

A Comparative Analysis of Well-Being and Coping among Mothers of Toddlers and Mothers of Adolescents with ASD

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Abstract The present study examined the impact of autism symptoms and coping strategies on the well-being of mothers of children with autism spectrum disorder (ASD). The sample consisted of 153 mothers of toddlers and 201 mothers of adolescents drawn from two ongoing, longitudinal studies of families of individuals with ASD. For mothers of toddlers, lower levels of emotion-focused coping and higher levels of problem-focused coping were generally associated with better maternal well-being, regardless of the level of child symptomatology. For mothers of adolescents, coping often acted as a buffer when autism symptoms were high. Although there was evidence of maternal distress in both groups, the presence of significant buffering effects reflects adaptation in the face of stress, particularly for mothers of adolescents.

Keywords Coping · Autism symptoms ·
Maternal well-being · Toddlers · Adolescents

Introduction

Raising a child with an autism spectrum disorder (ASD) is considered to be a highly stressful event for families

(Duarte et al. 2005). In comparison to parents of children with other disabilities (Down syndrome, fragile × syndrome, undifferentiated developmental disability, and cerebral palsy), mothers of individuals with ASD report more negative impact and poorer well-being during their children's preschool years (Eisenhower et al. 2005) and adulthood (Abbeduto et al. 2004; Blacher and McIntyre 2006). Despite the challenges associated with caring for a child with a developmental disability, there is evidence that coping strategies may play a protective role for parents (Essex et al. 1999; Seltzer et al. 1995). The present study evaluated the impact of children's autism symptoms and maternal coping strategies on well-being in mothers of toddlers and mothers of adolescents with ASD.

Child Characteristics and Maternal Well-Being

The challenging behaviors of children with ASD have been repeatedly associated with poor maternal psychological well-being (Abbeduto et al. 2004; Allik et al. 2006; Herring et al. 2006) and high levels of stress (Bromley et al. 2004; Hastings et al. 2005b; Lecavalier et al. 2006). There is some debate, however, if the core symptoms of ASD, or alternatively, behavior problems more generally, drive this connection between autism and maternal well-being. For instance, a recent study by Hastings et al. (2005b) demonstrated that behavior problems of preschool children with autism, but not adaptive behavior or severity of autism symptoms, were associated with maternal stress. Similarly, in a study comparing toddlers and preschoolers with pervasive developmental disorder to those with developmental delays, emotional and behavioral problems predicted maternal stress, mental health problems, and

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family dysfunction above the effects of diagnosis, level of delay, or gender (Herring et al. 2006).

In contrast, other studies point to the potential role of behaviors specific to autism in predicting parental well-being and stress. In a sample of children and adolescents with ASDs, Lecavalier et al. (2006) found that self-isolated/ritualistic behaviors were associated with poorer parent outcomes, controlling for externalizing behaviors, leading the researchers to posit that severity of the core features of autism may additionally contribute to caregiver stress (Lecavalier et al. 2006). In a study of preschool children with intellectual disabilities (autism, cerebral palsy, Down syndrome, and undifferentiated developmental delay), autism group status contributed significantly to mothers' reports of negative impact even after controlling for maternal education level, children's behavior problems, and cognitive level, suggesting that certain aspects of raising a child with autism, above and beyond behavior problems, negatively impact maternal stress (Eisenhower et al. 2005). The present study addresses these issues by exploring the impact of core autism symptoms on maternal well-being at two very different points in the family life cycle—When the children with ASD are toddlers and have been recently diagnosed and when they are adolescents.

Coping and Maternal Well-Being

Coping strategies have been postulated as one mechanism by which parents adapt to the stresses associated with raising a child with a disability. *Coping* is defined as the process by which individuals respond to threats of stress. Coping strategies are often clustered into two general types: *problem-focused coping*, strategies which aim to solve the problem or do something to change the source of stress (e.g., planning), and *emotion-focused coping*, strategies which aim to reduce or manage the feelings of distress (e.g., denial; Carver et al. 1989). In a study of mothers of adults with mental retardation, high problem-focused coping and low emotion-focused coping buffered the impact of high stress on maternal well-being. Specifically, when the son or daughter had more severe functional limitations and mothers used higher levels of problem-focused coping, they had decreasing levels of depression over time. High levels of emotion-focused coping, however, worked in the opposite direction, and were associated with increased burden over time when children had more severe limitations (Essex et al. 1999). Similarly, specific problem-focused coping strategies (planning and positive reinterpretation of growth) have been found to buffer the effects of caregiving burden on depressive symptoms among mothers of adults with mental retardation (Seltzer et al. 1995).

Although coping has been found to act as a buffer in the face of caregiving stress for mothers of individuals with mental retardation (Essex et al. 1999; Seltzer et al. 1995), the role of coping for mental health and well-being among mothers of children with ASD is less clear. For instance, Abbeduto et al. (2004) found no evidence of a buffering effect of coping with behavioral symptoms for mothers of children with autism, fragile X, and Down syndrome, perhaps reflecting the potential ineffectiveness of coping strategies in the face of the uncontrollable stress that may arise from the unpredictable behavior problems associated with autism and fragile X. Similarly, in a study of caregivers of children with ASD, coping style was not related to individual or family adjustment, although this study only used a composite coping score and did not investigate different types of coping strategies (Higgins et al. 2005). In contrast, a recent study of specific coping strategies in families of preschool and school-aged children with autism did demonstrate associations between coping and parental well-being. Active avoidance coping, a construct similar to emotion-focused coping, predicted higher levels of stress, anxiety, and depression. Problem-focused coping, however, was not related to stress or mental health. Potential interactive effects of maternal coping with child-related stressors were not examined in this study (Hastings et al. 2005a). The present study addresses these gaps in previous research by investigating how coping strategies may interact with children's autism symptoms and by assessing multiple forms of coping.

