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INACCURATE PARENTAL PERCEPTIONS OF COGNITIVE DISABILITIES: PREDICTORS AND OUTCOMES ASSOCIATED WITH CHILD AND FAMILY FUNCTIONING

By

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ABSTRACT

INACCURATE PARENTAL PERCEPTIONS OF COGNITIVE DISABILITIES:
PREDICTORS AND OUTCOMES ASSOCIATED WITH CHILD AND FAMILY FUNCTIONING

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This study focused on mothers' ability to accurately perceive the cognitive ability of their children with mental retardation, and the relationship between perceptual accuracy, socioeconomic status (SES), severity of mental retardation, mothers' stress or distress, and children's self-esteem. Subjects were mothers and children with Educable (n=57) or Trainable Mental Retardation (n=32). Mothers' estimates were compared to their children's scores on the Peabody Picture Vocabulary Test-Revised.

Perceptual accuracy was divided into four groups: accurate, underestimators, overestimators, and "low estimate/low performance." Results indicated that higher SES mothers and mothers of children with moderate mental retardation were most perceptually accurate. Lower SES mothers tended to overestimate their child's performance. Accurate estimators experienced less psychological distress. Children of overestimators tended to report greater feelings of competence in social interactions than children of accurate estimators.

This achievement is dedicated to my wonderful wife Sandy.

Without her unwavering support and encouragement

the work may never have come to fruition.

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INTRODUCTION

Previous research has shown that the parents of children with mental retardation often inaccurately perceived either the existence or extent of their child's retardation (Schulman and Stern, 1959; Barclay and Vaught, 1964; Gorelick and Sandhu, 1967; and Tew, Laurence, and Samuel, 1974). However, that research has not investigated the possible effects of this inaccuracy on either the parents or the child. The present study focuses on the implications of perceptual inaccuracy for stress or distress in parents and low self-esteem in children. The study also examines the hypothesis that perceptual inaccuracy is influenced by socioeconomic status (SES) and the severity of the child's mental retardation.

LITERATURE REVIEW

Perceptual Accuracy

Perceptual distortions can be traced to the experience of giving birth to a child with mental retardation. Perceptual distortions of the child's cognitive ability probably arise from the discrepancy between parents' idealized expectations and their child's actual abilities, a discrepancy which is likely to persist until the parents resolve their grief over the loss of the idealized child. Bentovim (1972) describes pregnancy as a developmental crisis for both the husband and wife. He suggests that parents cope with the stress of those preparations by

envisioning a "perfect" child who will realize all of their hopes for the future. However, the birth of a child with mental retardation is discrepant from parents' expectations. Bentovim further suggests that parents experience a sudden switch in emotions after the birth of a child with mental retardation. Rather than the relief experienced after the completion of a normal, healthy birth, parents feel disbelief, anger, and an overwhelming sense of helplessness. Many parents feel like they want to get rid of their child, prompting feelings of guilt or self-blame. Solnit and Stark (1961) argue that some discrepancy probably always exists between parents' expectations and their child's actual ability, but with the birth of a child with mental retardation, the discrepancy is large enough to create a trauma situation for the parents. Drotar, Baskiewicz, Irvin, Kennell, and Klaus (1975) suggest that the grief must be resolved before the parents can reach the stage of adaptation and reorganization, where they are able to respond to the child's special needs in an effective manner.

Recent theories have argued for two modifications of the grief-resolution process in families of children with mental retardation. First, Wikler, Wasow, and Hatfield (1981) argued that grief in families of children with mental retardation is chronic rather than "time-bound", as discussed in earlier conceptions. Wikler et al. (1981) used a questionnaire to measure parents' adjustment to having a child with mental retardation throughout the family life-span. They administered the questionnaire to parents and social workers involved with the families. Both groups reported that, while grief over the diagnosis of the child as mentally impaired abated somewhat over time, there appeared to be crisis

events throughout the child's life which served as reminders of the child's impairment, and caused re-elevations of the parents' experience of grief. Wikler et al. (1981) identified ten such crisis points. The present study is particulalry concerned with the crisis created when the child is diagnosed with mental retardation.

Willner and Crane (1979) noted that the crisis created at the time of diagnosis was complicated for parents of children with mild handicaps for whom diagnosis was often delayed. For parents of children with identifiable, congenital mental retardation, the grieving process occurs shortly after the birth of the child. However, Willner and Crane (1979) found that diagnosis of mild handicaps was often delayed by as many as five years, and they concluded that resolution of grief was prolonged for parents by their difficulty in letting go of idealized beliefs and expectations and establishing expectations based upon the child's actual capabilities. Prior to diagnosis, parents seemed unaware of the child's retardation, and they continued to hold idealized expectations based on the belief that their child is unimpaired. As a result they misperceived their child's cognitive abilities. Willner and Crane (1979) further noted that parents of children with mild handicaps had a more difficult time resolving the grief they experienced following the diagnosis. They suggest that, parents of children with mild handicaps have had more time to stabilize their belief that the child is not impaired, and therefore these parents have more difficulty adapting their expectations to the limitations the handicap will place upon the child's capabilities.

McLaren and Bryson's (1987) review of epidemiological studies presents further justification for perceptual distortions by parents of

children with mild mental retardation. First, they note that 20-40% of the children with an IQ less than or equal to 50 (approximately TMR or more severe) in the research investigations were diagnosed with Down syndrome, which is usually noticeable at birth. Only 4.3-7.8% of the children with mild mental retardation had Down Syndrome. This suggests that fewer families of children with mild versus more severe mental retardation may be given a clear indication of their child's impairment at birth. This is further supported by McClaren and Bryson's (1987) second finding that a larger percentage of the cases of children with mild retardation, were of unknown etiology than in the TMR or more severely retarded group. Thus, mild mental retardation is not only less likely to be clearly indicated at the child's birth, but its cause is more likely to remain unclear throughout the child's life. Willner and Crane (1979) argue that the parents' difficulty in coping with their child's mild impairment arises largely from the vague and indeterminate cause of the impairment itself.

The arguments offered by Willner and Crane (1979), and McLaren and Bryson (1987) point out the importance of considering both the severity of the child's mental retardation and the child's age at diagnosis because both might affect parents' perceptual accuracy. To avoid this potential confound, the present study will explore the relative importance of both the child's age at diagnosis, and the severity of his/her mental retardation.

The child's level of cognitive functioning appears to be associated both with the expectations that parents formulate about the child and with the accuracy of their perceptions (Jensen and Kogan, 1962; Barclay and

Vaught, 1964; and Tew, Laurence, and Samuel, 1974). The level of functioning of the child seems to be associated with accuracy because it alters the parents' ability to formulate accurate expectations about the child's abilities due to the relative ambiguity of the presence and/or severity of the child's impairment.

Support for this formulation comes from a study addressing parents' unrealistic expectations conducted by Jensen and Kogan (1962). They asked 68 parents of children with Cerebral Palsy (CP) to complete a questionnaire about expectations for their child's future. Their estimates were compared to those of hospital staff working with the children. For those children actually functioning in the "dull-normal or higher" category of cognitive abilities, parents' estimates were nearly equivalent to the staff estimates. However, the parents' estimates for the children who were functioning in the "borderline or defective" category of cognitive abilities considerably exceeded staff estimates. The authors concluded that the children's cognitive impairment disrupted the parents' ability to establish realistic expectations for their children's future. Barclay and Vaught (1964) replicated this study comparing their own estimates to parents' estimates of the future achievement of their child with cerebral palsy. The investigators were clinical psychologists with extensive experience working with children with cerebral palsy. Unlike Jensen and Kogan's (1962) methods, these investigators based their estimates upon more quantitative data on the child's current level of cognitive functioning, derived from the child's scores on the Stanford-Binet and the Vineland Social Maturity Scale. The investigators' estimates were compared to parental estimates using Jensen

and Kogan's (1962) questionnaire on future expectations. The parents' estimates uniformly exceeded staff estimates. The extent of the overestimate depended upon whether or not the child had mental retardation, but did not depend upon the age of the child or the severity of the child's cerebral palsy. Thus, mental retardation was associated with larger errors. Because these studies focused upon future expectations for the child and did not ask parents to directly assess their child's current cognitive abilities, the only conclusion that can be drawn is that parents were more optimistic about their child's future than hospital staff. Meyerowitz and Farber (1966) compared the future expectations of parents of normally-functioning children to those of parents of children with mild mental retardation. They found that parents of children with mild mental retardation expressed expectations for their children which were simply unrealistic given the child's capabilities. They observed that many parents in their sample had not completed high school, yet they expected their child with Educable Mental Retardation (EMR) to graduate from college. The authors suggested that these parents were unaware of the requisite skills necessary for their children to fulfill these expectations.

Baucom and Epstein (1990) suggest that faulty expectations are linked to faulty perceptions, both of which derive from a common source, the individual's long-standing assumptions and beliefs. According to Baucom and Epstein (1990), perceptions and expectations differ mainly in their temporal focus. Perceptions are focused on what happens in the present, and expectations are focused upon what will most likely happen in the future. As such, perceptions may serve as feedback to assumptions

and beliefs, which in turn guide expectations.

Baucom and Epstein's (1990) analysis suggests that since faulty expectations about the future emerge from faulty perceptions of present events, the findings showing that parents hold faulty expectations for children with mental retardation imply that the parents must actually misperceive the child's current abilities. Evidence of faulty perceptions comes from several sources. A study by Tew, Laurence, and Samuel (1974) asked 57 parents of children with Spina Bifida to estimate their child's current mental age and that estimate was compared to the child's actual performance on the Wechsler Intelligence Scales for Children. Overall, they found that parents overestimated their child's cognitive ability by an average of nine points. More interesting, the nature of perceptual distortions differed depending upon the level of the child's cognitive abilities. For the four children who scored approximately 30 on the WISC, parents overestimated the cognitive capability of their child, and their estimates varied widely despite the fact that all of the children's scores were nearly identical. The parents' estimates exceeded their child's score by 5-45 IQ points, but in each case the estimate remained in the impaired range. However, for children scoring between 60 and 100, parents' overestimates were inversely related to the child's IQ. Thus, the closer the child's score came to 100, the more accurately parents estimated the child's ability. Further, because parents were asked to estimate their child's mental age, a score of 100 reflects a mental age equal to the child's chronological age. In the case of the children with more severe mental retardation, parents' estimates seemed to lack an anchor or norm for developing expectations. In the case of children with

mild or no mental retardation, parents seemed strongly directed by the anchor of normal functioning. Thus, this study suggests that faulty perceptions occur for parents and that distortions seem dependent upon the severity, not merely the presence, of the child's retardation. However, parents' perceptual distortions may have arisen, in part, by asking them to estimate their child's overall "mental age", because their responses probably derived more from their understanding of the constructs of IQ and mental age than from their perceptions of the child's relevant capabilities.

Gorelick and Sandhu (1967) noted that earlier studies (e.g. Barclay and Vaught, 1964; Jensen and Kogan, 1962) that found a discrepancy between parents' estimates of their child's cognitive ability and the child's actual ability used different measures for deriving parents' estimates than for measuring children's actual ability. They questioned whether differences between the parents' estimates and children's abilities was an indication of parents' perceptual distortions or an artifact of the difference between the measures used. In an attempt to avoid this potential confound, Gorelick and Sandhu (1967) administered the Revised Stanford-Binet intelligence test to 25 children brought to a clinic for evaluation of mental retardation, and asked the mothers to respond to the same test in the same manner they thought their child would answer. Estimated IQ scores were then calculated from the parents' responses. These were compared to the child's actual IQ score. The study found that the children all scored in the mentally impaired range, and that the parents overestimated their child's actual score by an average of nearly seven points. Unfortunately, this study did not evaluate the relationship

between the severity of the child's mental retardation, and the degree of the parents' perceptual distortion. For the 17 parents who overestimated their child's IQ, differences ranged from 1 to 66 points, and only three estimates fell in the normal range of IQ. These findings indicate that, similar to parent expectations, parent perceptions tend to exceed their child's actual cognitive ability. However, in contrast to Tew et al. (1974), without the availability of an age-related anchor point for estimating abilities, the parents' estimates were more varied.

Another set of studies has focused on the relationship between parents' socioeconomic status (SES) and the expectations they held for their children. In a comprehensive review of this issue in the general population, Bronfenbrenner (1958) concluded that middle-class mothers tended to hold higher academic expectations for their children than lower-class mothers. Similarly, Wendling and Elliott (1968) found that middle-class parents held higher expectations than lower-class parents for their normally-achieving children. These studies asked for parents' expectations about their child's future and thus did not allow for an evaluation of the accuracy of parents' perceptions.

Other studies have focused upon parents' expectations or perceptions of their child's current cognitive functioning both for the general population of children and in families of children with mental retardation. In the general population, Entwisle and Hayduk (1978) found that working-class parents reported lower estimates than middle-class parents for their child's first quarter grades in first grade. In another study, Marcus and Corsini (1978) studied both parents' expectations for their preschool child's achievement, and the accuracy of those

expectations. They asked 40 parents of preschool children to estimate their child's abilities on achievement tasks. Half of the parents were in the middle-class and the remainder were in the lower-class. Parents were told the tasks had 15 levels, and that average performance on these tasks ranged from 6-10. Based on that information, parents were asked what level they thought their child would complete. On the average, middle-class parents estimated that their child would complete level 8.0, and lower-class parents predicted their child would complete level 6.8. The children did not differ in their ability on the tasks. The tasks actually consisted of only seven levels, and lower-class children scored an average of 4.60 out of 7, while middle-class children scored an average of 4.59 out of 7. Thus, Marcus and Corsini (1978) found that, although the children did not differ in their level of ability, parents differed by social class in their expectations for the child.

