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Child Behavior Problems and Parenting Stress in Underserved Families of Children with ASD: Investigation of Family Resources and Parenting Self-efficacy

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Abstract

Behavior problems in children with autism spectrum disorder (ASD) may exacerbate parenting stress. Parenting self-efficacy and family resources may influence this association. We examined cross-sectional statistical mediation effects of parenting self-efficacy on the relationship between child behavior problems and parenting stress and hypothesized that family-level resources moderated this indirect effect. Participants included 132 underserved (Medicaid-eligible) children with ASD (ages 3–13) with racial/ethnic diversity; many (63%) had intellectual disability. Greater externalizing problems were linked with lower parenting self-efficacy, which in turn was associated with increased parenting stress. A larger mediation effect was observed for families with fewer resources. A plausible alternative model (parenting stress mediating parenting self-efficacy) exhibited poorer fit. Implications for family supports and benefits of longitudinal follow-up are discussed.

Keywords Autism spectrum disorder · Parenting self-efficacy · Parenting stress · Family resources · Externalizing and internalizing behaviors · Mediation analysis

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Introduction

Parenting a child diagnosed with autism spectrum disorder (ASD) can present unique joys as well as challenges (Myers et al., 2009). Studies have repeatedly shown that parenting stress is higher in families of children with ASD compared to families of children with chronic medical illness, other psychological disorders, and other developmental disorders (Hayes & Watson, 2013; Barroso et al., 2018). In addition to stress tied to children's core ASD-related symptoms (e.g., Davis & Carter, 2008; Rodriguez et al., 2019), the high rates of internalizing and externalizing behavior problems exhibited by children with ASD (Maskey et al., 2013; Salazar et al., 2015) may precipitate and increase parenting stress (Benson, 2006; Lecavalier et al., 2006; Rodriguez et al., 2019). Although findings vary across studies, carefully controlled longitudinal designs suggest that externalizing behavior problems can play a particularly powerful role in parenting stress (Lecavalier et al., 2006; Zaidman-Zait et al., 2017; Rodriguez et al., 2019), and parenting stress may reciprocally exacerbate both internalizing and externalizing child behavior problems over time (Lecavalier et al., 2006; Osborne & Reed, 2009; Zaidman-Zait et al., 2014;

Rodriguez et al., 2019). The relationship between internalizing and externalizing behavior problems and parenting stress in families of children with ASD cannot be accounted for by child factors such as age, sex, IQ, or adaptive behavior (Yorke et al., 2018). The effect of ASD symptom severity is less clear, although the majority of studies find significant associations between internalizing and externalizing behavior problems and parenting stress even after controlling for children's ASD symptom severity (see review by Yorke et al., 2018). Elucidating mechanisms underlying the robust associations between child behavior problems and parenting stress in families of children with ASD is critical to understanding risk and resilience processes and to targeting prevention and intervention supports.

Efforts to identify factors that underlie associations between child behavior problems and parenting stress focus on modifiable cognitions such as parenting self-efficacy. Parenting self-efficacy is "a parent's belief in their ability to influence their child and the environment in ways that would foster the child's development and success" (Jones & Prinz, 2005, p. 342). Parenting self-efficacy appears responsive to behavioral parent training (Sofronoff & Farbotko, 2002) and has been shown to mediate the relationship between behavior problems and mothers' internalizing symptoms in families of children and adolescents with ASD (Hastings & Brown, 2002; Rezendes & Scarpa, 2011). While parenting self-efficacy has been hypothesized to mediate the relationship between internalizing and externalizing behavior problems and parenting stress (Hastings, 2002), this specific model has not been formally tested. Rather, Rezendes and Scarpa (2011) tested a related statistical model with slightly different hypothesized causal directions and found that parenting stress served as a mediator between overall child behavior problems and parenting self-efficacy, lending support to the interrelatedness of parenting stress, parenting self-efficacy, and child behavior problems.

