



Parental Distress and Parenting Behavior in Families of Preschool Children with and Without ASD: Spillover and Buffering

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Abstract

Parents of children with autism spectrum disorder (ASD) report increased distress relative to parents of children with neurotypical development. Parent well-being is generally considered a key determinant of parenting behavior, thus increased distress may spill over into less optimal parenting in families of children with ASD. However, evidence is mixed regarding the degree to which parenting is actually compromised in this population, suggesting the possibility of buffering, wherein the parenting of children with ASD may be robust against spillover from increased parental distress. The current study tested competing *spillover* and *buffering* models with regard to relations among child ASD status, parental distress, and parenting behavior. Parents of preschoolers with ($n = 73$) and without ($n = 55$) ASD completed self-report measures of parenting stress, depressive symptoms, and emotion dysregulation, as well as of positive and negative parenting behaviors. Families of preschoolers with ASD reported higher distress and negative parenting, and lower positive parenting than did their counterparts. Findings supported the spillover model for negative parenting such that increased parental distress accounted for status-group differences in negative parenting. In contrast, potential buffering was observed for positive parenting in that an inverse association between distress and parenting was observed for parents of children with neurotypical development only. Findings highlight the potential benefit of intervention to reduce parental distress in families of children with ASD, but also suggest some existing ability of these families to buffer certain parenting behaviors from deleterious effects of parent distress.

Keywords Autism spectrum disorder · Parenting · Parental distress · Stress · Depression

Although determinants of parenting are complex and multifaceted, theoretical conceptualizations commonly feature parent psychological characteristics as a central influence on parenting behavior (Abidin, 1992; Belsky, 1984; Crnic & Low, 2002). Efforts to understand the role of parent characteristics in families of children with autism spectrum disorder (ASD) have often focused on parent psychological *distress*, given evidence of markedly elevated parenting

stress and mental health difficulties in these parents relative to parents of children with neurotypical development and parents of children with other intellectual and developmental disabilities (Baker-Ericzen et al., 2005; Barroso et al., 2018; Bispo-Torres et al., 2023; Dabrowska & Pisula, 2010; Estes et al., 2009 see also Hayes & Watson, 2013 and Karst & Van Hecke, 2012).

Decades of research robustly link core features of parental distress, including parenting stress, depressive symptoms, and emotion dysregulation, with less optimal parenting behavior in families of children with neurotypical development (e.g., Anthony et al., 2005; Crnic et al., 2005; Goodman et al., 2020; Lovejoy et al., 2000; Zimmer-Gembeck et al., 2022). Emerging evidence suggests the potential for parental distress to adversely affect parenting in families of children with ASD as well (De Clercq et al., 2022; Shawler & Sullivan, 2017). However, evidence is mixed regarding the extent to which parenting may be compromised by high levels of parental distress in these families. For example,

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a recent meta-analysis found that parents of children with ASD exhibited comparatively higher levels of observed negative parenting behavior (e.g., hostility, aversion), but no significant differences in observed positive parenting (e.g., support, warmth) as compared to families of children without ASD (Ku et al., 2019). Such findings raise the compelling possibility of both status-group effects on parenting (perhaps as mediated through increased distress) and *buffering*, wherein certain aspects of parenting behavior, such as positive parenting behaviors, may be protected against elevated parental distress in families of children with ASD. The current study tested contrasting *spillover* and *buffering* models to enhance understanding of the relationships among ASD status, parental distress (stress, depression symptoms, dysregulation), and positive and negative parenting behavior in families of children with ASD and families of children with neurotypical development.

Parenting stress has long been conceptualized as a core determinant of parenting behavior (Abidin, 1992; Belsky, 1984). Studies of families of children with neurotypical development have linked greater parenting stress with less observed positive affect during parent-child interaction (Crnic et al., 2005), stricter and harsher reported discipline strategies (e.g., Anthony et al., 2005; Jackson & Choi, 2018), a more critical family emotional climate (De Clercq et al., 2022), and more negative and controlling parenting behavior (see Crnic & Low, 2002 and Deater-Deckard, 2004 for reviews). Less research has focused on associations between parenting stress and parenting behavior in families of children with ASD. Nonetheless, existing findings suggest that higher levels of parenting stress in families of children with ASD may be similarly associated with a more critical emotional climate (De Clercq et al., 2022), harsher reported discipline strategies (Shawler & Sullivan, 2017), and lower levels of reported mindful parenting (i.e., more reactivity, less present-moment focus; Beer et al., 2013; Raulston et al., 2021; Wang et al., 2022).