Several studies have looked at how SES affects the relationship between parents' expectations or perceptions and the current cognitive functioning of their children with mental retardation. For example, Iano (1976), looked specifically at families of children with Educable Mental Retardation (EMR). Because all of the children were classified as EMR, they did not differ significantly in cognitive ability. Iano asked parents to estimate their child's intellectual ability, independence and social ability relative to children in general. Iano hypothesized that, because parents from lower social classes tended to value achievement less, they would be less likely to be troubled by their child's slow educational progress. In addition, Iano hypothesized that children with EMR from the lower social classes would appear less discrepant from

normally-achieving peers from lower social classes because, in general, children from lower social classes exhibited lower achievement than high or middle-class children. Iano found support for both hypotheses. Parents from the highest social class most frequently expressed negative feelings toward their child (86.4% of the cases), while 90% of the families from the lowest social class evaluated their child in positive or mixed terms. That is, lower-SES parents did seem less troubled by their child's slow educational progress. Iano also found that 80% of the parents from the highest two social classes estimated that their child's cognitive functioning was lower than the cognitive functioning of children in general, while 98% of the families from the lowest social class estimated that their child's intellectual ability was higher than other children's ability. It seems that the lower-SES child's intellectual ability met the standards for what the parents believed their child should be able to do. In contrast, upper and middle-class parents seemed to think their child's impaired ability fell below what those parents believed a child should be able to do. Although this study clearly indicates different parental expectations by SES, the results give no indication of differences in parents' actual perceptual accuracy because parents were not asked their child's level of cognitive functioning.

A second study, by Ewert and Green (1957), did ask mothers to estimate their child's current cognitive functioning in terms of mental age. The authors used those mental age estimates to compute IQ scores, and they formed two groups based on the accuracy of parents' estimates. Accurate raters did not differ by more than 15 points from their child's IQ, while erroneous raters differed by 16 points or more. The authors did

not indicate whether or not parents tended to overestimate their child's cognitive functioning as other studies have found (Jensen and Kogan, 1962; Barclay and Vaught, 1964; and Tew, et al., 1974). They hypothesized that parents from higher educational and occupational levels would more readily comprehend their child's retardation. They found support for this hypothesis only with mothers. While 30% of the accurate raters had attended some college, only 8% of the erroneous raters had attended college. Similarly, a greater percentage of mothers working in the professional or managerial fields (the two highest SES categories) were accurate raters, whereas a much higher percentage of housewives were erroneous raters. Although these findings show a relationship between mothers' SES and their perceptual accuracy, the fathers' showed no difference in perceptual accuracy in relation to either their educational or occupational levels.

In summary, these findings suggest that parents from higher social classes hold higher expectations for both children with mental retardation and children without mental retardation. However, studies have not given a clear indication of the relationship between parents' SES and their perceptual accuracy. The higher expectations of higher SES parents may be accurate perceptions of their child's cognitive ability in the general population, but for children with mental retardation, those higher expectations are likely to overestimate the child's capabilities. This may be particularly true in the EMR group where the child's mental retardation may not be diagnosed until the child begins school.

Although the effects of the severity of the child's mental retardation and the parents' SES have been considered separately as

predictors of parents' perceptual accuracy, these variables are not independent from one another. Many studies have noted that mild mental retardation is more prevalent in the lower social classes (Birch, Richardson, Baird, Horobin and Illsley, 1970; Edgerton, 1979; Farber, 1959; and Hurley, 1969). In particular, Birch et al. (1970) conducted an epidemiologic study to examine that relationship. They found that, in general, the prevalence of mental retardation correlated negatively with social class such that, in the lowest social class, the prevalence of mental retardation was nine times higher than in the highest class. Further, Birch et al. (1970) found that the prevalence rates across social classes differed depending on the severity of retardation. For their analyses, Birch et al. (1970) divided children into the following three groups based upon the severity of their mental retardation: 60-74, 50-59, and <50. For children with an IQ of <59, the prevalence was almost equally distributed across social classes. However, for children with an IQ of >60, the prevalence rose steadily from no reported cases in the highest social class to 24.9 per 1000 in the lowest social class. Thus, there were very different distributions of the severity of retardation within each social class. In the upper three social classes, there were no cases of children in the 60-74 IQ range 11% of the cases in the 50-59 IQ range and 89% of the cases fell in the <50 IQ range. In the lowest social class, 76% of the cases fell in the 60-74 IQ EMR range, 15% fell in the 50-59 IQ range, and only 9% fell in the <50 IQ range. Thus children from lower-SES families are more frequently mentally retarded and that mental retardation is largely the mild type.

Parents' Stress and Distress

Byrne and Cunningham (1985) review indicates that parents' stress and distress have been the primary foci of research on families of children with mental retardation. Earlier studies of this population tended to assume families of children with mental retardation comprised an homogenous group for whom the inevitable outcome was distress. Generally, parents experience additional stress from raising a child with mental retardation as compared with parents of normally developing children (Abbott and Meredith, 1986; Friedrich, 1979; Friedrich and Friedrich, 1981; Friedrich, Wilturner, and Cohen, 1985; and Kazak and Marvin, 1984). However, parents of children with mental retardation have shown great diversity in their experience of stress (Byrne and Cunningham, 1985). The present study attempts to understand factors influencing this diversity. First, the model assesses the separate contribution of the severity of the child's mental retardation and parents' SES to parents' stress and distress. Second the model assesses the effect of the parents' perceptual accuracy on parents' stress and distress. Third, drawing from studies of sociocultural retardation (Birch et al., 1970; Edgerton, 1979; Farber, 1959; Hurley, 1969) the model assesses the interactive effect of the severity of the child's mental retardation and the parents' SES on parents' stress and distress. Models of stress and coping, including Hill's (1949) and McCubbin, Joy, Cauble, Comeau, Patterson and Needle's (1980) offer an understanding of the process by which an event becomes defined as a stressor, the components involved in one's attempts to cope with stress, and appraisals of the success of the attempts to cope. However, these models are not entirely applicable for understanding the

stress of raising a child with mental retardation because they address acute stressors, but the presence of a child with mental retardation seems to present a chronic stressor as families cope with developmental crises throughout the child's life (Wikler, 1981). In addition, studies of parents' grief following the identification of their child's retardation (Solnit and Stark, 1961, and Willner and Crane, 1979) suggest that accepting the child's mental retardation may take several years.

In one of the few attempts to explain the effects of chronic stress, Haan (1977) argues that stress which is not adequately coped with contributes to physiological symptoms which may become an additional source of stress. Haan suggests that stress experienced without reprieve results in outcomes commonly defined as distress (e.g. physiological complaints). Wikler, Wasow, and Hatfield (1981) have attempted to understand how chronic stress occurs in parents of children with mental retardation. They suggest that grief in families of children with mental retardation appears to be chronic, but not continuous. Grief abates after the initial diagnosis, then recurs in response to specific developmental events throughout the child's life. Each of these events represents a stressor to the family. Thus, for these families stress may take on characteristics of both ongoing stress leading to slow degeneration, and periods of acute crisis associated with short-term turmoil.

Severity of Mental Retardation.

Studies have rarely evaluated the severity of the child's retardation as a differential factor in parents' experience of stress. Only two studies specifically compared the impact of different severity levels of retardation on stress, despite persuasive arguments that child

characteristics affect parents (Crnic et al. 1983; and, Byrne and Cunningham, 1985). In the first, Nihira, Meyers, and Mink (1980) compared the home environment, family adjustment and development of children diagnosed with TMR and EMR. They reported that children with TMR appeared to have a greater disruptive impact upon their families than children with EMR. However, they noted that parents of children with TMR expressed more positive sentiments about the impact of the child than did parents of children with EMR. This suggests that an understanding of parents' stress or distress must take into account both the impact of the demands of caring for a child with mental retardation, and the parents' attitudes about their child. In the second study, Blacher, Nihira and Meyers (1987) directly compared reports of family adjustment and coping between families of children labelled as EMR, TMR and SMR (Severely Mentally Retarded). They found that families of children with EMR and TMR reported significantly better adjustment than families children with SMR. They did not find a significant difference between children with TMR and children with EMR on family adjustment. In addition, the investigators found no difference between the three groups for the child's impact on either marital adjustment or coping. Overall, this study found no significant difference between EMR and TMR children's impact on their families, and SMR children only showed an impact on the family's adjustment. Blacher et al. (1987) defined the impact on family adjustment as the extent to which parents felt the child with mental retardation affected the atmosphere in the home, the relationships among family members, and the parents' agreement on child discipline. This study suggested that the presence of children with more severe mental retardation was associated with greater

impact on family functioning, but not associated with greater impact on other presumed indicators of stress or distress. Further, the authors found that severity of retardation was confounded with SES. Specifically, they found that the SES level of parents of children diagnosed as EMR were significantly lower than those of parents of children diagnosed as SMR. Thus, severity of retardation and SES may have exerted opposing effects on these families which obfuscated the association of each with family functioning. These findings do not suggest a clear relationship between the severity of the child's mental retardation and parents' stress or distress. Even though parents of children with SMR reported a greater impact of the child on family adjustment, the child's impact did not extend to other areas of marital adjustment or coping ability, which suggests that parents' stress from raising a child with mental retardation is not a generalized response. Instead, the stress may be associated with unique demands of the severity of the mental retardation on the family in combination with parents' SES and, as suggested in the previous study (Nihira, et al., 1980), parents' attitudes about their child with mental retardation.

Socioeconomic Status.

Research suggests that stress and psychological distress are linked to social class. Dohrenwend and Dohrenwend (1969) reviewed studies of the "true prevalence" of psychological distress in different communities. They found that the lower one's social class, the higher their reported psychological distress. Also, they found that people from lower social classes reported less success in coping with "objective" or environmental demands. The authors argued that members of lower social classes seemed

to resign themselves to their conditions and that this resignation aggravated the impact of stressors upon them. Rabkin and Streuning (1976) also found that families from lower-SES groups experienced more severe, though not more frequent stressful events than members of the middle class.

In families of children with mental retardation however, the relationship between stress associated with raising the child and SES appears to be reversed. For example, Donovan (1988) found that higher-SES mothers reported more stress than lower-SES mothers in raising their children with autism and/or mental retardation. Higher-SES mothers reported less marital adjustment, which Donovan used as an indirect measure of the impact of "child stress" on family functioning. Also, Blacher, Nihira, and Meyers' (1987) study indicated that, although parents of children with SMR comprised a significantly higher SES group than parents of children with TMR or EMR, the former group reported the greatest amount of stress. In part, the greater stress for high-SES parents may be due to their childrens' generally more severe forms of mental retardation, which lead to more strain and demands for care from the parents. However, this SES difference also supports Farber's (1968) contention that parents from higher social classes would experience the most emotional distress in response to the diagnosis of their child's mental retardation because of the discrepancy between the label of mental retardation and other labels applied to the family. He argued that mental retardation would create a crisis for both middle and low-SES families, but the nature of that crisis would differ. For middle-class parents, the crisis would revolve around the frustration of their expectations and

aspirations for their child. For lower-class parents, the crisis would center on the lack of the families' organization into domestic roles and responsibilities to meet the challenges of raising a child with mental retardation. Iano (1976) found that, for families of children with EMR, upper and middle-class parents expressed the most negative feelings about the presence of their child with mental retardation.

Perceptual Accuracy.

Although no studies have evaluated the outcomes of parents' perceptual accuracy, several studies contributed to guide the hypotheses of the present study. For example, one potentially important cause of chronic stress for the parents of children with mental retardation is ongoing difficulty establishing accurate expectations for the child. Jensen and Kogan (1962), drawing from their clinical experience in working with the families of children with mental retardation, observed that parents' persistent overrating of their child's potential for future achievement corresponded with the amount of disturbance in the parent-child relationship. In families of children with mental retardation, diagnosis of the retardation is a critical event in determining the parents' experience of stress and eventual distress (Gath, 1977). That event requires the parents to restructure their beliefs about the child. When the parents persist in holding beliefs discordant from their child's actual cognitive abilities, they should also exhibit more perceptual distortion of the child's ability, and a greater amount of stress and distress.

This formulation is consistent with Iano's (1976) finding, that parents of children with EMR who were from higher social classes both

perceived their child's cognitive functioning as below average and were more dissatisfied with the child. Kurtz (1977) argues that low-SES parents' expectations may be less discordant from their child's actual cognitive functioning than the expectations of parents from higher social classes, therefore lower-SES parents experience less stress. Kurtz listed six possible reactions of low SES families to their child labelled as mentally impaired, all of which might decrease the likelihood that they would perceive the label as a source of stress. (1) They may consider the condition unimportant or reject the label outright. (2) They may react minimally because the disability cannot compete with their other hardships. (3) They may accept the label as "natural," and as such, acceptable or believable. (4) The label may be one of several given to their child or children, making it difficult for them to see the child in terms of the labels. (5) They may react more to any physical disability than to mental disability. (6) They may not perceive the mental retardation as a problem requiring response.

