2.	Sensitivity	.56	.008**
3.	Stimulation Value	.32	.096
4.	Responsivity	.55	.009**
5.	Elaborativeness	.69	.001**
6.	Wait Time	.51	.017*
7.	Pacing	-.16	.266
8.	Directiveness	.15	.279
9.	Intrusiveness	-.36	.072
10.	Mutuality	.68	.001**

*p<.05

**p<.01

(using two-tailed test of significance)

1984; Dunst, 1985; Goldberg, 1977; Terdal et al. 1976; Vietze et al., 1978). That is, mothers of mentally handicapped children are more responsive to children when they can

understand their signals (presumably at higher developmental ages) using cognitive, behavioral and linguistic measures.

The relationship between intrusiveness and readability, although not statistically significant ($r=-.36$, $p=.07$) was in the expected direction. The parent's behavior was more intrusive when she couldn't discern the child's signals.

Interestingly, there was no relationship between maternal directiveness and readability ($r=.15$, $p=.28$). That is, mothers who may have experienced difficulty in interpreting their children's cues, were not necessarily more directive. This is in contrast to some research which has suggested that mothers increase their directive behaviour if they can't interpret their children's cues (Cardosa-Martins & Mervis, 1985; Eheart, 1982; Terdal et al., 1976). This study found that while perception of children's readability was associated with maternal warmth, responsivity and sensitivity, it was not related to maternal directiveness.

Question 2

What is the nature of the interrelationship among maternal directiveness, maternal intrusiveness, and other maternal behaviours?

One major goal of this study was to examine individual differences in maternal behaviour within a sample of mentally handicapped children and their mothers. This was achieved in two ways: by examining relationships among maternal and dyadic

behavioral style ratings, and by delineating subgroups of mothers according to their behaviours.

Pearson correlation coefficients were performed first on maternal variables. Table 8 presents correlations among the maternal behaviour ratings and mutuality.

Examination of Table 8 suggested two distinct behaviour patterns or clusters. Cluster 1 consisted of five interrelated maternal behaviours of sensitivity, responsivity, warmth, elaborativeness, and wait time. Mutuality in interactions was also positively related to the first four maternal behaviours ($p<.001$), and to wait time ($p<.01$). Cluster 2 is composed of two positively correlated behaviours, directiveness and intrusiveness ($r=.53$, $p<.01$). While intrusiveness was negatively related to all behaviours in Cluster 1 as well as to mutuality, directiveness was negatively related to only wait time ($r=.50$, $p<.01$). This suggested that while directive mothers may not allow their children adequate response time, directiveness doesn't preclude other behaviours in the sensitivity cluster nor mutually satisfying interactions.

Directiveness was also positively related to pacing ($r=.61$, $p<.01$), which indicated that mothers who set a faster pace were more directive. Pacing was not related to any of the behaviours in Cluster 1, nor to mutual interactions. Further statistical measures, such as cluster analysis, were not appropriate for the sample size.

Table 8

Correlations Among Maternal Behaviours

		1	2	3	4	5	6	7	8	9	10
1.	Warmth	-	.74***	.08	.68***	.80***	.52**	.12	.15	-.52**	.78***
2.	Sensitivity	-	-	-.02	.85***	.59***	.75***	.08	.20	-.59***	.76***
3.	Stimulation Value			-	.15	.18	.06	-.23	.17	.01	-.01
4.	Responsivity				-	56**	.80***	-.12	-.30	-.63***	.67***
5.	Elaborativeness					-	35*	.20	.28	-.35*	.69***
6.	Wait Time						-	30	.50**	- 80***	.53**
7.	Pacing							-	61**	.29	.03
8.	Directiveness								-	53**	09
9.	Intrusiveness								-	-.48***	
10	Mutuality									-	

*p< 05 **p< 01 ***p< 001 (using two-tailed test of significance)

To further examine individual differences in the interactions of mothers and their mentally handicapped children, it was decided to look at subgroups of mothers who varied in directiveness as a function of sensitivity, intrusiveness, and mutuality. To establish these subgroups, mothers who received ratings of four or five on the Likert scale were recorded as exhibiting High maternal behaviours. Moderate ratings were given to mothers who fell in the middle of the scale. Mothers received a Low classification if they had ratings of 1 and 2. Table 9 presents a description of these subgroups as statistical analysis was not possible with such small numbers.

Table 9 suggests that there was considerable variability in maternal style and how directiveness is integrated with other interactional characteristics. For example, mothers may be high in directiveness and high in sensitivity (n=5, 20%), or moderately directive and still sensitive (n=7, 28%). Only one mother (4%) showed high directiveness and low sensitivity.

The findings regarding the interrelationship of directiveness and mutuality were similar. Of the 25 mothers, eight or 32% were highly directive but still had highly mutual interactions, while a similar number were moderately directive with mutual interactions for a total of 64%. Only two mothers (8%) were low in directiveness and had interactions marked by high mutuality. Conversely, only one dyad (4%) exhibited an asynchronized interaction with a highly directive mother.