Parenting stress is robustly tied to other facets of parent psychological wellbeing, including parental depression, in both neurotypical development (Fang et al., 2022) and ASD (Davis & Carter, 2008; Enea & Rusu, 2020; Weitlauf et al., 2014). In turn, parental depression increases risk for disrupted parenting behavior (e.g., Goodman et al., 2020; Lovejoy et al., 2000). A recent meta-analysis involving longitudinal studies of families of children with neurotypical development demonstrated significant predictive associations between parental depression and subsequent positive and negative parenting behavior (Goodman et al., 2020). Similarly, an earlier meta-analysis focused on observed parenting in families of children with neurotypical development found links between parental depression and both positive and negative parenting, with the largest associations with the latter (Lovejoy et al., 2000). Despite evidence of

the heightened incidence of depression symptoms in parents of children with ASD (e.g., Bispo-Torres et al., 2023), the association between depression and parenting behavior in this population has received surprisingly limited attention. A 14-day diary study revealed an association between mothers' daily endorsements of depressive symptoms and their reports of frustrating parent-child interactions (Pruitt et al., 2016). Additionally, a recent investigation reported an inverse correlation between parental depression and reported mindful parenting in ASD (Raulston et al., 2021). Further investigation in this area is clearly needed.

Emotion dysregulation, or difficulties modulating internal states in the service of goal-directed activity (Gross, 2008; Thompson, 1994), is thought to underlie psychological distress and increase risk for psychopathology, including depression (Aldao et al., 2016; Joormann & Stanton, 2016). In parents of children with neurotypical development, parent emotion dysregulation is linked with greater parenting stress (Cao et al., 2017) and with multiple aspects of parenting behavior (for reviews see Leerkes & Augustine, 2019 and Zimmer-Gembeck et al., 2022). Specifically, a recent meta-analysis revealed greater parent emotion dysregulation to be significantly associated with reduced positive parenting and increased negative parenting behavior (Zimmer-Gembeck et al., 2022). Effects were strongest for prediction of negative parenting (Zimmer-Gembeck et al., 2022) and for investigations utilizing the Difficulties with Emotion Regulation Scale (DERS), the parent self-report measure used in the current study. Within families of children with ASD, preliminary evidence suggests associations between reported parent emotion dysregulation and both reported positive parenting and what the authors considered to be reported negative overprotection (Hu et al., 2019). Inverse associations between dysregulation and reported mindful parenting have also been documented (Aydin, 2023). The relative dearth of research in this area highlights the importance of advancing understanding of these processes in families of children with ASD.

Current Study

Challenges related to symptoms of ASD and associated behavioral difficulties are associated with increased parenting stress and distress (Ekas & Whitman, 2010; Lecavalier et al., 2006; Shawler & Sullivan, 2017). Further, parental distress can feedback upon the child through *spillover* from parental stress into the parenting behavior the child receives, as outlined previously. Conversely, it is possible that this chain of influence may not occur. Indeed, the parenting of children with ASD is often not compromised despite established elevations in parental distress (e.g., Ku et al., 2019). This apparent contradiction suggests that parents may also

buffer their parenting behavior against the distress commonly associated with certain child challenges related to ASD (Alostaz et al., 2022).

Building upon the existing evidence base, the current study tested two competing models of associations among ASD status, parent distress (parenting stress, depression symptoms, and emotion dysregulation), and parenting behavior. The *spillover* hypothesis predicted that higher levels of distress in parents of children with ASD relative to parents of children with neurotypical development would account for any differences in parenting behavior related to child ASD status. The *buffering* hypothesis predicted that the association between parent distress and parenting behavior would be moderated by child ASD status such that less spillover from distress to parenting occurred for families of children with ASD.

Methods

Participants

Participants included 128 families of children ages 3 to 5 years, including 73 families of preschool-aged children with ASD and 55 age-matched children with neurotypical development (NTD). Data for families of children with ASD involved baseline measures drawn from the first two in-person cohorts of a larger randomized controlled trial examining the efficacy of stress-reduction interventions for families of young children with ASD (Neece et al., 2023). Recruitment for these cohorts occurred from September 2018 to September 2019. Of the 81 families who participated in an initial visit as part of this randomized trial, 8 families did not return relevant questionnaire data and were not included in the current study. Two of these families did not return any demographic data; the remaining 6 families did not differ significantly from included participants on examined demographics. Community ASD diagnosis was confirmed by study administration of the Autism Diagnostic Observation Schedule-2 (ADOS-2; Lord et al., 2012) by research-reliable assessors. One child who did not meet the ADOS-2 criterion for an ASD classification was retained in the sample following completion of an in-depth, multi-method clinical best estimate by a licensed clinical psychologist with research reliability in the ADOS-2 and significant expertise in ASD assessment. Exclusionary criteria for the larger trial included (1) primary caregiver positive screen for suicidality, substance use, or active psychosis on the Structured Clinical Interview for DSM Disorders, Research Version Non-Patient Edition (First et al., 2002); (2) parent participation in auxiliary mental health treatment or support groups at time of randomization; and (3) child sensory or motor impairments that would prevent participation in the

