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Longitudinal Effects of Adaptability on Behavior Problems and Maternal Depression in Families of Adolescents with Autism

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Abstract

Research on families of individuals with autism has tended to focus on child-driven effects utilizing models of stress and coping. The current study used a family-systems perspective to examine whether family-level adaptability promoted beneficial outcomes for mothers and their adolescents with autism over time. Participants were 149 families of children diagnosed with autism who were between the ages of 10 and 22 years during the three-year period examined. Mothers reported on family adaptability, the mother-child relationship, their own depressive symptoms, and the behavior problems of their children at Wave 1, and these factors were used to predict maternal depression and child behavior problems three years later. Family-level adaptability predicted change in both maternal depression and child behavior problems over the study period, above and beyond the contribution of the dyadic mother-child relationship. These associations did not appear to depend upon the intellectual disability status of the individual with autism. Implications for autism, parent mental health, family systems theory, and for intervention with this population are discussed.

Keywords

Autism; adaptability; maternal depression; behavior problems; longitudinal effects

Research on families of individuals with developmental problems has tended to focus on child effects, examining how families are affected by the stressful experience of raising these children (Crnic, Friedrich, & Greenberg, 1983; Scorgie, Wilgosh, & McDonald, 1998) or, less frequently, how child characteristics influence parenting behavior and/or the family system (Costigan, Floyd, Harter, & McClintock, 1997; Fenning, Baker, Baker, & Crnic, 2007; Floyd, Harter, & Costigan, 2004). Understanding how parents maintain positive mental health and re-organize their behavior around the special needs of their children is of substantial clinical significance; however, an exclusive focus on family functioning as an outcome fails to fully appreciate the wealth of evidence from typically-developing populations highlighting the transactional interplay of child and family factors over time (Sameroff, 2009). The relative emphasis on child-driven effects on the family is even more pronounced in the study of autism, with the majority of research examining how particular

child characteristics affect parenting stress and mental health (Davis & Carter, 2008; Tomanik, Harris, & Hawkins, 2004).

One potential reason for an emphasis on child driven models in developmental disabilities lies in the substantial risk for poor parent mental health and the powerful effects of child behavior problems on distress in these families (e.g., B. Baker, Blacher, Crnic, & Edelbrock, 2002; Hauser-Cram, Warfield, Shonkoff, & Krauss, 2001). Family characteristics have been examined as potential resilience factors, with evidence for the role of support within the family on parent mental health outcomes (Barakat & Linney, 1992; Scorgie et al., 1998). Support may stem from dyadic relationships within the family or from family-level resources such as cohesion. Of course, family-level factors independent of support exist, and these may also serve as important resources for parents of children with developmental disabilities. One aim of the current study was to examine how family level *adaptability*, described below, might affect maternal depressive symptoms in families of individuals with autism over time.

Autism is a neurodevelopmental disorder involving core impairments in social functioning and communication (Dawson, 2008). A relative emphasis on child effects in autism may also have developed because child behavior problems are thought to originate primarily from the child's developmental condition. Behavior disruption is common in autism (McClintock, Hall, & Oliver 2003) and behavior problems may stem largely from autism-related rigidity and/or frustration from autism-related deficits (Whitman & Ekas, 2008). In addition, the possibility of a *biological constraint* has been discussed, suggesting that neurodevelopmental deficits, combined with on-going impairments in social motivation and engagement, may reduce the degree to which family factors can influence the behavioral phenotype of autism (see J. Baker, Messinger, Kelley, & Grantz, 2010, for a discussion).

Although some evidence for biological-constraint theories has emerged (Van IJzendoorn et al., 2007), there is also growing evidence to suggest that parent and family factors may take on *at least* as much importance for individuals with developmental problems as compared to normative populations (J. Baker, Fenning, Crnic, Baker, & Blacher, 2007). Specific to autism, recent longitudinal studies suggest that parenting can influence various aspects of the autism phenotype from early toddlerhood through adulthood (e.g., J. Baker et al., 2010; J. Baker, Smith, Greenberg, Seltzer, & Lounds, 2011; Greenberg, Seltzer, Hong, & Orsmond, 2006). Thus, there is growing evidence that parenting can influence autism-related behavior, even if the etiology of such behavior is largely neurodevelopmental in nature. Although support for the importance of dyadic (e.g., parenting) factors is emerging, no study known to the authors has examined the potential effects of systemic, family-level factors on the development of individuals with autism over time. A second aim of the current study was to examine the potential effects that family adaptability might have on the behavior problems of individuals with autism, above and beyond the dyadic parent-child relationship.