Factors external to the family also play a role in family stress and coping. The *Double ABCX Model* (McCubbin & Patterson, 1983) provides a framework for considering the accumulating impact of, and interplay between, the severity of stressors, availability of internal and external resources, appraisal processes, and family coping over time. This model has improved understanding of stress-related processes in families of children with ASD (Bristol, 1987; Manning et al., 2011; Paynter et al., 2013), with consistent findings that child behavior problems are one of the strongest predictors of parenting stress and family outcomes (Manning et al., 2011; Paynter et al., 2013). The *Double ABCX Model* is also helpful for conceptualizing the way in which external factors, such as limited family resources, may contribute to or intensify stress-related processes. Resource availability is a particular concern for families of children with ASD given the high financial cost associated with a diagnosis of ASD,

including loss of family income and higher costs for health care and schooling (Horlin et al., 2014; Lavelle et al., 2014). Furthermore, significant disparities exist in underserved populations, including ethnic/racial minorities and those experiencing poverty. Children with ASD from underserved populations in the United States are less likely to receive an ASD diagnosis, are more likely to receive a diagnosis later than their peers (Thomas et al., 2012; Durkin et al., 2017; Constantino et al., 2020), have less treatment utilization (Yingling et al., 2019), and have less access to quality health care (Magaña et al., 2012). A longitudinal study has shown that lower socioeconomic status and greater poverty-related stress lead to emotional and behavioral problems in children, adolescents, and adults without ASD, even within a disadvantaged sample (Santiago et al., 2011), although it is unknown if these findings generalize to families of children with ASD. Thus, it is important to explore how lack of access functions in families experiencing financial and social disadvantage.

The purpose of the current study was to investigate the relationship among parenting self-efficacy, internalizing and externalizing problems, parenting stress, and family resources in families of children with ASD at heightened risk due to underserved status. Drawing upon existing data and established theory, we hypothesized that parenting self-efficacy would mediate the association between externalizing and internalizing behavior problems and parenting stress and that the mediation effect would be greater for externalizing versus internalizing behavior problems. Additionally, adopting the framework of stress pile-up, we hypothesized that the amount of family resources would moderate the degree of mediation such that fewer family resources would intensify the expected inverse association between parenting self-efficacy and parenting stress. We directly tested our hypothesized model with a previously published alternative theoretical model with different directionality of effects, specifically, that parenting stress would mediate between internalizing/externalizing problems and parenting self-efficacy. We predicted that hypothesized relationships would remain significant even after controlling for child age, ASD symptom severity, and intellectual ability. Given the composition of our sample and evidence of meaningful cultural variation in perceived impact of ASD and related developmental disabilities (e.g., Blacher & McIntyre, 2006), we also explored whether model fit differed based on ethnicity. Our cross-sectional examination represents an important step toward unpacking complex interrelations among these child, parent, and family factors in a unique, highly diverse, and underrepresented sample.

Method

Participants

Participants included English-speaking families of 132 children with ASD between the ages of 3 and 13 years (24 female) who were Medicaid-eligible. We were not able to determine whether families were eligible for Medicaid benefits due to financial need or disability. Gross family income for the sample is included in Table 1). Families were recruited as part of a larger study focused on improving dental care in families reporting difficulties with child tooth brushing or dental visits (see Fenning et al., 2022). The study was approved by IRBs at the local sites and a central data coordinating center. All families provided written informed consent. The original study was registered prior to the first enrollment (clinicaltrials.gov [identifier NCT03003221]). Children's community diagnosis of ASD was confirmed using a clinical best estimate involving administration of the Autism Diagnostic Observation Schedule, Second Edition (ADOS-2; Lord et al., 2012) by research reliable assessors and completion of a checklist based on ASD criteria from the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; American Psychiatric & Association, 2013). Exclusion criteria only applied to dental-related conditions and services (i.e., acute dental condition requiring immediate emergency treatment, medication-induced oral-health side effects, and participation in non-study dental interventions).

Of the 266 families initially screened by phone for the larger dental study, 157 families were consented for baseline eligibility visits, which included direct testing of child ASD symptoms and intellectual functioning as well as parent interviews and completion of questionnaires. One hundred and thirty-two families provided data on study variables at baseline and were included in analyses. Included primary caregivers exhibited racial (34% Non-Caucasian) and ethnic (37% Hispanic) diversity, and all were underserved as defined by Medicaid-eligibility. In addition, 63% of children met DSM-5 criteria (American Psychiatric & Association, 2013) for Intellectual Disability based upon study administered assessments (i.e., Stanford-Binet–5th Edition, abbreviated battery; Vineland Adaptive Behavior Scales–3rd Edition; see Table 1 for participant characteristics).

