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The Impact of Child Symptom Severity on Stress Among Parents of Children with ASD: The Moderating Role of Coping Styles

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Abstract We examined the impact of autism severity and parental coping strategies on stress in parents of children with ASD. Children's autism symptoms and parental coping strategies (task-oriented, emotion-oriented, social diversion, and distraction) were evaluated as predictors of four types of parental stress (parent and family problems, pessimism, child characteristics, and physical incapacity). In order to examine potential buffering effects of coping strategies on stress associated with the child's symptom severity, the interactive effects of autism symptoms with coping strategies were also examined. Participants included 77 primary caregivers of a child with ASD. Using multiple regression analyses, emotion-oriented coping scores were associated with more parent and family problems, and task-oriented coping was associated with lower physical incapacity scores. The child's autism severity was the strongest and most consistent predictor of stress. Further, emotion-oriented coping moderated the relationship between pessimism stress and autism symptomatology, and distraction coping was a moderator between parent and family stress and autism symptoms. Results indicate that increasing our knowledge of the coping strategies that are more or less effective and under what conditions some coping strategies may be either beneficial or harmful for this population of parents has direct implications for treatment and parent education efforts.

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Introduction

The number of children diagnosed with an Autism Spectrum Disorders (ASD) has increased dramatically over the last 20 or 30 years (Baird et al. 2006). The Centers for Disease Control and Prevention (CDC) reported that as many as 6.7 of every 1000 children have a diagnosis of ASD (CDC 2004). ASD refers to a continuum of disorders, including Autistic Disorder, Asperger's Disorder, and Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS). According to the American Psychiatric Association (2000), ASD is characterized by a triad of impairments in social interaction, communication, and flexible imaginative functions (including restricted and repetitive behaviors and interests). Manifestations of ASD vary greatly depending on the developmental level and chronological age of the child and may include an additional diagnosis of mental retardation, ranging from mild to profound in severity, and a number of behavioral symptoms, such as hyperactivity, impulsivity, aggressiveness, self-injurious behaviors, and temper tantrums. Prior research has confirmed the presence of significant stress associated with caring for a child with ASD (Duarte et al. 2005); however, few studies have examined the way in which parents cope with stress despite evidence that indicates coping strategies may be protective for parents (Essex et al. 1999; Seltzer et al. 1995).

Parenting a child with ASD is highly stressful and challenging for many parents. Parents of children with ASD typically report higher levels of parenting stress when compared to parents of typically developing children (Baker-Ericzen et al. 2005; Erguner-Tekinalp and Akkok 2004),

parents of children with Down Syndrome (Hastings et al. 2005a; Sanders and Morgan 1997), and parents of children with other disabilities (Perry et al. 2005; Weiss 2002). Parenting stress has been one of the most frequently researched aspects of family life among families of children with ASD (Davis and Carter 2008). The severity of the child's autism symptoms and behaviors has consistently been found to be a strong predictor of parental stress (Bebko et al. 1987; Bromley et al. 2004; Hastings 2003; Hastings and Johnson 2001; Kasari and Sigman 1997; Konstantareas and Papageorgiou 2006; Lecavalier et al. 2006) and psychological well-being (Abbeduto et al. 2004; Allik et al. 2006; Herring et al. 2006). However, there is some debate whether it is the core symptoms of autism or the associated behavior problems that contribute to high levels of parental stress. Some studies have demonstrated that the behavior problems of children predicted maternal stress rather than adaptive behaviors or the severity of autism symptoms (Hastings et al. 2005b; Herring et al. 2006). Conversely, other studies indicate difficulties specific to the autism diagnosis in predicting parental stress. For example, Lecavalier et al. (2006) demonstrated that self-isolated and ritualistic behaviors were associated with poor parental outcomes when controlling for externalizing behaviors. In a study of Greek children with ASD, high autism severity, rather than overall level of functioning, predicted maternal stress (Konstantareas and Papageorgiou 2006).

