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The relationship between sources and functions of social support and dimensions of child- and parent-related stress

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Abstract

Background In this longitudinal study, we examined the relationship between the sources and functions of social support and dimensions of child- and parent-related stress for mothers of young children with mild developmental delays.
Methods Sixty-three mothers completed assessments of stress and support at two time points.
Results Multiple regression analyses revealed that parenting support during the early childhood period (i.e. advice on problems specific to their child and assistance with child care responsibilities), irrespective of source, consistently predicted most dimensions of parent stress assessed during the early elementary years and contributed unique variance. General support (i.e. primarily emotional support and validation) from various sources had other, less widespread effects on parental stress.
Conclusions The multidimensional perspective of the construct of social support that emerged suggested mechanisms mediating the relationship between support and stress and provided a framework for intervention.

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Keywords developmental delay, parent stress, social support

Introduction

The adaptive capacity of the family system is clearly strained by the presence of a young child with a developmental disability (Gallimore *et al.* 1993; Minnes 1998; Guralnick 2006). As challenges mount and an understanding of the likely persistence and complexity of the problems ahead emerges, the coping resources of many families become depleted, often resulting in increases in parental stress (Deater-Deckard 1998; Orsmond 2005). Although increased stress is generally experienced by both parents, the close association between caregiving demands and stress makes mothers especially vulnerable (Beckman 1991; Gallimore *et al.* 1993; Roach *et al.* 1999; Plant & Sanders 2007). Indeed, even during the early childhood period, numerous studies have documented that mothers of children with a range of developmental delays and disabilities report higher levels of stress than normative samples and comparable groups of mothers of typically developing children (Beckman 1991; Dyson 1991; Innocenti *et al.* 1992; Duis *et al.* 1997; Roach *et al.* 1999; Baker *et al.*

2003; Oelofsen & Richardson 2006). A similar pattern of increased stress is found for mothers of school-age children (Dyson 1993, 1997; Orr *et al.* 1993; Hauser-Cram *et al.* 2001).

This stress reaction on the part of mothers is part of a complex response with many dimensions (Orsmond 2005). It certainly represents responses linked to their child's characteristics, including stress often generated by their child's inability to adapt to new situations, problems with mood and emotional stability, as well as overall difficulties presented by daily challenges in meeting their child's needs. Beyond these child-related dimensions, stress is represented by its more general effects on parental well-being. This form of stress can be experienced as increases in depressive symptoms as well as concerns regarding restriction of roles, health, ability to bond with their child, and sense of competence with respect to their ability to parent a child with a disability. Mothers' close relationships, especially with their spouse, is a dimension of stress that can be adversely affected as well. Of importance, the various dimensions associated with these child-related and parent-related aspects of stress are effectively captured by the Parenting Stress Index (PSI) (Abidin 1995), a scale with good discriminant validity for these two major forms of stress (Bigras *et al.* 1996) that has been well normed with established clinical cut-offs.

In addition to experiencing higher overall levels of child-related stress, a larger proportion of mothers of children with disabilities also reach clinical levels. Child-related stress increases during the early childhood period (Warfield *et al.* 1999) and, by middle childhood, a substantial proportion of mothers report stressful reactions at or near clinical levels (Orr *et al.* 1993; Hauser-Cram *et al.* 2001). In contrast to child-related stress, parent-related stress does not typically exceed clinical cut-offs to a much larger extent than that which is found for normative samples during both early childhood and later developmental periods (e.g. Innocenti *et al.* 1992; Orr *et al.* 1993; Roach *et al.* 1999; Hauser-Cram *et al.* 2001). This attests to the remarkable adaptive capacities of most families of children with developmental disabilities.

Nevertheless, the higher overall levels of both child- and parent-related stress as well as increased clinical levels of stress related to children's characteristics have been associated with a range of less than optimal child outcomes. For example, as is the case for parents of typically developing children (Deater-Deckard 1998), available evidence suggests that the higher levels of stress of parents of children with developmental delays contribute to children's behaviour problems (Baker *et al.* 2003) as well as to lower levels of social competence (Guralnick *et al.* 2003, 2006b). Moreover, stress is associated with less developmentally appropriate parent-child interactions (Bradley *et al.* 1991; Krauss 1993). Consequently, successful efforts to reduce the stress of parents of children with disabilities may not only enhance parental well-being but result in better child outcomes as well.

A number of important factors have been linked to the degree of stress experienced by parents of children with disabilities and may be of value when considering approaches to minimising stress. Characteristics of the children themselves are, of course, critical, with the most consistent finding being an association between higher levels of children's behaviour problems and higher levels of numerous dimensions of parental stress (Floyd & Gallagher 1997; Baker *et al.* 2003, 2004). From a different perspective, social support provided to parents has emerged as having a consistent and strong relationship with parental stress and appears to play an essential role in family adaptation and personal well-being in general (Dunst *et al.* 1997). By having available and drawing upon their social support network, considerable resources can be obtained by parents, including assistance or advice from individuals in the network as well as validation of beliefs and emotions, to help them cope more effectively (Cochran & Brassard 1979). Numerous studies of parents of children with disabilities have documented the existence of a concurrent association between social support and parental stress during both the early childhood and school-age periods (Beckman 1991; Krauss 1993; Duis *et al.* 1997; Shin *et al.* 2006). It is not the case that parents of children with disabilities lack social supports (e.g. Dyson 1997), but that higher levels of support correspond with lower levels of parental stress. This support-stress relationship is particularly evident for high-risk groups in general (see Deater-Deckard 1998).