Children's Self-esteem

The construct of self-esteem.

For the child, self-esteem is a crucial outcome which reflects the child's perceptions of him/herself as competent and capable. If, as the literature on parents' expectations and perceptions suggests, parents expect more than their child with mental retardation can accomplish, then to the extent those children are aware of their parents' expectations, they are likely to be at risk for developing poor self-esteem. In addition, Fitts (1972) argued that, because children with mental retardation compare themselves to their non-impaired peers, they are at

great risk for developing poor self-esteem. Children's sense of self-esteem represents the evaluative aspect of their self-concept (Gurney, 1988). Harter (1982) chose to focus upon one aspect of one's self-evaluation, perceived competence, and her Perceived Competence Scales are used in the present study.

Perceptual Accuracy

Gurney (1988) states that, when young, the child does not have an sense of self. The child's sense of self develops through interpreting others' responses to him/her. In support, Rosenberg and Kaplan (1982) argue that people see themselves as others see them. That is, we evaluate ourselves based upon others' responses to our actions. Accordingly, parents' responses figure prominently in guiding the child's evaluation of his/her competence (Rosenberg, 1965). Lavelle and Keough (1980) argue that the parents' attitudes and expectations dictate their behavior toward the child, and their behavior can either promote or disrupt the child's sense of self-esteem. According to Baucom and Epstein's (1990) suggestion that perceptions may guide expectations, parents' inaccurate perceptions of their child's cognitive ability may result in unrealistic expectations for the child's achievement. The child would likely adopt these expectations he/she cannot fulfill, and as a result, the child would evaluate him/herself unfavorably.

Socioeconomic status

Two studies of the general population suggest that SES should predict self-esteem (Housley, Martin, McCoy, Greenhouse, Stigger and Chopin, 1987; and Kohr, Coldiron, Skiffington, Masters and Blust, 1988). Housley et al. (1987) used the Rosenberg Self-esteem Scale to measure the

self-esteem of girls between the ages of 14 and 16, and to examine associations with race, SES and area of residence. The investigators did not find differences in self-esteem in relation to race or area of residence, but they did find that girls from the higher SES group had significantly higher self-esteem than their cohorts from the lower SES group. Kohr, et al. (1988) studied self-esteem in fifth, eighth and eleventh graders using a measure of self-descriptive statements regarding the child's relationship with teachers and peers and the child's academic self-concept. Both of these studies showed differences between the highest and lowest SES groups, but in neither case did the middle SES group differ significantly from either the highest or lowest group. The findings suggested a linear trend, where self-esteem increases with higher levels of SES.

Severity of mental retardation

Another potential influence on self-esteem is the severity of mental retardation of the child. Previous studies comparing children with mental retardation to children without mental retardation suggest that mental retardation is associated with low self-esteem (Fitts, 1972; Ziglar, Balla, and Watson, 1972; and Leahy, 1985). Fitts (1972) argued that children with mental retardation compare themselves to their non-impaired cohorts, are less likely to see themselves as competent, and are thus at greater risk for developing poor self-esteem. Leahy (1985) found that children with mental retardation also exhibit lower "real" self-image than non-impaired children, defined as the child's perception of his/her current functioning, suggesting that these children might be more likely to display low self-esteem because of their mental retardation. Ziglar,

Balla, and Watson (1972) found that children with mental retardation reported having a lower ideal self-image than non-retarded children.

Although fewer studies have examined self-esteem within samples of children with different levels of mental retardation, the work of Mink, Nihira, and Meyers (1983) and Mink, Meyers, and Nihira (1984) allows for an indirect comparison of children's self-esteem and the severity of their cognitive impairment. In the first study, Mink et at. gathered descriptive data, including a measure of self-esteem, on children labelled as TMR. They asked the children's teachers to complete the Coopersmith Self-esteem Behavior scale. Teacher ratings averaged 17.8. In the second study, Mink et al. (1984) gathered similar information from teachers of children labelled as EMR, and found that teacher ratings of the child's self-esteem averaged 16.4. Although no statistical tests were performed to contrast the groups, the two reports provide at least suggestive data that children with more severe mental retardation may experience higher self-esteem than children with milder mental retardation.

The relationship between self-esteem and mental retardation appears to be a complicated one. Although the presence of mental retardation corresponds with lower self-esteem, more severe mental retardation does not appear to correspond with still lower self-esteem. In addition, the relatively greater risk for poor self-esteem in children with EMR may depend upon the family's SES. Kurtz's (1977) argument suggests that lower-SES parents' beliefs about their children may not only be protective for themselves in terms of reducing stress but may also function to preserve high levels of self-esteem for the children. Iano (1970) further suggests that of all children with EMR, those from families in the lower

social class would likely report higher self-esteem because their achievement would more nearly match their parents' expectations.

Model and hypotheses

This study focuses on the relationship between parents' perceptual inaccuracy about their child's cognitive functioning, parental stress or distress, and low self-esteem for the children. In addition, this study examines the effects of the parents' SES and the severity of the child's mental retardation upon both perceptual accuracy and the outcome variables.

A model proposing direct and indirect links among these factors is presented in Figure 1. The model suggests that perceptual inaccuracy will be associated with stress and distress for the parents and low self-esteem for the child. The model also proposes that SES and the severity of the child's retardation will directly affect the outcome measures and will have indirect links through perceptual accuracy.

Although this model is consistent with the reasoning that advantaged conditions (i.e., high SES, mild mental retardation for the child, accurate perceptions by the parents) should lead to positive outcomes, the above review of research suggests that the actual picture will be much more complex. In some cases, SES and the severity of retardation should exert opposing influences, and in others these factors should serve as moderators for each other and for the effects of perceptual accuracy on the outcomes. Thus, the present study will evaluate these more complex relationships and contrast the findings with the relationships proposed in Figure 1.

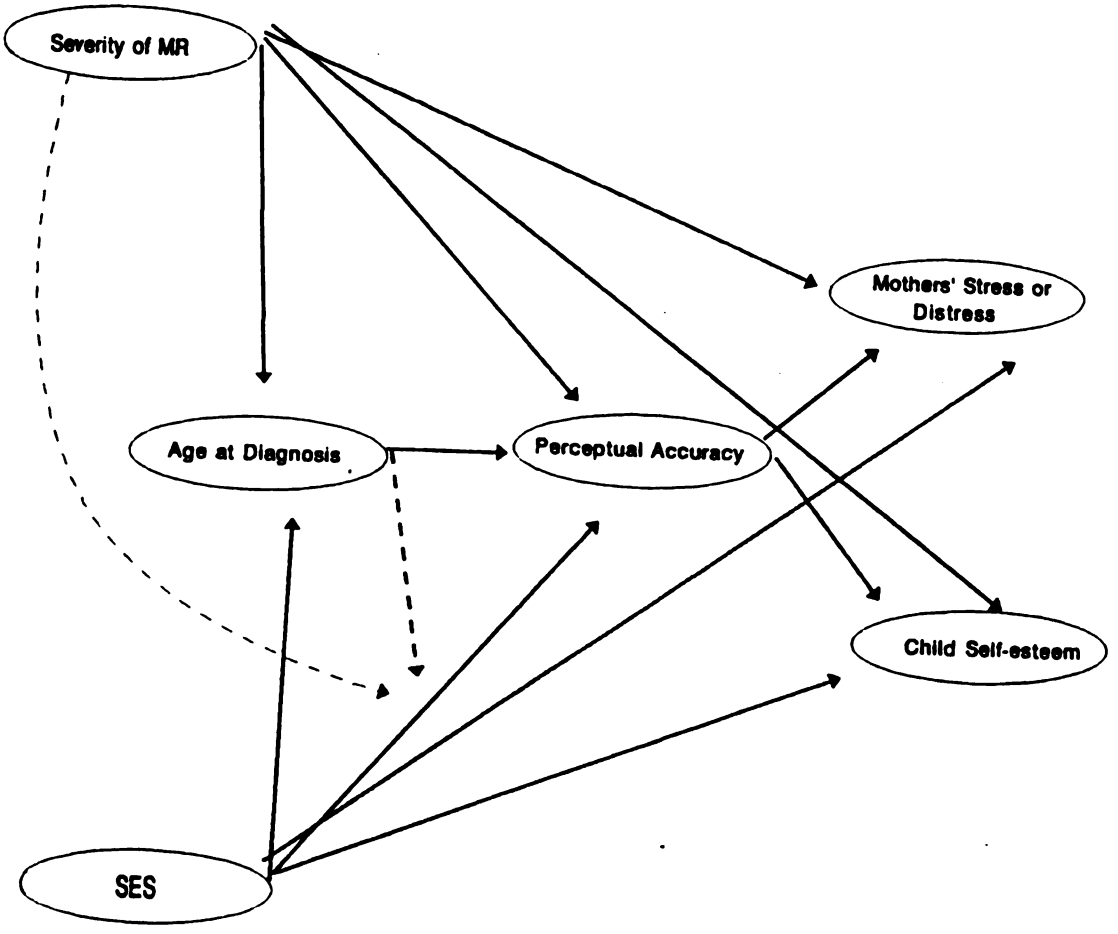

Figure 1. The Conceptual Model

The hypotheses for the present study are as follows:

1) The parents' SES and the severity of the child's mental retardation will be associated with the parents' perceptual accuracy. Specifically, (a) the relationship between SES and parents' perceptual accuracy will be moderated by the severity of the child's mental retardation, (b) the moderational effects will be accounted for by the child's age at diagnosis such that early diagnosis will be associated with a strong relationship between SES and perceptual accuracy, whereas, late diagnosis will be associated with a weak relationship between SES and perceptual accuracy, and (c) the severity of the child's mental retardation will be strongly associated with the child's age at diagnosis such that EMR will be associated with significantly later diagnosis.

The moderational hypothesis draws from the findings of Willner and Crane (1979) that, although all parents of children with mental retardation mourn the loss of their idealized child, because children with mild handicaps were diagnosed at a later age, the mourning process is delayed and prolonged for the parents. Accordingly, there will be a strong relationship between SES and parents' perceptual accuracy when the child had moderate mental retardation and had been diagnosed at an early age. However, if the child was diagnosed later, the relationship between SES and parents' perceptual accuracy will be obscured, or possibly reversed. The reversal may occur because of the parents' beliefs about what their child should be accomplishing. High-SES parents will hold higher initial expectations for their child than low-SES parents, and the late diagnosis will prolong the exposure of both the parent and the child to those unrealistic expectations. Because low-SES parents' lower

expectations will be more congruent with the child's cognitive functioning, parents will be more perceptually accurate.

2) SES, the severity of the child's mental retardation and perceptual accuracy will be associated with parents' stress and distress. Specifically, (a) there will be no main effect of SES on parents' stress and distress because high-SES parents will report stress related to the disconfirming effect of the child's mental retardation on parents' expectations, and low-SES parents will report stress related to the demands of caring for their child with mental retardation. (b) The severity of the child's mental retardation will be directly associated with parents' stress and distress such that parents of children with TMR will report more stress and distress than parents of children with EMR. However, (c) more interesting is the interaction between SES and severity, which indicates that low-SES parents of children with TMR and high-SES parents of children with EMR will experience the highest levels of stress and distress, and (d) there will be a main effect of parents' perceptual accuracy on their reports of stress and distress such that accurate perceivers across groups for SES and severity of mental retardation will report less stress and distress than inaccurate perceivers.

3) SES, severity of the child's mental retardation, and perceptual accuracy will be associated with the child's self-esteem in the following manner: (a) SES will have a direct effect on self-esteem such that, higher SES will be associated with higher child self-esteem, (b) SES will interact with the severity of the child's mental retardation to affect the child's self-esteem such that, children with TMR from high-SES families, and children with EMR from low-SES families will report the highest self-

esteem, and (c) there will be a main effect of perceptual accuracy on children's reported self-esteem such that parents who are accurate perceivers will have children who report higher self-esteem than children of inaccurate perceivers regardless of SES or the severity of the child's mental retardation.

METHOD

Subjects

The subjects were 57 families of children with Educable Mental Retardation (EMR) and 32 families of children with Trainable Mental Retardation (TMR) identified by the local school system. Most of the families were recruited through the school system. A letter describing the project was sent to the schools involved. Schools agreeing to participate distributed information to all parents whose children were classified as EMR or TMR. Families interested in participating in the study returned postcards, and were then contacted to schedule data collection sessions. In addition, some families responded to radio or newspaper advertisements, or to referral from local agencies working with families of children with handicaps. All of the children in the sample were living at home. The sample consisted of 89 children ranging in age from 7 to 21 years old (M= 12.6, SD= 3.5).

For this study, severity was considered as a discrete rather than continuous variable, using the two categories: Educable Mental Retardation (EMR) and Trainable Mental Retardation (TMR). The severity of the child's mental retardation was reported initially by parents and confirmed by the diagnosis from the child's Individual Education Plan (IEP) provided by the child's school. To be diagnosed with mental retardation, a child must meet two criteria: (a) a score on a standard intelligence test greater than two standard deviations below the mean, and (b) evidence of below-average adaptive functioning on a standardized measure of adaptive functioning. Thus, the scores of children classified as EMR ranged from 55-69 on intelligence tests and the scores of children diagnosed as TMR

ranged from 40-54.

