

Parenting and Development of One-Year-Olds: Links with Parental, Contextual, and Child Characteristics

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A set of hypotheses derived from Belsky's process model of the determinants of parenting was tested in a sample of 129 Dutch parents with their 15-month-old infants. Parental ego-resiliency and education, partner support, and infant social fearfulness were found to explain significant and unique portions of variance in the observed quality of parental behavior, which, in turn, was linked to the infants' attachment security and cognitive development. Parental intelligence was both indirectly—through parenting—and directly related with infant Bayley Mental Developmental Index, whereas parental ego-resiliency was both indirectly and directly linked with infant Attachment Q-Set security. Belsky's claim that parents' personal resources are most effective and child characteristics are least effective in buffering the parenting system was not empirically confirmed.

INTRODUCTION

In the past few decades, Belsky's (1984) ecological model of the determinants of parenting has been widely adopted as a theoretical framework for research on parenting and child development. The model presumes that the quality of parenting is multiply determined by factors from three domains: characteristics of the parent, contextual sources of stress and support, and child characteristics. Among these domains, the parental characteristics—that is, parents' personal psychological resources—are viewed as the most influential determinants of growth-promoting parental behavior. The model also organizes the effects of the various determinants of parenting by specifying pathways of influence, such as the effect of parents' developmental history on quality of parenting, which is presumed to be mediated by their personalities. In the past few years, the basic assumptions of Belsky's model have been examined in various comprehensive investigations of the model (Luster, 1998; Meyers, 1999).

The current study's aim was to contribute to this field by examining patterns of correlations among selected parental, contextual, and child characteristics accounting for variance in the observed quality of parent–infant interaction and infant development in a sample of 129 Dutch families with their 15-month-old infants. The study extended previous research in two ways. First, it comprised two additional parental characteristics (i.e., parental intelligence and education) beyond those already implied in Belsky's model. This combination of parental attachment security, personality, intelligence, and education has not been studied before in relation to quality of parenting and child development. Second, in contrast to earlier studies in search of possible determinants of parenting, the cur-

rent investigation also included two broad measures of infant competence (i.e., attachment security and cognitive development) as child development “outcomes” of parenting. The model in Figure 1, which is based on Belsky's (1984) conceptual framework, summarizes our assumptions regarding the way in which the various parental, contextual, and child characteristics relate to quality of parenting and infant development. In contrast to Belsky's model, Figure 1 does not include “work” as a contextual source of parental stress. Work experiences were not assessed in this study because no substantial variance in work stress was expected in the present community-based sample. The Netherlands has the lowest percentage of working mothers among all European countries. In our sample the majority of the mothers were homemakers or only worked part-time.

Parental Characteristics

In accordance with Belsky's model, parental personality was considered the theoretically most influential determinant of parenting because it is thought to affect parental behavior both directly and indirectly. Despite the presumed importance of parental personality, its contribution to the quality of parenting has received relatively little attention in empirical research (Belsky, Crnic, & Woodworth, 1995). Moreover, most studies relating parental personality to quality of parenting have focused on the associations between disturbed psychological functioning or depression and nonoptimal parenting (Downey & Coyne, 1990; Oates & Forrest, 1985; Simons, Lorenz, Wu, & Conger, 1993; Simons, Whitbeck, Conger, & Wu, 1991).

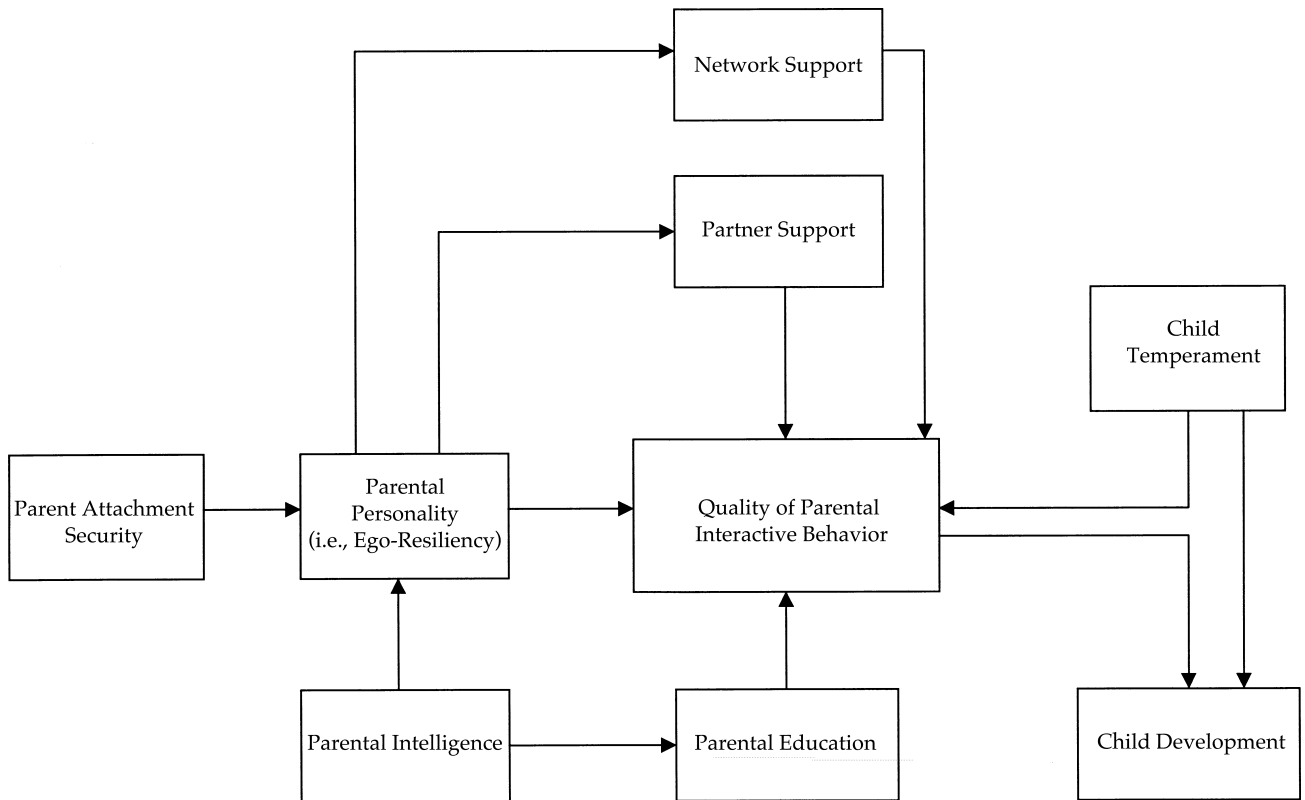


Figure 1 Model summarizing the hypothesized pattern of relations among parental, contextual, and child characteristics; quality of parental behavior; and child development.

In the present study, we chose to focus on a single but comprehensive personality construct, namely parents' ego-resiliency (Block & Block, 1980). This choice was made primarily on theoretical grounds. By definition, an ego-resilient person should be well equipped to cope resourcefully with the often-stressful task of parenting. On the broadest level, ego-resiliency is conceptualized as a general capacity for flexible and resourceful adaptation to external and internal stressors. Block and Block (1980, p. 48) defined ego-resiliency as "resourceful adaptation to changing circumstances," "flexible invocation of the available repertoire of problem-solving strategies," and "the ability to maintain integrated performance while under stress." As such, ego-resiliency can be expected to foster parents' ability to provide supportive developmental experiences to their offspring (see also the descriptive statements used to assess ego-resiliency in the Method section). Ego-resiliency has been found to be strongly related to effective functioning in diverse areas of life (Klohn, 1996), but, to our knowledge, it has not been investigated in relation to quality of parenting. There is only indirect empirical evidence that ego-resilient individuals might be better parents; that is,

quality of parenting has been found to be empirically related to such parental characteristics as "internal locus of control," "self-esteem," and "ego-strength" (Biringen, 1990; Cox, Owen, Lewis, & Henderson, 1989; Mondell & Tyler, 1981; Stevens, 1988), which are conceptually closely related to the construct of ego-resiliency.

Ego-resilient persons have been shown to have the capacity for warm and close relationships with others and to possess the necessary interpersonal skills and social poise that are needed to negotiate the social world (Klohn, 1996). They have been found to be more capable than ego-brittle individuals to mobilize support from their partners and their social networks (Kobak & Sceery, 1988). We therefore assumed, as shown in Figure 1, that parents' ego-resiliency would be not only directly, but also indirectly related to the quality of parenting, through support provided by the partner and the broader social network.

Another characteristic thought to affect the way in which parents treat their children is parental attachment security, which is assumed to reflect their personal attachment history. Prior research has shown parents' representations of their relationships with their own parents to influence future parenting be-

havior and their children's later development (Cohn, Cowan, Cowan, & Pearson, 1992; Crowell & Feldman, 1988). In a meta-analysis of 10 studies of the relation between parents' attachment representations and responsiveness, van IJzendoorn (1995) found effect sizes ranging from .35, $r = .17$, to 1.37, $r = .57$. Recent studies have also found parents who were classified as securely attached to be more responsive, sensitive, and warm when compared with insecure parents (Crandell, Fitzgerald, & Whipple, 1997; Pederson, Gleason, Moran, & Bento, 1998). In keeping with Belsky's (1984) model, we expected the relation between parents' attachment security and parenting to be mediated by parental personality in the form of ego-resiliency. A positive association between attachment security and ego-resiliency has been found in studies with preschoolers (Arend, Gove, & Sroufe, 1979), adolescents (Kobak & Sceery, 1988), and young adults (Borman-Spurrell, Allen, Hauser, Carter & Cole-Detke, as cited in Crowell & Treboux, 1995). Similarly, indirect evidence for such a relation was provided by studies that demonstrated a link between adult attachment and personality characteristics conceptually related to ego-resiliency, such as self-esteem, self-confidence, and psychological well-being (Collins & Read, 1990; Diehl, Elnick, Bourbeau, & Labouvie-Vief, 1998; Feeney & Noller, 1990; Luster, 1998; Man & Hamid, 1998).