Accordingly, intervention efforts to enhance social support may well have a beneficial effect on paren-

tal stress. However, social support, like stress, is a multidimensional construct, yet its dimensions are rarely differentiated in studies evaluating the association between social support and stress – thereby failing to provide specific directions for intervention. A frequent strategy is to obtain information from possible sources of support (e.g. friends, professionals, extended family) and then sum responses to generate measures of network size, density, and overall helpfulness or satisfaction. Information with respect to sources of support can be regrouped to examine differences between, e.g. formal (professionals, agencies) and informal (friends, extended family) sources of support, but this rarely occurs (Beckman 1991). Moreover, distinctions among the specific functions of support (e.g. emotional support, instrumental support) are generally absent in studies evaluating the linkage between support and stress.

Although the functional dimensions of social support can be characterised in many ways, an important distinction for parents of children with disabilities may be between the provision of general support (e.g. share private feelings, someone to listen to ideas and concerns) and support whose function is primarily to assist in parenting a child with a disability (e.g. advice on child problems, help with child care); referred to as parenting support. As noted earlier, available research indicates that the demands associated with caretaking activities are strong correlates of parental stress (Beckman 1991; Roach *et al.* 1999; Plant & Sanders 2007). Belle (1982) suggested that for other high risk groups, support with child care was perhaps the most valued form of social support. A similar finding suggesting the importance of parenting support was reported by Duis *et al.* (1997) for families of children with disabilities. Accordingly, a central hypothesis of this study is that higher levels of social support that function to provide a mother of a child with a disability with parenting support, irrespective of the source of that support, will be most closely associated with lower levels of stress. Parenting support should have broad effects, influencing most dimensions of child-related stress and parent-related stress. In particular, parenting support would be expected to be related to virtually all aspects of parent-related stress, as support focused on assistance or advice on child-rearing would likely contribute to less role restriction and to lower levels of depression and isolation, among other dimensions. Parenting support would also likely be associated with child-related stress, particularly the more malleable but potentially stressful aspects of a child's behavior such as demandingness or adaptability. Stress associated with less malleable child characteristics such as the child's mood or distractibility would be less affected.

In contrast, available evidence suggests that general support from a variety of sources (e.g. friends, extended family) is not likely to be associated with child-related stress. Specifically, Krauss (1993) found no concurrent association between a general measure of social support, which minimally focused on parenting support, and child-related stress during the early childhood period. Similarly, in a longitudinal study, child-related stress was not predicted by a measure of general social support in two analyses spanning the early childhood period (Warfield *et al.* 1999) nor did general social support at age five predict child-related stress at 10 years of age (Hauser-Cram *et al.* 2001). However, parent-related stress at age 10 years was predicted by a general social support measure at age 5 years, with increases in support over time corresponding to decreases in parent-related stress (Hauser-Cram *et al.* 2001).

Although the specific functions of support in relation to various dimensions of stress have not been systematically evaluated, this information can be of considerable value in guiding the design of interventions to enhance the social support of mothers of children with disabilities. To examine our hypotheses related to these specific relationships in this study, measures of social support distinguishing between parenting support (irrespective of the source of support) and general support (from different but identifiable sources) and measures of child-related and parent-related stress were obtained from mothers of children with mild developmental delays when the children were in preschool or kindergarten programmes. All measures were obtained once again 2 years later as children made the transition to early elementary school.

Of special interest was whether the forms of social support identified by mothers during early childhood predicted maternal stress following children's transition to early elementary school 2 years

later. From a practical perspective, ensuring that supports are available is best accomplished during the early childhood period where interventions that centre on families of children with disabilities is common practice and when families begin to realise the extraordinary nature of the challenges ahead. Consequently, it was important to determine whether the well-established concurrent association between support and stress in the early childhood period is retained over time and to identify those specific dimensions of support that are predictive of the dimensions of child- and parent-related stress during the early elementary period. Interventions guided by information with respect to those forms of social support that can best reduce different dimensions of stress during the early childhood years may be of considerable value in altering the trajectory towards increased child- and parent-related stress that occurs by middle childhood (Orr *et al*. 1993; Hauser-Cram *et al*. 2001).

To obtain information regarding the specificity of these relationships and to test our hypotheses, separate hierarchical multiple regressions predicting child-related and parent-related stress during the early elementary period from the specific sources and functions of social support during early childhood were carried out. These analyses controlled for various child characteristics (chronological age, cognitive and language levels, behaviour problems) as well as family social status. In view of our hypothesis regarding the possible special benefits of parenting support, an important feature of this analysis was to identify those social support dimensions that contributed unique variance to child- and parent-related domains of stress. This was followed by a series of more detailed analyses of the association between specific social support dimensions (parenting support and the various sources of general support) and specific dimensions of both child-related (e.g. mood, demandingness) and parent-related stress (e.g. social isolation, depression).

Method

Participants

After receiving Institutional Review Board approval for all procedures and measures, young children with mild developmental delays were recruited through contact with local school districts in a large metropolitan community. Participating school districts distributed announcements describing an opportunity to participate in a larger research project intended to promote children's peer relationships. Information was sent to all parents whose children had an Individualized Education Program (IEP) and who attended an inclusive (mainstreamed) preschool or kindergarten. Parents who were interested in participating in the study contacted project staff directly who then initiated a screening and identification process. To be included in this sample a child had to meet the following criteria: (1) be between 48 and 78 months of age; (2) have a current IEP; (3) be experiencing difficulties in peer-related social competence as expressed by parent concerns in a structured phone interview; (4) have a primary female caregiver (minimum of a 6-month relationship, as mothers were our informants); and (5) obtain a Full Scale IQ (FSIQ) score between 50 and 80 on the Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R; Wechsler 1989).