parent-child interaction tasks that were part of the larger assessment protocol (e.g., blindness or deafness, difficulty sitting independently). Parents participated in study procedures in English. Of the participating primary caregivers of children with ASD, 18 (25%) reported a history of mental health problems, including depression ($n = 17$), anxiety ($n = 12$), bipolar disorder ($n = 4$), and post-traumatic stress disorder ($n = 2$). A majority of the children with ASD (65%) met DSM-5 (American Psychiatric Association, 2013) criteria for intellectual disability based upon standardized scores below 76 on the Stanford-Binet-5 Abbreviated Battery IQ (SB-5 ABIQ; Roid, 2003) and the Vineland Adaptive Behaviors Scales-3 Adaptive Behavior Composite (Sparrow et al., 2016). ASD symptom severity fell in the *moderate* to *high* range (ADOS-2 Comparison Score $M = 7.33$, $SD = 1.68$).

Families of children with neurotypical development were recruited from the community through local organizations, service providers, and social media postings. These families were recruited from January 2019 to December 2019. Exclusionary criteria for families of children with NTD included (1) child community diagnosis of ASD or other developmental delay, (2) a sibling with ASD or other developmental delay; (3) a total score of 12 or higher on the Social Communication Questionnaire (SCQ; Rutter et al., 2003), which is the recommended adjusted cutoff for ASD in young children (Corsello et al., 2007); and (4) Stanford-Binet-5 Abbreviated Battery IQ score (SB-5 ABIQ; Roid, 2003) score below 85. Among primary caregivers of children with neurotypical development, 9 (16%) reported a history of mental health problems, including depression ($n = 6$), anxiety ($n = 4$), bipolar disorder ($n = 1$), post-traumatic stress disorder ($n = 1$), and obsessive compulsive disorder ($n = 1$).

Table 1 presents participant demographics by diagnostic group. Groups differed significantly in race/ethnicity, with a greater proportion of caregivers of children with ASD identifying as Hispanic/Latino relative to caregivers of children with NTD, $\chi^2 = 6.99$, $p < .001$. Additionally, caregivers of children with NTD reported having achieved a higher educational level than caregivers of children with ASD, $t = 3.15$, $p < .01$. Regarding child characteristics, children with NTD had significantly higher measured intellectual functioning than children with ASD, $t = 15.08$, $p < .001$. Groups also differed in child gender, with the majority of children with ASD identified as male compared to just under half of the children with NTD, $\chi^2 = 14.50$, $p < .001$. Each of these variables was controlled in all status-group analyses in which the variable was also related to the outcome variable of interest.

The average age in years of children with ASD ($M = 3.96$, $SD = 0.90$) did not differ from children with NTD ($M = 3.96$, $SD = 0.72$). Half of the families of children with ASD reported receiving a primary ASD diagnosis for their child during the second year of life (50%), and 34% reported

Table 1 Participant demographics

Demographic	ASD (<i>n</i> = 73)	NTD (<i>n</i> = 55)
	Parent Demographics	
Age in Years <i>M</i> (<i>SD</i>)	34.51 (6.97)	33.29 (5.39)
Gender		
Female	87%	89%
Male	13%	11%
Race/Ethnicity ^a		
Hispanic/Latino	63%	40%
White, non-Hispanic	32%	56%
Multiracial	14%	11%
Asian	9%	6%
Black	7%	7%
Pacific Islander	1%	0
Native American	1%	2%
Other	0	2%
Marital Status		
Married	62%	80%
Living Together	20%	4%
Separated	6%	4%
Divorced	0	6%
Widowed	1%	0
Single	11%	7%
Annual Income		
<\$30k	29%	28%
\$30k to <\$50k	16%	13%
\$50k to <\$70k	23%	26%
\$70k to <\$90k	10%	11%
>\$90k	23%	22%
Education Level		
High school or less	22%	16%
Some college	21%	9%
Technical Degree/AA	35%	15%
Bachelor's Degree	10%	40%
Graduate Degree	13%	20%
	Child Demographics	
Age in Years <i>M</i> (<i>SD</i>)	3.96 (0.90)	3.96 (0.72)
Gender		
Male	78%	46%
Female	23%	55%
Estimated IQ <i>M</i> (<i>SD</i>)	65.79 (17.17)	103.76 (11.91)
Race/Ethnicity ^a		
Hispanic/Latino	62%	51%
White	44%	73%
Multiracial	24%	40%
Asian	7%	9%
Black	10%	16%
Pacific Islander	3%	0
Native American	3%	0
Other	1%	0

NTD Neurotypical development ASD Autism spectrum disorder

^aCumulative percentages for race/ethnicity exceed 100% given that each identification was treated independently (i.e., those identified as “multiracial” were also included for any racial/ethnicity category variable for which they identified)

receiving this diagnosis in the third year. 61% of families of children with ASD reported having received some behavioral intervention services for their child within the previous six months.

