



Published in final edited form as:

Focus Autism Other Dev Disabl. 2010 March ; 25(1): 37–46. doi:10.1177/1088357609350367.

Sibling Adjustment and Maternal Well-Being: An Examination of Families With and Without a Child With an Autism Spectrum Disorder

Nicole Quintero¹ and Laura Lee McIntyre²

¹University of Illinois at Chicago

²University of Oregon, Eugene

Abstract

Differences in sibling social, behavioral, and academic adjustment and maternal well-being in families with ($n = 20$) and without ($n = 23$) a preschooler with autism spectrum disorder (ASD) were explored. Results are interpreted to suggest that mothers of children with autism report more daily hassles, life stress, and depression than mothers without a child with ASD. There were no significant differences in parent and teacher reports of older siblings' social, behavioral, and academic adjustment in families with and without a child with ASD. Sibling behavioral adjustment was, however, significantly related to maternal well-being. Because families with children with ASD often experience more parenting stress and depression, siblings may be more vulnerable to the cumulative risks over time.

Keywords

siblings; autism spectrum disorder; maternal well-being; depression

Autism spectrum disorders (ASDs) are the fastest growing pediatric developmental disorders affecting as many as 1 in 150 children (Centers for Disease Control and Prevention, 2007), and differ from other chronic developmental disorders, such as Down syndrome or cerebral palsy, due to unknown etiology and spectrum of behavioral manifestations. ASDs are characterized by deficits in behavior, language, and social communication (Bodfish, 2004). Deficits manifest prior to the age of 36 months, and the diagnostic procedure generally involves a multidisciplinary team including psychologists, pediatricians, psychiatrists, and other health professionals (Lord & Risi, 2000; National Research Council, 2001). Symptoms are classified on a spectrum, with varying degrees of functioning among individuals with ASDs. Some individuals on the autism spectrum have significant cognitive impairments, whereas others function in the average or gifted range of intellectual functioning (Wing & Potter, 2002). The relatively early onset of the disorders, compounded by the unknown etiology and triad of behavioral excesses and deficits, as well as perceived increase in prevalence, make ASDs

© 2010 Hammill Institute on Disabilities

Corresponding Author: Laura Lee McIntyre, Department of Special Education and Clinical Sciences, 5208 University of Oregon, Eugene, OR 97403-5208, llmcinty@uoregon.edu.

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Declaration of Conflicting Interests

The authors declare that they do not have any conflict of interest.

especially challenging for families to negotiate (Dominigue, Cutler, & McTarnaghan, 2000; Lord & Risi, 2000).

Family Impact

Researchers investigating the impact of ASD on parenting stress and depression have demonstrated consistent results. Caregivers of children diagnosed with an ASD have higher rates of depression and stress when compared to caregivers of both typically developing children and children with intellectual disabilities, although it is unknown whether coping mechanisms differ amongst caregivers with a child with an ASD or other disabilities (e.g., Blacher & McIntyre, 2006; Fisman & Wolf, 1993; Hastings, 2003; Hastings et al., 2005; Hastings & Johnson, 2001; Ross & Cuskelly, 2006; Wolf, Noh, Fisman, & Speechley, 1989).

Parents with children with disabilities are faced with the daunting task of restructuring and rebalancing the needs of the rest of the family, including the typically developing siblings. Exacerbated by the often elevated levels of parent stress and depression, the pervasive spectrum of behavioral excesses and skill deficits associated with ASDs can be financially and emotionally taxing on families. The demands placed on parents in coordinating services may leave little time to spend with other family members. Furthermore, as parents take on additional roles, other responsibilities may be shifted onto the siblings at home. However, there is not a large body of empirical evidence focusing on siblings. Thus, the question of the psychological adjustment of those who receive the extra familial responsibilities (e.g., siblings) has been raised among researchers.

Sibling Impact

The presence of a child with an ASD changes the traditional sibling role. In conjunction with higher rates of parenting stress and depression, siblings are often exposed to increased parental expectations, decreased parental involvement, and increased responsibilities (Hannah & Midlarsky, 1985). Additionally, as both children and parents age, it is likely that the sibling will procure the role of primary caregiver. Therefore, it is plausible to hypothesize that the shift in the traditional sibling role can result in adjustment problems, both within the home and school settings; however, researchers investigating the socioemotional adjustment of siblings of children with ASD have offered inconsistent results. Hastings (2003) suggests that, according to maternal reports, siblings of children with autism have more peer and overall adjustment problems, as well as lower levels of prosocial behavior than a normative sample of siblings. Bågenholm and Gillberg (1991) compared siblings of children with autism to a normative sample and a sample of siblings of children with chronic illness or mental retardation using self-report methodology. Siblings of children with autism reported more negative views about their sibling relationship, and a disproportionate number reported that they felt “lonely” in contrast to the comparison siblings. In addition to adjustment, Ross and Cuskelly (2006) investigated the coping strategies of siblings of children with and without autism. The researchers found that 40% of siblings in the ASD group had scores on the *Child Behavior Checklist* (Achenbach, 1991) that were within either the borderline or clinical range, with aggression as the most commonly reported problem behavior. Neither siblings’ knowledge of ASD nor coping skills were associated with adjustment. Overall, these studies suggest that siblings of children with autism have lower social and emotional competencies when compared to normative samples of siblings.