A number of exclusionary criteria also were established. Based on the Child Behaviour Checklist (CBCL; Achenbach 1991) completed by the mother (or other female caregiver) for each child (see below), children who scored in the clinical range were excluded from the study (a *t*-score above 70 was established for children with developmental delays). A phone screening interview for mothers eliminated six children described as exhibiting major behaviour problems. Two children were excluded because they obtained a *t*-score of 70 or above on the CBCL. Similarly, exclusion occurred if mothers scored at or above the 95th percentile on the Parent Domain of the PSI (Abidin 1995). Three participants were excluded based on this criterion. These exclusionary criteria were established to minimise any disruptions to the portion of the larger project devoted to promoting children's peer relationships. Finally, children were excluded if English was not their primary language or if they had significant sensory or motor problems. No children were excluded on this basis.

Seventy-three children and families meeting our criteria were successfully recruited to participate, with 63 completing the study over the 2-year period. Comparisons at time 1 between children

Table 1 Child and family characteristics at time 1

	M or %	SD	Range
Child demographics			
Age (months)	63.52	7.65	47–77
Gender (% male)	71.4		
Ethnicity (% Caucasian)*	73.0		
Child characteristics			
WPPSI-R full scale IQ†	66.43	9.43	51–80
Adaptive behaviour scales‡	69.46	8.63	54–94
TACL-R total scale§	68.38	15.73	22–96
EOWPVT-R expressive language¶	77.87	12.73	55–119
CBCL total behaviour problems††	58.21	6.61	46–70
Family demographics			
Family social status‡‡	51.46	13.01	20–66
Mother's age (years)	37.06	5.05	25–47
Marital status (% partnered)	92.10		

$n = 63$.

* Other ethnicities: Black, 1.6%; Hispanic, 4.8%; Asian, 6.3%; Native American, 1.6%, Biracial, 12.7%.

† Weschler Preschool and Primary Scale of Intelligence-Revised and Weschler Intelligence Scale for Children – Third Edition.

‡ Vineland Adaptive Behaviour Scales, total standard score.

§ Test for Auditory Comprehension of Language-Revised, total score.

¶ Expressive One Word Picture Vocabulary Test-Revised, standard score.

†† Child Behaviour Checklist, T-scores.

‡‡ Hollingshead Four-Factor Index of Social Status.

completing the study and those who did not were carried out on all child and family measures listed in Table 1. Because of unequal sample sizes, tests for homogeneity of variance were run prior to *t*-tests and were adjusted appropriately. For 2×2 contingency tables with expected frequencies of less than five, Fisher's exact test was substituted for the chi-square test. No significant differences ($P > 0.05$) were obtained for either continuous (*t*-tests) or dichotomous (χ^2) measures. Diagnostic information provided by parents at the end of the study indicated that most children received only categorical diagnoses (e.g. static encephalopathy, developmental delay) or no diagnosis whatsoever, with meaningful etiologic diagnoses infrequently reported (see Guralnick *et al.* 2006a).

Child and family characteristic measures

Children were evaluated by psychologists with extensive prior experience working with young children with developmental delays. The following child measures were administered: (1) The WPPSI-R (Wechsler 1989) – This measure was used to obtain FSIQ scores with older children assessed with the Wechsler Intelligence Scale for Children-Third Edition (WISC-III; Wechsler 1991). The standard battery of tests (five verbal and five performance) was administered; (2) The *Vineland Adaptive Behaviour Scales* (Sparrow *et al.* 1984) – This scale was administered to mothers, with the total standard score reported in Table 1; (3) The *Test for Auditory Comprehension of Language – Revised* (TACL-R; Carrow-Woolfolk 1985) – Although the TACL-R yields four standardised scores, only the total score was used in this analysis; (4) The *Expressive One Word Picture Vocabulary Test-Revised* (EOWPVT-R) (Gardner 1990) – The obtained raw score was converted to a standard score which was used for analysis; and (5) CBCL (Achenbach 1991) – Mothers rated the frequency of different behaviour problems from a 118 item questionnaire using a three-point scale. Only the total score was used for analysis.

Standard demographic information about the family (marital status, number of children, ethnicity, educational and occupational status and income) was also obtained via self-reports from mothers.

The *Hollingshead Four Factor Index of Social Status* (Hollingshead 1975, unpublished manuscript) was used to calculate a measure of family social status (range 8–66). Table 1 presents these child and family characteristic measures obtained at Time 1.

Maternal child-related and parent-related stress

The PSI (Abidin 1995, 3rd edition) was administered to mothers at both time periods. The PSI is a 101-item questionnaire which yields scores for the two major domains of child-related and parent-related stress. There is good discriminant validity between these domains (Bigras *et al.* 1996), with consistent evidence supporting the reliability and validity of the scales (Abidin 1997; Lessenberry & Rehfeldt 2004). Each item is rated on either a 5 point scale ranging from strongly agree to strongly disagree or a specific 4 or 5 point scale. Higher scores reflect more stress. The PSI was not designed specifically for families of children with disabilities but it has been administered to large samples of heterogeneous groups of children with delays and disabilities yielding logical and meaningful relationships to other factors and high levels of internal consistency (Innocenti *et al.* 1992; Sexton *et al.* 1992; Roach *et al.* 1999; Hauser-Cram *et al.* 2001).