In an extension of Belsky's model, we included two, more cognitive, parental characteristics in the present study, which were expected to contribute considerably to the quality of parents' interactions with their infants: parental intelligence and education. Several studies have demonstrated a relation between the quality of mother-child interaction and maternal education (Alwin, 1984; Brody & Flor, 1998; Kelly, Sanchez-Hucles, & Walker, 1993; NICHD Early Child Care Research Network, 1999; Zevalkink & Riksen-Walraven, 2001). In these studies, however, parental intelligence was not controlled for. In the present study, we assumed that the relation between parents' education and the quality of parent-child interaction in our sample would be, in part, explained by differences in parental intelligence. In countries such as The Netherlands, with broad opportunities for education, a high correlation between intelligence and education can be expected. Given that parental intelligence is related to the quality of parenting (Baharudin & Luster, 1998; Bradley et al., 1993; Watson, Kirby, Kelleher, & Bradley, 1996; Whiteside-Mansell, Pope, & Bradley, 1996), higher educated parents can therefore be expected to provide better quality care than lower educated parents simply because they are more intelligent. But higher educated

parents may also provide more supportive child care for reasons beyond their higher intelligence. During their years of college or university education and functioning in higher qualified jobs with more responsibilities, they may have acquired attitudes and competencies such as tolerance or the ability to plan tasks, that may also be visible in interactions with their children, particularly during such instruction tasks as used in the present study. Figure 1 shows our assumption that the relation between parental intelligence and quality of parenting would be mediated by parents' level of education.

In addition, we also expected a relation between parental intelligence and ego-resiliency. Intelligence and ego-resiliency are conceptualized as independent constructs, but have been found to be highly interrelated (Block & Kremen, 1996). We assumed that intelligence fosters ego-resiliency by allowing people to quickly appraise situations and adapt to changing circumstances. Empirical research has indeed shown intelligence to contribute to ego-resiliency (van Aken, 1992).

Contextual Characteristics: Partner and Network Support

Past studies have provided considerable evidence that high levels of marital support and satisfaction are associated with skillful parenting (Belsky, Glistrap, & Rovine, 1984; Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983; Easterbrooks & Emde, 1988; Emery & Tuer, 1993; Engfer, 1988; Erel & Burman, 1995; Feldman, Nash, & Aschenbrenner, 1983; Goldberg & Easterbrooks, 1984; Meyer, 1988; Simons & Johnson, 1996; Simons et al., 1993; Simons, Whitbeck, Conger, & Melby, 1990). This relation has been found to hold for both mothers and fathers, in various countries, and for infants as well as for older children (Belsky, 1990). It has been shown that the effect of marital support on parenting remains after controlling for the effects of parental characteristics (Cox et al., 1989). We therefore expected marital support to explain variance in quality of parenting beyond that explained by parental characteristics.

Support from the wider social network appears to have less impact on parental behavior than marital support. Only a few studies have shown a positive effect of network support on parenting (see Andresen & Telleen, 1992; Simons & Johnson, 1996). Studies that have examined the relative importance of marital versus other kinds of support have found that the quality of the marital relationship is a stronger predictor of parenting than network support (Crnic et al., 1983; Friedrich, 1979). In addition, there is evidence that social network support cannot compensate for a lack of spousal support in an unsupportive marriage (Simons

et al., 1993). Based on all these findings, in the current study we expected a positive relation between quality of parenting and partner support. With regard to network support, we expected a weaker relation, if any, with quality of parenting.

Child Characteristics

In the domain of child characteristics, infant temperament was assessed in the present study as a factor that might explain differences in parental behavior. Studies of the relation between infant difficulty and maternal responsiveness have yielded mixed results (Crockenberg, 1986). Negative effects have been found (Lee & Bates, 1985; Maccoby, Snow, & Jacklin, 1984; van den Boom & Hoeksma, 1994) as well as positive effects (Bates, Olson, Pettit, & Bayles, 1982) and inconsistent relations (Peters-Martin & Wachs, 1984). A recent study of the determinants of fathering yielded no relation between child characteristics and the quality of parenting (Woodworth, Belsky, & Crnic, 1996). The evidence regarding the relation between the temperamental dimension of social fearfulness (which was also assessed in the present study) and parenting is also somewhat inconsistent. Rubin and colleagues (e.g., Rubin, Hastings, Henderson, & Chen, 1997; Rubin, Stewart, & Chen, 1995) have suggested that parents of socially fearful children are intrusive, overcontrolling, and not responsive toward their children. Park, Belsky, Putnam, and Crnic (1997), in contrast, have observed that parents behave more sensitively, more affectionately, and less intrusively in interactions with relatively inhibited children. With regard to the causal direction of the relations between child social fearfulness and parental behavior, results of recent studies strongly suggest that inhibited behavior in young children elicits responsiveness and protectiveness in their parents (Belsky, Rha, & Park, 2000; Rubin, Nelson, Hastings, & Asendorpf, 1999). Given the unequivocal evidence regarding the nature of the relation between different aspects of child temperament and quality of parenting, we refrained from making strong hypotheses about the relation between temperament and parenting. In accordance with Belsky's (1984) model, we simply assumed that child temperament would be less predictive of parenting than the characteristics of the parents themselves and the characteristics of the caregiving context.

Quality of Parenting and Infant Development

The quality of parenting was observed during a series of parent-child instructional tasks and assessed by rating the quality of the support the parent pro-

vided to the infant (Erickson, Sroufe, & Egeland, 1985). The overall quality of the parental interactive behavior observed using a similar procedure has been found to be related to various characteristics of the social and cultural context of parenting (Riksen-Walraven & Zevalkink, 2000; Zevalkink & Riksen-Walraven, 2001), to the sensitivity of parental responding during free play (Vereijken, Riksen-Walraven, & Kondo-Ikemura, 1997), and to the sensitivity of parental responding during extended periods of parent-child interaction in the natural home setting (Zevalkink & Riksen-Walraven, 2001). The results of these studies suggest that the differences in parental behavior that the present study aimed to explain are ecologically valid and reflect the quality of the infants' everyday experiences with their parents. In addition, the same measure of parenting quality has been shown to predict various aspects of child development across cultures; that is, children's attachment security (Vereijken et al., 1997; Zevalkink, Riksen-Walraven, & van Lieshout, 1999), cognitive competence (Riksen-Walraven, Meij, Hubbard, & Zevalkink, 1996), competence motivation (Meij, Riksen-Walraven, & van Lieshout, 2000), and the occurrence of behavioral problems (Erickson et al., 1985). To ensure that the differences in parenting observed in the present sample were meaningful differences, which may contribute to children's development, we related them to two broad "outcome" measures of infant development, that is, attachment security and cognitive development.

Research Aims and Hypotheses

This study examined whether and how parental, contextual, and child characteristics relate to quality of parenting and child development. First, using regression analysis, we tested the hypothesis that (1) parental, contextual, and child characteristics would explain significant and unique portions of the variance in parental interactive behavior. Next, using path analyses, we attempted to shed more light on how the various characteristics are related to parenting and child development. The hypotheses were that (2) parental ego-resiliency would be both directly and indirectly—through partner and network support—related to quality of parenting, (3) parental attachment security would be related to parenting through parental ego-resiliency, (4) parental intelligence would be related to quality of parenting through level of education, and (5) quality of parenting would be related to infant attachment security and cognitive development.

Given that parental, contextual, and child characteristics have been found to contribute independently to the quality of parenting, the question still remained

as to what extent a “strength” in one of the three domains may compensate for a “weakness” in one or both of the others. For example, can marital support compensate for a lack of personal psychological resources in a parent and keep the quality of parenting at an acceptable level? Based on the assumption that parental characteristics are the most influential determinants of parenting, followed by social support and child characteristics, in that order, Belsky (1984) rank ordered the eight possible combinations of strengths and weaknesses in the three domains according to their expected probability of yielding adequate parental care. According to his model, parent–child dyads with strengths in all three domains are expected to show the highest quality of care, followed by dyads with two, one, and zero strengths, respectively. When one domain is “weak,” parenting is expected to be least affected if this weakness lies in the domain of child characteristics, more when it is in the domain of social support, and most if the weakness is in the domain of parents’ personal psychological resources. When two domains are weak, the quality of parenting is expected to be highest if the remaining strength is in the domain of parental characteristics, lower if it is in the area of social support, and lowest if the only strength of the dyad lies in “favorable” child characteristics. Belsky’s hypotheses were tested by computing the mean quality of parenting in subgroups of dyads with different patterns of “strengths” and “weaknesses” in the three domains, and by then comparing these scores with what would be expected on the basis of Belsky’s propositions.

METHOD

Participants

The sample consisted of 129 physically healthy 15-month-old infants (67 boys, 62 girls) and their primary caregivers. Because earlier research has recommended that studies of the possible determinants of parenting be conducted in heterogeneous samples (Meyers, 1999), the aim was to recruit such a sample in the present study. The recruitment of the families was based on the records from local health-care centers in the city of Nijmegen in The Netherlands. During 9 consecutive months, all families with a 15-month-old baby (i.e., 639 families) living in districts with many young families from various socioeconomic backgrounds were contacted. They were sent a recruitment letter explaining the goals of the study and were asked to return a card if interested in participating. Of the 174 families who replied, 129 parent–child dyads (the maximum attainable given

the time and resources available for the project) were randomly selected for the study. The sample included 123 two-parent families and 6 single-parent families. In 3 families, the father was the primary caregiver of the child. In these cases, the mothers were the breadwinners and had full-time jobs out of the home. Because these fathers had taken care of the infants from birth on and acted as their primary attachment figures, they were included in the sample of primary caregivers. The patterns of scores of these 3 fathers, moreover, turned out to fall within the normal range in the sample. The percentages of single parents and of fathers acting as primary caregivers were representative of families in The Netherlands with children in this age group. In the sample, 38% of the primary caregivers were homemakers, and only 4% worked out of the home for more than 32 hours a week. The ages of the primary caregivers ranged from 22 to 47 years ($M = 32.9$ years, $SD = 4.42$). Their level of education ranged from low (elementary school) to high (college degree or more). The sample contained 73 firstborn infants and 56 later-born infants.