Measures

Child ASD Symptom Severity

The Autism Diagnostic Observation Schedule—Second Edition (ADOS-2; Lord et al., 2012) is a standardized observational assessment of symptoms characteristic of ASD with strong empirical support (see e.g., Randall et al., 2018). The ADOS-2 includes five modules, each with a different set of structured observations and prompts depending on the age and language level of the individual. A standardized comparison score (CS) can be used to index ASD symptom severity across modules. The CS ranges from 1 to 10, with higher numbers signifying greater ASD symptom severity.

Child Intellectual Functioning

Child intellectual ability was estimated using the Stanford-Binet–5th Edition, abbreviated battery (ABIQ; Roid, 2003). The ABIQ is based on two "routing" tests, one from the verbal domain and one from the nonverbal domain. The ABIQ is highly correlated with FSIQ (Roid, 2003) and there is generally good agreement between ABIQ and FSIQ in ASD samples, although ABIQ has been noted to overestimate cognitive ability in a minority of cases (Matthews et al., 2015; Twomey et al., 2018).

Child Adaptive Functioning

Level of adaptive functioning was measured using the Vineland Adaptive Behavior Scales–3rd Edition, comprehensive interview form (VABS-3; Sparrow et al., 2016). The VABS-3 is a standardized semi-structured interview used to gather information on adaptive skills across several functional domains. The adaptive behavior composite (ABC) is a summary score of an individual's level of functioning in areas of communication, daily living skills, and socialization. Higher scores are indicative of greater adaptive functioning. The VABS-3 ABC scores were used in combination with SB-5 ABIQ scores to characterize intellectual disability in our sample.

Child Internalizing and Externalizing Behavior Problems

The Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000, 2001) is a norm-referenced, parent-report instrument for a wide range of child behaviors with forms for preschool (ages 1½ -5) and school-aged (ages 6–18) children. The *Internalizing* (CBCL-I) and *Externalizing* (CBCL-E) subscales for both forms have strong psychometric properties with published Cronbach's Alphas ranging from 0.89 to 0.94 and 8-day test–retest reliabilities ranging from 0.87 to 0.92. Both forms have shown evidence of

Table 1 Participant characteristics (total sample *N*=132)

	n	% missing	*M*	*SD*	Range
Age	131	0.76	7.44	2.64	3–13
CBCL-I	119	9.85	62.60	10.25	34 − 81
CBCL-E	119	9.85	60.85	11.35	33 − 89
ADOS-2 CS	124	6.06	7.31	1.79	1 − 10
SB-5 ABIQ	125	5.30	68.60	20.32	47 − 124
VABS-3 ABC	122	7.58	56.9	17.7	20—122
FIQ-NI	132	0	26.70	12.03	3 − 61
FRS	130	1.52	113.48	19.50	60 − 150
PSOC	132	0	66.70	11.83	31 − 96

	n	% of sample
Child's Sex		
Male	107	81.7
Female	24	18.3
Child's Ethnicity		
Hispanic	44	37.3
Non-Hispanic	74	62.7
Declined Answering	5	4.0
Child's Race		
American Indian/Alaskan Native	2	1.5
Asian	13	9.8
Black/African American	12	9.1
Caucasian/White	69	52.3
Hawaiian/Pacific Islander	3	2.3
Multiracial	15	11.4
Unknown/Not reported	18	13.6
Annual Gross Family Income		
< $15,000	19	14.4
$15,000-$24,999	28	21.2
$25,000-$34,999	25	18.9
$35,000-$49,999	23	17.4
$50,000-$74,999	19	14.4
≥ $75,000	9	6.8
Declined Answering	9	6.8
Primary Caregiver Education		
Less than 8th grade	4	3.0
Some high school	9	6.8
Finished high school (or GED)	22	16.7
Some college or AA Degree	63	47.7
Bachelor's Degree (BA, BS)	20	15.2
Post-Graduate Degree	12	9.1
Declined Answering	2	1.5
Primary Caregiver Living Situation		
Married / Domestic Partner	72	54.5
Single / Other Adults in Home	32	24.2
Single / No Other Adults in Home	27	20.5
Declined Answering	1	0.8
CBCL-I Clinical Cut-off (T ≥ 63)		
Above	63	52.9
Below	56	47.1

Table 1 (continued)

	n	% of sample
CBCL-E Clinical Cut-off (T ≥ 63)		
Above	52	43.7
Below	67	56.3
Evidence of Intellectual Disability		
Yes	76	62.8
No	45	37.2