Age of Child and Maternal Well-Being

The age of the son or daughter with ASD is another potentially important factor for maternal psychological functioning. Although the wear-and-tear hypothesis of caregiving (Townsend et al. 1989) would suggest that the cumulative toll of providing long-term care leads to psychological strain, some studies have shown parents of older children with autism to have higher levels of psychological well-being than parents of younger children, implying adaptation to the caregiving role over time. For instance, Fitzgerald et al. (2002) reported that having an older child with autism (mean age = 15.84 years) is associated with better maternal mental health and less caregiving burden in comparison with having a younger child (mean age = 10.53 years). Similarly, in a sample of adolescent and young adult children with ASD, mothers' well-being was found to improve over time (Lounds et al., in press). One possible explanation for the apparent age-related improvements in maternal well-being could be that mothers of children with ASD may be developing more effective coping strategies over time. For instance, in a

10-year longitudinal, ethnographic study of parents of children with autism, Gray (2002) found that parents were doing better over time and attributed these improvements to possible increases in coping abilities. Similarly, Essex et al. (1999) postulated that mothers of individuals with mental retardation develop adaptive coping skills over the lifespan while navigating the multiple spheres required for their children's care.

Hastings et al. (2005a) recently investigated the role of child age in parental coping strategies in a sample of preschoolers and school-aged children with autism. In this study, parents of preschoolers used more problem-focused coping than parents of school-aged children, although this difference was hypothesized to be driven primarily by the high levels of problem-focused coping present in families using ABA interventions. There were no age group differences in active avoidance coping, positive coping, or religious/denial coping (Hastings et al. 2005a). The lack of age group differences in this study, however, may be an artifact of the age range evaluated. Comparing groups at more disparate periods in the life course might reveal different findings. For instance, mothers of newly diagnosed children with ASD may have had little time to accept their children's diagnosis and subsequently may have less well-developed coping strategies than mothers of older children or adults. The present study will examine coping strategies and maternal functioning in mothers of newly diagnosed toddlers as well as mothers of adolescents.

Present Study

The present study aimed to examine how the core autism symptoms and multiple coping strategies are associated with maternal psychological functioning in mothers of toddlers and mothers of adolescents with ASD. In line with current recommendations to examine both positive and negative outcomes for families of children with disabilities (Blacher et al. 2005; Hastings et al. 2002), the present study investigated three aspects of maternal well-being: depression, anger, and personal growth. Depression was investigated because of previous studies reporting elevation in depressive symptoms in mothers of children with ASD; this finding has been reported in both mothers of young children as well as mothers of adolescents and adults. Anger was chosen given its particular salience for mothers of toddlers who are potentially still reacting to their child's diagnosis. Relatedly, personal growth was selected because of its particular relevance for mothers of adolescents, who may report feelings of maturity and growth as a result of raising their child with ASD. Children's autism symptoms (impairments in communication,

impairments in reciprocal social interaction, and repetitive behaviors and interests) and mothers' coping strategies (positive reinterpretation and growth, active coping, planning, focus on and venting emotion, denial, and behavioral disengagement) were evaluated as predictors of these dimensions of maternal well-being. The interactive effects of autism symptoms with coping strategies were also examined in order to evaluate whether coping buffered maternal stress associated with the child's symptoms.

Specifically, the present study had three research questions: (1) Do mothers of toddlers and mothers of adolescents with ASD differ in levels of well-being; (2) Do mothers of toddlers and mothers of adolescents differ in the degree to which they utilize different coping strategies; and (3) Are autism symptoms, coping strategies, or the interaction of symptoms and strategies associated with maternal well-being for mothers of toddlers and mothers of adolescents with ASD?

We hypothesized that mothers of adolescents would show less depression and anger and more personal growth than mothers of toddlers, since mothers of toddlers have more recently experienced the highly stressful news that their child has ASD. We also predicted that mothers of adolescents would have higher levels of the problem-focused coping strategies and lower levels of the emotion-focused coping strategies. It was hypothesized that mothers of older children would have had more time to adapt to develop effective coping styles. Finally, we expected that coping strategies would interact with children's autism symptoms in such a way that coping strategies would moderate the association between symptom severity and well-being similarly for both groups of mothers.

Methods

Participants

Participants for the present study were drawn from two ongoing longitudinal studies of families of children with ASD, one focused on families with toddlers (Carter et al. 2007) and one focused on families with adolescents and adults (Seltzer et al. 2003; Shattuck et al., in press). Families of toddlers were recruited through early intervention providers, autism specialty service providers, physicians, and local conferences and events for families of children with ASD. All participants were living in Massachusetts when the study began. For inclusion in the study, children had to meet diagnostic criteria for ASD based on administration of the Autism Diagnostic Interview-Revised (ADI-R; Lord et al. 1994) and the Autism Diagnostic

Observation Schedule (Lord et al. 2000) in addition to a confirmation of the diagnosis by expert clinical impression. Only children with an idiopathic diagnosis of ASD who were residing with their mothers were included, resulting in a sample of 151 mother–child dyads. Children were between 18 and 34 months of age at the initial interview. On average, toddlers received a diagnosis of ASD 3 months prior to the parent interview.