Procedure

The caregivers and children were visited in their homes (by the first author) for 2 hours when the child was 15 months of age ($M = 15.1$, $SD = .25$). During the visit, the primary caregiver completed a Q-sort and a set of questionnaires assessing his or her ego-resiliency and attachment style, network and partner support, and child temperament. In addition, the caregiver was administered a verbal intelligence test. At the end of the visit, the caregiver and child were videotaped during the performance of four consecutive interaction tasks, lasting 3 or 4 min each. The parent was asked to have the child unlock a puzzle box, put a puppet together, do a jigsaw puzzle, and “read” a set of picture books. The parents were also told that they could help the child whenever they felt the need to. After each home visit, the trained visitor applied the 90-item version of the Attachment Q-Set (AQS; Waters, 1995) to her observations of the child’s behavior during the visit. Within 1 week after the home visit, the parent and child visited the University Laboratory where the child’s cognitive development was assessed using the Bayley Scales of Infant Development.

Instruments and Measures

Ego-resiliency. Parents described their own personality using a Dutch translation of the 100-item California Adult Q-Set (CAQ; Block, 1961/1978). The CAQ is

an ipsative measure consisting of 100 descriptive statements that sample a broad domain of personal and interpersonal characteristics and functioning. The parents were asked to sort these 100 statements into a fixed, quasnormal, nine-category distribution, ranging from "least characteristic" to "most characteristic" in terms of their salience to themselves. Block (1991) had nine experts use the CAQ in the same way to describe a prototypical ego-resilient person. These nine expert-sorts were then aggregated into a composite ego-resiliency criterion profile, which specifies the personality attributes associated with the construct of ego-resiliency that was extensively described in the Introduction section. CAQ statements rated by the experts as most characteristic for ego-resilient persons were, for example: "Has insight into own motives and behavior"; "Has warmth, capacity for close relationships"; "Calm, relaxed in manner"; and "Is productive, gets things done." Statements judged as most uncharacteristic included: "Is brittle, maladaptive under stress"; "Is self-defeating"; "Is uncomfortable with uncertainty and complexities"; and "Is overactive to minor frustrations, irritable." To obtain ego-resiliency scores for the parents, each parent's own Q-sort description was correlated with the criterion profile as provided by the experts. A strong positive correlation meant that the parent was very similar to the ego-resiliency criterion profile (i.e., is very ego-resilient), a strong negative correlation indicated that the parent was dissimilar to the prototypical ego-resilient person (i.e., is very ego-brittle).

Adult attachment. Parental attachment security was assessed using the Relationship Questionnaire (Bartholomew & Horowitz, 1991). This self-report instrument provides prototypical descriptions of the four main types of attachment: secure, dismissing, preoccupied, and fearful. The parents were asked to choose the description that best characterizes "the way you generally are in your close relationships." Depending on their answers, the parents were classified into one of four attachment categories: secure, dismissing, preoccupied, or fearful. For the present study, only the secure versus insecure (i.e., dismissing, preoccupied, and fearful) distinction was used.

Education and intelligence. The primary caregiver's level of education was rated along a 7-point scale ranging from 1 (elementary school) to 7 (college degree or higher).

Parents' intelligence was assessed with a Dutch translation of the Peabody Picture Vocabulary Test (Dunn, 1965). For this receptive vocabulary test, the examiner reads a series of words aloud and asks the respondent to indicate which of four pictures best rep-

resents the meaning of a particular word. The PPVT takes relatively little time to complete, but is widely recognized as one of the most reliable and valid measures of verbal intelligence. We were particularly interested in verbal intelligence in the present study, because verbal IQ was expected to contribute more than general intelligence to the quality of the instructions parents provided for their children during the observed interaction tasks.

Network support. The brief version of the Social Support Questionnaire (Sarason, Levine, Basham, & Sarason, 1983; Sarason, Sarason, Shearin, & Pierce, 1987) was used to assess the support parents receive from their social network. Parents were asked to list all those individuals who provide them with support in six different situations (e.g., when help is needed, when feeling tense and under pressure) and to rate the degree to which they were satisfied with the total support received in each of the situations. In light of the generally low degree of variance in the satisfaction scores, only the total number of different individuals (minus the partner) available for help across the six situations was used. Cronbach's α coefficients for the number of individuals and for the degree of satisfaction reported across situations were .92 and .89, respectively.

Partner support. A subscale of a Dutch questionnaire for assessing family problems (Koot, 1997) was used to measure the quality of the support received from the partner. The subscale consists of five items concerned with partner support during childrearing, such as "My partner supports me in my role as a parent," and "My partner and I agree about childrearing." Cronbach's α was .82. Partner support was assessed particularly in the domain of childrearing as such specific support was expected to contribute to the quality of parenting to a greater degree than more global measures of partner support or marital quality. Marital conflict with regard to childrearing has indeed been found to have more adverse effects on parenting than general marital conflict (Davies & Cummings, 1984). Single parents were asked to fill out the questionnaire if they were still in contact with a (former) partner. If not, they were given the minimum score.

Child temperament. The Toddler Behavior Assessment Questionnaire (TBAQ; Goldsmith, 1994) was used to characterize children in terms of five dimensions of temperament: activity level, pleasure, social fearfulness, anger proneness, and interest/persistence. The caregiver indicates along a 7-point scale how often he or she observed particular behaviors on the part of the child during the past month; for example, "When your child was being approached by an unfamiliar adult while shopping or out walking, how

often did your child show distress or cry?" The internal consistency of the five scales was satisfactory; Cronbach's $\alpha = .86$ (20 items) for activity level, $\alpha = .82$ (19 items) for pleasure, $\alpha = .77$ (19 items) for social fearfulness, $\alpha = .88$ (28 items) for anger proneness, and $\alpha = .79$ (22 items) for interest/persistence.

Quality of parental interactive behavior. The videotaped parent-child instruction sessions were rated for the quality of parental interactive behavior using five 7-point scales developed by Erickson et al. (1985): (1) supportive presence or the provision of emotional support, (2) respect for the child's autonomy or non-intrusiveness, (3) structure and limit setting, (4) quality of instructions, and (5) hostility. Each interaction episode was rated independently by two observers who had been trained by the second author, who has extensive experience with application of the scales. The interrater reliabilities expressed as Pearson correlations were beyond $r = .85$ and Cohen's κ s (for agreement within 1 scale point) were beyond .98 for all of the scales. A composite score for the overall quality of parental interactive behavior was computed by summing the five standardized scale scores (which were all significantly interrelated) after reversal of the score for hostility. Cronbach's α for the combined scale was .84.

Child cognitive development. The children's level of cognitive functioning was assessed using the Dutch version of the Bayley (1969) Mental Scale of Infant Development (van der Meulen & Smrkovsky, 1983). The first author and four graduate students, who were trained in the assessments, administered the tests. Level of cognitive development is expressed in the standardized Mental Developmental Index (MDI), which gives an overall impression of the child's cognitive abilities as compared with a large sample of Dutch same-aged children.

Child attachment security. The AQS, Version 3 (Waters, 1995) was used to describe infant attachment behavior in the home setting. As prescribed by the AQS procedure, the home visitor arranged the 90 descriptive statements in a rectangular forced nine-category distribution according to the evaluated saliency of each item to the particular child. A security score was obtained by correlating the child's Q-sort description with the criterion sort for a prototypically secure infant, provided by experts. Security scores range from +1.00 for a perfectly secure infant to -1.00 for a most insecure infant. The home visitor was thoroughly trained by the second author, who has extensive experience in applying the AQS. Reliability checks showed Q-correlations of independent sorts on the same children to exceed the standard of .75.

RESULTS

Descriptive Statistics and Relations among the Study Variables

Table 1 presents descriptive statistics (means, standard deviations, and ranges) for the study variables, as well as their interrelations. The distributions of scores for parental attachment security and ego-resiliency were in line with findings of earlier studies. Parents' education and intelligence were slightly above average for the Netherlands, but showed wide individual variation. The distribution of scores for network and partner support showed mild to moderate skewness, but also substantial variation. The scores for child temperament, quality of parental behavior, and child development were all normally distributed, with means approximating those delineated in other research.

Inspection of the correlation matrix shows that all parental characteristics were significantly interrelated, with the exception of attachment security and intelligence. As expected, the correlation between parents' intelligence and education was high. Ego-resiliency was the only parental characteristic to be significantly related to all of the other parental characteristics, to both partner and network support, to quality of parenting, and to the two measures of child development. Parental ego-resiliency was not, however, associated with any of the child temperament characteristics. The other parental characteristics showed little association with child temperament as well. The two child development measures were moderately interrelated. Both measures were significantly related to quality of parenting.

The variables in Table 1 were examined to see how they were related to the parents' age and to children's gender and birth order. Parents' age was significantly related to their intelligence and education, $r = .50$ and $r = .45$, respectively, $ps < .01$, but not to quality of parenting, $r = .14$, or to the measures of child development. There were no differences in the mean scores of boys and girls for any of the variables in Table 1. To find out whether the data for boys and girls could be collapsed in the subsequent multivariate analyses, we also tested for gender differences in the pattern of correlations among the variables. The equality of the correlation matrices for boys and girls was tested using LISREL 8.20 (Green, 1992). The test did not yield a significant fit, $\chi^2(10, N = 55) = 65.93$, $p = .15$, goodness-of-fit index (GFI) = .90, indicating that the correlation matrices for boys and girls were not different.