CBCL Child Behavior Checklist, Internalizing (I), Externalizing (E), *ADOS-2 CS* = Autism Diagnostic Observation Scale, 2nd Edition Comparison Score, *SB-5 ABIQ* = Stanford-Binet–5th Edition, abbreviated battery, *VABS-3 ABC* Vineland Adaptive Behavior Scales–3rd Edition, Adaptive Behavior Composite, *FIQ-NI* Family Impact Questionnaire—Negative Impact Composite, *FRS* Family Resource Scale, *PSOC* Parenting Sense of Competence scale

adequate reliability and validity in samples of youth with ASD (Pandolfi et al., 2009, 2012). Within our sample, 52.9% and 43.7% of participants were rated above the clinical threshold for the *Internalizing* and *Externalizing* subscales, respectively. T-scores were used in all analyses.

Parenting Stress

The Family Impact Questionnaire (FIQ; Donenberg & Baker, 1993) is a 50-item instrument for assessing the impact a child has on their family compared to other same-aged children. Responses for questions 1 through 48 are based on a four-point scale ranging from "not at all" = 0 to "very much" = 3; responses for questions 49 and 50 are based on a seven-point scale ranging from "much easier" or "much less positive" = 0 to "much more difficult" or "much more positive" = 6. The measure includes five scales assessing impact on social life, negative feelings toward child, positive feelings toward child, impact on finances, and, if applicable, impact on marriage and siblings. Scale reliabilities on the FIQ range from $r = 0.83$ to 0.92. The FIQ has been shown to correlate with other measures of parenting stress and to have good test–retest reliability ($r = 0.67$; Baker et al., 2000; Donenberg & Baker, 1993). The Negative Impact Composite (FIQ-NI) combines the first two scales and is often used to measure parenting stress in families of children with intellectual and developmental disabilities, including ASD (see meta-analysis by Hayes & Watson, 2013), given the ability of the FIQ-NI to differentiate parent impact from measurement of child problems. The FIQ-NI (range 0 to 82) was used as the measure of parenting stress in the current study, with higher scores indicating greater parenting stress.

Parenting Self-Efficacy

The Parenting Sense of Competence scale (PSOC; Johnston & Mash, 1989; Ohan et al., 2000) is a widely-used instrument for assessing self-perceived parenting efficacy and satisfaction, with demonstrated validity for families of children with ASD (Estes et al., 2014). The 16-item total score (range 16 to 96) was used to index overall parenting self-efficacy in the current study, consistent with Johnston and Mash (1989). Higher scores indicate greater parenting self-efficacy. A previous study in families of children with ASD showed that the PSOC was sensitive to change in response to a parent-mediated behavioral management training program as well as in a psychoeducational control group (Iadarola et al., 2018). The PSOC has been shown to have good internal consistency reliability ($\alpha = 0.77$–0.80), a consistent factor structure, and evidence for convergent and divergent validity (Ohan et al., 2000).