Conversely, other researchers suggest that siblings of children with autism are relatively well-adjusted. Pilowsky, Yirmiya, Doppelt, Gross-Tsur, and Shalev (2004) used maternal reports of adjustment to conclude that there were no significant differences in social-emotional adjustment, behavior problems, and socialization skills in siblings of children with autism compared to siblings of children with mental retardation and developmental language delays.

Similarly, when compared to siblings of children with Down's syndrome, parental reports yielded no significant differences between the groups on scores measuring problem behavior. Both groups of siblings had adjustment (problem behavior) scores within the normal range. In addition to maternal reports of problem behavior, Kaminsky and Dewey (2002) also asked siblings to provide self-reports of their adjustment. Results suggested that siblings' self-reports indicated low levels of loneliness. Furthermore, no significant differences between siblings of children with autism and siblings of children with Down's syndrome were found in perceived social support among parents, classmates, or teachers. Although these researchers suggest that siblings of children with autism are well-adjusted, the discrepancies in the current literature warrant additional empirical investigation.

Little research has been dedicated to examining the school outcomes of siblings of children with autism. Bågenholm and Gillberg (1991) investigated siblings' behaviors both at home and school. Although parent ratings of their children's behaviors toward their siblings did not differ, significant differences were found in teacher reports of inattention/hyperactivity and conduct problems, with siblings of children with disabilities exhibiting more problem behaviors than siblings of children without disabilities. Conversely, although a comparison group was not recruited for analyses, Mates (1990) suggested that the increased responsibility of caring for a sibling with autism does not necessarily lead to poor academic performance and behavior.

Rationale and Goals

Due to the inconsistencies found in the extant literature, sibling adjustment is subject to wide clinical interpretation. Therefore, it is imperative for researchers to further investigate sibling adjustment to better guide intervention and family support practices. The differential results in the sibling adjustment literature may be due to a number of methodological differences, such as sampling, composition of comparison groups, measurement, informant, and family factors (age of sibling, birth order, etc.). Previous research was extended in the current study through the control of many of the sampling and methodological differences by including a clearly defined sample of families, using multiple informants, and minimizing variability of sibling characteristics.

The primary goal was to examine social, behavioral, and academic adjustment in older siblings of children with ASD in comparison to older siblings of children without disabilities. Sibling adjustment was investigated through both parent and teacher reports of siblings' social skills, behavior problems, and academic competence. It was hypothesized that typically developing siblings of preschool-aged children with ASD would have higher teacher-reported and parent-reported problem behavior and lower social skills and academic competence. A secondary goal was to examine parenting stress and depression of primary caregivers and explore the relationship between parental well-being and sibling adjustment. Consistent with the extant literature, it was hypothesized that mothers who had a preschooler with an ASD would have higher self-reported stress and depression.

Method

Participants

Participants were 43 families living in and near a midsize city in upstate New York. Each family had a preschool-aged child (2 to 5 years old) and an elementary-aged child (6 to 10 years old). In target families ($n = 20$), the preschooler had an ASD and the elementary-aged child was typically developing. In control families ($n = 23$), both children were typically developing. Approximately two thirds of preschoolers in both groups were male (control = 63.6%; target = 64.7%). Target preschoolers with ASD were an average age of 4.35 years ($SD = 1.12$), slightly

older than control preschoolers who averaged 3.72 years ($SD = 0.71$; $t = -2.15$, $p < .05$). Preschoolers with ASD were receiving special education and related services. For example, 82% of preschoolers with ASD were receiving speech and occupational therapy, and just under half (47%) were receiving physical therapy. Approximately one third (35%) of preschoolers with ASD received discrete trial instruction as part of their special education program.

The demographic characteristics for families and elementary-aged siblings are provided in Table 1. In both target and control groups, participating primary caregivers were mothers, in their mid-30s, well educated, and were married or living with a partner. Significantly fewer target mothers than control mothers were employed. Family size did not differ significantly by groups and averaged approximately four people per household. Family income did not differ significantly by group, with the majority of families in middle to upper-middle income brackets. Siblings were approximately 7 years old in both target and control groups and were generally in first or second grade. The majority of siblings in both groups attended public school. The length of time elementary school teachers reported that they knew the target and control siblings did not differ significantly.

Procedure

The study was approved by the authors' university institutional review board. Target families were recruited through 12 local early childhood programs that serve children with developmental delays and disabilities. To be included in the study, target preschool children (a) were between 2 and 5 years at the initiation of the study, (b) had a medical diagnosis of an ASD, (c) had an older typically developing sibling between 6 and 10 years attending a local elementary school, and (d) were living with their primary caregiver for a minimum of 6 months prior to the beginning of the study. All child diagnoses were parent-reported and were not confirmed via medical or school records. Inclusionary criteria for control preschool children were identical to target children, with the exception that they were typically developing. "Typically developing" was defined as having no known emotional, behavioral, learning, or developmental disorder or delay. Families in the target and control groups were excluded if either the preschooler or elementary-aged child was nonambulatory, had significant sensory impairments (e.g., deaf, blind), or if the family had more than one child with a diagnosis of ASD. Six target families were excluded for the following reasons: the sibling was not typically developing ($n = 3$); there was more than one child with ASD in the family ($n = 1$); the child with ASD was not between the ages of 2 and 5 years ($n = 1$), and the sibling was not between the ages of 6 and 10 years ($n = 1$). No control families were excluded.