Families of adolescents and adults with ASD were recruited via informational packets sent out by agencies, schools, and diagnostic clinics as well as media announcements in Massachusetts and Wisconsin. All families met three initial inclusion criteria: (a) they had a child age 10 or older; (b) the parent reported that the child had received a diagnosis of ASD from a medical, psychological, or education professional; and (c) there was a confirmation of parent report of diagnosis based on the ADI-R (Lord et al. 1994). Of the 406 individuals in the total sample, 384 (94.6%) met all criteria for autism on the ADI-R and 22 (5.4%) demonstrated a pattern of impairment on the ADI-R that was consistent with their diagnosis of Asperger's Disorder or Pervasive Developmental Disorder-Not Otherwise Specified. For the present analysis, participants were excluded if at the time of the initial interview: (a) the child was older than 21 years ($n = 146$); (b) the child was not co-residing with his/her mother ($n = 54$); and (c) there was missing data on measures of maternal well-being ($n = 5$). On average adolescents received a diagnosis of ASD 9 years and 10 months prior to the parent interview.

The final sample for the present analysis consisted of 151 mothers of toddlers and 201 mothers of adolescents. The majority of mothers of toddlers (94%) as well as the majority of mothers of adolescents (87%) were married, although mothers of toddlers were more likely to be married than mothers of adolescents, $\chi^2(3, n = 352) = 15.01$, $p < 0.01$. As anticipated, mothers of adolescents ($M_{\text{age}} = 44.74$, $SD = 5.84$) were significantly older than mothers of toddlers ($M_{\text{age}} = 36.00$, $SD = 4.73$), $t(350) = -15.06$, $p < 0.001$. Additionally, there was a significant difference between the groups on annual income, $t(350) = 3.61$, $p < 0.001$, with mothers of toddlers (median = \$70,000–\$79,000) having higher incomes than mothers of adolescents (median = \$50,000–\$59,000).

The groups did not differ in terms of maternal educational attainment or ethnicity. Approximately half of the mothers in both groups were college graduates (59% for toddler group and 49% for adolescent group). The majority of mothers in both groups were Caucasian, with 13% and 9% minorities in the toddler and adolescent groups, respectively. The majority of children were male in both groups (78% of toddlers and 74% of adolescents). Of the adolescent sample, 61% were in partially inclusive educational

programs, 24% were in fully inclusive classrooms, and 15% experienced no inclusion. All toddlers were receiving early intervention services.

Procedure

Mothers in both studies participated in in-home interviews lasting from 2 to 4 h; during this interview, autism symptoms were measured using the ADI-R. Mothers also completed self-administered questionnaires assessing maternal well-being and coping strategies.

Measures of Maternal Well-being

Center for Epidemiological Studies-Depression Scale (CES-D)

Maternal depression was measured using the Center for Epidemiological Studies-depression Scale (CES-D) (Radloff 1977), a 20 item self-report scale of depressive symptoms. Respondents rate the frequency of depressive symptoms in the past week on a four-point scale ranging from 0 (*rarely*) to 3 (*most of the time*). A score of 16 or higher indicates a risk for clinical depression. Mothers of toddlers had a Cronbach's alpha reliability of 0.82; mothers of adolescents had a reliability coefficient of 0.91.

Profile of Mood States (POMS)

Maternal well-being was also assessed using the anger subscale from the Profile of Mood States (POMS) (McNair et al. 1971). The POMS measures the frequency of affective symptoms during the previous week on a scale of 0 (*not at all*) to 4 (*extremely*). Reliability coefficients were 0.91 and 0.94 for mothers of toddlers and adolescents, respectively, for the anger subscale.

Scales of Psychological Well-being

The personal growth subscale from the Scales of Psychological Well-Being (Ryff 1989) was used to measure positive psychological well-being. The personal growth subscale is comprised of five items rated on a six-point scale (1 = *strongly disagree* to 6 = *strongly agree*). Example items include, "new experiences are important," and "life has been continuous learning and growing." The Cronbach's alpha reliabilities were 0.63 and 0.68 for mothers of toddlers and adolescents, respectively, for personal growth.

Measures of Coping

Coping strategies were measured using the Coping Orientations to Problems Experienced (COPE; Carver et al. 1989), which consists of 13 four-item subscales that assess how individuals respond to stressful events. For each item respondents rate how often they use a particular coping strategy when experiencing a difficult or stressful event on a four-point scale (1 = *not at all* to 4 = *a lot*). We chose six subscales reflecting the theoretical constructs of problem-focused coping and emotion-focused coping (Pearlin and Schooler 1978). Problem-focused coping was measured with three subscales: *Active coping* (direct attempts to remove, circumvent, or reduce the effects of a stressor); *planning* (planning an action to deal with a stressor); and *positive reinterpretation and growth* (reframing a problematic event in a positive light; Carver et al. 1989). Three other scales measured emotion-focused coping: *Denial* (denying that a stressor exists or is real); *focusing on and venting of emotions* (focusing on the stressor and ventilating those feelings); and *behavioral disengagement* (reduction of efforts to deal with a stressor; Carver et al. 1989). Cronbach's alpha reliabilities for the problem-focused coping subscales ranged from 0.66 to 0.85 in the toddler sample and from 0.61 to 0.86 in the adolescent sample. The emotion-focused coping subscales had Cronbach's alpha reliabilities ranging from 0.73 to 0.78 for mothers of toddlers and from 0.60 to 0.76 for mothers of adolescents.

