

Direct Social Support for Young High Risk Children: Relations with Behavioral and Emotional Outcomes across Time

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Abstract This study is unique in addressing developmental correlates of direct social support for young children in a high risk sample, in contrast to previous studies addressing social support for caregivers. Participants were drawn from a prospective, longitudinal study of at-risk children. Social support was rated from maternal interviews throughout early childhood. Support from the mother was assessed from mother-child observations. Outcomes included internalizing and externalizing behavior problems measured from first through tenth grades. The most common support providers were biological fathers, followed by grandparents and other providers. Using multilevel modeling, higher quantity, higher quality, and lower disruption of support predicted lower starting levels of behavior problems, controlling for support from the mother. Disruption was associated with change in slope. Gender differences were found for externalizing behavior intercepts. Social support provides a promotive factor for young high risk children. Implications include involving children's social support providers in prevention and intervention programs.

Keywords Social support · Early childhood · Internalizing behavior problems · Externalizing behavior problems · Multilevel modeling

In the field of developmental psychopathology, disorder often is viewed in terms of assets and liabilities, risk and pro-

tective factors, cumulated over time (Rutter & Sroufe, 2000; Sameroff, 2000). Assets have included, for example, stable family environment, nurturing parents, social support for the family, and developed competence of the child. This paper describes a hitherto under studied, but clearly potential asset; namely, direct social support for the preschool-aged child. Such surrounding support may supplement or offset care from primary caregivers and may promote positive functioning and resilience in several ways. Alternative supportive figures may represent buffers when parents are maltreating, may permit development of alternative, positive representational models of relationships, and may directly promote development of necessary coping skills (e.g., Cicchetti, Toth, & Maughan, 2000).

Studies of such support are becoming increasingly relevant. Historical changes, such as increasing rates of multi-generational families due to divorce, single parenting, and poverty, rising maternal employment, and growing numbers of young children in foster care (Clarke-Stewart, Allhusen, & Clements, 1995; Clyman, Harden, & Little, 2002), have increased the extent to which individuals outside the maternal-child dyad are involved in family life. The role of extended kin may be even more significant for children from minority and lower socioeconomic groups (Chase-Lansdale, Gordon, Coley, Wakschlag, & Brooks-Gunn, 1999).

Defining social support in early childhood

To date, little is known about the provision and influence of direct social support to preschool children, although calls for such efforts have existed for decades (Cauce, Reid, Landesman, & Gonzalez, 1990; Lewis & Feiring, 1978). Studies have demonstrated that social support provided to the mother

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indirectly affects young children's outcomes (through its effects on parenting) (Cochran & Niego, 1995). From an ecological and developmental perspective, direct social support from individuals with whom the young child has a significant dyadic relationship are expected to exert the most direct developmental influence (Cicchetti et al., 2000). Although studies in middle childhood have demonstrated the role of social support on adjustment in high risk and maltreated children (Bolger, Patterson, & Kupersmidt, 1998; Taussig, 2002), our understanding of direct social support in early childhood is limited.

Defining and measuring social support in early childhood is a complex task, since social support varies with children's developmental needs and expanding social systems (Cauce et al., 1990; Furman, 1989). Moreover, measures of social support should incorporate relationship functions outside of primary caregiving roles, such as companionship. Additionally, the child's developing skills (i.e., autonomy seeking, reciprocity, sharing, empathy) result in an increasingly active role in relationships beyond the maternal-child dyad. Developmental capacities may limit the ability to capture some traditional measures of social support (i.e., perceived support), so measures may rely on parental report and may emphasize sources of support, functions and role of support, and network support.

Sources of support

Existing descriptions of preschool social networks indicate that young children's primary sources of support are mothers and fathers, followed by relatives, adult friends and neighbors, and teachers (Cauce et al., 1990; Feiring & Lewis, 1989). In the current study, we view primary caregiving as a separate role from social support and our purpose is to identify support from beyond the primary caregiving (i.e., usually the mother-child) relationship. Social support relationships thus were defined as significant (but non-primary caregiving) dyadic relationships provided by adults outside the maternal-child dyad, including significant male figures, extended family members, informal relationships (e.g., neighbors, mother's friends), and formal relationships (e.g., teachers, counselors).

Function and role of support

The developmental influence of social support varies with what providers contribute to the child's life. Key functions of social relationships in early childhood include tenderness and companionship (Furman, 1989), as well as continuity or consistency, emotional investment, and providing emotional and physical care (Howes, 1999). In studies with older children, these criteria, operationalized as the following features,

have been found to relate to children's socioemotional adjustment: co-residence (Brooks-Gunn, Guo, & Furstenberg, 1993; Pittman, *in press*); frequency of contact (Bryant, 1985; Cauce et al., 1990); stability and disruption (Brooks-Gunn et al., 1993; Howes, 1988); and relationship quality (Carson & Parke, 1996; Lussier, Deater-Deckard, Dunn, & Davies, 2002).

Network of support

Another important measure of social support in early childhood is the child's social network (Feiring & Lewis, 1989). Although simple measures of social network size and density typically are not related strongly to more positive perceptions of support or to more positive adjustment (Sarason, Sarason, & Pierce, 1990), measures which take into account the quality of social networks may be more fruitful (Wolchik, Beals, & Sandler, 1989). In this study, we incorporate a network measure which includes both the number of support individuals and the quality or cohesiveness of this network in supporting the child's development.

Developmental influence of social support on behavior trajectories

Examinations of the trajectories of internalizing and externalizing behavior and factors that influence them contribute to our understanding of normative and psychopathological development. Patterns of internalizing behavior tend to be relatively stable in childhood and increasing over the course of adolescence (Bongers, Koot, van der Ende, & Verhulst, 2003). Externalizing behavior shows more complex patterns, with physical aggression being relatively stable or decreasing from childhood into adolescence and delinquency increasing during adolescence (Bongers et al., 2003; Brody, Nagin, & Tremblay, 2003). Gender influences the levels and trajectories, with males demonstrating consistently higher levels of externalizing behavior (Bongers et al., 2003) and females demonstrating increasing internalizing problems over time (Leve, Kim, & Pears, 2005). Parent-child relationship problems and maternal depression are associated with both higher levels of externalizing behavior (Appleyard, 2003; Munson, McMahon, & Spieker, 2001) and increases over time (McFayden-Ketchum, Bates, Dodge, & Pettit, 1996; Leve et al., 2005). Our study extends previous findings by examining the influence of other supportive relationships on levels and trajectories of behavior problems, above and beyond the maternal-child relationship. We hypothesize that social support will be related to lower levels and decreasing problems over time.

Theoretical links between early childhood risk, social support, and developmental outcomes

This study is guided by the organizational perspective and by attachment theory. The organizational perspective holds that development occurs in a hierarchical manner, such that developmental status at any age is built upon previous experience and competence (Sroufe & Rutter, 1984). Early childhood experiences, such as positive or negative relationship experiences, are carried forward in development. However, dynamic transactions between the child and compensatory influences in the environment allow for change and “righting” of the developmental course (Cicchetti et al., 2000). For high risk children, social support beyond the primary attachment relationship may provide a corrective relationship experience or buffer to the effects of risk (Cicchetti et al., 2000; Youngstrom, Weist, & Albus, 2003).

Rationale and summary of the current study

To date, longitudinal investigations addressing the role of direct social support in early childhood for high risk children are lacking. Both theory and empirical evidence regarding the influence of middle childhood social support suggest that such figures may play an important role in the behavioral and emotional outcomes of high risk preschoolers. The goals of the current study were: (1) to provide descriptive data on direct social support for young high risk children and (2) to examine the influence of social support on the levels and trajectories of behavioral and emotional outcomes over time, controlling for early childhood support from the mother.

