DIFFERENTIAL DISCIPLINE AND PARENT PERCEPTIONS OF SIBLINGS' CHARACTERISTICS: COMPARING BETWEEN- AND WITHIN-FAMILY ANALYSES

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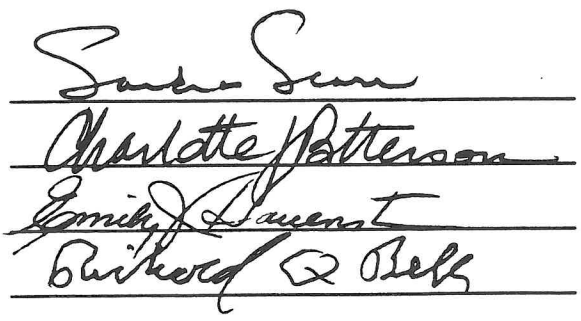

ABSTRACT

The investigation of the role of parents in children's development has focused on the effects of discipline on child behavior. These studies have relied on variability between families. New evidence from behavior genetics research points to within-family variability as being important to understanding the relationships between parental and child behaviors. These researchers have proposed that the within-family environment can be divided into 2 components - "shared" (that which is common to all children in the family) and "nonshared" (experiences unique to that child). While differential discipline is regarded as an important source of nonshared environmental effects to explain sibling differences in behavior, little is known about how parents' reports of differential discipline are related to their differential perceptions of their sibling children. Family interviews including 112 mothers and 98 fathers were conducted, in which parents' discipline strategies, stress, childrearing attitudes, family structure, and perceptions of children's behaviors were measured. Only 2 robust effects were found, where parents' greater use of Physical Punishment was statistically predicted by higher Traditionality, and child youth. There was little evidence for covariation between differential perceptions and differential discipline. These results are discussed within the context of specific predictions based

on Socialization and Behavior Genetics theories, and a method of directly measuring nonshared environment effects is proposed.

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INTRODUCTION

Current theories of family socialization emphasize both environmental and genetic contributions to particular developmental pathways. Research that focuses specifically on between-family or within-family differences in socialization patterns is in danger of over-representing the importance of unique environmental or biological factors. Thus, the challenge to contemporary developmentalists is to consider all variability -- between and within families -- as crucial to investigating the way environment and biology combine in development (Scarr, 1992).

Family socialization research

The historical roots of research on parental discipline are represented by the work of Baldwin and Becker, who proposed the orthogonal, 2-dimension model of parental socialization (Maccoby, 1992; Maccoby & Martin, 1983). Warmth encompasses the emotional tone that a parent demonstrates, and is considered a crucial aspect of any lasting positive influence on a child's development (Baumrind, 1991; MacDonald, 1992). Control is the degree of pressure the parent applies in socialization transactions; parents who are high on this dimension display coercive, punitive behaviors, while parents who are low in control may appear to be ignoring the child altogether.

Parents' discipline strategies are stable over time (Roberts, Block & Block, 1984; Baumrind, 1991; McNally,

Eisenberg & Harris, 1991), and are strongly related to childrearing attitudes and beliefs (Schaefer & Edgerton, 1985; Pinkerton & Scarr, 1994), and intelligence and level of education (Scarr, 1981, 1985; Kelley, Power & Wimbush, 1992). In addition, childrearing values may be related to parents' attributions about children's misbehavior, which have been shown to be related to parental behavior toward the child (Dix & Grusec, 1985; Dix, Ruble & Zambarano, 1989; Baden & Howe, 1992).

Socio-economic and cultural characteristics are also correlated with parental behavior. Generally, lower class families are more likely to value conformity, obedience, honesty, neatness, and cleanliness, devalue independence and nonconformity, and display more authoritarian (i.e. physical, coercive, high control) discipline. Middle-class families are more likely to value autonomy and independence, and display more authoritative discipline (i.e. reasoning, positive reinforcement) (Kohn, 1969; Maccoby, 1984a). Ethnic group differences in discipline have also been reported (Stack, 1974; Wilson, 1984; Kelley, Power & Wimbush, 1991), although the confounding of race and socio-economic status has made interpretation of these findings difficult. Given the evidence that family characteristics and parental discipline covary, Maccoby has suggested that the behaviors and attitudes common to a given socio-economic or cultural group are best thought of as different clusters

of parenting behaviors. In addition, Zern's (1976) ethnographic studies provide evidence that similarities in parenting behavior across cultural groups outweigh differences.

There is evidence that parental discipline is related to children's behavior (Baumrind, 1991; Hoffmann, 1991; Maccoby, 1984a), where more punitive discipline has been found to be related to hostility and resistance, or dependency and submissiveness. It is noteworthy that the direction of effects (from parent to child, and vice versa) has not been tested in these studies, thus making the results inconclusive (Pinkerton & Scarr, 1994), and that effect sizes have generally been small (Maccoby & Martin, 1983; Maccoby, 1984a).

Research investigating the role of parental discipline in the development of psychopathology in children has been more revealing. Findings from studies of marital satisfaction (Cox, Owen, Lewis & Henderson, 1989), parental conflict (Emery, 1982), divorce (Hetherington, 1991), depression (Downey & Coyne, 1990), and parenting stress (Webster-Stratton, 1990) have emphasized the damaging impact of high stress (both economic and psychological) and low social support (Simons, Lorenz & Conger, 1992) on parenting behavior, and on children's maladaptive behavior. These parents have higher levels of stress hormones (Gottman & Katz, 1989), are more likely to model aggressive and hostile

behavior toward their children (Patterson, DeBaryshe, & Ramsey, 1989), and are inept at coping with their children's behavior (Forgatch, Patterson & Skinner, 1988; Fauber, Forehand, Thomas & Wierson, 1990). The children in these families are more aggressive or withdrawn (or both). Furthermore, there is considerable evidence that these patterns of authoritarian, sometimes abusive, parenting are transmitted from one generation to the next (Caspi, Elder & Bem, 1987; Dodge, Pettit & Bates, 1990), most likely through both genetic and environmental means. However, as pointed out before, direction of effect in these studies has not been conclusively determined.

Parental attitudes about child rearing

Parental beliefs about how children should be treated is another important aspect of socialization (Sigel, 1985) that influences parents' behavior. The relationship between economic status and childrearing beliefs has been well documented. Generally, middle-class families are more permissive toward sexual behavior and are more accepting of the child's display of parent-directed anger, show higher expectation regarding maturity, achievement, and independence, and place more value on the well-being of the child than on obedience (Maccoby, 1984b).

Kochanska, Kuczynski and Radke-Yarrow (1989) also found a positive relationship between authoritarian maternal attitudes (e.g. value of conformity and obedience) and

observed authoritarian discipline (e.g. physical forms of discipline), and authoritative attitudes (e.g. values autonomy) with less punitive discipline (e.g. use of suggestions).

In contrast to the relationships found between social status and attitude variables, few relationships have been found between attitudes and child outcomes (particularly socio-emotional development). It is possible that there are methodological problems (Becker & Krug, 1965; Bell, 1985; Holden & Edwards, 1989); most of the measures used for these studies are ambiguous and too global in scope. However, measurement problems aside, we do know that parents' attitudes matter in some respects. Schaefer & Edgerton (1985), through the development of the Parental Modernity Scale, found a relationship between traditional attitudes about teaching children and the child's academic competence. Bugenthal & Shennum (cited in Bell, 1985), reported that, although parents' beliefs had little effect on interactions with their own children, they were clearly related to interactions with "stranger" children in a lab. As a possible explanation, Bell emphasizes Goodnow's theory of the "fine-tuning" of attitudes, where parents begin with general beliefs which become more specific with more experience with a child. Thus, for family socialization, global belief systems may not be as important as more specific attitudes.

Parental disagreement about childrearing strategies may be related to parenting, because disagreements can cause conflict (Deal, Halverson & Wampler, 1989). In one study (Gjerde, 1988), parental concordance was positively related to parental education (only for the parents of boys), and was associated with a more permissive, less authoritarian maternal interactive style. With respect to child outcomes, parental agreement has been found to be positively related to boys' academic performance and to girls' independence and social competence in late adolescence (Vaughn, Block & Block, 1988), and negatively related to behavior problems in boys (Trickett & Susman, 1989). Note that parental disagreement covaries with other forms of conflict, and is related to more punitive discipline as well. As Deal and his colleagues (Deal et al., 1989) point out, disagreement on childrearing attitudes may not be adding any more explained variance in child outcome than do parental conflict and punitive discipline.

There is also evidence that parents' appraisals of their child's current behavior is influenced by attitudes as well as the child's prior behavior. Dix & Grusec (1985) proposed that the parent's attributions about the child's behavior could be related to the intensity and probability of a parental response, but not the content (e.g. the specific parent behavior). This idea contradicts a study (Dix, Ruble & Zambarano, 1989) where a parent's attribution

about the intent of a child's behavior was related to the parent's discipline response; more authoritarian mothers inferred greater competence and responsibility to a misbehaving child. The authors proposed that parents' attributions affect their cognitive processes (e.g. attending only to the child's negative behavior), and in turn affect parents' use of upper and lower-limit control behaviors (Bell & Harper, 1977).

Bi-directionality: Parent-child transactions

Although most of the research on family socialization has emphasized the effects of parental discipline on children, it is of paramount importance to address the bi-directionality of parent-child interactions; parent and child behaviors can be viewed as "actions" as well as "reactions" (Bell & Chapman, 1986; Sameroff, 1975). There is empirical evidence for child-effects on parental behavior (see Bell & Harper, 1977; Maccoby & Martin, 1983). These and other researchers have found that effective parents are sensitive to their child's responses to earlier parental behavior; an example of this is the establishment of reciprocal dyadic interaction between a mother and her newborn (Lester, Hoffman & Brazelton, 1985; Cohn & Tronick, 1988). In laboratory research, children's dependence has been shown to predict more directive parental behavior, and a child's attentiveness to an adult has been linked to the adult's positive attention toward that child (Bell &

Chapman, 1986). Research on hyperactivity and conduct disorder in boys has demonstrated that the child may be "driving" the negative interactions with his parents (Anderson, Lytton & Romney, 1986). In addition, there is evidence that parents' react differently to the behavior of boys and girls (Maccoby & Martin, 1983; Lytton & Romney, 1991).

Maccoby (1984a) added that with development, children have greater self-control and awareness, and more mature cognitive and perspective-taking abilities. Thus, the parent-child dyad enters a period of "co-regulation" from early childhood to puberty, where child autonomy increases dramatically. As children grow older, parents use less physical punishment, and more reasoning and contractual discipline (e.g. withdrawal of privileges), largely due to the child's changing competencies. Scarr & McCartney (1983) proposed a similar age-based property, emphasizing the increasing importance of self-selection into specific environments, and the decreasing importance of parental control.

In summary, a transactional model of parent-child interaction requires both parent and child effects. Developmental theorists seem to agree that appropriate, warm parenting involves parental sensitivity to child behavior; in this way, parental action is, in part, a response to an individual child's behavior. Thus, it is important to

consider both the parent's and child's characteristics, and what each individual brings to a transaction when evaluating the process of socialization.

Temperament and behavioral difficulty

Although researchers have investigated many aspects of children's social and emotional development within families, two areas of behavior have received particularly close attention - temperament and behavior problems. Temperament is defined as a rubric of biologically-based personality traits that are evident in early childhood (Goldsmith, Buss & Plomin, 1987). Although there are various theories of temperament which focus on the different sources of children's behavior, there is a consensus that temperament represents the early stages of subsequent personality, is stable over time, and is an important part of the quality of the relationship between a parent and child.

Buss and Plomin (1984) identified 4 temperament factors, including the child's sociability, emotional lability, activity, and shyness, all of which are important aspects of a child's early personality (John, Caspi, Robins, Moffitt & Stouthamer-Loeber, 1994). Temperamental difficulty in young children (e.g. irritable, fussy, emotionally labile) has been linked to conflict with parents, and high-control discipline (Pettit & Bates, 1989). Other research has also found a relationship between low-control in mothers, and higher levels of temperamental

difficulty (Maccoby, Snow & Jacklin, 1984; Olweus, 1993). It is noteworthy that most of this research has focused on mother-son relationships. Moreover, this research has largely ignored the "fit" between the child and parent (Goldsmith et al., 1987), a potentially important aspect of the effects of child temperament on parents' behaviors.

Research on conduct disorder (CD) in young boys has revealed the bi-directional quality of problematic parent-child relationships. For instance, Lytton's review (1990) reported that drug intervention has a calming effect on a CD child's behavior, and subsequently, the mothers become less controlling and power assertive. However, Paxton (cited in Bell & Harper, 1977) reported a time lag between the change in a child's behavior and a mother's behavior, indicating the importance of the interaction history and parental expectations, even in the face of a powerful child effect. In addition, research by Patterson and Hetherington has pointed to the development of cyclical, coercive exchanges between parents and a behaviorally difficult child. In a sense, the socialization transactions in these families have become routinely punitive; the parent and child both contribute to the ongoing hostility and reactivity observed.

Within-family differences

The study of between-family differences in home environments has been the focus of most family socialization research (Hoffman, 1991; Scarr, 1992). Based on the

assumption that there are no genetic similarities between family environments, Socialization research has compared different family environments and how they are related to different child behaviors. By contrast, less attention has been given to within-family variability (e.g. differences in sibling characteristics and differential discipline) that may be revealing more about the process of socialization.

Behavior geneticists have investigated the relative contribution of genetic and environmental sources of within-family variability that is confounded in Socialization research. A basic model shows that genetic variability within a family is divided between "shared" and "nonshared" components (Falconer, 1960); every biological relative within a family has shared genetic variance and unique genetic variance. In addition, the environment can also be separated into these components (Plomin, 1986); environmental variance that is experienced by all children in the family is regarded as "shared" (e.g. family income, parental education), and unique experiences are called "nonshared" (peer relationships, differential parental treatment). More recent research has found evidence that some measures of the environment are also confounded with genetic variability (Chipuer, Plomin, Pederson, McClearn & Nesselroade, 1993), based on both self-report and observer's ratings (Scarr, in press).

In order to detect the existence of unique

environmental or genetic influence, a family study must be used (Scarr & Kidd, 1983). Because the vast majority of research on socialization and child outcomes has focused on one child per family, unique variation is largely undocumented; in order to study sibling differences, one must look at more than one child in each family. In addition, estimation of the genetic parameters requires the inclusion of twin or non-biological siblings.

Sibling comparisons

The research literature on differential parental treatment and sibling comparisons provides insight into the impact of socialization influences within families. For example, Dunn and her colleagues have employed a series of studies of adoptive and nonadoptive families with infants and preschoolers. Mothers were observed interacting with both of their children when each child was 12 months old (Dunn, Plomin & Nettles, 1985), 24 months old (Dunn, Plomin & Daniels, 1986) and 36 months old (Dunn & Plomin, 1986). Interestingly, the mothers behaved quite similarly with both siblings at all 3 ages, with the exception of differential controlling behavior when the subjects were 24 months old. Also, while not statistically significant, mothers did treat biological siblings more similarly than adoptive siblings (Dunn & Plomin, 1986). Thus, Dunn and her colleagues have shown that, if differential behavior actually occurs, it is not very obvious before 36 months of age. However, the

trend revealed in the biological/adoptive sibling comparisons indicates evidence for an increasing role of the child's determination in causing parental behaviors. Furthermore, mothers were not very consistent in their treatment of the children from 12 to 36 months. Thus, it appears that mothers are responding to the needs of each child, which may be largely related to the child's developmental status, but not to other child characteristics. This may be due, in part, to the global nature of the measures, however. Observation at a more microscopic level may reveal more child-specific differential maternal behaviors.

In other studies, Dunn and her colleagues have also found differential treatment of siblings in preschool and middle childhood (Dunn, Stocker, & Plomin, 1990; Stocker, Dunn & Plomin, 1990). Differential treatment was related to the older sibling's problem behaviors, and to siblings' behaviors toward each other, even after family structural variables (e.g. family income) were considered. Another study of school-age children (Brody, Stoneman & Burke, 1987) found that more differential maternal treatment was associated with less sibling interaction.

There is certainly more evidence for differential treatment effects with school-age children than with younger children. However, all of the studies with school-age children differ from the research on younger children in

that mothers were observed interacting with both siblings at a single time-point; the comparisons were made for 2 children of different ages. Exceptions to this are the twin studies of Scarr (1968) and Lytton (1977), which provide some evidence of differential treatment of twins based on actual zygosity. In general, it is possible that parents are responding to their children differentially at an early age; however, this differential treatment may not become pronounced until the children are older.

It is difficult to measure young (i.e. from infancy through late childhood) children's perceptions of parental treatment, which may actually be more important in determining sibling differences, particularly when viewed as falling within the realm of nonshared environment (Dunn et al., 1985). However, studies of adolescents and adults have attempted to address this question. Daniels & Plomin (1985) found that adolescent and young adult siblings perceived their treatment by their parents to be quite similar. There were no differences in biological/adoptive sibling comparisons, indicating that the 40% of subjects who reported any differential treatment were responding to something that was most likely environmental in nature. This contrasts with Baker & Daniels' study of adult twins (1990), which revealed a stronger genetic component in perceptions of parental treatment. However, in another

study, siblings still reported more differences in parental treatment than parents reported (Daniels, Dunn, Furstenberg & Plomin, 1985). Furthermore, Mekos (1992) found strong relationships between both parent and adolescent reports of differential treatment, and sibling differences in behavior problems. More importantly, there was greater covariation between differential discipline and sibling differences, based on the adolescents' reports, compared to the parents' reports.

Given these findings, the smallest differences in perceptions may be related to observable differences in siblings; however, the genetic or environmental source of these perceptions has not been replicated in these studies. In particular, the inconsistency of the 2 genetic studies (Daniels & Plomin, 1985; Baker & Daniels, 1990) forces us to look elsewhere for the answer. Some evidence for a genetic component, particularly in the domain of parental acceptance/rejection, has been provided by the adolescent twin studies of Rowe (1981; 1983). However, Rowe is careful to point out that this result may be related to a confound between genetic similarity and the amount of time siblings spent together.

Regardless of the actual degree to which genetic variance accounts for perceptions of differential treatment, the majority of the variance appears to lie in the environmental domain (Daniels & Plomin, 1985; Rowe, 1981).

In short, even if parents are responding to their children's unique qualities, their differential treatment of the children may also be an indication of the parents' characteristics. Therefore, it is particularly important to investigate the relationships between family and parent characteristics, differential treatment of siblings, and parents' perceptions of their children's characteristics.

Justification and hypotheses

In a recent study, Deal and his colleagues (Deal, Halverson & Wampler, 1993) tested a 'cognitive' model of differential discipline, by investigating covariation between parents differential perceptions of their sibling children's characteristics, and observed differential treatment. Using dyadic scores (intra-class correlations), they found a statistically reliable relationship between differential perceptions of children's temperament and differential discipline, but only for fathers. As these researchers note, there was little support for this cognitive model in their data. However, by testing the relationship between parent perceptions of temperament, and observer ratings of parent behavior (probably in an attempt to avoid shared method variance), this study did not provide a rigorous test of this model. If parents are consciously 'linking' their discipline behavior to their children's individual characteristics, parents' perceptions of both must be measured.

The goal of this study was to describe both between and within-family variability in child and parent characteristics, as well as parental discipline, and to explain potential covariation between differential discipline and differential perceptions of sibling children. In addition, the relative contributions of shared and unique sibling characteristics to the prediction of parental discipline was explored. Three hypotheses guided the statistical analyses.

Between-family comparisons:

1) Parents who are more stressed, who perceive less social support, are lower SES, have lower IQ scores, and have more traditional child rearing attitudes, will report using more punitive discipline techniques. Furthermore, child's temperament, parent-child dysfunction, child difficulty, behavior problems, and gender will be related to parental discipline as well, so that parents of boys, and parents who perceive their child to be behaviorally difficult, will report more punitive discipline techniques.

2) Interactions between parent characteristics (including stress and child rearing values) and the child's temperament, parent-child dysfunction, child difficulty, and behavior problems are expected in predicting parent use of punitive discipline, where punitive discipline will be highest in stressed, more traditional families where child is perceived as more behaviorally difficult.

Within-family comparisons:

3) Differences in parental discipline will be related to differences in parents' perceptions of the siblings' temperament and behaviors, where parents will report more punitive discipline for the child perceived as more difficult, and larger differences in perceptions of the siblings will be related to greater differential discipline. Furthermore, parents who are stressed or have traditional childrearing attitudes are expected to be more rigid and less sensitive to their children's individual characteristics when choosing discipline strategies. This is expected to be reflected in reports of differential discipline, so that parents who are more stressed, or have more traditional childrearing values, will report more similar discipline for siblings, regardless of their perceptions of both children's characteristics.

METHOD

Sample

The focus of this study was on children ranging in age from 1 to 11 years (late infancy through middle childhood). Furthermore, because differential discipline was of central importance, families with two or more children in this age range were needed in order to investigate similarities and differences in the parents' perceptions of their own discipline, and child characteristics, with respect to siblings living in the same home environment. For this

paper, siblings were sorted according to their relative birth order - the younger sibling is referred to as sibling 'A', and the older as sibling 'B'.

In order to avoid possible sibling differences due solely to changes in puberty for the older siblings (the focus of this study was on children from late infancy through middle-childhood), families with a 9 to 11 year old child were asked about the pubertal status of their child based on Tanner's (1962) checklist; this included questions about the beginning of breast development in girls, and the presence of pubic hair in boys. While there is mixed empirical evidence that pubertal status should even be a concern (see Paikoff & Brooks-Gunn, 1991, for a review), the "older siblings" were young enough that this exclusion rule had little impact on the selection of families (there were only 3 exclusions).

The sample included 112 families; in all cases, mothers participated in the study, while fewer fathers (n=98) did so. These families included 62 female and 50 male sibling A's (mean age = 59.7 months), and 44 female and 68 male sibling B's (mean age = 94.7 months). The gender composition of sibling dyads was balanced - half were mixed-sex dyads. The sample was comprised of white (97%), dual-earner (75%), married (96%) couples. These families were middle to high income (mean annual per capita income = $18,792).

Sixty-five of the families were participants in a longitudinal study of child care centers and families (Scarr, Phillips, McCartney & Abbott-Shim, 1993) who were distributed throughout central and eastern Virginia, but resided in or near city areas. Of the 242 families from the earlier study, there were approximately 120 who participated in the follow-up study. About 10% had moved out of the state, 5% were not contacted because their current address or phone number was not available, and the remaining non-participants refused. Of these, 65 had 2 or more children in the appropriate age range. Contact was initiated through the mailing of a report on the results of the earlier child care study and a phone call.

An additional 47 families were recruited through nominations made by families from the longitudinal child care study. Four of these 47 families were recruited through personal contacts of the investigator. However, these families were similar to the other families (demographically). After families who were not eligible (due to their children's age) were excluded, approximately half of the remaining families agreed to participate. Of these, 8% of 51 families who agreed to participate initially ultimately did not take part in study. Families were not paid for their participation, but the children were given small gifts.

Power analysis was conducted by testing the effect size

of a correlation between differential discipline and differential perceptions of the children. With an average sample size of 100 for these analyses, power to detect correlations in the .2 range was between 65% and 94%. Correlations exceeding +/- .28 were detected with more than 80% power.

Procedure

Once a family had been contacted and agreed to participate, a 1 1/2 hour in-home interview was arranged. Two research assistants visited the home, and separately interviewed the mother and father (if present); portions of the interview were recorded for subsequent coding. When not being interviewed, the mother and father completed a packet of rating forms. Due to time constraints, a small subgroup of parents (4 mothers, 3 fathers) conducted these interviews over the phone and through the mail. The phone interview was conducted by a reliable coder, and explicit instructions for completing the ratings were included in the mail. The interview and ratings packet is included in Appendix A.

Measures

Parent interview: The interview with each parent focused on demographic information and parental discipline techniques.

Family demographics were provided by both parents during the interview. Variables included parents' age, marital status, family composition, family income,

education, occupational prestige (NORC, 1984), ethnicity, work hours and schedule (i.e. shift work).