Family-level adaptability refers to the ability of a family system to change in the face of situational or developmental stress (Minuchin, 1974; Olson, Sprenkle, & Russell, 1979), reflected in part by a family's ability to generate new solutions to problems, to compromise,

and to shift roles and responsibilities (Olson, 2008). Although adaptability is often considered alongside family-level cohesion (i.e., the emotional bonding of the family; Olson et al., 2000), these two constructs are not only conceptually distinct from one another but are also thought to be fairly unrelated (Olson, 2008). Low family adaptability in otherwise typically-developing populations has been linked with a host of poor child outcomes, ranging from serious emotional disturbance to increased risk for future injection drug use (Corsi, Winch, Kwiatkowski, & Booth, 2007; Prange, Greenbaum, Silver, & Friedman, 1992). Families of children with developmental problems, despite the uniqueness of their experience, also engage in normative family tasks and exhibit a wide range of family dynamics (Costigan et al., 1997; Floyd et al., 2004). A family's ability to remain flexible, to re-organize around new challenges, and to develop cooperative problem-solving styles is likely to enable its members to meet the many challenges of family life. In contrast, rigidity in family dynamics may tend to stifle creative thinking and input among members, and to lock families into interactive patterns that are unsatisfying to certain members and are ill-equipped to address new problems. Rigid family structures could maintain family stress and could also produce feelings of helplessness and frustration in its members, exacerbating parental depressive symptoms and child behavior problems.

Family adaptability may be particularly relevant for caregivers of individuals whose special needs require increased problem-solving, flexibility and on-going accommodation. Indeed, Deimling, Smerglia, and Schaefer (2001) found that low adaptability was the strongest family predictor of depression in caregivers of impaired elders. Hassiotis (1997) examined family adaptability in a small sample of families of adolescents and young adults with learning disabilities and reported concurrent associations between adaptability and challenging child behavior. Mothers of children with comorbid behavior problems were also higher on depression, suggesting a potential link between adaptability and maternal depression. Interestingly, the author considered the concurrent link between adaptability and child behavior problems purely from a child-driven perspective, with findings suggesting “the difficulty of the families with the more severely affected children in being flexible or in changing over time” (p. 40). Bidirectional effects remain possible, however, with beneficial family functioning also affording a positive therapeutic effect on individual members—including the child. Indeed, in the general population, high family adaptability has been linked to lower behavior problems in both low- and high-risk children (Bauman, Camacho, Silver, Hudis, & Draimin, 2002; Smets & Hartup 1998).

A construct related to adaptability, family problem-solving, has been examined in families of children with intellectual disability (e.g., Costigan et al., 1997; Floyd et al., 2004). Findings suggested a link between child behavior problems and family problem solving; however, the design of this study was not longitudinal so causality could not be addressed (Floyd et al., 2004). To our knowledge, only one study to date has examined adaptability in families of individuals with autism. A previous investigation from our laboratory using an overlapping portion of the current sample found concurrent associations among family adaptability, maternal depression, and child behavior problems (Orsmond, Lin, & Seltzer, 2007). Importantly, these factors were measured at the same time-point, and a reasonable assumption is that family-level adaptability may have reflected the combined characteristics of the individual members. The question then remains whether or not family adaptability in

turn feeds back upon the members, fostering positive maternal and child outcomes over time. Some research on how family-level functioning may affect children with other disabilities has been performed (Mink, Nihira, & Meyers, 1983; Hauser-Cram et al., 1999; Shonkoff, Hauser-Cram, Krauss, & Upshur, 1992), which can inform such research on families of children with autism. The current study extended the examination of the potential benefits of positive family-level functioning to families of individuals with autism, and examined the under-studied construct of family adaptability.