Parents of children with ASD responded to recruitment flyers distributed by local early childhood programs. Parents were screened over the telephone to determine eligibility. Upon eligibility determination, parents were mailed a consent form, parent packet of questionnaires, and teacher packet of questionnaires. Parents were asked to bring the packet to their child's schools and provide teachers with an overview of the study and welcome letter (provided by the researchers). Of the total sample ($n = 43$), three teachers did not return their packets. Additionally, parents were asked to provide the name of a friend who had two typically developing children similar in age and gender to the target family. This technique, known as the snowball recruitment technique, assisted in generating a control sample that had similar demographic characteristics. Out of the 20 participating target families, 8 were able to provide names of 12 control families who had verbally agreed to allow the authors to contact them to provide them with study details. The 12 control families then recruited 11 additional control families. Control families followed the same procedures as target families. All participating primary caregivers (mothers) and teachers received a \$10 gift card for their participation.

Measures

Parent well-being measures were selected based on their psychometric properties and use in previous research examining parenting daily hassles, parenting stress, and caregiver depression in families with children with and without developmental disabilities (e.g., Baker et al., 2003; Blacher & McIntyre, 2006). Sibling adjustment measures were selected based on their psychometric properties, widespread use, and availability in both parent-report and teacher-report formats. Although target families had a preschooler with an ASD, the adjustment of the typically developing sibling was the focus of this investigation. Therefore, if the measure asked questions about a specific index child (i.e., *Parenting Stress Index*, *Social Skills Rating System*, *Child Behavior Checklist*), parents were instructed to complete the questionnaire focusing on the elementary-aged sibling. Teachers were instructed to complete the measures regarding the elementary-aged sibling as well.

Parental Well-Being Variables

Daily hassles—The *Parenting Daily Hassles* (PDH; Crnic & Greenberg, 1990) was used to measure parents' everyday stress associated with childrearing activities across all children in the household. Parents rate 20 items on a 5-point scale. Parents' ratings yield two scores: frequency of hassles (0 = *never*; 4 = *constantly*) and intensity of hassles (1 = *no hassle*; 5 = *big hassle*). A total score is computed by summing the intensity scores. Alpha coefficients for the present sample were .91 for target mothers and .78 for control mothers.

Parenting stress: The *Parenting Stress Index—Third Edition* (PSI-3; Abidin, 1995) was used to measure parenting stress as it related to child factors, parent factors, and stressful life events. This measure consists of 100 questions that parents respond to using a 5-point scale (1 = *strongly disagree*; 5 = *strongly agree*) and 20 life stress questions that parents respond to with yes/no responses. The PSI-3 yields raw scores which can be converted to Child and Parent Domain scores, a Total Stress score, and a Life Stress score. Parents were instructed to complete the measure using the typically developing sibling as the index child when questions asked about a specific child. The measure includes index child specific items (Child Domain Stress), items related to parenting stress that may be a function of parenting the index child or parenting in general (Parent Domain Stress), as well as items related to stressful life events (Life Stress Domain). A Total Stress score is computed by summing the Child Domain and Parent Domain stress scores. Alpha coefficients for the target mothers in the present sample were: .92 Child Domain, .93 Parent Domain, and .92 for Total Stress. Alpha coefficients for the control mothers in the present sample were: .94 Child Domain, .95 Parent Domain, and .97 for Total Stress.

Depression: The *Center for Epidemiologic Studies—Depression Scale* (CES-D; Radloff, 1977) was used to assess the depressed symptomatology of the primary care-giver. The CES-D consists of 20 items that are rated on a 4-point scale (0 = *rarely*; 3 = *most/all of the time*) and assesses the frequency of depressive moods and feelings that have occurred within the past week. The composite score indicates total depressed feelings and mood, with higher scores indicative of more depressed symptomatology. The alpha coefficient for the composite score for the present sample was .87 for target mothers and .92 for control mothers.

Parent-Reported Sibling Adjustment

Behavior problems—The primary caregiver filled out the *Child Behavior Checklist for Ages 6–18* (CBCL/6–18; Achenbach & Rescorla, 2001), a measure of 113 specific behavioral and emotional problems and two additional “other” items. Caregivers rate their child on how true each item is now or was during the past 6 months using a 3-point scale (0 = *not true*; 2 = *very true*). Raw scores are converted to Internalizing and Externalizing Broadband T scores as well as a Total Problems T score ($M = 50$; $SD = 10$). Scores of 60 and above (1 SD above the

mean) are considered to be in the Borderline range and indicate risk for problem behavior. Alpha coefficients for the current target group were .75 for Internalizing Problems, .83 for Externalizing Problems, and .91 for Total Problems. The control group yielded alphas of .84 for Internalizing Problems, .94 for Externalizing Problems, and .97 for Total Problems.

Social skills—The *Social Skills Rating System–Elementary Parent* version (SSRS-EP; Gresham & Elliott, 1990) was completed by the primary caregiver to assess the perceived frequency and importance of 38 social behaviors in four domains: Cooperation, Assertion, Self-Control, and Responsibility. Raw scores are summed and converted to a Total Social Skills standard score ($M = 100$; $SD = 15$). Alpha coefficients for the current sample were .85 for target siblings and .81 for control siblings.

Teacher-Reported Sibling Adjustment

Behavior problems—The *Teacher's Report Form* (TRF/6–18; Achenbach & Rescorla, 2001), the teacher companion to the parent-reported CBCL, was completed by the sibling's elementary school teacher. Similar to the CBCL, the TRF yields Internalizing and Externalizing Broadband scores, as well as a Total Problems T score ($M = 50$; $SD = 10$). Scores of 60 and above (1 SD above the mean) are considered to be in the Borderline range and indicate risk for problem behavior. Alpha coefficients for the present target group were .91 for Internalizing Problems, .77 for Externalizing Problems, and .97 for Total Problems. For the control group, alphas were .79 for Internalizing Problems, .87 for Externalizing Problems, and .93 for Total Problems.