Verbal IQ: Data from the first child care study included the mothers' WAIS-R Vocabulary scores (Wechsler, 1955). For this study, fathers from the earlier sample were asked to complete this measure, so that both parents' vocabulary scores would be measured (coded from audio tape), albeit at different time points. Because adult IQ is stable in this age range, the lag in time of assessment of mothers and fathers was not a concern. For the additional families who did not participate in the earlier study, both parents were be asked to complete the vocabulary subscale of the WAIS. Inter-rater reliability was above .90.

Parental discipline: The second portion of the parent interview involved administration and audio recording of the Parental Discipline Interview (Scarr, Pinkerton & Eisenberg, in preparation). This measure included the presentation of 5 age-appropriate scenarios, where the parent was asked what form of discipline they would use. The parent was then asked what they would do if the behavior continued. While the vignettes varied in content, they were designed to tap basic discipline issues, such as violations of safety rules and compliance with parent demands.

All interviews were audiotaped and then scored by trained coders who achieved high inter-rater reliability (.86+). The original discipline categories were condensed

into six variables. Physical Punishment, Physical Restraint, and Reasoning remained as scored. The other 15 discipline categories were grouped into 3 theoretically-based, normally distributed scores - Coercive Verbal, Low Authority, and Behavior Modification.

Physical Punishment was defined as the parent's deliberate infliction of physical pain. Specific terms used to identify this type of discipline included slapping, spanking, whipping, hitting, paddling, switching, beating, pinching, shaking, yanking, grabbing or shoving with more force than necessary to move the child. Physical Restraint consisted of the parent physically restraining the child by holding him or her, grabbing the hand or otherwise physically confining the child. This category encompassed physical actions designed to prevent the child from committing undesirable acts, not to inflict pain. Reasoning was scored only if the parent gave an explanation of why the child's behavior was inappropriate or undesirable, and did so in a way that the child would understand.

Coercive Verbal discipline included Coercive Commands, Reprimands, Threats, Angry Interrogations, Disappointment, and Withdrawal of Affection. This category encompassed forms of verbally presented high control, compared to explanations or requests. Low Authority included Bribes, Distractions, Pleads, Requests, Delegation of Authority, and Redefining the Situation. This category included the more

"permissive" forms of discipline. Behavior Modification techniques included Isolation (time-out), Ignore, Withdrawal of Privileges, and Demand for Restitution.

Parent ratings: Each parent was also requested to complete self-ratings on several measures. Adequate internal consistency (using Cronbach's alpha) for these measures and their subscales has been demonstrated with the earlier child care study sample (Eisenberg, 1992; Scarr, Pinkerton & Eisenberg, in preparation).

Social support and stress: An important aspect of family functioning is parental well-being (Eisenberg, 1992). Each parent was asked to rate her or his perceptions of emotional support, as well as perceptions of instrumental help with various household and parenting tasks. Parents completed Marshall's Emotional Support Scale (1989), an 11 item measure that utilizes a 5-point Likert-type scale, ranging from 1=strongly disagree to 5=strongly agree, and Marshall's Instrumental Support Scale (1989), where the respondent reported who was primarily responsible for completing a list of 18 household and parenting tasks. A total score was derived for each scale, where higher scores corresponded to higher perceived emotional and instrumental support from important others. Both measures showed high internal consistency in the larger child care sample (Emotional Support alpha=.94, Instrumental Support alpha=.91); alpha coefficients were slightly lower, but

still high, for the current study (.8 range).

Another important factor is the stress that a parent perceives to be associated with their role as parent and spouse. It is known that parenting stress is related to the quality of the parent-child and marital relationships within a family system (Abidin, 1983). Abidin's (1990) Parenting Stress Index - Short Form (PSI-S) was employed to measure this construct for both mothers and fathers. The PSI-S has been normed with a sample of 800 mothers with preschool or early school-aged children. This 36 item, 5 point Likert-type scale includes 3 factors: Parenting Stress, Parent-Child Dysfunction, and Child Difficulty. According to the author, the Parental Stress factor is strongly correlated with the parent domain factor of the PSI-101 (r=.92), and the Difficult Child factor is correlated with the PSI-101 child domain factor (r=.87). The Parent-Child Dysfunction factor is moderately correlated with both the parent domain (r=.73) and the child domain (r=.50) from the PSI-101. For this study, the Parent Stress score served as the sole measure of parenting stress. This subscale has high test-retest reliability (r=.85) and high internal consistency (alpha=.87) (Abidin, 1990); for the current study, the internal consistency was also high (.8 range). Note that while the items on this scale were completed by each parent only once, the items for Parent-Child Dysfunction and Child Difficulty were completed for each child in the study and

were analyzed as parent perceptions of child characteristics. These 2 child-specific subscales are described in more detail below.

In addition, parents completed five items borrowed from the original 101 item PSI that measured satisfaction with the marital relationship - Marital Stress. This scale had moderate internal consistency in this study (alpha=.70 to .77), and was correlated with Parenting Stress (r=.5 to .7) and Emotional Support (described below; r=-.2 to -.3).

Life events: Each parent also recorded how many Stressful Life Events they had encountered in the past year, using Abidin's Life Events Inventory from the Parenting Stress Index (1983). Each parent noted the number of listed events that occurred, and a weighted total score was calculated. Events such as divorce, death of an immediate family member, and substantial (>20%) loss in income, received the highest weights. Abidin (1983) did not report any reliability or validity data for this optional scale of the PSI. In the current study, parent agreement was moderate (r=.44).

Child rearing attitudes: Each parent completed the Parental Modernity Scale (Schaefer & Edgerton, 1985). This measure includes 30 items on a 5-point Likert-type scale. Two subscales, Traditional and Progressive attitudes, were calculated. In the original child care study, both subscales demonstrated moderate to high internal consistency

(Traditional alpha=.87, Progressive alpha=.65). The alpha coefficient for the current data was similarly high for Traditionality (.83), but lower for the Progressiveness scale (.47 to .55).

Parent ratings of child characteristics: Each parent also completed ratings of each child. Temperament was measured using the EAS (Buss & Plomin, 1984), a 20 item measure utilizing a 5-point Likert-type scale; 4 subscales, including Sociability, Shyness, Activity, and Emotionality, were calculated. The internal consistency estimates for each subscale, from the earlier child care sample and the current sample, were moderate (Emotionality alpha =.70 to .81, Sociability alpha=.69 to .77, Activity alpha=.70 to .80, Shyness alpha=.47 to .76). Correlations from the earlier child care study between the four subscales were low to moderate (depending on the subscale), ranging from r=-.4 to .4). There was more variability in these correlations in the current study (r=-.6 to .6). In addition, parental agreement on these scales was moderate to high (.35 to .61).

Parents also completed the Conners' Parent Rating Scales (Conners, 1989), a measure of various child behavior problems. This 48 item measure includes 5 subscales: Conduct Problems, Learning Problems, Somatic Problems, Hyperactivity, and Anxiety. Internal consistency has not been published for the 5 subscales; however, item-total correlations range from .13 to .65. The alpha coefficients

for the current study were: Conduct (.80 to .83), Learning Problems (.60 to .75), Somatic Problems (.42 to .85), Hyperactivity (.65 to .77), and Anxiety (.62 to .69). Published inter-rater correlations (i.e. between mothers' and fathers' ratings) range from .46 (Psychosomatic subscale) to .55 (Hyperactivity Index). Parent agreement was not as high in the current study (.24 to .49).

As noted earlier, the 12 item Parent-Child Dysfunction, and 12 item Child Difficulty factors from the PSI-Short form were considered parent ratings of child characteristics as well. Parents completed these 24 items for both children. Abidin's (1990) published test-retest correlations are high for both subscales (Parent-Child Dysfunction r=.68, Difficult Child r=.78), as are estimates of internal consistency (parent-child dysfunction alpha=.80, difficult child alpha=.85). The alpha estimates for the current study were also high (.77 to .89).

For all of the analyses, mean substitution and pairwise comparison procedures were utilized, so that cases with random missing values were not discarded (Tabachnick & Fidell, 1989). Using these procedures leads to minor fluctuations in the sample size for univariate estimates, but total model results are based on the degrees of freedom derived from a listwise deletion of cases.

RESULTS

Description of data

The descriptive statistics (i.e. mean, standard deviation, and range of values) for all of the variables included in the study are displayed in Tables 1 through 5. These tables are organized into information for categorical data (e.g. ethnicity, child gender), parent characteristics, younger child characteristics, older child characteristics, and parent discipline.

Parents had high family incomes (the median per capita income was above $18,000.00), were predominantly dual-earners, and were highly educated (the majority had college degrees). In addition, most were married, caucasian, and had an average of 2 children (with the maximum being 4). This was a homogeneous group of families who were clearly not economically stressed.

The means for measures of stress and support also indicated that these parents were happy (means presented for mothers/fathers, and ranges represent scores for both siblings). On average, parents felt that they had the support they needed (Emotional Support mothers=4.76/ fathers=4.49; Instrumental Support 1.82/2.14), and perceived little stress in their family relationships (Parenting and Marital Stress 2.03 to 2.50/2.01 to 2.18; weighted Life Events 6.49/5.91; Parent-Child Dysfunction and Difficulty 1.38 to 2.35/ 1.44 to 2.27; all PSI scales were below

clinical cut-offs). In addition, on average, mothers and fathers had more progressive (4.41/4.34), less traditional (2.14/2.24) childrearing attitudes.

Parents' reported that their children were, on average, Active and Sociable (3.8 to 3.9 range, and moderately low on Emotionality and Shyness (2.70 to 2.80). The means for the behavior problems scales indicated that parents viewed their children as well behaved, and had few behavioral difficulties (for both parents, the only Conners scale score with a mean greater than 1.00 was the Hyperactivity scale: 1.06 to 1.13/1.18 to 1.20).

Parents reported that Behavior Modification was, on average, the most popular discipline strategy (means for both parents were around 6 out of a possible maximum of 45), followed closely by Low Authority (4.96 to 6.27/5.16 to 6.05) and Coercive Verbal (5.00 to 5.55/5.51 to 5.84). Reasoning (1.47 to 1.48/1.40 to 1.44) and Physical Restraint (.88 to .75/1.01 to 1.42) were used much less frequently. Least popular was the use of Physical Punishment (.62 to .87/.55 to .88).

Associations among and between variables: Between-family comparisons

Pearson correlations were used to estimate the degree of association between variables. Correlations among and between parents' characteristics are shown in Table 6. Note that unless otherwise stated, the correlations were found

for both mothers and fathers. In some cases, marginal effects are described.

Family demographics and WAIS vocabulary

Vocabulary, education, and age were positively correlated with each other (.22 to .60; $p<.01$), and each with job prestige (.24 to .53, $p<.05$ to .01), although the correlation between WAIS Vocabulary and age was not significant for fathers (.17), and the correlation between mothers' age and job prestige was marginal (.20, $p<.06$). Income, job prestige, and work hours were positively related for fathers (.26 to .38, $p<.01$); only job prestige and hours were correlated for mothers (.53, $p<.01$). In addition, work hours were positively related to fathers' age and education (.30, $p<.01$). Parents were similar in age (.66, $p<.01$) and education (.46, $p<.01$), and wives who worked fewer hours outside the home had husbands who worked more (-.24, $p<.05$).

Stress and support

Marital Stress was negatively related to family income (-.21, $p<.05$) for mothers, and Parenting Stress was positively related to education (.21, $p<.05$) for fathers. Marital and Parenting Stress were positively related to each other (.55 to .71, $p<.01$), and negatively related to Emotional Support (-.27 to -.33, $p<.01$). In addition, while Instrumental Support was negatively related to Marital and Parenting Stress for mothers (-.21 to -.49, $p<.01$), it was positively related to age, education and income (.30, $p<.01$)

for fathers, and to work hours for both parents (.30 to .33, $p<.01$). Parent concordance was statistically reliable for Marital Stress (.28, $p<.01$) and Stressful Life Events (.44, $p<.01$); parents also reported moderate agreement on the division of labor (i.e. Instrumental Support) in the household (-.46, $p<.01$).

Childrearing attitudes

Progressive childrearing attitudes were positively related to Emotional Support (.26 to .39, $p<.01$) for both parents, and education for mothers (.21, $p<.05$); the latter correlation, while similar for fathers (.17), was not statistically reliable. In addition, fathers' WAIS Vocabulary and age were positively correlated with Progressiveness (.21 to .22, $p<.05$). Traditional childrearing attitudes were negatively related to Vocabulary, age, and job prestige (-.23 to -.40, $p<.05$ to .01) for both parents, and to education and Instrumental Support for mothers (-.33 to -.45, $p<.01$). Progressiveness and Traditionality, while uncorrelated for mothers, were modestly related (-.32, $p<.01$) for fathers. Lastly, parents' Traditionality was slightly similar (.22, $p<.05$), but the similarity in Progressive attitudes was not statistically reliable (.18).

Correlations among child characteristics

The correlations for mothers' perceptions of their sibling children are shown in Table 7; the correlations for

fathers appear in Table 8. Unless otherwise stated, the correlations were found for mothers' and fathers' ratings of both children. As before, noteworthy marginal correlations are also described.

Shyness and Sociability were negatively correlated (-.24 to .39), although the relationship for fathers' ratings of sibling B was marginal (-.20, $p<.06$). Activity was positively correlated with Sociability (.43 to .61, $p<.01$), but negatively related to Shyness (-.25 to .42, $p<.05$ to .01). The only evidence for sibling similarity in temperament was found in fathers' ratings of each child's Shyness (.25, $p<.05$); this relationship for mothers, while not statistically reliable, was similar (.17).

Conduct Problems were positively related to Learning Problems, Hyperactivity, and Somatic Problems (.24 to .57, $p<.05$ to .01), although the relationship with Somatic Problems was not statistically reliable for mothers' ratings of sibling A (.16). In addition, Learning Problems were associated with Hyperactivity and Anxiety (.26 to .54, $p<.01$); again, the relationship with Anxiety for mothers' ratings of sibling A was not significant (.07). Anxiety and Somatic Problems were positively related, but only for mothers' ratings of sibling B (.35, $p<.01$), and fathers' ratings of sibling A (.44, $p<.01$); the correlation for fathers' ratings of sibling B was marginal (.20, $p<.06$). Parent-Child Dysfunction and Child Difficulty were also

positively correlated (.55 to .68, p<.01). Lastly, parents reported that their sibling children were similar in problems of Conduct, Learning, and Anxiety (.33 to .48, p<.01), and similar in Parent-Child Dysfunction and Child Difficulty (.36 to .39, p<.01), with the exception of the intra-class correlation for fathers' ratings of Child Difficulty (.11). In addition, fathers perceived their children to be similar in Somatic Problems (.37, p<.01).

Correlations between child characteristics

Emotionality was positively related to problems in Conduct and Learning, Hyperactivity, Anxiety, Parent-Child Dysfunction, and Child Difficulty (.25 to .74, p<.01). There were 2 exceptions, however, where the correlation for fathers' ratings of Emotionality and Somatic Problems was significant (.46, p<.01) but only for sibling A, and the correlation between Emotionality and Anxiety was not statistically reliable (.13).

Sociability was positively related to Hyperactivity (.32 to .41, p<.01) (except for mothers' ratings of sibling A), and negatively related to Anxiety (-.23 to -39, p<.05 to .01). Sociability was also negatively correlated with Parent-Child Dysfunction (-.21 to -.35, p<.05-.01), but only for mothers' ratings of sibling A and fathers' ratings of sibling B; this correlation was negative, but not statistically reliable, for mothers' ratings of sibling B (-.13), and fathers' ratings of sibling A (-.17).

Shyness was positively correlated with Anxiety (.29-.61, $p<.01$) and Parent-Child Dysfunction (-.21 to -.22, $p<.05$); however, this latter correlation was only statistically reliable for sibling B. Furthermore, Shyness was also related to Child Difficulty (.25, $p<.05$), but only for mothers' ratings of sibling B. Lastly, Activity was positively correlated with Hyperactivity (.36 to .47, $p<.01$), and negatively related to Anxiety (-.21 to -.46, $p<.05$ to .01) (with the exception of mothers' ratings of sibling A).

Almost all of the relationships between Parent-Child Dysfunction and Child Difficulty, and the measures of behavior problems, were statistically reliable. Positive correlations were found between these 2 PSI scales and Conduct Problems, Learning Problems, Hyperactivity, Somatic Problems, and Anxiety (.22 to .76, $p<.05$-.01). However, for fathers' ratings of sibling A, the correlations between Parent-Child Dysfunction and Somatic Problems, Hyperactivity, and Anxiety, were not statistically reliable, although there was evidence for a positive trend in the data (.15 to .20).

Child age was related to Somatic Problems (.23, $p<.05$), and Hyperactivity (-.21, $p<.05$). Furthermore, these effects were only found for mothers' ratings of sibling B, although there were marginal effects for the same correlations among fathers' ratings of sibling A (.20, $p<.06$).

Correlations among parent discipline scores

The correlations among and between mothers' and fathers' discipline for both siblings are displayed in Tables 9 and 10. Two patterns emerged from these correlations. First, parents reported using similar discipline strategies with both children; the intra-class correlations were positive, and modest to moderate in magnitude (.26 to .56, $p<.01$). Second, Low Authority discipline appeared to be the "least punitive" strategy. Low Authority discipline with sibling B was negatively correlated with Physical Restraint (-.23 to -.26, $p<.05$-.01) and Physical Punishment (-.21, $p<.05$), although the correlation for mothers' Physical Punishment was marginal (-.19). In addition, Low Authority and Behavior Modification were negatively correlated (-.33 to -.48, $p<.01$) (with the exception of fathers' discipline of sibling B). A few other relationships were found as well. Reasoning was negatively related to Low Authority for mothers' discipline of sibling A (-.22, $p<.05$), and fathers' Physical Punishment for sibling A (-.21, $p<.05$). Physical Punishment was also positively correlated with Behavior Modification (.29, $p<.01$), but only for mothers' discipline with sibling B.

Correlations with parental discipline

Table 11 shows the correlations between mothers' characteristics and discipline scores. For discipline with sibling A, Physical Punishment was negatively related to

WAIS Vocabulary, education, and Progressiveness (-.24 to -.32, $p<.05$ to -.01). For sibling B, Reasoning was positively associated with Stressful Life Events (.22, $p<.05$) and negatively related to education and work hours (-.27, $p<.01$). In addition, mothers' use of more Low Authority discipline with sibling B was positively correlated with Progressiveness (.27, $p<.05$). Lastly, more Traditional mothers reported less Low Authority discipline (-.22 to -.27, $p<.05$-.01) and more Physical Punishment (.21 to .37, $p<.05$-.01).

The same correlations for fathers are shown in Table 12. Fathers' Coercive Verbal discipline with sibling A was positively correlated with education (.24, $p<.05$), and also with Stressful Life Events (.26,$p<.01$) with sibling B. Physical Punishment was positively related to Stressful Life Events (.33, $p<.01$) for sibling A, and negatively related to Parenting and Marital Stress (-.22, $p<.01$) for sibling B. In addition, more Traditional fathers reported more Physical Punishment (.31 to .38, $p<.01$) for both children. For sibling B, use of Behavior Modification was negatively related to fathers' age (-.27, $p<.01$) and Parenting Stress (-.22, $p<.05$), Reasoning was positively correlated with family income (.28, $p<.01$), and Restraint was negatively related to Instrumental Support (-.27, $p<.01$).

Correlations between parents' discipline and children's characteristics were also computed and are displayed in

Tables 13 and 14. For sibling A, mothers' Coercive Verbal discipline was positively related to Conduct Problems and Hyperactivity (.23 to .25, $p<.05$), Restraint was positively correlated with Anxiety and Child Difficulty (.22 to .31, $p<.05$ to .01), and more Reasoning was associated with higher levels of child Activity (.24, $p<.05$). Sibling B's Activity and Sociability were positively correlated with mothers' use of Behavior Modification (.21 to .27, $p<.05$ to .01). Lastly, sibling A's age was associated with less Low Authority (-.47, $p<.01$) and Physical Punishment (-.28, $p<.01$), and more Behavior Modification (.29, $p<.01$), while the sibling B's age was associated with more Coercive Verbal (.21, $p<.05$) and less Restraint (-.21, $p<.05$).

Fathers' Coercive Verbal discipline was negatively related to sibling A's Activity (-.25, $p<.05$). Low Authority discipline was negatively correlated with sibling A's Somatic Problems (-.26, $p<.01$), and sibling B's Shyness (-.26, $p<.01$). Fathers also reported more Behavior Modification for sibling B's with more Conduct Problems (.24, $p<.05$). Restraint was negatively correlated with sibling A's Anxiety (-.26, $p<.01$), and sibling B's Hyperactivity (-.22, $p<.05$). Greater amounts of Physical Punishment were related to sibling A's Somatic Problems (.22, $p<.05$), and sibling B's Emotionality (.23, $p<.05$). Lastly, child age was negatively related to Low Authority, Reasoning and Physical Punishment (-.22 to .33, $p<.05$ to

.01) for sibling A, but positively related (.32, p<.01) to Coercive Verbal discipline with sibling B.

Similarity in parents' perceptions and discipline of siblings

Parent agreement was measured as the correlation between mothers' and fathers' ratings of the same child. These correlations are shown in Table 15. Parents moderately agreed in their ratings of their children's temperament and behavior problems (.24 to .61, p<.05 to .01). There was only one non-significant correlation, a marginal effect for mothers' and fathers' ratings of sibling A's Parent-Child Dysfunction (.20, p<.06).

Similarly, almost all of the correlations between mothers' and fathers' discipline of both children were positive and statistically reliable (.24 to .44, p<.05 to .01); exceptions included non-significant correlations for Behavior Modification and Reasoning with sibling B. However, compared to the moderate correlations for children's temperament and behavior problems, the parent-agreement correlations for discipline were more modest. This is an important point that may have consequences in a subsequent analysis which considers the similarity of mothers' and fathers' differential perceptions, and differential discipline.

Summary of correlations

To summarize, there were distinguishable patterns of

relationships among and between parent characteristics, child temperament and behavior problems, parent-child relationship quality, and parental discipline. Family background characteristics, stress and support, and childrearing attitudes were related for both mothers and fathers. For children's characteristics, Sociability and Activity - 2 positive behavior scales - emerged as an Extraversion/Introversion score. Among the behavior problems, problems in Conduct, Learning, and Hyperactivity were strongly related, and behavior problems as a group were positively associated with Emotionality, Parent-Child Dysfunction and Child Difficulty In addition, parents perceived sibling similarities in behavior problems, but no similarities in temperament. Age was largely unrelated to other child characteristics; the only statistically reliable correlations found were for mothers' ratings of older siblings' Somatic Problems and Hyperactivity. Lastly, parents' showed moderate agreement on ratings of both children's characteristics, and more modest (but statistically reliable) similarities in discipline strategies, particularly for the younger siblings (sibling A).

Associations among and between variables:

Within-family comparisons

The next set of correlations were calculated using two procedures. First, absolute difference scores were

calculated. Second, relative difference scores, where the older siblings' scores were subtracted from the younger siblings' scores (i.e. sibling A - sibling B), were calculated. For these relative differences, positive scores corresponded with the younger sibling being 'higher' on that particular characteristic or discipline score, while negative scores corresponded to the older sibling being 'higher' on that variable. These difference scores were computed for child characteristics (differential perception of temperament, behavior problems, parent-child dysfunction and difficulty) and the 6 discipline scores (e.g. differential physical punishment, differential behavior modification). Correlations were calculated to explore possible covariation between parent and child characteristics, and differential perceptions and discipline.

Differential discipline and parent characteristics

It was hypothesized that more traditional, more stressed, parents would report less differential discipline. The correlations between parent characteristics and absolute differences in discipline are shown in Table 16. More Traditional mothers and fathers reported more differential Physical Punishment (.22 to .40, $p<.05$ to .01); a similar effect was found for mothers' Progressiveness (-.26, $p<.01$). However, these more Traditional mothers reported less differential Low Authority discipline (-.21, $p<.05$).

Mothers with less education and less Emotional Support used more differential Physical Punishment (-.26, $p<.01$), while those with higher family income reported greater differential Behavior Modification (.21, $p<.05$). Younger fathers with fewer work hours reported more differential Low Authority discipline (-.22 to -.24, $p<.05$), while fathers with more Stressful Life Events used greater differential Physical Punishment.