The Current Study

Although family adaptability is pertinent at any phase of development, the current investigation examined how adaptability during early adolescence predicted individual outcomes as the children with autism entered late adolescence/young adulthood. Individuals with autism qualify to receive secondary school services until the age of 22, and there is evidence suggesting that the period leading up to this transition may represent a particularly stressful time for parents of individuals with autism (J. Baker et al., 2011; Lounds, Seltzer, Greenberg, & Shattuck, 2007). Furthermore, the period from early adolescence to young adulthood is also characterized by disruption even in typically-developing populations, and the normative task for most families at this time involves re-organization and on-going negotiation within the family system. As adolescents become more independent and the desire for individuation becomes more pronounced, the family system must be flexible enough to adjust to related role changes and novel issues that arise (see McHale & Sullivan, 2008).

It is possible that family-level adaptability might relate to change in individual outcomes due to its shared variance with other aspects of family functioning. We therefore controlled for mother-child relationship quality in order to ensure that adaptability was not simply indexing this more proximal, dyadic factor. We also examined whether the presence of intellectual disability (ID) in the child moderated the association between adaptability and child behavior problems in order to evaluate the possibility that this relation, if significant, could have been driven primarily by less affected individuals. Although more severely impaired individuals may exhibit less developmental change over time (Shonkoff et al., 1992), family factors might predict child outcomes equally or more strongly for children with cognitive delays (J. Baker et al., 2007). Given the lack of relevant research investigating ID as a moderator of family-child associations, our moderation analysis was largely exploratory.

Method

Participants

Participants for the current study were drawn from an ongoing longitudinal investigation of families of adolescents and adults with autism living in Massachusetts ($n = 204$) and Wisconsin ($n = 202$). Characteristics of the larger sample have been described in detail in previous studies from our laboratory (Greenberg et al., 2006; Seltzer et al., 2011). Briefly, criteria for inclusion at Wave 1 were: (a) the family had a son or daughter age 10 years or older; (b) the child received a diagnosis of an autism spectrum disorder (ASD) by a medical,

psychological, or educational professional, as per parent report; and (c) administration of the Autism Diagnostic Interview-Revised (Lord, Rutter, & LeCouteur, 1994) supported the ASD diagnosis. Data on family adaptability were obtained at only the first wave of the investigation (collected 1998 – 2000), so these data were included in the current study as the point of prediction. Child behavior problems and maternal depression were considered at the first wave and also at a follow-up three years later (Wave 3, 2002 – 2003).

Of the 406 families participating in the first wave, 200 included target children within the desired age range (i.e., under 22 years at Wave 3). Of these families, 171 of the target children were co-residing with the parent(s) at the initial study period and adaptability data from the first wave were available for all but four of these families. Across the 3-year period currently examined, 15 of the remaining 167 children (9%) transitioned to non-co-resident status and three mothers died, leaving a final sample of 149 families. No demographic or study variable differentiated between families that remained versus those who were excluded based upon change in residence or death.

Children's average age at the first wave of the study was 14.77 years ($SD = 1.89$), and mothers' age averaged 44.36 years ($SD = 5.21$). Mean age of the children at follow-up was 17.82 years ($SD = 2.06$). Seventy-four percent of the target children were male. Eighty-six percent of the mothers were married and 91% identified themselves as Caucasian and not Hispanic. Approximately 58% of the mothers completed college and 23% held graduate degrees. The average household income in 1999 U.S. dollars fell between \$45,000 and \$60,000, and most of the children had one to two siblings in the home.

Procedures and Measures

All procedures were conducted in accordance with our Institutional Review Board. Each wave of data collection involved participation by mothers in a 2- to 3-hour interview and completion of questionnaires.