Social skills—The *Social Skills Rating System–Elementary Teacher Version* (SSRS-ET; Gresham & Elliott, 1990) was completed by the sibling's elementary school teacher. This measure is similar to the parent version of the SSRS and yields a Total Social Skills standard score ($M = 100$; $SD = 15$), which is a composite of 30 items in three domains: Cooperation, Assertion, and Self-Control. Alpha coefficients for the current sample were .92 for target siblings and .74 for control siblings.

Academic competence—The nine-item Academic Competence subscale of the SSRS-ET (Gresham & Elliott, 1990) was completed to get a broad assessment of the teacher's rating of the sibling's academic abilities. The Academic Competence scale asks the teacher to rate the student's academic performance on a 5-point scale that compares the student in question to the rest of the students in the class. Raw scores are converted to an Academic Competence standard score ($M = 100$; $SD = 15$). Alpha coefficients for the current sample were .93 target siblings and .91 for control siblings.

Data Analysis

SPSS 15.0 for Windows (SPSS Inc., Chicago, IL) was used to conduct all analyses, including descriptive and inferential statistics. Chi-square and t tests were used to analyze differences in demographic variables between target and control groups. t tests and analysis of covariance were used to examine differences between control and target groups on maternal well-being and sibling adjustment measures. The two demographic variables that significantly differed between groups were preschool age and maternal employment. Given that preschool age was not significantly related to any of the adjustment measures of interest, it was not included as a covariate. Maternal employment was significantly related to maternal well-being, thus this variable was included as a covariate in analyses comparing maternal well-being outcomes by group. Bivariate correlations were used to examine the relationship between maternal well-being and sibling adjustment for all families. Given that family income was not normally distributed in the present study, the nonparametric statistic Spearman's rho was used to correlate family income with sibling and maternal well-being adjustment measures.

Results

Sibling Adjustment

The social, behavioral, and academic adjustment of older elementary-aged siblings of preschoolers with ASD were compared to control siblings of typically developing preschoolers. Table 2 displays parent and teacher reports of siblings' problem behaviors and social skills, as well as teacher reports of academic competence. Mean scores of parent-reported and teacher-reported problem behavior and social skills did not significantly differ by group; however, an examination of standardized effect sizes suggests that there were moderate effects for teacher-reported internalizing behaviors ($d = .57$) and total problems ($d = .41$), with target siblings scoring higher than control siblings. Descriptive statistics (means and standard deviations) suggest, however, that the siblings in both groups were in the average range and generally well adjusted with respect to social skills and behavioral functioning. Teacher-reported academic competence of siblings did not differ by group status. Furthermore, mean standard scores for both groups were in the average range for academic competence. The percentage of siblings who scored one or more standard deviations above the mean on the CBCL Total Problems did not significantly differ between target and control siblings, with 5.9% of target siblings and 13.6% of control siblings above this cutoff, $\chi^2(1, N = 40) = 0.63, p = .62$. The percentage of siblings who scored one or more standard deviations above the mean on the teacher reported TRF did not significantly differ either, with 15.8% of target siblings and 5.0% of control siblings scoring one or more standard deviations above the mean, $\chi^2(1, N = 40) = 1.23, p = .34$.

Maternal Well-Being

A secondary aim of the study was to compare maternal well-being in families with and without a preschooler with autism. Table 3 displays group comparisons for parenting daily hassles, parenting stress, and maternal depression, controlling for maternal employment status. Mothers with preschoolers with ASD reported significantly more daily hassles, life stress, and depression than mothers without a child with ASD. These effect sizes were in the moderate range (d range: .59 to .67). Although Life Stress differed between groups, other domains of stress measured on the PSI (Parent Domain, Child Domain, and Total Stress), did not significantly differ between mothers with and without a preschooler with an ASD.

Relationship Between Maternal Well-Being and Sibling Adjustment

Correlations between maternal well-being and sibling adjustment variables are depicted in Table 4 for the total sample. Mothers' reports of parenting daily hassles (PDH) significantly correlated with their reports of siblings' behavior problems (CBCL). Additionally, mothers' reports of total stress (PSI-3) significantly correlated with their reports of sibling behavior problems (CBCL) and social skills (SSRS). In other words, mothers who reported more stress were more likely to report more behavior problems and fewer social skills in the elementary-aged sibling. Teacher-reported behavior problems (TRF) significantly correlated with mothers' reports of life stress (PSI-3) and depression (CES-D). Teachers rated siblings as having more problem behaviors in families with mothers reporting more life stress and depression.

Correlations between maternal well-being and sibling adjustment were examined in the subsample of families with a preschooler with an ASD. In general, many of the same relationships found in the total sample held true for the subsample of target families with children with ASD. Parents' reports of sibling problem behavior were significantly correlated with Child Domain stress on the PSI ($r = .61, p = .01$), Parent Domain stress on the PSI ($r = .69, p = .01$), Total Stress on the PSI ($r = .83, p = .00$), and depression ($r = .64, p = .01$). Parent-reported sibling social skills was significantly correlated with Parent Domain stress ($r = -.57, p = .02$), Total Stress ($r = -.52, p = .03$), and depression ($r = -.70, p = .00$). Teacher reports of

sibling academic competence was significantly related to Life Stress ($r = -.57, p = .02$). Demographic variables were also explored in the target sub-sample to investigate whether they related to sibling adjustment. Sibling gender was significantly related to parent reports of their social skills ($r = -.55, p = .02$). That is, being male was associated with higher social skill scores. Finally, there was a trend approaching significance between family income and parent reported problem behavior ($\rho = -.47, p = .06$). That is, there was a trend for lower income to be associated with higher parent-reported behavior problems in siblings.