Coping strategies may be one mechanism by which parents of children with ASD adapt to stress. The transactional model of stress and coping defines coping as "the process of managing demands (external or internal) that are appraised as taxing or exceeding the resources of the person" (Lazarus and Folkman 1984, p. 283) and has guided the coping literature over the past 20 years. Utilizing this model, Endler and Parker (1990) propose that individuals cope with stress in the following ways: task-oriented coping (i.e., strategies that attempt to solve a problem, reconceptualize a problem, or minimize the effects of a problem), emotion-oriented coping (i.e., emotional responses, self-preoccupation, and fantasizing reactions), and avoidance-oriented coping, including social diversion (i.e., strategies that involve avoiding a stressful situation by seeking out others), and distraction (i.e., engaging in a substitute task). Task-oriented and social diversion coping has been found to be related to adaptation, whereas emotion-oriented coping has been associated with psychopathology (Endler et al. 1993; McWilliams et al. 2003). Distraction coping has been found to be unrelated to psychopathology.

Research on coping in parents of children with ASD is limited with surprisingly few studies in the literature on the types of coping strategies used (Hastings et al. 2005a). However, a few studies have examined the direct and moderating effects of coping. Several studies have demonstrated that higher levels of problem solving coping predicted less psychological distress (i.e., depressive symptoms, spousal relationship difficulties), while emotion-focused coping predicted more psychological distress (Abbeduto et al. 2004; Dunn et al. 2001; Smith et al. 2008). Distancing (e.g., going on as if nothing has happened, trying to forget the situation, making light of the situation) also corresponded to increased depression (Dunn et al. 2001). Additionally, distraction and emotional regulation coping (i.e., expressing or controlling emotions in a constructive manner) have been associated with lower levels of daily negative mood, whereas higher levels of daily negative mood were predicted by increased use of problem-focused, blaming, worrying, and withdrawal coping (Pottie and Ingram 2008).

Coping has been found to play a protective role in the face of caregiving stress for parents with children of other chronic conditions. For example, high problem-focused coping and low emotion-focused coping have been found to buffer the impact of high levels of stress on maternal well-being for parents of children with mental retardation (Essex et al. 1999; Seltzer et al. 1995). However, the role of coping for parents of children with ASD is less clear with little research examining this relationship. Some studies have found no evidence of a buffering effect of coping (Abbeduto et al. 2004; Higgins et al. 2005). In contrast, Dunn et al. (2001) found distancing and social support to be significant moderators in the relationship between stressors and isolation, with less use of distancing and social support corresponding to a greater likelihood that stressors would lead to isolation. In a study examining the moderating effects of coping on daily psychological distress, worrying coping and social support coping moderated the relationship between daily stress and negative mood, with higher levels of these types of coping predicting greater negative mood (Pottie and Ingram 2008). Additionally, days characterized by high levels of stress and use of emotional regulation coping (i.e., appropriate expression of emotional distress) were associated with more daily positive mood.

Although it is clear that autism symptomatology and behavior predict parental stress and well-being, only one known study has examined the potential moderating effects of coping on this relationship. Smith et al. (2008) examined the impact of autism symptoms and coping on well-being among mothers of toddlers and mothers of adolescents with ASD and demonstrated associations between coping and well-being, particularly with parents of adolescents with ASD. The positive reinterpretation and growth subscale of problem-focused coping predicted significantly lower levels of anger and higher levels of personal growth when autism symptoms (i.e., repetitive behaviors) were severe. In contrast, high emotion-focused coping (i.e., venting, behavioral

disengagement) predicted significantly less personal growth when autism symptoms were severe (i.e., social impairments, repetitive behaviors).