Method

Participants

Participants were drawn from an on-going prospective longitudinal study investigating developmental outcomes of at-risk urban children (Egeland & Brunnequell, 1979). The sample comprised first-time mothers ($M = 20$ years old, range = 12–34 years) and their infants recruited from a public health clinic during pregnancy. The sample consists of 184 participants (101 male, 83 female) for whom early childhood data and at least one outcome variable were available. Mothers included 83.2% Caucasian, 11.4% African American, and 5.3% Native American, Hispanic, or Asian. Approximately 17% of the children were of mixed racial heritage. The families were identified as at risk for parenting problems due to low income (100%), single parenthood (62%), and low maternal education (35.9% with less than a high school education). Extensive data were collected at

frequent, regular intervals with multiple informants and data collection methods, including psychological tests, parent, teacher, and child interviews and questionnaires, and direct observations of child behavior and parent-child interactions.

Attrition analyses tested whether participants with data available for the outcome analyses were different on important characteristics from participants in the original sample ($N = 267$), including mother’s age at delivery, marital status, educational level at birth, race, and child gender. Significant differences were found for mother’s educational level at birth (i.e., non-participants’ mothers had lower education, 11.30 versus 11.87 years, $t = 2.26, p < .05$), but not for mother’s age, marital status, race, or child gender. Though attrition may have affected the sample regarding education, the overall risk for behavior problems remained considerable.

Independent variables

Early childhood social support variables

Qualitative ratings of social support relationships were measured by extracting data from interviews with the mother throughout early childhood (at 12, 18, 30, 42, 54, and 64 months). Participants were included if data were available from at least three of six possible interviews (yielding $N = 193$). Ratings were made for three developmental periods in early childhood using two interviews for each period (i.e., 12 and 18 months, 30 and 42 months, 54 and 64 months). Coders reviewed the ratings across early childhood and summarized support up to 64 months. The overall early childhood ratings were used for this study. Though a child may have had different support providers at each rating point, the overall ratings combine support across providers. Thus, analysis by type of provider was not pursued in this study.

Since the focus was on supportive relationships outside the primary caregiving relationship, individuals who became the permanent primary caregiver for the child (e.g., a foster parent who adopted the child) ceased to be coded as support providers. To ensure the measure captured qualities of relationships beyond caregiving, we incorporated elements of companionship, engagement above and beyond babysitting/caregiving, mutual positive regard, and the child’s response to the individual. Pertinent information gleaned from maternal interviews included responses to questions about the support person’s residency in the home, frequency and type of involvement with the child, emotional support of the child, and the child’s response to this individual. Relevant data were rated by coders who were blind to outcomes. For approximately 30% of the cases ($n = 63$), information was coded independently by at least two coders to determine inter-rater reliability. Intraclass correlations (reported below) were calculated to compare independent coding of the support scales.

Co-residence This 4-point scale measured the amount of time the child lived with this person, including: no relationship available to the child (1); not living with the person (2); living with the person less than 100% of the time period (3); and living with the support person 100% of the time period (4). The average intra-class correlation for inter-rater reliability was .96.

Frequency of support This 4-point scale measured how frequently the child had contact with this support person, ranging from: no relationship (1); to relatively infrequent (i.e., less than weekly) (2); to somewhat frequent (i.e., on a weekly basis) (3); to very frequent (i.e., daily) (4). The average intra-class correlation for this scale was .87.

Stability of support This 4-point scale described how stable and predictable this relationship was for the child, ranging from: no relationship (1); to unstable, often unavailable, or unable to be counted on (2); to stable and generally available (3); to very stable and available most of the time, with a reliable pattern of support (4). Average intra-class correlation was .91.

Network of support This 5-point scale measured the extensiveness of the social network, including the number of persons available to the child and the cohesiveness of the network supporting the child's development. On the low end (1), the child had no support persons or only one supportive individual and the family appeared isolated and disconnected. On the high end (5), the child was well-connected to more than one person and to a community of support (i.e., family, community activities, agencies). The average intra-class correlation was .85.

Overall quality of support This scale provided an overall summary of the quality of the relationship. It took into account the frequency and stability of interactions but primarily summarized the qualitative indicators of the relationship, such as tone of the interactions (i.e., negative, endangering vs. warm, with mutual positive regard), type of contact (i.e., provider offers babysitting to meet the mother's needs vs. seeks out special opportunities to be with the child), level of involvement (i.e., detached from the child vs. takes an active interest in the child), and the child's response to the person (i.e., fearful of or angry with the person vs. enjoys provider's company, looks forward to seeing provider). A low score indicates no consistent relationship or a poor quality, unsafe relationship. A high score reflects a consistent, positive relationship with a person who shows active involvement in the child's best interests and who has mutual positive interactions with the child. To reflect the expanding developmental capacities and independence in establishing relationships outside the mother-child dyad, a 3-point scale

was used at the 12–18 month interviews, whereas a 7-point scale was used for the 30–64 month interviews. The average intra-class correlation was .94.

Disruption of support This 5-point rating scale assessed the number of important changes or losses in supportive relationships over the early childhood period. On the low end (1), support figures were consistent across childhood with no changes or disruptions. On the high end (5), support for the child was characterized as highly disruptive, such that the child had a different primary support provider at each interview or had two or more major losses of primary support providers over the course of early childhood. The average intra-class correlation was .93.

Early childhood emotional support from the mother composite

A composite measure of emotional support provided to the child from the mother was derived from mother-child observational assessments at ages 12, 18, 24, 30, and 42 months.

Attachment The Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978) consists of a series of brief infant-parent separations and reunions and infant encounters with an unfamiliar adult in an unfamiliar setting. This procedure is designed to assess individual differences in the quality of attachment relationship (i.e., secure or insecure) and has been validated extensively. Videotapes at 12 and 18 months were coded by two coders. Rater agreement was 89% at 12 months and 93% at 18 months. Disagreements were resolved by conferencing. A composite score (0–2) was used indicating the number of times the dyad was rated secure.

Supportive presence Mother-child relationship quality was assessed in a laboratory problem solving procedure at 24 months (Matas, Arend, & Sroufe, 1978) and in a set of teaching tasks at 42 months (Erickson, Sroufe, & Egeland, 1985). The child was challenged to solve a series of increasingly difficult problems with the mother available to help. Videotaped sessions were coded by research assistants. A mother scoring high on the 7-point scale provided appropriate expressions of emotional support, high regard for the child, and a calm, reassuring teaching style, particularly when the child had difficulties. Ratings were completed by two coders and discrepancies were resolved by conferencing. Intra-class inter-rater reliability for 24- and 42-month supportive presence were .72 and .87, respectively. During these tasks, hostile maternal behavior also was measured on a 7-point scale (intra-class inter-rater reliability was .75 and .80). Since a high level of supportive presence is likely to be substantially eroded by a high level of hostility (Duggal, Carlson, Sroufe, & Egeland, 2001), scores on the

hostility scale were subtracted from the supportive presence rating. This approach was consistent with our nonmaternal social support overall quality of support variable, in which participants received a lower score if there was evidence that the support person was hostile or endangering to the child.

Emotional and verbal responsiveness At 30 months, the Caldwell HOME Inventory (Caldwell, Heider, & Kaplan, 1966) was administered in the family home to assess social, emotional, and cognitive support available to the child. The Emotional and Verbal Responsivity subscale consists of 11 yes-no items which rated the quantity, quality, and overall supportiveness of the mother's interactions with the child. The sum of "yes" scores provides the subscale score.

Emotional support from the mother composite A composite variable of the overall level of emotional support provided to the child by the mother was created. Scores on the variables (i.e., secure attachment, supportive presence (minus hostility), and emotional and verbal responsiveness) were transformed into *z*-scores. Next, the mean of these *z*-scores was calculated.

Dependent variables

Child and adolescent emotional and behavioral problems

Children's emotional and behavioral problems were measured by teacher report at first grade (approximately age 6–7), second grade (age 7–8), third grade (age 8–9), sixth grade (age 11–12), and tenth grade (age 15–16) using the Teacher Report Form (TRF) of the Child Behavior Checklist (Achenbach & Edelbrock, 1986). Reliability and validity data are well established. Raw scores, rather than T scores, were used in the multilevel models. Raw scores reflect a measure of true change in behavior over time, whereas T scores provide a comparison of an individual's relative position to the standardized sample over time (Stoolmiller & Bank, 1995).