Discussion

In this study, the current sibling literature was extended by investigating the social, behavioral, and academic adjustment of older typically developing siblings and maternal well-being in families with a preschool-aged child with an ASD or a typically developing preschool-aged child. In an effort to minimize variance due to age-related differences and birth order, the sample was limited to families with a preschool-aged child with ASD and an older typically developing sibling in middle childhood (6 to 10 years old). Families were excluded if siblings received special education, related services (e.g., speech therapy), or had an identified emotional, behavioral, or developmental disability (e.g., attention-deficit/hyperactivity disorder, learning disability, speech delay). Previous studies of family and sibling adjustment have often included a wide age range of children with ASD and have included both younger and older siblings (e.g., Bågenholm & Gillberg, 1991), with or without disabilities, possibly influencing study findings. Thus, controlling for extraneous variables and using strict inclusionary/ exclusionary criteria, as was done in the current study, provides additional support for study findings.

The results comparing the social, behavioral, and academic adjustment of siblings with or without a preschool-aged sibling with an ASD demonstrated negligible between-group differences. Teacher-reported behavior problems, although not statistically significant, showed moderate effect sizes for sibling internalizing and total problem behaviors, with siblings of children with ASD demonstrating more behavior problems than control siblings, suggesting a possibility of heightened problems at school. It should be noted that findings from parent-reported and teacher-reported checklists suggest that siblings in both groups were generally well-adjusted, with the majority of all children within the normal range of social, behavioral, and academic functioning. These results corroborate previous studies which failed to find significant socioemotional maladjustment in siblings of children with ASD (e.g., Kaminsky & Dewey, 2002; Pilowsky et al., 2004). Although conclusions should be made with caution given the small, homogeneous sample, the lack of sociobehavioral adjustment differences between the target and control groups may indicate that siblings of children with ASD are well-adjusted. Interpretation of findings must be considered within the limitations of the study design. It is plausible that adjustment level was affected by cumulative risk. Due to the restricted age range of the siblings with autism in the study (2 to 5 years old), the typically developing older siblings may not yet have been negatively affected.

Siblings were excluded from the present study if they had identified disabilities. Several studies suggest that siblings of children with ASD are at increased risk for experiencing a range of developmental and psychiatric problems (Dawson et al., 2002; Folstein & Rutter, 1988; Murcia, Gulden, & Herrup, 2005), possibly due to a broader autism phenotype (e.g., Losh & Piven, 2007; Piven & Palmer, 1999). A moderate effect size for teacher-reported internalizing behavior problems may be some evidence for more anxiety, withdrawal, or depression in the target sibling group. Because siblings with known disabilities or psychiatric problems were excluded from the study, this effect may represent subclinical levels of internalizing difficulties. It is possible that findings would have differed if all siblings of children with ASD were included, not just those who were typically developing.

Results of this study corroborate prior research indicating that mothers who have children diagnosed with ASD report higher stress and depressive symptomatology (e.g., Fisman & Wolf, 1993; Hastings, 2003; Hastings & Johnson, 2001). With respect to stress, findings suggest that mothers of children with ASD reported more life stress (e.g., moving, change in employment) and daily hassles (e.g., continually cleaning up messes, babysitters are difficult to find) than mothers of children who were typically developing. Reports of life stress and daily hassles were undoubtedly affected by the presence of a child with an ASD, and may have been less related to the presence of the typically developing sibling. To exemplify this point, target mothers did not differ from control families in their Total Stress scores on the PSI-3. Items making up the Total Stress composite were more focused on the elementary-aged index child; thus, the influence of the preschool child with an ASD was minimized. It is plausible that typically developing siblings, in isolation, are no more stressful to mothers of preschoolers with ASD than mothers of typically developing preschoolers.

Implications for Practice

These findings can be interpreted to suggest that siblings of children with ASD did not differ significantly from siblings of typically developing children with respect to social, behavioral, and academic competence in two-parent households, with well-educated mothers, and the majority of annual family incomes >\$75,000. However, mothers of children with ASD reported more stress and depression. Furthermore, maternal stress and depression significantly correlated with children's behavioral adjustment, as reported by both mothers and teachers. Thus, siblings of preschoolers with ASD may, over time, become more at-risk for negative outcomes if they continue to accumulate risks associated with maternal stress and depression. Maternal depression has been shown to be associated with insensitive parent-child interactions in typically developing children, which have been predictive of both childhood behavior problems and cognitive impairments (Murray et al., 1999).

Parents and siblings of children with ASD may be vulnerable to some unique risks, especially over time. The current findings may assist clinicians, education professionals, and health care workers in developing and sustaining ongoing programs that are designed to support families who have children with disabilities. Interventions that target sibling well-being, including social and emotional competencies, may be important. Although siblings who had disabilities or behavior problems were excluded in the present study, some siblings of children with ASD may have features commensurate with a broad autism phenotype. Thus, developmental screening and appropriate psychoeducational interventions may be helpful in detecting and intervening with siblings who do not meet diagnostic criteria for ASD but show signs of other developmental delays or psychiatric difficulties. As siblings age, they are likely to take on more caregiving responsibilities for their brothers or sisters with disabilities. Supporting parents and siblings, across the lifespan, may help them provide appropriate care for their family member with a disability.