Procedures

Procedures were approved by an Institutional Review Board and were overseen by the participating universities. Following an initial phone screening, eligible families were scheduled for a baseline laboratory assessment and caregivers provided informed consent. For all children, the laboratory visit included direct testing of child intellectual functioning and participation in interactive laboratory tasks. Parents also completed questionnaires. Children with ASD participated in additional direct assessment, including the ADOS-2, and their parents reported on adaptive behavior.

Measures

Parent Distress

Parenting Stress Parenting stress was measured with the Parent Distress scale of the *Parenting Stress Index – Short Form* (PSI-SF; Abidin, 2012). Items are rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Parent Distress subscale scores range from 12 to 60, with higher scores indicating more stress. The PSI-SF has been used widely in families of children with NTD (Abidin, 2012; Haskett et al., 2006; Lee et al., 2016) and children with ASD (for reviews see Barroso et al., 2018 and Hayes & Watson, 2013). However, some authors have questioned the coherence of the overall Parent Distress factor for families of children with ASD, recommending further delineation of this scale to separate “general” from “parenting” distress (Zaidman-Zait et al., 2011). Given planned status-group comparisons, and evidence of acceptable and similar internal consistency across our subsamples (Table 2), we retained primary focus on the original Parenting Distress subscale. However, due to the valid points and evidence

presented by Zaidman-Zait et al. (2011), the relevant factor-derived composites for General and Parenting Distress were also examined, and considerations for the use of these subscales appear in the bivariate analyses section.

Parent Depression Symptoms Parent depression symptoms were measured with the widely-used *Center for Epidemiological Studies – Depression Scale* (CES-D; Radloff, 1977), which has demonstrated reliability and evidence of validity in parents of children with NTD (e.g., Beck, 1999; Loechner et al., 2018) and parents of children with ASD (e.g., Bispo-Torres et al., 2023). The scale consists of 20 items that are used to assess various depressive symptoms over the previous week, such as depressed affect, difficulties with interpersonal functioning, low positive affect, and somatic complaints. Each item is rated on a 4-point Likert scale ranging from 0 (*rarely or none of the time*) to 3 (*most or all of the time*). Total scores range from 0 to 60; a score of 16 or higher indicates clinically-significant levels of depressive symptoms. Internal consistency of the CES-D was high for the full sample and within each status group (Table 2).

Parent Dysregulation Parent dysregulation was indexed with the *Difficulties with Emotion Regulation Scale* (DERS; Gratz & Roemer, 2004). The DERS is a 36-item self-report measure of emotion regulation difficulties. Items are rated on a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). Higher scores on the DERS indicate more difficulty regulating emotions. The measure asks parents about levels of non-acceptance, goals, impulsivity, awareness, emotion regulation strategies, and clarity. The DERS has been used widely in studies of emotion dysregulation (Zimmer-Gembeck et al., 2022), including in parents of children with ASD (Costa et al., 2017; Hu et al., 2019). Although some concerns regarding factor structure have been identified (e.g., Hallion et al., 2018), we utilized the total score given our theoretical rationale and evidence of excellent internal consistency for the full sample as well as each subsample (Table 2).

Table 2 Descriptive statistics for predictor variables, group differences in these variables, and interrelations among these composited variables

	Stress (PSI-PD)	Depression (CES-D)	Dysregulation (DERS)	Mean (SD) NTD/ASD	Group Difference	Internal Consistency (a) NTD/ASD/Full
Stress (PSI-PD)		0.32**	0.19	24.28 (6.79) / 38.95 (8.50)	$F(1,124)=57.10^{***}$	0.88 / 0.82 / 0.91
Depression (CES-D)	0.48***		0.60***	7.18 (7.10) / 20.37 (11.75)	$F(1,117)=23.11^{***}$	0.86 / 0.91 / 0.91
Dysregulation (DERS)	0.56***	0.64***		62.11 (16.00) / 82.01(22.10)	$F(1,120)=24.34^{***}$	0.93 / 0.95 / 0.95

NTD Neurotypical development ASD Autism spectrum disorder

Correlations in the lower left represent those for NTD; correlations in the upper right are those for ASD. *F*-tests include for control of child estimated IQ

*** $p < .001$; ** $p < .01$

Parenting Behavior

Negative Parenting

Negative parenting was assessed via parent report on the *O'Leary Parenting Scale* (OPS; Arnold et al., 1993), a 30-item self-report measure of problematic parenting in discipline situations. The total scale includes subscales related to laxness (e.g., “If my child gets upset, I back down and give in”), overreactivity (e.g., “I raise my voice or yell”), and verbosity (“If saying no doesn't work right away, I keep talking and try to get through to my child”), and higher ratings reflect less optimal parenting. The scale has exhibited adequate reliability and validity evidence through associations with child misbehavior and observed problematic discipline in families of children with NTD (Arnold et al., 1993; Lorber et al., 2014), and in families of children with ASD (Tellegen & Sanders, 2014). Internal consistency for the full sample and within each status group were acceptable (full $\alpha = 0.76$, NTD = 0.78, ASD = 0.72).