In looking at intrusiveness which was correlated with directiveness, Table 9 gives a more differentiated picture of this relationship. Only three mothers (12%) were highly directive and intrusive, and one (4%) was moderately directive and highly intrusive. Conversely, seven mothers (28%) were highly directive but not intrusive and a further 28% were moderately directive but not intrusive. Combining these figures, a picture emerges that mothers who are directive are not necessarily intrusive (56%).

Given that the present study found a moderate correlation between directiveness and intrusiveness, and the importance of these two behaviours in the literature, this descriptive analysis emphasizes the point that this is not a strictly one-to-one relationship. Maternal directiveness combines multifariously with intrusiveness and other maternal behaviours such as sensitivity to create an individualized interactional style.

In summary, this study has found significant variations in maternal interactional style. There is partial support that there are subgroups of mothers who vary in directiveness, sensitivity, and other interactional characteristics such as intrusiveness. Mothers may be both directive and sensitive yet not necessarily intrusive, as these qualities may be combined in complex ways. The portrayal of maternal directiveness as a unidimensional and inherently negative style was not supported in this study as no relationship to the sensi-

tivity cluster was observed.

Table 9

Description of Subgroups of Maternal Behaviours

	Directiveness			
	High	Moderate	Low	Total
Sensitivity				
High	n=5	n=7	n=2	14
Moderate	n=5	n=2	n=2	9
Low	n=1	n=0	n=1	2
Totals	11	9	5	25
Mutuality				
High	n=8	n=8	n=2	18
Moderate	n=2	n=1	n=1	4
Low	n=1	n=0	n=2	3
Totals	11	9	5	25
Intrusiveness				
High	n=3	n=1	n=0	4
Moderate	n=1	n=1	n=0	2
Low	n=7	n=7	n=5	19
Totals	11	9	5	25

Question 3

To what extent are maternal interactional behaviours associated with (a) on-going child behaviours, and (b) child developmental status?

The present study first examined how mothers varied in their behaviours as a function of children's interactive behaviours. Table 10 suggests several significant relationships between children's and mothers' behaviours.

Children who were more interested in the interaction, had mothers who were more responsive ($r=.38$, $p<.05$), elaborated more ($r=.34$, $p<.05$), and allowed sufficient wait time ($r=.49$, $p<.01$). More socially responsive children also had mothers who showed their responsivity ($r=.40$, $p<.05$), and allowed adequate response opportunities ($r=.59$, $p<.01$). The amount of the children's affectionate behaviour was positively related to maternal warmth ($r=.34$, $p<.05$), sensitivity ($r=.34$, $p<.05$), elaborativeness ($r=.41$, $p<.05$), and mutual interactions ($r=.45$, $p<.05$).

Several significant relationships existed between pacing and directiveness and children's behaviours. Mothers who tended to lead faster paced interactions had children who were less mature at play ($r= -.36$, $p<.05$) and exhibited less social initiative ($r= -.62$, $p<.001$) and less social responsiveness ($r= -.39$, $p<.05$).

Table 10

Relationships Between Maternal Behaviours, Children's Behaviours and Developmental Competence

		1	2	3	4	5	6	7	8	9	10
1.	CA'	-.24	-.21	.34*	-.21	-.02	-.05	-.10	-.13	-.15	-.31
2.	Communication DQ'	-.08	-.00	.08	.11	.07	.04	-.50*	-.43*	-.19	-.06
3.	Cognitive DQ'	-.48*	-.12	-.19	-.11	-.30	-.05	-.66***	-.54**	-.17	-.25
4.	Play Maturity	-.22	.05	.38*	-.04	-.06	23	-.36*	-.25	-.09	-.17
5.	Interest	.13	.23	.02	38*	.34*	49**	-.20	-.18	-.28	.15
6.	Social Initiative	-.11	05	28	.02	-.11	31	-.62***	-.57**	-.37*	-.26
7.	Object Initiative	-.22	.13	-.07	.17	-.36*	36*	-.25	-.71***	-.33	-.26
8.	Social Responsiveness	.16	.33	10	.40*	18	59**	-.39*	-.31	-.37*	.39*
9.	Affect	.34*	.34*	01	.31	.41*	27	-.12	.07	-.25	.45*

*p<.05 **p<.01 ***p<.001 (using two-tailed test of significance)

Note: 'Sample size = 21

1	=	Warmth	6	=	Wait Time
2	=	Sensitivity	7	=	Pacing
3	=	Stimulation Value	8	=	Directiveness
4	=	Responsivity	9	=	Intrusiveness
5	=	Elaborativeness	10	=	Mutuality

Mothers who were more directive had children who initiated less social interactions ($r = -.57$, $p < .01$) and interactions with objects ($r = -.71$, $p < .001$). Although not statistically significant, the trend was in the expected direction that directive mothers had less socially responsive children ($r = -.31$, $p = .06$).

This finding on the relationship between directiveness and children's initiating behaviour is consistent with the literature reviewed (Cunningham et al., 1981; Eheart, 1982). These correlational analyses do not tell whether mothers are more directive because their children are less interactive, or if the children's behaviour is due to a directive maternal style. However, establishing a link between these behaviours is a first step in research designed to discern the direction of influence. Variations were observed in mothers as a function of their children's behaviours, again challenging the assumption of homogeneity.