Limitations

Several limitations are inherent in the design and could be addressed in future research. In addition to being a small sample, the present sample consisted of families with relatively few demographic risk factors. That is, all mothers in the current study were living with a partner, well educated, and most had incomes commensurate with middle-class status, likely affecting study findings and limiting generalizability. Investigating the fathers' perspective could provide a more thorough depiction of the family dynamics. Future research could expand recruitment efforts to target families in urban areas, with more risk factors, and less involvement in social support systems (e.g., autism support groups or early childhood programs). Future studies could include father reports of child well-being.

Another study limitation was the lack of available information regarding the preschool-aged child. Parents reported the diagnosis of their son or daughter and these diagnoses were not verified. Future research could include independent verification of diagnosis (through chart review, independent evaluation, etc.) as well as assessment of adaptive functioning and problem behavior. The presence of child maladaptive behavior has been demonstrated to greatly affect parenting stress and well being (Baker et al., 2003; Lecavalier, Leone, & Wiltz, 2006) and may affect sibling adjustment. Additional research is warranted to determine the effects of behavior problems and adaptive functioning in the child with an ASD on sibling adjustment. In this sample, preschool children in control families were, on average, 8 months older than target preschool children with ASD. Although preschool child age was not significantly related to any of the adjustment variables of interest to the present study, it may be possible that age of the preschool child may be an important variable to examine in future studies. It is plausible that target preschool children with ASD were somewhat older than controls given that they are not often diagnosed until preschool years (Mandell, Novak, & Zubritsky, 2005). Additionally, it is conceivable that families in the current sample were receiving adequate social support, which served to mitigate stress and enhance sibling well-being. Unfortunately, family social support and preschool functioning were not assessed in this study; however, future research could include this information to determine the relationship of these variables on sibling adjustment.

With respect to measurement, all included instruments had adequate internal consistency reliability for the present sample, with coefficient alphas of $>.70$. It is important to note that there were several differences in alphas across target and control groups for both family well-being and sibling adjustment measures. For example, the Parenting Daily Hassle instrument yielded an alpha coefficient of .91 for target mothers and .78 for control mothers. Cronbach's alpha measures how well a set of items measure a single unidimensional latent construct. Thus, some of the measures may have more reliably measured a single latent construct for one group and not the other. Finally, although both parent reports and teacher reports of sibling adjustment were included in this study, sibling self-reports were not included. Thus, findings may not accurately capture siblings' experiences. Future research could incorporate sibling self-reports in addition to caregiver and teacher reports of adjustment.

In summary, results of the current study corroborate previous research suggesting mothers who have a child with an ASD experience higher levels of self-reported stress and depression even in the presence of protective factors such as another adult in the home and upper-middle class income. The study also extends sibling literature by including tightly controlled methodology, minimizing the effects of confounds, such as sibling age, birth order, and sociodemographic risk factors. These findings can be interpreted to suggest that typically developing siblings of children with ASD are well-adjusted, although they may experience heightened internalizing behavior problems in the classroom relative to control siblings of typically developing children.

Acknowledgments

Funding

The research was supported in part by grant R03HDH47711 from the National Institute of Child Health and Human Development, awarded to the second author.

References

- Abidin, RR. The Parenting Stress Index. 3rd ed.. Lutz, FL: Psychological Assessment Resources; 1995.
- Achenbach, TM. Manual for the Child Behavior Checklist 4–18 and 1991 profile. Burlington, VT: University of Vermont; 1991.