Family adaptability—Family adaptability was measured with a revised version of the adaptability scale from the Family Adaptability and Cohesion Evaluation Scales-2nd edition (FACES II; Olson, Portner, & Bell, 1982). The original scale included 14 items designed to measure adaptability in a curvilinear manner, with moderate scores reflecting an optimal range of functioning. Many studies, however, reported low factor loadings for certain items on the FACES II and its revision (the FACES III; Olson, Portner, & Lavee, 1985), and also suggested that the adaptability scales functioned primarily in a linear manner (Ben-David & Jurich, 1993; Green et al., 1991; Olson, 1991). The authors of the scale subsequently revised the FACES in order to identify the strongest items and to create a scale that clearly measured adaptability in a linear manner (Olson, 2008). The current version of the FACES adaptability scale (FACES IV; Olson, 2008) consists of seven items. Four of these items are identical to items on the FACES II and one is highly similar. Thus, to create the most robust measure of linear adaptability for the current study, we constructed a scale from the FACES II that consisted of the five items retained by the FACES IV (α for the current study = .63). Although the internal consistency of this scale was somewhat low, this version demonstrated

higher reliability than did the established and widely used FACES III adaptability scale ($\alpha = .61$; Olson et al., 1985).

Items on the current scale measured aspects of adaptability that included how well the family as a whole generated new solutions to problems, the degree to which the family compromised, the fairness of discipline, the clarity of rules, and the flexibility with which members shifted family roles. These factors were assessed in relation to general family functioning and not necessarily with regard to issues concerning the target child. Mothers rated the frequency of each behavior on a 5-point scale, with higher scores representing greater adaptability, and these items were averaged to create the summary score. The FACES scales are the most commonly used report measures of family adaptability and have generated all of the aforementioned findings involving adaptability. The FACES IV adaptability scale has demonstrated adequate reliability and validity (Olson, 2011).

Mother-child relationship—Mothers' perceptions of closeness with their children with ASD were measured with 10 items from the Positive Affect Index (PAI; Bengtson & Schrader, 1982). Five items addressed each mother's feelings and affective behaviors toward her child (e.g., affection, trust, respect), and five items considered the same feelings and behaviors as perceived to be reciprocated by the child. Each item was rated on a scale ranging from 1 (*not at all*) to 6 (*extremely*). Reliability and validity for the PAI has been demonstrated in general (Bengtson & Schrader, 1982), and in previous studies from our larger investigation (e.g., Orsmond, Seltzer, Greenberg, & Krauss, 2006). The overall dyadic relationship score was generated by adding the sums of the mother-to-child and child-to-mother items ($r = .64, p < .001$).

Child behavior problems—The General Maladaptive Index of the Scales of Independent Behavior Revised—SIB-R (Bruininks, Woodcock, Weatherman, & Hill, 1996) was used to measure behavior problems. This rating included behaviors that were hurtful to self, unusual or repetitive, withdrawn or inattentive, socially offensive, uncooperative, hurtful to others, destructive to property, and/or disruptive. Mothers were asked to indicate whether a particular behavior problem occurred within the last six months and, if so, to rate the frequency (1, *less than once a month* to 5, *one or more times an hour*) and the severity of the behavior (1, *not serious* to 5, *extremely serious*). The SIB-R is reliable and valid (Bruininks et al., 1996) and has exhibited stability and convergent validity in our sample (e.g., J. Baker et al., 2011). The scale generates a range of scores from 90 to 174. A score between 90 and 110 reflects behaviors that are not considered clinically-significant, and scores above 111 reflect *marginally serious* (111-120), *moderately serious* (121-130), *serious* (131-140), or *very serious* problems (above 141).

Maternal depressive symptoms—Mothers' depressive symptomatology was measured with the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1997). The CES-D asked participants to rate how often each of 20 statements applied to them within the last week, from 1 (*rarely or none of the time, less than 1 day*) to 4 (*most or all of the time, 5–7 days*). CES-D scores of 16 or above indicate clinically-significant symptoms. The CES-D is reliable and valid, and has demonstrated convergence with other measures of depression.