Child Autism Symptoms

Autism symptoms were assessed using the ADI-R (Lord et al. 1994; Rutter et al. 2003). The ADI-R is a semi-structured interview with items based on the criteria for an autism diagnosis in the *Diagnostic and Statistical Manual of Mental Disorder-fourth edition, text revision* (DSM-IV-TR, American Psychiatric Association 2000). For the adolescent sample, only the items used in the diagnostic algorithm were administered. Each item was coded with a score of 0 (no abnormality present); 1 (possible abnormality); 2 (definite abnormality); or 3 (extreme abnormality with respect to behavior). Based on the suggestions of Lord et al. (1994), we recoded scores of 3 to scores of 2.

The ADI-R provides scores for the three core symptom areas used in the diagnosis of autism: Impairments in communication, impairments in reciprocal social interaction, and repetitive behaviors and interests. The Communication domain of the ADI-R consists of 11 items reflecting impairments in communication. Only four items, however, are administered for both verbal and non-verbal

individuals: Pointing to express interest, gestures, nodding, and head-shaking. Scores for these four items were summed to create a total score for Impairments in Non-verbal Communication. Impairments in Reciprocal Social Interaction were measured by summing scores of 14 items: Direct gaze, social smiling, range of facial expression, interest in people, response to others' approaches, friendships, directing attention, offering to share, sharing enjoyment with others, use of other's body, offering comfort, quality of social overtures, inappropriate facial expressions, and appropriateness of social response. Seven items were summed to assess Impairments in Repetitive Behaviors and Restricted Interest: Circumscribed interests, unusual preoccupations, compulsion/rituals, hand and finger mannerisms, other complex mannerisms/body movements, repetitive use of objects/interest in parts, and unusual sensory interest. Previous work has demonstrated the test-retest reliability, diagnostic and convergent validity, and specificity and sensitivity of the ADI-R (Hill et al. 2001; Lord et al. 1997).

Results

Our first two research questions concerned differences between the two groups of mothers on indicators of psychological well-being and coping strategies. To address these questions we conducted a series of one-way analyses of covariance (ANCOVAs), controlling for family income. Although mothers of toddlers were more likely to be married than mothers of adolescents, marital status was not a significant covariate in preliminary analyses and therefore was not used as a covariate in the final models.

The mean and standard deviation for the indicators of well-being for both groups are presented in Table 1. Mothers did not differ in levels of personal growth or depression, although there was a significant difference between groups on maternal report of anger, with mothers of adolescents reporting more anger than mothers of toddlers, $F(1, 349) = 6.22, p < 0.05$. It is important to note that both groups of mothers displayed elevated levels of depressive symptoms, with 36% of mothers of toddlers and 37% of mothers of adolescents having scores above the clinical risk for depression (i.e., a score of 16 or above).

Table 1 also presents the mean and standard deviation for coping strategies. There were no significant differences between the two groups on the problem-focused coping variables (positive reinterpretation and growth, active coping, and planning) or on two of the emotion-focused coping variables (focus on and venting emotion and denial). However, there was a significant difference

Table 1 Mean and standard deviation for well-being, coping strategies, and autism symptoms by child cohort

	Toddlers		Adolescents		<i>F</i>
	M	SD	M	SD	
Maternal well-being					
Depression	13.73	9.70	13.48	9.75	1.02
Anger	8.37	7.56	11.36	9.85	6.22*
Personal growth	25.29	3.50	25.77	3.81	1.43
Problem-focused coping strategies					
Positive reinterpretation and growth	8.28	2.50	8.32	2.57	0.10
Active coping	8.05	2.29	8.53	2.32	3.29
Planning	8.86	2.49	9.24	2.33	1.29
Emotion-focused coping strategies					
Focus on venting emotions	6.34	2.61	6.41	2.59	0.10
Behavioral disengagement	1.46	1.72	1.90	1.83	4.38*
Denial	0.96	1.58	0.87	1.37	0.70
Autism symptoms					
Impairments in social reciprocity	17.56	4.06	13.96	5.46	42.31***
Impairments in communication	6.21	1.86	5.55	1.49	13.78**
Repetitive behaviors	4.78	2.09	5.66	2.64	9.62***

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

between the groups on behavioral disengagement. In contrast with our hypothesis, mothers of adolescents displayed significantly higher levels of behavioral disengagement, $F(1, 349) = 4.38$, $p < 0.05$, than mothers of toddlers.

We also examined differences between the toddlers and adolescents with ASD on the three core autism symptom domains using ANCOVA, again controlling for family income. The mean and standard deviation for the core autism symptoms of the toddlers and adolescents with ASD are presented in Table 1. Toddlers had significantly greater impairments in social reciprocity, $F(1, 349) = 42.31$, $p < 0.001$, and communication, $F(1, 349) = 13.78$, $p < 0.001$, than adolescents. Conversely, adolescents had significantly more repetitive behaviors and restricted interests, $F(1, 349) = 9.62$, $p < 0.01$.

For the third hypothesis we examined whether autism symptoms and coping strategies predicted maternal well-being and whether coping strategies buffered the effects of autism symptoms on well-being. For these analyses, a series of multiple regressions were conducted. Separate analyses were conducted for mothers of toddlers and mothers of adolescents. Also, separate analyses were conducted for each of the six coping strategies and three autism symptoms. In all analyses, the autism symptom variable, the coping strategy variable, and the interaction variable were entered simultaneously in addition to the control variable of family income.