- Achenbach, TM.; Rescorla, LA. Manual for the ASEBA school-age forms and profiles. Burlington, VT: University of Vermont; 2001.
- Bägenholm A, Gillberg C. Psychosocial effects of children with autism and mental retardation: A population-based study. *Journal of Mental Deficiency* 1991;35:291–307.
- Baker BL, McIntyre LL, Blacher J, Crnic K, Edelbrock C, Low C. Preschool children with and without developmental delay: Behavioral problems and parenting stress over time. *Journal of Intellectual Disability Research* 2003;47:217–230. [PubMed: 12787154]
- Blacher J, McIntyre LL. Syndrome specificity and behavioural disorders in young adults with intellectual disability: Culture differences in family impact. *Journal of Intellectual Disability Research* 2006;50:184–198. [PubMed: 16430730]
- Bodfish JW. Treating the core features of autism: Are we there yet? *Mental Retardation and Developmental Disabilities* 2004;10:318–326.
- Centers for Disease Control and Prevention. Prevalence of ASDs. 2007. Retrieved July 15, 2007, from http://www.cdc.gov/ncbddd/autism/faq_prevalence.htm#whatisprevalence
- Crnic KA, Greenberg MT. Minor parenting stresses with young children. *Child Development* 1990;61:1628–1637. [PubMed: 2245752]
- Dawson G, Webb S, Schellenberg GD, Dager S, Friedman S, Aylward E, et al. Defining the broader phenotype of autism: Genetic, brain, and behavioral perspectives. *Development and Psychopathology* 2002;14:581–611. [PubMed: 12349875]
- Dominigue, B.; Cutler, B.; McTarnaghan, J. The experience of autism in the lives of families. In: Wetherby, AM.; Prizant, BM., editors. *Autism spectrum disorders: Vol. 9. A transactional developmental perspective*. 9th ed.. Vol. Vol.. Baltimore: Paul H. Brookes; 2000. p. 369-394.
- Fisman S, Wolf L. The handicapped child: Psychological effects of parental, marital, and sibling relationships. *Pervasive Developmental Disorders* 1993;14:199–217.
- Folstein S, Rutter M. Autism: Familial aggregation and genetic implications. *Journal of Autism and Developmental Disorders* 1988;18:3–30. [PubMed: 3131299]
- Gresham, FM.; Elliott, SN. *Social Skills Rating System manual*. Circle Pines, MN: American Guidance Service; 1990.
- Hannah ME, Midlarsky E. Siblings of the handicapped: A literature review for school psychologists. *School Psychology Review* 1985;14:510–520.
- Hastings RP. Brief report: Behavioral adjustment of siblings of children with autism. *Journal of Autism and Developmental Disabilities* 2003;33:99–104.
- Hastings RP, Johnson E. Stress in UK families conducting intensive home-based behavioral intervention for their young child with autism. *Journal of Autism and Developmental Disorders* 2001;31:327–336. [PubMed: 11518485]
- Hastings RP, Kovshoff H, Brown T, Ward NJ, Degli Espinosa F, Remington B. Coping strategies in mothers and fathers of preschool and school-age children with autism. *Autism* 2005;9:377–391. [PubMed: 16155055]
- Kaminsky L, Dewey D. Psychosocial adjustment in siblings of children with autism. *Journal of Child Psychology and Psychiatry* 2002;43:225–232. [PubMed: 11902601]
- Lecavalier L, Leone S, Wiltz J. The impact of behaviour problems of caregiver stress in young people with autism spectrum disorders. *Journal of Intellectual Disability Research* 2006;50:172–183. [PubMed: 16430729]
- Lord, C.; Risi, S. Diagnosis of autism spectrum disorders in young children. In: Wetherby, AM.; Prizant, BM., editors. *Autism spectrum disorders: Vol. 9. A transactional developmental perspective*. 9th ed.. Vol. Vol.. Baltimore: Paul H. Brookes; 2000. p. 11-30.
- Losh M, Piven J. Social-cognition and the broad autism phenotype: Identifying genetically meaningful phenotypes. *Journal of Child Psychology and Psychiatry* 2007;48:105–112. [PubMed: 17244276]
- Mandell DS, Novak MM, Zubritsky CD. Factors associated with age of diagnosis among children with autism spectrum disorders. *Pediatrics* 2005;116:1480–1486. [PubMed: 16322174]
- Mates TE. Siblings of autistic children: Their adjustment and performance at home and in school. *Journal of Autism and Developmental Disorders* 1990;20:545–553. [PubMed: 2279972]

- Murcia CL, Gulden F, Herrup K. A question of balance: A proposal for new mouse models of autism. *International Journal of Developmental Neuroscience* 2005;23:265–275. [PubMed: 15749251]
- Murray L, Sinclair D, Cooper P, Ducournau P, Turner P, Stein A. The socioemotional development of 5-year-old children of postnatally depressed mothers. *Journal of Child Psychology and Psychiatry* 1999;40:1259–1271. [PubMed: 10604404]
- National Research Council. *Educating children with autism*. Washington, DC: National Academy Press; 2001. Committee on Educational Interventions for Children with Autism. Division of Behavioral and Social Sciences and Education
- Pilowsky T, Yirmiya N, Doppelt O, Gross-Tsur V, Shalev RS. Social and emotional adjustment of siblings of children with autism. *Journal of Child Psychology and Psychiatry* 2004;45:855–865. [PubMed: 15056315]
- Piven J, Palmer P. Psychiatric disorder and the broad autism phenotype: Evidence from a family study of multiple-incidence autism families. *American Journal of Psychiatry* 1999;156:557–563. [PubMed: 10200734]
- Radloff LS. The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement* 1977;1:385–401.
- Ross P, Cuskelly M. Adjustment, sibling problems and coping strategies of brothers and sisters of children with autistic spectrum disorders. *Journal of Intellectual & Developmental Disability* 2006;31:76–86.
- Wing L, Potter D. The epidemiology of autistic spectrum disorders: Is the prevalence rising? *Mental Retardation and Developmental Disabilities* 2002;8:151–161.
- Wolf LC, Noh S, Fisman SN, Speechley M. Brief report: Psychological effects of parenting stress on parents of autistic children. *Journal of Autism and Developmental Disorders* 1989;19:157–166. [PubMed: 2523379]

Biographies

Nicole Quintero, PhD, is a postdoctoral fellow in psychology at the Institute on Disability and Human Development at the University of Illinois at Chicago. She received a PhD in school psychology from Syracuse University in 2009. Her current interests include: autism spectrum disorders, sibling and family adjustment, and kindergarten transition.

Laura Lee McIntyre, PhD, is an associate professor of school psychology in the department of special education and clinical sciences at the University of Oregon. Her current interests include: early identification and treatment of childhood developmental and behavioral problems, family-based interventions, kindergarten transition, and parent–professional partnerships.