Intellectual disability—Procedures for assessing the presence of ID in our sample have been reported in detail in previous studies (e.g., Greenberg et al., 2006). Briefly, ID was considered present if the individual obtained a standard score below 70 on both the Wide Range Intelligence Test (Glutting, Adams, & Sheslow, 2000) and the Vineland Scales of Adaptive Behavior—Screeners (Sparrow, Carter, & Cicchetti, 1993). For individuals who scored between 71 and 75 on one or both measures, or for whom either of the measures was missing, review of additional records and clinical consensus was used. Status was coded as “1” if an intellectual disability was present, and “0” if it was not. Fifty six percent of the children were considered to have ID, generally consistent with previous epidemiological findings (e.g., Fombonne, 2003).

Analytic Plan

Descriptive data and correlations among variables were initially examined. The variables of interest were then entered into a just-identified path analysis model using Mplus (Muthén & Muthén, 2006) in which initial levels of family adaptability, mother-child relationship, maternal depression and child behavior problems predicted later depression and behavior problems. Similar to previous studies examining developmental change, we used residualized change (obtained by controlling for the earlier scores of the dependent measures) to statistically model change (see Shonkoff et al., 1992).

Assuming that associations among family adaptability, later depression, and later behavior problems emerged, an examination of indirect effects was planned in order to determine the degree to which residualized change in one dependent variable may have accounted for the effect of adaptability on the other dependent variable. Indirect effects were assessed by adjusting the model to include directional pathways between dependent variables, which would allow for the examination of indirect effects. Because our sample size was relatively small for multi-group modeling and we were interested in whether or not ID status moderated a particular association, a hierarchical regression predicting residual change in behavior problems was performed in which ID status and our four predictors were entered on the first step, and the ID x family adaptability interaction term was entered on the second step.

Results

Sixteen families (11%) dropped between the waves considered here. Missing data (including attrition) ranged from 1% to 19% for any given association and these data did not appear to depart substantially from being “missing completely at random” as per Little's MCAR test (Little, 1988), $\chi^2 = 11.66, p = .11$. Indeed, missing status for Wave 3 depression and behavior problem data were unrelated to the Wave 1 scores on these variables. Missing data were estimated using full information maximum likelihood estimation (Enders & Bandalos, 2001)¹.

¹An alternative path model including only families that provided data at both waves was also tested and resulted in a pattern of significance identical to that observed in the estimated model.

Behavior problems showed a decrease over time for this population ($M = 116.50$, $SD = 11.66$ to $M = 114.41$, $SD = 11.30$; $t = 2.86$, $p < .01$, $d = .52$), consistent with previous examinations of these waves that included the entire sample (e.g., Shattuck et al., 2007). However, mean behavior problems remained within the marginally serious range, and a quarter (24%) of the individuals with ASD scored within the moderately serious range or higher at the final measurement period. Mean scores for maternal depression remained in the normative range throughout the period examined herein ($M = 13.68$, $SD = 10.11$ to $M = 13.08$, $SD = 9.81$); however, 28% of mothers scored above the clinical cut-off at the final period. Although the descriptive data on adaptability could not be directly compared to the FACES IV norms based on the full scale, we note that the current sample's average score per scale item ($M = 3.59$, $SD = .58$) fell above the average item score for the FACES IV normative group (50th percentile $M = 3.29$), and well above the lower cut-off for the “flexible” categorization ($M = 2.71$; Olson, 2008). Bivariate correlations among study variables can be seen in Table 1. Because none of the demographic variables were associated with family adaptability, these were not included in the path model so as to preserve a reasonable parameter to participant ratio (Bentler & Chou, 1987).

Testing of the path model indicated high stability of behavior problems and maternal depression over time (Figure 1). However, initial levels of family adaptability predicted final levels of both of these factors (depression est. = -3.210 , $SE = 1.203$; behavior problems est. = -3.241 , $SE = 1.253$), above and beyond initial levels of depression, behavior problems, and the mother-child relationship, indicating that adaptability predicted residualized change in behavior problems and depression (see Figure 1). The mother-child relationship demonstrated concurrent associations with child behavior problems, but this dyadic variable did not predict residualized change in either maternal depression or child behavior problems over time.