Positive Parenting

To measure positive parenting, which is not indexed by the O'Leary Parenting Scale, we utilized the Positive Parenting scale of the *Alabama Parenting Questionnaire – Preschool Revision* (AP-PR; Clerkin et al., 2007). The APQ-PR Positive Parenting scale consists of six items rated on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*). The scale largely considers behaviors related to rewarding the child with positive physical, verbal, and/or tangible stimuli for compliance or performance (e.g., “You reward or give something extra to your child for obeying you or behaving well,” “You hug or kiss your child when he/she has done something well.”). The APQ-PR has appropriate reliability and validity evidence from studies of parenting behavior in families of children with NTD (Blower et al., 2019; Clerkin et al., 2007) and children with ASD (Baker et al., 2020; McRae et al., 2019). Internal consistency for the APQ-PR Positive Parenting subscale was acceptable (full $\alpha = 0.84$, NTD = 0.83, ASD = 0.82).

Data Analysis Plan

Following consideration of missing data, interrelations among the composited distress variables and the internal consistencies of the distress composites by group and for the full sample were considered. Bivariate correlations between the distress predictors and parenting behaviors were examined by group, and linear regressions were performed with the PROCESS macro for SPSS (Hayes, 2022) to test hypotheses related to mediation (*spillover model*) and moderation (*buffering model*). Regressions were performed for each

parenting outcome (negative and positive) through PROCESS Model 4 with 5000 bootstrap samples. For each of these regressions, diagnostic status group (ASD/NTD) was entered as the predictor, any potential confounding variables were entered as covariates, and the parent distress composite was entered as a mediator. The option to test for interactions between the predictor and the mediator was enabled to test the moderation/buffering hypothesis. Finally, any variable that covaried with status group was examined as a possible alternate moderator in order to ensure that any significant moderation was not due to confounding factors.

Results

Missing Data

A small proportion of data was missing for predictor variables comprising the parental distress composite: PSI ($n = 1$; 0.7%), DERS ($n = 5$; 4%), CES-D ($n = 8$; 6%). All participants returned at least 2 of the 3 distress measures. Missing parental distress data were not significantly related to any child (age, gender, race/ethnicity, IQ, ASD symptoms), parent (age, race/ethnicity, education), or family (annual income) factor examined. Regarding the parenting behavior outcome measures, all families returned the APQ-PR, and the OPS was missing for 5 families (4%). Families missing the OPS reported a significantly lower level of parent education than families with complete OPS data, $t = -2.64$, $p = .005$.

Group Differences

Consistent with expectations and existing literature, parents of children with ASD reported significantly greater parenting stress, depressive symptoms, and emotion dysregulation than did parents of children with NTD (Table 2). Group differences were also significant for the parenting behavior measures, with parents of children with ASD reporting lower levels of positive parenting and higher levels of negative parenting relative to parents of children with NTD (Table 3).

Distress Composite Development

Standardized scores for the distress variables were averaged to create a unitary composite. Associations among the three distress variables were positive and significant at moderate to high magnitude for families of children with NTD, resulting in good internal reliability for an overall composite, $\alpha = 0.80$. Associations among the three distress variables were similarly positive for families of children with ASD, with significance reached for two of the three associations. Although the association between stress (PSI-PD)

Table 3 Correlations between predictor and criterion variables by status group, and status-group differences on criterion variables

	Parent Distress				Mean (<i>SD</i>)	Group Difference
	Stress (PSI-PD)	Depression (CES-D)	Dysregulation (DERS)	Distress Composite		
NTD: Negative Parenting (OPS)	0.32*	0.24 ⁺	0.29*	0.34*	2.90 (0.50)	$F(1, 116)=7.05^{**}$
Positive Parenting (APQ-PR)	-0.34*	-0.35*	-0.42**	-0.44**	4.43 (0.39)	$F(1, 125)=5.70^*$
ASD: Negative Parenting (OPS)	0.08	0.32**	0.61***	0.42***	3.27 (0.55)	
Positive Parenting (APQ-PR)	0.10	0.14	-0.07	0.09	3.99 (0.64)	

ASD Autism spectrum disorder NTD Neurotypical development; *F*-test for negative parenting included control for child gender, child estimated IQ, and maternal education; *F*-test for positive parenting included control for child estimated IQ

⁺ $p = .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

and dysregulation (DERS) was not significant for families of children with ASD, overall internal consistency for the composite was generally adequate ($\alpha = 0.64$; full sample $\alpha = 0.82$). A three-scale distress composite was therefore retained due to the need to compare across groups, the desire to minimize Type 1 error, and the theoretical rationale that these scales are measuring relatively distinct constructs that combine to index overall parent distress. Of note, the association between the PSI-PD and DERS scales remained nonsignificant for families of children with ASD even when utilizing the proposed alternate structure for the PSI Parent Distress Scale (Zaidman-Zait et al., 2011): general stress $r = .21$, parenting stress $r = .19$.