The Child Domain was designed to represent mothers' perceptions of parenting difficulties or concerns as presented by their child's characteristics. Included in the 47 items are six subscales that tap children's behaviour and behavioural dispositions: (1) mood ('My child generally wakes up in a bad mood'); (2) demandingness ('My child is always hanging on me'); (3) adaptability ('My child gets upset easily over the smallest thing'); (4) acceptability ('My child is not able to do as much as I expected'); (5) distractibility/hyperactivity ('My child appears disorganised and is easily distracted'); and (6) reinforces parent ('My child rarely does things that make me feel good'). In addition to subscale scores (raw scores), a total child-related stress score is calculated by summing across the six subscales. For this study, Cronbach's alpha coefficients were 0.67 at time 1 and 0.62 at time 2 averaged across the six subscales and 0.77 at both time points for the total score.

The Parent Domain of the PSI focuses on mothers' parenting experiences with her child across a number of domains that may affect her ability to function adequately in the parenting role. Included in the 54 items are seven subscales: (1) sense of competence ('I feel capable and on top of things when I am caring for my child'); (2) social isolation ('I am not as interested in people as I used to be'); (3) attachment ('I expected to have closer and warmer feelings for my child than I do and this bothers me'); (4) health ('Physically, I feel good most of the time'); (5) role restriction ('I often feel my child's needs control my life'); (6) depression ('I often feel guilty about the way I feel towards my child'); and (7) relationship with spouse ['Since having my child, my spouse (or male/female friend) and I don't do as many things together']. In addition to individual subscale scores (raw scores) a total parent-related stress score is obtained by summing over the seven subscales. For this study, Cronbach's alpha coefficients were 0.74 at time 1 and 0.76 at time 2 averaged over the seven subscales. For the total parent-related stress core, alpha was 0.88 at time 1 and 0.87 at time 2.

Maternal social support

Mothers' social support was measured with the Inventory of Parental Experiences (IPE; Crnic *et al.* 1983). For each pair of questions, mothers provide information on the amount of social support received and then evaluate their satisfaction with that level of support. Separate scores are obtained for five subscales plus a score for total support. The first subscale, parenting support, assesses the amount of and satisfaction with support specific to advice about problems with their child with a developmental delay ('If sometimes you were to have bad or angry feelings about your child, how many people could you talk to about this?'), care-taking assistance ('How much of the housework and/or care of other children are you doing yourself?'), or general respite from parenting responsibilities ('How much time do you get for yourself each day?'). Although one question was specific to support from professionals, the source of parenting support (e.g. friends, relatives, spouse) for this subscale was not specified and represents the overall level of support available to mothers for parenting their child with a delay.

In contrast to parenting support, the four remaining subscales of the IPE evaluated general levels of support (e.g. sharing, emotional support, level of involvement with others) linked to the source of support. These sources of general support varied in terms of the presumed closeness of the relationship to the mother, with the four subscales consisting of the following: (1) intimate support ('At present, do you have someone you can share your most private feelings with?'); (2) friendship support ('If you were to become upset or angry, would you have someone to talk honestly to, who is not involved? How many people?'); (3) extended family support ('How often do you visit in person with your parents?'; 'How satisfied are you with this amount of visiting?'); and (4) community support ('How involved are you in your neighbourhood?').

Separate scores for the amount and satisfaction dimensions of support can be obtained for each of the five subscales as well as a score for total support. However, the amount and satisfaction dimensions were highly and significantly correlated in all instances (mean $r = 0.64$) and were therefore combined to create one score for each of the five subscales (one subscale for parenting support and four subscales for general support from specific sources) and a total score. Although test–retest reliabilities on this measure are not available from the scale's developers, its internal consistency scores were acceptable, ranging from 0.50 to 0.74. In this study, Cronbach's alpha averaged 0.80 at time 1 and 0.76 at time 2 for the five subscales. For the total support scale, alphas were 0.76 and 0.77 at times 1 and 2 respectively. This scale has been used with at-risk samples (Crnic *et al.* 1983), and highly stressed mothers who report higher levels of support on this measure have been observed to display more positive maternal behaviour (Crnic & Greenberg 1990).

Procedure

Following recruitment procedures outlined above, families whose children met all inclusionary criteria received a packet of materials in the mail containing the various scales and questionnaires. Mothers were then scheduled for a visit to the University with their child for interviews and testing. This procedure was repeated 2 years later.

Results

Changes over time and stability of support and stress measures

Descriptive statistics for the support and stress measures for the two time periods are presented in Table 2. A MANOVA carried out for the five social support subscales failed to produce a significant time effect, $F_{1,61} = 3.90$, $P > 0.05$. Because there was a strong trend ($P < 0.10$), follow-up t-tests were carried out and revealed that only community support significantly increased over time, $t(62) = 2.91$, $P < 0.05$. However, the total support measure did not change significantly across the two time periods, $t(62) = 1.86$, $P > 0.05$. As indicated in Table 2, stability correlations were high for all measures, averaging $r = 0.71$.

Separate MANOVAs for time were also carried out for the child and parent domain subscales of the PSI (see Table 2). A significant time effect for the six child subscales, $F_{1,62} = 4.06$, $P < 0.05$, was obtained. Although follow-up t-tests were not significant for any of the subscales, the total stress score for the child domain was significantly lower at time 2, $t(62) = 2.04$, $P < 0.05$. The time effect for the seven subscales of the parent domain was not significant, $F_{1,61} = 1.18$, $P > 0.05$. For the parent domain, extreme stress scores at time 2 were not excessive with only 4.8% of families at or above the 95th percentile. For the child domain, however, 25.4% were at or above that level. Using the 85th percentile to index the clinical cut-off for high levels of stress as suggested by Abidin (1995), still only 15.9% reached that level at time 2 for the parent domain but 54.0% were at that level for the child domain. As was the case for the social support measure, all subscales and the total stress scales were stable over time, with stability coefficients averaging $r = 0.62$.