The correlations between parent characteristics and relative differences in discipline are shown in Table 17. Unlike the correlations with absolute differences in discipline, only 2 statistically reliable associations were found for mothers - less education was related to greater Physical Punishment with sibling B (-.25, $p<.05$), and Traditionality was positively related to Physical Punishment with sibling A (.28, $p<.01$). Similarly, only 2 correlations were significant for fathers' reports. Older fathers reported using more Behavior Modification with sibling A (25, $p<.05$), and having less money was associated with using more Physical Restraint with sibling B (-.21, $p<.05$). None of the relationships found between parent characteristics and relative differences in discipline were found for both mothers and fathers.

Correlations between differential perceptions and differential discipline

One aim was to explore covariation between differences

in parents' perceptions of their sibling children, and differences in discipline. The first analysis involved the calculation of correlations between absolute difference scores for children's characteristics (parents' differential perceptions), and difference scores for discipline; these are shown in Table 18.

Parents' differential perceptions of their children's Somatic Problems were related to their use of Physical Restraint; however, while this relationship was positive for mothers (.21, $p<.05$), the same correlation was negative for fathers (-.22, $p<.05$). Larger differences in mothers' reports of Hyperactivity were related to greater differential Physical Punishment and Restraint (.21, $p<.05$). Differences in siblings' ages were positively correlated with mothers' differential Low Authority discipline (.21, $p<.05$). For fathers, greater differential Low Authority discipline was related to larger differences in Shyness (.25, $p<.05$), and smaller differences in Conduct Problems (-.33, $p<.01$). In addition, fathers' differential Behavior Modification was associated with greater differences in children's Learning Problems and Anxiety (.25 to .31, $p<.05$ to .01).

Table 19 shows correlations between parents' relative differential perceptions, and their relative differential discipline. None of the statistically reliable correlations were found for both parents' reports. For mothers, sibling

A's with lower levels of Learning Problems received less Low authority discipline (-.21, $p<.05$), and those with more Conduct Problems received more Physical Restraint (.30, $p<.01$). For fathers, 5 correlations were significant. Greater use of Coercive Verbal discipline with sibling A was related to greater Parent-Child Dysfunction with that child (.25, $p<.05$). More Low Authority discipline with sibling B was associated with greater Child Difficulty in sibling A (-.21, $p<.05$). Fathers also reported using more Behavior Modification with sibling A when that child was more Emotionally labile (.25, $p<.05$), had more Conduct Problems (.39, $p<.01$), and was perceived as more Difficult (.33, $p<.01$) than sibling B.

Correlations between parents' differential perceptions and differential discipline

The last set of correlations, displayed in Table 20, shows the degree of similarity in mothers' and fathers' differential perceptions and differential discipline. Mothers and fathers reported similar differential perceptions of their sibling children; all of the correlations were positive, and moderate to high in magnitude (.36 to .62, $p<.01$). By contrast, there was only one statistically significant correlation among the differential discipline scores - both parents reported similar levels of differential low authority discipline (.33, $p<.01$). There was one marginal effect, for Behavior

Modification (.20, $p<.06$). Thus, although parents showed moderate agreement in relative comparisons of their sibling children's characteristics, there were virtually no similarities in mothers' and fathers' differential reports of discipline.

Gender differences: Between-family comparisons

In order to test for child and parent gender differences in family and individual characteristics, a series of 2 (child gender) x 2 (parent gender) MANOVA models were employed. Dependent variables in these models were grouped conceptually. Thus, separate models were tested for family demographics (e.g. parent age, years of education, hours at work per week), parent characteristics (e.g. parenting and marital stress, emotional support, traditionality), and each sibling's characteristics (e.g. sociability, activity, conduct problems, parent-child dysfunction). Parent gender was included as a within-subjects factor, in order to control for inflated type-I error rates due to covariation between mothers' and fathers' ratings of the same child. Where appropriate, post-hoc tests were used, including one-way ANOVA (for the between-subjects effects) and paired t-tests (for the within-subjects effects).

Four child and parent gender effects were found. First, the younger child's gender was related to parents' childrearing attitudes (Wilks $F\{2,92\}=3.49$, $p<.05$), where

boys had fathers who had less Progressive attitudes (m=4.2) than fathers of girls (m=4.4) ($F\{1,95\}=7.52$, $p<.01$), and mothers of boys had more Traditional attitudes (m=2.3) than mothers of girls (m=2.0) ($F\{1,109\}=7.76$, $p<.01$). Second, the older sibling's gender was associated with parents' ratings of the younger child ($F\{5,76\}=2.64$, $p<.05$); however, univariate post-hoc tests revealed no statistically reliable differences. Third, parent gender differences were found for family demographics ($F\{5,80\}=10.73$, $p<.001$); fathers were slightly older than mothers ($t=-4.86$, $p<.001$) and reported more hours of work outside the home ($t=-6.25$, $p<.001$) than their wives. Lastly, parent gender was related to parental modernity ($F\{2,92\}=3.56$, $p<.05$), with fathers reporting higher levels of Traditionality than mothers ($t=-2.45$, $p<.05$).

Gender differences: Within-family comparisons

In order to test for child and parent gender differences in differential discipline and differential child characteristics, a 2 (child gender) x 2 (child gender composition=same sex vs. different sex) x 2 (parent gender) MANOVA model was used. As with the between-family gender MANOVA model, parent gender served as a within-subjects factor. Separate models were tested for differential perceptions of siblings' temperament (i.e. sociability, emotionality, activity and shyness), differential perceptions of siblings' behavior problems (i.e. conduct,

learning problems, hyperactivity, anxiety, somatic problems), and differential discipline (i.e. physical punishment, restraint, reasoning, verbal discipline, low authority discipline, behavior modification). Absolute and relative difference scores served as dependent variables for these models.

There were neither sibling gender effects nor gender composition effects. Parent gender was related to relative differential parent-child dysfunction and child difficulty ($F\{2,90\}=3.38$, $p<.05$). Mothers had higher levels of Dysfunction with sibling B (post-hoc paired $t=-2.31$, $p<.05$), and mothers reported greater levels of Child Difficulty in sibling B's ($t=-2.50$, $p<.05$). The only effect found for absolute difference scores was for Child Difficulty ($F\{2,90\}=7.85$, $p<.01$), with differences for mothers being larger than fathers ($t=3.61$, $p<.01$). There was no evidence that child or parent gender contributed to differential discipline.

Mean differences in differential discipline: Stress and Modernity

It was hypothesized that there would be between-family differences in the amount and kind of differential discipline reported. Specifically, Parenting Stress and Traditionality were expected to be related to differential discipline. In order to test for mean differences, a mean-split was used to create the low and high groups for both

variables. Mean differences in differential discipline for low vs. high Parenting Stress and low vs. high Traditionality were tested using a 2 (Stress) x 2 (Traditionality) MANOVA. Separate analyses were conducted for mothers and fathers. There were no statistically reliable differences in differential discipline associated with either Parenting Stress or Traditionality. This corroborated the correlational analysis between differential discipline and parent characteristics, described previously.

Multiple regression analyses

Data reduction

Due to the number of variables being considered simultaneously for the between-family regression analyses, a data reduction strategy was used. As Tabachnick and Fidell (1989) recommend, a variables-to-cases ratio of 5:1 is the absolute acceptable minimum for reliable multiple regression analysis. With the full complement of data, a typical between-family regression model would have approximately 30 variables, with only 112 (mothers) or 98 (fathers) families. Thus, a strategy was used to reduce the number of variables for analysis to approximately 20. Because there was not sufficient power to conduct exploratory factor analysis, variables that were conceptually and statistically related (correlated) with one another were standardized and averaged, to produce 'construct' scores. Note that these

construct scores were not used in the within-family models, which included subsets of predictors (i.e. the cases to variables ratio was not a concern).

First, the correlations among mothers' and fathers' characteristics were explored. For mothers, WAIS Vocabulary and education were strongly correlated; these 2 variables were included in a maternal Intelligence score. In addition, mothers' job prestige and hours at work per week were related, and were combined into a Job Status factor. For fathers, years of education and WAIS vocabulary were not strongly related, and were therefore not combined. Fathers' Job Status factor consisted of job prestige, hours at work, and years of education, as all 3 were correlated. The remaining demographic characteristics were retained as separate variables for the regression analyses.

Second, the correlations among parents' characteristics were explored. A Stress/Support factor was computed for mothers and fathers, which combined Parenting Stress, Marital Stress, and Emotional Support (reverse coded). Instrumental Support, Progressiveness, and Traditionality, were kept as individual variables.

Third, correlations among sibling A's and sibling B's characteristics were explored. For both children, an Extraversion factor was computed, which combined the temperament scores of Sociability and Activity. A Behavior Problems factor combined Conduct Problems, Learning

Problems, and Hyperactivity, and a Parent-Child Distress score was computed from Parent-Child Dysfunction and Child Difficulty. Due to differences between parents in the correlations among the remaining characteristics, Shyness, Emotionality, Somatic Problems and Anxiety were retained as separate scores.

Alternative predictive models: advantages and disadvantages

Several types of analyses were used, in order to explore the data thoroughly, and to test the a priori hypotheses. For both the between- and within-family analyses, standard multiple regression models were used. In each model, parental discipline, or differential discipline, was predicted by parent and sibling characteristics, or by differential perceptions of siblings. In addition, having sibling data, and data for both parents, allowed for internal replication, a particularly useful analysis tool when using statistical regression.

However, there are problems with the use of difference scores in multiple regression. Given that the reliability of difference scores is a multiplicative function, the reliability of correlations between difference scores is quickly eroded, even if the original scores are measured with good reliability. The computation of the reliability of a difference score is:

$$\frac{(\text{reliability a})(\text{var a})}{\text{var}} + \frac{(\text{reliability b})(\text{var b})}{\text{var}} - 2\text{Cov(ab)}$$

where a and b are 2 variables (e.g. sibling's scores on the

same variable). Thus, the subtraction of the covariance of the 2 scores often reduces the reliability of the difference score (particularly when the covariance is moderate to high) so that no statistically reliable relationships can be found. Willett (1988) notes, however, that low reliability in a difference score does not necessarily mean low precision. Variability (in this case, across sibling pairs) is an equally important factor, and may be occurring independently of the covariation between siblings.

There are two other strategies which have been used to address these problems. One possibility is to adjust the correlation between difference scores for decreased reliability; one can estimate what the correlation might be, given perfectly reliable measures. Another possibility involves regressing one child's score on the score of his or her sibling, and using the deviation score to represent the amount of "spread" between siblings. Both of these approaches, however, are not favored, for various mathematical and interpretive reasons (Willet, 1988). Thus, the problem is that difference scores often have no remaining reliable variance, if covariation between the scores is moderate to high. There is already evidence of this problem based on the few relationships found in the correlations between differential perceptions of sibling children, and differential discipline (which estimates covariation between difference scores). Thus, the strategy

used for alternative analyses included structural equation modeling (LISREL) to construct two models which might address the covariation of differences scores. In one model, the 'unique' and 'shared' components of siblings' characteristics were predictors of each child's discipline. In another, the relative magnitude of 'child specific' and 'cross-child' regression coefficients were compared in a cross-lag regression model. Each is described in more detail after the regression results.

Prediction models: between-family variability

In order to investigate the statistical prediction between family, parent, and child characteristics and parent discipline, a multiple regression model using backward selection was used. The predictors included demographics (Job Status, parent age, number of children, family income), Intelligence (Vocabulary for fathers), Stress/Support, childrearing attitudes (Traditionality and Progressiveness), and child characteristics (age, Extraversion, Shyness and Emotionality, Behavior Problems, Anxiety and Somatic Problems, Parent-Child Distress). In addition, four interaction terms were included: Stress/Support by child Behavior Problems, and by Parent-Child Distress, and Traditionality by child Behavior Problems, and by Parent-Child Distress. Only these interactions were included, given the a priori hypothesis that they would be related to parental discipline.

There were 6 models (one for each type of discipline), tested separately for mothers and fathers. In addition, the analyses were divided into those including sibling A's characteristics as predictors of discipline for that child, and those including sibling B's characteristics and discipline (the replication models). The results of these regression analyses are displayed in Tables 21 through 24.

Predictors of maternal discipline

Mother's Physical Punishment of sibling A ($F\{9,82\}=6.95$, $p<.001$; $R^2=.43/.37$) was related to higher Traditionality (.45, $p<.001$) and lower Progressiveness (-.26, $p<.01$). In addition, child youth (-.25, $p<.01$), higher child Behavior Problems (.38, $p<.001$), and lower Parent-Child Distress (-.32, $p<.001$) were related to higher Physical Punishment. Two interaction terms were significant predictors. First, in the interaction between Traditionality and child Behavior Problems (-.39, $p<.001$), less traditional mothers used the same low levels of Physical Punishment, regardless of their child's behavior, while more traditional mothers used the highest levels of physical discipline with low behavior-problem children. Second, in the interaction between Traditionality and Parent-Child Distress (.32, $p<.001$), more traditional mothers reported the same high levels of Physical Punishment, regardless of parent-child distress, while less traditional mothers reporting low parent-child distress

reported the lowest levels of Physical Punishment. In the replication analysis, higher levels of Physical Punishment ($F\{8,85\}=3.32$, $p<.01$; $R^2=.16/.11$) were predicted only by child youth (-.22, $p<.05$) and mothers' Traditionality (.27, $p<.05$).

Mothers' use of Physical Restraint with sibling A ($F\{6,85\} = 3.23$, $p<.01$; $R^2=.19/.13$) was higher for mothers with children who were younger (-.21, $p<.05$) and higher in Anxiety (.22, $p<.05$). The interaction between Stress/Support and child Behavior Problems was reliable as well (.23, $p<.05$); use of Restraint was the same for less-stressed mothers for all children, yet use of Restraint increased with higher maternal stress for children with more behavior problems, and decreased with higher maternal stress for children with fewer behavior problems. In the analysis of mothers' use of Restraint with older siblings ($F\{3,87\}=6.08$, $p<.001$; $R^2=.17/.14$), mothers Job Status was negatively related to use of Restraint (-.32, $p<.01$). Intelligence was a marginal predictor as well (-.19, $p<.06$).

Mothers' Reasoning with sibling A ($F\{1,90\}=9.42$, $p<.01$; $R^2=.09/.08$) was predicted only by higher levels of child Anxiety (.31, $p<.01$). For the replication analysis with sibling B ($F\{3,87\} = 2.98$, $p<.05$; $R^2=.09/.06$), more Reasoning was associated with child youth (-.25, $p<.05$).

Mothers' Coercive Verbal discipline with sibling A ($F\{1,90\}= 6.17$, $p<.05$; $R^2=.06/.05$) was predicted by the

child's Behavior Problems (.25, $p<.05$). In the analysis with sibling B, Coercive Verbal discipline ($F\{2,88\}=3.63$, $p<.05$; $R^2=.07/.05$) had no reliable predictors.

Mothers' greater use of Low Authority discipline with sibling A ($F\{3,88\}=14.16$, $p<.001$; $R^2=.32/.30$) was related to child youth (-.49, $p<.001$) and lower maternal Traditionality (-.26, $p<.01$). In the replication model, greater use of Low Authority discipline ($F\{6,84\}=4.09$, $p<.01$; $R^2=.23/.17$) was predicted by mothers' higher Instrumental Support (.24, $p<.05$) and Progressive childrearing attitudes (.30, $p<.01$), as well as greater child Anxiety (.26, $p<.05$). The interaction between Stress/Support and Parent-Child Distress was also a reliable predictor (-.39, $p<.01$). Thus, while mothers who were lower in stress reported comparable levels of permissiveness regardless of level of parent-child distress, Low Authority discipline decreased only for mothers who reported high parent-child distress.

Mothers' Behavior Modification with sibling A ($F\{4,87\}=4.60$, $p<.01$; $R^2=.17/.14$) was related to child age (.23, $p<.05$) and Behavior Problems (.20, $p<.05$). Two interaction terms were statistically significant - Stress/Support by Behavior Problems (.24, $p<.03$), and Traditionality by Behavior Problems (-.25, $p<.05$). Mothers who were more stressed and had children with higher behavior problems reported Behavior Modification techniques at the lowest levels, while mothers with lower-stress reported

comparable amounts of these discipline strategies for both low and high problem children. Second, less traditional mothers reported similar levels of Behavior Modification discipline for their children; however, use of Behavior Modification increased with higher traditionality for children low in behavior problems, and decreased for children high in behavior problems. The analysis for sibling B ($F\{3,87\}=4.42$, $p<.01$; $R^2=.13/.10$) linked higher amounts of Behavior Modification discipline in mothers with children who were more Extraverted (.25, $p<.05$), and who had fewer Somatic Problems (-.22, $p<.05$).

Predictors of fathers' discipline

Fathers' who used more Physical Punishment with sibling A ($F\{8,72\}=5.89$, $p<.001$; $R^2=.40/.33$) had children who were younger (-.20,$p<.05$), lower on Behavior Problems (-.26, $p<.05$), and higher in Anxiety (.26, $p<.05$). In addition, Physical Punishment was also positively related to Stressful Life Events (.33, $p<.001$) and Traditional attitudes (.33, $p<.001$). In the replication analysis, fathers' Physical Punishment with older siblings ($F\{7,82\}=6.28$, $p<.001$; $R^2=.35/.29$) was also related to Traditionality (.32, $p<.001$). Unlike the model for the younger sibling, greater Physical Punishment with sibling B was predicted by lower child Emotionality (-.33, $p<.01$), higher Somatic Problems (.26, $p<.01$), and greater Parent-Child Distress (.25, $p<.05$). Furthermore, the interaction term for parent

Stress/Support by Parent-Child Distress revealed that Physical Punishment was highest for low-stressed fathers with high parent-child distress (-.31,p<.01).

Fathers who reported more Physical Restraint with sibling A ($F\{4,76\}=5.65$, $p<.001$;$R^2=.23/.19$) had children who were younger (-.42,p<.001). In addition, the interaction term for parent Stress/Support by child Behavior Problems showed that Physical Restraint was highest for low-stressed fathers with high behavior problem children (-.21, p<.05). For the replication model with fathers' Restraint ($F\{1,88\}=7.42$, $p<.01$; $R^2=.08/.07$), per capita family income was the only predictor (.28, p<.01).

Fathers' higher levels of Reasoning with sibling A ($F\{1,79\}= 5.96$, $p<.05$; $R^2=.07/.06$) was associated with lower child Anxiety (-.26, p<.05). Fathers' use of more Reasoning with sibling B ($F\{8,72\}=5.53$, $p<.01$; $R^2=.11/.09$) was predicted by lower Instrumental Support (-.26, p<.05). Lower child Behavior Problems was a marginal predictor as well (-.19, p<.06).

Fathers' use of more Coercive Verbal discipline strategies with sibling A ($F\{5,75\}=3.05$, $p<.05$; $R^2=.17/.11$) was positively related to child age (.32, p<.01) and negatively related to child Extraversion (-.35, p<.01). In addition, 2 interaction terms (Stress/Support by Behavior Problems, Traditionality by Parent-Child Distress) were significant predictors. Coercive Verbal discipline was

highest in low-stressed fathers with high behavior problem children, and was lowest in high-stressed fathers with low behavior problem children. Also, fathers with high behavior problem children showed the same levels of Coercive Verbal discipline regardless of their traditionality. However, less traditional fathers with lower parent-child distress used the highest levels of verbal techniques, while traditional fathers with low parent-child distress displayed the lowest levels of Coercive Verbal discipline. In the replication analysis ($F\{4,85\}=7.79$, $p<.001$; $R^2=.27/.23$), fathers who were more Progressive (.21, $p<.05$), had more Stressful Life Events (.24, $p<.05$), and older children (.29, $p<.01$) reported greater use of Coercive Verbal discipline. In addition, the interaction between Stress/Support and Parent-Child Distress was a statistically reliable predictor. Fathers who reported low parent-child distress used the same levels of Coercive Verbal discipline, regardless of their own stress level. By contrast, low-stressed fathers with high parent-child distress reported the lowest levels of Coercive Verbal discipline, but high-stressed fathers with high parent-child distress reported the highest levels of Coercive Verbal discipline.

Fathers' use of permissive or Low Authority discipline with sibling A ($F\{6,74\}=3.05$, $p<.05$; $R^2=.20/.13$) was related to higher Job Status (.22, $p<.05$). In addition, higher permissiveness was predicted by child youth (-.33, $p<.01$),

lower child Behavior Problems (-.41, $p<.01$) and higher Parent-Child Distress (.31, $p<.05$). For the replication analysis with sibling B, higher Low Authority discipline ($F\{3,86\}=4.47$, $p<.01$; $R^2=.13/.10$) was related to lower child Behavior Problems (-.25, $p<.05$) and lower child Shyness (-.42, $p<.01$).

The regression model predicting fathers' use of Behavior Modification strategies with sibling A ($F\{1,79\}=2.16$, $p>.05$; $R^2=.15/.08$) was not statistically reliable. In the replication model ($F\{6,83\}=4.47$, $p<.001$; $R^2=.24/.19$), higher levels of Behavior Modification were found among younger fathers (-.27, $p<.01$) who reported lower Stress (-.32, $p<.01$). In addition, use of these techniques was associated with child Extraversion (-.32, $p<.01$) and Behavior Problems (.38, $p<.01$), and was marginally associated with lower child Emotionality (-.23, $p<.06$).

Summary of between-family regression results

While there were numerous results to consider, few effects replicated for both parents, and for both siblings. Only those effects that were robust (i.e. replicated in at least 3 of the 4 models for a discipline outcome) were considered for interpreting the results; these are shown in Table 27.

There were few effects of family demographic characteristics and verbal IQ, and none replicated. While it is somewhat surprising that the WAIS vocabulary scores

did not reliably predict discipline, it is not surprising that there were few effects for family background characteristics, given their restricted range of variability (which may cause attenuation in measures of association). It is likely, given what we know about the covariation of income, education, and discipline (Kohn, 1969; Scarr, 1985), that more effects may have been found if there had been more variability in these characteristics.

Even though these parents were highly educated, middle to high income, and fully employed, Traditional childrearing attitudes emerged as the only robust parent characteristic predictor of discipline (replicated in all 4 Physical Punishment models). More traditional parents reported higher levels of physical punishment.

Parents' who were higher in stress, and who perceived less emotional and instrumental support from others, were expected to report using more punitive discipline strategies as well. This hypothesis was based on both empirical and theoretical literature (Belsky, 1984; Abidin, 1990), which has demonstrated a relationship between these parent risk factors and poor parenting. These results demonstrated that while fathers who were higher in stress (life events, parenting and marital stress) reported using more punitive discipline, none of these effects were found for both children, and stress was not related to discipline for mothers.

Given the importance of potential child effects on parents' behavior (Bell & Harper, 1977) it was hypothesized that children's characteristics would be related to parents' discipline as well. Although the direction of the effect could not be tested with these correlational data, parental discipline was the focus of this study. Therefore, child effects were tested as statistical predictors of parental discipline.

The gender of the child has been regarded as important (Maccoby, 1984a; Lytton & Romney, 1991). However, the results from this study provide no support for this hypothesis - there were no differences between boys and girls in levels of parental discipline. While it is possible that parents' childrearing attitudes interact with child gender in the statistical prediction of physical punishment (i.e. boys had mothers who were more traditional, and these attitudes were a robust predictor of Physical Punishment), these gender differences were not robust effects.

The age of a child was a robust predictor of parents' use of Physical Punishment. This finding is consistent with the theoretical notion that power-assertive discipline decreases as children become more autonomous (Maccoby, 1984a). However, there was no evidence that child age was positively related to more reasoning or verbally-oriented discipline in this study. Aside from this age effect, there

were some effects in the individual models for children's temperament, behavior problems, and Parent-Child Distress, but none of these replicated. For example, Extraversion was related to non-punitive discipline among fathers (less Coercive Verbal, more Low Authority discipline) and mothers (more Behavior Modification), but not for both siblings. In addition, the interaction effects (between children's behavior and parents' stress and childrearing attitudes) did not replicate either.

Prediction models: within-family analyses

For the first set of within-family analyses, multiple regression with backward selection was used again, where differential discipline scores served as the outcome variables and differential perceptions of siblings were included as predictors. Thus, these models tested the degree of covariation between sibling differences in characteristics and sibling differences in discipline, for both absolute differences and relative differences. These results are shown in Tables 25 and 26.