Table 1

Demographics for Families With and Without a Preschooler With Autism Spectrum Disorder (ASD)

Characteristic	Target/ASD (<i>n</i> = 20)	Control (<i>n</i> = 23)	<i>t</i> or χ^2
Mother/family			
Age in years, <i>M</i> (<i>SD</i>)	36.35 (4.97)	36.64 (4.29)	<i>t</i> = 0.19
Maternal status, % biological (<i>n</i>)	94.1 (16)	95.4 (21)	χ^2 = 0.35
Education, % BA/BS (<i>n</i>)	58.8 (10)	77.3 (17)	χ^2 = 1.53
Employment, % working (<i>n</i>)	47.1 (8)	77.3 (17)	χ^2 = 3.80*
Status, % married/ partnered (<i>n</i>)	100.0 (17)	100.0 (22)	χ^2 = 0.00
Family size, <i>M</i> (<i>SD</i>)	4.29 (0.77)	4.64 (0.79)	<i>t</i> = 1.35
Family income, % (<i>n</i>)			χ^2 = 5.17
<\$15k	6.2 (1)	0.0 (0)	
\$35–45k	12.5 (2)	0.0 (0)	
\$55–65k	6.2 (1)	9.5 (2)	
\$65–75k	12.5 (2)	9.5 (2)	
\$75–85k	18.7 (3)	14.3 (3)	
\$85–100k	18.7 (3)	23.8 (5)	
>\$100k	25.0 (4)	42.9 (9)	
Sibling			
Age in years, <i>M</i> (<i>SD</i>)	7.35 (1.27)	7.18 (1.05)	<i>t</i> = -0.46
Gender, % male (<i>n</i>)	38.9 (11)	54.5 (10)	χ^2 = 0.97
Race, % White (<i>n</i>)	88.2 (15)	95.4 (21)	χ^2 = 0.70
Grade, <i>M</i> (<i>SD</i>)	1.89 (1.41)	1.36 (1.00)	<i>t</i> = -1.40
Attend public school, % (<i>n</i>)	100.0 (19)	80.0 (16)	χ^2 = 4.23
Months known by teacher, <i>M</i> (<i>SD</i>)	8.78 (3.40)	10.66 (6.39)	<i>t</i> = 1.16

* *p* < .05.

Table 2

Parent and Teacher Reports of Sibling Adjustment in Families With and Without a Preschooler With Autism Spectrum Disorder (ASD)

Report	Target/ASD M (SD)	Control M (SD)	<i>t</i>	<i>d</i>
Parent report				
Problem Behavior (CBCL)				
Internalizing	51.12 (9.75)	52.32 (10.95)	0.36	-0.11
Externalizing	49.18 (8.33)	49.91 (11.77)	0.22	-0.07
Total Problems	47.41 (8.43)	48.18 (12.42)	0.22	-0.07
Social Skills	102.65 (13.96)	99.95 (14.09)	-0.59	0.19
Teacher report				
Problem Behavior (TRF)				
Internalizing	51.58 (9.09)	47.10 (6.45)	-1.78	0.57
Externalizing	49.26 (6.67)	47.30 (7.80)	0.40	0.27
Total Problems	49.05 (8.94)	45.45 (8.22)	-1.31	0.41
Social Skills	105.50 (12.40)	108.00 (8.73)	0.72	-0.23
Academic Competence	101.95 (9.38)	103.21 (9.17)	0.42	-0.13

Note: CBCL = *Child Behavior Checklist*; TRF = *Teacher Report Form*.

None of the group comparisons reached statistical significance.

Table 3

Maternal Well-Being in Families With and Without a Preschooler With Autism Spectrum Disorder (ASD)
Controlling for Maternal Employment Status

Maternal Well-Being	Target/ASD <i>M (SD)</i>	Control <i>M (SD)</i>	<i>F</i>	<i>d</i>
<i>Parenting Daily Hassles</i>	47.00 (13.49)	39.64 (8.04)	3.96*	0.67
<i>Parenting Stress Index-3</i>				
Child Domain Total	91.59 (20.38)	93.00 (22.91)	0.58	-0.06
Parent Domain Total	123.88 (23.23)	117.90 (29.40)	0.87	0.23
Total Stress	215.47 (34.49)	206.33 (49.96)	0.81	0.21
Life Stress	6.82 (5.39)	3.71 (4.95)	4.20*	0.60
Depression-CES-D	13.71 (8.04)	8.82 (8.37)	3.77*	0.59

Note: CES-D = *Center for Epidemiologic Studies-Depression Scale*.

* $p < .05$.

Table 4

Correlations Between Maternal Well-Being and Sibling Adjustment Variables

Variable	1	2	3	4	5	6	7	8	9
1. Daily Hassles (PDH)	—								
2. Total Stress (PSI-3)	.32*	—							
3. Life Stress (PSI-3)	.12	.37*	—						
4. Depression (CES-D)	.19	.71***	.53***	—					
5. Total Prob (CBCL) Parent report	.35*	.66***	.12	.56***	—				
6. Total Prob (TRF) Teacher report	.11	.28	.41**	.38**	.34*	—			
7. Social Skills (SSRS) Parent report	-.05	-.53***	-.14	-.46	-.61***	-.39*	—		
8. Social Skills (SSRS) Teacher report	.09	-.20	-.18	-.08	-.27	-.43**	.10	—	
9. Academic Competence (SSRS)	-.05	-.20	-.22	-.26	.03	-.19	.13	.31	—

Note: CBCL = Child Behavior Checklist; CES-D = Center for Epidemiologic Studies–Depression Scale; PDH = Parenting Daily Hassles; PSI-3 = Parenting Stress Index; SSRS = Social Skills Rating System; TRF = Teacher Report Form.

* $p < .05$.

** $p < .01$.

*** $p < .001$.