The second objective of this research question was to explore the relationship between maternal behaviours and children's developmental competence. This was accomplished by correlating maternal, child, and dyadic interaction ratings with children's cognitive and language maturity.

The first set of correlations, previously presented in Table 10, shows the relationship between maternal variables and measures of children's competence. Maternal interactional style was related to children's chronological age in only one

instance: mothers tended to offer more stimulation to older children ($r=.34$, $p<.05$).

Mothers who were more directive ($r= -.43$, $p<.05$) and had faster paced interactions ($r= -.50$, $p<.05$) tended to have children whose communicative abilities were not so well developed. A similar pattern emerged with measures of children's cognitive functioning. That is, a significant negative relationship existed between maternal directiveness and children's cognitive status ($r= -.54$, $p<.01$), and between pacing and cognitive status ($r= -.66$, $p<.001$).

Interestingly, there was little relationship between the maternal sensitivity cluster and measures of child competence. The only significant correlation existed between maternal warmth and cognitive status: mothers were less warm to more developmentally competent children ($r= -.48$, $p<.05$).

Because children's behaviours are often seen as indices of developmental competence, a second set of correlations explored this relationship. Table 11 presents the results of this analysis.

Children's chronological age was significantly related to their cognitive status ($r=.42$, $p<.05$) but not to communication status. However, children who were higher functioning intellectually did possess greater language ability ($r=.65$, $p<.01$).

Table 11

Relationships Between Children's Behaviours and Developmental Competence

		1	2	3	4	5	6	7	8	9	10
1.	CA[1]	-	.08	.42*	.45*	.18	.46*	.14	.16	.03	-.31
2.	Communication DQ[1]	-	-	.65**	-.04	-.09	.16	-.13	.12	-.21	-.06
3.	Cognitive DQ[1]	-	-	-	.35	.19	.45*	.11	.37*	.06	-.25
4.	Maturity				-	.31	.54**	.30	.34*	.06	-.17
5.	Interest					-	.30	.60**	.04	.65***	.15
6.	Social Initiative						-	.33	.33	.07	-.26
7.	Social Responsivity							-	.14	.56**	.39*
8.	Object Initiative								-	-.26	-.26
9.	Affect									-	-.45*
10.	Mutuality										-

*p<.05 **p<.01 ***p<.001 (using two-tailed test of significance)

Note: [1]Sample size = 21

The children's cognitive index was significantly related to at least two behaviours: social initiative ($r=.45$, $p<.05$) and object initiative ($r=.37$, $p<.05$). Furthermore, the relationship between play maturity and cognitive status was almost significant ($r=.35$, $p=.06$).

It was anticipated that there would be a strong relationship between children's developmental status and certain behaviours as in the Crawley and Spiker (1983) study. They found that children's MDI was positively correlated with a hypothetical child competency cluster of play maturity, social initiative and social responsivity. While the present study found no relationship between social responsivity and cognitive functioning, the other relationships were partially confirmed.

In summary, mothers in this study tended to adjust their behaviours both on the basis of their children's developmental status and on-going behaviours. Specifically, mothers of mentally handicapped children who exhibited more directive behaviours, had children who (a) were lower functioning intellectually and communicatively, (b) initiated less social interactions, and (c) initiated fewer interactions involving objects. Children's initiating behaviours, and to a lesser degree play maturity ($p=.06$), were associated with their cognitive status.

Using these three child behaviours (social initiative, object initiative and play maturity) as a hypothetical child

competency cluster, some conjectures may be drawn. Throughout these correlational analyses a strong relationship between directiveness and pacing ($r=.61$, $p<.01$) has been evident. Neither behaviour was correlated with the sensitivity cluster nor with mutual interactions. Both behaviours were negatively associated with children's developmental status and to the hypothetical child competency cluster in various combinations. For example, pacing was negatively correlated with play maturity, social initiative, and social responsiveness. Directiveness was negatively correlated with social and object initiative, and with social responsiveness, but not significantly so.

This suggests that it may be feasible to re-examine directiveness in terms of its relationship to other maternal characteristics, especially pacing. Returning to the theme of heterogeneity, one may speculate that the development of child cognitive competence (using developmental or behavioral indices) is not a linear function of how directive a mother is, without regard to its multidimensionality.

There were relatively few associations between the maternal sensitivity cluster and either children's developmental status or behaviours. One explanation is that highly sensitive and non-directive mothers do not necessarily provide the most conducive environment for mentally handicapped children. Rather, an optimal combination of directiveness and sensitivity may be the most appropriate environment for

handicapped children. Unfortunately, with a limited sample size, it was not possible to perform statistical analyses relating child competence to the subgroups previously described.

The mothers in this study tended to adjust their behaviours more on the basis of their children's interactive behaviours than on stable characteristics such as MA, CA, or language levels. Table 12 (another look at Table 10) clarifies this relationship. One explanation is that what the child is doing at that moment may affect parental behaviour more than IQ or language level alone. Such an explanation would be in accordance with a transactional model of parent-child interaction. While the child's disability may place constraints on his interactive abilities, other transient variables exert an influence also. Marfo (1988) describes these transient characteristics as the "behavioral and socio-emotional events of a spontaneous or temporary nature that exert influence on the dyadic interaction process at any given time" (p.234).