Predicting Well-Being for Mothers of Toddlers

Tables 2, 3, 4 present the results of the regression analyses for mothers of toddlers for the dependent variables of depression, anger, and personal growth, respectively. Further, each of the tables presents three models, one for each of the three core symptoms of autism (social reciprocity, communication, and repetitive behaviors). Each column represents the betas for a separate regression model, one for each type of coping. As shown in Table 2, for mothers of toddlers, high levels of emotion-focused coping strategies (venting, denial, and behavioral disengagement) were associated with higher levels of depression. The problem focused-coping strategy of positive reinterpretation and growth was likewise a significant predictor of depression, with higher problem-focused coping associated with fewer depressive symptoms. In contrast, autism symptoms (i.e., social reciprocity, communication, and repetitive behaviors in models 1–3, respectively) were not significant predictors of depression. Thus, there were main effects of coping on depression but not main effects of autism symptoms. Also, counter to our hypothesis there were no significant interaction effects for coping and autism symptoms in mothers of toddlers.

Next, we examined predictors of anger as shown in Table 3. For mothers of toddlers, higher levels of venting, denial, and behavioral disengagement were associated with

Table 2 Prediction of depression in mothers of toddlers

Variable	Coping strategy					
	Problem-focused			Emotion-focused		
	Active coping	Planning	Positive reinterpretation and growth	Venting	Denial	Behavioral disengagement
Model 1						
Income	-0.17*	-0.17*	-0.18*	-0.16*	-0.15	-0.13
Social reciprocity	-0.07	-0.04	-0.04	-0.03	-0.04	-0.06
Coping	-0.09	-0.13	-0.21*	0.31***	0.32***	0.44***
Coping × social reciprocity	-0.09	0.00	-0.02	0.06	0.00	-0.08
R ²	0.05	0.04	0.08*	0.14***	0.13***	0.20***
Model 2						
Income	-0.17*	-0.18*	-0.18*	-0.16*	-0.17*	-0.12
Communication	-0.06	-0.05	-0.02	-0.04	-0.08	-0.07
Coping	-0.13	-0.11	-0.23**	0.33***	0.31***	0.42***
Coping × communication	-0.07	-0.09	-0.04	0.04	0.07	-0.09
R ²	0.05	0.05	0.08*	0.14***	0.14***	0.20***
Model 3						
Income	-0.16	-0.17*	-0.18*	-0.17*	-0.15	-0.14
Repetitive behavior	-0.01	-0.01	-0.01	0.01	0.00	-0.07
Coping	-0.13	-0.11	-0.20*	0.35***	0.30***	0.42***
Coping × repetitive behavior	0.05	0.11	0.11	0.07	-0.07	-0.02
R ²	0.05	0.05	0.09*	0.14***	0.13***	0.20***

The coefficients shown are standardized betas

Each coping strategy was entered into a separate regression model

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

higher levels of anger. Counter to our hypothesis, anger was not predicted by any of the problem-focused coping strategies or by autism symptoms. There were no significant interactions of coping with autism symptoms.

Finally, we examined the predictors of personal growth in mothers of toddlers (see Table 4). Consistent with our hypothesis, all problem-focused coping variables were related to personal growth. Higher levels of active coping, planning, and positive reinterpretation and growth were associated with higher levels of personal growth. Likewise, two emotion-focused coping variables (denial and behavioral disengagement) predicted lower levels of personal growth. Autism symptoms were not significantly associated with personal growth, but there was one significant buffering effect of coping with symptoms. As shown in Fig. 1, when impairments in social reciprocity were low, the level of venting emotion was not related to personal growth; however, when the toddler had high levels of impairments in social reciprocity, mothers who used high levels of coping via venting emotions had significantly

lower levels of personal growth than those who used low levels of venting, indicating a buffering effect.

Predicting Well-Being for Mothers of Adolescents

Tables 5, 6, 7 present the results of the regression analyses for mothers of adolescents for the dependent variables of depression, anger, and personal growth, respectively. In terms of depression, results for mothers of adolescents were similar to those for mothers of toddlers (see Table 5). As with the mothers of toddlers, for mothers of adolescents, higher levels of emotion-focused coping (venting, denial, and behavioral disengagement) were associated with higher levels of depression. Similarly, positive reinterpretation and growth, but none of the other problem-focused coping strategies, significantly predicted depression, with higher positive reinterpretation of growth related to fewer depressive symptoms. Also as with mothers of toddlers, autism symptoms were not associated with

Table 3 Prediction of anger in mothers of toddlers

Variable	Coping strategy					
	Problem-focused			Emotion-focused		
	Active coping	Planning	Positive reinterpretation and growth	Venting	Denial	Behavioral disengagement
Model 1						
Income	-0.04	-0.03	-0.04	-0.03	-0.02	0.00
Social reciprocity	-0.01	0.00	-0.01	0.00	-0.01	-0.02
Coping	0.07	-0.05	-0.16	0.26**	0.30**	0.27**
Coping × social reciprocity	-0.02	0.08	0.06	0.06	-0.01	-0.10
R ²	0.01	0.01	0.02	0.08*	0.09**	0.06
Model 2						
Income	-0.03	-0.03	-0.03	-0.03	-0.01	0.02
Communication	0.05	0.05	0.06	0.05	0.02	0.02
Coping	0.06	-0.02	-0.14	0.27***	0.30**	0.25**
Coping × communication	0.01	0.01	0.04	0.02	0.00	-0.15
R ²	0.01	0.00	0.02	0.08*	0.09**	0.08*
Model 3						
Income	-0.04	-0.03	-0.04	-0.01	-0.01	-0.02
Repetitive behavior	-0.02	-0.01	0.00	0.02	0.00	-0.03
Coping	0.03	-0.02	-0.13	0.25**	0.32***	0.24**
Coping × repetitive behavior	-0.13	-0.05	-0.02	-0.08	0.06	0.05
R ²	0.02	0.00	0.02	0.08*	0.09**	0.06

The coefficients shown are standardized betas

Each coping strategy was entered into a separate regression model

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

depression and there were no interactions of symptoms with coping strategies.