In this study we examined how core autism symptoms and multiple coping strategies are associated with parental stress. Four types of stress were investigated: parent and family problems, pessimism, child characteristics, and physical incapacity. Children's autism symptoms as outlined in the DSM-IV and parental coping strategies (task-oriented, emotion-oriented, social diversion, and distraction) were evaluated as predictors of parental stress. In order to examine potential buffering effects of coping strategies on stress associated with the child's symptom severity, the interactive effects of autism symptoms with coping strategies were also examined. Based on the extant literature, we hypothesized that the impact of autism symptom severity on parental stress is moderated by the types of coping strategies used by parents. Specifically, task-oriented coping, social diversion, and distraction coping would buffer the impact of autism severity on parental stress, whereas emotion-oriented coping would exacerbate stress.

Method

Participants

The participants consisted of 77 primary caregivers (68 mothers, 4 fathers, 2 grandparents, and 3 other) of a child with ASD. Information regarding the mother and father of the child with ASD was gathered. The mothers' mean age was 40.17 ($SD = 6.44$) years and the fathers' mean age was 42.54 ($SD = 7.35$) years. The majority of parents were married (79%), and the remaining participants reported being divorced (15%), single (5%), or widowed (1%). With respect to mothers' education level, 26.3% obtained an advanced degree, 46.1% obtained a college degree, 15.8% completed some college, and 11.8% obtained a high school diploma. Regarding the fathers' education level, 20.3% obtained an advanced degree, 52.2% obtained a college degree, 11.6% completed some college, and 15.9% obtained a high school diploma. The annual income of the families varied with over half (56.1%) reporting an income of $60,000 or more.

Information was also collected about the child with ASD. Children diagnosed with Autistic Disorder comprised 51.3% of the sample, and the remaining diagnoses included Autism Spectrum Disorder (22.4%), Pervasive Developmental Disorder-Not Otherwise Specified (14.5%), and Asperger's Syndrome (11.8%). The mean age at diagnosis was 3.47 ($SD = 2.67$) years. In making these diagnoses, 38.7% of children were diagnosed by a psychologist, 30.7% were

diagnosed by a psychiatrist, 12% were diagnosed through a multi-team approach (i.e., professionals from several fields), 4% of children were diagnosed by a pediatrician, and 14.7% of diagnoses were made by other professionals (e.g., neurologist). The majority of the children with ASD were male (88.6%) and ages ranged from 2 to 22, with a mean age of 8.33 ($SD = 4.2$) years. Total number of children living in the home ranged from 1 to 6, with a mean of 2.34 ($SD = .97$).

Procedure

Participants were recruited from parental support groups via seven electronic list-serves throughout several states in the Midwest. After permission was granted from support group presidents, the primary investigator posted the present study on list-serves and willing participants contacted the researcher with a mailing address. One hundred and fifty questionnaire packets were mailed and 81 were returned, yielding a 54% return rate. Four subjects were removed from analyses due to missing data, and four packets were returned after the deadline for analysis and so were not included in the study. Questionnaire packets included a set of forms and questionnaires. The first form in the packet was a cover letter with informed consent, followed by a demographic information sheet, Childhood Autism Rating Scale–Parent Version (CARS-P), Questionnaire on Resources and Stress–Friedrich Short Form (QRS-F), and Coping Inventory for Stressful Situations (CISS). The measures were randomized and each packet contained a self-addressed, stamped envelope for participants to return. Included in the questionnaire packet was a debriefing form that was placed in a sealed envelope titled "to be opened after completing the questionnaires" and participants were informed that reading this information prior to completing the questionnaires may cause him or her to respond with bias.

Measures

Demographic Information

Participants were administered a demographic sheet which asked his or her relationship to the child with ASD, the age and level of education of the parents, marital status, and annual income. Caregivers were also asked to report on the formal diagnosis of the child, the type of professional who diagnosed the child, the age of child at diagnosis, the gender of the child, and the total number of children living in the home.