Family Resources

The Family Resource Scale—Revised (FRS) is a 30-item instrument for quantifying family resources with good evidence of validity in a sample of low-income families (Van Horn et al., 2001). The revised instrument includes four subscales assessing perceived access to resources relating to basic needs (e.g., "enough clothes for your family"), money (e.g., "money to pay monthly bills"), time for self (e.g., "time to be by yourself", and time for family (e.g., "time for family to be together"). Each item is scored on a five-point scale ranging from "not at all adequate" = 1 to "almost always adequate" = 5. Responses of "not applicable" were scored as 5. The full-scale total score (range 30–50) was used in the present study; higher scores indicate more resources.
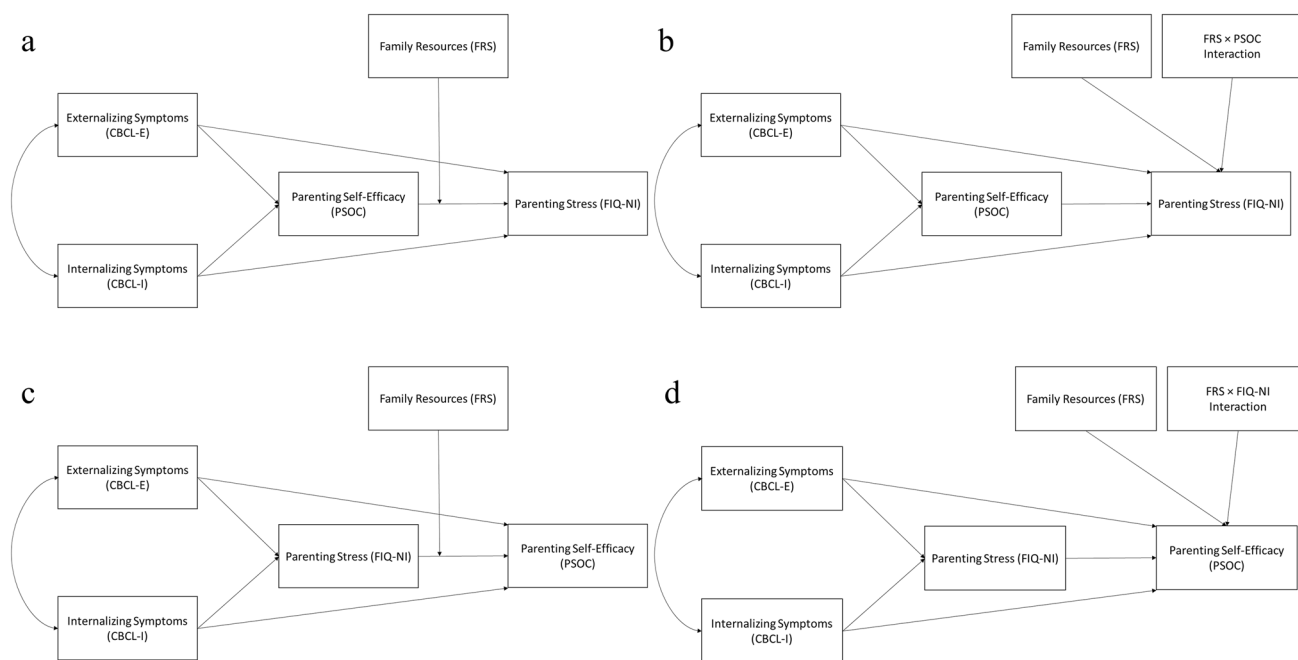
Fig. 1 Initial statistical models. **a** Hypothesized model—conceptual diagram, **b** Hypothesized model—statistical diagram, **c** Plausible alternative model—conceptual diagram, **d** plausible alternative model—statistical diagram

Statistical Analysis

We used a sequence of structural equation models to test the hypothesized relationships among parenting self-efficacy, parenting stress, family resources, and relevant covariates. All analyses were completed using the *lavaan* package (Rosseel, 2012) in R (version 3.6.1). Missing data were handled using full information maximum likelihood (FIML). Observed variables were standardized to mean 0, variance 1 as part of the analysis. All variables (except age and ethnicity) were assumed random.

Our initial model hypothesized parenting self-efficacy as a mediator of internalizing and externalizing symptoms on parenting stress, with mediation moderated by family resources (see Fig. 1a, b). The model was iteratively modified based on modification indices and theoretical considerations until a model with optimal model fit was obtained (Kline, 2015). The second model switched the directionality of Parent Self-Efficacy and Parenting Stress (see Fig. 1c, d) and following the same process of iterative modifications until optimal model fit was obtained. While the cross-sectional nature of our data preclude formal determination of causality, these contrasting mediation analyses assess how

well the data fit our theory and an alternative causal theory (cf., Rezendes & Scarpa, 2011). The third model controlled for age of the child, severity of ASD symptoms (using the ADOS-2 Comparison Score [CS]), and intellectual ability (using the ABIQ) in the best-fitting model from phase 1 and phase 2 and comparing the resulting models to identify the final model.[1] To explore potential contributions of ethnicity, we ran a multi-group analysis of the final covariate model based on ethnicity (Hispanic vs. non-Hispanic) and tested two nested models, a restricted model in which model parameters were constrained to be equal between groups and an unrestricted model in which model parameters were allowed to vary between groups.

The final analytic phase involved model interpretation including mediation/moderated mediation analysis of the final model. We tested for moderated mediation using the procedures outlined by Hayes (2015), including the calculation of an Index of Moderated Mediation. We computed bootstrapped, bias-corrected confidence intervals for indirect effects in each model using 10,000 samples. Model fit was determined using several fit indices including the Chi-squared statistic, comparative fit index (CFI), Tucker-Lewis index (TLI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA). Rules of thumb for good fit based on these measures include a nonsignificant Chi square statistic, $CFI \geq 0.90$, $TLI \geq 0.95$, and $SRMR/RMSEA < 0.08$ (Hooper et al., 2008; Kline, 2015).