The transactional view of mother-child interactions forces us to look at individual differences because no two dyadic partners are quite the same. Each dyadic unit is the product of a unique history of ongoing adjustments based on the capacities of each partner, and dependent on the interactive context.

Table 12

Description of Interaction Between Maternal Behaviours, Children's Developmental Status, and Behaviours

Maternal Behaviour Variable		Children's Developmental Status Variable	Children's Behaviour Variable
1.	Warmth	Cognitive DQ	Affect
2.	Sensitivity		Affect
3.	Stimulation Value	CA	Play Maturity
4.	Responsivity		Interest
			Social Responsiveness
5.	Elaborativeness		Interest
			Affect
			Object Initiative
6.	Wait Time		Interest
			Social Responsiveness
			Object Initiative
7.	Pacing	Cognitive DQ	Play Maturity
		Communication DQ	Social Initiative
			Social Responsiveness
8.	Directiveness	Cognitive DQ	Social Initiative
		Communication DQ	Object Initiative
9.	Intrusiveness		Social Initiative
			Social Responsiveness
10.	Mutuality		Affect
			Social Responsiveness

Conclusion

This research has revealed several interesting findings on maternal interactional behaviour, and specifically directiveness, as it relates to children's readability, to other maternal characteristics, and to children's competence and ongoing behaviours. These findings are summarized in the following chapter with implications for further research.

CHAPTER V

Summary and Implications

The first purpose of this research was to examine the relationship between mothers' perception of children's readability and maternal behaviours. Contrastive studies have suggested that mothers of mentally handicapped children are different than mothers of non-handicapped children, often due to the inadequate feedback they receive from their children. Support was found for previous research and theory that how well mothers perceive children's signals is related to how they interact with their mentally handicapped children. Disabled children who appear to provide less interpretable information to their mothers may experience more problems in interactions. Mothers responded more sensitively and warmly to children whose cues they could understand.

However, this study did not find a relationship between recognition of children's signals and maternal directiveness per se. That directiveness was not related to perception of children's signals in this study may have been due to the influence of early intervention which stressed a teaching model. Another explanation is that maternal behaviour may be the result of their own beliefs about the children's ability (Parke, 1978) and unrelated to children's characteristics. Also, because of the small sample size, this relationship may have been significant with another group. Future research

could more precisely define the behavioral signals which children emit, how these signals relate to specific maternal behaviours, and in what contexts.

The second, and major purpose of this investigation, was concerned with individual differences in mother-child interactions. Results partially support the findings of Crawley and Spiker (1983) that there are significant variations in mother-child interactional patterns. The mothers in this study exhibited behaviours in various combinations and to different degrees. Some mothers were directive and sensitive, others were directive and intrusive. Directiveness is not incompatible with sensitivity and responsivity nor with mutually satisfying relationships. Mothers also tended to adapt their style to the ongoing, interactive behaviours of their children, which is a source of within group variation.

This study suggested that a reconceptualization of maternal directiveness is necessary. Future research should reconsider its portrayal of directiveness as a unilateral, negative style without regard to its context or how it is integrated with other behaviours such as sensitivity and pacing. Maternal directiveness has to be considered as one dimension of an interactional style that combines in complex ways with other characteristics and is somewhat dependant on children's behaviours and developmental status.

The third purpose of this study was to examine the relationship between maternal style variables, children's

development, and on-going behaviours. It was found that while maternal style was related to both measures of child competence and child behaviours, the more significant relationships existed between maternal style and child behaviours. This research was unable to predict if an optimal combination of maternal directiveness and sensitivity would facilitate child development. The next step would be to determine how much directiveness, in what interactional combinations, and at which developmental ages fosters or impedes child development. The inclusion of a comparison group of high and low functioning mentally handicapped children would enhance future research.

The evidence presented in this study does suggest that the role of directiveness in child development may need to be re-examined. The absence of a significant relationship between directiveness and other maternal behaviors believed to facilitate child competence, as well as how it combines intricately with other maternal qualities such as sensitivity, implies that directiveness may not have an inherently negative impact on child development. More research is needed in the area of how maternal directiveness interacts with other maternal behaviors to influence child development.

Results from this study highlight the need to examine not only individual behaviours of each member of the dyad, but also the interactive context of the behaviours. Variations in interactional patterns were explored within a transactional

framework. For example, parents who were more directive had children who initiated less interactions. While this may be an adaptive response to the children's diminished capacities, this is not synonymous with being a facilitative response. Mentally handicapped children need to acquire certain skills and it remains to be seen whether increased amounts of maternal directive behaviour helps or hinders these children in acquiring cognitive, linguistic, and social strategies.

Several methodological issues need to be considered in the interpretation of results. First, the generalizability of the findings is constrained by the variety of handicapping conditions in the sample. However, it does make a valuable contribution as many mentally handicapped children exhibit a range of problems. Most research has centered on DS children because of methodological problems but this other population cannot be ignored (Davis et al., 1988a; Walker & Crawley, 1983). Also, the intervention effects on maternal behaviours were not assessed. It is conceivable that because the DHSP is a teaching intervention program, mothers in this study may have been acting in accordance to what the professionals advised them to do.