Severity of Autism Symptoms

The CARS-P (Schopler et al. 1980) was administered to assess the degree of autism symptoms and corresponding

stress levels. It is a 14-item adaptation of the CARS that was developed for parent report. Each item specifies a symptom (e.g., verbal communication, relating to people, emotional response) and severity is rated on a 4-point scale ranging from 1 ("normal for chronological age") to 4 ("severely abnormal for chronological age"). Parents also rate the stressfulness of each domain on a 4-point scale ranging from 1 ("none at all") to 4 ("extreme"). Psychometric findings generally support the use of the CARS-P. Parent reported severity and stress scores have been found to be strongly correlated with scores given by professionals. Adequate agreement between mothers' and fathers' ratings has been found, and overall severity scores have been associated with total stress scores (Bebko et al. 1987).

Stress

The QRS-F (Friedrich et al. 1983) was given to examine resources and stress related to having a disabled child in the family. This is a 52-item, true–false instrument measuring parental perception among the following four factors: (1) parent and family problems, (2) pessimism, (3) child characteristics, and (4) physical incapacity. The Friedrich Short Form of the QRS was developed to be a shorter and psychometrically stronger version of the original QRS (Friedrich et al. 1983). The QRS-F and the QRS have been shown to be closely related as evidenced by a correlation of .997 between the two measures (Friedrich et al. 1983). Alpha reliability coefficients range from .77 to .93, and the Kuder Richardson-20 reliability coefficient ranges from .93 to .95, which is a highly accepted value (Friedrich et al. 1983).

Coping Style

The CISS (Endler and Parker 1990) was employed to assess caregiver coping styles. This 48-item instrument is comprised of three scales of 16 items each that measure task-oriented, emotion-oriented, and avoidance-oriented coping styles. The avoidance scale includes distraction and social diversion subscales. Participants respond to items based on the frequency of behaviors during a stressful situation from 1 ("not at all") to 5 ("very much"). Reliability for the CISS has demonstrated to be generally high, with alphas ranging from .69 to .92 for all scales (Endler and Parker 1990b). Test–retest reliability coefficients are .51 or greater after a 6 week period. The CISS has also demonstrated adequate construct validity. Emotion-oriented coping is highly related to distress and psychopathology, whereas task-oriented coping and avoidance-oriented coping are not.

Results

Means, standard deviations, and correlations between variables used in the current study are presented in Table 1. Consistent with prior research on the factor structure of the CISS and QRS-F scales, most of the intercorrelations among the subscales were modest. The Parent and Family Problems and Pessimism subscales of the QRS-F were both strongly correlated with the Child Characteristics subscale (.61 and .64, respectively). Further, the Child Characteristics subscale was correlated .65 with the CARS-P. After further reviewing the CARS-P and Child Characteristics items, it was considered likely that these two subscales measure similar constructs. Therefore, the regressions involving Child Characteristics subscale were eliminated from the analysis plan.

Hierarchical ordinary least squares regressions were conducted to examine the impact of autism severity (CARS-P), coping (CISS), and the interaction between autism severity and coping scores on parents' ratings of stress (QRS-F). Since prior research suggests that CISS and QRS-F consist of distinct and independent factors, separate regressions were run for each of CISS (e.g., distraction) and QRS-F (e.g., parent and family problems) subscales. However, as noted above, the QRS-F subscale Child Characteristics was eliminated from the analyses. With four CISS subscales and three QRS-F scales, a total of 12 regressions were run. In addition, several demographic variables were tested as possible covariates in the first block: total number of children living in the home, family income, and marital status. All of the first block variables were entered using the forward selection technique. In the second block, CARS-P scores, CISS subscale scores, and the interactions between CARS-P scores and CISS subscale scores were entered using the enter technique. CARS-P scores and CISS subscale scores were centered before the interactions were created.