Measures

The parents completed questionnaire measures of their stress and distress, they evaluated the adaptive functioning in their child with mental retardation, and they were queried in order to obtain an estimate of the child's receptive language ability. The children were given measures of self-esteem and receptive language skills.

The parents completed the Questionnaire on Resources and Stress (QRS) developed by Holroyd (1974) specifically to measure the stressors and available familial resources for persons caring for and living with people who are either handicapped or chronically ill. The QRS was designed as a self-administered test of both the demands and the family member's response to those demands. This study used 14 of the 15 scales of the QRS to assess the parents' stress related to the presence of their child with mental retardation. The Health/Mood scale appears to overlap with the measure of distress, and thus was removed in order to eliminate this possible confound. Holroyd found that the reliability of the whole 285-item QRS was .96 using the Kuder-Richardson test.

The parents completed the Symptom Checklist-90 (SCL-90; Derogatis, 1983), a measure of psychological distress. The SCL-90 is composed of 90 symptoms of distress which subjects rate on a four-point scale from 0-3. The symptoms cluster into nine scales representing different symptom dimensions. For this study, all nine scales were combined into a composite score, the Global Severity Index (GSI). Derogatis (1983) reported a study of concurrent validation of the SCL-90 in which responses to the SCL-90 were correlated with responses to the Middlesex Hospital

Questionnaire (MSQ) another questionnaire to measure distress. Correlations between similar scales of the two measures ranged from .36 for phobic anxiety to .74 for anxiety. The global scores of the two measures showed a correlation of .92.

In order to get an estimate of the children's cognitive ability, they were given the Peabody Picture Vocabulary Test-Revised (PPVT-R; Dunn & Dunn, 1981), an individually administered test of verbal, receptive language abilities. The PPVT is highly correlated with intelligence, and it is often used as a screening device for determining level of intellectual functioning. The child is shown four pictures on a page and asked to identify, either verbally or by pointing to the appropriate picture, which of the pictures best represents a stimulus word. Normative scores have been developed for children between the ages of 2 and one-half to 18 years old. The PPVT-R exhibits split-half reliability ranging from .67 to .88. Although validity studies have not been completed on the PPVT-R, numerous studies have established the validity of the PPVT by comparing its scores to vocabulary tests and to measures of overall intelligence or achievement. Across 55 studies, the PPVT displayed a median correlation of .71 with other vocabulary tests. Although it is not presumed to be a measure of overall intelligence or achievement, the PPVT displayed moderate correlation with measures of IQ between .38 to .71, and with scholastic achievement tests between .29 to .68. The PPVT showed a median correlation of .70 with the PPVT-R, thus its authors argue that validity data for the PPVT can be applied to the PPVT-R.

The children's age in months when they were first diagnosed with mental retardation was also used in the present study. Parents were asked

about the developmental history of their child with mental retardation in a structured interview. In that interview, parents were asked when their child was first diagnosed with mental retardation. Age at diagnosis was divided into three groups: early diagnosis (birth to twelve months), mid-length diagnosis (twelve months to thirty-six months) and late diagnosis (longer than thirty-six months) based on Willner and Stark's (1979) work. They suggested that children with mild handicaps are often not diagnosed until they at least three years old. The early group is designed primarily to include children whose physical appearance is sufficient for diagnosis, as with Down Syndrome, or for whom development was delayed to the extent that it was evident through early gross motor or pre-language deficits. The middle group was not included in analyses because it was presumed to form an empty set.

In order to measure self-esteem, the children were administered Harter's (1982) Perceived Competence Scale for Children (PCSC) or a picture version of the scale, developed by Harter and Pike (1984), which was constructed for children too young to read. All children from the TMR group, and children ten years old or younger from the EMR group were given the picture version, and all children from the EMR group older than ten were given the questionnaire version. In both versions the children were first presented with two descriptors of a particular characteristic, which expressed either competency or lack of competency for that characteristic. They were asked to choose which was most like them. Next, they were asked to determine how strongly they endorsed or did not endorse the attitude.

The questionnaire version yields four factors representing academic, athletic, popularity, and personal appearance scales, as well as a scale

of general competence. The picture version also yields four subscales: cognitive competence, physical competence, peer acceptance, and maternal acceptance. Silon and Harter (1985) administered the PCSC to 9-12 year-old children with EMR and found the following two-factors structure of responses: a competence scale composed of items from the cognitive and physical subscales of the PCSC, and a popularity scale composed of the more concrete items about the number of friends the respondent had. No general factor emerged. Similarly, Harter and Pike (1984) found that a two-factor solution best accounted for children's style of responding to the picture version of the PCSC, but the factors (competence and maternal acceptance) were dissimilar from those found by Silon and Harter (1985). In order to compare the children's scores across the two versions, the present study examined the internal consistency and factorial loadings of the children's responses to the PCSC for this sample. The children's responses were compared to the three factors found by Harter (1982), the two factors found by Harter and Pike (1984), and the two factors found by Silon and Harter (1985) in order to determine which factor strusture best fit. For each version, the children's scores on the best-fitting factors were then converted to Z-scores, and the groups were combined for the analyses.

Harter (1982) reported that the PCSC questionnaire version displayed acceptable reliability, with coefficient alpha's for the domains ranging from .73 to .83. Test-retest reliability for three months range from .70 to .87, and for nine months from .69 to .80. She reported that the factors are stable across development in children in grades three through nine. Harter argued for the convergent validity of her measure in three

ways. First, she asked children to complete the scales and then their teachers rated them for children's self-esteem, and she found a correlation of .40 between the child and teacher ratings. In addition, she found that the correlations between the students' reported self-esteem and their teachers' ratings increased over grades 3-9 from .28 to .55. Further, she found that the scales correlated between .27 and .45 with children's scores on the Iowa Basic Skills Test. Finally, she hypothesized that the self-esteem scores were connected to intrinsic motivation, and found that scale scores correlated .57 with preference for mastery, .54 with independence mastery, and .33 with curiosity. For the picture version, Harter and Pike (1984) reported that subscale reliabilities ranged from .50 to .85, and they estimated the overall reliability to be in the mid- to high .80s. In addition, they asked children how they knew they were good at or not good at activities to which they had responded on the PCSC. Children showed they ability to report reasons for their responses in over 90% of the cases. As a test of the measure's discriminant validity, Harter and Pike (1984) found that children held back a grade reported significantly lower competence scores.

The parent that completed the Adaptive Behavior Scales on the child with mental retardation, collected as part of the larger study, was also asked to complete the PPVT Wordlist, a measure derived for this study from the Peabody Picture Vocabulary Test (PPVT). PPVT Wordlist was designed to generate a parent-estimate score of the child's cognitive abilities based on the child's receptive language ability. Similar to the procedure with the children, the parents were shown the PPVT stimulus materials with four pictures for each probe. On the PPVT, the child's task was to select

the correct picture that best matched each probe word. The items are arranged in order of increasing difficulty. The parents were asked whether or not they thought their child could correctly identify which picture best represented the probe. Similar to the procedure with the child, a starting point was selected based on the chronological age of the child. Items were administered in ascending order until a "ceiling" was reached, which was a total of six of eight words judged to be too difficult for the child. From the parents' estimates of words the child would answer correctly and incorrectly two scores were calculated. First, an overall estimated verbal IQ score was calculated to compare with the child's actual score in order to create nominal groups of parents who accurately versus inaccurately perceived the child's abilities on the PPVT. Mothers' perceptual accuracy was calculated by subtracting the children's actual standardized scores on the PPVT-R from the standardized scores calculated from the mothers' estimates. Thus, mothers who overestimated the number of correct items for their children had positive scores, while mothers who underestimated had negative scores. Similar to the procedure used by Ewert and Green (1957), the parents whose estimates were within one-half of a standard deviation of the child's actual overall score on the PPVT-R scales formed the group of accurate raters, and those whose estimates diverged from the child's ability by more than one-half of a standard deviation formed the inaccurate raters' group.

A socioeconomic status (SES) score was derived using a modification of Hollingshead's Four-Factor Index of Social Status (1975). Parents provided information on their current occupation and their highest level of schooling completed. From these data, the Four-Factor Index, combines

the level of schooling completed and the occupational rating for both parents and takes their average to attain an SES score for the family. However, this method differentially affects families with one versus two wage-earners. In families with only one spouse employed, the SES score is fully determined by that spouse's occupation and educational level. In families with two wage-earners, combining a second spouse's occupational and educational levels to the SES score of the first will, at best, equal the score of the single spouse, and that will only occur where both spouses attain equal scores. Any difference between spouses' scores will result in a lowering of the family's average SES. In an attempt to allow for the full range of difference in scores, the present study computed scores for both parents and used the higher of their scores as the family's level of SES. Hollingshead and Redlich (1958) divided the range of SES scores into five classes, while other studies have collapsed SES classes into two to four SES-groups in an attempt to form more appreciably different groups (Entwisle and Hayduk, 1978; Ewert and Green, 1957; Flynt and Wood, 1989; Iano, 1970; and, Marcus and Corsini, 1978). Considering the relationship between SES and mental retardation, studies have identified a lower-SES group presumed to represent a socioculturally deprived environment (Flynt and Wood, 1989; Iano, 1970, and Meyerowitz and Farber, 1966). That group is contrasted with higher-SES groups which are presumed to afford sufficient environmental stimulation for normal development. The present study first employed the five-group method for dividing SES. The SES scores, as measured by Hollingshead (1975), were divided into the following five groups: (I) 8-19, (II) 20-29, (III) 30-39, (IV) 40-48, (V) 49-66. A comparison of parents' years of education

across SES groups was significant, $F(4,91)= 9.21$, $p<.001$. The parents in group I had significantly fewer years of education than the parents in groups III, IV, and V, and the parents in group II reported significantly fewer years of education than the parents in group V.

When the analyses involving the five SES groups required collapsing, SES was divided into high and low groups using a median split at a score of 32 on the Hollingshead Index, which ranges from 8-66.

Procedure

This study was conducted as part of a larger study of families of children with mental retardation. In the larger study, each family was seen for two sessions which were spaced at least one week apart, each approximately two hours long. Families were paid $50 for participating in the study. During the first session, the mothers were given a battery of questionnaires, including the SCL-90, the children was administered the Harter scale, and the PPVT-R was administered to the children in a room separate from the mothers. The mothers completed the QRS independently during the week between sessions. During the second session, the mothers were asked to complete the PPVT Wordlist. The children were removed from the room while the mothers completed the PPVT Wordlist so that they were unable to provide feedback on their actual performance on items.

RESULTS

The construct of perceptual accuracy

The children obtained standardized scores on the PPVT-R ranging from 40 to 110 with a mean of 57.1 (SD= 16.8). As expected their PPVT-R scores differed significantly, $t(1,87)= -5.12$, $p<.001$. The children classified as EMR scored higher on the PPVT-R (M=63.3, SD= 16.1) than the children classified as TMR (M=46.6, SD= 12.1). Their mothers' estimated scores ranged from 40 to 118 with a mean of 58.3 (SD= 20.5). The mothers' estimates ranged from 41 points below to 76 points above their children's standard score. Previous studies have found that most parents overestimated their child's cognitive ability, but the current study found that the number of mothers who overestimated (n=34) was only slightly greater than the number who underestimated (n=29).

For most analyses the absolute value of the difference score was the dependent variable. Specifically, this difference score was used when examining the effects of the child's age at diagnosis, the severity of his/her mental retardation, and the family's SES on the mothers' perceptual accuracy. The mean absolute value of the difference between the child's performance and the mother's estimate for the sample was 13.65 (SD=14.53).

Other analyses used perceptual accuracy as an independent variable and examined its effects on the mothers' stress and distress and on the children's self-esteem. For these analyses, perceptual accuracy was separated into the following four groups of subjects: (a) low performance/low estimate (n=16) were the mothers whose estimates exactly matched their children's performance because of a floor effect on the

PPVT-R, (b) underestimators (n=20) were the mothers whose estimates were below the child's obtained score by greater than or equal to one-half of a standard deviation, (c) accurate estimators (n=25) were the mothers whose estimate fell within one-half of a standard deviation above or below the child's obtained score and, (d) overestimators (n=19) were the mothers whose estimate exceeded the child's obtained score by one-half of a standard deviation or greater. ANOVA's were also run for more extreme cases of under and overestimation in which the mothers' estimates and the children's performance differed by more than one standard deviation from one another. The results of these analyses did not differ appreciably from the analyses run using one-half of a standard deviation differences as the criterion, so only the analyses of the less extreme groups are reported in the present study. The formation of the low performance/low estimate group is unique to the present study and requires more explanation.