Bivariate Correlations

As presented in Table 3, relations between parent distress variables and *negative* parenting behaviors were generally consistent across status groups, with three of the four correlations demonstrating significant positive associations. The remaining nonsignificant association for families of children with NTD (depression and negative parenting) was similar in strength to the significant associations, but fell to a trend at $p = .10$. In contrast, the nonsignificant association for ASD with regard to negative parenting (stress) was quite small. Associations between parent distress and *positive* parenting appeared to differ substantially across status groups, with increased distress consistently and significantly related to lower positive parenting for families of children with NTD, whereas a consistent lack of significant associations with positive parenting was observed across all distress variables for families of children with ASD (Table 3).

Interestingly, with regard to consideration of the two-component model of parental stress proposed by Zaidman-Zait et al. (2011), significant relations between parental stress and each of the parenting behaviors for NTD families appeared largely driven by associations with the “general” distress subscale (negative parenting $r = .43$, $p < .01$; positive parenting $r = -.37$, $p < .01$) rather than the “parenting stress”

subscale ($r = .06$, -0.18 , *ns*, respectively). All associations remained consistently nonsignificant for families of children with ASD regardless of the construction of the PSI scale.

Of the demographic variables considered (e.g., child age, child gender, child IQ, caregiver race/ethnicity, caregiver education and income), child gender, $r = -.20$, $p < .05$, estimated IQ, $r = -.24$, $p < .01$, and caregiver education, $r = -.22$, $p < .05$, were each significantly related to negative parenting. Child IQ was also related to the distress composite, $r = -.44$, $p < .001$. Neither gender ($r = -.10$) nor education ($r = -.16$) was related to the distress composite, but both were related to status group ($r = -.34$, $p < .001$, $r = -.27$, $p < .01$, respectively), so these variables were controlled in the final regression for negative parenting. With regard to positive parenting, only child age, $r = .19$, $p < .05$, and estimated IQ, $r = .32$, $p < .001$, were related for the full sample. Age was not significantly related to any of the predictor variables, including the distress composite, $r = .04$, *ns*, or group status, $r = -.02$, *ns*, so only estimated IQ was controlled in the final regression for positive parenting.

Mediation and Moderation Analyses

The regression for negative parenting revealed that the association between ASD status and negative parenting behavior was no longer significant once the covariates and the interaction term were included (Table 4). Further, the test of indirect effects was significant, $b = 0.45$, $SE = 0.19$, $CI = 0.10$ to 0.84 , suggesting that distress mediated the association between status group and negative parenting. The interaction term between distress and status was not significant (Table 4), supporting the suggestion from the bivariate analyses, that links between distress and negative parenting seemed to operate similarly for each group of families. Results suggest support for the *spillover* model whereby child ASD status was associated with increase parental distress which, in turn, related to more negative parenting.

In the regression predicting positive parenting behaviors, the association between ASD status and parenting

Table 4 Linear regression predicting negative parenting

	Negative Parenting					
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	Lower <i>CI</i>	Upper <i>CI</i>
Status (ASD or NTD)	-.02	.19	-0.12	.904	-.396	.351
Child gender	-.13	.10	-1.31	.193	-.324	.066
Caregiver education	-.06	.02	-2.38*	.019	-.104	-.010
Child estimated IQ	.00	.00	0.22	.827	-.006	.007
Parent distress	.32	.12	2.71**	.008	.085	.551
Status x parent distress	-.02	.14	-0.17	.866	-.310	.261

ASD Autism spectrum disorder NTD Neurotypical development

* $p < .05$, ** $p < .01$

was no longer significant with the inclusion of the covariates and parent distress (Table 5). However, the test for indirect effects was not significant, $b = -0.10$, $SE = 0.16$, $CI = -0.215$ to 0.430 , suggesting that distress did not mediate the association between status group and positive parenting. The interaction between status group and parent distress was significant, consistent with examination of the bivariate associations (Table 5). Follow-up analyses indicated that increased parent distress was related to lower positive parenting for families of children with NTD *only*, $b = -0.31$, $t = -2.34$, $p = .021$, $CI = -0.568$ to -0.047 . Distress was unrelated to positive parenting for families of children with ASD, $b = 0.07$, $t = 0.88$, $p = .433$, $CI = -0.105$ to 0.242 , providing evidence for the *buffering* model for positive parenting (Fig. 1).