Due to the number of regressions and this study's specific aim to explore CARS-P and CISS interactions, only analyses that revealed statistically significant interactions are reported in the tables and figures. Two analyses led to significant coping main effects. Emotion-oriented coping was a main effect predictor of the Parent and Family Problems subscale scores ($\beta = .44$, $t = 4.84$, $p < .001$), and task-oriented coping was a main effect predictor of lower Physical Incapacity scores ($\beta = -.27$, $t = -2.08$, $p < .05$).

A total of two regressions revealed a statistically significant interaction effect and are presented in Tables 2 and 3. Interestingly, the demographic variables failed to predict family stress in any of the regression models. However, as presented below, CARS-P interacted with two of the CISS subscales to predict QRS-F subscale scores. When a

Table 1 Intercorrelations between autism symptoms, stress, and coping ($N = 77$)

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Number of children	2.34	.97	–										
2. Income category	3.87	1.78	−.05	–									
3. Autism symptoms	33.66	5.9	.23*	−.20	–								
4. Parent & family problems	9.44	5.12	.08	.01	.50**	–							
5. Pessimism	6.36	2.63	.12	.01	.55**	.52*	–						
6. Physical incapacity	1.32	1.27	.07	−.09	.24*	.31**	.15	.35**	–				
7. Task coping	59.16	9.77	−.12	−.03	−.24*	−.34**	−.18	−.28*	−.33**	–			
8. Emotion coping	41.15	11.44	−.12	−.10	.13	.50**	.26*	.36**	.13	−.36**	–		
9. Distraction coping	19.37	5.52	−.15	−.15	.06	.06	.00	.12	−.14	.10	.38**	–	
10. Social diversion coping	14.88	4.24	.04	.03	−.16	−.16	−.27*	−.24*	−.24*	.38**	−.16	.33**	–

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed)

Table 2 Ordinary least squares regression using demographics, CARS-P scores, and CISS emotion coping scores predicting QRS-F pessimism subscale scores: sample [Beta] weights and tests of significance

Variables	β	T	p
Demographic variables			
Number of children in the home	.06	.55	.58
Family income	.03	.27	.79
Marital status: divorce	−.06	−.59	.56
Marital status: single	.02	.18	.86
Marital status: widow	−.01	−.13	.89
Autism severity and coping variables			
CARS	.51	4.93	<.001
Emotion coping	.17	1.61	.11
CARS × Emotion interaction	.20	2.02	.048

Note: Beta represents the standardized regression coefficient for each predictor from the multiple regression analysis. Model $F_{3,63} = 11.90$, $p < .0001$. Adjusted $R^2 = .33$

Table 3 Ordinary least squares regression using demographics, CARS-P scores, and CISS distraction scores to predict QRS-F parent and family problem subscale scores: sample [Beta] weights and tests of significance

Variables	β	t	p
Demographic variables			
Number of children in the home	.03	.24	.81
Family income	.10	.86	.39
Marital status: divorce	−.10	−.87	.39
Marital status: single	.04	.34	.74
Marital status: widow	.04	.33	.75
Autism severity and coping variables			
CARS	.49	4.67	<.001
Distraction	.02	.21	.83
CARS × Distraction interaction	−.24	−2.23	.03

Note: Beta represents the standardized regression coefficient for each predictor from the multiple regression analysis. Model $F_{3,59} = 8.38$, $p < .0001$. Adjusted $R^2 = .26$

significant interaction effect was found, post-hoc probing and simple slopes analysis was conducted based on recommendations from Holmbeck (2002) using the Modgraph program (Jose 2008). These analyses are presented in Figs. 1 and 2.