We considered whether the effect of family adaptability on each dependent variable could be explained by residualized change in the other dependent factor. Testing of indirect effects was precluded by the lack of significant directional associations in the adjusted model from Wave 3 depression to Wave 3 behavior problems, $\beta = .13$, *ns*, and from Wave 3 behavior problems to Wave 3 depression, $\beta = .14$, *ns*. Thus, family adaptability appeared to predict the maternal and child outcomes uniquely. Results from the hierarchical regression replicated those of the path model in that family adaptability demonstrated a main effect on child behavior problems, $\beta = -.17$, $p < .05$; however, the ID x adaptability interaction term was not significant, $\beta = -.07$, $p = .47$ (R^2 for Step 2 = $.00$, $p = .47$), suggesting that the relation between adaptability and change in behavior problems did not depend upon the ID status of the individual with autism.

Discussion

Findings from the current study suggest that family-level adaptability may influence the course of maternal depression and child behavior problems in families of adolescents and young adults with autism, above and beyond the potential contribution of the mother-child dyadic relationship. These results have implications for several areas of study, informing our knowledge of autism, parent coping, family systems theory, and family interventions.

The clearest implication of the current study is that children with autism, like most children, likely respond to their family environment in addition to acting upon it. Furthermore, family adaptability appeared to predict change in child behavior problems regardless of whether or not the individual with autism exhibited comorbid intellectual disability, suggesting that the benefit of family adaptability may not depend upon children's functional abilities. Although these notions may not surprise family researchers or practitioners, they are rather novel to the study of autism due to a prominent focus on child effects and the fact that autism is characterized by a strong neurodevelopmental etiology and ongoing social deficits. Along with emerging evidence that dyadic factors can impact the course of the autism phenotype (e.g., J. Baker et al., 2010; J. Baker et al., 2011; Greenberg et al., 2006), the current findings suggest that behavioral trajectories in individuals with autism may also be receptive to aspects of the larger family system. Family-level adaptability also predicted subsequent reductions in maternal depression, and this effect was not accounted for by the parent-child relationship or by reductions in behavior problems. These findings support the proposition that rigidity in family functioning may foster negative feelings in its members, and that fluid, adaptable systems can promote well-being in the face of considerable on-going stress.

A central tenet of developmental psychopathology is that knowledge of typical and atypical development inform one another (Cummings, Davies, & Campbell, 2000). A large literature on family functioning in normative populations exists and could greatly benefit the study of intellectual and developmental disabilities (Baum & Lynggaard, 2006). In turn, family research in populations with atypical development can also contribute valuable information about the nature of normative family process. As an example, several early family theories minimized the importance individual psychopathology, viewing it largely as a secondary symptom of dysfunction in the family unit (see McHale & Sullivan, 2008, for a discussion). While the target of more contemporary family systems approaches remains on the family unit, there is an increased appreciation that "individual" difficulties may provide clues as to how certain families get stuck in particular patterns (McHale & Sullivan, 2008). Indeed, there are few individual factors more severe or pervasive than autism. Our findings therefore join those involving families of individuals with schizophrenia and other serious mental disorders (Nichols, 2009; Pilling et al., 2002) to support and strengthen the family systems perspective that, even in the face of salient individual difficulties, a focus on family-level processes may be quite useful.

Despite the success of family intervention in the treatment of adults with schizophrenia (McFarlane, 2002; Pilling et al., 2002), and emerging evidence that certain models born out of this work may be useful for families of individuals with autism (e.g., J. Baker et al., 2011; Greenberg et al., 2006; Smith, Greenberg, Seltzer & Hong, 2008), this approach has been fairly neglected in helping families of adolescents and adults with intellectual or developmental disabilities, despite some recent calls-to-action by family therapists (e.g., Baum & Lynggaard, 2006; Rhodes, 2002). Although additional studies are clearly needed, our findings provide initial evidence for the importance of considering family-level factors in the study, and perhaps in the treatment, of adolescents and young adults with autism.