Previous studies found that parents' estimates rarely corresponded exactly with their child's obtained intelligence score, yet the present study yielded 17 such cases. This phenomenon can be accounted for by a floor effect on the PPVT-R. On that measure, a standardized score of 40 is awarded regardless of how few items the respondent correctly identifies. As the age of the respondent increases, more items must be correctly identified in order to exceed that minimum score. Sixteen of the exact matches occurred because both the number of words the children identified correctly and the number that the mothers estimated their children would know were not sufficient, given the children's ages, to exceed the minimum score of the PPVT-R. These cases were combined to

create the low performance/low estimate group. Analyses were run to determine whether the exact match between children's performance and mothers' estimates in this group indicated accurate perceptions or merely an artifact of the PPVT-R. Because the floor effect, which created the exact correspondence between the mothers' estimates and the children's performance in this group, occurred as a result of using standardized scores, the raw scores of the PPVT-R were used to calculate mothers' perceptual accuracy for this set of analyses. A one-way ANOVA was run using the raw scores for mothers' perceptual accuracy as the dependent variable and the four perceptual accuracy groups as the independent variable to determine whether or not the group differences exhibited for the standardized scores existed when looking at raw scores for the PPVT-R. The ANOVA indicated significant group differences, $F(3,76)= 13.65$, $p<.0001$. Post-hoc comparisons using Tukey HSD indicated more specifically that mothers from both the accurate and the low performance/low estimate groups held significantly more accurate perceptions of their child's performance on the PPVT-R than mothers from the overestimate and underestimate groups. In addition, a planned comparison indicated that the low performance/low estimate group did not differ significantly from the accurate group in perceptual accuracy, $t(1, 76)= -1.17$, ns. These analyses indicated that the perceptual accuracy of mothers from the low performance/low estimate group was not just a function of the standardization of scores on the PPVT-R, and the low/low group was retained in all further analyses in which perceptual accuracy served as an independent variable.

The four perceptual accuracy groups were compared on the children's age and on the mothers' estimates and the children's performance on the PPVT-R using one-way ANOVA's. The children's age differed significantly across the four groups, $F(3,79)= 3.31$, $p<.05$. On the average, the children in the low/low group were the oldest ($M= 14.1$, $SD= 3.9$), followed by the accurate group ($M= 14.0$, $SD= 3.5$), the underestimators ($M= 13.0$, $SD= 3.4$), and overestimators ($M= 11.1$, $SD= 2.7$). A post-hoc test using Tukey's HSD revealed that the children in the accurate group were significantly older than the children in the overestimator group. Although the children in the low/low group were the oldest, the difference between the children in that group and the children in the overestimator group was not significant. That may be due to the small number of children in the low/low group and by the relatively large variation in their ages. The groups differed significantly for both the mothers' predictions, $F(3,79)= 27.29$, $p<.001$, and the children's performance on the PPVT-R, $F(3,79)= 21.74$, $p<.001$ as shown in Figure 2. More interestingly, post hoc comparisons using Tukey's HSD revealed the underestimator group was composed primarily of children whose scores were significantly higher than those from any other group ($M=74$), while the overestimator group was composed primarily of children whose mothers' estimates were significantly higher than those of any other group. In addition, both the children's performance and the mothers' estimates for the accurate group were significantly higher than those of the low/low group.

Mothers' Estimates and Children's Performance on the PPVT-R

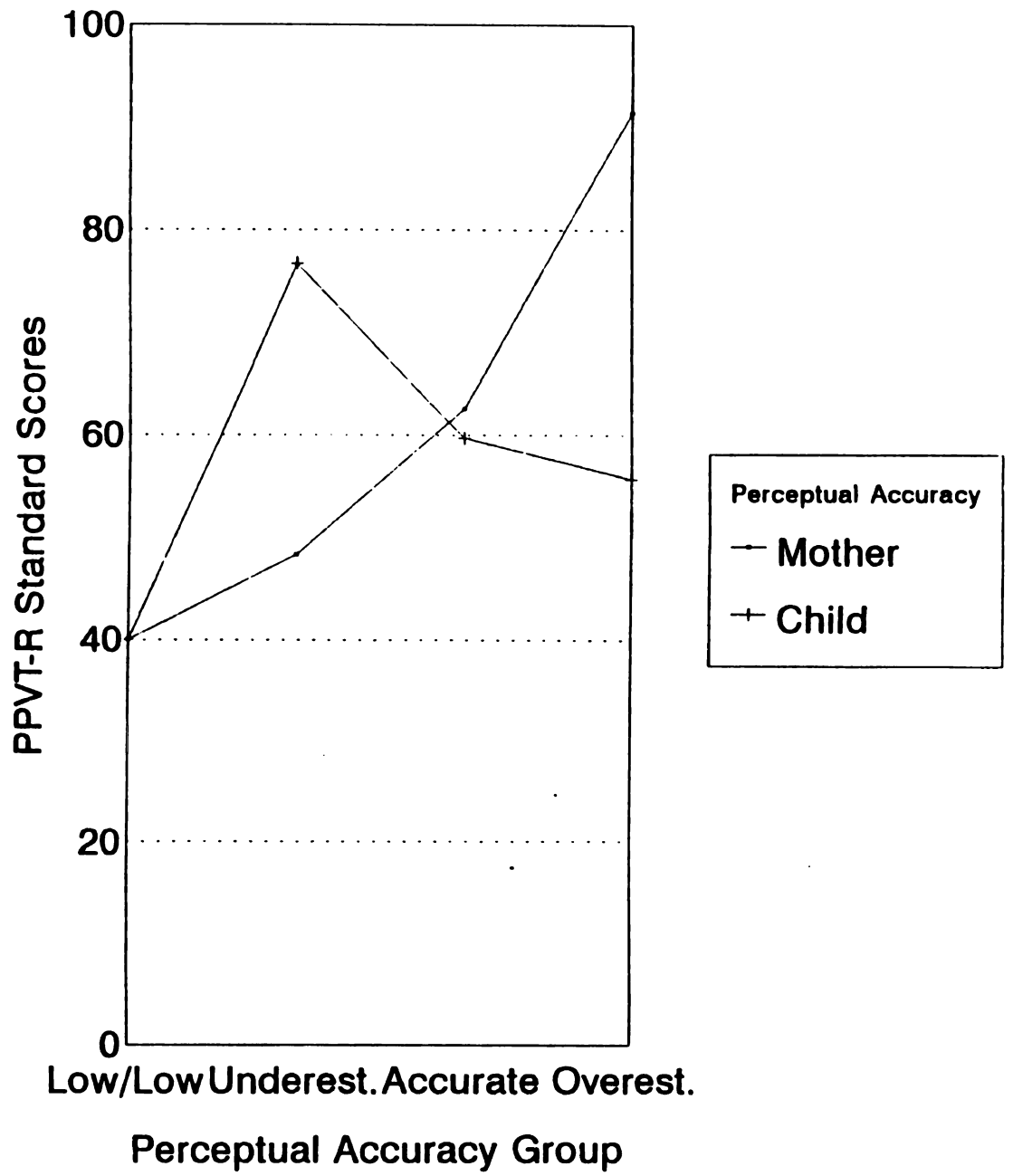

Figure 2. Perceptual Accuracy Group Estimate and Performance Differences

Variables affecting perceptual accuracy

Moderator hypothesis.

Two sets of analyses were conducted to understand the relationship of the mothers' perceptual accuracy with the severity of the child's mental retardation, and with the family's socioeconomic status. The first set of analyses tested Hypothesis 1, which proposed that the relationship between SES and the mothers' perceptual accuracy would be moderated by the age at which the child was diagnosed with mental retardation. In the current sample, children's age at diagnosis ranged from birth to 120 months (M=28.5 months, S.D.=28.8). Age at diagnosis was separated into the following three groups: (a) diagnosis in the first year (n=40), (b) diagnosis between the first and third years (n=17), and (c) diagnosis after three years (n=34). Hypothesis 1 proposed that when the diagnosis of mental retardation was made within the first year, there would be a strong positive correlation between the family's SES and the mother's perceptual accuracy. When diagnosis was made after the third year, the correlation between the family's SES and the mother's perceptual accuracy would be weak. The data failed to support the hypothesis. There was no significant difference in the correlation between SES and perceptual accuracy across the three conditions of the child's age at diagnosis: $r(30)$= -.15, ns when the child was identified within the first year, $r(15)$= -.15, ns when the child was identified between the first and third years, and $r(29)$= -.17, ns, when the child was identified after the third year.

This moderator hypothesis was based on the assumption that a strong correlation existed between the child's age at diagnosis and the severity

of the child's mental retardation because both presumably indicated mental retardation that was more easily detected. However, the low correlation $r(76) = .24$, $p < .05$ between those two variables was inconsistent with this assumption. Since the hypothesis had already been unsuccessfully tested for the child's age at diagnosis, the possible role of the severity of the child's mental retardation as a moderator of the relationship between the family's SES and the mothers' perceptual accuracy was tested. That hypothesis was also not supported. The correlation between the family's SES and the mother's perceptual accuracy was $r(76) = -.18$, ns when the child was classified as moderately mentally retarded, and $r(76) = -.04$, ns when the child was classified as mildly mentally retarded. The two correlations didi not differ significantly when tested using Fisher's r to z computation, $z(76) = -1.205$. ns. Thus, the moderator hypothesis was not supported for either variable presumed to indicate the clarity of the child's mental retardation.

SES and severity of mental retardation.

Hypothesis 1 also proposed that the mothers would more accurately perceive their child's ability on the PPVT-R when the family's SES was higher, or when the child's mental retardation was less severe. Two, one-way ANOVA's were conducted to test these proposals.

The one-way ANOVA contrasting the EMR and TMR groups, based on the mothers' perceptual accuracy scores, was significant, $F(1,76) = 9.15$, $p < .01$. As hypothesized, the mothers of children with moderate mental retardation ($M = 6.4$, $SD = 8.62$) more accurately perceived their children's ability on the PPVT-R than the mothers of children with mild mental retardation ($M = 17.0$, $SD = 15.5$).

However, the proposed difference in the mother's perceptual accuracy as a function of the family's SES did not occur, $F(4,68) = .33$, ns. As shown in Table 1 and consistent with the hypothesis, mothers in the two lowest SES groups had mean inaccuracy scores that appeared larger than those for the mothers in the three highest groups. However, the SES group differences failed to achieve significance because of the large variance within each of the SES groups and in the sample as a whole.

Table 1

Mothers' Perceptual Accuracy Scores for Separate SES Groups

SES GROUP	ACCURACY		
	n	M	SD
I (8-19)	9	9.7	10.7
II (20-29)	22	18.9	14.9
III (30-39)	17	11.8	10.4
IV (40-48)	10	8.8	16.0
V (49-66)	19	10.2	9.1
TOTAL	78	13.6	14.5

Note. The SES group scores in parentheses represent the parents' score on the Four Factor Index of Social Status (Hollingshead, 1975).

Because there was large variability among the scores within the five SES groups, the groups were collapsed into larger groups for the purpose of detecting possible SES differences. SES was divided into high and low conditions using a median split at a score of 32 on the Hollingshead Four Factor Index. A one-way ANOVA was conducted and, consistent with the hypothesis, the mothers from the higher SES group (M= 9.4, SD= 11.3) more accurately perceived their child's performance on the PPVT-R than the mothers from the lower SES group (M= 17.1, SD= 16.1), $F(1,78) = 5.90$, $p<.05$.

Variables affecting Mothers' Stress and Distress

Interaction of the Exogenous Variables.

Hypothesis 2 proposed main effects and interaction effects of the severity of the children's mental retardation and the families' SES on the mothers' reported stress and distress. First, the interaction hypothesis that the lower SES mothers of children classified as EMR, and higher SES mothers of children classified as TMR would report the least amount of stress and distress, was tested using a series of two-way ANOVA's. Due to the unequal distribution of the subjects into cells however, analysis could not be conducted on the full 5X2 model of SES (five groups) by severity of mental retardation (two groups). The SES groups were collapsed into high and low SES groups using the median split as described above. A series of 2X2 ANOVA's was conducted with SES (high-low) and the severity of the child's mental retardation (EMR-TMR) as independent variables. The dependent variables were the three factor scores for parent, family, and child problems on the QRS, and the global distress and depression scales of the SCL-90. None of the proposed interactions were

significant: parent problems, F(1,84)= 0.12, ns, family problems, F(1,84)= 0.06, ns, child problems, F(1,84)= 0.41. ns, and total problems, F(1,84)= 0.23, ns,or for global distress F(1,89)= 0.80, ns, and depression F(1,89)= 0.87, ns.

Severity of Mental Retardation.

Second, Hypothesis Two proposed that the mothers' of children with more severe mental retardation would report a greater number of problems on the QRS and the SCL-90. This proposal was tested by the main effects of the two-way ANOVA's described above. As shown in Table 2, the results for the SCL-90 scales: global distress, F(1,88)= 0.41, ns, and depression, F(1,88)= 0.55, ns, failed to support the hypothesis. The results did support the hypothesis for two of the three QRS scales. The mothers of children classified as EMR reported fewer total problems, F(1,84)= 6.48, p<.05, parent problems, F(1,84)= 6.69,p<.01, and showed a trend to report fewer child problems, F(1,84)= 3.62, p<.10, but they did not differ in their reports of family problems, F(1,84)= 1.74, ns. Follow-up ANOVA's were conducted on the individual subscales which contribute to the parent and child-oriented stress factors of the QRS. The ANOVA's revealed that the mothers of children classified as TMR reported significantly greater time demands from parenting, F(1,83) = 14.39, p<.001, and greater pessimism about the future for the child F(1,83) = 14.36, p<.001 than the mothers of children classified as EMR.