Table 2 presents the final regression model testing the effect of autism severity (CARS-P), Emotion-oriented Coping (CISS), and their interaction on QRS-F Pessimism subscale scores. Overall, the model predicted 33% of the variance in pessimism scores. The CARS-P × CISS Emotion-oriented Coping interaction was statistically significant. Post-hoc probing of the interaction is presented in Fig. 1. Based on these analyses, parents who endorse frequent use of emotion-oriented coping reported significantly more pessimism as the autism severity of their child increased ($\beta = .31$, $t = 4.84$, $p < .001$), although for both groups pessimism increased with an increase in autism severity.
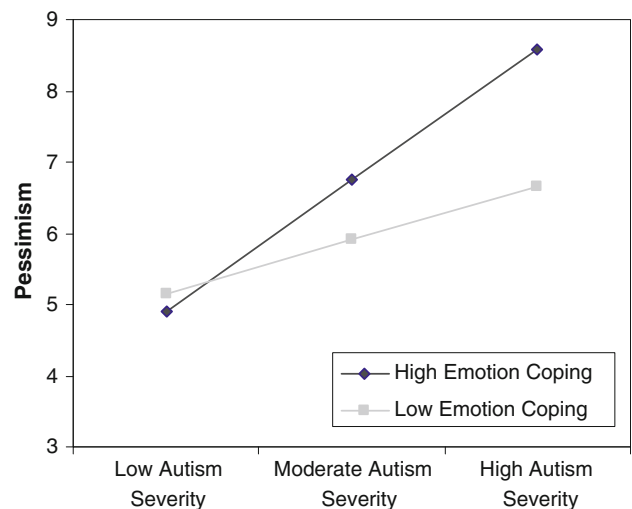

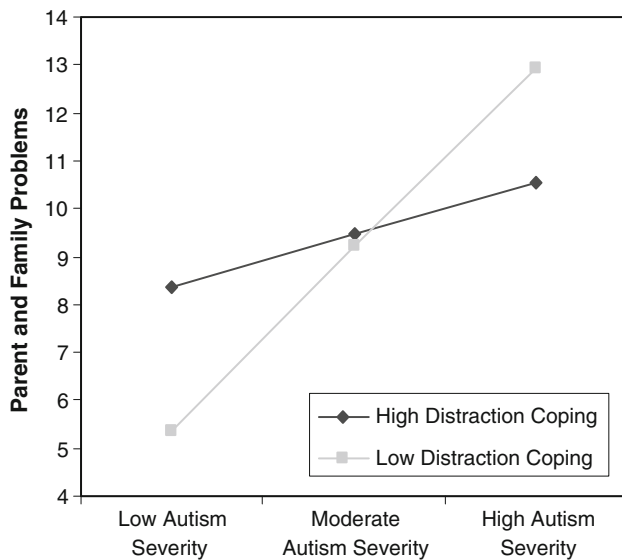**Fig. 1** Post hoc probing of Emotion coping × Autism severity interaction on pessimism scores

Fig. 2 Post hoc probing of Distraction coping × Autism severity interaction on parent and family problems scores

Thus, this relation was significantly stronger for those parents who reported frequent use of emotion-oriented coping.

The slope for the low emotion-oriented coping parents was also positive and significant ($\beta = .13$, $t = 2.02$, $p < .05$), but was notably smaller than the slope for the high emotion-oriented coping line. However, the confidence interval for the high emotion-oriented coping slope line (95% CI $\beta = .19-.43$) and the low emotion-oriented coping slope line (95% CI $\beta = .01-.25$) overlapped slightly, indicating that some caution should be used when discussing the differences between these slopes.

Table 3 presents the final regression model testing the effect of autism severity (CARS-P), Distraction Coping (CISS), and their interaction on QRS-F Parent and Family Problem subscale scores. Overall, the model predicted 26% of the variance in parent and family problem scores. As with the emotion-oriented coping analyses above, Table 3 suggests that CARS-P is a significant predictor of parent and family problems, but distraction coping is not a main effect predictor of parent and family problems. However, the interaction of CARS-P and CISS distraction coping was statistically significant. Post-hoc probing of the interaction is presented in Fig. 2. Based on these analyses, among parents who reported infrequent use of distraction coping (see low distraction coping line), the slope relating autism severity and parent and family problems was positive. The slope for the high distraction coping parents was also positive and significant ($\beta = .18$, $t = 2.03$, $p < .05$). However, the confidence interval for the low distraction coping slope line (95% CI $\beta = .50-.88$) and the high distraction coping slope line (95% CI $\beta = .04-.42$) do not overlap, indicating that the slope of the low distraction

coping line is significantly larger than the slope of the high distraction coping line. Thus, although for both groups family problems increased with an increase in autism severity, this relation was significantly stronger for those parents who reported less frequent use of distraction coping.