Prediction of maternal differential discipline

For mothers, larger differences in siblings' ages (.34, $p<.001$) predicted greater amounts of differential Physical Punishment ($F\{1,92\}=8.26$, $p<.001$; $R^2=.15/.14$). However, the model for relative differences in Physical Punishment was not significant. Absolute differences in Physical Restraint ($F\{1,92\}=4.01$;$p<.05$; $R^2=.04/.03$) were related to greater

differences in siblings' Hyperactivity (.20, $p<.05$). The model for relative differential Restraint ($F\{2,91\}=7.65; p<.001$; $R^2=.14/.13$) showed that greater Parent-Child Dysfunction with sibling A was related to greater Restraint with sibling B (-.30, $p<.05$). Also, higher levels of Conduct Problems in sibling A predicted greater use of Physical Restraint with that child (.49, $p<.001$). The absolute difference in mothers' Reasoning ($F\{1,92\}=4.53$, $p<.05$; $R^2=.05/.04$) was related to sibling differences in Somatic Problems (.22, $p<.05$). Relative differential Reasoning ($F\{3,90\}=4.96$, $p<.01$; $R^2=.14/.12$) was related to differential Anxiety (.21, $p<.05$), where more Reasoning was associated with higher anxiety for sibling A. In addition, greater amounts of Reasoning with sibling A was related to having different-gender children (.30, $p<.01$). The model predicting absolute differential Low Authority discipline was not significant. Relative difference in Low Authority discipline ($F\{3,90\}=4.88$, $p<.01$; $R^2=.14/.11$) was related to gender-group (-.24, $p<.01$), age difference (.22, $p<.01$), and differential Learning Problems (-.23, $p<.01$), so that greater amounts of Low Authority discipline were reported for sibling A if the siblings were the same gender, were farther apart in age, and if sibling A was lower than sibling B on Learning Problems. The absolute and relative difference models for Coercive Verbal discipline and Behavior Modification were not statistically significant.

Prediction of fathers' differential discipline

For fathers, the absolute difference in Reasoning ($F\{1,81\}=3.99$, $p<.05$; $R^2=.06/.04$) was negatively related to sibling differences in Somatic Problems (-.22, $p<.05$). The relative differential Reasoning model was not statistically reliable. Likewise, the absolute differential Coercive Verbal discipline model was not significant. However, relative differential Coercive Verbal discipline ($F\{4,78\}=4.53$, $p<.01$; $R^2=.19/.15$) was related to differential child Difficulty (-.29, $p<.01$), Parent-Child Dysfunction (.42, $p<.001$), and Activity (-.21, $p<.01$). Thus, greater Coercive Verbal discipline with sibling A was associated with that child being less difficult and active, but having a more dysfunctional relationship with the father, in comparison to sibling B. Absolute differences in Low Authority discipline ($F\{2,80\}=8.31$, $p<.001$; $R^2=.17/.15$) were related to sibling differences in shyness (.25, $p<.05$) and similarity in Conduct Problems (-.33, $p<.01$). Greater amounts of relative differential Low Authority discipline ($F\{4,78\}=3.37$, $p<.01$; $R^2=.15/.10$) was predicted by sibling A's lower Difficulty (-.51, $p<.001$) and higher Hyperactivity (.33, $p<.01$) compared to sibling A. Lastly, greater absolute differences in Behavior Modification ($F\{2,80\}=5.72$, $p<.01$; $R^2=.18/.15$) were related to greater sibling differences in Anxiety (.31, $p<.01$) and Learning Problems (.25, $p<.05$). Relative

differential Behavior Modification ($F\{4,78\}=6.79$, $p<.001$; $R^2=.26/.22$) was also related to differential anxiety (.25, $p<.01$) and conduct problems (.48, $p<.001$), as well as learning problems (-.26, $p<.01$). Thus, greater use of Behavior Modification techniques with sibling A was predicted by that child's greater Anxiety and Conduct Problems, and his or her lower levels of Learning Problems. Lastly, the models for fathers' absolute and relative differential Physical Punishment and Restraint were not statistically significant.

Summary of differential regression results

It was hypothesized that the same parent and child correlates of punitive discipline in the between-family analyses would also operate for differential punitive discipline within-families.

Child gender was not associated with differential discipline. Thus, parents reported similar levels of the six types of discipline for both boys and girls. While gender composition of the sibling pair was related to differential Reasoning and differential Low Authority discipline, this effect did not replicate - only mothers reported greater amounts of differential Low Authority discipline for same-sex siblings, and using more Reasoning with sibling A in mixed-sex pairs.

There were only two differential sibling age effects, and neither replicated. First, greater absolute differences

in sibling ages were positively related to greater differential Physical Punishment, but only among mothers. Second, a larger relative difference in ages was related to greater amounts of Low Authority discipline with sibling A, but again, only for mothers.

There were numerous differential child behavior effects that predicted differential discipline, but none of these replicated either. Greater absolute differences in siblings' Learning Problems were associated with less differential Behavior Modification, but only among fathers. Higher Learning Problems for sibling A were related to higher amounts of Low Authority discipline among mothers, but higher amounts of Behavior Modification among fathers. Sibling A's with higher Parent-Child Dysfunction had mothers who reported using less Physical Restraint. Coercive Verbal discipline among fathers was higher for sibling A's with greater Parent-Child Dysfunction, but lower Child Difficulty. Lastly, fathers reported lower amounts of Low Authority discipline with more Difficult, but less Hyperactive, sibling A's.

Testing the relative contribution of shared and unique variance

Another aim of this study was to test the relative contribution of sibling similarities and differences in predicting parents' discipline behavior. In order to do this, LISREL was used to test 2 types of models. In the

first model (Figure 1), the sibling A's characteristics (e.g. sociability, conduct problems, parent-child dysfunction) were partitioned into 'shared' and 'unique' components. Discipline for that child was regressed on these shared and unique components, in order to estimate the relative predictive value of these 2 types of variability. Gender and age were also included.

Models were tested separately for mothers and fathers. In addition, sibling A's characteristics were parsed into unique and shared components first, followed by replication analyses, where sibling B's characteristics were tested. For each of the 6 discipline scores, 11 univariate models were tested: 4 temperament models (i.e. emotionality, activity, sociability, and shyness), 5 behavior models (i.e. conduct, learning problems, hyperactivity, anxiety, and somatic problems), and 2 parent-child stress models (i.e. parent-child dysfunction, child difficulty). Each of these models was tested separately for mothers and fathers. This design resulted in a matrix of model fit results (chi-square, Goodness of Fit Index, Adjusted Goodness of Fit Index) with the following dimensions: discipline score (6) x child characteristic (11) x child (2) by parent (2).

This first structural model did not fit the data. The chi-square values never dropped below 94, and corresponding p-values were very small (<.001); the goodness-of-fit indices never approached .90. There was occasional

statistical prediction from these unique and shared components, but none were replicable, nor matched the results from the multiple regression analyses.

In a second structural model (Figure 2), a cross-lag regression model with discipline as the outcome and sibling's characteristics as the predictor, was used to test the relative effect size of child-specific vs. cross-lagged regression weights. Each child's gender and age were included as well. Evidence for covariation between differential perceptions of sibling children and differential discipline would be found if child-specific coefficients (a) were reliably larger in magnitude than cross-lagged coefficients (b). Only one clear pattern emerged from this model - that it did not fit the data either. Not one of the 132 models had chi-square coefficients below 90.00; p-values were very small (<.001). Furthermore, the Goodness of Fit indices did not exceed .86, and the Adjusted Goodness of Fit indices remained in the .6 range.

Little was revealed through these 2 LISREL models. There are several possible explanations for poor fit; a big sample, for instance, can produce chi-square values that are quite large, even for models that fit the data. Low statistical power is one possible cause, given the lack of variability in the fit indices for all of the models (i.e. evidence of a ceiling or floor effect). However, based on

the regression results, it's likely that the models did not fit the data because there was no reliable covariance between differential perceptions of children's behavior and differential discipline.

DISCUSSION

Few robust effects

The current study was designed to test several hypotheses about the relationships between parent and child characteristics, and parental discipline. First, based on comparisons between families, parents who were more stressed and traditional, and who viewed their children's behavior as more problematic (e.g. hyperactive) were expected to report using more punitive forms of discipline (including physical punishment and restraint, and coercive verbal discipline). Also, parents of boys were expected to report more punitive forms of discipline. Second, based on sibling comparisons within families, parents were expected to report different forms of discipline for sibling children, based on their perceptions of each child. Furthermore, parents who were more stressed, or more traditional, were expected to report the least differential discipline.

Parents who had more traditional childrearing attitudes used more Physical Punishment. However, with this exception, these analyses provided no evidence for rejecting the null hypothesis that there are no reliable relationships between parental discipline and parent and child

characteristics, and no reliable relationships between differential perceptions and differential discipline. Another robust effect, child age, was found, where parents reported using more Physical Punishment with children who were younger. However, there were no a priori hypotheses about this age effect, largely because there were no child age effects for Physical Punishment in an earlier study using the Parental Discipline Interview with parents of preschool children (Pinkerton & Scarr, 1994).

Both of these robust effects are consistent with past research on parental discipline. Numerous empirical studies, dating back several decades, have found a relationship between high control discipline and more Authoritarian childrearing values (Maccoby & Martin, 1983). In addition, researchers have noted that the majority of parents seem to use age-appropriate discipline strategies (Maccoby, 1984; Dunn & McGuire, 1992) - this includes less physical forms of discipline, and more verbal means of control, as children become more verbally and cognitively adept. However, while it is clear that the parents in the current study are reporting less Physical Punishment with older children, it is not clear that parents of older children are using more verbal forms of discipline.

The general lack of robust effects in this internal replication design has serious implications. For instance, although there were numerous effects for both the between

and within-family regression analyses, there were no apriori hypotheses regarding parent differences, nor child age group differences, in the covariation of parent and child characteristics and discipline. Aside from the statistical advantages of using internal replication (it is conservative), it would be most difficult to interpret these numerous results in a post-hoc fashion. Even if there were hypotheses regarding parent and child age group differences, there were no additional robust effects for mothers, or fathers, or sibling A, or sibling B, except for the two robust effects (Traditionalism, child age --> Physical Punishment) already mentioned.

An example of one interpretation of the non-replicated results follows. While mothers reported using more punitive forms of discipline (i.e. Physical Punishment, Coercive Verbal) with children who had more behavior problems, fathers reported using less punitive discipline (i.e. Low Authority, Behavior Modification, less Physical Punishment) with these children. However, this effect was found only for sibling A among mothers - the prediction of Physical Punishment among fathers was found only for sibling A, while the prediction of Low Authority and Behavior Modification for fathers was found for both siblings. Furthermore, there was contradictory evidence, where mothers reported using more Behavior Modification with children higher in behavior problems (but only for sibling A). One potential conclusion

is that parent gender interacts with child age in determining the relationship between child behavior problems and parent's use of punitive discipline. However, the problems with this interpretation are obvious. First, the results are contradicted within the same study. Second, the child age grouping is based only on relative age ranking, not the age distribution of siblings. Thus, while sibling A is always the younger of the two, the age distributions for both sibling groups overlap. Consideration of child age group effects would be more sound if there was no variability within each sibling group.

The Random Effects model

An alternative hypothesis that must be considered is a "null" or random effects model. Given the number of parameters estimated for both parents and both sibling groups in the between-family regression analyses (480 total), one would expect to find 24 effects by chance, with alpha=.05. This null hypothesis can be rejected, as there were 61 statistically reliable effects. However, as already mentioned, only 2 robust effects (i.e. those that replicated across 3 or all of the models) were found in the between-family analyses. In addition, there were numerous contradictory findings. One example (child Behavior Problems and punitive discipline) was already mentioned. In addition, effects of opposite sign were found for mothers and fathers in the between-family analyses: Stress x

Behavior Problems --> Restraint (sibling A; mother +, father -), Anxiety --> Reasoning (sibling A; mother +, father -), Extraversion --> Behavior Modification (sibling B; mother +, father -).

For the within-family analyses (including both the relative and absolute-difference regression analyses), 312 parameters were estimated, leading to an expected 15.6 chance effects for alpha=.05. Only 18 effects were found, leading to a marginal rejection of this null hypothesis. One contradictory effect (opposite sign) was found for mothers and fathers in the within-family analyses, where absolute Differential Somatic Problems --> absolute Differential Reasoning (mother +, father -). Even simple comparisons between the absolute and differential difference score models, within each of the 6 models and parent gender, revealed no replicated effects.

A Tale of Two Theories

The assertions of Socialization and Behavior Genetics theories of human development both include hypotheses about the transmission of parents characteristics to their children (Scarr, in press). Socialization is, by definition, the environmental transmission of parent's goals, values, and information about the world through parent's behaviors. Behavior geneticists expect children's characteristics to be at least partly accounted for by genetic transmission from parents; in addition, parents

provide certain environmental opportunities to their children, and these environments are correlated with the genetic characteristics of the parents and children (g-e correlation). Although genetic and environmental similarity among family members is confounded in the current study, and the data are correlational (causality can not be tested), one can still interpret these findings (or lack of findings) within the context of specific predictions about covariation based on these two theories. While direction of effects (e.g. parent discipline --> child behavior) cannot be considered, the patterns of covariation can.

Proponents of Socialization Theory have argued that particular types of discipline behaviors (i.e. use of physical punishment) and affect (i.e. warmth) have particular effects on children. For example, Baumrind's research has described parents' behavior along similar dimensions, classifying parents as Authoritarian, Authoritative, or Permissive, and investigating the effects these parent behaviors have on children. In addition, Patterson's research has investigated the role of 'inept' (inappropriate) parenting in determining the development of coercive dyadic exchanges between parents and their behaviorally difficult children. If these theorists are correct, one would expect to find statistically reliable relationships between parental discipline and children's behavior - for example, parents who use physical forms of

discipline should have children who are less well adjusted. Second, there should be only modest differences in parents' discipline for different children in the same family; parental discipline with one child should be generally representative of the discipline that is used with all children in the family (thus, one only needs to study one child in the family).

Alternatively, behavior geneticists would assert that the most reliable predictors of parental discipline are individual parent characteristics that are moderately to highly heritable, such as intelligence and personality. Parents who are smarter, who have more democratic and authoritative views about childrearing, and who are low in personality characteristics associated with maladaptive functioning (e.g. neuroticism) are more likely to use discipline strategies that are commensurate with these characteristics - reliance on reasoning and other child-centered forms of discipline, and less use of coercive or high-control strategies, such as physical punishment. If this is the case, there would be strong relationships between reported discipline, and the heritable characteristics of the parents. In addition, differential discipline has been identified as a potential source of sibling differences (Plomin & Daniels, 1987; Reiss et al., 1993), whereby one would find covariation between child-specific discipline and individual children's

characteristics and behavior.

What conclusions can be made? First, while parents did appear to modulate their use of physical punishment based in part on their children's ages, the only other robust predictor of discipline was Traditionalism. Authoritarianism, which has been shown to be related to more traditional views of childrearing, has also been shown to be as heritable as other IQ subtests, and moderately correlated with parental IQ scores (Scarr, 1981). However, this correlation was modest to moderate in these data ($r=-.40$ for mothers, $r=-.28$ for fathers), and verbal IQ was not a reliable predictor of parental discipline. Regardless of whether the Traditionalism scale is an adequate measure of Authoritarianism, it is clear that parents' attitudes were related to their use of Physical Punishment. Thus, partial support for a Behavior Genetic/Parent Characteristics hypothesis was found.

The lack of reliable relationships between child temperament and behavior, and parental discipline, contradicts the prediction of expected correlations in Socialization Theory. While children's personalities and behavior problems were associated with discipline in individual models, none of these effects replicated - not one of these effects was found for both parents, or for both siblings. By contrast, this lack of robust effects is consistent with Scarr's theory that for the majority of

families, few direct relationships between parental discipline and child behavior should be found (Scarr, 1993).

No Support for the Cognitive Model

There were no robust effects of differential perceptions of sibling children predicting differential discipline. Although some relationships were found for mothers and fathers individually, none of these effects was found for both parents. In addition, no effects replicated across the relative and absolute difference score models. Although I had expected there to be relationships between differences in siblings and differences in the discipline parents reported, the lack of effects is consistent with the prediction of Socialization Theory that differential discipline is minimal in most families, and not expected to be important.

However, is there any empirical evidence that differential discipline occurs within most families? While some behavior geneticists have emphasized the **potential** for differential discipline as a source of siblings' different experiences in the same family (Plomin & Daniels, 1987; Dunn & Plomin, 1990), there is little empirical support for this in the current data. In fact, parents reported using similar discipline with both children (r's=.26-.56). However, it was not the case that parents were repeating everything they said for both siblings. While parents also reported similar behavior problems for their sibling

children (r's=.36-.48), they viewed siblings as very different in personality (the only reliable intra-class correlation was for fathers' perceptions of sibling shyness). If these intra-class correlations had been high for all of these variables, then one could certainly argue that parents were not differentiating their children in any way; however, this was not the case.

The Trouble with Difference Scores

What might explain this lack of covariation between differential perceptions of sibling children, and differential discipline? One possible explanation is that there is no reliable variability in the sibling difference scores; this is certainly an interpretation that many would share, given the difficulty with difference scores, as mentioned before (Willett, 1988). Although low reliability and high covariation may indicate poor reliability in the differential discipline scores (parent agreement was low, and the intra-class correlations were moderate in magnitude), differential perceptions of siblings' characteristics did not have the same problems (parents agreed, and intra-class correlations were lower than those for discipline). Attempts to use LISREL models to avoid reliability problems proved fruitless.

Deal, Halverson and Wampler (1993) used an intra-class correlation coefficient, derived for each sibling dyad, in analyses. Interestingly, while they found statistically

reliable sibling similarity scores for discipline, these similarity coefficients were only slightly higher than 'pseudo-sibling' (random) comparisons. In fact, the comparison between similarity of fathers' discipline for 'real' siblings, and similarity of discipline for 'pseudo-siblings', was not different! Although the authors explained this finding in light of the constraints on parental behavior due to the experimental situation, it is interesting that this same comparison did reveal more similar treatment of real siblings among mothers.

Deal and his colleagues pointed out that there was little evidence for covariation between differential parental perceptions, and differential discipline, even with the most robust measures of sibling differences. However, as noted in the introduction of this paper, comparing this conclusion to the current study is tenuous - parents' perceptions were compared to their own reports of their discipline, not to observers' ratings of discipline.

Shortcomings and solutions

There are various shortcomings which must be addressed. First, there are potential problems in the measurement of individual characteristics and discipline; this is a particularly acute problem for the Parental Discipline Interview (PDI), which was the only measure of parental discipline in this study. Very little cross-validation research has been conducted for this instrument. The only

study conducted included Bermudian mothers observed in a brief structured assessment in a teaching task with their children - a modest (r=.3) relationship between observed control and self-reported use of punitive discipline was reported (Scarr, 1985; Scarr & McCartney, 1988). In addition, there was no evidence from the current study that the PDI is sensitive to differential discipline, although differential discipline has been observed in some empirical studies (Brody & Stoneman, 1993; Reiss et al., 1993).

Another consideration is that the PDI may not be a measure of parental behavior, but instead assesses Authoritarian childrearing values (given that the only robust parent predictor of discipline was Traditionality --> Physical Punishment). In their recent review of these types of measures, Holden and Edwards (1991) noted that instruments of this type have not been shown to reliably differentiate parents' attitudes and behaviors. If the PDI is simply measuring parental attitudes, this might explain the general lack of relationships with child characteristics (Bell, 1985).

Third, the source of the information is also important to consider, particularly when trying to measure effects for nonshared environment, such as differential discipline. As Reiss and his colleagues noted (1993), virtually all of the behavior genetics research to date comparing parents and children's reports of differential effects find strong

genetic effects for parent's reports of sibling differences, and strong non-shared environment effects for children's reports of differences. Because I was interested in the covariation of differential parental perceptions and differential discipline, parent's reports were used exclusively. The age of the children, and other constraints (time and cost), prevented the inclusion of children's reports. Unfortunately, it is impossible to test whether the lack of reliable relationships in the within-family analyses is due to a small nonshared environment effect for parents reports, or some other form of unmeasured variance (e.g. error). However, teacher and child caregiver ratings of the children's temperament and behavior problems have also been collected for approximately half of the sample; subsequent analyses will include these additional sources, which will answer important questions about the information contained in the parents' ratings.

Lastly, the non-representativeness of the current sample is problematic. As already described, these families are a highly selected group; family income, education, job prestige, and homogeneity in ethnicity and structural family characteristics (e.g. number of parents and children), all stand out as remarkable characteristics of this sample. These findings can not be generalized to all families with pre-adolescent children.

Future directions: Measuring the impact of new environments

Although there were few results to interpret, this study did provide some impetus for thinking about ways to improve our conceptualizations and measurement of nonshared environment effects. What is the role of unique environmental experiences in the development of individual differences in sibling characteristics over the life-span? Although there are some longitudinal twin and adoption studies (e.g. the Louisville and Texas studies), these have not yet measured change longitudinally over the life-span (due primarily to practical constraints). Furthermore, these studies have relied exclusively on structural models where nonshared environment is more or less modeled as the remaining variance (although, notable exceptions include the work by Plomin and Daniels, who are developing measures of family members' perceptions of unique experiences).

Some theorists have included this developmental component. Scarr and McCartney (1983) proposed a theory that involves both genes and environments, which includes hypotheses about changes over time. In their view, the genotype drives experience; active environment seeking becomes more important as autonomy and independence increase and children become more competent at making choices. In turn, the shared environment becomes less important in predicting sibling differences.

There are many studies, both environmental and genetic in emphasis, which have found evidence for the role of unique environmental experiences. In an exhaustive review of twin and adoption studies on temperament and personality, Goldsmith (1983) found support for the importance of nonshared environmental effects on individual differences. Yet, Goldsmith did not address the developmental implications, aside from the possibility that genetic effects were not static over time. By contrast, in a meta-analysis of twin studies on intelligence and personality, McCartney and her colleagues (1990) found strong correlational evidence that sibling twins become increasingly different with age, and that the unique environment component was an important indicator of this shift. However, this "type" of environment, by definition, is almost impossible to actually measure, as noted by McCall (1983):

"...if discontinuous nonshared within-family environmental factors that are uniquely matched with a child's aptitudes and interests at the time are a major influence on [mental] development, does this not excise the issue out of the body of science? The proposition is really that major contributors to [mental] development are idiosyncratic and therefore outside science, which seeks general laws" (p. 414).

A solution? "We can study these factors, but we must

be more developmental and multivariate in both independent and dependent variables" (p.414).

One such developmental framework involves studies that observe **changes in sibling similarity at normative transition points.** An obviously simple list of examples of such transitions include the introduction to elementary school, middle-school and high school, making new friends, changes associated with puberty, moving away from the home for the first time, marriage or cohabitation, becoming a parent, and the loss of parents and siblings.

Why might normative transitions be useful? Included are 4 propositions:

1. Normative transitions are not age-based, yet their timing is often correlated with age. Thus, one can avoid some of the issues surrounding the 'meaning' of age (Wohlwill, 1973), instead more directly measuring developmental status at the point of transition. Many of these transitions are heavily influenced, if not determined, by cultural norms (e.g. transitions through school, cohabitation and marriage), although others may be largely determined by genetic variability within a population (e.g. onset of puberty).

2. These transitions are experienced by the majority of individuals in a population.

3. Periods of transition are optimal for observing change in an organized behavioral system (Thelen & Ulrich,

1991). Observations at and around transition points capitalize on theoretically maximized inter-individual and intra-individual variability. It is noteworthy that with few exceptions, this hypothesis has not been tested for social behavior.

4. The probability of observing any immediate effects on individual differences in personality and behavior is also maximized at transitions points. For example, transitions to a new environment (e.g. a classroom or school, a different town, a new role or relationship) include changes in competency demands and information available to the individual. The researcher could choose those characteristics of the new experience that he or she was most interested in measuring. However, long-term or delayed effects would require more comprehensive (multiple repeated) measurement.