Table 2

Severity of Mental Retardation and Mothers' Stress and Distress

VARIABLE	Severity of Mental Retardation			
	TMR		EMR	
	Mean	SD	Mean	SD
QRS				
Parent-oriented Stress	38.12	(11.39)	31.01	(12.41)**
Health/Mood	4.30	(2.81)	3.45	(2.89)
Time Demands	5.93	(2.83)	3.83	(2.47)***
Negative Attitude	9.53	(3.60)	8.19	(2.63)
Overprotect/Depend	5.73	(2.61)	5.44	(2.73)
Lack Social Support	4.17	(1.23)	3.82	(1.52)
Overcommit/Martyr	3.76	(1.19)	3.32	(1.49)
Pessimism	4.68	(2.26)	2.95	(1.77)***
Family-oriented Stress	10.72	(5.17)	9.71	(4.39)
Lack Fam Integration	3.47	(2.54)	2.76	(2.46)
Lack Fam Opportunity	2.23	(1.45)	1.82	(1.25)
Financial Problems	5.02	(3.03)	5.14	(2.30)

(Table continues...)

Table 2 (cont'd)

VARIABLE	Severity of Mental Retardation: TMR Mean	TMR SD	EMR Mean	EMR SD
Child-oriented Stress	17.47	(7.45)	13.98	(8.19)a
Phys Incapacitation	2.37	(1.90)	1.91	(1.67)
Lack of Activities	2.07	(1.44)	1.59	(1.75)
Social Obtrusiveness	2.13	(1.55)	1.85	(1.37)
Difficult Personality	10.90	(5.19)	8.63	(5.48)a
SCL-90				
Global Distress	.42	(.47)	.55	(.54)
Depression	.57	(.75)	.77	(.77)

Note. The number of subjects in each group differed for the QRS (TMR = 30, EMR = 55) and SCL-90 (TMR = 32, EMR = 58) because more mothers returned the latter questionnaire completed.

ap<.10, two-tailed

* p<.05 ** p<.01 *** p<.001

Socioeconomic Status

Hypothesis 2 also proposed that the mothers from higher SES groups would report more parent problems on the QRS than mothers from lower SES groups, but that the mothers from lower SES groups would report more problems related to available financial resources to meet child-care demands, and more global distress and depression from the SCL-90. For these analyses, a separate series of one-way ANOVA's were run to compare the full five SES groups' responses on the three factors of the QRS, and on the global distress and depression scales of the SCL-90. Use of the main effects from the two-way ANOVA's described above would only have allowed for a comparison between high and low SES groups. As shown in Table 3, contrary to the hypothesis, the mothers' parent stress scores did not differ by SES group membership, $F(4,83)= 0.90$, ns. A follow-up ANOVA on the individual scales contributing to personal stress revealed no significant differences between SES groups and no consistent direction of effects across SES groups.

However, consistent with the hypothesis, the SES effect was significant for mothers' reports of family problems on the QRS, $F(4,83)= 7.22$, $p<.001$. A post-hoc comparison of the groups using Tukey's HSD revealed that the mothers from group V reported fewer family problems than the mothers from any other group. Differences in the family-oriented stress factor were further investigated through a series of one-way ANOVA's conducted on the individual subscales of the factor. The results indicated that the SES group differences in Financial Problems, $F(4,82)= 10.00$, $p<.001$ largely accounted for the effects on family problems. The other two subscales contributing to family problems did not differ

significantly by SES group: family opportunity $F(4,82)= 0.99$, ns, and family integration $F(4,82)= 1.65$, ns. A post-hoc comparison of the financial problems subscale using Tukey's HSD indicated that Group V reported significantly less stress than Groups 2 and 3 related to financial problems.

Table 3

Effects of the Family's SES on Mothers' Stress and Distress

Variable	SES I	II	III	IV	V
	MEANS				
QRS					
Parent Problems	29.72	35.92	40.76	35.65	31.11
Health/Mood	3.22	4.88	3.50	4.27	2.73
Time Demands	4.89	4.84	4.38	5.46	3.91
Negative Attitude	7.28	8.96	9.06	9.46	8.34
Overprotect/Depend	4.56	5.72	6.19	5.55	5.46
Lack Social Support	3.72	3.88	4.69	4.09	3.46
Overcommit/Martyr	3.33	4.04	3.38	2.91	3.32
Pessimism	2.72	3.60	3.56	3.91	3.89
Family Problems	9.39	12.24	11.50	11.27	6.43
Family Integration	3.11	3.40	3.19	4.00	1.96
Family Opportunity	1.67	2.28	2.00	2.27	1.59
Financial Problems	4.61	6.56	6.31	5.00	2.89*** (5>2,3)

(Table continues...)

Table 3 (cont'd)

Variable	SES I	II	III	IV	V
	MEANS				
Child Problems	15.44	16.16	15.57	18.28	12.51
Physical Incapac	2.78	2.40	1.69	2.73	1.32a
Lack of Activities	1.11	1.92	2.06	2.09	1.46
Social Obtrusiveness	1.44	2.60	1.88	1.73	1.59a
Difficult Personality	10.11	9.24	9.94	11.73	8.14
SCL-90					
Global Distress	.70	.81	.38	.38	.29** (2>5)
Depression	.86	1.13	.50	.62	.41** (2>5)

Note. The number of subjects in each group differed for the QRS (SES groups I=10, II=25, III=16, IV=11, and V=22) and SCL-90 (SES groups I=11, II=24, III=16, IV=13, and V=25)

ap<.10, two-tailed

* p<.05 ** p<.01 *** p<.001

The proposed SES effect was also significant for the mothers' reports of global distress, $F(4,88)= 3.98$, $p<.01$, and depression, $F(4,88)= 3.17$, $p<.05$ on the SCL-90. A post-hoc comparison of the groups using Tukey's HSD revealed that group II reported significantly greater global distress and depression than group V. The results indicate a generally linear relationship from groups II through V, as indicated in Figure 4. However, the mothers in Group I reported less global distress and depression than those in group II, though this difference was not significant.

SES and Mothers' Distress Scores on the SCL-90

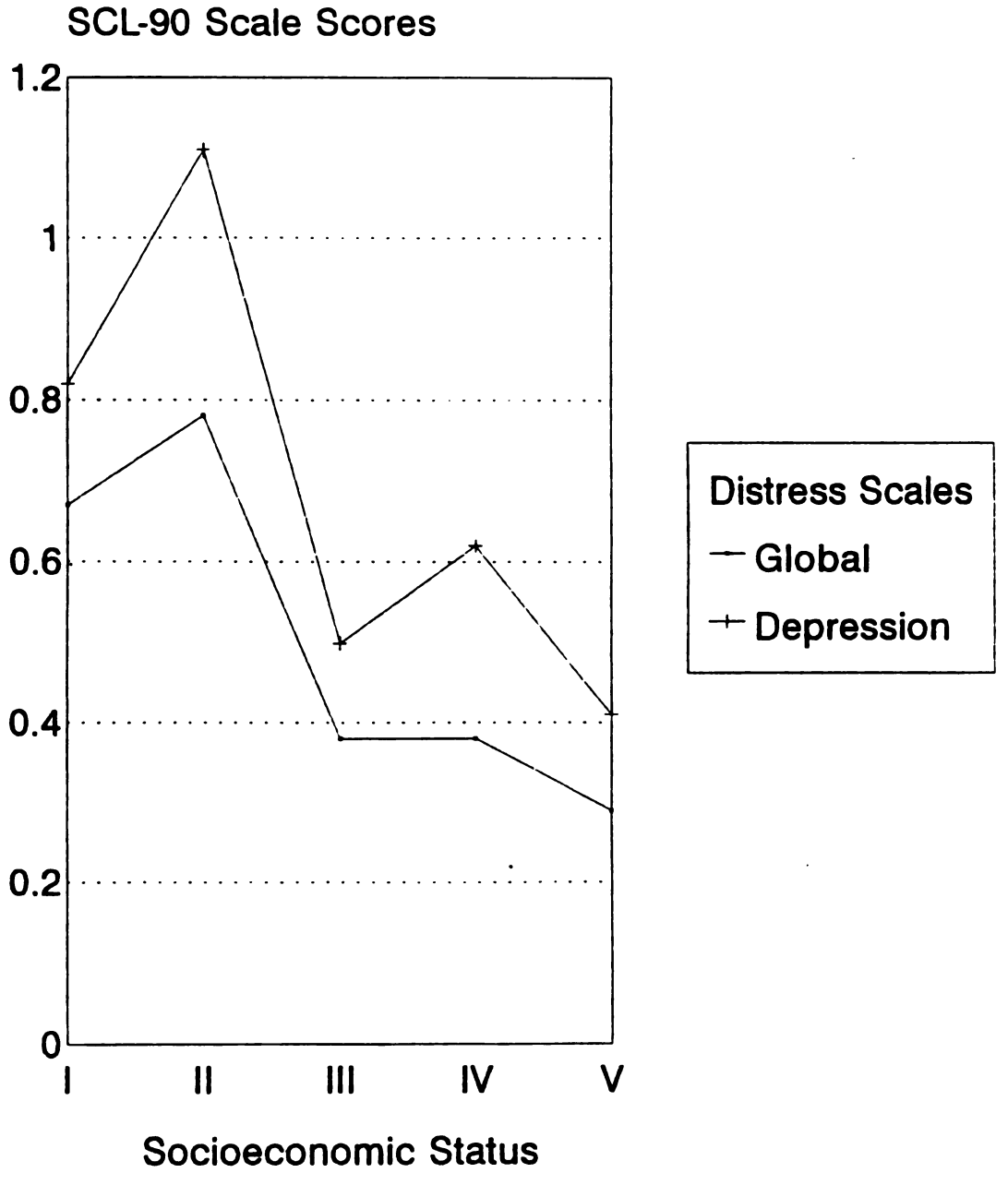

Figure 3. The Relationship Between SES and Mothers' Distress

Mothers' Perceptual Accuracy.

Finally, Hypothesis 2 proposed that the mothers who accurately perceived their child's performance on the PPVT-R would report fewer problems on the QRS and less distress on the SCL-90 than the mothers who inaccurately perceived their child's performance. A series of one-way ANOVA's was conducted to detect differences between the four perceptual accuracy groups on the three factors of the QRS, and on the global distress and depression scales of the SCL-90. As shown in Table 4, the hypothesis was supported for distress, but not for problems on the QRS. The perceptual accuracy groups differed significantly on both the global distress, $F(3,75)= 3.40$, $p<.05$, and depression, $F(3,75)= 3.21$, $p<.05$, scores on the SCL-90. Post-hoc comparisons using Tukey's HSD revealed that the mothers in the underestimator group reported significantly more global distress and depression than the mothers in the low estimate/low performance group. However, analysis of the QRS factors for parent problems, $F(3,72)= 0.93$, ns, family problems, $F(3,72)= 1.84$, ns, and child problems, $F(3,72)= 1.86$, n.s., failed to support the hypothesis. The differences between the perceptual accuracy groups appeared consistent across the factor scores of the QRS, so an ANOVA was run using perceptual accuracy group membership as the independent variable and the overall problem score on the QRS as the dependent variable. The full ANOVA did not yield significant group differences, $F(3,72)= 1.58$, ns. However, analyses contrasting the groups on the individual subscales of the QRS did reveal significant differences for pessimism, $F(3,72)=3.30$, $p<.05$, and social obtrusiveness, $F(3,72)=3.01$, $p<.05$, as well as a trend for difficult personality, $F(3,72)= 2.23$, $p<.10$. Post-hoc comparisons of

these significant findings using Tukey's HSD indicated that: (a) the low estimate/low performance group of mothers expressed significantly more pessimism than the mothers who estimated accurately, and (b) the underestimators saw their children as more socially obtrusive than the overestimators. Neither of these findings were consistent with the hypothesis, which only predicted differences between accurate and inaccurate perceptions. Also, there was a trend for the mothers from the low/low group to report that their children had the most difficult personalities, while those from the accurate group reported that their children had the least difficult personalities of any perceptual accuracy group.

Table 4

Effects of Mothers' Perceptual Accuracy on Their Stress and Distress

	PERCEPTUAL ACCURACY			
	1	2	3	4
Variable	LOW/LOW	UNDEREST	ACCURATE	OVEREST
		MEANS		
QRS				
Parent Problems	35.97	34.55	29.96	31.50
Health/Mood	3.87	4.50	3.25	3.13
Time Demands	4.80	4.00	3.82	4.53
Negative Attitude	9.20	8.35	8.37	8.23
Overprotect/Depend	5.67	6.20	4.86	5.20
Lack Social Support	4.13	4.00	3.68	4.10
Overcommit/Martyr	3.73	3.65	3.27	3.13
Pessimism	4.67	3.85	2.68	3.17* (1>3)
Family Problems	10.37	11.65	8.61	10.00
Lack Fam Integration	3.27	3.60	2.32	2.73
Lack Fam Opportunity	2.07	2.15	1.64	1.73
Financial Problems	5.03	5.90	4.66	5.53

(Table continues...)

Table 4 (cont'd)

Variable	PERCEPTUAL ACCURACY 1 LOW/LOW	2 UNDEREST	3 ACCURATE	4 OVEREST
		MEANS		
Child Problems	18.13	16.00	12.36	14.20
Phys Incapacitation	3.07	1.95	1.82	1.80
Lack of Activities	1.87	1.80	1.91	1.73
Social Obtrusiveness	1.80	2.55	1.64	1.33* (2>4)
Difficult Personality	11.40	9.70	7.00	9.33a
SCL-90				
Global Distress	.27	.79	.40	.47* (2>1)
Depression	.36	1.08	.59	.55* (2>1)

Note. The number of subjects in each group differed for the QRS (Perceptual accuracy groups: 1 = 15, 2 = 20, 3 = 22, and 4 = 16) and the SCL-90 (Perceptual accuracy groups: 1 = 16, 2 = 19, 3 = 24, and 4 = 18).

ap<.10, two-tailed

* p<.05 ** p<.01

Variables affecting Children's Self-esteem

Validity of Self-esteem in this Sample.