Discussion

Prior research has shown that parents of children with ASD experience significant caregiving stress. The previous literature has generally found that the severity of the child's autism symptoms and behaviors are strong main effects predictors of stress. The current study attempted to add to the existing literature by exploring the effects of specific coping strategies (e.g., task-oriented coping) on specific stress domains (e.g., Parent and Family Problems) among parents with ASD youth. This study then explored the possible moderating impact of specific coping strategies and ASD severity on specific stress domains, and is one of only a few studies to take a more nuanced approach to the study of coping, stress, and ASD severity (e.g., Smith et al. 2008) among parents.

The child's autism severity, as measured by the CARS-P, was the strongest and most consistent predictor of stress across all of the parental stress domains. This finding is consistent with the prior literature (Bebko et al. 1987; Bromley et al. 2004; Hastings 2003; Hastings and Johnson 2001; Kasari and Sigman 1997; Konstantareas and Papageorgiou 2006; Lecavalier et al. 2006) and consistent with a Conservation of Resources (COR) perspective of stress. The COR model of stress posits that people attempt to gain, maintain, and protect their resources, and a potential or actual loss of these resources is perceived as threatening and stressful (Hobfoll 1989). According to the COR model, the increased demands of parenting a youth high on ASD severity threatens emotional and relational resources, which can then be associated with more parent and family problems and increased pessimism, the two scales of the QRS-F that figured most prominently and consistently in the results.

In terms of coping styles, CISS emotion-oriented coping scores were associated with more parent and family problems, and task-oriented coping was associated with lower physical incapacity scores. Emotion-oriented coping has been consistently found to predict psychological distress (Higgins and Endler 1995; Abbeduto et al. 2004; Dunn et al. 2001; Smith et al. 2008). Emotion-oriented coping on the CISS is considered to measure negative thinking and rumination (Austenfeld and Stanton 2004; Higgins and Endler 1995). The parents who participated in this study were predominantly mothers, and research has shown that women are particularly vulnerable to relational stressors such as those measured by parent and family problems

(Herring et al. 2006; Klein and Corwin 2002). Since this was a cross-sectional study, it is impossible to determine directionality and assess whether emotion-oriented coping caused greater parent and family problems or if existing parent and family problems eventually led to increased emotional coping. Either of these possible explanations are viable (e.g., Lightsey and Sweeney 2008), and it is likely that they are bi-directional, such that emotion-oriented coping impacts family functioning as family problems leads to increased emotion-oriented coping. All of these are interesting questions for future research.

This study also found task-oriented parental coping to predict lower physical incapacity scores on the QRS-F. Task-orientated coping consists of engaging in active attempts, both behavioral and cognitive, to alleviate stress (Endler and Parker 1990; Folkman and Lazarus 1988). Again, this study was cross-sectional and the results can only offer hypotheses for future research. For example, it is possible that higher task-oriented coping allows parents to work on specific and concrete treatment regimens related to increasing physical capacity, thereby causing a reduction in QRS-F physical incapacity scores. Established evidence-based behavioral regiments for children with autism, such as Applied Behavior Analysis (ABA), may be more conducive to task-oriented programming. The proactive emphasis of this coping style paired with a behavioral treatment may therefore be expected to help lower physical incapacity. Alternatively, more severe physical problems may lead to an extinguishing of task-oriented coping in parents, since this style may lead to frustration by highlighting parents' inability to improve their children's condition. According to this interpretation, lower task-oriented coping may be an adaptive response to frustration for parents with high severity ASD children.