Therefore, it is proposed that nonshared environment effects can actually be measured at those times when researchers know people are being exposed to new environments. This is not to say that these new environments are independent of the family environment, or the individual's genotype - in fact, they are more likely to be correlated (i.e., g-e correlation). However, this would provide a more rigorous test of the role of unique environmental experiences, and the role that selection of experiences, play in the development of individual

differences. In addition, a more thorough description of changes over time could be illustrated. Current conceptualizations of unique environment effects have assumed that age-based change in sibling differentiation is linear (i.e. all of these studies have relied on correlations between sibling difference scores and age, or on repeated measures MANOVA), even though the alternative (i.e. that these effects are nonlinear, and perhaps discontinuous) has not been tested (see Figure 3).

Following Scarr's (in press) suggestion, researchers must begin to test specific competing hypotheses put forward by Socialization and Behavior Genetics theories regarding the effects that parents have on their children's development. Although some effort has been made among Socialization researchers to begin incorporating tests of genetic and environmental contribution, the next challenge is to develop methods of directly measuring unique environmental experience that will allow more precise hypothesis testing.

References

Abidin, R. (1983). Parenting Stress Index - Manual. Charlottesville, VA: Pediatrics Psychology Press.

Abidin, R. (1990). Parenting Stress Index - Short Form Manual. Charlottesville, VA: Pediatrics Psychology Press.

Anderson, K., Lytton, H. & Romney, D.M. (1986). Mothers' interactions with normal and conduct-disordered boys: Who affects whom? Developmental Psychology, 22, 604-609.

Baker, L. & Daniels, D. (1990). Nonshared environmental influences and personality differences in adult twins. Journal of Personality and Social Psychology, 58(1), 103-110.

Baumrind, D. (1991). Effective parenting during the early adolescent transition. In P.A. Cowan & E.M. Hetherington (Eds.), Family Transitions. Hillsdale, NJ: Lawrence Erlbaum.

Becker, W.C. & Krug, R.S. (1965). The parent attitude research instrument: A research review. Child Development, 36, 329-365.

Bell, R.Q. (1985). Review of Parental belief systems (I. Sigel, Ed.), Contemporary Psychology,

Bell, R.Q. & Harper, L.V. (1977). Child effects on adults. Hillsdale, NJ: Erlbaum.

Bell, R.Q. & Chapman, M. (1986). Child effects in studies using experimental or brief longitudinal approaches to socialization. Developmental Psychology, 22, 595-603.

Belsky, J. (1984). The determinants of parenting: A process model. Child Development, 55, 83-96.

Brody, G, Stoneman, Z. & Burke, M. (1987). Child temperaments, maternal differential behavior, and sibling relationships. Developmental Psychology, 23(3), 354-362.

Brody, G. & Stoneman, Z. (1993). Sibling relationships and their association with parental differential discipline. In Hetherington, Reiss & Plomin (Eds.), Separate social worlds of siblings: Impact of the nonshared environment on development. Hillsdale, NJ: Lawrence Erlbaum.

Buss & Plomin (1984). Temperament: Early developing personality traits. Hillsdale, NJ: Lawrence Erlbaum.

Caspi, A., Elder, G. & Bem, D. (1987). Moving against the world: Life-course patterns of explosive children. Developmental Psychology, 23, 30-313.

Cohn, J.F. & Tronick, E.Z. (1988). Mother-infant face-to-face interaction: Influence is bidirectional and unrelated to periodic cycles in either partner's behavior. Developmental Psychology, 24, 386-392.

Conners, C.K. (1989). Conners' ratings scales manual. North Tonowanda, NY: Multi-Health Systems, Inc.

Daniels, D., Dunn, J., Furstenberg, F., & Plomin, R. (1985). Environmental differences within the family and adjustment differences within pairs of adolescent siblings. Child Development, 56(3), 764-774.

Daniels, D. & Plomin, R. (1985). Differential experience of siblings in the same family. Developmental Psychology, 21(5), 747-760.

Deal, J., Halverson, C. & Wampler, K. (1989). Parental agreement on child- rearing orientations: Relations to parental, marital, family, and child characteristics. Child Development, 60(5), 1025-1034.

Dix, T. & Grusec, J. (1985). Parent attribution processes in the socialization of children. In I. Sigel (Ed.), Parental Belief Systems (1st Edition). Hillsdale, NJ: Lawrence Erlbaum.

Dix, T., Ruble, D. & Zambarano, R. (1989). Mothers' implicit theories of discipline: Child effects, parent effects, and the attribution process. Child Development, 60(6), 1373-1391.

Dodge, K.A., Bates, J. & Pettit, G. (1990). Mechanisms in the cycle of violence. Science, 250, 1678-1683.

Downey, G. & Coyne, J.C. (1990). Children of depressed parents: An integrative review. Psychological Bulletin, 108, 50-76.

Dunn, J. & McGuire, S. (1992). Sibling and peer relationships in childhood. Journal of Child Psychology and Psychiatry and Allied Disciplines, 33, 67-105.

Dunn, J., Plomin, R., & Nettles, M. (1985). Consistency of mothers' behavior toward infant siblings. Developmental Psychology, 21(6), 1188-1195.

Dunn, J., Plomin, R., & Daniels, D. (1986). Consistency and change in mothers' behavior toward young siblings. Child Development, 57(2), 348-356.

Dunn, J., & Plomin, R. (1986). Determinants of maternal behaviour towards 3-year-old siblings. British Journal of Developmental Psychology, 4(2), 127-137.

Dunn, J. & Plomin, R. (1990). Separate lives: Why siblings are so different. New York: Basic Books.

Dunn, J., Stocker, C. & Plomin, R. (1990). Nonshared experiences within the family: Correlates of behavioral problems in middle childhood. Development and Psychopathology, 2(2), 113-126.

Eisenberg, M. (1992). Work-family interference, coping strategies, and subjective well-being in working mothers. Unpublished dissertation. University of Virginia, Charlottesville, VA.

Emery, R. (1982). Interparental conflict and the children of discord and divorce. Psychological Bulletin, 92, 310-330.

Falconer, D.S. (1960). Introduction to quantitative genetics. New York: Ronald Press.

Fauber, R., Forehand, R., Thomas, A. & Wierson, M. (1990). A mediational model of the impact of marital conflict on adolescent adjustment in intact and divorced families: The role of disrupted parenting. Child Development, 61(4), 1112-1123.

Forgatch, M.S., Patterson, G.R., & Skinner, M.L. (1988). A mediational model for the effect of divorce on antisocial behavior in boys. In E.M. Hetherington & J.D. Arsteh (Eds.),Impact of Divorce, Single Parenting, and Stepparenting on Children. Hillsdale, NJ: Lawrence Erlbaum.

Gjerde, P. F. (1988). Parental concordance on child rearing and the interactive emphases of parents: Sex differentiated relationships during the preschool years. Developmental Psychology, 24, 700-708.

Goldsmith, H.H., Buss, A.H. & Plomin, R. (1987). Roundtable: What is temperament? Four approaches. Child Development, 58, 505-529.

Goldsmith, H.H. (1983). Genetic influences on personality from infancy to adulthood. Child Development, 54, 331-355.

Gottman, J. & Katz, L.F. (1989). Effects of marital discord on young children's peer interactions and health. Developmental Psychology, 25, 373-381.

Hetherington, E.M. (1991). The role of individual differences and family relationships in children's coping with divorce and remarriage. In P.A. Cowan & E.M. Hetherington (Eds.), Family Transitions. Hillsdale, NJ: Lawrence Erlbaum.

Hoffman, L. (1991). The influence of the family environment on personality: Accounting for sibling differences. Psychological Bulletin, 110, 187-203.

Holden, G.W & Edwards, L.A. (1989). Parental attitudes toward child rearing: Instruments, issues, and implications. Psychological Bulletin, 106, 29-58.

John, O.P., Caspi, A., Robins, R., Moffitt, T. & Stouthamer-Loeber, M. (1994). The "Little Five": Exploring the nomological network of the five-factor model of personality in adolescent boys. Child Development, 65, 160-178.

Kelley, M., Power, T. & Wimbush, D. (1992). Determinants of disciplinary practices in low-income black mothers. Child Development, 63, 573-582.

Kochanska, G., Kuczynski, L. & Radke-Yarrow, M. (1989). Correspondence between mothers' self-reported and observed child rearing practices. Child Development, 60, 56-63.

Kohn, M. (1969). Class and conformity: A study in values. Homewood, IL: Dorsey Press.

Lester, B.M., Hoffman, J. & Brazelton, T.B. (1985). The rhythmic structure of mother-infant interaction in term and preterm infants. Child Development, 56, 15-27.

Lytton, H. (1977). Do parents create, or repond to, differences in twins? Developmental Psychology, 13(5), 456-459.

Lytton, H. (1990). Child and parent effects in boys' conduct disorder: A reinterpretation. Developmental Psychology, 26, 683-697.

Lytton, H. & Romney, D.M. (1991). Parents' differential socialization of boys and girls: A meta-analysis. Psychological Bulletin, 109(2), 267-296.

MacDonald, K. (1992). Warmth as a devlopmental construct: An evolutionary analysis. Child Development, 63, 753-773.

McHale, S. & Pawletko, T.M. (1992). Differential treatment of siblings in two family contexts. Child Development, 63, 68-81.

McNally, S., Eisenberg, N., & Harris, J.D. (1991). Consistency and change in maternal child rearing practices and values: A longitudinal study. Child Development, 62, 190-198.

Maccoby, E. (1984a). Socialization and developmental change. Child Development, 55, 317-328.

Maccoby, E. (1984b). Middle childhood in the context of the family. In W.A. Collins (Ed.), Development During Middle Childhood. Washington, D.C. : National Academy Press.

Maccoby, E. (1992). Trends in the study of socialization: Is there a Lewinian heritage? Journal of Social Issues, 48, 171-186.

Maccoby, E. & Martin, J. (1983). Socialization in the context of the family: Parent child interaction. In P. Mussen (Ed), Handbook of Child Psychology (Vol. 4). New York: John Wiley & Sons.

Maccoby, E., Snow, M. & Jacklin, C.N. (1984). Children's dispositions and mother-child interaction at 12 and 18 months: A short-term longitudinal study. Developmental Psychology, 20, 459-472.

Marshall, N. (1989). Perceived social support. Unpublished manuscript, Wellesley College, Wellesly MA.

Mekos, D.J. (1992). As different as night and day: Understanding sibling differences in problem behavior. Unpublished dissertation. Charlottesville, VA: University of Virginia.

NORC: National Opinion Research Center, 1984. Occupational prestige codes - Coding manual.

Olweus, D. (1993). Bullying. London: Blackwell.

Paikoff, R.L. & Brooks-Gunn, J. (1991). Do parent-child relationships change during puberty? Psychological Bulletin, 110, 46-66.

Patterson, G., DeBaryshe, B. & Ramsey, E. (1989). A developmental perspective on antisocial behavior. American Psychologist, 44, 329-335.

Pettit, G. & Bates, J. (1989). Family interaction patterns and children's behavior problems from infancy to 4 years. Developmental Psychology, 25, 413-420.

Pinkerton, R. & Scarr, S. (1994). How working parents discipline young children: Cultural and individual differences. Under revision.

Plomin, R. (1986). Development, genetics, and psychology. Hillsdale, NJ: Lawrence Erlbaum.

Plomin, R. & Daniels, D. (1987). Why are children in the same family so different? Behavioral and Brain Sciences, 10, 1-16.

Reiss, D., Plomin, R., Hetherington, E.M., Howe, G.W., Rovine, M., Tyron, A. & Hagen, M.S. (1993). The separate worlds of teenage siblings: An introduction to the study of the nonshared environment and adolescent development. In Hetherington, Reiss & Plomin (Eds.), Separate social worlds of siblings: Impact of the nonshared environment on development. Hillsdale, NJ: Lawrence Erlbaum.

Roberts, G., Block, J.H. & Block, J. (1984). Continuity and change in parents' child reaing practices. Child Development, 55, 588-597.

Rowe, D. (1981). Environmental and genetic influences on dimensions of perceived parenting: A twin study. Developmental Psychology, 17(2), 203-208.

Rowe, D. (1983). A biometrical analysis of perceptions of family environment: A study of twin and singleton sibling kinships. Child Development, 54(2), 416-423.

Sameroff, A. (1975). Transactions in development. Human Development.

Scarr, S. (1968). Environmental bias in twin studies. Eugenics Quarterly, 15, 34-40.

Scarr, S. (1981). Race, social class, and individual differences in IQ: New studies of old issues. Hillsdale, NJ: Lawrence Earlbaum.

Scarr, S. (1985). Constructing psychology: Making facts and fables for our times. American Psychologist, 40, 499-512.

Scarr, S. (1992). Developmental theories for the 1990's: Development and individual differences. Child Development, 63, 1-19.

Scarr, S. (in press). Behavior genetic and socialization theories of intelligence: Truce and Reconciliation. To appear in R.J. Sternberg & E.L. Grigorenko (Eds.), Intelligence: Heredity and Environment. New York: Cambridge University Press.

Scarr, S. & Grajec, S. (1982). Similarities and differences among siblings. Chapter in Lamb, M. & Sutton-Smith, B. (Eds.) Sibling Relationships. Hillsdale, N.J.: LEA.

Scarr, S. & Kidd, K. (1983). Developmental behavior genetics. In M. Haith & J. Campos (Eds.), Manual of Child Psychology: Infancy and the biology of development. New York: Wiley.

Scarr, S. & McCartney, K. (1983). How people make their own environments: A theory of genotype --> environment effects. Child Development, 54, 424-435.

Scarr, S. & McCartney, K. (1988). Far from home: An experimental evaluation of the Mother-Child Home Program in Bermuda. Child Development, 59, 531-543.

Scarr, S., Phillips, D., McCartney, K. & Abbott-Shim, M. (1993). Quality of child care as an aspect of family and child care policy in the United States. Pediatrics, 91, 182-188.

Scarr, S., Pinkerton, R. & Eisenberg, M. (in preparation). The Parental discipline interview manual. Charlottesville, VA: University of Virginia.

Schaefer & Edgerton (1985). Parent and child correlates of parental modernity. In I. Sigel (Ed.), Parental Belief Systems (1st Edition). Hillsdale, NJ: Erlbaum.

Sigel, I. (1985). Parental belief systems: The psychological consequences for children. Hillsdale, NJ: Erlbaum.

Simons, R.L., Lorenz, F.O. & Conger, R.D. (1992). Support from spouse as mediator and moderator of the disruptive influence of economic strain on parenting. Child Development, 63, 1282-1301.

Stack, C.B. (1974). All our kin: Strategies for survival in a black community. New York: Harper & Row.

Stocker, C., Dunn, J., & Plomin, R. (1989). Sibling relationships: Links with child temp., maternal behavior, and family structure. Child Development, 60(3), 715-727.

Tabachnick, B.G. & Fidell, L.S. (1989). Using multivariate statistics (2nd Edition). New York: Harper Collins.

Tejerina-Allen, M., Wagner, B. & Cohen, P. (1993). A comparison of across-family and within-family parenting predictors of adolescent psychopathology and suicidal ideation. In Hetherington, Reiss & Plomin (Eds.), Separate social worlds of siblings: Impact of the nonshared environment on development. Hillsdale, NJ: Lawrence Erlbaum.

Thelen, E. & Ulrich, B. (1992). Hidden skills: A dynamic systems analysis of treadmill stepping during the first year. Monographs of the Society for Research in Child Development, 56, 1-103.

Trickett, P.K. & Susman, E. (1989). Perceived similarities and disagreements about childrearing practices in abusive and nonabusive families: intergenerational and concurrent family processes. In D. Cicchetti & V. Carlson (Eds.), Child Maltreatment. New York: Cambridge University Press.

Vaughn, B., Block, J.H. & Block, J. (1988). Parental agreement on child rearing during early childhood and the psychological characteristics of adolescents. Child Development, 59(4),1020-1033.

Webster-Stratton, C. (1990). Long-term follow-up of families with young conduct problem children: From preschool to grade school. Journal of Clinical Child Psychology, 19, 144-149.

Wechsler, D. (1955). Wechsler Adult Intelligence Scale. New York: Psychological Corp.

Willett, J.B. (1988). Questions and answers in the measurement of change. In E.Z. Rothkopf (Ed.), 1988/9 Review of Research in Education, Vol.15. Washington D.C.: AERA.

Wilson, M. (1984). Mothers' and grandmothers' perceptions of parental behavior in three-generational black families. Child Development, 55, 1333-1339.

Wohlwill, J.F. (1973). The study of behavioral development (Ch. 12). New York: Academic Press.

Zern, D. (1984). Relationships among selected child-rearing variables in a cross-cultural sample of 110 societies. Devpelopmental Psychology, 20(4), 683-690.

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Table 1. Descriptive statistics: categorical data

sibling A gender	62 (55%) girls, 50 (44%) boys
sibling B gender	44 (40%) girls, 68 (60%) boys
gender composition	54 (48%) same, 58 (52%) mixed
mother ethnicity	107 (97%) white, 2 (3%) black, 2 missing
marital status	107 (96%) married, 2 (3%) separated, 1 divorced, 1 living with partner
career status	83 (74%) dual-earner, 10 (9%) single-earner 19 (17%) no father data
father ethnicity	90 (90%) white, 3 (3%) black, 2 (2%) Asian American, 1 (1%) Hispanic, 2 missing
number adults in home	107 (96%) 2 adults, 5 (4%) 1 adult

Table 2. Descriptive statistics: family and parent characteristics.

variable	mean	st.dev	min	max
number of children	2.35	.55	2	4
sibling A age in months	59.66	20.11	15.38	103.93
sibling B age in months	94.66	20.69	46.47	136.13
age difference	35.00	13.48	15.54	75.67
family per capita income	18,792	7,354	6,000	42,500
mother characteristics:				
verbal WAIS-R score	58.03	7.86	33	70
age in years	37.63	3.97	28.00	49.00
years of education	16.26	1.78	12	18
job prestige	53.70	16.37	23	99
hours at work/week	31.24	16.25	.00	55.00
Parent Stress	2.03	.62	1.00	4.00
Marital Stress	2.50	.92	1.00	5.00
Life Events (number of)	1.85	1.60	0	6
Life Events (weighted)	6.49	6.34	.00	25.00
Emotional Support	4.76	.30	3.64	5.00
Instrumental Support	1.82	.27	1.00	2.35
Progressive Attitudes	4.41	.34	3.00	5.00
Traditional Attitudes	2.14	.52	1.00	4.00

Table 2. (continued)

father's characteristics:

	mean	st.dev	min	max
verbal WAIS-R score	57.44	6.23	40	70
age in years	39.08	4.04	29.00	51.00
years of education	16.62	1.75	12	19
job prestige	58.98	14.30	28	82
hours at work/week	45.82	11.78	.00	80.00
Parent Stress	2.01	.71	1.00	4.75
Marital Stress	2.18	.77	1.00	5.00
Life Events (number of)	1.71	1.42	0	5
Life Events (weighted)	5.91	5.38	.00	21.00
Emotional Support	4.49	.42	3.36	5.00
Instrumental Support	2.14	.20	1.44	2.61
Progressive Attitudes	4.34	.32	3.63	5.00
Traditional Attitudes	2.24	.52	1.10	3.50

Table 3. Parent ratings of sibling A characteristics

mother

	mean	st.dev	min	max
temperament:				
Emotionality	2.67	.72	1.17	4.33
Sociability	3.92	.71	1.75	5.00
Shyness	2.70	.61	1.40	4.00
Activity	4.03	.68	1.80	5.00
behavior problems:				
Conduct Problems	.55	.36	.00	1.75
Learning Problems	.45	.40	.00	2.00
Somatic Problems	.14	.25	.00	1.00
Hyperactivity	1.06	.66	.00	2.75
Anxiety	.57	.48	.00	2.00
Manageability	2.18	.72	1.05	4.11

Table 3. (continued)

	father			
	mean	st.dev	min	max
temperament:				
Emotionality	2.77	.69	1.17	4.83
Sociability	3.87	.64	2.25	5.00
Shyness	2.69	.59	1.60	4.20
Activity	3.94	.64	2.40	5.00
behavior problems:				
Conduct Problems	.60	.41	.00	1.88
Learning Problems	.55	.43	.00	2.25
Somatic Problems	.17	.30	.00	2.00
Hyperactivity	1.20	.67	.00	3.00
Anxiety	.56	.42	.00	2.25
Manageability	2.32	.59	1.11	3.65

Table 4. Parent ratings of sibling B characteristics.

	mother			
	mean	st.dev	min	max
temperament:				
Emotionality	2.77	.81	1.00	4.83
Sociability	4.13	.64	2.50	5.00
Shyness	2.70	.65	1.00	4.40
Activity	3.92	.78	2.00	5.00
behavior problems:				
Conduct Problems	.60	.43	.00	2.25
Learning Problems	.55	.44	.00	2.50
Somatic Problems	.19	.32	.00	2.25
Hyperactivity	1.13	.70	.00	2.75
Anxiety	.66	.52	.00	1.75
Manageability	1.93	.65	1.08	3.59

Table 4. (continued)

	father			
	mean	st.dev	min	max
temperament:				
Emotionality	2.70	.64	1.33	4.17
Sociability	3.98	.72	2.00	5.00
Shyness	2.80	.68	1.40	4.20
Activity	3.89	.76	1.40	5.00
behavior problems:				
Conduct Problems	.58	.43	.00	2.50
Learning Problems	.61	.46	.00	2.50
Somatic Problems	.19	.30	.00	1.25
Hyperactivity	1.18	.65	.00	3.00
Anxiety	.67	.52	.00	2.25
Manageability	2.30	.64	1.00	3.59

Table 5. Parent discipline for siblings.

	mother			
	mean	st.dev	min	max
sibling A:				
Physical Punishment	.87	1.68	.00	9.00
Physical Restraint	.88	1.32	.00	7.00
Reasoning	1.48	1.87	.00	11.00
Verbal command/reprimand	5.00	3.17	.00	14.00
Low Authority Discipline	6.27	3.90	.00	21.00
Behavior Modification	6.04	3.16	.00	14.00
sibling B:				
Physical Punishment	.62	1.23	.00	6.00
Physical Restraint	.75	1.25	.00	6.00
Reasoning	1.47	1.47	.00	7.00
Verbal command/reprimand	5.55	3.11	.00	15.00
Low Authority Discipline	4.96	3.19	.00	12.00
Behavior Modification	6.42	2.97	.00	19.00

Table 5. (continued)

	father			
	mean	st.dev	min	max
sibling A:				
Physical Punishment	.88	1.13	.00	4.00
Physical Restraint	1.42	1.92	.00	9.00
Reasoning	1.40	1.48	.00	6.00
Coercive Verbal	5.51	3.53	.00	17.00
Low Authority Discipline	6.05	3.46	.00	15.00
Behavior Modification	5.68	3.19	.00	13.00
sibling B:				
Physical Punishment	.55	.94	.00	4.00
Physical Restraint	1.01	1.51	.00	9.00
Reasoning	1.44	1.29	.00	6.00
Coercive Verbal	5.84	3.85	.00	18.00
Low Authority Discipline	5.16	3.04	.00	12.00
Behavior Modification	6.35	2.75	.00	13.00

Table 6. Correlations among and between parent characteristics.

	fathers												
mothers	1	2	3	4	5	6	7	8	9	10	11	12	13
1.v-WAIS	06	17	**23**	14	**25**	05	03	12	-04	03	17	**21**	**-28**
2.age	**38**	**66**	**22**	**28**	**53**	**30**	05	11	-14	11	**32**	**22**	**-30**
3.yrsed	**60**	**48**	**46**	02	**53**	**30**	**21**	03	-15	06	**30**	17	-06
4.income	14	11	**24**	100	**27**	**26**	-15	02	-13	09	**30**	03	-11
5.j.prest	**24**	20	**27**	14	10	**38**	05	14	-02	-03	13	16	**-24**
6.hours	-00	-03	04	-08	**53**	**-24**	-15	03	-06	-04	**33**	09	-15
7.p.stress	04	-06	-09	-13	-06	00	07	**71**	-01	**-30**	-02	-15	08
8.m.stress	19	11	11	**-21**	-00	02	**55**	**28**	-01	**-31**	-06	-18	04
9.l.events	-18	-18	-14	-13	-12	-08	02	12	**44**	08	-13	-08	09
10.e.support	-16	-12	-11	05	01	04	**-33**	**-27**	17	18	03	**39**	-07
11.i.support	01	08	09	06	15	**30**	**-21**	**-49**	-17	03	**-46**	16	-04
12.prog	16	11	**21**	01	-14	-09	05	14	02	**26**	-12	18	**-32**
13.trad	**-40**	**-29**	**-45**	-01	**-23**	-13	20	06	14	01	**-33**	-04	22

Note: Mother characteristics below diagonal, father characteristics above diagonal. Underlined diagonal correlations between mother and father characteristics. Statistical reliability: $r > .20$ ($p<.05$). $r > .25$ ($p<.01$).