Secondly, statistical analyses would be enhanced by a larger sample selection. The relatively small sample size limited statistical procedures available for both determining predictor variables and designating subgroups. In addition, the large number of correlations may have compromised some of

the findings.

In spite of the limitations of this study, the findings on individual differences have important implications for future research and theory. Mothers adjust their behaviours on a host of variables beyond the child's diagnosis. They are a heterogenous group - a finding which contrastive studies have concealed. Directiveness does not preclude responsiveness and sensitivity, and is only one aspect of a complex interactional style. Thus, it cannot be considered in isolation from other interactional variables. Another implication of the multidimensionality of maternal directiveness is that future research should not rely so much on the developmental consequences of one behaviour, but rather on how it combines with other maternal and child behaviours to influence the formation of competence in children.

Individual differences in mother-child interactions is a vast, relatively unexplored area. Contrastive studies have greatly contributed to our knowledge of the dynamics in interactions, and provided the direction for future research. However, correlational and multivariate designs can complement these contrastive studies by contributing information on individual differences (Walker & Crawley, 1983). The greatest problem with such designs is the lack of a large sampling pool. With the exception of the Mahoney (1988a) study which employed 60 dyads, this study used the largest number of subjects in a correlational design thus far. It is necessary

for future research to replicate and expand these results, using larger samples to examine sources of individual differences, and the relationship of variations to competence in mentally handicapped children.

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APPENDIX A

Draft Videotaping Guide

PARENT-CHILD INTERACTION STUDY

Department of Educational Psychology

Memorial University of Newfoundland

Principal Investigator: Dr. Kofi Marfo

Funding Agency: Spencer Foundation, Chicago

VIDEOTAPING PROCEDURES

The purpose of the videotaping is to obtain a sample of interaction between the primary caregiver and the child in free-play and during structured activities. The recording should be perfect, since the video will be analyzed later for patterns of interaction between parent and child. Only the parent, the target child, and the individual doing the recording should be present during videotaping. The entire taping session should not exceed 20 minutes.

Setting

All interaction samples will be obtained in the natural environment of the dyad's own home. Interactions should be arranged to take place in an area in the living room, unless some other location in the house is deemed more appropriate.

Because the goal is to obtain a sample of interaction that is as close to the dyad's natural routine interactions as possible, it is entirely up to the parent to determine whether she/he would sit on a chair or sit/lie on the floor.

The camera should be positioned on a tripod approximately 8 to 10 feet from the dyad and should be aimed at the dyad and whatever activities or objects they are engaged with. Avoid directing camera towards a window. As much as possible only the small area where the interaction is occurring should be filmed. It will be necessary, therefore, to request the

parent to keep the child within that small area (you might want to show parents what the limits of this area will be, after setting up the camera on the tripod).

MATERIALS

Stacking rings	Building/Nesting blocks
Xylophone	Toy telephone
Ball	Mirror/hair brush set
Picture book	Toy bus/vehicle with movable wooden/ plastic figures

STRUCTURED TASKS

1. **Stacking Rings** (Time Limit: 3 minutes)

Mother's task is to get the child to stack as many of the rings as possible. Mother is free to go about task in any manner she wishes. This task should be completed just prior to free play.

2. **Getting Child to Put Toys Away** (Time Limit: 2 minutes)

Mother's task, after the 15 minutes of free play, is to get the child to put the toys away in the toy box. Again, mother is free to go about this task in any way she wishes or feels comfortable with.

FREE PLAY USING STANDARD TOYS (Time Limit: 15 minutes)

Mother and child will engage in free play around the standard toys provided. Mother will try to keep the interac-

tion within the small section of the living/play room chosen for this purpose. There will be no prescription as to how mother and child should play. The dyad is at complete liberty to use all or some of the toys in any way they wish.

SEQUENCE OF ACTIVITIES

1. Stacking rings (structured)
2. Free play
3. Putting toys away (structured)

INSTRUCTIONS

1. Spend some time chatting and interacting with the child to create a relaxed atmosphere. Discuss the instructions outlined below and the sequence of activities with the mother.

Instructions

We are interested in observing _____ (name of child) in a play session with you. Please try and pretend as if I am not here, and play with _____ as you would normally do. You can use all or some of the toys provided in any way you and _____ wish. Feel free, if you wish, to sit or lie on the floor. If you prefer to sit on a chair or couch, feel free to do so.

Before the play session, however, we would like you to spend some three minutes trying to get _____ to stack as many of these rings (show them) as he/she can on

the stacking pole. I will signal to let you know when to begin or stop an activity.

After the 15 minutes of free play, we would like you to get the child to put the toys away in the toy box. You will have 2 minutes to do that, and I will let you know when to start and stop.

2. Present stacking rod rings to mother (rings should not be stacked at time of handing them over to mother). Instruct mother to start task, and begin recording as soon as you have given the instruction. At the end of 3 minutes stop recording, and place the box of toys (including the stacking rings and rod) beside mother. Signal mother to start, and begin recording.
3. After 15 minutes of recording free play, signal mother to stop and get the child to put the toys away (in the toy box).