Before addressing the relationship between self-esteem and the independent variables it was necessary to examine the validity of the Perceived Competence Scales as a measure of self-esteem in children with mental retardation. These analyses were conducted on the children who were capable of responding to the PCSC. Overall, a majority of the children with mental retardation in this sample were able to understand the PCSC well enough to complete one of the versions of the questionnaire. In this sample, 75 of the 94 children were able to complete the PCSC. Fifty-four of 60 (90%) of the children classified as EMR were able to complete the questionnaire, as compared to 23 of 34 children (67.7%) classified as TMR. As expected, a higher percentage of the children with mild versus moderate mental retardation were able to complete the more difficult, paper-and-pencil version of the PCSC. Within those groups, 34 children classified as EMR completed the paper-and-pencil version of the PCSC, while only seven of the children classified as TMR completed that version. The remainder in each group completed the picture version.

In an attempt to evaluate the validity of using the PCSC with this sample of children, their pattern of responses to the measure were compared to standardization samples used by Harter et al. (1982, 1984). Inter-item correlations of the children's responses on the PCSC were compared to the existing factors. The correlation matrix shown in Table 5 indicated that the individual items comprising each standard scale all correlated significantly with their respective scales, and in every case, the items correlated highest with the appropriate scale. Thus, the

structure of the responses of children in the current study appeared similar to the responses of the children in the standardization sample for this measure. However, also shown on Table 5, the coefficient alpha's computed as an indication of internal consistency were somewhat lower than those reported by Harter (1982) in her standardization samples. Table 6 shows a similar pattern on the Picture Version of the PCSC for both the item-factor correlations and the coefficient alpha's for each factor. These results also suggested that the two-factor solution reported by Silon and Harter (1985) for their EMR sample was a worse fit in the current sample than the original three factor solution reported by Harter (1982).

Table 5

Perceived Competence Scale- Older Version Item to Scale Correlations

	STANDARD SCALES			MR SCALES			
ITEM#	COGNITIVE	SOCIAL	PHYSICAL	COMPETENCE	POPULARITY	MEAN	S.D.
COGNITIVE COMPETENCE (coefficient alpha= .61)							
1.	.79**	.42**	.33*	.68**a	.47**	2.79	1.20
7.	.58**	.28	.36*	.38**	.32*	2.77	1.06
13.	.53**	.34*	.16	.27	.25	2.65	1.16
19.	.55**	.26	.25	.45**a	.35*	2.90	1.15
25.	.64**	.44**	.19	.47**	.58**	3.35	0.89
31.	.45**	.13	.34*	.49**	.05	2.77	1.23
SOCIAL COMPETENCE (coefficient alpha= .53)							
2.	.33*	.45**	.12	.21	.54**a	2.83	1.16
8.	.45**	.81**	.27	.43**	.79**a	3.04	1.22
14.	.25	.54**	.05	.15	.31*	2.73	1.14
20.	.16	.52**	.16	.17	.64**a	2.85	1.22
26.	.03	.41**	.02	.10	.12	2.88	1.20
32.	.50**	.56**	.21	.51**	.60**a	2.98	1.06
PHYSICAL COMPETENCE (coefficient alpha= .53)							
3.	.31*	.18	.59**	.36*	.22	2.83	1.19
9.	-.05	-.03	.45**	.27a	-.04	2.63	1.20
15.	.47**	.35*	.63**	.66**a	.43**	2.85	1.17
21.	.26	.09	.65**	.55**a	.13	2.83	1.12
27.	.16	-.06	.38**	.10	-.04	2.48	1.17
33.	.40**	.32*	.61**	.61**a	.31	2.73	1.07

a Items from the scales found with an EMR sample (Silon and Harter 1985)
* = p<.05, ** = p<.01

Table 6

Perceived Competence Scale- Picture Version Item to Scale Correlations

	STANDARD SCALES			PICTURE-VERSION SCALES			
ITEM#	COGNIT	SOCIAL	PHYSICAL	COMPETENCE	ACCEPTANCE	MEAN	S.D.
COGNITIVE COMPETENCE (coefficient alpha= .67)							
1.	.56**	.35*	.36*	.52**a	.34	3.30	0.88
5.	.47**	.08	.45**	.52**a	.08	3.15	1.09
9.	.46**	.18	.07	.31a	.28	2.79	1.17
13.	.68**	.22	.68**	.76**a	.32	2.88	1.19
17.	.67**	.34	.15	.48**a	.43**	3.21	0.99
21.	.72**	.44*	.39*	.63**a	.53**	3.15	1.12
SOCIAL COMPETENCE (coefficient alpha= .76)							
2.	.39*	.55**	.12	.30	.43*a	3.46	0.87
6.	.21	.60**	.23	.25	.47**a	3.03	1.05
10.	.43*	.74**	.47**	.50**	.72**a	3.41	0.98
14.	.37*	.74**	.26	.36*	.67**a	3.49	0.97
18.	.13	.68**	.00	.08	.61**a	3.09	1.01
22.	.20	.73**	.17	.21	.67**a	3.15	1.06
PHYSICAL COMPETENCE (coefficient alpha= .57)							
3.	.42*	.25	.47**	.50**a	.22	3.39	0.79
7.	.33	.36*	.68**	.55**a	-.04	2.93	1.17
11.	.13	.11	.45**	.32a	.43**	3.39	0.90
15.	.68**	.22	.68**	.76**a	.13	3.42	0.75
19.	.35*	.33	.46**	.45**a	-.04	2.94	1.14
23.	.09	-.13	.58**	.36*a	.31	2.73	1.07

a Denotes items forming picture-version scales (Harter and Pike, 1984)
* = p<.05, ** = p<.01

Interaction of the Exogenous Variables.

Using the three factor model of the PCSC as a basis for analyses, Hypothesis 3 proposed three effects on the self-esteem of the children in this sample. First, Hypothesis 3 proposed that SES and the severity of the child's mental retardation would interact in contributing to higher self-esteem in children with moderate mental retardation from high SES families and children with mild mental retardation from low SES families. This hypothesis was tested using a 2X2 ANOVA with the family's SES (high versus low) and the severity of the child's mental retardation (EMR versus TMR) as independent variables and scores on the PCSC as a dependent variable. The results failed to support the hypothesized interactions for any of the three factors of the Perceived Competence Scales: intellectual $F(1,79)= 1.06$, ns, social $F(1,79)= 0.38$, ns, or physical $F(1,79)=0.89$, ns. In addition, the main effect of the child's mental retardation upon his/her self-esteem was not significant for any factor of the PCSC, intellectual $F(1,79)= 0.81$, ns, social $F(1,79)= 0.47$, ns, and physical $F(1,79)= 2.20$, ns.

Socioeconomic status.

Second, Hypothesis 3 proposed that high as opposed to low family SES would be associated with higher self-esteem in the children with mental retardation. This proposal was tested using a set of one-way ANOVA's rather than the main effects of the 2X2 ANOVA's described above in order to examine the effects of all five SES groups on each of the three factors of the Perceived Competence Scales. Again, none of the three factors supported the hypothesis: intellectual $F(4,78)= 1.02$, ns, social $F(4,78)= 0.61$, ns, or physical $F(4,78)= 1.58$, ns.

Mothers' Perceptual Accuracy.

Third, Hypothesis 3 proposed that the children would report higher self-esteem when their mother's estimates were accurate than when the estimates were inaccurate. A series of one-way ANOVA's was used to determine the effect of the four conditions of perceptual accuracy on the children's reported self-esteem. The mothers' perceptual accuracy group membership did not affect the children's reports on either the intellectual $F(3,65)= 0.58$, ns, or physical $F(3,65)= 0.31$ factors, but perceptual accuracy-group membership was significantly related to the social factor of the Perceived Competence Scales, $F(3,65)= 2.79$, $p<.05$. However, a post-hoc analysis using Tukey's HSD indicated that the effect was the opposite of the hypothesized relationship between the mothers' perceptual accuracy and the children's self-esteem. The Z-scores of the children whose mothers accurately estimated their performance showed that they reported significantly lower self-esteem ($M= -.34$, $SD= 1.28$) than the children whose mothers overestimated their performance ($M= .54$, $SD= .79$), suggesting that the mothers' overestimation was related to the children's reports of more positive self-esteem.

DISCUSSION

This study focused on contributions to and outcomes of inaccurate perceptions of children's cognitive abilities in mothers of children with mental retardation. Previous literature suggested that, unlike parents of normally-developing children, parents of children with mental retardation lack guidance for establishing expectations for their child's development (Bentovim, 1972). As a result, parents of children with mental retardation would misperceive their child's cognitive abilities.

The present study approaches the study of mothers' perceptual accuracy in several unique ways. First, the argument in previous studies has focused solely upon whether or not parents of children with mental retardation misperceive their children's cognitive abilities. Because previous studies consistently documented that the parents do tend to misperceive their children's abilities (Schulman and Stern, 1959; Barclay and Vaught, 1964; Gorelick and Sandhu, 1967; and, Tew, Laurence, and Samuel, 1974), this study focuses on the outcomes of maternal misperception for both the mothers and their children with mental retardation. Second, previous studies have tended to focus on parents' overestimation of their child's cognitive ability. The present study focused upon both overestimation and underestimation, and the outcomes of each. Third, this study presented a conceptual model for understanding the contributions to, and outcomes of, mothers' perceptual inaccuracy.

Support for the Conceptual Model

Of the three major hypotheses, two received qualified support, and the third received very minimal support. Both greater severity of the child's mental retardation and higher SES were associated with greater

perceptual accuracy, though the child's age at diagnosis did not moderate the relationship between SES and the mothers' perceptual accuracy. More severe forms of mental retardation, lower SES, and less perceptual accuracy were associated with the mothers' reports of greater stress and distress. However, neither the child's mental retardation, nor the family's SES were associated with the children's reported self-esteem. There was a trend toward a relationship between the mothers' perceptual accuracy and the children's reported self-esteem.

Flaws in the Conceptual Model

The lack of more consistent support for the conceptual model as a whole may be attributed, in part, to errors in the formulation of the hypotheses that guided the analyses. Little previous research has been conducted on the relationship between cognitive variables and outcomes for both parents and children. The exploratory nature of this research likely increased the or error, [discuss how hypos could be wrong, not just unsupported because of measurement problems]

Moderator Hypothesis.

The present data failed to support the hypothesis that when the child's mental retardation was readily apparent, as suggested by having been diagnosed earlier in the child's life, mothers with higher SES would hold more accurate perceptions than the mothers with low SES. When the diagnosis was made relatively late, the SES groups were not expected to differ in their ability to accurately perceive their child's cognitive abilities. Instead, the results indicated that the mothers with higher SES made significantly more accurate estimates of their child's cognitive abilities than the mothers with lower SES regardless of the child's age

at diagnosis. The failure to support the hypothesis may be due to the fact that most families were studied several years after the child was diagnosed. Perhaps the child's age at diagnosis is a variable whose impact decreases over time. Regardless of the length of the delay in diagnosis, all parents of children with mental retardation are eventually faced with their child's cognitive limitations, and they all go through stages of coping with those limitations as suggested by the work of Gath (1977), Wikler (1981) and Wikler et al. (1981). Because the mothers in the present sample typically had a long period of time between when their children were diagnosed with mental retardation and when the current data were collected (M= 129.9 months ,SD= 45.9), it is possible that most of them had already adjusted to the diagnosis as well as they were able. As such, the lack of support for the moderational hypothesis may simply have reflected the decreased salience of the variable due to the passage of time since diagnosis.

Issues in the Measurement of the Children's Self-Esteem.

The inter-item correlations suggested that the children in this sample who were able to comprehend and respond to the PCSC did so in a manner consistent with the three factor structure created by Harter (1982) for children without mental retardation. The responses of the children in the present study were not consistent with the two factor structure found by Silon and Harter (1985) for children classified as EMR, or the two factor structure found by Harter and Pike (1984). Silon and Harter (1985) argued that the "mental age" of children with mental retardation was a good indicator of their response style on the PCSC. That argument was supported by the data for the children in the EMR group, but not the

TMR group. That is, Silon and Harter (1985) stated that, only at eight years of age do children begin to perceive their self-esteem in terms of three factors (intellectual, social, and physical). In the present study, the children in the EMR group had an average mental age of 8.36 years (SD=2.12), and this produced what appeared to be a three-factor structure for the PCSC scores. The children in Silon and Harter's (1985) study, whose responses produced only a two-factor structure, were all below eight years. However, the children in the TMR group in the present study had a mean mental age of 5.66 (SD=1.52), yet their responses also best matched the three factor structure. This suggests that mental age may not be the most reliable indicator of children's response style on the PCSC. Instead, the differences in response style may have related to discrepancies in chronological age between the children in this study and those presented by Harter et al. (1984, 1985). The average age of the children in this study who completed the pencil-and-paper version of the PCSC was 14.45 (SD= 2.87), as compared to those in Silon and Harter's (1985) study (M= 11.07). Similarly, the average age of the children in this study who completed the picture version of the PCSC was 11.56 (SD= 3.46) compared to 5.68 for the children in Harter and Pike's (1984).