Comparison of the mean scores of first- and later-born children yielded only two differences, which were hard to interpret. Firstborn infants were rated

Table 1 Means, Variances, and Correlations among the Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	M	SD	Min.	Max.
Parental characteristics																		
1. Attachment security															.50	.50	0	1
2. Ego-resiliency	.24**														.43	.19	-.05	.74
3. Education	.20*	.37**													4.94	1.77	1	7
4. Intelligence	.06	.35**	.70**												113.19	12.30	55	129
Contextual characteristics																		
5. Network support	.09	.22**	.20**	.11											19.40	11.70	0	48
6. Partner support	.29**	.24**	.03	.01	.12										13.23	2.26	5	15
Child characteristics																		
7. Activity level	-.06	-.10	-.14	-.08	-.00	-.26**									3.66	.78	1.77	6.25
8. Anger proneness	.06	-.14	-.03	.01	-.08	-.13	.40**								3.39	.77	1.62	5.19
9. Interest/persistence	-.02	-.13	-.12	-.22**	-.15*	.05	-.24**	-.06							3.65	.84	1.41	6.30
10. Pleasure	-.09	-.12	-.26**	-.18**	.06	-.17*	.27**	.11	.07						5.03	.82	2.63	6.68
11. Social fearfulness	-.05	-.01	.07	.06	-.13	-.04	-.06	.34**	.08	-.22**					3.70	.84	1.63	5.77
Parental behavior																		
12. Overall quality	.25**	.36**	.39**	.30**	.08	.24*	-.21*	-.03	.05	-.17*	.30**				0	3.83	-11.78	8.30
Child development																		
13. Bayley Mental Development Index	.12	.21**	.20*	.30**	.13	.16*	.02	.13	-.04	.08	.13	.40**			103.10	17.30	59	141
14. Attachment Q-Set	.12	.34**	.14	.19*	-.02	.13	-.11	-.15*	-.08	.18*	-.02	.48**	.39**		.25	.26	-.54	.72

Note: N between 120 and 129.

* $p < .05$; ** $p < .01$.

by their parents as significantly less anger prone than later-born infants ($M = 3.24$, $SD = .71$ and $M = 3.59$, $SD = .81$, respectively), $t(126) = -2.61$, $p < .01$. First-born infants also received lower ratings for social fearfulness than later-born infants ($M = 3.48$, $SD = .80$ and $M = 4.01$, $SD = .81$, respectively), $t(126) = -3.71$, $p < .01$. The equality of the correlation matrices was also tested for first- and later-born children. The test results, $\chi^2(10, N = 55) = 51.13$, $p = .62$, GFI = .93, indicate that the matrices were not different from each other.

Variance in Parental Behavior Explained by Parental, Contextual, and Child Characteristics

A multiple regression analysis was performed in which the parental, contextual, and child characteristics were entered simultaneously into the regression equation. Multicollinearity was not detected. The standardized regression coefficients shown in Table 2 indicate that among the parental characteristics, parents' level of education and their ego-resiliency made significant and independent contributions to the explained variance in parental behavior. In the contextual domain, partner support was the only characteristic to contribute significantly to the explained variance in parental behavior. Among the child characteristics, only social fearfulness explained a significant portion of the variance in the observed quality of parental behavior.

Taken together, the multiple regression analysis confirmed our expectation that parental, contextual, and

child characteristics would explain significant and unique portions of the variance in parental interactive behavior. Among the parental characteristics, intelligence and attachment security did not add significantly to the regression equation, which fits our suggestion that the effects of parents' intelligence and attachment on their behavior in interaction with their infants are mediated by parental ego-resiliency and education, respectively. The next section, in which the path model was tested, will shed more light on this matter.

Evaluation of the Path Model

The overall goodness-of-fit of the path model depicted in Figure 1 was assessed using the LISREL 8.20 Statistical Program (Jöreskog & Sörbom, 1989). Given the finding that network support was found to be unrelated to both quality of parental behavior and to the child development measures, it was a priori eliminated from the model to be tested. Social fearfulness was chosen to indicate child temperament, because this was the only child characteristic found to contribute significantly to the quality of parental behavior in the multiple regression analyses. Given that single indicators were used to represent all of the variables in the model, a structural equation model in which all variables were directly measured, with no assumed measurement error, was examined. The interrelations among the indicators depicted in Table 1 constituted the input matrix for the analyses.

The model with the child's cognitive development (Bayley MDI) as an indicator of child development was examined first. The analysis of the initial model did not yield a significant fit, $\chi^2(15, N = 129) = 29.14$, $p = .02$, GFI = .95, Adjusted Goodness-of-Fit Index (AGFI) = .88, Root Mean Square Residual (RMS) = .08. The suggested deletion of the path between the child's social fear and MDI did not result in a significant reduction, $\chi^2(16, N = 129) = 29.17$, $p = .02$, GFI = .95, AGFI = .89, RMS = .07. The modification indices further suggested adding paths between parents' attachment on the one hand and partner support and parental education on the other. Adding these paths increased the fit of the model, $\chi^2(14, N = 129) = 13.94$, $p = .45$, GFI = .97, AGFI = .93, RMS = .05. Finally, a direct path between parental intelligence and the child's MDI was suggested. The $\chi^2(13, N = 129) = 8.93$, $p = .78$, GFI = .98, AGFI = .95, RMS = .03, indicated that this final model, depicted in Figure 2, fit the data well.

The model with infant attachment security as an indicator of child development was examined next. This analysis of the model did not yield a significant fit, $\chi^2(15, N = 129) = 29.37$, $p = .01$, GFI = .95, AGFI = .88,

Table 2 Stepwise Multiple Regression Analysis Predicting Overall Quality of Parental Interactive Behavior from Characteristics in the Parental, Contextual, and Child Domains

Variable	β	t
Parental characteristics		
Attachment security	.10	1.18
Ego-resiliency	.21	2.51*
Educational level	.30	3.75**
Intelligence	.06	.54
Contextual characteristics		
Network support	-.05	-.68
Partner support	.25	3.25**
Child characteristics		
Activity level	-.15	-1.87
Anger proneness	-.14	-1.72
Interest/persistence	.10	1.36
Pleasure	.02	.22
Social fearfulness	.30	3.87**

Note: $N = 129$; $R^2 = .34$; $F = 14.59$.

* $p < .05$; ** $p < .01$.

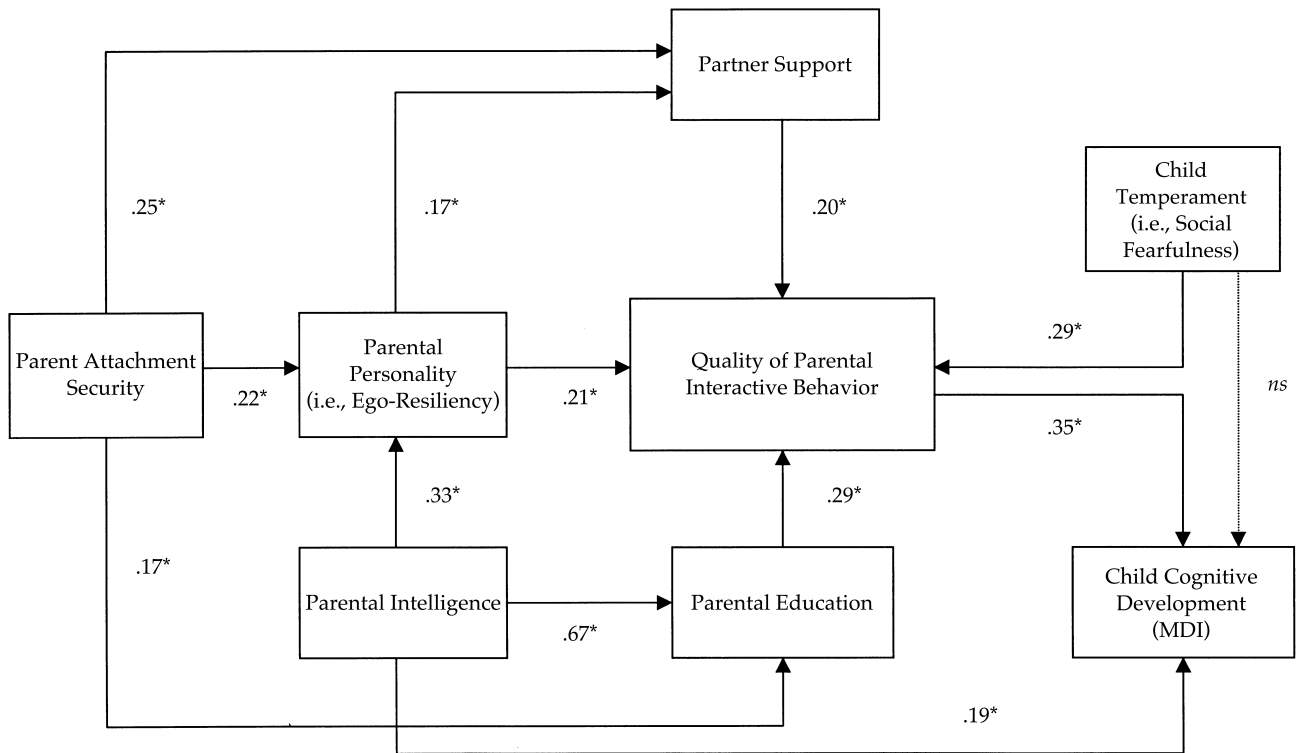


Figure 2 Final LISREL model with the infants' Bayley Mental Developmental Index (MDI) as a child development measure. * Standardized path coefficients significant at the .05 level.