Table 7. Correlations among and between mother ratings of children's characteristics.

	sibling B											
sibling A	1	2	3	4	5	6	7	8	9	10	11	12
1.emot	07	-14	39	01	55	38	20	39	43	52	74	-13
2.soc	-00	-03	-39	58	-01	09	02	41	-39	-13	-11	-12
3.shy	21	-24	17	-35	11	04	04	-10	61	21	25	-15
4.act	-04	43	-33	03	07	03	-01	47	-29	01	03	-10
5.conduct	38	-18	-06	09	48	57	24	54	31	65	68	07
6.learn	34	-24	13	-07	48	36	30	55	33	47	46	06
7.somatic	17	-13	-08	-01	16	07	09	18	35	28	28	23
8.hyper	39	10	-17	36	55	43	17	18	11	37	43	-21
9.anxious	31	-39	29	-12	20	38	05	19	37	33	36	-02
10.dysfctn	25	-35	09	-02	55	35	36	27	29	39	68	16
11.difficult	57	-10	13	04	58	38	28	45	22	66	11	02
12.age	-10	-01	-10	-15	-04	00	18	-12	02	06	11	78

Note: Sibling A characteristics below diagonal, sibling B characteristics above diagonal. Underlined diagonal intra-class correlations between siblings. Decimals not included. Statistical reliability: $r > .20$ ($p<.05$). $r > .25$ ($p<.01$).

Table 8. Correlations among and between father ratings of children's characteristics

	sibling B											
sibling A	1	2	3	4	5	6	7	8	9	10	11	12
1.emot	07	-11	03	-10	**47**	**42**	18	**45**	**34**	**39**	**61**	-20
2.soc	**22**	-04	-20	**51**	-15	-04	-09	**32**	**-23**	**-21**	-10	-06
3.shy	01	**-26**	25	**-25**	-05	07	-07	-19	**56**	**22**	12	-02
4.act	06	**61**	**-42**	10	-03	03	-09	**36**	**-21**	-16	-08	-03
5.conduct	**58**	16	-09	12	**33**	**56**	**28**	**48**	14	**60**	**70**	01
6.learn	**32**	-14	**24**	-15	**32**	**47**	**26**	**54**	**47**	**59**	**52**	17
7.somatic	**46**	-12	14	-16	**25**	**38**	**37**	13	20	**24**	**28**	02
8.hyper	**45**	**33**	**-25**	**47**	**49**	**26**	05	14	12	**28**	**47**	-12
9.anxious	13	**-23**	**55**	**-46**	-03	**38**	**44**	-12	**42**	**40**	**31**	-03
10.dysfctn	**33**	-17	10	-08	**58**	**41**	20	20	15	**37**	**55**	04
11.difficult	**59**	-06	10	-15	**76**	**33**	**37**	**43**	**23**	**56**	**36**	-10
12.age	-10	-03	-04	-05	-07	-13	20	-20	02	03	13	**78**

Note: Sibling A characteristics below diagonal, sibling B characteristics above diagonal. Underlined diagonal intra-class correlations between siblings. Decimals not included. Statistical reliability: $r > .20$ ($p<.05$). $r > .25$ ($p<.01$).

Table 9. Correlations among and between mother discipline of children.

			sibling B			
sibling A	1	2	3	4	5	6
1.coercive verbal	**53**	-08	-18	02	-05	-11
2.low authority	-07	**50**	**-33**	-05	**-23**	**-21**
3.behavior mod	-15	**-48**	**48**	05	07	**29**
4.reasoning	-09	**-22**	-03	**26**	11	10
5.restraint	-08	-04	07	-02	**49**	10
6.physical pun	-10	-14	-15	-11	-02	**55**

Note: Sibling A discipline below diagonal, sibling B discipline above diagonal. Underlined diagonal intra-class correlations between siblings. Decimals not included. Statistical reliability: $r > .20$ ($p<.05$). $r > .25$ ($p<.01$).

Table 10. Correlations among and between father discipline of children.

			sibling B			
sibling A	1	2	3	4	5	6
1.coercive verbal	**56**	-15	-05	02	04	-18
2.low authority	**-23**	**56**	-15	01	**-26**	-19
3.behavior mod	-20	**-42**	**46**	-05	06	18
4.reasoning	01	-17	16	**38**	05	-13
5.restraint	01	-10	-10	-15	**54**	18
6.physical pun	-12	-00	-07	**-21**	04	**51**

Note: Sibling A discipline below diagonal, sibling B discipline above diagonal. Underlined diagonal intra-class correlations between siblings. Decimals not included. Statistical reliability: $r > .20$ ($p<.05$). $r > .25$ ($p<.01$).

Table 11. Correlations between mother characteristics and discipline with both children.

	sibling A/B					
	verbal	low auth	beh mod	restraint	reason	phy pun
wais	04/ 04	10/ 18	07/ 07	-03/ 03	-11/-20	**-24**/-13
age	05/-04	-01/ 11	10/ 00	-05/-06	-11/-18	-20/-10
yrsed	14/ 06	10/ 15	08/ 01	-01/-04	-17/**-27**	**-32**/-16
income	09/ 08	03/ 13	-07/-05	-12/-06	-08/-07	-09/ 06
jobprst	07/ 02	08/ 15	-09/-00	-04/ 02	-14/-27	-17/-02
hours	06/-01	18/ 03	-18/-03	01/ 17	-11/**-27**	-13/-03
pstress	08/ 14	-05/-05	-16/-01	14/ 10	17/ 09	06/ 06
marrst	12/ 08	-03/-05	-08/ 01	09/ 16	11/ 07	-03/-03
lei	03/ 07	-08/-08	07/-08	19/ 08	11/ **22**	07/-04
esupport	-02/-15	01/ 19	10/ 05	-04/-03	-01/-14	-12/-02
isupport	-04/-07	16/ 12	-01/ 10	-15/ 05	-15/-05	-04/ 11
prog	04/-09	10/ **27**	09/ 01	-06/-04	-02/-07	**-26**/-17
trad	-06/-04	**-27/-22**	-05/-07	02/-13	00/ 09	**37/ 21**

Note: Correlation for both siblings. Decimals not included. Statistical reliability: $r > .20$ ($p<.05$). $r > .25$ ($p<.01$).

Table 12. Correlations between father characteristics and discipline with both children.

	sibling A/B					
	verbal	low auth	beh mod	restraint	reason	phy pun
wais	07/ 23	01/ 09	13/-06	00/-06	-02/-01	-09/-14
age	05/ 13	-15/-00	02/**-27**	05/-02	15/ 09	-10/-05
yrsed	**24**/ 18	01/ 06	13/-07	-07/-12	04/ 13	-13/-12
income	09/-04	-01/ 01	00/-11	-04/ 01	04/ **28**	06/-01
jobprst	14/ 14	08/-00	-02/-15	07/-08	-03/-01	-16/-14
hours	16/ 00	-03/ 10	01/ 04	-04/-08	03/-01	04/ 03
pstress	-02/ 04	03/-01	-02/**-22**	-07/ 09	-16/-12	-11/**-22**
marrst	-05/ 09	05/ 12	-03/-18	-05/ 08	-16/-14	-05/**-22**
lei	13/ **26**	02/-12	-09/ 09	-03/ 14	09/-01	**33**/ 15
esupport	08/ 02	11/ 15	03/ 09	09/ 17	-11/-13	12/ 09
isupport	14/-03	05/ 08	-12/-09	-07/**-27**	01/ 00	04/-04
prog	15/ 21	01/ 15	05/ 02	-07/ 05	02/-01	-10/-19
trad	-11/-17	05/ 03	**-22**/-04	-01/ 08	-01/-01	**38**/**-31**

Note: Correlation for both siblings. Decimals not included. Statistical reliability: $r > .20$ ($p<.05$). $r > .25$ ($p<.01$).

Table 13. Correlations between mothers' ratings of child characteristics and discipline

sibling A/B

	verbal	low auth	beh mod	restraint	reason	phy pun
emot	-01/ 07	-07/ -06	-08/-03	19/-09	04/ 03	13/ 02
act	06/-16	04/-14	-03/ **27**	-02/-03	**24**/-01	04/ 14
soc	-01/-20	-04/ 02	09/ **21**	-09/ 01	-04/ 09	-03/ 10
shy	02/-01	-09/ 14	07/-13	15/-04	06/ 02	07/-11
conduct	**23**/ 13	-15/-15	02/-02	04/-10	12/ 01	-02/ 05
learning	11/ 06	-19/-16	-15/ 11	10/ 04	19/ 15	04/ 10
hyper	**25**/-03	-08/-15	-13/-15	09/-13	14/-02	11/ 18
anxiety	08/ 02	-13/ 02	-03/-08	**31**/ 09	19/-02	-08/-12
somatic	04/ 02	-04/ 10	-02/-16	01/ 08	17/ 03	-02/-11
dysfctn	09/ 14	-13/-15	02/ 02	20/-06	10/ 01	-00/ 02
difficult	12/ 20	-14/-11	03/-04	**22**/-11	10/ 06	05/-02
age	13/ **21**	**-47**/-12	**29**/ 01	13/**-21**	-13/-02	**-28**/-15

Note: Correlation for both siblings. Decimals not included. Statistical reliability: $r > .20$ ($p<.05$). $r > .25$ ($p<.01$).

Table 14. Correlations between fathers' ratings of child characteristics and discipline

sibling A/B

	verbal	low auth	beh mod	restraint	reason	phy pun
emot	02/ 01	-11/-13	17/-05	-03/-11	20/-01	**23**/-13
act	**-25**/-03	00/ 02	-01/-20	15/-02	00/-04	07/ -7
soc	-07/-12	04/14	-03/-15	-03/-04	-02/-05	17/ 01
shy	01/-01	14/**-26**	01/03	-13/-06	03/ 03	08/ 01
conduct	00/ 14	-20/-16	-12/ **24**	11/-16	06/-03	15/ 16
learning	16/ 18	-09/-13	-16/-02	-01/-15	16/-10	15/-03
hyper	-00/ 12	-11/-08	07/-07	11/**-22**	18/ 01	-01/ 04
anxiety	19/ 03	-00/-05	05/-07	**-26**/-11	04/01	20/-09
somatic	18/ 13	**-26**/ 16	06/-14	-05/-08	10/ 07	**22**/ 10
dysfctn	-03/ 13	-06/-16	-05/-04	01/-14	03/-13	10/-01
difficult	06/ 11	-05/-19	-16/-03	-03/-19	08/ 02	09/ 12
age	19/ **32**	**-22**/-01	**21**/-08	14/ 04	**-33**/-17	**-23**/-11

Note: Correlation for both siblings. Decimals not included. Statistical reliability: $r > .20$ ($p<.05$). $r > .25$ ($p<.01$).

Table 15. Correlations between mother and father discipline and ratings of children's characteristics.

	sibling A	sibling B
child characteristics		
emotionality	42	41
sociability	42	37
shyness	44	61
activity	35	46
conduct	42	45
learning problems	38	28
somatic problems	37	24
hyperactivity	35	40
anxiousness	32	49
parent-child dysfunction	20	41
child difficulty	51	48
discipline		
coercive verbal	29	33
low authority	32	44
behavior mod	31	12
reasoning	38	10
restraint	24	31
physical punish	30	37

Note: Decimals not included. Statistical reliability: $r > .20$ ($p<.05$). $r > .25$ ($p<.01$).

Table 16. Correlations between parent characteristics and absolute differential discipline.

mother/father

	verbal	low auth	beh mod	restraint	reason	phy pun
wais	-11/ 03	-06/ 01	04/-03	-14/-02	07/-02	-18/-15
age	-17/ 05	-18/-24	-03/-04	-12/-08	-10/ 08	-09/-17
yrsed	-08/-03	-04/-04	-02/-12	-13/-01	02/-30	-26/-15
income	-03/ 01	-02/-01	21/ 04	05/-02	-13/-14	-12/-06
jobprst	-06/-01	-06/-01	03/-10	-11/-08	-08/-33	-12/-10
hours	-00/-07	08/-22	06/ 03	-14/ 03	03/-11	-07/ 09
pstress	02/-05	-01/ 11	-06/ 04	05/-15	07/-04	09/ 01
marrst	-02/-10	-01/-07	-17/ 15	19/-14	14/-05	10/-01
lei	10/ 09	01/-04	-11/ 12	13/ 02	19/ 08	02/ 23
esupport	-02/ 05	-15/-00	11/-07	-05/ 12	-01/-03	-21/ 05
isupport	-06/ 04	03/ 06	18/ 10	-20/ 02	-14/-17	-04/ 16
prog	00/ 20	-07/-13	12/-10	-01/ 14	-10/-18	-26/-09
trad	20/-20	-21/-05	-01/ 10	02/-02	-07/ 13	40/ 22

Note: Correlation for mothers and for fathers. Decimals not included. Statistical reliability: $r > .20$ ($p<.05$). $r > .25$ ($p<.01$).

Table 17. Correlations between parent characteristics and relative differential discipline.

mother/father

	verbal	low auth	beh mod	restraint	reason	phy pun
wais	-02/-17	-06/-07	05/ 19	07/-02	-01/ 05	-20/ 03
age	09/-07	-11/-15	12/ **25**	04/ 09	01/ 05	-17/-05
yrsed	08/ 05	-03/-04	08/ 19	09/-07	03/ 03	**-25**/-04
income	-01/ 12	-09/-03	-02/ 11	-01/**-21**	-05/-04	-16/ 07
jobprst	07/ 00	-04/ 11	-09/ 10	12/-03	-07/ 12	-18/-05
hours	07/ 16	17/-13	-18/-02	15/ 04	-12/ 03	-12/ 01
pstress	-06/-05	-01/ 05	-17/ 16	10/-08	05/-15	03/ 08
marrst	06/-15	02/-06	-10/ 13	05/-05	-05/-12	00/ 14
lei	-05/-20	-03/ 11	15/-14	-10/ 12	15/-13	12/ 21
esupport	13/ 06	-16/-03	05/-04	13/-01	-01/-05	-13/ 04
isupport	01/ 19	05/-01	-08/-05	-10/ 01	-14/ 16	-14/ 08
prog	12/-08	-14/-14	10/ 03	04/ 03	-01/-11	-17/ 07
trad	-00/ 08	-08/ 03	-01/-20	-08/-00	06/-08	**28**/ 13

Note: Correlation for mothers and for fathers. Decimals not included. Statistical reliability: $r > .20$ ($p<.05$). $r > .25$ ($p<.01$).

Table 18. Correlations between differential perceptions of children and absolute differential discipline.

mother/father

	verbal	low auth	beh mod	restraint	reason	phy pun
emot	-09/-13	05/ 05	09/-08	07/06	-08/ 03	-08/ 11
act	03/ 08	01/-01	-07/ 06	11/-08	00/-06	19/-06
soc	19/-01	04/-17	-01/-03	-02/-17	02/ 09	13/-05
shy	06/ 05	-06/ **25**	-08/ 09	18/ 06	00/ 07	07/-06
conduct	01/ 01	-07/**-33**	04/ 08	10/ 01	-09/-12	-07/-07
learning	05/ 01	-12/-12	-07/ **25**	-08/-04	03/-13	-04/-02
hyper	01/ 11	-09/-07	04/ 10	**21**/-07	-02/ 02	**21**/ 03
anxiety	-04/ 01	17/ 10	09/ **31**	-09/-15	03/-20	-05/-03
somatic	11/-04	03/ 02	-08/-02	01/-08	**22**/ **22**	-03/ 15
dysfctn	-05/ 02	-03/-11	-06/ 10	-09/ 06	-11/-04	-02/ 10
difficult	-14/ 11	13/-07	09/-05	07/-04	-13/-11	-06/-06
age diff	-10/-09	**21**/-08	-08/-06	01/ 05	06/ 17	14/-04

Note: Correlation for mothers and for fathers. Decimals not included. Statistical reliability: $r > .20$ ($p<.05$). $r > .25$ ($p<.01$).

Table 19. Correlations between differential perceptions of children and relative differential discipline.

mother/father

	verbal	low auth	beh mod	restraint	reason	phy pun
emot	-03/-06	-09/ 02	-01/ **25**	-02/-03	04/-08	03/ 01
act	-13/-17	11/-04	11/-04	-01/ 06	-15/ 04	17/ 10
soc	-04/-05	08/ 07	10/-01	06/-10	-14/-05	05/-02
shy	08/ 01	11/-13	-16/ 03	-10/-05	03/-03	-06/-04
conduct	03/ 01	-13/-12	19/ **39**	**30**/ 07	-07/ 05	04/ 07
learning	05/ 16	**-21**/ 10	11/-10	14/ 11	05/-06	-01/ 01
hyper	01/-11	-10/ 08	20/ 11	00/-09	-13/-13	11/-06
anxiety	-02/-08	07/ 01	-12/ 03	-04/-03	15/ 01	-11/ 06
somatic	13/-01	04/-03	04/ 19	04/ 10	-18/-00	-02/ 15
dysfctn	16/ **25**	-07/-10	05/ 14	01/ 00	-11/ 06	-01/-07
difficult	10/-11	-11/**-21**	01/ **33**	07/ 02	01/-04	12/ 08
age diff	13/ 32	**24**/ 14	**-31/-29**	10/ 14	**-23**/ 13	04/ 07

Note: Correlation for mothers and for fathers. Decimals not included. Statistical reliability: $r > .20$ ($p<.05$). $r > .25$ ($p<.01$).

Table 20. Correlations between mother and father differential perceptions and differential discipline.

	relative	absolute
child characteristics		
emotionality	47	25
activity	58	35
sociability	56	48
shyness	56	31
conduct	55	35
learning problems	36	28
hyperactivity	54	44
anxiousness	54	21
somatic problems	40	06
parent-child dysfunction	51	28
child difficulty	62	41
discipline		
coercive verbal	15	01
low authority	33	22
behavior modification	20	04
reasoning	12	09
restraint	-01	13
physical punishment	-03	29

Note: Decimals not included. Statistical reliability: $r > .20$ ($p<.05$).

$r > .25$ ($p<.01$).

Table 21. Results of between family regression analyses for mothers, sibling A

outcome & predictors	F,d.f.	p-value	R^2/Adj
Physical Punishment	F{9,82}=6.95	<.001	.43/.37
Traditionality	.45	<.001	
Progressiveness	-.25	<.01	
child age	-.25	<.01	
Behavior Problems	.38	<.001	
Parent-Child Distress	-.32	<.001	
Trad. x Beh. Problems	-.39	<.001	
Trad. x P-C Distress	.32	<.001	
Restraint	F{6,85}=3.23	<.01	.19/.13
child age	-.21	<.05	
Anxiety	.22	<.05	
Stress x Beh. Problems	.23	<.05	
Reasoning:	F{1,90}=9.42	<.01	.09/.08
Anxiety	.31	<.01	
Coercive Verbal:	F{1,90}=6.17	<.05	.06/.05
Behavior Problems	.25	<.05	
Low Authority:	F{3,88}=14.16	<.001	.32/.30
Traditionality	-.26	<.01	
child age	-.49	<.001	
Behavior Modification:	F{4,87}=4.60	<.01	.17/.14
child age	.23	<.05	
Behavior Problems	.20	<.05	
Stress x Beh. Problems	.24	<.05	
Trad. x Beh. Problems	-.25	<.05	

Table 22. Results of between family regression analyses for mothers, sibling B

outcome & predictors	F,d.f.	p-value	R^2/Adj
Physical Punishment:	F{8,85}=3.32	<.01	.16/.11
Traditionality	.27	<.05	
child age	-.22	<.05	
Restraint:	F{3,87}=6.08	<.001	.17/.14
Job status	-.32	<.01	
Reasoning:	F{1,88}=7.42	<.01	.08/.07
child age	-.25	<.05	
Coercive Verbal:	F{2,88}=3.63	<.05	.07/.05
no reliable predictors			
Low Authority:	F{6,84}=4.09	<.01	.23/.17
Progressiveness	.30	<.01	
Instrumental Support	.24	<.05	
Anxiety	.26	<.05	
Stress x P-C Distress	-.39	<.01	
Behavior Modification:	F{3,87}=4.42	<.01	.13/.10
Extraversion	.25	<.05	
Somatic Problems	-.22	<.05	

Table 23. Results of between family regression analyses for fathers, sibling A

outcome & predictors	F,d.f.	p-value	R^2/Adj
Physical Punishment:	F{8,72}=5.89	<.001	.40/.33
Traditionality	.33	<.001	
Life Events	.33	<.001	
child age	-.20	<.05	
Behavior Problems	-.26	<.05	
Anxiety	.26	<.05	
Restraint:	F{4.76}=5.65	<.001	.23/.19
child age	-.42	<.001	
Stress x Beh. Problems	-.21	<.05	
Reasoning:	F{1,79}=5.96	<.05	.07/.06
Anxiety	-.26	<.05	
Coercive Verbal:	F{5,75}=3.05	<.05	.17/.11
child age	.32	<.01	
Extraversion	-.35	<.01	
Stress x Beh. Problems	?		
Trad. x P-C Distress	?		
Low Authority:	F{6,74}=3.05	<.05	.20/.13
Job status	.22	<.05	
child age	-.41	<.01	
Parent-Child Distress	.31	<.05	
Behavior Modification:	F{1,79}=2.16	>.05	ns

Table 24. Results of between family regression analyses for fathers, sibling B

outcome & predictors	F,d.f.	p-value	R^2/Adj
Physical Punishment:	F(7,82)=6.28	<.001	.35/.29
Traditionality	.32	<.001	
Emotionality	-.33	<.001	
Somatic Problems	.26	<.01	
Parent-Child Distress	.25	<.05	
Stress x P-C Distress	-.31	<.01	
Restraint:	F(1,88)=7.42	<.01	.08/.07
percap family income	.28	<.01	
Reasoning:	F(8,72)=5.53	<.01	.11/.09
Instrumental Support	-.26	<.05	
Coercive Verbal:	F(4,85)=7.79	<.001	.27/.23
Progressiveness	.21	<.05	
Life Events	.24	<.05	
child age	.29	<.01	
Low Authority:	F(3,86)=4.47	<.01	.13/.10
Behavior Problems	-.25	<.05	
Shyness	-.42	<.01	
Behavior Modification:	F(6,83)=4.47	<.001	.24/.19
Fathers' age	-.27	<.01	
Stress/Support	-.32	<.01	
Extraversion	-.32	<.01	
Behavior Problems	.38	<.01	

Table 25. Results of within-family regression using absolute and relative difference scores for mothers

outcome and predictors	F,d.f.	p-value	R^2/Adj
Absolute Diff. Phys Pun:	F(1,92)=8.26	<.001	.15/.14
age difference	.34	<.001	
Relative Diff. Phys Pun:	no variables	ns	
Absolute Diff. Restraint:	F(1,92)=4.01	<.05	.04/.03
differential Hyperactivity	.20	<.05	
Relative Diff. Restraint:	F(2,91)=7.65	<.001	.14/.13
differential P-C Dysfctn	-.30	<.05	
differential Conduct Prob	.49	<.001	
Absolute Diff. Reasoning:	F(1,92)=4.53	<.05	.05/.04
differential Somatic Prob	.22	<.05	
Relative Diff. Reasoning:	F(3,90)=4.96	<.01	.14/.12
differential Anxiety	.21	<.05	
gender composition	.30	<.01	
Absolute Diff. Low Authority:	no variables	ns	
Relative Diff. Low Authority:	F(3,90)=4.88	<.01	.14/.11
gender composition	-.24	<.01	
age difference	.22	<.01	
differential Learn Prob	-.23	<.01	
Absolute Diff. Coercive Verbal:	no variables	ns	
Relative Diff. Coercive Verbal:	no variables	ns	

Table 26. Results of within-family regression using absolute and relative difference scores for fathers

outcome and predictors	F,d.f.	p-value	R^2/Adj
Absolute Diff. Phys Pun:	no variables	ns	
Relative Diff. Phys Pun:	no variables	ns	
Absolute Diff. Restraint:	no variables	ns	
Relative Diff. Restraint:	no variables	ns	
Absolute Diff. Reasoning:	F{1,81}=3.99	<.05	.06/.04
differential Somatic Prob	-.22	<.05	
Relative Diff. Reasoning:	no variables	ns	
Absolute Diff. Low Authority:	F{2,80}=8.31	<.001	.17/.15
differential Shyness	.25	<.05	
differential Conduct Prob	-.33	<.01	
Relative Diff. Low Authority:	F{4,78}=3.37	<.05	.15/.10
differential Difficulty	-.51	<.001	
differential Hyperactivity	.33	<.01	
Absolute Diff. Coercive Verbal:	no variables	ns	
Relative Diff. Coercive Verbal:	F{4,78}=4.53	<.01	.19/.15
differential Difficulty	-.29	<.01	
differential P-C Dysfunction	.42	<.001	
differential Activity	-.21	<.01	

Table 27. Robust effects: Replication across between-family regression analyses.

predictor	outcome	#models	effect	p
Traditionality	Phy Pun	4/4	.27 to .45	<.01-.001
child age	Phy Pun	3/4	-.20 to -.25	<.05
child age	Restraint	2/4	-.21 to -.42	<.05-.001
child age	Coer Verb	2/4	.29 to .32	<.01
child age	Low Auth	2/4	-.41 to -.49	<.01-.001
Behavior Problems	Beh Mod	2/4	.20 to .38	<.05-.01

Figure captions.