Although adaptability is appreciated by many family approaches (see McHale & Sullivan, 2008), it is not always a central target in family treatment. Family interventions for

schizophrenia, for example, can include a number of techniques such as psycho-education and problem-solving (McFarlane, 2002; Pillar et al., 2002). While each of these methods likely promotes family adaptability, they can be delivered independent from a systems perspective, and “dismantling” studies have not yet considered whether or not addressing adaptability is an active ingredient in the intervention. Our findings suggest that increased adaptability maybe one possible mechanism underlying the effectiveness of family interventions.

Increasing adaptability in families of individuals with autism may be thought to be a particularly challenging task, given that autism is marked by rigidity (American Psychological Association, 2000), and that a certain portion of first-degree relatives may exhibit similar problems (Hurley, Losh, Parlier, Reznick, & Piven, 2006). Although not directly comparable to norms from the FACES IV, our families' average item score suggested that the group was no more likely than most families to exhibit rigid patterns as defined by a family systems perspective. These findings suggest either that the “broad autism phenotype” does not necessarily affect family-level adaptability or that these tendencies may be balanced by other factors, such as movement toward *increased* adaptability as a result of long-term family challenges.

A surprising finding in our study was that mother-child relationship quality did not predict change in maternal depression or child behavior problems. Studies have reported concurrent associations between the mother-child relationship and these variables (e.g., Orsmond et al., 2006). It is possible then that shared affect, trust, and respect between mother and child may represent a robust indicator of current family climate, but may not predict change during adolescence as well as adaptability. Similarly, depression and behavior problems were not predictive of each other over time in our model. Given the age examined, the moderate association of these factors at the initiation of the study, and the considerable stability of each, it is possible that the association between these factors was already established and less open to change during this point in the family life cycle. In contrast, family adaptability may have represented a more recent contributor to associated processes and may have been particularly relevant during adolescence.

The present study depended heavily on maternal report, so shared method variance, the accuracy of the report, and some specific biases must be considered. Concerns about shared method variance were somewhat reduced in our study by the use of a path model that controlled for other report measures and for earlier forms of the outcome variables. Although the study measured only maternal perspectives, it is meaningful that mothers who perceived their families as higher in adaptability decreased in depressive symptoms over time. Regarding the potential inaccuracy of maternal report, we were careful to consider the possibility that changes in perceived behavior problems may have occurred as a function of change in maternal depressive bias—a possibility that was not supported by the data. Nonetheless, future examinations utilizing observational methods or multi-informant report are necessary before firm conclusions can be drawn regarding appropriate avenues for intervention.

Our study utilized a shortened version of the most recently developed measure of adaptability, composed of five rather than seven items. Although this shortened form would have likely reduced rather than increased the potential for finding associations, future studies could replicate our investigation using the full FACES IV adaptability scale. We attempted to increase support for the uniqueness of the family-level construct by including a particularly relevant dyadic factor; however, future studies may include additional measures of family-level functioning (e.g., marital quality) in order to identify adaptability as specifically important. Similarly, although the adaptability measure was designed to reflect a systemic family construct, studies that consider interactions between various family variables would represent a more sophisticated family-systems design. In the current study, we examined the effects of adaptability on the functioning of individual members. Although there is evidence that children with disabilities likely influence the family system (e.g., Costigan et al., 1997), future studies might include measurement of adaptability at multiple time-points, so as to test a bidirectional model. The families in our study were generally high in resources and support, thus examining the extent to which these findings generalize to families with fewer resources is an important next step. Finally, our current investigation examined developmental processes related to adaptability (i.e., what *does* happen rather than what *could* happen). Manipulation of adaptability through intervention might allow families to achieve even higher levels of adaptability, producing more variation and increasing the potential for even stronger ties to individual outcomes. The current study represents some of the first evidence that family level adaptability may promote resilience not only for parents caring for their children with autism, but also for the children themselves.