Analysis plan and handling missing data

First, descriptive analyses for each variable measured were used to describe the providers and characteristics (i.e., co-residence, frequency, stability, network, quality) of early childhood social support. Next, multilevel modeling (MLM; hierarchical linear modeling/HLM; Bryk & Raudenbush, 1992) was used to determine initial levels (i.e., intercepts) of and patterns of change in behavior problems over time. An advantage of MLM is its ability to model individual variability in intercepts and slopes and to explore covariates to explain variations in individual intercepts and change over time. Another advantage is its flexibility in handling

cases with missing observations and multiple observations within participants, such that participants with at least one observation can be included by estimating each individual's trend on the basis of information available for that subject (Raudenbush, 2002). Through empirical Bayes' estimation, individuals with complete data are given more weight than individuals with missing data.

Linear (i.e., 0, 1, 2, 5, 9) and quadratic (i.e., orthogonal polynomials associated with the linear coding; $-0.67, -0.31, 0.04, 0.44, 0.50$) time coding were used to model the growth over time. Variables were grand-mean centered for use in interaction terms. Figure 1 illustrates the predicted path model. Sample equations used for the analyses are provided in the appendix.

In the current study, 38 of the 193 participants (19.7%) had missing observations on at least one dependent variable. Twenty-nine of these participants (15%) were missing one or two of the five outcome observations. Using MLM, outcomes for these participants were estimated using maximum likelihood estimation from the available observations. Nine participants (4.7%) had no outcome data available and were excluded from the analyses, resulting in a final $N = 184$.

Results

Question 1. Descriptive analyses of direct social support in early childhood

The frequencies of social support providers (e.g., father figure, grandparent, other relatives) at each rating period are presented in Table 1. For the majority of children, biological fathers were the primary providers of social support, followed by grandparents, and then other support providers. There was no support provider outside the mother for 2.6% of the sample.

Means, standard deviations, and inter-correlations for the social support variables are provided in Table 2. To put these means into perspective, the average child in the sample lived with the support person at some point during early childhood, saw them relatively frequently (i.e., weekly to daily basis), and had a generally stable and reliable pattern of support. On average, the children had fair or average quality of support, meaning that support was generally available, but there was no clear indicator of positive or good interactions with this person. However, 14% experienced support which may have been endangering or harmful to child. Regarding network of support, the average child had some connection to friends and family, but little community support. 27% of the sample had only one or two individuals in their network. In terms of disruption, the average child experienced a major change in or loss of at least one moderately important support relationship or several minor changes during early childhood.

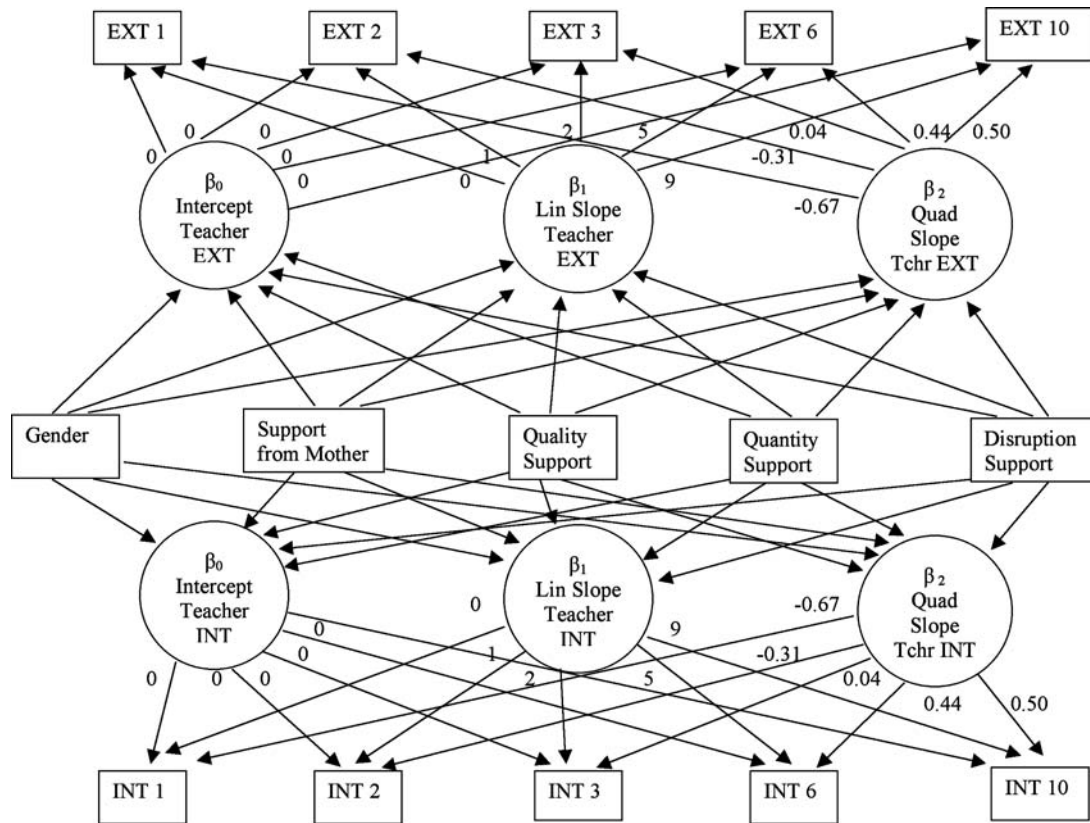


Fig. 1 Path model of latent growth curves: Influence of social support, support from mother, and gender on internalizing and externalizing behavior problem trajectories

Table 1 Count and percentage of early childhood social support providers ($N = 193$)

Provider	12 & 18 month interviews N (%)	30 & 42 month interviews N (%)	54 & 64 month interviews N (%)	Mean over early childhood period N (%)
Biological father	103 (53.4)	89 (46.1)	81 (42.0)	91 (47.2)
Other father figure (boyfriend, step-father)	16 (8.3)	26 (13.5)	45 (23.3)	29 (15.0)
Grandparent	43 (22.3)	39 (20.2)	35 (18.1)	39 (20.2)
Other relative	13 (6.7)	20 (10.4)	9 (4.7)	14 (7.2)
Informal relationship (friend, neighbor)	8 (4.1)	9 (4.7)	4 (2.1)	7 (3.6)
Formal relationship (teacher, counselor)	4 (2.1)	3 (1.6)	4 (2.1)	4 (2.1)
N/A (no one available)	5 (2.6)	7 (3.6)	4 (2.1)	5 (2.6)
Missing	1 (.05)	0 (0)	11 (5.7)	4 (2.1)

Note. Numbers represent the number (and percentage) of participants with each support provider type out of the total sample of 193 participants.

Table 2 Means, standard deviations, and inter-correlations between early childhood social support variables ($N = 193$)

Variable	1	2	3	4	5	6
1. Co-residence	–					
2. Frequency of support	.63**	–				
3. Stability of support	.49**	.71**	–			
4. Overall quality of support	.33**	.50**	.63**	–		
5. Network of support	.25**	.32**	.45*	.47**	–	
6. Disruption of support	–.29**	–.26**	–.33*	–.25**	–.13	–
Mean	3.15	3.61	3.45	4.36	2.88	2.64
Standard Deviation	.69	.60	.68	1.09	.73	1.04

Note. * $p \leq .05$. ** $p \leq .01$.