A somewhat different picture emerged for mothers of adolescents in comparison to mothers of toddlers with respect to anger (see Table 6). All the emotion-focused coping variables (venting, denial, and behavioral disengagement) and one problem-focused coping variable (positive reinterpretation and growth) predicted anger for mothers of adolescents in the expected directions. Although autism symptoms were not associated with anger, there was one significant interaction of symptoms with coping. When repetitive behaviors were low, the level of positive reinterpretation and growth was not related to anger; however, when the adolescent had high levels of repetitive behaviors, mothers who used high levels of positive reinterpretation and growth had significantly lower levels of anger than those who used low levels of positive reinterpretation and growth. This buffering effect, and all subsequent significant interaction effects, follows the same pattern as the example presented in Fig. 1. Figures for these interactions are available upon request from the first author.

Finally, as shown in Table 7, for mothers of adolescents, each problem-focused coping variable (active coping, planning, and positive reinterpretation and growth) predicted personal growth. Only one emotion-focused coping variable consistently had a main effect for personal growth: Behavioral disengagement. As predicted, there were also significant interactions of symptoms with coping strategies. When repetitive behaviors were low, positive reinterpretation and growth was not related to personal growth; however, when adolescents had high levels of repetitive behaviors, mothers who used high levels of positive reinterpretation and growth had significantly higher levels of personal growth than mothers who used low levels of positive reinterpretation and growth.

There were also three interactions of autism symptoms with emotion-focused coping variables. When social impairments were low, there was no association between venting and personal growth. In contrast, when social impairments were high, mothers who used low levels of venting emotions had significantly higher personal growth than those who used high levels of venting emotions.

Table 4 Prediction of personal growth in mothers of toddlers

Variable	Coping strategy					
	Problem-focused			Emotion-focused		
	Active coping	Planning	Positive reinterpretation and growth	Venting	Denial	Behavioral disengagement
Model 1						
Income	0.01	0.04	0.07	0.02	0.01	0.00
Social reciprocity	-0.06	-0.06	-0.07	-0.08	-0.06	-0.05
Coping	0.37***	0.41***	0.52***	-0.15	-0.23*	-0.31***
Coping × social reciprocity	-0.01	-0.01	0.01	-0.18*	-0.06	0.04
R ²	0.14***	0.17***	0.28***	0.08*	0.07*	0.09**
Model 2						
Income	0.02	0.05	0.07	0.03	0.01	0.00
Communication	0.04	0.03	-0.02	0.03	0.06	0.05
Coping	0.37***	0.40***	0.55***	-0.22**	-0.28**	-0.31***
Coping × communication	-0.01	0.03	-0.07	-0.08	0.07	0.09
R ²	0.14***	0.17***	0.28***	0.06	0.07*	0.10**
Model 3						
Income	0.01	0.04	0.06	0.04	0.01	0.01
Repetitive behavior	-0.06	-0.05	-0.07	-0.07	-0.05	-0.02
Coping	0.36***	0.40***	0.51***	-0.26**	-0.28**	-0.30***
Coping × repetitive behavior	-0.02	-0.05	-0.11	-0.11	-0.09	-0.02
R ²	0.14***	0.17***	0.29***	0.06*	0.08*	0.09**

The coefficients shown are standardized betas

Each coping strategy was entered into a separate regression model

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

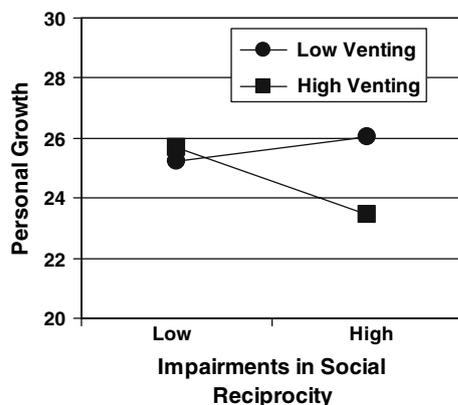


Fig. 1 Example of buffering effect. Significant interaction of impairments in social reciprocity and venting emotions in the prediction of personal growth in mothers of toddlers with ASD

Similarly, when social impairments were low, behavioral disengagement was not related to personal growth; however, when impairments in social reciprocity were high,

mothers with low levels of behavioral disengagement had significantly higher levels of personal growth than mothers with high levels of behavior disengagement. Finally, a similar pattern was found with behavioral disengagement and repetitive behaviors. When repetitive behaviors were low, there was no association between behavioral disengagement and personal growth; however, when adolescents had high levels of repetitive behaviors, mothers who used low levels of behavioral disengagement had significantly higher personal growth than those who used high levels of behavioral disengagement.