Although the fact that items showed expected intercorrelations suggested that the PCSC was valid for the children in this sample, the hypothesized differences in the children's self-esteem in relation to the family's SES or the severity of the child's mental retardation did not occur. In addition, their self-esteem showed only a tendency to differ in relation to the mothers' perceptual accuracy, which will be discussed later. The failure to find expected effects may have resulted from

several problems that arose from using two different versions of the PCSC with this sample. First, the severity of the child's mental retardation was confounded with the version of the PCSC used. Most of the children with moderate mental retardation received the picture version of the PCSC, and most of the children with mild mental retardation received the paper-and-pencil version. The children's responses were transformed into Z-scores in order to make comparisons irrespective of which version of the PCSC was administered. Thus, differences between the EMR and TMR groups were obscured because the Z-score transformation made the mean and standard deviation of both groups equal. Nevertheless, analysis of the children's actual scale scores revealed no significant differences related to the family's SES, the severity of the child's mental retardation, or the mothers' perceptual accuracy. This may due to a second problem with using two versions of the PCSC. The items on each version were developed to include age-appropriate content. For example, items from the intellectual factor of the pictorial version questioned children's competence for specific scholastically-related tasks. The paper-and-pencil version of the PCSC asked children about more general capabilities and difficulties, and questions were specifically referenced to peers' abilities on the same task. Similarly, on the physical factor, the pictorial version asked about specific skills such as skipping, running, and jumping rope. The older version asked about ability and willingness to participate in sports, and some questions asked the children to compare themselves to their peers. Therefore, even when the children were responding to the similar items from different versions of the PCSC, the connotation of the items differed because they were phrased

differently. The pictorial version focused more upon the children's ability to accomplish a task rather than the quality of their performance on the task compared to other children. Because the children classified as TMR generally responded to stimuli developed for much younger children, the fact that scores were not depressed nevertheless suggests that they see themselves only s competent as much younger children. Thus, the reported self-esteem of the children in the TMR group may have been inflated because they were compared to children from a younger reference group.

Mothers' Perceptual Accuracy

Initially, mothers' perceptual accuracy was conceived of as a dichotomous variable, and the hypotheses compared accurate to inaccurate perceptions. The hypotheses were supported in several ways. As in previous studies (Ewert and Green, 1957; and Iano, 1976), the mothers with high SES were more perceptually accurate than the mothers with low SES, although this finding will be qualified below. Additionally, consistent with the hypotheses The mothers of children with moderate mental retardation perceived their children's cognitive abilities more accurately than the mothers of children with mild mental retardation. This may reflect the greater ambiguity of mild handicaps as Willner and Crane (1979) suggested. As a result, they suggested that the parents of children with mild handicaps had more difficulty relinquishing their "normal" expectations for the child. For the mothers of children with moderate mental retardation their children's impairments are more evident.

The four perceptual accuracy groups.

Although the issue of perceptual accuracy versus inaccuracy alone has important implications for parent and child outcomes, this study's results indicated that the outcomes of perceptual inaccuracy differed depending on whether the mothers underestimated or overestimated. Also, the study uncovered a group of mothers who were accurate due to a floor effect on the measure, and who differed from other accurate mothers.

The importance of separating overestimation from underestimation can be seen clearly in the relationship between the family's SES and the mothers' perceptual accuracy. As stated above, the mothers with low SES were less perceptually accurate than those with the higher SES. In addition, the mothers differed in the manner of their misperceptions. The estimates of nearly all of the mothers from Group I, the lowest of the five SES groups, matched or exceeded their children's performance. In contrast, over half of the mothers from Group II, the second lowest SES group, underestimated their child's performance. The difference between these two groups may be related to different family standards. Kahl (1961) identified two family types within the lower-middle class which contributed to different parental expectations. The first, referred to as "getting by" families, tended to accept the security of their current situation rather than striving to improve their social status. The second were the "getting ahead" families whose educational and achievement standards were based upon those above them in the work hierarchy and social strata. The getting ahead families expected their children to share those standards. Baucom and Epstein (1990) suggest that standards are what a person thinks should be, and what is perceived may be

influenced by those standards. As such, the Group I mothers' tendency to overestimate may have indicated their optimism that their children could get by. On the other hand, the tendency for the mothers in Group II to underestimate their child's performance may have indicated their pessimism about the children's ability to get ahead.

The results suggest three observations about the relationship between perceptual accuracy, stress, distress, and the child's self-esteem. First, perceptual accuracy was not consistently related to less stress for mothers. Although the mothers in both the low/low and accurate groups perceived their children's cognitive abilities accurately, the mothers in the former group reported significantly more pessimism about their children's future than the mothers in the latter group. This difference between groups of accurate estimators suggests that perceptual accuracy alone is not sufficient to counteract the realistic problems of raising a child with more severe mental retardation.

Second, the differences in the mothers' misperceptions may have been the result of different processes operating for each group. The underestimators seemed to exhibit a cognitive set for their children that was consistent with studies of depressed mothers. In previous studies, mothers who had been identified as clinically depressed (Lee and Gottlib, 1989), and mothers who reported elevated amounts of depression on self-report measures (Webster-Stratton, 1988; and Webster-Stratton and Hammond, 1988) consistently reported that their children engaged in more problem behaviors than children of nondepressed mothers (clinical or self-report), even though outsiders' evaluations suggested that the children's behavior did not differ from other children's behavior. Similarly, the mothers

in this study who reported the greatest amount of depression also underestimated their children's cognitive abilities. They also reported that their children were the most socially obtrusive, despite the fact that, as a group the children had the highest PPVT-R scores (M= 74.0). In contrast, the mothers who overestimated reported that their children were the least socially obtrusive. These children were significantly younger (M= 10.8 years) than those in any other group. It seems that these mothers exhibited a general optimism about their children, perhaps because they had not encountered some of the stressors that confront parents over the course of raising a child with mental retardation (Wikler et al., 1981). Nevertheless, the mothers' optimism seems to be related to positive outcomes for the children. These children reported the greatest amount of social competence of any perceptual accuracy group. Thus, taken together these findings suggest that over and underestimation may be indicative of general well being and outlook of the mothers, which in turn has implications for the adjustment and well-being of the children.

The third point raised by these analyses is that perceptual accuracy may actually enhance the mothers' ability to cope with their children's cognitive impairment, and may thus prevent the mothers from experiencing distress or depression because of the childcare burden. Although both the low/low and the underestimator groups reported relatively high levels of child problems, the mothers from the low/low group reported significantly less distress and depression than the underestimator group. Perhaps recognizing their children's problems in the context of accurately recognizing the child's cognitive limitations helps to relieve confusion for the mothers in the low/low group, and thus relieves stress and

distress.

Impact of the Exogenous Variables on Mothers' Stress and Distress

The Interaction.

The proposed interaction between the severity of the child's mental retardation and the family's SES on the mothers' reported QRS problems was not supported for either the total problems or the individual factors of the QRS. These results failed to support Iano's (1970) findings that parents with higher SES more often reported negative feelings about their child diagnosed as EMR than parents with low SES. One explanation for the difference is findings may be the difference in instruments used to measure parents' attitudes. Iano (1970) used judges ratings of parents responses to the Adapted Thurston Sentence Completion Form (ATSCF) to measure their attitude toward their children. The QRS was designed specifically for measuring parents' experiences of different, and generally more objective sources of stress parents encounter while raising a child with mental retardation. Perhaps, the ATSCF is more sensitive to the subjective thoughts and opinions parents have about their children than the QRS.

Family SES.

The proposed relationship between the family's SES and the mothers' reports of problems and distress received partial support. As hypothesized, the mothers with lower SES reported significantly more family problems on the QRS and more stress and distress on the SCL-90 than the mothers with higher SES. However there was no significant difference in parent problems across SES groups. The differences on the family problems factor of the QRS were accounted for by differences in the number

of reported financial problems between these groups. Interestingly, although the number of reported financial problems tend to increase as the family's SES decreased, this was not the case for the mothers from the lowest SES group. They reported fewer financial problems than any other group except the highest SES group. This finding, together with the fact that family income for these mothers from SES group I was actually the lowest of any SSES group (Floyd and Saitzyk, 1991) suggested that the mothers from the lowest SES group were denying their financial problems a response Haan (1977) noted was common in families with low SES, or the mothers were content with "getting by," as Kahl (1961) observed in his study.

Severity of the Child's Mental Retardation.

As hypothesized, the mothers of children with moderate mental retardation reported greater amounts of problems for the parent factor and total problems on the QRS and they showed a trend toward reporting more child problems than the mothers of children with mild mental retardation. However, the mothers' reports did not differ significantly as a function of the severity of the child's mental retardation for family problems on the QRS or distress on the SCL-90. Floyd and Saitzyk (1991) note, the parent problems factor of the QRS measures both childcare demands and feelings of stress or distress. The present findings showed significant EMR/TMR group differences only on the time demands and pessimism subscales of the parent problems factor. These findings suggest that although the mothers of the children classified as TMR recognized more demands related to their children's cognitive limitations, these demands were not associated with greater distress for the mothers. These mothers seemed

to recognize that they were faced with raising a more difficult child, whose condition was not likely to change, but they were able to cope with those demands.

These findings do not appear to be consistent with previous studies (Blacher, Nihira, and Meyers, 1987; and Nihira, Meyers, and Mink, 1980) which found that more severe mental retardation was associated with a greater number of family problems. However, the differences Blacher et al. (1987) found were between families of children with severe mental retardation and those with either mild or moderate mental retardation. They did not find significant differences in family adjustment between the parents of children with EMR versus TMR. In addition, Nihira et al. (1980) found that children classified as TMR had a greater impact on their family's adjustment than children classified as EMR. However, they also found that parents of children classified as TMR expressed a more positive attitude about their child than mothers of children with EMR. The family factor subscales on the QRS do not distinguish between adjustment and attitudes, which may explain the lack of significant EMR-TMR differences in the present study.

Limitations and Directions for Further Research

Several limitations of this study restrict the conclusions that can be drawn about the impact of perceptual accuracy, but point out directions for further research. First, the study was limited by the measures used. The outcome measures selected for this study may not have been applicable to the range of cognitive impairment exhibited by the children in this sample.

The design of this study could also have been improved in several ways. First, a more complete study of the full conceptual model would require collecting a larger number of subjects, in order to ensure an adequate distribution of families across SES groups and mental retardation groups. Second, it would also be useful to collect perceptual accuracy data from parents of children without mental retardation to observe differences or similarities with the sample of mothers with mental retardation. Use of a comparison sample might also give a baseline indication of mothers' perceptual accuracy for mothers who have available developmental guidelines. Third, the potency of perceptual accuracy and the child's age at diagnosis would be increased by studying families more immediately following their child's diagnosis. This is particularly relevant for detecting expected problems for families of children whose diagnosis is delayed.

The outcome measures used in this study could also have limited the results obtained. First, many items on the QRS may have been targeted for children with more severe handicaps than the children in this sample. For example, the parent attitudes subscale of the QRS that seems to include many items that apply to children with more severe mental retardation and concommitant physical difficulties. There are several items on parents' thoughts about their child dying, which are more likely to be endorsed when the child's handicaps are severe and life-threatening. There are also several items which question parents' response to the child's physical incapacitation. For example, item 89 states, "It is easier for me to do something for _____ than to let him/her do it himself/herself and make a mess." While these items are likely to be important in

differentiating parenting stress across the full range of severity of mental retardation, many of the items on this subscale may be too extreme for parents of children with either mild or moderate mental retardation to endorse, and this seems true of the QRS in general. In an attempt to include items applicable to the full range of impairment, Holroyd's (1974) QRS may not address the issues facing parents of children with more mild or moderate mental retardation. Those issues, such as parents attitudes, beliefs, may need to be addressed using instruments aimed at parents of children without mental retardation. The present study may have benefitted by using both measures of parenting experiences developed for families of children without handicaps and the QRS. In that way, processes and events applicable to parents of children with and without mental retardation could be measured. Second, the study could have made a more definite statement about the effects of the three independent variables on the children's self-esteem if all of the children had been able to complete the same measure of self-esteem.

The results of this study suggest that mothers' perceptions play a role in the stress they experience in parenting, and in the development of their child's self-esteem. However, both of those relationships presume that mothers act on their perceptions. Based on how they perceive their child's cognitive abilities, mothers should establish expectations for their child and they should act to bring about those expectations. Adding direct observation of mother-child behavior, and more complete assessment of parents beliefs and standards, would allow for a more complete understanding of whether this is indeed the case. Future work should use longitudinal follow-ups in order to better understand the

processes by which parents' perceptions of their children's cognitive abilities are shaped by their beliefs or standards about what their children should be able to achieve. Presumably parents' perceptions are both affected by and serve to modify their beliefs or standards about their children. Furthermore, both parents' perceptions and beliefs or standards about their children combine to affect parents' expectations for their children's future and the parents' behavior toward their children. The relationship between these cognitive and behavioral variables can be best understood using longitudinal follow-ups.

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