Table 3 Additional independent and dependent variable descriptive statistics

Variable description	N	Mean (SD)	Min	Max	Skewness
Early childhood support from the mother composite	193	.01 (.68)	− 1.94	1.32	− .32
Teacher-reported internalizing behavior (Gr. 1)	181	52.29 (10.47)	36.00	79.00	.28
Teacher-reported externalizing behavior (Gr. 1)	181	55.45 (9.91)	39.00	86.00	.54
Teacher-reported internalizing behavior (Gr. 2)	180	53.94 (11.25)	36.00	84.00	.22
Teacher-reported externalizing behavior (Gr. 2)	180	55.39 (10.17)	39.00	92.00	.43
Teacher-reported internalizing behavior (Gr. 3)	179	54.56 (10.49)	36.00	83.00	.12
Teacher-reported externalizing behavior (Gr. 3)	179	55.84 (10.59)	39.00	82.00	.30
Teacher-reported internalizing behavior (Gr. 6)	178	55.24 (8.85)	38.00	84.00	.21
Teacher-reported externalizing behavior (Gr. 6)	178	55.20 (9.44)	40.00	83.00	.04
Teacher-reported internalizing behavior (Gr. 10)	168	53.95 (8.31)	38.00	76.33	− .22
Teacher-reported externalizing behavior (Gr. 10)	168	55.73 (8.91)	40.00	80.00	− .05

All measures of social support in early childhood were significantly inter-correlated (r 's ranged from $-.25$ to $.71$), with the exception of overall network of support and overall disruption of support ($r = -.13, ns$) (Table 2). Means, standard deviations, range, and skewness for the additional independent (i.e., support from mother) and dependent variables (i.e., internalizing and externalizing behavior) are provided in Table 3.

Due to the large number of predictors (i.e., six support variables) and correlations between these variables, an exploratory factor analysis was conducted in order to reduce the variable set and to develop composite variables in a meaningful way. Maximum likelihood estimation was used because of its robustness and wide use for factor analytic models. Promax rotation was specified so that the derived factors could be intercorrelated. From this factor analysis, two factors emerged based on the best fit indices ($\Delta X^2(5) = 35.18, p\Delta < .001$) when compared with a one-factor solution (see Table 4). One factor, labeled quantity of social support, included positive loadings ($> .50$) for mean co-residence and frequency of support. The second factor, labeled quality of social support, comprised of positive loadings ($> .50$) for stability, quality, and network of support. For the multivariate analyses, two composite variables were created by taking the mean of the z -scores of the variables comprising each factor ($\alpha = .77$ for quantity of support; $\alpha = .76$ for quality of support; factor correlation $r = .59$). The sixth variable, disruption of support, did not load on either factor but was

Table 4 Promax-rotated factor loadings of early childhood social support variables

Item	Factor 1	Factor 2	Unique variance
Co-residence	.69	.00	.52
Frequency of support	.84	.11	.17
Stability of support	.40	.56	.26
Overall quality of support	.04	.77	.38
Network of support	− .05	.62	.66
Disruption of support	− .19	− .20	.88

used in further analyses because it was considered to be an important theoretical concept for investigation.

Following this factor analysis, inter-correlations between the new social support variables and their correlations with support from the mother were examined. Quantity and quality of support were significantly positively correlated ($r = .58, p \leq .01$). Disruption was significantly negatively associated with quantity and quality of support ($r = -.30$ and $r = -.30, p \leq .01$, respectively). Quantity of support was not significantly correlated with support from the mother, but quality of support was significantly positively correlated ($r = .18, p \leq .05$) and disruption of support was significantly negatively correlated ($r = -.22, p \leq .01$) with support from the mother.

Correlations between independent and dependent variables (Table 5) revealed significant associations between the social support variables and support from the mother with all first grade behavior problems. All of the variables except disruption were significantly associated with third and tenth grade outcomes. Significant negative correlations were found between quality of support and second grade internalizing problems, quantity of support and sixth grade externalizing problems, and support from the mother and sixth grade internalizing behavior.

Question 2. Relations between early childhood social support and later behavior problems

Further analyses of the relations between social support and behavior problems across time were examined with multi-level modeling.

Unconditional analyses: Change in internalizing behavior problems over time

We examined whether internalizing behavior problems changed over time from first grade to tenth grade by comparing the random effects of a model with linear and quadratic change parameters with a baseline model with only the

Table 5 Two-tailed correlations between independent and dependent variables (Achenbach TRF raw scores)

Variable	INTG1	EXTG1	INTG2	EXTG2	INTG3	EXTG3	INTG6	EXTG6	INT10	EXT10
Quantity of support	-.31**	-.30**	-.06	-.11	-.17*	-.17*	-.07	-.20**	-.09	-.16*
Quality of support	-.27**	-.24**	-.20**	-.03	-.16*	-.09	-.07	-.08	-.14 ⁺	-.16*
Disruption of support	.26**	.27**	.06	.13 ⁺	.10	.14	.12	.12	.03	.05
Support from mother	-.16*	-.21**	-.10	-.13 ⁺	-.20**	-.18*	-.15*	-.10	-.19*	-.18*

Note. INTG1 = teacher-reported internalizing behavior raw score (grade 1); EXTG1 = teacher-reported externalizing behavior raw score (grade 1); INTG2 = teacher-reported internalizing behavior raw score (grade 2); EXTG2 = teacher-reported externalizing behavior raw score (grade 2); INTG3 = teacher-reported internalizing behavior raw score (grade 3); EXTG3 = teacher-reported externalizing behavior raw score (grade 3); INTG6 = teacher-reported internalizing behavior raw score (grade 6); EXTG6 = teacher-reported externalizing behavior raw score (grade 6); INT10 = teacher-reported internalizing behavior raw score (grade 10); EXT10 = teacher-reported externalizing behavior raw score (grade 10)
⁺ $p \leq .10$. * $p \leq .05$. ** $p \leq .01$.

intercept term and an error term. Comparing the fit statistics for the models, the linear plus quadratic model fit the data better than the baseline (intercept only) model, $\chi^2(7) = 45.2, p \leq .001$. (Note: A model with a linear change term only also was compared with the baseline and the linear plus quadratic change terms. The linear model provided a better fit to the data than the baseline model, $\chi^2(3) = 15.7, p \leq .01$, but the linear plus quadratic model provided a better fit than the linear only model, $\chi^2(4) = 29.5, p \leq .001$. Thus, the linear plus quadratic change terms was adopted.) Regarding the fixed effects of this model, the group mean intercept coefficient was significant, indicating that, on average, initial status was not zero in the population. Additionally, there was significant negative quadratic change across time in the population, indicating that, on aver-

age, teachers reported fewer behavior problems across time and the shape of the change was curvilinear (see Table 6, Model 1).

Conditional analyses: Early childhood social support as static covariate of internalizing behavior problem intercepts and slopes

We examined static covariate effects to delineate possible explanations for individual variability in intercepts and slopes (Table 6, Models 2–6). Gender was examined, with a contrast test of the fixed effects of gender on the intercept and slope. Gender did not have a significant effect on the intercept or trajectories of behavior, and was not included in the remaining models for internalizing behavior.

Table 6 Multilevel model results of the fixed effects of static covariates predicting initial level and change in internalizing behavior (first to tenth grades) ($N = 184$)

Variable	Coefficient (SE)					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
INT in grade 1	7.81 (.47)***	7.82 (.47)***	7.82 (.46)***	7.83 (.45)***	7.85 (.46)***	7.85 (.45)***
Support from mother	–	–1.65 (.68)*	–1.50 (.68)*	–1.27 (.68) ⁺	–1.33 (.69) ⁺	–1.11 (.68)
Quantity of support	–	–	–1.21 (.51)*	–	–	–0.17 (.63)
Quality of support	–	–	–	–1.82 (.55)**	–	–1.47 (.68)*
Disruption of support	–	–	–	–	1.13 (.48)*	0.73 (.50)
Linear change in INT	–0.04 (.07)	–.03 (.07)	–0.03 (.07)	–0.03 (.07)	–.03 (.07)	–0.03 (.07)
Support from mother	–	–0.03 (.10)	–0.04 (.10)	–0.06 (.10)	–0.08 (.10)	–0.09 (.10)
Quantity of support	–	–	0.08 (.08)	–	–	–0.03 (.10)
Quality of support	–	–	–	0.15 (.08) ⁺	–	0.12 (.10)
Disruption of support	–	–	–	–	–0.16 (.07)*	–0.14 (.08) ⁺
Quadratic change in INT	–1.31 (.49)**	–1.31 (.49)**	–1.31 (.49)**	–1.32 (.49)**	–1.30 (.49)**	–1.31 (.49)**
Support from mother	–	0.44 (.72)	0.46 (.73)	0.59 (.73)	0.45 (.74)	0.57 (.74)
Quantity of support	–	–	–0.27 (.55)	–	–	0.12 (.69)
Quality of support	–	–	–	–0.71 (.60)	–	–0.83 (.73)
Disruption of support	–	–	–	–	0.04 (.51)	–0.13 (.54)
Omnibus test χ^2	45.2***	14.0**	22.6**	31.8***	20.8**	36.0***
Estimated parameters	10	13	16	16	16	22
-2 Log likelihood	5948.3	5934.3	5925.7	5916.5	5927.5	5912.3

Note. χ^2 difference test for Model 1 (baseline = linear + quadratic) is compared to the intercept only model; χ^2 difference test for Models 2 through 6 are compared to Model 1.