RMS = .07. The modification indices suggested adding paths between parents' attachment security on the one hand and partner support and parental education on the other. Adding these paths resulted in a significant reduction in χ^2 of 6.91, $\chi^2(13, N = 129) = 14.15, p = .36$, GFI = .98, AGFI = .93, RMS = .04. Finally, to obtain the most parsimonious model, the modification indices suggested a direct path between parents' ego-resiliency and child attachment security, $\chi^2(12, N = 129) = 10.12, p = .61$, GFI = .98, AGFI = .94, RMS = .03. This final model, depicted in Figure 3, fit the data well.

In sum, the analyses of the model empirically confirmed our four hypotheses regarding the mediated relations among parental characteristics, parental interactive behavior, and child development. First, parents' ego-resiliency proved to be related to their interactive behavior both directly and indirectly through partner support. Second, the relation between parents' attachment security and the quality of their interactive behavior was mediated by parental ego-resiliency. Third, the relation between parents' intelligence and the quality of their interactive behavior was mediated through their level of education. Finally, the quality of parental behavior was related to both measures of child development. Unexpectedly,

children's attachment security and cognitive development were not only related to the quality of parenting, but also—directly—to parents' ego-resiliency and intelligence, respectively.

Parenting: A Buffered System?

Finally, Belsky's (1984) predictions about the quality of parenting in parent–infant dyads with different patterns of strengths and weaknesses in the three domains of influence on parenting (parental, contextual, and child characteristics) were examined. Parent–infant dyads were labeled strong or weak in a given domain depending on whether they scored above or below the median on the potentially most influential characteristics in that domain—that is, on the characteristics that were found to provide a significant and unique contribution to the quality of parenting in the multiple regression analyses. Dyads were considered strong in the domain of parental characteristics if the parents' composite score (i.e., the sum of the standardized scores) on ego-resiliency and education was above the median. Strengths in the domains of contextual and child characteristics were defined as scores above the median on partner support and in-

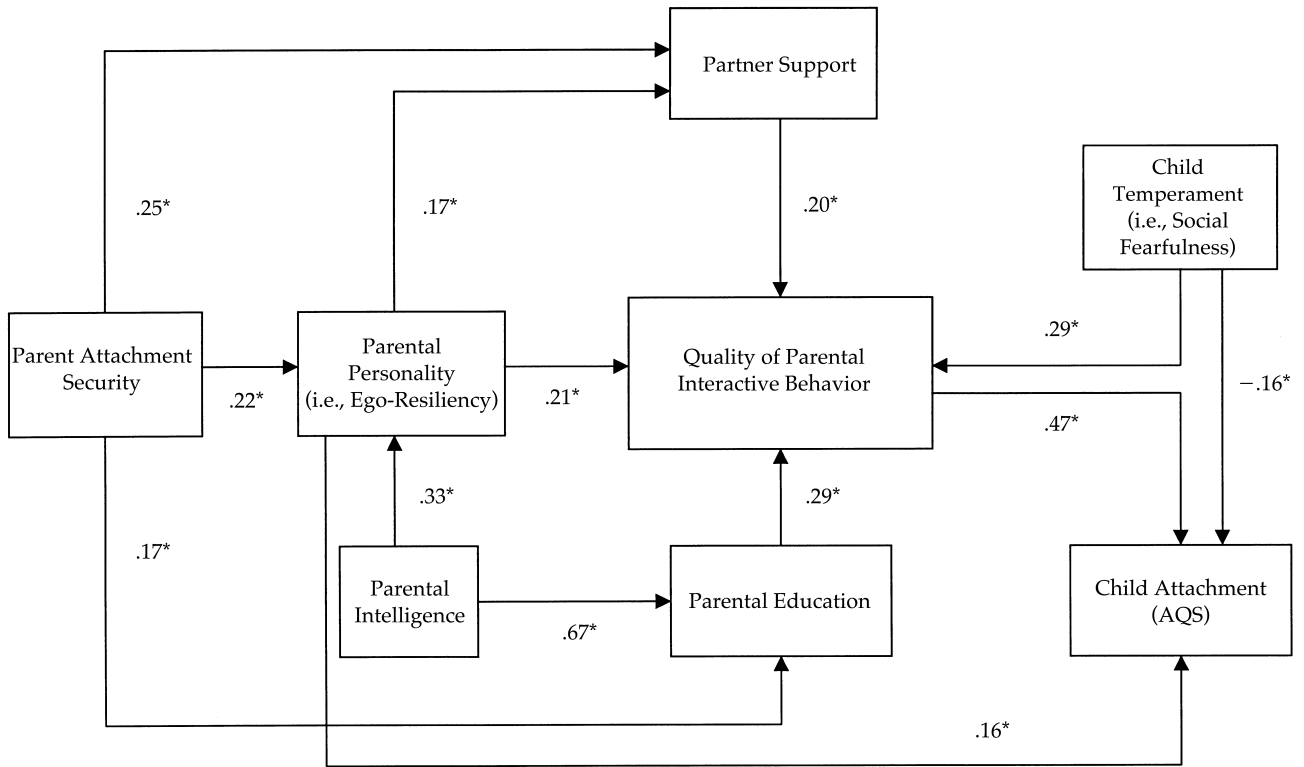


Figure 3 Final LISREL model with the infants' Attachment Q-Set (AQS) score as a child development measure. * Standardized path coefficients significant at the .05 level.

fant social fear, respectively. On the basis of their high versus low scores in the three domains, the dyads were then categorized into eight groups that represented all possible combinations of strengths and

weaknesses in the various domains. In Table 3 these patterns are rank ordered according to their hypothesized probability of yielding adequate parenting. The hypothesized rank order is based on Belsky's (1984)

Table 3 Quality of Parental Interactive Behavior in Eight Subgroups of Dyads with Different Patterns of Strengths and Weaknesses across Three Domains of Characteristics

Relative Probability of Adequate Parenting ^a	Strengths and Weaknesses in Three Domains of Influence on Parenting			Observed Quality of Parental Interactive Behavior ^b					
	Parental Characteristics (Ego-Resiliency and Education)	Contextual Characteristics (Partner Support)	Child Characteristics (Social Fear)	In Eight Subgroups			In Dyads with 3, 2, 1, and 0 Strengths		
				<i>n</i>	<i>M</i>	(<i>SD</i>)	<i>n</i>	<i>M</i>	(<i>SD</i>)
1. Highest	+	+	+	13	3.14	(3.49)	57	.75	(3.17)
2.	+	+	-	24	.26	(2.86)			
3.	+	-	+	16	1.75	(2.29)			
4.	-	+	+	17	.52	(4.13)			
5.	+	-	-	10	-.34	(3.09)			
6.	-	+	-	20	-1.19	(3.97)	45	-.96	(3.91)
7.	-	-	+	15	-1.09	(4.49)			
8. Lowest	-	-	-	12	-3.43	(3.81)			

^a According to Belsky's (1984) theoretical model of the relative probability of effective parental functioning in all possible conditions of parenting systems.

^b Standard scores.

assumption that parental personal resources have the greatest potential for buffering the parenting system, followed by contextual and child characteristics, in that order. Table 3 shows the mean quality of parental behavior as observed in the eight groups of dyads.

First the hypothesis that dyads with strengths in all three domains show the highest quality of care was tested, followed by dyads with two, one, and zero strengths, respectively. An analysis of variance (ANOVA) indicated that the four groups of dyads with different numbers of strong domains differed significantly in the quality of parenting, $F(3, 126) = 9.14, p < .001$. Subsequent Scheffé tests showed that dyads with strengths in all three domains exhibited a significantly higher quality of parenting than dyads strong in only one domain, $F(1, 56) = 11.60, p < .001$, or in none of the three domains, $F(1, 24) = 20.26, p < .001$. Dyads with two strong domains showed higher quality parenting than dyads without strengths in any of the domains, $F(1, 68) = 16.13, p < .001$.

We next focused on the quality of parenting among the three subgroups with a weakness in one of the three domains. If parental personal resources—as proposed by Belsky—have the greatest potential and child characteristics have the least potential for buffering the parenting system, the quality of parenting should be the lowest in dyads with a weakness in the parental domain, and highest in dyads with unfavorable child characteristics. An ANOVA, however, did not yield a significant difference in the quality of parenting among the three groups of dyads, $F(2, 56) = 1.14, p = .33$. In the same way, the observed quality of parenting in the three groups of dyads with weaknesses in two of the three domains was compared. Belsky's hypothesis that the quality of parenting should be highest if the remaining strength is in the parental domain and lowest if only child characteristics are favorable was not confirmed by this study's data. An ANOVA did not show a significant difference in quality of parenting among the three groups of dyads, $F(2, 44) = .16, p = .85$.

In sum, the analyses on groups of dyads with different patterns of strengths and weaknesses in the three domains of influence on parenting confirmed Belsky's assumption that parenting is buffered against the negative effects of weakness in a single domain because parental behavior is multiply determined by characteristics in several domains. The present study's findings, however, cast doubt on Belsky's assertion that particular domains have more buffering potential than do others. It was the number of strong or weak domains, and not the nature of the domains, that made a difference in the quality of parents' behavior in the interactions with their infants.

DISCUSSION

In the present study, a set of hypotheses derived from Belsky's (1984) process model of the determinants of parenting was tested. Given that the analyses were not based on longitudinal data, it is important to keep in mind that the path model summarizing the results represents a pattern of covariation among variables and does not allow for causal explanations. Although the direction of the paths shown in the model was chosen on theoretical grounds, the existence of effects in the opposite direction or bidirectional effects cannot be excluded. In general, the pattern of associations found in the path analytic procedures provided good support for Belsky's assertion that the quality of parenting is multiply determined by influences from three domains. Parental characteristics, contextual factors, and child characteristics were each found to explain a significant and unique portion of the variance in the observed quality of parental interactive behavior, which, in turn, proved to be significantly related to the infants' attachment security and cognitive development. The findings of this study suggest that Belsky's model should be expanded to include parents' intelligence and education in addition to attachment security and personality as important determinants of parenting and child development. Parental education significantly added to the explained variance in the observed quality of parenting, and parents' intelligence significantly contributed to the children's cognitive development.