Hierarchical regressions

Two hierarchical regressions were carried out to examine the predictive relationship between the social support measures at time 1 and the total child-related and the parent-related stress measures at time 2. In this analysis, we first controlled for a number of relevant variables. Because approximately half the children were enrolled in an inter-

Table 2 Descriptive statistics for stability and change over time for support and stress measures

Measures	Time 1		Time 2		Stability correlations[§]
	M	SD	M	SD	
Social support[†]					
Parenting support	2.69	0.48	2.73	0.49	0.68***
Intimate support	3.60	0.62	3.59	0.57	0.73***
Friendship support	3.07	0.57	3.16	0.53	0.67***
Extended family support	2.76	0.52	2.81	0.48	0.79***
Community support	2.64	0.69	2.81	0.65	0.60***
Total support	2.66	0.38	2.93	0.38	0.80***
Stress[‡]					
Child-related domain					
Total child stress	123.84	19.86	119.62	18.12	0.63***
Adaptability	30.27	6.29	29.16	5.80	0.53***
Acceptability	19.24	3.65	18.75	3.23	0.41**
Demandingness	24.48	5.51	23.54	5.09	0.58***
Mood	11.73	3.14	11.43	3.16	0.47***
Distractibility/hyperactivity	27.29	6.07	26.37	5.75	0.74***
Reinforces parent	10.81	3.91	10.40	3.37	0.69***
Parent-related domain	124.63	24.70	122.59	25.06	0.74***
Total parent stress					
Depression	20.44	5.76	19.94	5.73	0.59***
Attachment	12.27	3.00	12.16	3.25	0.51***
Restriction of role	19.08	5.63	18.92	5.31	0.71***
Sense of competence	28.51	5.41	28.41	5.87	0.69***
Social isolation	13.24	4.16	12.59	3.76	0.59***
Relationship with spouse	18.26	5.78	17.81	5.40	0.72***
Health	12.73	3.60	12.63	3.71	0.64***

$n = 63$.

[†] Based on combined amount and satisfaction scores from the Inventory of Parental Experiences.

[‡] Based on Parenting Stress Index (raw scores).

[§] Pearson product-moment correlations.

** $P < 0.01$, *** $P < 0.001$.

vention to promote their peer interactions following time 1 assessments (Guralnick *et al.* 2006a), a dummy-coded variable for condition (intervention = 0 vs. control = 1) was first entered into the analysis. This variable accounted for virtually no variance and is not considered further. To control for child characteristics at time 1, children's chronological age, FSIQ, TACL-R, and EOWPVT-R were entered in Step 1. Although previous findings have yielded only weak or inconsistent associations with parental stress measures (e.g. Krauss 1993), it was nevertheless important to control for these child characteristics. CBCL total behaviour problem scores (time 1) were entered as Step 2 given the consistent association of this variable with stress measures reported in previous studies (see Hastings & Brown 2002). Family social status was entered in Step 3, as family education and resources have also proven to be relevant to parenting stress for some samples in previous work (e.g. Smith *et al.* 2001). In the final step, all five time 1 subscales of the social support measure were entered.

Table 3 presents zero-order correlations for all predictive measures (time 1) and the two dependent variables (time 2). As seen in Table 3, significant correlations for the stress measures were obtained for four of the five social support subscales (with the exception of community support), and for total child behaviour problems. Most of the subscales for social support were significantly interrelated with

Table 3 Zero-order correlations among independent and dependent measures in regressions

	Independent measures time 1										Dependent measures time 2	
	WPPSI-R† Full scale IQ	TACL-R‡ Total scale	EOWPVT-R§ Expressive language	CBCL¶ Total behaviour problems	Family†† social status	IPE‡‡ Parenting support	IPE‡‡ Intimate support	IPE‡‡ Friendship support	IPE‡‡ Extended family support	IPE‡‡ Community support	PSI§§ Child domain	PSI§§ Parent domain
Time 1												
Chronological age	−0.095	−0.147**	0.151	−0.099	0.240	−0.157	0.171	−0.024	0.020	−0.154	0.147	0.090
WPPSI-R full scale IQ		0.586***	0.550***	0.099	−0.159	−0.081	−0.013	−0.170	−0.263*	−0.184	0.044	0.126
TACL-R total scale			0.442***	0.219	−0.020	0.111	−0.028	0.052	−0.123	−0.079	0.012	−0.025
EOWPVT-R Expressive language				−0.097	0.176	−0.118	0.013	−0.098	−0.121	−0.182	0.063	0.007
CBCL total behaviour problems					−0.341**	−0.180	−0.007	−0.094	−0.030	−0.005	0.277*	0.118
Family social status						0.184	0.211	0.149	0.042	0.155	0.021	−0.161
IPE parenting support							0.407**	0.669***	0.362**	0.356**	−0.488***	−0.559***
IPE intimate support								0.496***	0.438***	0.141	−0.198	−0.439***
IPE friendship support									0.473***	0.404**	−0.272*	−0.455***
IPE extended family support										0.094	−0.222	−0.330**
IPE community support											−0.054	−0.117

$n = 63$.

† Weschler Preschool and Primary Scale of Intelligence-Revised and Weschler Intelligence Scale for Children – Third Edition.