⁺ $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

We then explored relations between early childhood social support and internalizing behavior intercepts and slopes, after controlling for maternal support. The omnibus tests compare the random effects of the baseline model (i.e., intercept, linear, and quadratic change terms) with models that also include the covariate terms. If the model with the covariate fits the data better, then this covariate is associated with initial status, linear and quadratic change, or both.

First, we examined the influence of each support variable independently (Table 6, Models 2–5). The omnibus tests for the covariate models were all significant. Examining the predictors of the intercept (i.e., fixed effects), starting levels of internalizing behavior in first grade were conditional on quantity, quality, and disruption of early childhood social support, above and beyond the influence of support from the mother. Children who had higher quantity or quality or lower disruption of social support in early childhood demonstrated significantly fewer internalizing problems in first grade, above and beyond the effects of maternal support.

Turning to the predictors of the slope (i.e., fixed effects), disruption of support was associated with trajectories of internalizing behavior over time, and quality of support demonstrated a trend. No significant slope effects were found for quantity of support. Nonsignificant slope effects suggest the trajectories for quantity and quality were essentially parallel. Follow up analyses using a median split revealed that mean internalizing problems of children with poorer support (i.e., low quantity, low quality, high disruption) were higher over time (on average 1.41 to 2.46 points higher), and a number of these mean differences were significant or approached significance across time. For example, children with lower quality of support demonstrated trend-level differences through the sixth grade, and continued to demonstrate higher internalizing at tenth grade although the differences were not significant. For disruption, children with high disruption evinced higher internalizing behavior across time until tenth grade when the trajectories converged and they evinced lower mean internalizing behavior.

After establishing the significance of each support variable independently above and beyond the influence of support from the mother, all of the support variables were entered in the MLM to address the question of how the early childhood support variables work together (Table 6, Model 6). The omnibus test was significant. Examining the predictors of the intercept (i.e., fixed effects), starting levels of internalizing behavior problems in first grade were conditional on quality of early childhood social support. Children who had higher quality of social support in early childhood demonstrated significantly lower starting levels of internalizing problems at grade 1. However, the rate of change (linear plus quadratic) in internalizing behaviors from first grade to tenth grade did not differ based on social support in early childhood.

Unconditional analyses: Change in externalizing behavior problems over time

For the unconditional model of externalizing behavior problems from first grade to tenth grade, a linear model fit the data better than a baseline (intercept only) model, $\chi^2(3) = 21.2$, $p \leq .001$. (Note: A model with linear and quadratic terms also was tested against the model including only linear change. Since this model did not provide a better fit to the data than the model with only the linear term, $\chi^2(4) = 3.7$, $p > .05$ NS, the linear only model was adopted.) Regarding the fixed effects, the group mean intercept coefficient was significant, indicating that, on average, initial status was not zero in the population. However, on average, the linear change across time in the population did not differ significantly from zero (i.e., the group mean externalizing behavior was relatively stable over time) (Table 7, Model 1).

Conditional analyses: Early childhood social support as static covariate of externalizing behavior problem intercepts and slopes

We examined static covariate effects to delineate possible explanations for individual variability in intercepts and slopes. Gender was included as a covariate, with a contrast test of the fixed effects of gender on the intercept and slope of externalizing behavior. Gender had a significant effect on the externalizing behavior intercepts. Specifically, boys demonstrated significantly more externalizing problems at grade 1 than girls, although the slopes did not differ (Table 7, Model 2). Therefore, gender was included as an additional covariate in the remaining models for externalizing behavior.

We then explored relations between early childhood social support and externalizing behavior problem intercepts and slopes, after controlling for gender and support from the mother. We examined the influence of each support variable independently (Table 7, Models 3–6). The omnibus tests for the covariate models were significant. Examining the predictors of the intercept (i.e., fixed effects), starting levels of externalizing behavior in first grade were conditional on quantity and disruption in early childhood social support, above and beyond the influence of maternal support, and quality of support demonstrated a trend. Children who had higher quantity or lower disruption of social support demonstrated significantly fewer externalizing problems in first grade, above and beyond the effects of gender and maternal support.

Turning to the predictors of slope (i.e., fixed effects), disruption of support was associated with the trajectories of externalizing behavior problems over time. No significant slope effects were found for quantity or quality of support. Nonsignificant slope effects suggest the trajectories for quantity and quality were essentially parallel. Follow up analyses

Table 7 Multilevel model results of the fixed effects of static covariates predicting initial level and change in externalizing behavior (First to Tenth Grades) ($N = 184$)

Variable	Coefficient (SE)						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
EXT in grade 1	10.75 (.80)***	10.80 (.75)***	10.82 (.74)***	10.82 (.72)***	10.83 (.73)***	10.89 (.72)***	10.87 (.70)***
Sex	–	–6.91 (1.51)***	–6.82 (1.48)***	–6.95 (1.44)***	–6.97 (1.47)***	–7.21 (1.44)***	–7.19 (1.42)***
Support from mother	–	–	–2.94 (1.09)***	–2.60 (1.06)*	–2.60 (1.09)*	–2.18 (1.07)*	–2.17 (1.07)*
Quantity of support	–	–	–	–2.71 (.80)***	–	–	–2.29 (.98)*
Quality of support	–	–	–	–	–1.60 (.89) ⁺	–	0.54 (1.06)
Disruption of support	–	–	–	–	–	2.62 (.74)***	2.06 (.78)**
Linear change in EXT	–0.09 (.10)	–0.09 (.10)	–0.09 (.10)	–0.09 (.10)	–0.09 (.10)	–0.09 (.10)	–0.09 (.10)
Sex	–	0.29 (.21)	0.28 (.21)	0.29 (.21)	0.28 (.21)	0.34 (.20) ⁺	0.32 (.20)
Support from mother	–	–	0.06 (.15)	0.04 (.15)	0.06 (.16)	–0.03 (.15)	–0.02 (.15)
Quantity of support	–	–	–	0.11 (.12)	–	–	0.05 (.14)
Quality of support	–	–	–	–	0.02 (.13)	–	–0.14 (.15)
Disruption of support	–	–	–	–	–	–0.35 (.10)**	–0.37 (.11)**
Omnibus Test χ^2	21.2***	22.4***	31.9***	45.1***	36.5***	46.1***	56.6***
Estimated Parameters	6	8	10	12	12	12	16
-2 Log Likelihood	6586.3	6563.9	6554.4	6541.2	6549.8	6540.2	6529.7

Note. χ^2 difference test for Model 1 (baseline = linear) is compared to the intercept only model; χ^2 difference test for Models 2 through 7 are compared to Model 1.

⁺ $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

using a median split revealed that mean externalizing problems of children with poorer support (i.e., low quantity, low quality, high disruption) were higher over time (on average 2.32 to 3.49 points higher), and a number of these mean differences were significant or approached significance across time. For example, children with lower quantity of support demonstrated significant differences through the sixth grade, and continued to demonstrate higher externalizing at tenth grade although the differences were not significant. For disruption, children with high disruption evinced higher externalizing behavior across time until tenth grade when the trajectories converged and they evinced lower mean externalizing behavior.