Alternative Post-Hoc Analyses

Additional, post-hoc analyses were performed in order to ensure that group status did not moderate the association between distress and positive parenting as a function of a significant covariation with another variable. Child gender, child IQ, caregiver education, and caregiver race/ethnicity as White/Hispanic, all differed between status groups. Regressions were performed with each of these variables replacing status group as the moderator. None of these interactions were significant (child gender $b = -0.17$, $p = .17$; child IQ $b = -0.06$, $p = .88$; parent education $b = -0.43$, $p = .20$; parent race/ethnicity $b = 0.01$, $p = .92$), increasing confidence

that the relations differed primarily as a function of whether the families had a child with or without ASD.

Discussion

The current study tested two competing models of associations among children's ASD status, parental distress, and parenting behavior. Support for each model depended upon the type of parenting considered. Processes reflective of the *spillover* model were observed for negative parenting in that increased parental distress (parenting stress, depression symptoms, and dysregulation) appeared to account for the higher rates of negative parenting reported by parents of preschoolers with ASD as compared to their counterparts. In contrast, the *buffering* model was supported for positive parenting in that associations between higher distress and reduced positive parenting were observed for parents of children with neurotypical development, but not for parents of preschoolers with ASD.

Evidence that parental distress mediated the association between ASD status and negative parenting underscores the importance of intervening to reduce distress in these families. It is likely that such efforts may require an explicit focus on parental distress, given that parental distress may remain otherwise unchanged in the context of interventions for families of children with ASD (e.g., Oono et al., 2013). Moreover, findings suggest an urgent need to intervene early, as problematic associations between parental distress and

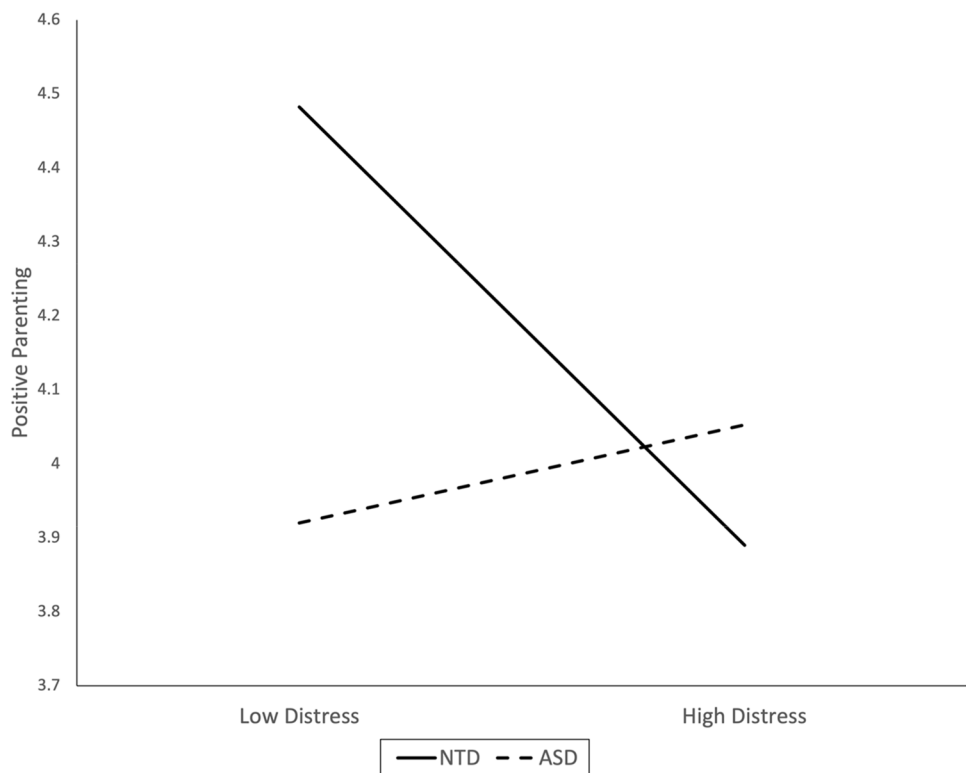
Table 5 Linear regression predicting positive parenting

	Positive Parenting					
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	Lower <i>CI</i>	Upper <i>CI</i>
Status (ASD or NTD)	-0.21	0.19	-1.10	0.273	-0.588	0.167
Child Estimated IQ	0.00	0.00	0.56	0.576	-0.005	0.008
Parent Distress	-0.31	0.13	2.34*	0.021	-0.568	-0.047
Status x Parent Distress	.38	0.16	2.39*	0.018	0.065	0.688