‡ Test for Auditory Comprehension of Language-Revised.

§ Expressive One Word Picture Vocabulary Test-Revised.

¶ Child Behaviour Checklist.

†† Hollingshead Four-Factor Index of Social Status.

‡‡ Inventory of Parental Experiences.

§§ Parenting Stress Index.

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Table 4 Hierarchical multiple regression analysis predicting the psi child domain total score at time 2

Variables (time 1)	Δ R^2	df	Δ *F*	Beta
Step 1	0.03	4,57	0.42	
Chronological age				0.17
FSIQ†				0.02
TACL-R‡				0.07
EOWPVT-R§				0.01
Step 2	0.09	1,56	5.77*	
CBCL total behaviour problems¶				0.32*
Step 3	0.01	1,55	0.64	
Family social status††				0.12
Step 4	0.22	5,50	3.30*	
Parenting support				–0.51**
Intimate support				–0.09
Friendship support				0.06
Extended family support				–0.02
Community support				0.11

$n = 63$.

† Weschler Preschool and Primary Scale of Intelligence-Revised and Weschler Intelligence Scale for Children – Third Edition.

‡ Test for Auditory Comprehension of Language-Revised.

§ Expressive One Word Picture Vocabulary Test-Revised.

¶ Child Behaviour Checklist.

†† Hollingshead Four-Factor Index of Social Status.

* $P < 0.05$, ** $P < 0.01$.

one another, although less so for the community support measure.

Table 4 presents the results of the regression for total child-related stress (PSI Child Domain total score). As expected, the child characteristic measure that included chronological age and cognitive and language development was not significantly associated with child-related stress. None of the beta weights for the individual measures were significant as well. Also, as expected, child behaviour problems (Step 2) did account for a significant amount of variance in child-related stress (more problems, higher stress), but family social status (Step 3) did not. Even after controlling for these variables, the combined subscales of social support (Step 4) accounted for a substantial amount of variance (Δ $R^2 = 0.22$) in child-related stress. Of importance, the only subscale that contributed unique variance to the association was parenting support. Specifically, lower levels of parenting support for mothers at time 1 predicted higher levels of child-related stress at time 2 (Beta = –0.51, $P < 0.01$, see Table 4).

The regression for parent-related stress (PSI Parent Domain total scores) revealed a similar pattern, except that behaviour problems failed to contribute any significant variance (see Table 5). However, as was the case for child-related stress, there was a strong predictive relationship with social support (Δ $R^2 = 0.35$). Once again, the only social support subscale contributing unique variance was the parent support measure, with lower levels of parenting support at time 1 predicting higher levels of parent-related stress at time 2 (Beta = –0.44, $P < 0.01$).

As noted, previous research has indicated that a strong concurrent relationship exists between stress and support at various time points. This is also the case in this study as revealed by the statistically significant correlations between total social support scores and total stress scores even after partialling out the child and family measures. Specifically, concurrent partial correlations for total social support with the two stress domains are as follows: Time 1, child domain, $r = –0.33$, $P < 0.05$; Time 2, child domain, $r = –0.32$, $P < 0.05$; Time 1, parent domain,

Table 5 Hierarchical multiple regression analysis predicting the psi parent domain total score at time 2

Variables (time 1)	Δ R^2	df	Δ F	Beta
Step 1	0.04	4,57	0.59	
Chronological age				0.10
FSIQ†				0.24
TACL-R‡				–0.08
EOWPVT-R§				–0.10
Step 2	0.02	1,56	0.87	
CBCL total behaviour problems¶				0.13
Step 3	0.01	1,55	0.64	
Family social status††				–0.12
Step 4	0.35	5,50	5.94***	
Parenting support				–0.44**
Intimate support				–0.26
Friendship support				–0.08
Extended family support				0.00
Community support				0.14

$n = 63$.

† Weschler Preschool and Primary Scale of Intelligence-Revised and Weschler Intelligence Scale for Children – Third Edition.

‡ Test for Auditory Comprehension of Language-Revised.

§ Expressive One Word Picture Vocabulary Test-Revised.

¶ Child Behaviour Checklist.

†† Hollingshead Four-Factor Index of Social Status.

** $P < 0.01$, *** $P < 0.001$.

$r = -0.57$, $P < 0.001$; Time 2, parent domain, $r = -0.65$, $P < 0.001$. In addition, in separate regression analyses, we found that the dimensions of social support at Time 1 no longer predicted stress at Time 2 for either the child or parent domain (total scores) after controlling for Time 1 stress. Indeed, as reported in Table 2, both stress and support measures are highly stable over time. Taken together, these results for both the concurrent and predictive analyses are consistent with the existence of a highly interrelated pattern of associations between stress and support.

Associations between subscales of support and subscales of stress

The regression analyses focused only on total child- and parent-related stress scores. In this analysis, each of the dimensions of social support (five subscales and total support) at time 1 was correlated with the separate subscales (dimensions) for both child- and parent-related stress at time 2. Consistent with the previous analyses, child characteristics, behaviour problems, and family social status variables were first partialled out.

In view of the substantial number of correlations and the risk of significant correlations occurring by chance, the social support subscales were first correlated with the total child- or parent-related stress scales. If the overall partial correlation was significant, the remaining stress subscales were examined. For completeness, Tables 6 and 7 present all of the partial correlations.