Next, all of the support variables were entered in the MLM to address the question of how the early childhood support variables work together (Table 7, Model 7). The omnibus test was significant. Examining predictors of intercept (i.e., fixed effects), starting levels of externalizing behavior problems in first grade were conditional on quantity of and disruption in social support, controlling for gender and maternal support. Children with higher quantity and lower disruption of support in early childhood demonstrated significantly lower starting levels of externalizing problems at grade 1. Regarding predictors of slope (i.e., fixed effects), linear change in externalizing behavior across time was conditional on disruption of social support. Specifically, children with high disruption evinced higher externalizing behavior across time until tenth grade when the trajectories converged.

Follow up analyses: Contextual influences of social support

The outcomes of social support may vary by contextual factors, such as household structure (coresidence) or whether the provider is a close vs. extended family member vs. non-family member (Jayakody & Kalil, 2002; Vaden-Kiernan, Ialongo, Pearson, & Kellam, 1995). Since our study combined support information from three periods in early childhood, during which there were numerous changes in support providers and household structure, we were unable to analyze the contextual factors separately in the multilevel models. To explore this issue, we conducted post hoc analyses using the individual support variables from the three different early childhood rating periods. We conducted hierarchical regression analyses using dummy coding to examine the differential influence of biofathers vs. maternal boyfriends, father figures vs. non-father figures, and family members vs. non-family members. The regression equations predicting grade 1 internalizing and externalizing behaviors included coresidence, the dummy-coded contrast variable, and an interaction term (coresidence by provider).

From the 18 regressions, one significant interaction was found for family vs. non-family members (overall $F = 4.66^{**}$, $df = 3$). Specifically, support from non-family members with lower coresidence at 30–42 month interviews was related with the highest externalizing behavior at grade 1 ($\beta = 1.82^*$). Support from family members who had higher coresidence was related to lower externalizing behavior than

support from family members or non-family members who were not living with the child. However, support from high coresiding family members was related to slightly higher externalizing behavior than support from high coresiding non-family members. In sum, coresidence did not interact with the provision of support from father or father figures to affect the child's later behavior, but coresidence at 30–42 month interviews interacted with whether the provider was a family member or not. Given the type I error probabilities, caution should be used in interpreting these findings.

Discussion

The goals of the current study were: (1) to provide descriptive data on direct social support for young high risk children and (2) to examine relations between social support and behavioral and emotional outcomes. Though there have been calls for examinations of direct social support for some time (Cauce et al., 1990; Lewis & Feiring, 1978), little previous work has incorporated a prospective longitudinal investigation of the nature and influence of direct social support for preschool children.

Social support in early childhood

Consistent with the few previous studies available with young children (Bost et al., 1994; Cauce et al., 1990), overall the young children in this sample had clearly established relationships with social support figures beyond their primary caregiver. As has been noted in previous literature, young children's social networks are comprised primarily of parents, father figures, and close family members until school age (Bryant, 1985; Cauce et al., 1990; Furman, 1989). The central purposes of support in early childhood are tenderness (protective care) and companionship, which are best provided by relationships with close adults (Furman, 1989).

The majority of children received relatively frequent and stable support from their primary support provider. However, the quality of the experience was not positive for all children (e.g., 14% had support providers who were neglectful or endangering, 27% had very little connection to a network of support). This evidence supports previous research that high risk children's social support may mirror that of their parents (Mueller & Silverman, 1989; Wolfe, 1985), underscoring the isolation experienced by many families living in poverty.

Moreover, when we looked at the disruption of support across time (i.e., changes in who was providing the support) we found a contrast to what initially appeared to be "stable" support. Over half of the sample experienced a change in or loss of at least one important relationship. That is, significant and stable support providers at one interview would no longer be available to the child at the next interview. This

finding highlights the chaotic and disrupted environments for children in low income, high risk settings. The results are of particular concern since loss and disruption in caregiving have been associated with relationship and adjustment problems (Brooks-Gunn et al., 1993; Howes, 1988), although some studies have found less consistent links for low-income African American children (cf. Shaw, Winslow, & Flanagan, 1999). The importance of early separation and loss calls for more direct, longitudinal empirical study.

Early childhood social support and later behavioral problems

Children who experienced more time with supportive individuals outside the mother, higher quality interactions with them, and more consistent social support had significantly fewer teacher-reported internalizing and externalizing problems at first grade. This finding adds to previous literature on the relations between mother-child relationships and behavior trajectories. Positive experiences with support figures may contribute directly to later behavior, above and beyond support from the mother, by promoting emotional self-regulation, consistent with the organizational model (Sroufe, Egeland, Carlson, & Collins, 2005). Alternatively, these support providers also may be providing support to the mother, which then indirectly enhances child outcomes. Moreover, these effects might be amplified when support provided by the mother was very low or when the child experienced maltreatment (Cicchetti et al., 2000). Future studies could investigate support provided to the mother and child simultaneously as well as interactions between poor maternal caregiving and support in order to determine if social support for the child continues to predict better outcomes after controlling for support provided to the mother and interactions with caregiving quality.

The results regarding the slopes were unexpected, yet revealed interesting findings. Although the slopes for quantity and quality of support did not demonstrate a cascading effect over time, the trajectories were basically parallel. Since the slopes are similar, the promotive effects of the quantity and quality of early direct support seen in first grade essentially are maintained across time, similar to other studies of early promotive factors (Munson, McMahon, & Spieker, 2001; Appleyard, 2003).

On the other hand, children with higher disruption of support during early childhood demonstrated more deleterious outcomes initially but the paths converged at tenth grade. It is possible that disruption affects children's contemporaneous outcomes, but its influence fades over time. Moreover, additional factors in later childhood (i.e., peer influences and support) also contribute to socioemotional outcomes (Furman, 1989). Future studies with repeated measures of support could examine if support as a dynamic covariate would

predict the hypothesized rate of change. Also, the rate of change in behavior problems may vary across different developmental periods (e.g., at the transition to school, at the transition to adolescence) and different covariates may predict the developmental course differently (Munson, McMahon, & Spieker, 2001). As Bryk and Raudenbush (1992) suggest, future investigations could analyze change over time separately across developmental periods.

When we entered the support variables simultaneously, quality of support emerged as the only significant predictor of internalizing behavior intercepts, whereas quantity and disruption of support were significantly associated with externalizing intercepts. Quality of support comprised stability in relationships, extensiveness of the social network, and mutual positive regard in relationships. Perhaps these aspects of support contribute to children's sense of self-worth, which then portends less anxiety and depression in future stressful situations. Future research could investigate children's self-worth as a mediator or mechanism through which quality of support affects later outcomes. On the other hand, children with higher quantity of support and less disruption may be under more adult supervision and monitoring, and thus less likely to engage in delinquent behaviors. These findings with an early childhood sample support and extend previous work that monitoring in middle childhood is associated with less externalizing behavior (Pettit, Bates, Dodge, & Meece, 1999; Snyder, Dishion, & Patterson, 1986).

Limitations of the study and future directions

Some aspects of the measurement approach may have influenced our findings. Because this study drew upon a pre-existing dataset, the measures are hindered somewhat by pre-determined interview questions which may not ideally tap the construct. Differentiation between social support roles and primary caregiving was also a challenge, particularly since mothers were the source of information. Future studies with more focused measurements will contribute further to the understanding of early childhood social support. Moreover, since the data relied on maternal report alone, it is possible that aspects of the mother's relationship with this support provider are tied up in the measure (e.g., limited knowledge about the relationship; potential biases if mother had discord in her own relationship with the person). Maternal reports of children's social support differ from children's own reports (Bost et al., 1994). Thus, our measures might not have identified key individuals who supported the child or accurately measured their relationship. Although child report was not available in this study, future studies could include the input of children to assess more adequately their relationships.

Our measurement approach also combined support information from three periods in early childhood; thus, it was not possible for us to examine the contextual factors (e.g., house-

hold structure, type of provider) separately in the multilevel models. Our follow up analyses did not suggest consistent interactions between coresidence or family membership and behavioral outcomes in this study. However, future studies should continue to unpack questions about the role of household structure and family vs. non-family support (Jayakody & Kalil, 2002; Vaden-Kiernan, Ialongo, Pearson, & Kellam, 1995).