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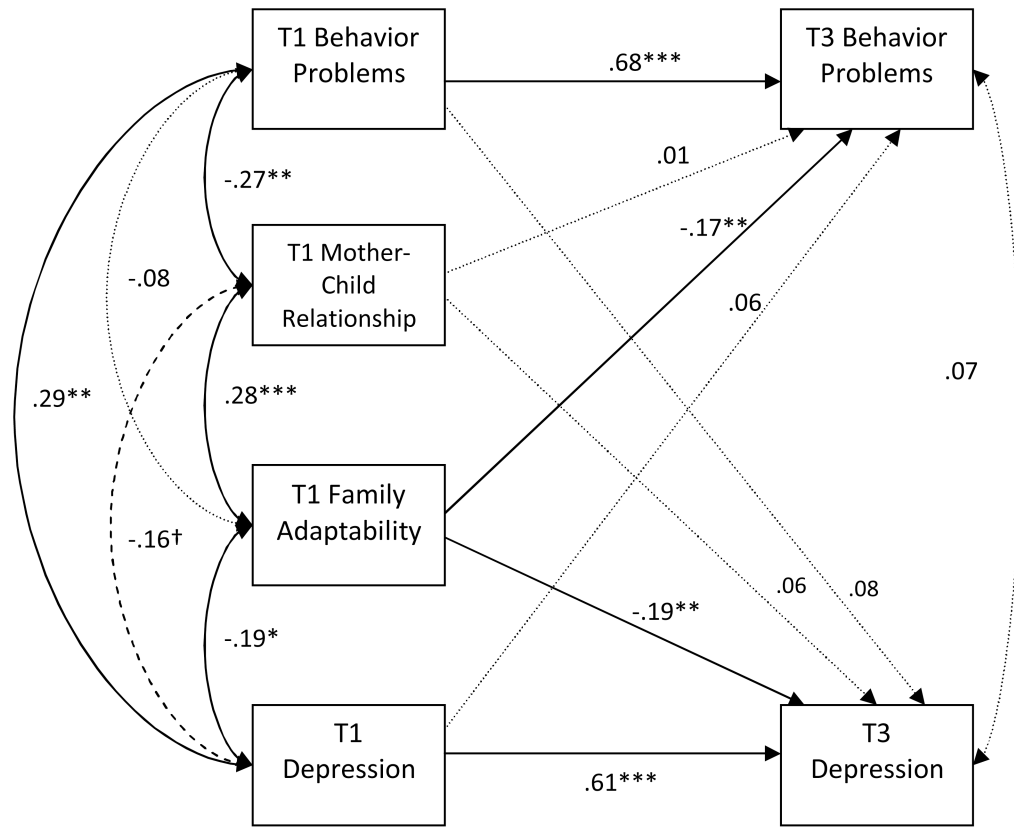


Figure 1. Just-identified path model predicting change in individual variables from early dyadic and family factors ($n = 149$). Standardized path coefficients are shown.
 † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 1
Correlations among Family, Dyadic, Individual, and Control Variables (n = 133 – 149)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|-----------------------------------|--------|-------------------|--------|-------|--------|------|------|------|-------|-------------------|
| 1. T1 Family Adaptability | -- | | | | | | | | | |
| 2. T1 Mother-Child Relationship | .28** | -- | | | | | | | | |
| 3. T1 Child Behavior Problems | -.08 | -.26*** | -- | | | | | | | |
| 4. T3 Child Behavior Problems | -.20* | -.23** | .71*** | -- | | | | | | |
| 5. T1 Maternal Depression | -.19* | -.15 [†] | .28** | .26** | -- | | | | | |
| 6. T3 Maternal Depression | -.28** | -.11 | .22* | .30** | .66*** | -- | | | | |
| 7. Intellectual Disability (1=ID) | .01 | .02 | .19* | .29** | .05 | .02 | -- | | | |
| 8. Child Age | .00 | -.02 | .03 | -.04 | -.02 | -.01 | .20* | -- | | |
| 9. Family Income | .04 | -.15 [†] | .07 | .03 | -.32** | -.12 | -.06 | .01 | -- | |
| 10. # of Other Children | .00 | -.15 [†] | -.10 | -.01 | .00 | .00 | -.02 | -.07 | .03 | -- |
| 11. Marital Status (1= Married) | .02 | .03 | -.01 | .02 | -.06 | -.11 | -.08 | .07 | .30** | -.15 [†] |

[†] p < .10,

* p < .05,

** p < .01,

*** p < .001.