The hypotheses based on Belsky's (1984) assertions about parenting as a buffered system, however, were only partially confirmed by the data. It was shown that if one of the domains of characteristics (parental, contextual, or child) is weak, strengths in the other two domains may keep the quality of parental behavior at the same level as when all domains are strong. Belsky's claim that among the three domains, parents' personal resources are most effective and child characteristics are least effective in buffering the parenting system was not empirically confirmed, however. It was the number of strong or weak domains, and not the nature of the domains involved, that was found to be related to the quality of parenting. A reason for the lack of empirical support for Belsky's hypothesis that parental characteristics have the greatest potential for buffering the parental system may be found in the way his assertion was underpinned. Belsky (1984, p. 91) argued that "we regard personal psychological resources as the most influential determinant of parenting not simply for its direct effect on parental functioning but also because of the role it undoubtedly plays in recruiting contextual support." The analysis he went on to suggest as a way to test his

hypothesis and which we performed in the present study (identification of subsets of cases with different patterns of strengths and weaknesses in the three domains), however, eliminates the effect of personal resources recruiting contextual support. This person-centered analysis, which allows for the direct comparison of cases strong in parental resources but weak in partner support with cases weak in parental resources but strong in partner support, indicates that parental resources by themselves do not have greater potential for buffering the quality of parental behavior than does partner support. We caution, however, that cell sizes were not very large in comparing different patterns of strengths and weaknesses. Obviously, replication is required before strong conclusions can be drawn.

The fact that parents' personal resources were not found to contribute more to the quality of parenting than did contextual or child characteristics does not imply that the three domains are equally important for child development. The unexpected finding that two of the parental characteristics in the present study were not only indirectly—through parenting—but also directly related to the children's development, suggests that they play a relatively important role in child development. The LISREL analyses suggested adding two paths to the initial model; that is, one between parents' verbal intelligence and their infants' cognitive development and one between parents' ego-resiliency and their infants' attachment security. How can these extra paths be explained?

The additional direct path between parents' IQ and their infants' Bayley MDI that was found in addition to the hypothesized indirect path from parental IQ through parental interactive behavior to the infants' MDI suggests that parents' intelligence contributes both indirectly—via the quality of parenting—and directly to their children's cognitive development. This finding is consistent with results of other studies in which parental IQ and the quality of parent-child interaction (Bornstein & Tamis-LeMonda, 1994) or the quality of the home environment as assessed with the Home Observation of the Measurement of the Environment (Baharudin & Luster, 1998; Bradley et al., 1993; Luster & Dubow, 1992; Yeates, MacPhee, Campbell, & Ramey, 1983) were found to make independent contributions to children's cognitive competence. This study's findings support the assumption of genetic influences on infants' cognitive development (Thompson, 1990), which are, in part, mediated by the quality of parent-infant interaction.

The LISREL analysis also suggested adding a direct path between parental ego-resiliency and infant attachment security to the expected indirect path from

ego-resiliency through parenting to infant attachment security. The suggested path indicates that parental ego-resiliency may foster infant security via both parent-infant interaction and other venues of influence. In theory, there are several ways in which parents' ego-resiliency might positively affect their children's attachment security. As outlined in the Introduction, ego-resilient persons are defined as resourceful problem solvers, who are able to maintain integrated performance while under stress. Therefore, resilient parents should be better able than more brittle parents to create stable living conditions and a harmonious home atmosphere for their children, which may contribute to the children's sense of security beyond what is conveyed in parent-child interaction. There is evidence, for example, that exposure to high levels of overt marital conflict fosters insecurity in children (Belsky, 1999). Another way in which parental ego-resiliency might contribute to the child's attachment security is via the spouse. In the present study, ego-resilient parents reported relatively high levels of partner support in childrearing. It seems likely that supportive partners in childrearing—in this study mostly fathers—have more supportive interactions with their children as well, and thereby foster a sense of security and competence in the children that is reflected in higher AQS scores. This argument, although speculative, underscores the need for future studies of the determinants of infant development to also consider the interactions of the child with the other parent as well as the other parent's personality characteristics.

As expected, the path analyses confirmed parental attachment security to be indirectly related to parents' interactive behavior through their ego-resiliency. The analyses, however, also suggested adding two other indirect pathways between parental attachment and behavior: one via partner support and one via parents' level of education. The path between adult attachment and partner support is in accordance with the results of other studies with adolescents and adults, in which secure individuals reported more support from their partners than insecure individuals (Florian, Mikulincer, & Bucholtz, 1995; Kobak & Sceery, 1988). The second additional path for parents' attachment security indicated by the LISREL analyses suggests that adult attachment may be linked to a higher level of education and thereby enhances the quality of parenting. A link between adult attachment, assessed using the AAI, and educational level was found by Crowell et al. (1996). Although these authors argue that their finding may be sample specific, our findings support the validity of their results. In sum, the present study's final LISREL models suggest that secure parents provide higher quality care

for their children than do insecure parents for several reasons. First, secure attachment is related to the development of ego-resiliency, which allows parents to cope flexibly with the often-stressful developmental task of parenting. Second, secure parents tend to experience more partner support during childrearing. Finally, secure attachment appears to contribute to the achievement of a higher level of education, which constitutes, in turn, an important resource for adequate parenting.

Among the infant temperament characteristics, only the child's social fearfulness was found to explain a significant and unique portion of the variance in parental behavior beyond the parental and contextual characteristics. As is apparent from the correlation, $r = .30, p < .01$, between social fearfulness and the score reflecting the overall quality of parental behavior shown in Table 1, socially fearful infants received significantly higher quality support from their parents than their less fearful age-mates. To obtain a more detailed picture of the behavior of parents toward their socially fearful infants, the correlations between social fearfulness and the scores for the separate aspects of observed parental behavior were inspected (not shown in the table). The correlations indicate that the parents of socially fearful children showed more affection than parents of less fearful children, $r = .30, p < .01$, provided higher quality instructions, $r = .27, p < .01$, and provided more adequate structure and limits, $r = .26, p < .01$, but not in an intrusive manner, as indicated by higher scores for respect of the child's autonomy, $r = .25, p < .01$. Social fearfulness was not related to parental hostility, $r = -.06$. These findings are in contrast to those of Rubin et al. (1999), who found parents of socially fearful children to typically not respect their children's independence. The difference between our results and those of Rubin et al. (1999) may be explained by the use of questionnaires by Rubin et al. to assess parenting styles, whereas we observed parents' behavior during interactions with their children. Our findings agree with those of Park et al. (1997), who also observed parent-child interaction and found parents to behave more sensitively toward more socially fearful children. The present study's results suggest that children's social fearfulness draws out the sensitive side of parents, at least when the children are very young. Belsky et al. (2000) found that parents of inhibited 3-year-olds not only showed acceptance but also discouragement of their children's withdrawn behavior. It is not unlikely that parents' nurturance and acceptance of their fearful infants' behavior gradually makes way for pressure toward independence, at least in Western cultures in which autonomy is highly valued (Belsky et al., 2000). In addition, it is also pos-

sible that the other temperamental characteristics—which in this study were found to be unrelated or only weakly related to parental behavior toward their 15-month-old infants—will have more impact on their parents' behavior as the children grow older.

The present study's analysis of the path model with the AQS score as a measure of child development suggests a three-stage positive pathway from infant social fearfulness to high-quality support provided by parents to a secure attachment of the child, indicating that children's social fearfulness may positively contribute to their attachment security by eliciting high-quality support from the parent. In addition, however, a direct negative path was found between infant social fearfulness and attachment security, indicating that children who were rated by their parents as more socially fearful were described by the home visitor as more insecure. This may be due, in part, to the fact that in judging attachment security with the AQS, children's reactions to the home visitor are also taken into account and contribute to the security score (Vaughn & Bost, 1999). The AQS item "Child is willing to talk to new people, show them toys, or show them what he can do if mother asks him to," for example, is considered typical for a secure infant. Thus, although the nurturance that socially fearful infants evidently elicit from their parents may foster their attachment security, the children's social fearfulness nevertheless remains visible to a home visitor and negatively affects their security scores.

It should be noted that the data collector in the home, who recorded the parent-infant interaction episode on videotape, also applied the AQS following the visit. This could have inflated the correlation between the quality of parental behavior and infant attachment security. To minimize this effect, the home visitor was not involved in the coding of the videotaped interactions. Moreover, she was not acquainted with the rating scales for parental behavior at the time of the data collection. The AQS, however, cannot be applied without getting an impression of the parents' behavior, because the method requires observation of children's secure-base behavior during interactions with the parent. This may explain why infant AQS security has been found to be more strongly associated with parental sensitivity than Strange Situation attachment security, which is not based on extended observations of parent-infant interaction, mean r s of .50 and .26, respectively (van IJzendoorn, Vereijken, & Riksen-Walraven, in press). Regardless, the correlation found in this study between AQS security and the quality of parental behavior, $r = .48$, was not different from the mean correlation found in the aforementioned meta-analysis.

Because most of the potential determinants of parenting measured in the present study (i.e., parental ego-resiliency and attachment security, network and partner support, and infant temperament) were based on parental report, the independence of these measures may be questioned. Various findings, however, provide evidence in favor of the independence and validity of these assessments. First, the parent-reported measures were only weakly interrelated. For example, the infant temperament scores were found to be unrelated to parental ego-resiliency and attachment. Moreover, the two self-report measures of parental ego-resiliency and attachment security proved to be differentially related to the measures of parental and child intelligence and parental interactive behavior, which were independently assessed using tests and observations. The measures of network and partner support were also differentially related to the observed quality of parental behavior. Most convincingly, the multiple regression analysis showed parent-reported characteristics in the parental, child, and contextual domains to independently explain unique portions of variance in the observed quality of parental behavior.