This study demonstrated that early childhood social support was related to positive behavioral and emotional outcomes. However, the question remains, what are the processes or mechanisms by which early support affects later outcomes? One mechanism through which these effects might operate is through the child's representational models of self and others. Early childhood support relationships beyond the primary attachment relationship may promote healthy representations (Dozier, Stovall, Albus, & Bates, 2001; Lynch & Cicchetti, 1992). Future research could incorporate measures of representation to examine mediating links between social support and later outcomes.

Implications for intervention

Although our findings do not indicate that support provides a cascading effect over time, its relations to lower levels of behavior problems demonstrate enhancement of children's functioning, at least through the elementary school years. As such, interventionists working with families of young children could include social support providers in their services and guide parents to enhance their social support (Cicchetti et al., 2000; Gowen & Nebrig, 2002; Hunter, Pearson, Ialongo, & Kellam, 1998). However, certain individual factors may affect the effectiveness of social support interventions. There is significant variability in the capacity for individuals to elicit and utilize social support (Sarason, Sarason, & Shearin, 1986). Children who play an active role in seeking support and who show a capacity to utilize this resource have better outcomes (Egeland, Carlson, & Sroufe, 1993; Werner, 1993). Longitudinal investigations of individual differences in social support are needed to identify factors involved in this process and to identify children who may benefit the most from support interventions.

Conclusions

This study contributes to the knowledge about the nature and influence of direct social support for young high risk children and suggests potential avenues for future investigation. In an era in which young children increasingly are involved in relationships outside the maternal-child dyad (Clarke-Stewart et al., 1995; Clyman et al., 2002), the influence of these support figures on developmental outcomes

deserves special attention, particularly for children from high risk homes (Chase-Lansdale et al., 1999). Continued efforts to explore the dynamic interplay between risk and protective factors may clarify developmental pathways toward resilience and may identify interventions to facilitate competence and healthy adaptation for high risk children.

Appendix: MLM equations used for modeling internalizing behavior problems

The following Level 1 equation (with linear and quadratic change terms) was used to determine whether internalizing behavior problem trajectories changed over time:

$$y_{ij} = \beta_{0i} + \beta_{1i}L_{ij} + \beta_{2i}Q_{ij} + e_{ij},$$

in which y_{ij} is the internalizing behavior problem score of individual i at time j , β_{1i} is the intercept for individual i , β_{1i} is the linear slope coefficient for individual i , β_{2i} is the quadratic slope coefficient for individual i , and e_{ij} is individual i 's residual at time j .

To estimate the average effects for the whole sample (i.e., unconditional model), the parameters from the Level 1 models become the outcomes for the Level 2 equations. The Level 2 equations were:

$$\beta_{0i} = y_{00} + u_{0i}$$

$$\beta_{1i} = y_{10} + u_{1i}$$

$$\beta_{2i} = y_{20} + u_{2i},$$

where y_{00} is the average intercept (i.e., behavior problem score at first grade), u_{0i} is the deviation of individual i 's intercept from the average intercept, y_{10} is the average linear slope (i.e., linear change in behavior problems from grade 1 to grade 10), u_{1i} is the deviation of individual i 's intercept from the average linear slope, y_{20} is the average quadratic slope (i.e., quadratic change in behavior problems from grade 1 to grade 10), and u_{2i} is the deviation of individual i 's intercept from the average quadratic slope.

To estimate associations between the static covariates (i.e., early childhood social support controlling for support from the mother) and behavior problem intercepts and slopes (i.e., conditional models), the following Level 2 equations were used:

$$\beta_{0i} = y_{00} + y_{01}(\text{EC SUPPORT FROM MOTHER}) + y_{02}(\text{EC SOCIAL SUPPORT}) + u_{0i}$$

$$\beta_{1i} = y_{10} + y_{11}(\text{EC SUPPORT FROM MOTHER})$$

$$+ y_{12}(\text{EC SOCIAL SUPPORT}) + u_{1i}$$

$$\beta_{2i} = y_{20} + y_{21}(\text{EC SUPPORT FROM MOTHER}) + y_{22}(\text{EC SOCIAL SUPPORT}) + u_{2i},$$

where y_{01} is the association between support from the mother and initial levels of behavior problems, y_{02} is the association between social support and initial levels of behavior problems, y_{11} is the association between support from the mother and linear change in behavior problem growth, y_{12} is the association between social support and linear change in behavior problem growth, y_{21} is the association between support from the mother and quadratic change in behavior problem growth, and y_{22} is the association between social support and quadratic change in behavior problem growth.

Note. The equations for externalizing behavior problems were similar, except that (based on preliminary analyses) the quadratic term was not included and sex was included as a covariate.

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References

Achenbach, T., & Edelbrock, C. (1986). *Manual for the teacher's report form*. Burlington: University of Vermont Department of Psychiatry.

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation*. Hillsdale, NJ: Erlbaum.

Appleyard, K. (2003). *Early parent-child interactions predicting later child behavior problem trajectories: The role of hostility and supportive presence*. Poster presented at the biennial meeting of the Society for Research in Child Development, Tampa, FL.

Bolger, K. E., Patterson, C. J., & Kupersmidt, J. B. (1998). Peer relationships and self-esteem among children who have been maltreated. *Child Development, 69*, 1171–1197.