1. First structural model showing shared and unique sibling characteristics.
2. Second structural model, comparing relative magnitude of autoregression and cross-lag regression coefficients.
3. Linear and nonlinear models of sibling differentiation over time.

Figure 1.

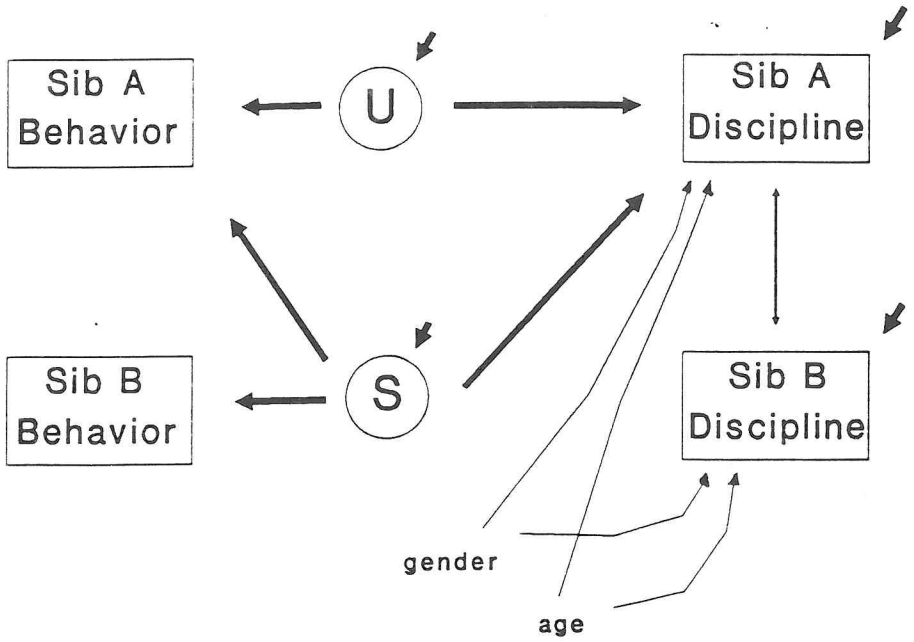

Sib A
Behavior
U
Sib A
Discipline
Sib B
Behavior
S
Sib B
Discipline
gender
age

Figure 2.

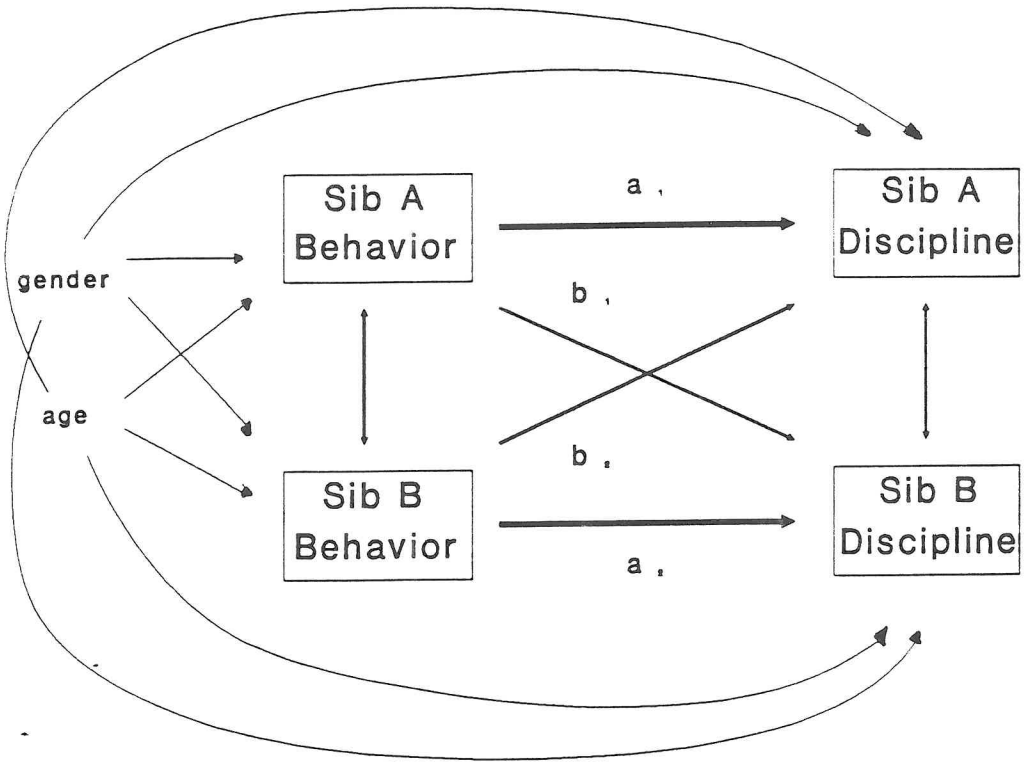
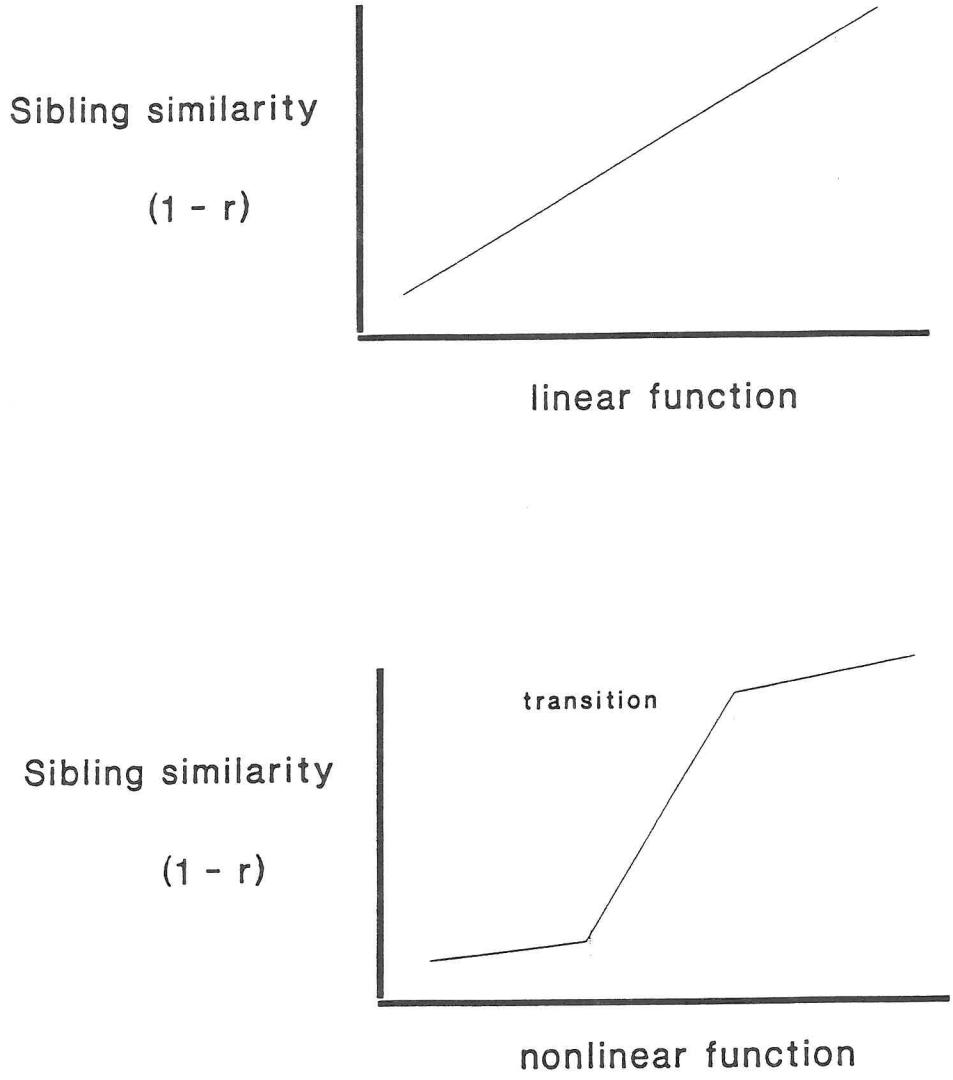

Sib A
Behavior
Sib A
Discipline
Sib B
Behavior
Sib B
Discipline
gender
age
a .
b .
b .
a .

Figure 3.


Sibling similarity
(1 - r)
linear function
transition
Sibling similarity
(1 - r)
nonlinear function

Appendix A.

Parent interview and ratings for one child.

I

RA: ra1 ___
ID: (id)
Mother Interview

RA: ra1 ___
ID: (id)
parent: 1 (mother)

FAMILY INFORMATION QUESTIONNAIRE

As you know, the study is gathering information about parents and the day to day problems they face in combining family and work responsibilities. We really appreciate your being willing to participate in the study.

First, we need some information about your household and family.

1. How many children (under 18) reside in this house? ____
(includes target child, target sibling, and all others)

key: sex: 1=female 2=male
relationship to target child: 1=sister 2=brother 3=step-sister 4=step-brother 5=cousin 6=foster child 7=non-relative

(order children from oldest to youngest)

	name	age in yrs.	mos.	circle sex	circle relationship
a.	_____	___	___	1 2	1 2 3 4 5 6 7
b.	_____	___	___	1 2	1 2 3 4 5 6 7
c.	_____	___	___	1 2	1 2 3 4 5 6 7
d.	_____	___	___	1 2	1 2 3 4 5 6 7
e.	_____	___	___	1 2	1 2 3 4 5 6 7

What is your current marital status?

married.....1
divorced.....2
separated.....3
remarried.....4
not married, living with partner.....5
other (specify) _____.....6

If divorced : how many years has it been since the divorce? ____

How many adults (18 and older) live in this house, including yourself? ____

key: sex: 1=female 2=male
relationship to target child: 1=mother 2=father 3=sister 4=brother 5=grandparent 6=uncle 7=aunt 8=other

(start list with mother)

	name	age in yrs.	(circle) sex	(circle) relationship
a.	_____	___	1 2	1 2 3 4 5 6 7 8
b.	_____	___	1 2	1 2 3 4 5 6 7 8
c.	_____	___	1 2	1 2 3 4 5 6 7 8
d.	_____	___	1 2	1 2 3 4 5 6 7 8
e.	_____	___	1 2	1 2 3 4 5 6 7 8

Mother's Ethnicity

I'm going to read a list of different ethnic groups. Please tell me the group with which you identify.

1. White/caucasian 1
2. African American (including Jamaicans, Bahamians, and other Carribbeans of African, but not Hispanic or Arabic descent) 2
3. Hispanic (including persons of Mexican, Puerto Rican Central or South American or other Spanish origin) ...3
4. Asian & Asian American (includes Pakistans, Indians and Pacific Islanders) 4
5. Native American (includes Alaskans).....5
6. Other (please specify _____).....6

What was (tc)'s birth weight? _____

What was (ts)'s birth weight? _____

Mother's Education

How many years of school did you complete?
(e.g. High school=12, bachelors degree=16, etc.) ____

What is the last grade in school or college you completed?

elementary.....1
middle school.....2
high school diploma.....3
some college.....4
college degree.....5
some post-graduate.....6
advanced degree.....7

Any additional vocational/technical training? no= 1 yes= 2

If yes, how many years? ____

Employment

Are you employed? no= 1 yes= 2
(if no, go to **Family Income**)

What is your current occupation?

_____

What kind of business or other firm do you work for?
(please provide name of employer)

_____

How many hours a week do you work? ____
Do you work the same hours every week? no= 1
yes= 2

If yes, what hours?_____ (e.g., 8:30-5:00)

If no, describe the shifts or other pattern of work hours_____

Are some of your paid hours worked at home? no= 1
yes= 2

If yes, how many work hours are spent at home? ____

How much control do you have over the scheduling of your work hours? Would you say that you have
quite a bit of control?.....1
some control?.....2
little or no control?.....3

Do you have a second job? no= 1
yes= 2

If yes, how many hours a week do you work at this job? ____

THE 2 FOLLOWING QUESTIONS REFER TO ALL EMPLOYMENT SITUATIONS COMBINED

During the last 3 months, have you missed any work days? no= 1
yes= 2

If yes, how many have you missed for any reason? ____

And, how many did you miss because of your child care responsibilities? (e.g. sick child) ____

During the last 3 months, have you been late to work or had to leave early for any reason? no= 1
yes= 2

If yes, how many days? ____

And, how many days because of your child care responsibilities? (e.g. sick child) ____

Family Income

What is your gross (before taxes) annual salary for your job/jobs? $_____.00

Are there other adults in the household who contribute to the family income? (e.g. spouse) no= 1 yes= 2

If yes, how much gross (before taxes) annual income? $_____.00

Please estimate: What was your total **family** income in 1992, including **all sources**--your job(s), spouse's job(s), interest from savings accounts, bonds, stocks, rent from tenants, welfare, social security, child support, gifts and other sources. $_____.00

Home expenses

Do you rent or are you buying your home? Rent= 1 Buy= 2

Approximately how much do you pay in rent or mortgage payments **per month**? $_____.00

Overall, do you feel that, in relation to your expenses, the family income is:

more than adequate.....1

adequate.....2

barely adequate.....3

inadequate.....4

II

RA: ra1 ___
ID: (id)
Mother Ratings

ID: (id)
parent: 1 (mother)

Parental Modernity Scale

The following are some statements about rearing and educating children. Read each statement carefully and circle the number at the right which most closely reflects your feelings: 1-strongly disagree to 5-strongly agree. Try to answer all of the items without skipping items or looking back.

strongly agree 5
mildly agree 4
neither 3
mildly disagree 2
strongly disagree 1

1. Since parents lack special training in education, they should not question the teacher's training methods.	1	2	3	4	5
2. Children should be treated the same regardless of the differences among them.	1	2	3	4	5
3. Children should always obey the teacher.	1	2	3	4	5
4. Preparing for the future is more important for a child than enjoying today.	1	2	3	4	5
5. Children will not do the right thing unless they must.	1	2	3	4	5
6. Children should be allowed to disagree with adults if they feel their own ideas are better.	1	2	3	4	5
7. Children should be kept busy with work and study at home and at school.	1	2	3	4	5
8. The major goal of education is to put basic information into the minds of children.	1	2	3	4	5
9. In order to be fair, a teacher must treat all children alike.	1	2	3	4	5
10. The most important thing to teach children is absolute obedience to whoever is in authority.	1	2	3	4	5

strongly agree 5
mildly agree 4
neither 3
mildly disagree 2
strongly disagree 1

11. Children learn best by doing things themselves rather than listening to others.	1	2	3	4	5
12. Children must be carefully treated early in life or their natural impulses will make them unmanageable.	1	2	3	4	5
13. Children have a right to their own point of view and should be allowed to express it.	1	2	3	4	5
14. Children's learning results mainly from being presented with basic information again & again.	1	2	3	4	5
15. Children like to teach other children.	1	2	3	4	5
16. The most important thing to teach children is absolute obedience to their parents.	1	2	3	4	5
17. Once a child is in school, the school has the main responsibility for her/his education.	1	2	3	4	5
18. Children generally do not do what they should unless someone sees to it.	1	2	3	4	5
19. I teach children that they should be doing something useful at all times.	1	2	3	4	5
20. It's all right for a child to disagree with me.	1	2	3	4	5
21. Children should always obey their parents.	1	2	3	4	5
22. Teachers need not be concerned with what goes on in a child's home.	1	2	3	4	5
23. I go along with the game when a child is pretending something.	1	2	3	4	5
24. Parents should teach their children to have unquestioning loyalty to them.	1	2	3	4	5

strongly agree 5
mildly agree 4
neither 3
mildly disagree 2
strongly disagree 1

25. Teachers should discipline children all the same.	1	2	3	4	5
26. Children should not question the authority of their parents.	1	2	3	4	5
27. What children learn at home is very important to their school success.	1	2	3	4	5
28. Children will be bad unless they are taught what is right.	1	2	3	4	5
29. A child's ideas should be seriously considered in making family decisions.	1	2	3	4	5
30. A teacher has no right to seek information about a child's home background.	1	2	3	4	5

ID: (id)
parent: 1 (mother)

Instrumental and Emotional Support

The following questions ask about your relationships with the people who are important in your life. This might include your spouse/partner, your children, family, friends, or other important people in your life.

When you think about these people, to what extent, if any, do you agree with the following statements?

strongly agree 5
mildly agree 4
neither 3
mildly disagree 2
strongly disagree 1

1. The people I care about make me feel that they care about me.	1	2	3	4	5
2. The people important to me accept me as I am.	1	2	3	4	5
3. I enjoy the time I spend with the people who are important to me.	1	2	3	4	5
4. The people I care about seem interested in how I'm doing.	1	2	3	4	5
5. The people I care about almost always come through for me when I need them.	1	2	3	4	5
6. When something's on my mind, just talking with the people I know can make me feel better.	1	2	3	4	5
7. The people who are important to me encourage me when I feel discouraged or down.	1	2	3	4	5
8. I enjoy talking about everyday kinds of things with the people I care about.	1	2	3	4	5
9. The people I know are good sources of useful information when I need it.	1	2	3	4	5
10. The people I care about help me out.	1	2	3	4	5
11. When I need someone to help me out, I can usually find someone.	1	2	3	4	5

Please tell us who does each of the following in your home. Choose the person, or persons, who are are primarily responsible for getting these tasks done.

someone else does it 4
spouse and I share 3
spouse does it 2
I do it 1

1. Fixes meals	1	2	3	4
2. Does the food shopping	1	2	3	4
3. Fixes things around the house	1	2	3	4
4. Does the laundry	1	2	3	4
5. Does the inside cleaning	1	2	3	4
6. Does the work outside around the house	1	2	3	4
7. Pays the bills	1	2	3	4
8. Takes care of car problems	1	2	3	4
9. Dresses the child/children	1	2	3	4
10. Changes (or used to change) child's diapers	1	2	3	4
11. Feeds the child/children	1	2	3	4
12. Takes child/children to doctor when s/he is sick	1	2	3	4
13. Takes child/children to child care	1	2	3	4
14. Puts child/children to bed	1	2	3	4
15. Keeps track of where child/children is/are	1	2	3	4
16. Looks after child/children when s/he is sick	1	2	3	4
17. Shops for child's/children's clothes	1	2	3	4
18. Shops for toys and gifts for child/children	1	2	3	4

I do it 1
spouse does it 2
spouse and I share 3
someone else does it 4

ID: (id)
parent: 1 (mother)

PARENTING STRESS INDEX

The questions on the following pages ask you to mark an answer which best describes your feelings. While you may not find an answer which exactly states your feelings, please mark the answer which comes closest to describing how you feel. Your first reaction to each question should be your answer.

Please mark the degree to which you agree or disagree with the following statements by filling in the number which best matches how you feel. If you are not sure, please fill in #3.

strongly disagree 5
mildly disagree 4
neither 3
mildly agree 2
strongly agree 1

1.	I often have the feeling that I cannot handle things very well.	1	2	3	4	5
2.	I find myself giving up more of my life to meet my children's needs than I ever expected.	1	2	3	4	5
3.	I feel trapped by my responsibilities as a parent.	1	2	3	4	5
4.	Since having a child I have been unable to do new and different things.	1	2	3	4	5
5.	Since having a child I feel that I am almost never able to do things that I like to do.	1	2	3	4	5
6.	I am unhappy with the last purchase of clothing I made for myself.	1	2	3	4	5
7.	There are quite a few things that bother me about my life.	1	2	3	4	5
8.	Having a child has caused more problems than I expected in my relationship with my spouse (male/female friend).	1	2	3	4	5
9.	I feel alone and without friends.	1	2	3	4	5
10.	When I go to a party I usually expect not to enjoy myself.	1	2	3	4	5
11.	I am not as interested in people as I used to be.	1	2	3	4	5

strongly disagree 5
mildly disagree 4
neither 3
mildly agree 2
strongly agree 1

12.	I don't enjoy things as I used to.	1	2	3	4	5
13.	It takes a long time for parents to develop close, warm feelings for their chidlren.	1	2	3	4	5
14.	When I was young, I never felt comfortable holding or taking care of children.	1	2	3	4	5
15.	The number of children that I have now is too many.	1	2	3	4	5
16.	Since having a child, my spouse (male/ female friend) has not given me as much help and support as I expected.	1	2	3	4	5
17.	Having a child has caused more problems than I expected in my relationship with my spouse (male/female friend).	1	2	3	4	5
18.	Since having a child my spouse (male/female friend) and I don't do as many things together.	1	2	3	4	5
19.	Since having a child, my spouse (male/female friend) and I don't spend as much time together as a family as I had expected.	1	2	3	4	5
20.	Since having a child, I have had less interest in sex.	1	2	3	4	5

ID: (id)
parent: 1 (mother)

Life events inventory

During the last 12 months, have any of the following events occurred in your immediate family? Please circle the number of any that have happened.

Divorce.....1
Divorce of a close friend or family member.....2
Marital reconciliation.....3
Marriage.....4
Separation.....5
Pregnancy.....6
Other relative moved into household.....7
Income increased substantially (20% or more).....8
Went deeply into debt.....9
Moved to new location.....10
Promotion at work.....11
Income decreased substantially.....12
Alcohol or drug problem.....13
Death of close family friend.....14
Began new job.....15
Entered new school.....16
Trouble with superiors at work.....17
Trouble with teachers at school.....18
Legal problems.....19
Death of immediate family member.....20
None of the above apply.....00

III

RA: ra1 ___
ID: (id)
Mother Ratings of TC (tc)

ID: (id)
parent: 1 (mother)
child: TC (tc)

PARENTING STRESS INDEX

In anwering the following questions, please think about (tc).

The questions on the following pages ask you to mark an answer which best describes your feelings. While you may not find an answer which exactly states your feelings, please mark the answer which comes closest to describing how you feel. Your first reaction to each question should be your answer.