It should be kept in mind that Belsky's model is, in fact, meant to explain differences between parents in the quality of their parenting. In the present study, child development outcome measures were included because the aim was to examine the complete model, including the path between quality of parenting and child development. If, however, the goal is to understand what factors contribute to the emergence of differences between children in attachment security or cognitive development, then it will be necessary to observe the quality of the interactional exchanges of both parents with the child and, given the results of the present study, to assess both parents' ego-resiliency and intelligence as important direct influences on child development.

Longitudinal research is needed to gain more insight into the causal direction of the paths between parental, child, and contextual characteristics, the quality of parent-child interaction, and child development. The direction of the arrows in our path models suggest, for example, that parents' behavior influences their infants' cognitive development and attachment security. Intervention studies have indeed shown that improved quality of parenting—measured with the same rating scales as used in the present study—is associated with higher Bayley MDI scores in infants (Riksen-Walraven, Meij, Hubbard, & Zevalkink, 1996), and that enhancing parents' sensitivity fosters infants' attachment security (van den Boom, 1995). The children's cognitive and social competence certainly also affect their parents' behavior, however, particularly

as the children grow older. Longitudinal research may shed more light on these transactional relations among children and their parents.

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REFERENCES

- Alwin, D. F. (1984). Trends in parental socialization values: Detroit, 1958–1983. *American Journal of Sociology*, *90*, 359–381.
- Andresen, P., & Telleen, S. (1992). The relationship between social support and maternal behavior and attitudes: A meta-analytic review. *American Journal of Community Psychology*, *20*, 753–774.
- Arend, R., Gove, F. L., & Sroufe, L. A. (1979). Continuity of individual adaptation from infancy to kindergarten: A predictive study of ego-resiliency and curiosity in preschoolers. *Child Development*, *50*, 950–959.
- Baharudin, R., & Luster, T. (1998). Factors related to the quality of the home environment and children's achievement. *Journal of Family Issues*, *19*, 375–403.
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, *61*, 226–244.
- Bates, J. E., Olson, S. L., Pettit, G. S., & Bayles, K. (1982). Dimensions of individuality in the mother-infant relationship at six months of age. *Child Development*, *53*, 446–461.
- Bayley, N. (1969). *Bayley Scales of Infant Development*. New York: Psychological Corporation.
- Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, *55*, 83–96.
- Belsky, J. (1990). Parental and nonparental child care and children's socioemotional development: A decade in review. *Journal of Marriage and the Family*, *52*, 885–903.
- Belsky, J. (1999). Interactional and contextual determinants of attachment security. In J. Cassidy and P. Shaver (Eds.), *Handbook of attachment: Theory, research and clinical applications* (pp. 249–264). New York: Guilford Press.
- Belsky, J., Crnic, K., & Woodworth, S. (1995). Personality and parenting: Exploring the mediating role of transient

- mood and daily hassles. *Journal of Personality*, 63, 905–930.
- Belsky, J., Glistrap, B., & Rovine, M. (1984). The Pennsylvania Infant and Family Development Project: Stability and change in mother-infant and father-infant interaction in a family setting at 1-to-3-to-9 months. *Child Development*, 55, 692–704.
- Belsky, J., Rha, J., & Park, S. (2000). Exploring reciprocal parent and child effects in the case of child inhibition in US and Korean samples. *International Journal of Behavioral Development*, 24, 338–347.
- Biringen, Z. (1990). Direct observation of maternal sensitivity and dyadic interactions in the home: Relations to maternal thinking. *Developmental Psychology*, 26, 278–284.
- Block, J. (1978). *The Q-sort method in personality assessment and psychiatric research*. Palo Alto, CA: Consulting Psychology Press. (Original work published 1961, Springfield, IL, C.C. Thomas)
- Block, J. (1991). *Prototypes for the California Adult Q-Set*. Berkeley: University of California.
- Block, J. H., & Block, J. (1980). The role of ego-control and ego-resiliency in the organization of behavior. In W. A. Collins (Ed.), *The Minnesota Symposia on Child Psychology* (Vol. 13, pp. 39–101). Hillsdale, NJ: Erlbaum.
- Block, J., & Kremen, A. M. (1996). IQ and ego-resiliency: Conceptual and empirical connections and separateness. *Journal of Personality and Social Psychology*, 70, 349–361.
- Bornstein, M. H., & Tamis-LeMonda, C. S. (1994). Antecedents of information-processing skills in infants: Habituation, novelty responsiveness, and cross-modal transfer. *Infant Behavior and Development*, 17, 371–380.
- Bradley, R. H., Whiteside, L., Caldwell, B. M., Casey, P. H., Kelleher, K., Pope, S., Swanson, M., Barrett, K., & Cross, D. (1993). Maternal IQ, the home environment, and child IQ in low birthweight, premature children. *International Journal of Behavioral Development*, 16, 61–74.
- Brody, G. H., & Flor, D. (1998). Maternal resources, parenting practices, and child competence in rural, single-parent African American families. *Child Development*, 69, 803–816.
- Cohn, D. A., Cowan, P. A., Cowan, C. P., & Pearson, J. (1992). Mothers' and fathers' working models of childhood attachment relationships, parenting styles, and child behavior. *Development and Psychopathology*, 4, 417–431.
- Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology*, 58, 644–663.
- Cox, M., Owen, M. R., Lewis, J. M., & Henderson, V. K. (1989). Marriage, adult adjustment, and early parenting. *Child Development*, 60, 1015–1024.
- Crandell, L. E., Fitzgerald, H. E., & Whipple, E. E. (1997). Dyadic synchrony in parent-child interactions: A link with maternal representations of attachment relationships. *Infant Mental Health Journal*, 18, 247–264.
- Crnici, K. A., Greenberg, M. T., Ragozin, A. S., Robinson, N. M., & Basham, R. (1983). Effects of stress and social support on mothers and premature and full-term infants. *Child Development*, 54, 209–217.
- Crockenberg, S. (1986). Are temperamental differences in babies associated with predictable differences in caregiving? In V. J. Lerner and R. M. Lerner (Eds.), *New directions for child development: Vol. 31. Temperament and social interaction during infancy and childhood* (pp. 53–73). San Francisco: Jossey-Bass.
- Crowell, J. A., & Feldman, S. S. (1988). Mothers' internal models of relationships and children's behavioral and developmental status: A study of mother-child interaction. *Child Development*, 59, 1273–1285.
- Crowell, J. A., & Treboux, D. (1995). A review of adult attachment measures: Implications for theory and research. *Social Development*, 4, 294–327.
- Crowell, J. A., Waters, E., Treboux, D., O'Connor, E., Colon-Dowes, C., Feider, O., Golby B., & Possada, G. (1996). Discriminant validity of the Adult Attachment Interview. *Child Development*, 67, 2584–2599.
- Davies, G., & Cummings, E. M. (1984). Marital conflict and child adjustment. *Psychological Bulletin*, 116, 387–411.
- Diehl, M., Elnick, A. B., Bourbeau, L. S., & Labouvie-Vief, G. (1998). Adult attachment styles: Their relations to family context and personality. *Journal of Personality and Social Psychology*, 74, 1656–1669.
- Downey, G., & Coyne, J. C. (1990). Children of depressed parents: An integrative review. *Psychological Bulletin*, 108, 50–76.
- Dunn, L. M. (1965). *Peabody Picture Vocabulary Test*. Washington, DC: American Guidance Service.
- Easterbrooks, M. A., & Emde, R. N. (1988). Marital and parent-child relationships: The role of affect in the family system. In R. A. Hinde & J. Stevenson-Hinde (Eds.), *Relationships within families: Mutual influences* (pp. 83–103). New York: Oxford University Press.
- Emery, R. E., & Tuer, M. (1993). Parenting and the marital relationship. In T. Luster & L. Okagaki (Eds.), *Parenting: An ecological perspective* (pp. 121–148). Hillsdale, NJ: Erlbaum.
- Engfer, A. (1988). The interrelatedness of marriage and the mother-child relationship. In R. A. Hinde & J. Stevenson-Hinde (Eds.), *Relationships within families: Mutual influences* (pp. 104–118). New York: Oxford University Press.
- Erel, O., & Burman, B. (1995). Interrelatedness of marital relations and parent-child relations: A meta-analytic review. *Psychological Bulletin*, 118, 108–132.
- Erickson, M. F., Sroufe, L. A., & Egeland, B. (1985). The relationship between quality of attachment and behavior problems in preschool in a high-risk sample. In I. Bretherton & E. Waters (Eds.), *Growing points of attachment theory and research. Monographs of the Society for Research in Child Development*, 50(1–2, Serial No. 209).
- Feeney, J. A., & Noller, P. (1990). Attachment style as a predictor of adult romantic relationships. *Journal of Personality and Social Psychology*, 58, 281–291.
- Feldman, S. S., Nash, S. C., & Aschenbrenner, B. (1983). Antecedents of fathering. *Child Development*, 54, 1628–1636.
- Florian, V., Mikulincer, M., & Bucholtz, I. (1995). Effects of adult attachment style on the perception and search for social support. *The Journal of Psychology*, 129, 665–676.
- Friedrich, W. N. (1979). Predictors of the coping behavior of mothers of handicapped children. *Journal of Consulting and Clinical Psychology*, 47, 1140–1141.