Emotion-oriented coping moderated the relationship between pessimism stress, as measured by the QRS-F, and autism symptomatology, as measured by the CARS-P (Fig. 1). Parents who rated their child's autism symptoms severely and reported using more emotion-oriented coping also experienced greater pessimism. Pessimism, or generalized negative outcome expectancies, has been associated with greater negative psychological outcomes, such as depressive symptomatology (Anderson 1996; Scheier and Carver 1992). Parents who ruminate on current problems, like the high autism severity of their youth, may experience more pessimistic views of the future and thus become more vulnerable to psychopathology. The idea that pessimism leads to an inclination to experience negative emotions, which further manifests to negative affective conditions, is a cornerstone to Beck's (1976) theory. Therefore, this finding has important implications for treatment in that mitigating negative thinking through cognitive therapy should be an intervention priority for this population of parents.

Figure 2 illustrates the moderation of distraction coping on the impact of autism symptom severity on parental stress. Parents who rated their child's autism symptoms as more severe and also rated themselves high on the use of engaging in more alternative, distracting, or pleasurable activities (i.e., distraction coping) had lower levels of parent and family stress. The literature has reported mixed findings regarding distraction coping, and the significant interaction effect found in this study offers an explanation. Distraction may serve as protective for parents of child with ASD when symptom severity is high because the parenting demand is higher for more severe symptoms (e.g., repetitive child behaviors). Under these circumstances, parents may benefit from the more austere coping strategy of distraction and avoidance because it allows for a complete change of environments to alleviate stress and engage in social relationships (Dunn et al. 2001). As a result, these parents can then re-enter the family feeling less stress, which may lessen the likelihood of spillover. The results also suggest that distraction may be less useful at lower levels of autism severity. It may be that these parents have less caregiving demand to distract from therefore distraction coping does not have as great of an impact when autism symptoms are less severe. As with the discussion of main effects above, it is impossible to draw casual conclusions in this study, so any discussion of the findings merely offers potential hypotheses for future research.

There are several limitations to this study. First, this study was cross-sectional and did not study the impact of autism severity and coping strategies on parental stress over time. Future investigations should employ a longitudinal design to evaluate causal pathways. A second limitation is that the study used solely self-report data. Although self-report is crucial when assessing internalized states (e.g., stress) and anonymity was assured, the self-report nature of the measures may have impacted the data, as parents may have been vulnerable to social desirability in their responses. Parents may have been hesitant to answer sensitive questions honestly therefore underestimating difficulties. Lastly, generalization of results is limited because of the homogenous sample; most participants were older, educated, married, and of high socioeconomic status. Future studies should seek out participants from diverse sources in order to achieve a varied sample. In addition, all participants were volunteers recruited from electronic support group list-serves, indicating the use of formal support systems. Individuals who volunteer for studies and belong to support groups may have fewer adjustment problems than those who do not. Thus, caution must be used when generalizing results because the current study may underrepresent parental stress within this population.

Overall, this investigation adds to the literature in its examination of coping styles as moderators in a highly

stressed population in order to better understand how parents of children with ASD cope with caregiving stress. The current study supports previous literature indicating that the child's symptoms and behaviors are a strong predictor of parental stress, and results indicate that the use of certain coping strategies impacts stress levels. Results suggest that managing stress by using emotion-oriented coping responses is related to increased parent and family problems, as well as to parental pessimism when autism symptomatology is high. Conversely, task-oriented approaches are related to decreased child physical incapacity, and the use of distraction coping is beneficial when autism severity is high. Although parenting stress is often unavoidable, increasing our knowledge of the coping strategies that are more or less effective for this population of parents, and under what conditions some coping strategies may be either beneficial or harmful, has direct implications for treatment and parent education efforts.

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