Please mark the degree to which you agree or disagree with the following statements by filling in the number which best matches how you feel. If you are not sure, please fill in #3.

strongly disagree 5
mildly disagree 4
neither 3
mildly agree 2
strongly agree 1

1. (tc) rarely does things for me that make me feel good.	1	2	3	4	5
2. Most times I feel that (tc) does not like me and does not want to be close to me.	1	2	3	4	5
3. (tc) smiles at me much less than I expected.	1	2	3	4	5
4. When I do things for (tc) I get the feeling that my efforts are not appreciated very much.	1	2	3	4	5
5. When playing, (tc) doesn't often giggle or laugh.	1	2	3	4	5
6. (tc) doesn't seem to learn as quickly as most children.	1	2	3	4	5
7. (tc) doesn't seem to smile as much as most children.	1	2	3	4	5
8. (tc) is not able to do as much as I expected.	1	2	3	4	5
9. It takes a long time and it is very hard for (tc) to get used to new things.	1	2	3	4	5

strongly disagree 5
mildly disagree 4
neither 3
mildly agree 2
strongly agree 1

10. I feel that I am:
    1. not very good at being a parent
    2. a person who has some trouble being a parent
    3. an average parent
    4. a better than average parent
    5. a very good parent — 1 2 3 4 5

11. I expected to have closer and warmer feelings for (tc) than I do and this bothers me. — 1 2 3 4 5

12. Sometimes (tc) does things that bother me just to be mean. — 1 2 3 4 5

13. (tc) seems to cry or fuss more often than most children. — 1 2 3 4 5

14. (tc) generally wakes up in a bad mood. — 1 2 3 4 5

15. I feel that (tc) is very moody and easily upset. — 1 2 3 4 5

16. (tc) does a few things which bother me a great deal. — 1 2 3 4 5

17. (tc) reacts very strongly when something happens that s/he doesn't like. — 1 2 3 4 5

18. (tc) gets upset easily over the smallest thing. — 1 2 3 4 5

19. (tc)'s sleeping or eating schedule was much harder to establish than I expected. — 1 2 3 4 5

20. I have found that getting (tc) to do something or stop doing something is:
    1. much harder than I expected
    2. somewhat harder than I expected
    3. about as hard as I expected
    4. somewhat easier than I expected
    5. much easier than I expected — 1 2 3 4 5

strongly disagree 5
mildly disagree 4
neither 3
mildly agree 2
strongly agree 1

21. Think carefully and count the number of things which (tc) does that bother you. For example: dawdles, refuses to listen, overactive, cries, interrupts, fights, whines, etc. Please circle the number which includes the number of things you counted.
1. 10+ 2. 8-9 3. 6-7 4. 4-5 5. 1-3 1 2 3 4 5

22. There are some things (tc) does that really bother me a lot. 1 2 3 4 5

23. (tc) turned out to be more of a problem than I had expected. 1 2 3 4 5

24. (tc) makes more demands on me than most children. 1 2 3 4 5

ID: (id)
parent: 1 (mother)
child: TC (tc)

EAS: Temperament survey (EAS)

Listed below are items concerning (tc)'s temperament. Rate each of the items for this child on a scale of 1 (not at all characteristic) to 5 (highly characteristic or typical). Indicate your choice by circling the number in the appropriate column to the right of each item.

Highly characteristic 5
Mainly characteristic 4
Neither 3
Mainly uncharacteristic 2
Highly uncharacteristic 1

(tc):

1. Child tends to be shy.	1	2	3	4	5
2. Child cries easily.	1	2	3	4	5
3. Child likes to be with people.	1	2	3	4	5
4. Child is always on the go.	1	2	3	4	5
5. Child prefers playing with others rather than alone.	1	2	3	4	5
6. Child tends to be somewhat emotional.	1	2	3	4	5
7. When child moves about, s/he usually moves slowly.	1	2	3	4	5
8. Child makes friends easily.	1	2	3	4	5
9. Child is off and running as soon as s/he wakes up in the morning.	1	2	3	4	5
10. Child finds people more stimulating than anything else.	1	2	3	4	5
11. Child often fusses and cries.	1	2	3	4	5
12. Child is very sociable.	1	2	3	4	5
13. Child is very energetic.	1	2	3	4	5
14. Child takes a long time to warm up to strangers.	1	2	3	4	5

(tc):

Highly characteristic 5
Mainly characteristic 4
Neither 3
Mainly uncharacteristic 2
Highly uncharacteristic 1

15. Child gets upset easily.	1	2	3	4	5
16. Child is something of a loner.	1	2	3	4	5
17. Child prefers quiet, inactive games to more active ones.	1	2	3	4	5
18. When alone, child feels isolated.	1	2	3	4	5
19. Child reacts intensely when upset.	1	2	3	4	5
20. Child is very friendly with strangers.	1	2	3	4	5

ID: (id)
parent: 1 (mother)
child: TC (tc)

Connors' Parent Rating Scales

Read each item below carefully, and decide how much (tc) has been bothered by this problem **during the past month.**

very much 3
pretty much 2
just a little 1
not at all 0

(tc):				
1. Picks at things (nails, fingers, hair, clothing)	0	1	2	3
2. Sassy to grown-ups	0	1	2	3
3. Problems with making or keeping friends	0	1	2	3
4. Excitable, impulsive	0	1	2	3
5. Wants to run things	0	1	2	3
6. Sucks or chews (thumb, clothing, blankets)	0	1	2	3
7. Cries easily or often	0	1	2	3
8. Carries a chip on his/her shoulder	0	1	2	3
9. Daydreams	0	1	2	3
10. Difficulty in learning	0	1	2	3
11. Restless in the "squirmy" sense	0	1	2	3
12. Fearful (of new situations, new people or places, going to school)	0	1	2	3
13. Restless, always up and on the go	0	1	2	3
14. Destructive	0	1	2	3
15. Tells lies or stories that aren't true	0	1	2	3
16. Shy	0	1	2	3
17. Gets into more trouble than others same age	0	1	2	3

(tc):

very much 3
pretty much 2
just a little 1
not at all 0

18. Speaks differently from others same age (baby talk, stuttering, hard to understand)	0	1	2	3
19. Denies mistakes or blames others	0	1	2	3
20. Quarrelsome	0	1	2	3
21. Pouts and sulks	0	1	2	3
22. Steals	0	1	2	3
23. Disobedient or obeys but resentfully	0	1	2	3
24. Worries more than others (about being alone, illness, or death)	0	1	2	3
25. Fails to finish things	0	1	2	3
26. Feelings easily hurt	0	1	2	3
27. Bullies others	0	1	2	3
28. Unable to stop repetitive activity	0	1	2	3
29. Cruel	0	1	2	3
30. Childish or immature (wants help s/he doesn't need, clings, needs constant reassurance)	0	1	2	3
31. Distractability or attention span a problem	0	1	2	3
32. Headaches	0	1	2	3
33. Mood changes quickly and drastically	0	1	2	3
34. Doesn't like or doesn't follow rules or restrictions	0	1	2	3
35. Fights constantly	0	1	2	3

(tc):

very much 3
pretty much 2
just a little 1
not at all 0

36. Doesn't get along well with brothers or sisters OR child has no brothers or sister	0	1	2	3
	(check here ___)			
37. Easily frustrated in efforts	0	1	2	3
38. Disturbs other children	0	1	2	3
39. Basically an unhappy child	0	1	2	3
40. Problems with eating (poor appetite, up between bites)	0	1	2	3
41. Stomach aches	0	1	2	3
42. Problems with sleep (can't fall asleep, up too early, up in the night)	0	1	2	3
43. Other aches and pains	0	1	2	3
44. Vomiting or nausea	0	1	2	3
45. Feels cheated in family circle	0	1	2	3
46. Boasts and brags	0	1	2	3
47. Lets self be pushed around	0	1	2	3
48. Bowel problems (frequently loose, irregular habits, constipation)	0	1	2	3

IV

RA: ra1 ___
ID: (id)
Mother
Parental Discipline Interview
for TC (tc)

Audio record, Tape #1 (TC)

parent: 1 (mother)
child: 1 TC (tc)

Vignettes for Children
Age 12 to 36 months

ONE OF THE THINGS WE ARE INTERESTED IN IS HOW YOU HANDLE (tc) WHEN S/HE MISBEHAVES. I AM GOING TO DESCRIBE SOME DIFFERENT WAYS IN WHICH CHILDREN DISOBEY THEIR PARENTS. I WOULD LIKE YOU TO IMAGINE YOUR CHILD IN EACH SITUATION AND TELL ME HOW YOU WOULD DEAL WITH HIM/HER.

1. (tc) refuses to be dressed in the morning, when you are in a hurry to get out of the house. S/he keeps her/his arms rigid so you can't get the shirt on, curls her/his toes so you struggle to get on the shoes. S/he fusses, whines, and throws her/himself on the floor. What would you do?
   2nd query: What if s/he refuses to be dressed the next day?
   3rd query: What if it happens again the next day? What would you do?

2. You have told (tc) many times not to play with electrical cords or put them in (his/her) mouth. But (he/she) keeps doing it. When you catch (him/her) playing with an electrical cord, what would you do?
   2nd query: What would you do if s/he does it again in the next few minutes?
   3rd query: What if s/he does it again the next day?

3. You are shopping in a store and (tc) is with you. S/he points at something s/he wants. You say NO, and s/he starts crying and screaming. What would you do?
   2nd query: What if s/he continues crying and screaming? What would you do?
   3rd query: What if the next time you go to a store s/he does it again?

4. You have told (tc) not to touch anything on the coffee table. S/he approaches the table and is just about to grab a breakable piece off the table. You can see it in pieces on the floor. What would you do?
   2nd query: What would you do if s/he does it again in the next few minutes?
   3rd query: What if s/he does it again the next day?

5. (tc) refuses to quiet down after being put to bed. S/he screams and cries until your nerves are frayed. What would you do?
   2nd query: What would you do if s/he did the same thing in the next few minutes?
   3rd query: What if s/he did it again the next night? What would you do?

parent: 1 (mother)
child: 1 TC (tc)

Vignettes for Children
Age 37 to 60 months

ONE OF THE THINGS WE ARE INTERESTED IN IS HOW YOU HANDLE (tc) WHEN S/HE MISBEHAVES. I AM GOING TO DESCRIBE SOME DIFFERENT WAYS IN WHICH CHILDREN DISOBEY THEIR PARENTS. I WOULD LIKE YOU TO IMAGINE YOUR CHILD IN EACH SITUATION AND TELL ME HOW YOU WOULD DEAL WITH HIM/HER.

1. (tc) refuses to get dressed in the morning, when you are in a hurry to get out of the house. S/he will not put on the clothes and refuses to let you dress her/him. S/he fusses, whines, and throws her/himself on the floor. What would you do?
   2nd query: What if s/he refuses to get dressed the next day?
   3rd query: What if it happens again? What would you do?

2. (tc) and a neighbor's child are playing together in your living room. (tc) asks to play with a toy, but the other child refuses. (tc) gets angry, hits the playmate, and takes the toy. What would you do?
   2nd query: What would you do if s/he does it again in the next few minutes?
   3rd query: What if s/he does it again the next day?

3. You are outside with your family. When you are not looking, (tc) runs into a busy street, falls down and starts crying. You pick her/him up and s/he doesn't seem to be hurt. What would you do next?
   2nd query: What would you do if s/he does it again in the next few minutes?
   3rd query: What if s/he does it again the next day?

4. You are shopping in a store and (tc) is with you. S/he sees something s/he likes and asks if s/he can have it. You say NO, but (tc) demands to have it and starts crying and screaming. What would you do?
   2nd query: What if s/he continues crying and screaming? What would you do?
   3rd query: What if the next time you go to a store s/he does it again?

5. (tc) refuses to quiet-down after being put to bed. S/he screams and cries until your nerves are frayed. What would you do?
   2nd query: What would you do if s/he did the same thing in the next few minutes?
   3rd query: What if s/he did it again the next night? What would you do?

parent: 1 (mother)
child: 1 TC (tc)

Vignettes for Children
Age 5 (K) to 8 (3rd grade)

ONE OF THE THINGS WE ARE INTERESTED IN IS HOW YOU HANDLE (tc) WHEN S/HE MISBEHAVES. I AM GOING TO DESCRIBE SOME DIFFERENT WAYS IN WHICH CHILDREN DISOBEY THEIR PARENTS. I WOULD LIKE YOU TO IMAGINE YOUR CHILD IN EACH SITUATION AND TELL ME HOW YOU WOULD DEAL WITH HIM/HER.

1. You are talking on the phone when you hear (tc) yelling at her/his sibling about what to watch on T.V. You stop your conversation several times to tell (tc) to stop yelling, but before you know it, s/he has hit the sibling, and has switched to another T.V. program. What would you do?

2nd query: What if this happened again in the next few minutes?
3rd query: What if it happens again the next day? What would you do?

2. You have asked (tc) many times not to use or play with the stove. One evening, you return from work to find (tc) playing in the kitchen, and one of the front stove burners on high. What would you do?
2nd query: What if this happened again the following day?
3rd query: What if s/he does it again? What would you do?

3. You are trying to get everyone off to work or school in the morning, and are already 15 minutes lates. Just as you are ready to leave, (tc) begins whining that s/he doesn't want to go to school, and runs back to her/his room. What would you do?
2nd query: What would you do if s/he does it again the following day?
3rd query: What if s/he does it again? What would you do?

4. It has been a long day, and you are tired. You have just finished putting dinner on the table when (tc) says that s/he hates the meal. Before you say anything, (tc) crosses her/his arms and begins pouting, saying that s/he won't eat. What would you do?
2nd query: What if s/he continues to refuse? What would you do?
3rd query: What if this happened again the following evening?

5. It is late in the evening on a school night, and you are very tired. Even though it is an hour past (tc)'s bedtime, and you have asked her/him repeatedly to go to bed, (tc) is still coming out of her/his room every few minutes to get a drink of water or to ask a question. Just before heading to bed yourself, (tc) comes out again, asking for a snack. What would you do?
2nd query: What would you do if s/he came out of her/his room again?

3rd query: What if s/he does it the next night? What would you do?

parent: 1 (mother)
child: 1 TC (tc)

Vignettes for Children
Age 9 (4th) to 10 (up to 6th grade)

ONE OF THE THINGS WE ARE INTERESTED IN IS HOW YOU HANDLE (tc) WHEN S/HE MISBEHAVES. I AM GOING TO DESCRIBE SOME DIFFERENT WAYS IN WHICH CHILDREN DISOBEY THEIR PARENTS. I WOULD LIKE YOU TO IMAGINE YOUR CHILD IN EACH SITUATION AND TELL ME HOW YOU WOULD DEAL WITH HIM/HER.

1. You are trying to get everyone off to work or school in the morning, and are already 15 minutes lates. Just as you are ready to leave, (tc) begins whining that s/he doesn't want to go to school, and runs back to her/his room. What would you do?
   2nd query: What would you do if s/he does it again the following day?
   3rd query: What if s/he does it again? What would you do?

2. (tc) has afternoon chores to complete before s/he may watch T.V. You notice in the late afternoon that (tc) is still watching T.V., and you remind her/him repeatedly to do the chores. At dinner time, you find her/him watching television, the chores left undone. What would you do?
   2nd query: What would you do if s/he does it again the following day?
   3rd query: What if s/he does it again? What would you do?

3. You are driving between errands in the car and the traffic is very heavy. Suddenly, (tc) begins yelling at her/his sibling to stay on the other side of the back seat. You look into the rearview mirror as (tc) calls the sibling a name and begins pushing the sibling to the other side. What would you do?
   2nd query: What would you do if s/he continues pushing and name calling?
   3rd query: What if s/he does it again? What would you do?

4. It is late in the evening on a school night, and you are very tired. Even though it is an hour past (tc)'s bedtime, and you have asked her/him repeatedly to go to bed, (tc) is still coming out of her/his room every few minutes to get a drink of water or to ask a question. Just before heading to bed yourself, (tc) comes out again, asking for a snack. What would you do?
   2nd query: What would you do if s/he came out of her/his room again?
   3rd query: What if s/he does it again the next night? What would you do?

5. (tc) tells you that s/he is going to be riding her/his bike on the sidewalk. A few minutes later, you look out the window just in time to see a car screech to a halt, only a few feet from (tc), who has stopped on her/his bike in the middle of the road. What would you do?
   2nd query: What would you do if s/he does it again the following day?
   3rd query: What if s/he does it again? What would you do?

RA: ral ___
ID: (id)
parent: 1 (mother)
child: 1 TC (tc)

Parental Discipline Techniques -- scoring sheet

Techniques Used by Mother:

Criteria:

0--No punishment
1--Bribe
2--Withdrawal of privileges
3--Isolation
4--Withdrawal of affection
5--Ignore
6--Distraction
7--Demand for restitution
8--Encouragement/praise
9--Disappointment
10--Plead/request
11--Reasoning
12--Angry interrogation
13--Firm Command/Verbal Reprimand
14--Threat
15--Physical restraint
16--Physical punishment
17--Delegation of authority

	First Query	Second Query	(Third Query)
Situation 1.	_____	_____	_____
Situation 2.	_____	_____	_____
Situation 3.	_____	_____	_____
Situation 4.	_____	_____	_____
Situation 5.	_____	_____	_____

V

RA: ra1 ___
ID: (id)
Mother Ratings on PDI for TC (tc)

parent: 1 (mother)
child: 1 TC (tc)

Parent Discipline Feedback Report
Vignettes: 12 to 36 months

We are interested in your actual experiences with similar situations to those we just asked you about. Please circle: (1) Frequency: the word which best represents how often you experience similar situations and (2) Severity: the word which best represents how serious you would consider it if (tc) acted in the way described.

1. (tc) refuses to be dressed in the morning, when you are in a hurry to get out of the house. S/he keeps her/his arms rigid so you can't get the shirt on, curls her/his toes so you struggle to get on the shoes. S/he fusses, whines, and throws her/himself on the floor.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

2. You have told (tc) many times not to play with electrical cords or put them in (his/her) mouth. But (he/she) keeps doing it. When you catch (him/her) playing with an electrical cord, what would you do?

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

3. You are shopping in a store and (tc) is with you. S/he points at something s/he wants. You say NO, and s/he starts crying and screaming.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

4. You have told (tc) not to touch anything on the coffee table. S/he approaches the table and is just about to grab a breakable piece off the table. You can see it in pieces on the floor.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

5. (tc) refuses to quiet down after being put to bed. S/he screams and cries until your nerves are frayed.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

parent: 1 (mother)
child: 1 TC (tc)

Parent Discipline Feedback Report
Vignettes: 37 to 60 months

We are interested in your actual experiences with similar situations to those we just asked you about. Please circle: (1) Frequency: the word which best represents how often you experience similar situations and (2) Severity: the word which best represents how serious you would consider it if (tc) acted in the way described.

1. (tc) refuses to get dressed in the morning, when you are in a hurry to get out of the house. S/he will not put on the clothes and refuses to let you dress her/him. S/he fusses, whines, and throws her/himself on the floor.
Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

2. (tc) and a neighbor's child are playing together in your living room. (tc) asks to play with a toy, but the other child refuses. (tc) gets angry, hits the playmate, and takes the toy.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

3. You are outside with your family. When you are not looking, (tc) runs into a busy street, falls down and starts crying. You pick her/him up and s/he doesn't seem to be hurt.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

4. You are shopping in a store and (tc) is with you. S/he sees something s/he likes and asks if s/he can have it. You say NO, but (tc) demands to have it and starts crying and screaming.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

5. (tc) refuses to quiet-down after being put to bed. S/he screams and cries until your nerves are frayed.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

parent: 1 (mother)
child: 1 TC (tc)

Parent Discipline Feedback Report
Vignettes: 5(K) to 8 (3rd grade)

We are interested in your actual experiences with similar situations to those we just asked you about. Please circle: (1) Frequency: the word which best represents how often you experience similar situations and (2) Severity: the word which best represents how serious you would consider it if (tc) acted in the way described.

1. You are talking on the phone when you hear (tc) yelling at her/his sibling about what to watch on T.V. You stop your conversation several times to tell (tc) to stop yelling, but before you know it, s/he has hit the sibling, and has switched to another T.V. program.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

2. You have asked (tc) many times not to use or play with the stove. One evening, you return from work to find (tc) playing in the kitchen, and one of the front stove burners on high.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

3. You are trying to get everyone off to work or school in the morning, and are already 15 minutes lates. Just as you are ready to leave, (tc) begins whining that s/he doesn't want to go to school, and runs back to her/his room.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

4. It has been a long day, and you are tired. You have just finished putting dinner on the table when (tc) says that s/he hates the meal. Before you say anything, (tc) crosses her/his arms and begins pouting, saying that s/he won't eat.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

5. It is late in the evening on a school night, and you are very tired. Even though it is an hour past (tc)'s bedtime, and you have asked her/him repeatedly to go to bed, (tc) is still coming out of her/his room every few minutes to get a drink of water or to ask a question. Just before heading to bed yourself, (tc) comes out again, asking for a snack.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

parent: 1 (mother)
child: 1 TC (tc)

Parent Discipline Feedback Report
Vignettes: 9(4th) to 10 (5th grade)

We are interested in your actual experiences with similar situations to those we just asked you about. Please circle: (1) Frequency: the word which best represents how often you experience similar situations and (2) Severity: the word which best represents how serious you would consider it if (tc) acted in the way described.

1. You are trying to get everyone off to work or school in the morning, and are already 15 minutes lates. Just as you are ready to leave, (tc) begins whining that s/he doesn't want to go to school, and runs back to her/his room.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

2. (tc) has afternoon chores to complete before s/he may watch T.V. You notice in the late afternoon that (tc) is still watching T.V., and you remind her/him repeatedly to do the chores. At dinner time, you find her/him watching television, the chores left undone.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

3. You are driving between errands in the car and the traffic is very heavy. Suddenly, (tc) begins yelling at her/his sibling to stay on the other side of the back seat. You look into the rearview mirror as (tc) calls the sibling a name and begins pushing the sibling to the other side.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

4. It is late in the evening on a school night, and you are very tired. Even though it is an hour past (tc)'s bedtime, and you have asked her/him repeatedly to go to bed, (tc) is still coming out of her/his room every few minutes to get a drink of water or to ask a question. Just before heading to bed yourself, (tc) comes out again, asking for a snack.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

5. (tc) tells you that s/he is going to be riding her/his bike on the sidewalk. A few minutes later, you look out the window just in time to see a car screech to a halt, only a few feet from (tc), who has stopped on her/his bike in the middle of the road.

Frequency: DAILY (5) WEEKLY (4) MONTHLY (3) YEARLY (2) NEVER (1)

Severity: VERY (5) QUITE (4) MODERATELY (3) MILD (2) NONE (1)

RA: ra1 ___
ID: (id)
Mother Vocab
Audio Record, Tape #1

ID:

CONSENT FORM

CHILD CARE AND FAMILY PROJECT-PHASE II

I grant permission for my family to participate in this study of families and children.

I understand that participation includes a visit to my family at home. I and my spouse (if present) will also be asked to complete questionnaires about ourselves, our family, and our children. I will also be asked to complete a vocabulary list. I understand that certain portions of the interview will be audio recorded, so that the information may be coded later.

I understand that these procedures will be completed during our normal activities at home.

I understand that our family name(s) will not be written on any of the questionnaires or forms used in this study. Instead, family ID codes will be used to identify our information. These steps are taken to assure that all information pertaining to my family will be kept strictly confidential, and that no reports (written and verbal) of the study will identify our family or children by name or location.

I understand that the children's/child's first name(s) appear on the forms for the convenience of myself and the interviewer. The children/child will never be identified by name.

I understand that I and/or my spouse may choose to withdraw from the study at any time.

Parent Signature Date

Parent Signature Date

Kirby Deater-Deckard or Dr. Scarr may be contacted at:
Department of Psychology
Gilmer Hall
University of Virginia
Charlottesville, Virginia 22903
(804/982-4736)

ID: (id)

Dear (name),

Thank you so much for participating in this study. I look forward to sending you a summary of the findings from the study soon.

In order to continue expanding the size of the sample for my dissertatiion, I must continue making contact with families in the immediate area. Please take a moment to think about other families you know of who have children who are close in age to your own. **The only criteria for being a part of this study is that the family has at least two children in the 4 - 10 year age range.**

With this list, I will contact these other families and ask them if they would like to participate as well. I'm assuming that unless you state otherwise, I may identify you as participants in the recruitment letter that I send to these families. If you would like to nominate other families for recruitment **but do not wish to be identified**, please check the appropriate place below.

Many thanks!

Kirby Deater-Deckard

PLEASE LIST NAMES & ADDRESSES, PHONE #'S, AND APPROXIMATE AGES OF CHILDREN OF THESE OTHER FAMILIES:

___Please do not identify us in the recruitment letter sent to these families.

Parent(s) full name & address	**phone #**	**approx. ages of children**