Discussion

The present study examined the association between autism symptoms and coping strategies and the well-being of mothers of toddlers and mothers of adolescents with ASD. Expanding on previous research, both positive and negative indicators of well-being were examined, and our study focused on core autism symptoms rather than general

Table 5 Prediction of depression in mothers of adolescents

Variable	Coping strategy					
	Problem-focused			Emotion-focused		
	Active coping	Planning	Positive reinterpretation and growth	Venting	Denial	Behavioral disengagement
Model 1						
Income	-0.25***	-0.26***	-0.29***	-0.24***	-0.23**	-0.25***
Social reciprocity	0.00	0.01	0.00	0.03	-0.01	0.01
Coping	-0.10	-0.12	-0.27***	0.30***	0.19**	0.17*
Coping × social reciprocity	-0.02	-0.07	-0.07	-0.04	-0.01	0.03
R ²	0.07**	0.08**	0.13***	0.15***	0.10***	0.09**
Model 2						
Income	-0.26***	-0.26***	-0.29***	-0.24***	-0.23**	-0.25***
Communication	-0.04	-0.05	-0.04	0.00	-0.06	-0.04
Coping	-0.11	-0.12	-0.25***	0.27***	0.19**	0.17*
Coping × communication	-0.06	-0.07	-0.02	-0.06	-0.02	0.07
R ²	0.08**	0.08**	0.12***	0.15***	0.10***	0.09**
Model 3						
Income	-0.26***	-0.27***	-0.28***	-0.23**	-0.23**	-0.24***
Repetitive behavior	0.13	0.12	0.15*	0.11	0.13	0.12
Coping	-0.10	-0.12	-0.26***	0.29***	0.19**	0.14*
Coping × repetitive behavior	0.06	0.06	-0.05	-0.06	-0.01	0.06
R ²	0.09**	0.09**	0.15***	0.16***	0.11***	0.11***

The coefficients shown are standardized betas

Each coping strategy was entered into a separate regression model

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

behavioral and on multiple dimensions of coping rather than a global coping construct. Finally, two groups of mothers of children with ASD were contrasted at two widely spaced points in the life-span, toddlerhood and adolescence, in order to determine if there are age-related differences in well-being and coping strategies.

Group Comparisons of Well-Being, Coping, and Autism Symptoms

Consistent with previous research on parents of children with ASD (Abbeduto et al. 2004; Eisenhower et al. 2005; Weiss 2002), both mothers of toddlers and mothers of adolescents showed signs of significant distress. Over one-third of mothers in both groups had elevated depressive symptom scores on the CES-D indicating risk for clinical depression. In contrast with our hypothesis, mothers of adolescents reported higher levels of anger than mothers of toddlers. This is potential evidence for a wear-and-tear hypothesis, with mothers who have been in the caregiving

role for a longer period of time showing more anger. Alternatively, higher anger scores among mothers of adolescents may reflect normative changes in the parent–child relationship, with high-anger resulting from the frustrations associated with parenting an adolescent.

With respect to the use of specific coping strategies, there was only one significant difference between mothers of toddlers and mothers of adolescents. Counter to our hypothesis, mothers of adolescents had higher levels of behavioral disengagement in comparison to mothers of toddlers. The greater utilization of this emotion-focused coping strategy by mothers of adolescents stands in contrast with the findings of Hastings et al. (2005a) who found no differences in active avoidance coping between parents of preschoolers and parents of school-aged children. The age-related differences in the current study may again reflect factors unique to the adolescent period. Mothers of adolescents may be experiencing the normative “storm and stress” associated with the transition from childhood into adulthood (Arnett 1999). During this period new challenges may arise for mothers as a result of the increasing

Table 6 Prediction of anger in mothers of adolescents

Variable	Coping strategy					
	Problem-focused			Emotion-focused		
	Active coping	Planning	Positive reinterpretation and growth	Venting	Denial	Behavioral disengagement
Model 1						
Income	-0.23**	-0.23**	-0.26***	-0.22**	-0.21**	-0.23**
Social reciprocity	-0.03	-0.02	-0.05	-0.01	-0.06	-0.03
Coping	-0.01	-0.01	-0.19**	0.37***	0.17*	0.26***
Coping × social reciprocity	-0.07	-0.11	0.00	-0.04	-0.05	-0.04
R^2	0.06*	0.07**	0.09**	0.21***	0.09**	0.13***
Model 2						
Income	-0.24**	-0.24**	-0.26***	-0.22**	-0.22**	-0.23**
Communication	-0.06	-0.06	-0.07	-0.03	-0.09	-0.06
Coping	0.00	-0.01	-0.19**	0.39***	0.17*	0.26***
Coping × communication	-0.01	-0.03	0.01	-0.02	-0.05	0.01
R^2	0.06*	0.06*	0.09**	0.21***	0.09**	0.13***
Model 3						
Income	-0.22**	-0.22**	-0.26***	-0.22**	-0.22**	-0.23**
Repetitive behavior	0.08	0.09	0.08	0.05	0.06	0.06
Coping	0.04	0.03	-0.18**	0.39***	0.18*	0.28***
Coping × repetitive behavior	-0.11	-0.09	-0.15*	0.03	-0.05	-0.06
R^2	0.07*	0.07**	0.12***	0.22***	0.09**	0.13***

The coefficients shown are standardized betas

Each coping strategy was entered into a separate regression model

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

size and strength of their child. As such, it may be that mothers of adolescents feel less control in their parenting role and are thus more likely to use emotion-focused coping strategies. Emotion-focused coping strategies are often employed when there is uncertainty associated with a stressor and when a person feels like there is little he or she can do to change the stressful circumstances (Folkman 1984).

As expected, differences between toddlers and adolescents were found for the core autism symptoms of impaired communication, impaired social reciprocity and restricted and repetitive behaviors. Consistent with previous research indicating that there is some abatement of symptoms during adolescence and adulthood (Seltzer et al. 2004; Shattuck et al., in press), adolescents had significantly fewer impairments in non-verbal communication and social reciprocity in comparison with toddlers. In contrast, adolescents had more repetitive behavior problems than toddlers; this is in line with other reports that repetitive behaviors and restricted interests emerge more fully after the toddler period (Stone et al. 1999; Ventola et al. 2006).