For total child-related stress, the only significant partial correlations obtained were for the parenting support subscale and the total support measure (see Table 6). For the parenting support subscale, significant partial correlations were obtained for all child-related stress subscales (with higher support associated with lower stress levels) except those most directly related to child temperament or behavioural disposition (mood, distractibility/hyperactivity). The same pattern was found for the total support measure, with no significant association obtained for the child acceptability subscale as well.

As expected, the analysis for parent-related stress resulted in an entirely different pattern, with significant associations with total parent-related stress obtained for the total support measure and all

Table 6 Partial correlations between social support subscales at time 1 and child-related stress subscales at time 2

	Child-related stress at time 2						
Social support at time 1	**Total Child Domain**	**Adaptability**	**Acceptability**	**Demanding-ness**	**Mood**	**Distractibility/ hyperactivity**	**Reinforces parent**
Parenting support	–0.475***	–0.352**	–0.294*	–0.377**	–0.144	–0.222	–0.460***
Intimate support	–0.247	–0.113	–0.084	–0.412**	–0.005	–0.134	–0.114
Friendship support	–0.247	–0.215	–0.176	–0.265	0.034	–0.016	–0.314*
Extended family support	–0.211	–0.387**	–0.040	–0.263	–0.103	0.078	–0.010
Community support	–0.086	–0.028	–0.003	–0.127	0.071	–0.058	–0.131
Total support	–0.371**	–0.355**	–0.192	–0.388**	–0.077	–0.073	–0.307*

Chronological Age, FSIQ, TACL-R, EOWPVT-R, CBCL Total Behaviour Problems, and Family Social Status were partialled out for all correlations.

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

social support subscales except community support (see Table 7). As suggested by the regressions in the previous analyses, parenting support was most consistent, correlating significantly with all parent-related stress subscales except mother's health. In fact, none of the social support measures were significantly correlated with health. Three of the four sources of general support (intimate, friendships, extended family) were also consistent correlates for most subscales of parent-related stress. The total support measure, representing the combination of the subscales was correlated with all parent-related stress subscales except mother's perceived attachment to her child, her sense of competence in the parenting role, and health.

Discussion

The increase in parent stress that frequently occurs as a consequence of having a child with a developmental disability can not only adversely affect many aspects of family well-being but can also prevent parents from creating the most optimal environment for their child at many developmental periods. Indeed, many families find they are on a path towards increased stress, a pattern that becomes most evident by middle childhood. Previous research had suggested that social support obtained from various sources (e.g. friends, professionals, family members) and serving various functions (e.g. emotional support, advice about child) could play a vital role in buffering parents of children with disabilities from stress. However, virtually all previous work emphasised the overall relationship between social support and stress, irrespective of its function or its source.

In this study, an important distinction was made between support to provide advice or caretaking help to mothers specific to their child with a developmental delay but irrespective of source, referred to as parenting support, and more general support. The construct of general support is represented by forms of emotional support, sharing of concerns, or advice about various problems. The emphasis on parenting support was based on evidence indicating that caregiving demands and related issues specific to parenting a child with a disability were strongly associated with maternal stress (e.g. Beckman 1991). The more general form of support also was examined in relation to the source of that support, i.e. community support, friendship support, extended family support, and intimate support (primarily from spouse or partner).

Consistent with our hypothesis, the only social support dimension contributing unique variance in our multiple regressions to the prediction of both child- and parent-related stress, after controlling for children's chronological age, cognitive and language levels and behaviour problems, as well as family

Table 7 Partial correlations between social support subscales at time 1 and of parent-related stress subscales at time 2

	Parent-related stress at time 2							
Social support at time 1	**Total Parent Domain**	**Depression**	**Attachment**	**Restriction of role**	**Sense of competence**	**Social isolation**	**Relationship spouse**	**Health**
Parenting support	−0.539***	−0.402***	−0.373***	−0.640***	−0.420***	−0.354***	−0.425***	−0.139
Intimate support	−0.449***	−0.453***	−0.126	−0.303*	−0.282*	−0.285*	−0.632***	−0.116
Friendship support	−0.412***	−0.347***	−0.240	−0.525***	−0.179	−0.352***	−0.430***	−0.048
Extended family support	−0.305*	−0.185	−0.035	−0.410***	−0.046	−0.305*	−0.411***	−0.132
Community support	−0.105	−0.117	−0.049	−0.168	−0.075	−0.075	−0.064	0.062
Total support	−0.500***	−0.388***	−0.240	−0.602***	−0.266	−0.392***	−0.525***	−0.112

Chronological Age, FSIQ, TACL-R, EOWPVT-R, CBCL Total Behaviour Problems, and Family Social Status were partialled out for all correlations.

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

social status, was parenting support. Moreover, and of considerable importance, none of the sources of general support predicted child-related stress (see Table 6). The unusual value of parenting support was also evident in that it significantly predicted all child-related stress dimensions except child mood and distractibility/hyperactivity (see Table 6), and all parent-related stress dimensions except parent health (see Table 7).

The finding that higher levels of parenting support evident during the early childhood period was predictive of lower levels of parent stress over the transition to the early elementary years (2 years later) suggests that enhanced parenting support should be considered an essential component in the design of early intervention programmes. Our findings also revealed that strong concurrent as well as predictive associations existed between support and stress, that social support and stress were stable over time, and that social support at Time 1 no longer predicted stress at Time 2 after controlling for Time 1 stress. In view of this high degree of interconnectedness, the expectation is that successful interventions to enhance social support, particularly parenting support, during the early childhood period will create a supportive set of relationships that carry forward to the early elementary period and beyond. In fact, successful interventions of any type that are able to reduce early parenting stress should produce long-term benefits.