DEALING WITH DISRUPTIONS

Disruptions are likely to occur, especially during the 15-minute free play session. If child strays from the interaction area or runs, say, to the kitchen for food or drink, stop recording and resume it when he/she comes back. If mother has to break the session for some reason, a similar procedure should be followed. In all cases, however, please keep track of the time to ensure that you obtain a total of 15 minutes of interaction.

If the child gets to irritable, tired, or uninterested to continue, you may discontinue videotaping and arrange a new appointment.

APPENDIX B

The Parent-Child Behaviour Rating Scale

THE PARENT-CHILD BEHAVIOUR RATING SCALE

(Adapted from the work of
Crawley & Spiker and Mahoney & Robenalt)

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PARENT-CHILD BEHAVIOUR RATING SCALE

CHILD BEHAVIOURS

Play maturity: Level of play exhibited during the interaction, ranging from simple banging and mouthing to functional/appropriate use of toys in pretend play.

1. No evidence of functional play or interaction with toys/objects beyond simple banging or mouthing
2. Some, but almost negligible functional use: throughout interaction functional use is observed no more than once.
3. Moderate functional play: child displays functional play with up to half of all toys/objects encountered.
4. High functional play: child displays functional play with over half of the toys/objects encountered.
5. Very high functional play: child displays functional play with almost every toy/object encountered.

Interest: Extent to which the toys and activities initiated by mother captured child's interest/attention. The interested child consistently focuses attention either on own toys or on activity performed by parent. The disinterested child stares into space, locomotes away from toys,

stares at camera, or performs other activity indicating lack of interest.

1. Highly unenthusiastic. Child shows no evidence of interest in or enjoyment of the interaction.
2. Minimally enthusiastic: Child displays some, but little, interest or enjoyment in the interaction.
3. Moderately enthusiastic: Child shows as much enjoyment and enthusiasm as would be expected for age level.
4. Highly enthusiastic: Child shows more than average level of enjoyment and enthusiasm.
5. Extremely enthusiastic: Child displays high levels of interest throughout the interaction.

Social Initiative: Extent to which child initiates social interactions, ranging from no initiation to consistent use of a wide variety of initiating behaviours (e.g., pointing to, talking to, visually checking with mother).

1. Very low initiation: Child rarely ever initiates conversation or nonverbal social interactions.
2. Low initiation: Child occasionally initiates some social interaction.
3. Moderate initiation: Child initiates interactions fairly frequently throughout the session, but the parent definitely sets the pace for most interactions.

4. High initiation: Child is very active and initiates a significantly large number of interactions during the session, although the parent initiates quite a substantial amount of the interaction.
5. Very high initiation: Child essentially sets the pace of most of the interactions between him/herself and the parent.

Social responsivity: Extent to which child responds to parent's initiations. The responsive child eagerly and appropriately responds (e.g., through visual attention, attempted compliance, or active compliance) to most parental initiations. The nonresponsive child, on the other hand, consistently ignores or actively resists mother's initiations.

1. Unresponsive: Child consistently ignores or actively resists parent's initiations and cues for action.
2. Minimally responsive: Child occasional responds to some of the parent's initiations and cues.
3. Moderately responsive: Child responds to a fairly reasonable number of parental initiations and cues.
4. Responsive: Child responds very well to most of the parent's initiations and cues.
5. Very Responsive: Child does not only respond well to parent's initiations and cues, but also shows a

great deal of anticipation of such initiations.

Object initiative: Extent to which the child initiates activities with toys/objects independently of maternal prompting. May range from no independent initiations (child is disinterested, totally passive, or acts on objects only in response to maternal prompts) to consistent independent initiation (child acts on objects frequently and almost always independently).

1. Very low initiation: Child rarely ever initiates interactions with toys and objects.
2. Low initiation: Child occasionally initiates some interaction with toys/objects.
3. Moderate initiation: Child initiates interactions with toys/objects fairly frequently throughout the session, but the parent definitely sets the pace for most interactions.
4. High initiation: Child is very active and initiates a significantly large number of toy interactions during the session, although the parent initiates quite a substantial amount of the interaction.
5. Very high initiation: Child essentially sets the pace of most of the interactions between him/herself and the parent.

Affect: Extent to which the child expresses positive affect towards the mother. May range from expressions of negative affect through neutral affective expression to consistent expression of some form of positive affect (smiles, squeals, laughter, hugs, etc.).

1. Shows significant negative affect throughout interaction.
2. Shows minimal levels of negative affect.
3. Shows neutral affect.
4. Shows more than average expression of positive affect.
5. Shows very strong positive affect throughout interaction.

PARENTAL BEHAVIOURS

Warmth: The extent to which parent displays positive affect to the child through such behaviours as hugging, patting, caressing, kissing, verbal endearments, and gestures and all actions depicting fondness and positive affect.

1. Very low: Positive affect is lacking; parent appears cold and reserved, rarely expressing affection through touch or voice.
2. Low: Parent occasionally expresses warmth through brief touches, and vocal tone suggests low intensity of positive affect.
3. Moderate: Parent displays low-intensity positive

affect throughout the interaction, using touch and vocal tones.