Although repetitive behaviors often lessen during adolescence and adulthood (Shattuck et al., in press), in comparison with newly diagnosed children whose repetitive behaviors potentially are not completely manifested yet, the repetitive behaviors of adolescents may appear more severe.

Predicting Maternal Well-Being

Consistent with previous research demonstrating the impact of coping on maternal functioning in parents of children with ASD (Hastings et al. 2005a), higher levels of problem-focused coping and lower levels of emotion-focused coping were associated with better maternal well-being in both groups of mothers. However, there were some differences in the predictive utility of the individual coping variables. Specifically, positive reinterpretation and growth, a problem-focused coping variable, and behavioral disengagement, an emotion-focused coping strategy, emerged as strong predictors of both positive and negative

Table 7 Prediction of personal growth in mothers of adolescents

Variable	Coping strategy					
	Problem-focused			Emotion-focused		
	Active coping	Planning	Positive reinterpretation and growth	Venting	Denial	Behavioral disengagement
Model 1						
Income	0.02	0.05	0.09	0.01	0.00	0.01
Social reciprocity	-0.10	-0.11	-0.14*	-0.16*	-0.15*	-0.15*
Coping	0.24**	0.31***	0.52***	-0.18*	-0.06	-0.30***
Coping × social reciprocity	-0.05	0.03	0.12	-0.15*	-0.11	-0.14*
R ²	0.09**	0.12***	0.28***	0.06*	0.04	0.12***
Model 2						
Income	0.01	0.04	0.07	-0.02	-0.03	-0.02
Communication	0.11	0.11	0.08	0.07	0.05	0.08
Coping	0.30***	0.35***	0.51***	-0.11	-0.08	-0.29***
Coping × communication	0.06	0.08	0.01	-0.01	-0.15*	-0.10
R ²	0.09**	0.12***	0.25***	0.02	0.03	0.09**
Model 3						
Income	0.00	0.03	0.06	-0.01	-0.02	-0.01
Repetitive behavior	0.01	0.01	-0.02	0.01	0.01	0.04
Coping	0.26***	0.32***	0.49***	-0.11	-0.04	-0.25**
Coping × repetitive behavior	0.05	0.02	0.17**	-0.05	-0.08	-0.15*
R ²	0.08**	0.11***	0.28***	0.02	0.01	0.10***

The coefficients shown are standardized betas

Each coping strategy was entered into a separate regression model

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

indicators of maternal well-being in both groups. In contrast, active coping and planning (problem-focused coping variables) significantly predicted personal growth but not anger or depression. These findings highlight the value of exploring specific aspects of coping as well as multiple indicators of well-being.

It is interesting to note that the strength of the main effects of coping strategies were very similar for mothers of toddlers and mothers of adolescents, reflecting the importance of coping strategies for maternal well-being regardless of developmental stage of the child. However, there was a divergence between the groups in the extent to which coping strategies buffered autism symptoms; buffering effects emerged much more prominently among mothers of adolescents than mother of toddlers. Similarly, Orr et al. (1993) found that severity of developmental disability was related to maternal stress for mothers of school-aged and adolescent children, but not for mothers of preschoolers. This discrepancy in buffering effects for mothers of adolescents and toddlers may reflect developmental differences in parenting a child with ASD. Given

that mothers of adolescents have been responding to the challenges associated with raising a child with ASD for nearly a decade, the presence of more buffering effects in the adolescent group may reflect that over time these mothers have learned to cope more effectively with their children’s autism symptoms. In comparison with mothers of adolescents, mothers of newly diagnosed children may be less skilled at knowing when the employment of different coping strategies is most useful (i.e., utilizing problem-focused coping in the face of high symptoms).

The present study was not without limitations. First, the current analyses utilized cross-sectional data. Future studies should use a longitudinal framework to examine maternal psychological functioning and coping strategies over time. It would be interesting to examine how changes in coping strategies or children’s behavioral profiles may influence changes in maternal well-being. Second, the present study used a predominately Caucasian sample of mothers with a relatively high-average socioeconomic status, thus limiting the generalizability of the findings to non-white and lower socioeconomic populations and to

fathers and other caregivers. Third, the only child characteristics examined in the present study were core autism symptoms (impairments in social reciprocity, impairments in communication, and restricted and repetitive behaviors). It may be that other child-related characteristics such as general behavior problems and adaptive functioning are significant sources of stress for mothers of toddlers and adolescents. However, examining behavior problems across age groups would have been less informative for the present study, given that particular problems behaviors may have different meanings at different points in development.

In conclusion, the present study demonstrated how utilizing problem-focused coping strategies and minimizing emotion-focused coping strategies can have on a positive impact on maternal well-being, particularly for mothers of adolescents. The study also highlighted how coping strategies operate differently in the face of stress at different points in the caregiving life course. For mothers of toddlers, lower levels of emotion-focused coping and higher levels of problem-focused coping were generally associated with better maternal well-being, regardless of the level of child symptomatology, whereas for mothers of adolescents, coping often acted as a buffer when autism symptoms were high. Furthermore, mothers of adolescents were more likely to report higher levels of anger and behavioral disengagement than mothers of toddlers, perhaps reflecting “wear and tear” over time. Thus, mothers of adolescents with severe autism symptoms may be a particularly important group to target for intervention, with a focus not only on reducing the severity of the adolescent’s symptoms but also on improving maternal coping strategies. The present study supports the sentiment that intervention efforts need to concentrate on aiding families not only during the early years following diagnosis, but also during the transitional years of adolescence and beyond.

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