Fortunately, implementation of relevant social support programmes tends to be more easily accomplished during the early childhood period, as organised groups meeting for various purposes are common for all children and families during this time. For families of children with disabilities, various individual parent-focused (e.g. Pelchat *et al.* 1999) or group-focused (e.g. Barnett *et al.* 2003) early intervention programmes are available and are designed to enhance family adaptation. Of note, these and other well conceptualised programmes contain important components of parenting support within which individual families could develop strategies to enhance that form of support. This could include building more effective professional support and friendship networks to help address specific issues for their child, exploring respite care options, as well as creating a forum for obtaining child-focused advice. The long-term effectiveness of

these programmes in reducing parent stress constitutes an important direction for future research.

Conceptually, many mechanisms may be operating that mediate this link between parenting support and parent stress. One possibility is that higher levels of parenting support may encourage mothers to utilise active problem-focused coping strategies, many of which are able to achieve practical, beneficial results. Previous work has suggested that problem-focused strategies, particularly those that seek to gain social support, are associated with family well-being (Frey *et al.* 1989; Judge 1998). Higher levels of parenting support may also promote a sense of control for mothers in situations that often seem beyond their control. Available evidence suggests that this is one factor mediating the relationship between overall support and parent stress (Hassall *et al.* 2005). Research designed to better understand the mechanisms involved, as well as which specific sources of parenting support can be most effective in this connection, will greatly contribute to the design and ultimate success of interventions (Coyne & Racioppo 2000).

As noted, general support provided by the community, friends, extended family and intimates as indexed by the amount and satisfaction with that support did not predict child-related stress. However, the potential value of general support is evident as all dimensions except community support did significantly predict parent-related stress. Support from friends and intimate support had the strongest relationship, as each predicted most of the dimensions of parent-related stress. However, the close association between the intimate support dimension and the relationship with spouse stress dimension most likely reflects the fact that items on both scales are addressing similar issues.

General support was not associated with mother's attachment to her child and only minimally to her perceived sense of competence. With respect to attachment, general support may be insufficient to overcome the many conflicted and complex feelings about a child with a disability, especially given the potential for shared stigma (Goffman 1963; Green 2003; Shin *et al.* 2006). Perceived sense of competence may well reflect accurate parental self-assessments of their skills and abilities that cannot easily be altered by emotional support or general advice. Of note, both the sense of competence and parent attachment dimensions were significantly associated with parenting support. This suggests once again that providing concrete child-relevant advice with an emphasis on caregiving support can have widespread beneficial effects.

Nevertheless, our results suggest that efforts to build friendship, extended family and intimate support during the early childhood period can be of value in reducing most aspects of parent-related stress during the early elementary years. Addressing these issues clinically is, however, a highly sensitive matter and the process can easily become intrusive. This is especially the case as the professional training of early childhood personnel rarely provides the clinical skills and knowledge necessary to counsel families with respect to complex interpersonal relationships. Some general strategies that are not likely to be perceived as intrusive can certainly be applied to families to encourage increased general support from a variety of sources. Indeed, many families point to the importance of their relationship with and general support provided by professionals; a level of support that extends well beyond child-specific parenting support (Dunst & Trivette 1986). In addition to the naturally occurring and non-intrusive strategies that emerge from these relationships, early interventionists could utilise screening tools to help identify substantial concerns with respect to the mother's ability to obtain or receive general support from various sources and then make referrals to the appropriate professionals as needed.

As expected, children's cognitive and language levels were not associated with either child- or parent-related stress. Higher levels of children's behaviour problems during the early childhood period, however, were predictive of increased child-related stress, but not parent-related stress. This finding likely represents mothers' accurate perceptions of child-related difficulties (e.g. demandingness, adaptability, distractibility/hyperactivity) that cannot be easily altered. However, personal and external resources can affect the impact of children's behaviour problems and influence various dimensions of parent-related stress (Quine & Pahl 1991; Beresford 1994; Hastings & Brown 2002). As indicated in this and related studies, social support constitutes one of those resources. The absence of an association between children's behaviour prob-

lems and parent-related stress may also be due to the fact that children exhibiting extreme behaviour problems were excluded from our sample.

There are a number of other factors related to our sample that should be considered in interpreting our findings. Mothers experiencing extreme stress during the early childhood period were also excluded from our sample and our sample was homogeneous with respect to ethnicity and social status. More heterogeneous samples should be recruited in future studies. However, it is important to note that our findings regarding the proportion of mothers reaching clinical cut-off levels for parent-related stress at time 2 are similar to those of previous studies with more heterogeneous samples (Hauser-Cram *et al.* 2001). In addition, we were unable to examine sex differences as there were a relatively small number of girls in our sample as is common in studies of young children with mild developmental delays (Vig *et al.* 1987; Bernheimer & Keogh 1988). The extent to which our findings generalise to mothers of children with other types or more severe delays or disabilities also needs to be examined in future work.

The influence of method variance also must be considered, as mothers were the respondents for both the social support and stress measures. As noted earlier, method variance likely accounted for the strong association between intimate support and stress involving the mother's relationship with her spouse. However, the various dimensions of social support, particularly parenting support, were differentially associated with specific dimensions of the stress measure in a manner that advanced our understanding of the social support construct. This finding, as well as the contributions and possible mechanisms through which social support influences parent stress, suggests that method variance did not substantially influence the patterns obtained in this investigation. In fact, our results clearly suggest that efforts to enhance parenting support have the greatest potential for reducing both child- and parent-related stress for mothers of young children with mild developmental delays.

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