ASD Autism spectrum disorder NTD Neurotypical development

* $p < .05$

Fig. 1 Parent distress predicting positive parenting for children with autism spectrum disorder (ASD) and neurotypical development (NTD)



negative parenting already appear observable during the preschool years, and parental distress may further impede the uptake and effectiveness of child-focused interventions during this period (Osborne et al., 2008). Results from mindfulness-based interventions suggest promising distress reduction for parents of children with ASD (e.g., Ferraioli & Harris, 2013; Rojas-Torres et al., 2021; Schwartzman et al., 2021; Weitlauf et al., 2020). Indeed, our recently concluded randomized trial highlights Mindfulness-Based Stress Reduction as a promising avenue for supporting socioeconomically and racially/ethnically diverse parents of preschoolers with ASD (Fenning et al., 2023).

Although spillover between parent distress and negative parenting was observed, parents of preschoolers with ASD also appeared to demonstrate *buffering* in that increased distress was not related to reduced positive parenting in the manner that was observed for parents of children with neurotypical development. Although intervention with parent distress remains warranted, it is important to recognize the existing strengths of these parents. Findings suggest that parents of young children with ASD may be able to “set aside” or compartmentalize their distress when engaged in parent-child interaction such that their ability to deliver praise and affection to their children is independent of their underlying distress. Having a child with a recognized disability may increase intentionality in parenting such that parents actively monitor relations between their own distress and their parenting behavior more so than do parents of children with

neurotypical development. However, the identified association for negative parenting suggests that it may be easier for parents to retain certain positive behaviors despite distress than to inhibit less optimal ones. Indeed, findings from the present study are consistent with those of the previously mentioned meta-analysis suggesting that families of children with ASD tended to differ more from other families on negative as compared to positive parenting (Ku et al., 2019).

Within this study, we were not able to account for the mechanism by which this buffering occurs. Alostaz et al. (2022) found that parental active coping (e.g., planning, problem-solving) appeared to buffer associations between externalizing behavior problems and parental reactions to negative child emotion in families of somewhat older children with ASD. Interestingly, this buffering was only observed for supportive (positive) and not unsupportive (negative) parenting (Alostaz et al., 2022), dovetailing with the current findings of increased buffering for positive aspects of parenting. A more complete examination of the role of coping in these processes is necessary.

The current study involved a relatively large sample of young children with ASD from an underserved, diverse sample of families. Further strengths include a multi-faceted examination of parental distress and consideration of both positive and negative aspects of parenting. The largest limitation involves the use of a single timepoint, which precludes interpretation of causal direction; however, it is more likely that distress would influence parenting behavior than

vice-versa (e.g., Belsky, 1984), and neither would influence children's ASD status. Some measurement considerations also exist. The current study relied exclusively upon parent report. Self-report is likely the most accurate and feasible method for measuring distress, but investigations considering observation of parenting are needed. Indeed, a series of studies of very young children with ASD in the Netherlands found that parents *reported* themselves as less authoritative in their parenting style (Rutgers et al., 2007) but were not scored lower on relevant sensitive behaviors when *observed* (Ijzendoorn, Rutgers et al., 2007). It is also worth noting that our measures of parenting were generally oriented towards more behaviorally-based processes (e.g., praise, discipline), whereas many examinations of the parenting of children with ASD are often based upon more developmental measures such as parent sensitivity or warmth (e.g., Baker et al., 2010; van Ijzendoorn et al., 2007). Additionally, future studies would benefit from incorporating additional measures of mental health, such as anxiety, to further enhance understanding of parents' internal experiences.

Additional considerations include some unique characteristics of the sample. The children in our sample were young, with relatively recent diagnoses. It is possible that a larger percentage of these families were still actively coping with the diagnosis of their child (Wachtel & Carter, 2008). It is also the case that the families of children with ASD were recruited specifically for participation in a larger randomized trial of parent stress-reduction interventions; thus, findings may be less generalizable to parents experiencing lower levels of distress or to those who are not seeking services. Similarly, the 4% of parents who did not provide negative parenting data reported significantly lower education than the remaining families, which is a further consideration for external validity.

Findings from the current study support common models of stress and parenting but also present an intriguing challenge to the traditional assumption that parent mental health is necessarily key to understanding parenting behavior (e.g., Belsky, 1984). Recognizing, and perhaps building upon, existing strengths in parents of children with ASD, while providing assistance through distress-reducing support is likely a fruitful avenue for improving both quality of life and parenting in this population.

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Declarations

Competing Interests The authors have no relevant financial or non-financial interests to disclose.

Ethical Approval All procedures performed were in accordance with the 1964 Helsinki Declaration and its later amendments. Procedures were approved and overseen by an Institutional Review Board of Loma Linda University in collaboration with the additional participating universities.

Informed Consent Informed consent was obtained from the primary caregivers in the study for themselves and their minor children.

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