4. High: Parent expresses affection frequently through touch and vocal tone, and verbalizes terms of endearment.
5. Very high: Parent openly expresses love for the child continually and effusively through touch, vocal tone, and verbal endearments.

Sensitivity: The extent to which parent shows awareness of and reads the child's verbal and nonverbal cues or signals (whether parent responds to such cues/signals is a different matter).

1. High insensitivity: Parent seems to ignore child's cues and signals all the time. Parent hardly ever comments on or watches child's behaviour/action or interest.
2. Low sensitivity: Parent occasionally picks up on child's signal. For example, parent may suddenly notice child's attention to some aspect of the environment but does not follow up on or monitor child's behaviour.
3. Moderately sensitive: Parent seems to be aware of the child's interests and signals and consistently monitors child's behaviour. However, parent ignores more subtle and hard-to-detect communication cues

from the child.

4. High sensitivity: Parent seems to read child's cues well and consistently monitors the child's behaviour and interests; however, parent is inconsistent in detecting more subtle and hard-to-detect communications from the child.

5. Very high sensitivity: Parent seems to read child's cues well, including relatively more subtle and hard-to-detect cues, and consistently monitors the child's behaviour.

Stimulation value: The extent to which parent explicitly orients her interactions towards providing optimum cognitive, social, or linguistic stimulation to the child. Very high stimulation value is characterized by behaviours and activities which are conspicuously high in instructional value. There is obvious preoccupation with boosting the child's cognitive, social, or linguistic competence.

1. Very low stimulation value: Parent's interaction style and behaviours do not show any sign of explicit preoccupation with helping the child acquire cognitive, social, or linguistic skills. Most of parent's behaviours centre on just having fun with the child.

geared almost exclusively to her own wishes, moods, and activities.

2. Unresponsive: Parent's responses are inconsistent and may be inappropriate or slow.
3. Moderately responsive: Parent responds fairly well to the child's behaviours, but may at times be slow or inappropriate.
4. Responsive: Parent responds consistently and promptly to most of the child's behaviour throughout the interaction.
5. Highly responsive: Parent responds promptly and appropriately to even subtle and hard-to-detect behaviours of the child.

Elaborativeness: The extent to which parent follows, expands, or elaborates on the child's responses or self-initiated behaviours.

1. Virtual absence of elaborations: Parent rarely ever elaborates on the child's vocalizations and behaviours/actions.
2. Minimal presence of elaborations: Parent elaborates occasionally on child's vocalizations, behaviours/action but still ignores a significant number of opportunities to elaborate on child's utterances.
3. Moderately elaborative: Parent consistently and promptly elaborates on child's utterances or behav-

2. Low stimulation value: Parent demonstrates minimal preoccupation with teaching cognitive, social, or linguistic skills. Parent spends more time having fun with the child, but engages in some amount of "teaching."
3. Moderate stimulation value: Parent spends about equal amounts of time having fun with as well as teaching the child cognitive, social, or linguistic skills.
4. High stimulation value: Parent shows significantly greater preoccupation with helping the child to acquire cognitive, social, or linguistic skills than with having fun with the child.
5. Very high stimulation value: Parent shows an overwhelming preoccupation with helping the child to acquire cognitive, social, or linguistic skills than with having fun with the child.

Responsiveness: The extent to which parent responds <u>appropriately</u> to child's cues/signals (e.g., facial expressions and other body language) interests, and overt actions/behaviours (e.g., drawing parent's attention to an object by pointing; holding out an object and anticipating parent to label object; etc.)

1. Highly unresponsive: Parent chronically fails to react to the child's behaviours. Parent seems

iours a lot of the time. Elaborations are sufficiently detailed.

4. Very elaborative: Parent elaborates most of the child's utterances or behaviours consistently and promptly, and in sufficient detail.
5. Highly elaborative: Parent demonstrates obvious awareness of the importance of elaborating on the child's utterances and behaviours, and does so throughout the interaction with utmost promptness and consistency. This parent's elaborations are very rich.

Wait time: The extent to which parent waits for the child to respond to action/information requests.

1. Virtual absence of wait time: Parent requests for action or information but almost always fails to provide enough wait time for the child to respond.
2. Minimal incidence of wait time: With the exception of a few instances, parent's action and information requests are characterized by no wait time.
3. Moderate incidence of wait time: Parent allows wait time about half of the time.
4. High incidence of wait time: Parent allows wait time more than half of the time.
5. Very high incidence of wait time: Parent allows wait time almost every time an action or informa-

tion request is made.

Pacing: The rate of parental behaviour, measured independently of child's response opportunities.

1. Very slow: Parent is almost inactive.
2. Slow: Parent's tempo is slower than average, and there may be some periods of inactivity.
3. Average pace: Parent is neither strikingly slow nor fast. Tempo appears average.
4. Fast: Parent's pace is faster than average.
5. Very fast: Parent's interaction is characterized by rapid fire behaviour, which often does not allow the child time to react.

Directiveness: The extent to which parent uses requests, hints, commands, and other controlling behaviours and actions/gestures to get the child to follow her own agenda, rather than the child's. This is also, in effect, a measure of how much initiative the parent allows the child to take during the interactive episode.