- Bongers, I. L., Koot, H. M., van der Ende, J., & Verhulst, F. C. (2003). The normative development of child and adolescent problem behavior. *Journal of Abnormal Psychology, 112*, 179–192.
- Bost, K. K., Cielinski, K. L., Newell, W. H., & Vaughn, B. E. (1994). Social networks of children attending Head Start from the perspective of the child. *Early Childhood Research Quarterly, 9*, 441–462.
- Broidy, L. M., Nagin, D. S., & Tremblay, R. E. (2003). Developmental trajectories of childhood disruptive behaviors and adolescent delinquency: A six-site cross-national study. *Developmental Psychology, 39*, 222–245.
- Brooks-Gunn, J., Guo, G., & Furstenberg, F. F. (1993). Who drops out of and who continues beyond high school? A 20-year follow-up of black urban youth. *Journal of Research on Adolescence, 33*, 271–294.
- Bryant, B. K. (1985). *The neighborhood walk: Sources of support in middle childhood. Monographs of the Society for Research in Child Development, Serial No. 210, 50 (No. 3)*. Chicago: University of Chicago Press.
- Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analysis methods*. Thousand Oaks, CA: Sage.
- Caldwell, B., Heider, J., & Kaplan, B. (1966). *The Inventory of Home Stimulation*. Paper presented at the annual meeting of the American Psychological Association. New York, NY.
- Carson, J. L., & Parke, R. D. (1996). Reciprocal negative affect in parent-child interactions and children's peer competency. *Child Development, 67*, 2217–2226.
- Cauce, A. M., Reid, M., Landesman, S., & Gonzalez, N. (1990). Social support in young children: Measurement, structure, and behavioral impact. In B. R. Sarason, I. G. Sarason, & G. R. Pierce (Eds.), *Social support: An interactional view* (pp. 64–94). New York: John Wiley & Sons.
- Chase-Lansdale, P. L., Gordon, R. A., Coley, R. L., Wakschlag, L. S., & Brooks-Gunn, J. (1999). Young African American multi-generational families in poverty: The contexts, exchanges, and processes of their lives. In E. M. Hetherington (Ed.), *Coping with divorce, single parenting, and remarriage: A risk and resilience perspective* (pp. 165–191). Mahwah, NJ: Lawrence Erlbaum.
- Cicchetti, D., Toth, S. L., & Maughan, A. (2000). An ecological-transactional model of child maltreatment. In A. J. Sameroff, M. Lewis, & S. M. Miller (Eds.), *Handbook of developmental psychopathology* (2nd ed.) (pp. 689–722). New York: Kluwer Academic/Plenum Publishers.
- Clarke-Stewart, K. A., Allhusen, V. D., & Clements, D. C. (1995). Nonparental caregiving. In M. H. Bornstein (Ed.), *Handbook of parenting* (Vol. 3) (pp. 151–176). Mahwah, NJ: Lawrence Erlbaum Associates.
- Clyman, R. B., Harden, B. J., & Little, C. (2002). Assessment, intervention, and research on infants in out-of-home placement. *Infant Mental Health Journal, 23*, 435–453.
- Cochran, M. M., & Niego, S. (1995). Parenting and social networks. In M. H. Bornstein (Ed.), *Handbook of parenting, Vol. 3* (pp. 393–418). Mahwah, NJ: Lawrence Erlbaum Associates.
- Dozier, M., Stovall, K. C., Albus, K. E., & Bates, B. (2001). Attachment for infants in foster care: The role of caregiver state of mind. *Child Development, 72*, 1467–1477.
- Duggal, S., Carlson, E. A., Sroufe, L. A., & Egeland, B. (2001). Depressive symptomatology in childhood and adolescence. *Development and Psychopathology, 13*, 143–164.
- Egeland, B., & Brunnequell, D. (1979). An at risk approach to the study of child abuse. Some preliminary findings. *Journal of the American Academy of Child Psychiatry, 18*, 219–235.
- Egeland, B., Carlson, E., & Sroufe, L. A. (1993). Resilience as process. *Development and Psychopathology, 5*, 517–528.
- 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* (pp. 147–166). *Monographs of the Society for Research in Child Development, Serial No. 209, 50, Nos. 1–2*. Chicago: University of Chicago Press.
- Feiring, C., & Lewis, M. (1989). The social networks of girls and boys from early through middle childhood. In D. Belle (Ed.), *Children's social networks and social supports* (pp. 119–150). New York: Wiley.
- Furman, W. (1989). The development of children's social networks. In D. Belle (Ed.), *Children's social networks and social supports* (pp. 151–172). New York: Wiley.
- Gowen, J. W., & Nebrig, J. B. (2002). *Enhancing early emotional development: Guiding parents of young children*. Baltimore: Paul H. Brookes Publishing Co.
- Howes, C. (1999). Attachment relationships in the context of multiple caregivers. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 671–687). New York: Guilford Press.
- Howes, C. (1988). Relationships between early child care and schooling. *Developmental Psychology, 24*, 53–57.
- Hunter, A. G., Pearson, J. L., Ialongo, N. S., & Kellam, S. G. (1998). Parenting alone to multiple caregivers: Child care and parenting arrangements in Black and White families. *Family Relations, 47*, 343–353.
- Jayakody, R., & Kalil, A. (2002). Social fathering in low-income, African American families with preschool children. *Journal of Marriage and the Family, 64*, 504–516.
- Leve, L. D., Kim, H. K., & Pears, K. C. (2005). Childhood temperament and family environment as predictors of internalizing and externalizing trajectories from ages 5 to 17. *Journal of Abnormal Child Psychology, 33*, 505–520.
- Lewis, M., & Feiring, C. (1978). The child as a member of the family system. *Behavioral Science, 23*, 225–233.
- Lussier, G., Deater-Deckard, K., Dunn, J., & Davies, L. (2002). Support across two generations: Children's closeness to grandparents following parental divorce and remarriage. *Journal of Family Psychology, 16*, 363–376.
- Lynch, M., & Cicchetti, D. (1992). Maltreated children's reports of relatedness to their teachers. In R. C. Pianta (Ed.), *Beyond the parent: The role of other adults in children's lives. New Directions in Child Development, No. 57* (pp. 81–107). San Francisco: Jossey Bass.
- Matas, L., Arend, R. A., & Sroufe, L. A. (1978). Continuity of adaptation in the second year: The relationship between quality of attachment and later competence. *Child Development, 49*, 547–556.
- McFayden-Ketchum, S. A., Bates, J. E., Dodge, K. A., & Pettit, G. S. (1996). Patterns of change in early childhood aggressive-disruptive behavior: Gender differences in predictions for early coercive and affectionate mother-child interactions. *Child Development, 67*, 2417–2433.
- Mueller, N., & Silverman, N. (1989). Peer relations in maltreated children. In D. Cicchetti & V. Carlson (Eds.), *Child maltreatment: Theory and research on the causes and consequences of child abuse and neglect* (pp. 529–578). New York: Cambridge University Press.
- Munson, J. A., McMahon, R. J., & Spieker, S. J. (2001). Structure and variability in the developmental trajectory of children's externalizing problems: Impact of infant attachment, maternal depressive symptomatology, and child sex. *Development and Psychopathology, 13*, 277–296.

- Pettit, G. S., Bates, J. E., Dodge, K. A., & Meece, D. W. (1999). The impact of after-school peer contact on early adolescent externalizing problems is moderated by parental monitoring, perceived neighborhood safety, and prior adjustment. *Child Development, 70*, 768–778.
- Pittman, L. D. (in press). Grandmothers' involvement among adolescents growing up in poverty. *Journal of Research on Adolescence*.
- Raudenbush, S. W. (2002). Alternative covariance structures for polynomial models of individual growth and change. In D. S. Moskowitz & S. L. Hershberger (Eds.), *Modeling intra-individual variability with repeated measures data* (pp. 25–58). Mahwah, NJ: Erlbaum.
- Rutter, M., & Sroufe, L. A. (2000). Developmental psychopathology: Concepts and challenges. *Development and Psychopathology, 12*, 265–296.
- Sameroff, A. (2000). Dialectical processes in developmental psychopathology. In A. J. Sameroff, M. Lewis, & S. M. Miller (Eds.), *Handbook of developmental psychopathology* (2nd ed.) (pp. 23–40). Dordrecht, Netherlands: Kluwer Academic Publishers.
- Sarason, B. R., Sarason, I. G., & Pierce, G. R. (1990). Traditional views of social support and their impact on assessment. In B. R. Sarason, G. R. Pierce, & I. G. Sarason (Eds.), *Social support: An interactional view* (pp. 9–25). New York: Wiley.
- Sarason, I. G., Sarason, B. R., & Shearin, E. N. (1986). Social support as an individual difference variable: Its stability, origins, and relational aspects. *Journal of Personality and Social Psychology, 50*, 845–855.
- Shaw, D. S., Winslow, E. B., & Flanagan, C. (1999). A prospective study of the effects of marital status and family relations on young children's adjustment among African American and Caucasian families. *Child Development, 70*, 742–755.
- Snyder, J., Dishion, T. J., & Patterson, G. R. (1986). Determinants and consequences of associating with deviant peers during preadolescence and adolescence. *Journal of Early Adolescence, 6*, 29–43.
- Sroufe, L. A., Egeland, B., Carlson, E. A., & Collins, W. A. (2005). *The development of the person: The Minnesota study of risk and adaptation from birth to adulthood*. New York: Guilford Press.
- Sroufe, L. A., & Rutter, M. (1984). The domain of developmental psychopathology. *Child Development, 55*, 17–29.
- Stoolmiller, M., & Bank, L. (1995). Autoregressive effects in structural equation models: We see some problems. In J. M. Gottman (Ed.), *The analysis of change* (pp. 261–276). Hillsdale, NJ: Erlbaum.
- Taussig, H. N. (2002). Risk behaviors in maltreated youth placed in foster care: A longitudinal study of protective and vulnerability factors. *Child Abuse & Neglect, 26*, 1179–1199.
- Vaden-Kiernan, N., Ialongo, N. S., Pearson, J., & Kellam, S. (1995). Household family structure and children's aggressive behavior: A longitudinal study of urban elementary school children. *Journal of Abnormal Child Psychology, 23*, 553–568.
- Werner, E. (1993). Risk, resilience, and recovery: Perspectives from the Kauai longitudinal study. *Development and Psychopathology, 5*, 503–515.
- Wolchik, S. A., Beals, J., & Sandler, I. N. (1989). Mapping children's support networks: Conceptual and methodological issues. In D. Belle (Ed.), *Children's social networks and social supports* (pp. 191–220). New York: Wiley-Interscience.
- Wolfe, D. A. (1985). Child-abusive parents: An empirical review and analysis. *Psychological Bulletin, 97*, 462–482.
- Youngstrom, E., Weist, M. D., & Albus, K. E. (2003). Exploring violence exposure, stress, protective factors, and behavioral problems among inner-city youth. *American Journal of Community Psychology, 32*, 115–129.