- Goldberg, W. A., & Easterbrooks, M. A. (1984). The role of marital quality in the toddler development. *Developmental Psychology, 20*, 504–514.
- Goldsmith, H. H. (1994). *The toddler behavior assessment questionnaire: Preliminary manual*. Unpublished manuscript, University of Oregon at Eugene.
- Green, J. A. (1992). Testing whether correlation matrices are different from each other. *Developmental Psychology, 28*, 215–224.
- Jöreskog, K. G., & Sörbom, D. (1989). *LISREL: Analysis of linear structural relationships by maximum likelihood, instrumental variables, and least squares methods* (Version 8.20). Mooresville, IN: Scientific Software.
- Kelly, M. L., Sanchez-Hucles, J., & Walker, R. (1993). Correlates of disciplinary practices in working- to middle-class African-American mothers. *Merrill-Palmer Quarterly, 39*, 252–264.
- Klohnen, E. C. (1996). Conceptual analysis and measurement of the construct of ego-resiliency. *Journal of Personality and Social Psychology, 70*, 1067–1079.
- Kobak, R. R., & Sceery, A. (1988). Attachment in late adolescence: Working models, affect regulation, and representations of self and others. *Child Development, 59*, 135–146.
- Koot, H. (1997). *Vragenlijst voor Gezinsproblemen* [Family Problems Questionnaire]. Rotterdam, The Netherlands: Erasmus University.
- Lee, C. L., & Bates, J. E. (1985). Mother-child interaction at age two years and perceived difficult temperament. *Child Development, 56*, 1314–1325.
- Luster, T. (1998). Individual differences in the caregiving behavior of teenage mothers: An ecological perspective. *Clinical Child Psychology and Psychiatry, 3*, 341–360.
- Luster, T., & Dubow, E. (1992). Home environment and maternal intelligence as predictors of verbal intelligence: A comparison of preschool and school-age children. *Merrill-Palmer Quarterly, 38*, 151–175.
- Maccoby, E. E., Snow, M. E., & 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.
- Man, K., & Hamid, P. N. (1998). The relationship between attachment prototypes, self-esteem, loneliness and causal attributions in Chinese trainee teachers. *Personality and Individual Differences, 24*, 357–371.
- Meij, H. T., Riksen-Walraven, J. M. A., & van Lieshout, C. F. M. (2000). Patterns of change and stability of parental support in relation to children's competence motivation. *Early Child Development and Care, 160*, 1–15.
- Meyer, H. J. (1988). Marital and mother-child relationships: Developmental history, parent personality, and child difficulties. In R. A. Hinde & J. Stevenson-Hinde (Eds.), *Relationships within families: Mutual influences* (pp. 181–192). New York: Oxford University Press.
- Meyers, S. A. (1999). Mothering in context: Ecological determinants of parent behavior. *Merrill-Palmer Quarterly, 45*, 332–357.
- Mondell, S., & Tyler, F. B. (1981). Parental competence and styles of problem solving/play behavior with children. *Developmental Psychology, 17*, 73–78.
- NICHD Early Child Care Research Network (1999). Child care and mother-child interaction in the first three years of life. *Developmental Psychology, 35*, 1399–1413.
- Oates, R. K., & Forrest, D. (1985). Self-esteem and early background of abusive mothers. *Child Abuse and Neglect, 9*, 89–93.
- Park, S., Belsky, J., Putnam, S., & Crnic, K. (1997). Infant emotionality, parenting, and 3-year inhibition: Exploring stability and lawful discontinuity in a male sample. *Developmental Psychology, 33*, 218–227.
- Pederson, D. R., Gleason, K. E., Moran, G., & Bento, S. (1998). Maternal attachment representations, maternal sensitivity, and the infant-mother attachment relationship. *Developmental Psychology, 34*, 925–933.
- Peters-Martin, P., & Wachs, T. D. (1984). A longitudinal study of temperament and its correlates in the first 12 months. *Infant Behavior and Development, 7*, 285–298.
- Riksen-Walraven, J. M. A., Meij, J. Th., Hubbard, F. O., & Zevalkink, J. (1996). Intervention in lower-class Surinam-Dutch families: Effects on mothers and infants. *International Journal of Behavioral Development, 19*, 739–756.
- Riksen-Walraven, J. M. A., & Zevalkink, J. (2000). Gifted infants: What kinds of support do they need? In C. F. M. van Lieshout & P. G. Heymans (Eds.), *Developing talent across the life span* (pp. 203–230). Hove, U.K.: Psychology Press.
- Rubin, K. H., Hastings, P., Henderson, H., & Chen, X. (1997). The consistency and concomitants of inhibition. *Child Development, 68*, 467–483.
- Rubin, K. H., Nelson, L. J., Hastings, P., & Asendorpf, J. (1999). The transaction between parents' perceptions of their children's shyness and their parenting styles. *International Journal of Behavioral Development, 23*, 937–957.
- Rubin, K. H., Stewart, S. L., & Chen, X. (1995). Parents of aggressive and withdrawn children. In M. Bornstein (Ed.), *Handbook of parenting: Vol. 1. Children and parenting* (pp. 255–284). Mahwah, NJ: Erlbaum.
- Sarason, I. G., Levine, H. M., Basham, R. B., & Sarason, B. R. (1983). Assessing social support: The Social Support Questionnaire. *Journal of Personality and Social Psychology, 44*, 127–139.
- Sarason, I. G., Sarason, B. R., Shearin, E. N., & Pierce, G. R. (1987). A brief measure of social support: Practical and theoretical implications. *Journal of Social and Personal Relationships, 4*, 497–510.
- Simons, R. L., & Johnson, C. (1996). The impact of marital and social network support on quality of parenting. In G. R. Pierce, B. R. Sarason, & I. C. Sarason (Eds.), *Handbook of social support and the family* (pp. 269–288). New York: Plenum.
- Simons, R. L., Lorenz, F. O., Wu, C., & Conger, R. D. (1993). Social network and marital support as mediators and moderators of the impact of stress and depression on parental behavior. *Developmental Psychology, 29*, 368–381.
- Simons, R. L., Whitbeck, L. B., Conger, R. D., & Melby, J. N. (1990). Husband and wife differences in determinants of parenting: A social learning/exchange model of parental behavior. *Journal of Marriage and the Family, 52*, 375–392.
- Simons, R. L., Whitbeck, L. B., Conger, R. D., & Wu, C.

- (1991). Intergenerational transmission of harsh parenting. *Developmental Psychology, 27*, 159–171.
- Stevens, J. H. (1988). Social support, locus of control, and parenting in three low-income groups of mothers: Black teenagers, Black adults and White adults. *Child Development, 59*, 635–642.
- Thompson, L. A. (1990). Genetic contributions to early individual differences. In J. Colombo & J. Fagen (Eds.), *Individual differences in infancy: Reliability, stability, and prediction* (pp. 45–76). Hillsdale, NJ: Erlbaum.
- van Aken, M. A. G. (1992). The development of general competence and domain-specific competencies. *European Journal of Personality, 6*, 267–282.
- van den Boom, D. C. (1995). Do first-year intervention effects endure? Follow-up during toddlerhood of a sample of Dutch irritable infants. *Child Development, 66*, 1798–1816.
- van den Boom, D. C., & Hoeksma, J. B. (1994). The effect of infant irritability on mother-infant interaction: A growth-curve analysis. *Developmental Psychology, 31*, 581–590.
- van IJzendoorn, M. H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin, 117*, 387–403.
- van IJzendoorn, M. H., Vereijken, C. M. J. L., & Riksen-Walraven, J. M. A. (in press). Is the Attachment Q-Sort a valid measure of attachment security in young children? In B. E. Vaughn & E. Waters (Eds.), *Patterns of secure base behavior: Q-sort perspectives on attachment and caregiving*. Mahwah, NJ: Erlbaum.
- van der Meulen, B. F., & Smrkovsky, M. (1983). *BOS 2-30 Bayley Ontwikkelingsschalen* [Bayley Scales of Infant Development]. Lisse, The Netherlands: Swets & Zeitlinger.
- Vaughn, B. E., & Bost, K. K. (1999). Attachment and temperament: Redundant, independent, or interacting influences on interpersonal adaptation and personality development? In J. Cassidy & P. Shaver (Eds.), *Handbook of attachment: Theory, research and clinical applications* (pp. 199–225). New York: Guilford.
- Vereijken, C. M. J. L., Riksen-Walraven, J. M. A., & Kondou-Ikemura, K. (1997). Maternal sensitivity and infant attachment security in Japan: A longitudinal study. *International Journal of Behavioral Development, 21*, 35–49.
- Waters, E. (1995). The Attachment Q-Set, Version 3.0. [Appendix A]. *Monographs of the Society for Research in Child Development, 60*(2–3, Serial No. 244).
- Watson, J. E., Kirby, R. S., Kelleher, K. J., & Bradley, R. H. (1996). Effects of poverty on home environment: An analysis of three-year outcome data for low birth weight premature infants. *Journal of Pediatric Psychology, 21*, 419–431.
- Whiteside-Mansell, L., Pope, S. K., & Bradley, R. H. (1996). Patterns of parenting behavior in young mothers. *Family Relations: Journal of Applied Family and Child Studies, 45*, 273–281.
- Woodworth, S., Belsky, J., & Crnic, K. (1996). The determinants of fathering during the child's second and third years of life: A developmental analysis. *Journal of Marriage and the Family, 58*, 679–692.
- Yeates, K. O., MacPhee, D., Campbell, F. A., & Ramey, C. T. (1983). Maternal IQ and home environment as determinants of early childhood intellectual competence: A developmental analysis. *Developmental Psychology, 19*, 731–739.
- Zevalkink, J., & Riksen-Walraven, J. M. A. (2001). Parenting in Indonesia: Inter- and intra-cultural differences in mothers' interaction with their young children. *International Journal of Behavioral Development, 25*, 167–175.
- Zevalkink, J., Riksen-Walraven, J. M. A., & van Lieshout, C. F. M. (1999). Attachment in the Indonesian caregiving context. *Social Development, 8*, 21–40.