1. Parent allows child to initiate or continue activities of his/her own choosing without interfering. Parent consistently avoids volunteering suggestions and tends to withhold them when they are requested or when they are the obvious reaction to the immediate situation. Parent's attitude may be "do

it your own way."

2. Parent occasionally makes suggestions. This parent rarely tells the child what to do. He/she may respond with advice and criticism when help is requested but in general refrains from initiating such interaction. On the whole, this parent is cooperative and non-interfering.

3. Parent's tendency to make suggestions and direct the child is about equal to the tendency to allow the child self-direction. Parent may try to influence the child's choice of activity but allow independence in the execution of play, or parent may let the child make his/her own choice but be ready with suggestions for effective implementation.

4. Parent is directive: Parent occasionally withholds suggestions but more often indicates what to do next or how to do it. Parent produces a steady stream of suggestive remarks and may initiate a new activity when there has been no previous sign of inertia and/or resistance on the part of the child.

5. Parent is very directive: Parent continually attempts to direct the minute details of the child's "free" play, initiating most activities or telling/showing the child what to do. This parent is conspicuous for the extreme frequency of setting

the agenda of the interaction. This parent appears to the observer to be constantly instructing, training, eliciting, directing, and controlling.

Intrusiveness: Extent to which parent initiates, intervenes, or elaborates so abruptly as to be almost disruptive of child's ongoing behaviour. Also included in this category is the extent to which parent uses both verbal and nonverbal behaviour to stop the child from engaging in behaviour or activity that has no obvious dangerous or undesirable consequences.

1. Nonintrusive: Parent does not inhibit child's activity unduly. Interventions (e.g. elaborations) are done in a manner that neither usurps the child's turn nor disrupts ongoing behaviour unduly.
2. Minimally intrusive: Parent occasionally inhibits child from an activity of interest or intervenes in a manner that is somehow disruptive.
3. Moderately intrusive: Parent inhibits or intrudes fairly consistently throughout the interaction.
4. Intrusive: Parent inhibits or intrudes a great deal of the time.
5. Very intrusive: Parent almost always inhibits the child's behaviour.

DYADIC BEHAVIOUR

Mutuality: Extent to which both mother and child appear to be tuned in to each other's behaviours and activities. Extent to which they appear to share the same intentions and interests. High mutual dyads have partners who appear to be in harmony with each other, while low mutual dyads may show conflict, "parallel play", or appear out of phase or disorganized in their interactions.

1. Very low mutuality: The activities of parent and child are for the most part uncoordinated, for a number of reasons. For example, parent may try hard to gain the cooperation of the child but the child engages largely in parallel play.
2. Low mutuality: Parent and child occasionally share common interests and do things together, but such joint activity is not typical of the overall interaction.
3. Moderate mutuality: Parent and child spend about as much time in mutual activity/play as in independent activities.
4. High mutuality: Most of the interaction time is spent in mutual activity between parent and child.
5. Very high mutuality: The interaction is characterized by an overwhelming degree of mutuality. Parent and child are so tuned into each other's world that there is a strong and obvious sense of commonality

of purpose and mutual enjoyment.

Parent-Child Interaction Project

Department of Educational Psychology

Memorial University of Newfoundland

Rating Form for the Parent-Child Behaviour Rating Scale

Form A: Child Behaviours

Play Maturity:	1	2	3	4	5
Interest:	1	2	3	4	5
Social Initiative:	1	2	3	4	5
Social Responsivity:	1	2	3	4	5
Affect:	1	2	3	4	5

Video ID #: _____

Child's First Name: _____

Coder: _____

Parent-Child Interaction Project

Department of Educational Psychology

Memorial University of Newfoundland

Rating Form for the Parent-Child Behaviour Rating Scale

Form B: Maternal Behaviours

Warmth:	1	2	3	4	5
Sensitivity:	1	2	3	4	5
Stimulation Value:	1	2	3	4	5
Responsiveness:	1	2	3	4	5
Elaborativeness:	1	2	3	4	5
Wait Time:	1	2	3	4	5
Pacing:	1	2	3	4	5
Directiveness:	1	2	3	4	5
Intrusiveness:	1	2	3	4	5
Mutuality:	1	2	3	4	5

Video ID #: _____

Child's First Name: _____

Coder: _____

APPENDIX C

Readability Scale

Form 19

FOR EACH OF THESE QUESTIONS, PLEASE CIRCLE THE NUMBER THAT BEST DESCRIBES YOUR FEELING.

KEY TO RATINGS:

5 = Most of the time

4 = Very Often

3 = Sometimes

2 = Seldom

1 = Never

		Never				Most of the Time
1.	My child gives clear cues as to what he/she needs or wants to do.	1	2	3	4	5
2.	I can tell when my child is happy.	1	2	3	4	5
3.	I can tell when my child is moody, irritable, or unhappy.	1	2	3	4	5
4.	I can tell when my child wants to play.	1	2	3	4	5
5.	I can tell when my child wants me to join him/her in play.	1	2	3	4	5
6.	I can understand my child's verbal communication.	1	2	3	4	5

ID #: _____