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[1] To control for these variables, exogenous variables were correlated with covariates in the model and endogenous variables were regressed onto covariates. Covariates were also allowed to correlate with each other.

Table 2 Model 1—original hypothesized model

Model	Model-specific fit statistics									
	χ^2	df	p	CFI	TLI	SRMR	RMSEA	RMSEA 90% CI	AIC	BIC
1—Base Model	38.349	6	< .001	.857	.667	.140	.204	.145–.267	1972.45	2032.67
1a—Base Model: Added CBCL-E→FRS	18.115	5	.003	.941	.836	.121	.150	.080–.227	1799.37	1843.56
1b—Base Model: Added CBCL-E→FRS & FRS→PSOC	10.359	5	.07	.976	.928	.091	.096	0–.179	1791.61	1835.81
1c—Model **1b** with covariates	11.717	9	.23	.988	.953	.056	.051	0–.124	2876.84	2975.35

CFI Comparative Fit Index, *TLI* Tucker-Lewis Index, *SRMR* Standardized Root Mean Square Residual, *RMSEA* Root Mean Square Error of Approximation, *AIC* Akaike Information Criterion, *BIC* Bayesian Information Criterion, *CBCL-E* Child Behavior Checklist—Externalizing Scale, *FRS* Family Resource Scale, *PSOC* Parenting Sense of Competence scale

Table 3 Model 2—plausible alternative model

Model	Model-specific fit statistics									
	χ^2	df	p	CFI	TLI	SRMR	RMSEA	RMSEA 90% CI	AIC	BIC
2—Base Model	31.69	6	< .001	.885	.731	.137	.191	0.129–0.259	1796.44	1837.87
2a—Base Model: Added CBCL-E→FRS	15.468	5	.009	.953	.868	.099	.134	0.061–0.212	1782.21	1826.41
2b—Base Model: Added CBCL-E→FRS & FRS→PSOC	23.866	6	.001	.920	.799	.077	.160	0.096–0.229	1788.61	1830.05

CFI Comparative Fit Index, *TLI* Tucker-Lewis Index, *SRMR* Standardized Root Mean Square Residual, *RMSEA* Root Mean Square Error of Approximation, *AIC* Akaike Information Criterion, *BIC* Bayesian Information Criterion, *CBCL-E* Child Behavior Checklist—Externalizing Scale, *FRS* Family Resource Scale, *PSOC* Parenting Sense of Competence scale

Results

Missing Data

Approximately 10% of participants were missing CBCL measures (Table 1), but missingness of CBCL data was weakly correlated with FIQ-NI ($r = 0.18$, bootstrapped 95% CI [-0.02–0.33], $p = 0.05$) and not significantly correlated with other study variables, and FIML yields unbiased estimates under the less restrictive missing-at-random assumption which we deemed justifiable in the current study.

Phase 1—Hypothesized Model

Model fit of the initial model was under acceptable limits (Table 2). Based on modification indices and theoretical considerations, we added direct paths between CBCL-E and FRS as well as between FRS and PSOC. This was justified based on research showing relationships between externalizing symptoms, parenting self-efficacy, and parental burden in ASD youth (Vogan et al., 2014; Kurzrok et al., 2021). These model adjustments resulted in acceptable model fit based on Chi-square test and CFI [$\chi^2(5) = 10.36$, $p = 0.066$,

CFI = 0.976] but not the other indices [TLI = 0.928, SRMR = 0.091, RMSEA = 0.096].

Phase 2—Plausible Alternative Model

Model fit of the alternative model was also poor (see Table 3). Based on modification indices and theoretical considerations (i.e., stress pile-up), we added a direct path between FRS and FIQ-NI, which improved model fit somewhat. Adding an additional path between CBCL-E and FRS resulted in deteriorated model fit. The best-fitting plausible alternative model had acceptable model fit only for CFI [$\chi^2(5) = 15.47$, $p = 0.009$, CFI = 0.953, TLI = 0.868, SRMR = 0.099, RMSEA = 0.134].

Phase 3—Adding covariates

The optimal model from phase 1 had superior model fit compared to the optimal model from phase 2. Adding planned covariates (i.e., age, intellectual functioning, and ASD symptom severity) to the phase 1 model resulted in acceptable model fit across all parameters [$\chi^2(9) = 11.72$, $p = 0.23$, CFI = 0.988, TLI = 0.953, SRMR = 0.056, RMSEA = 0.051]. However, adding covariates did not result in any substantive
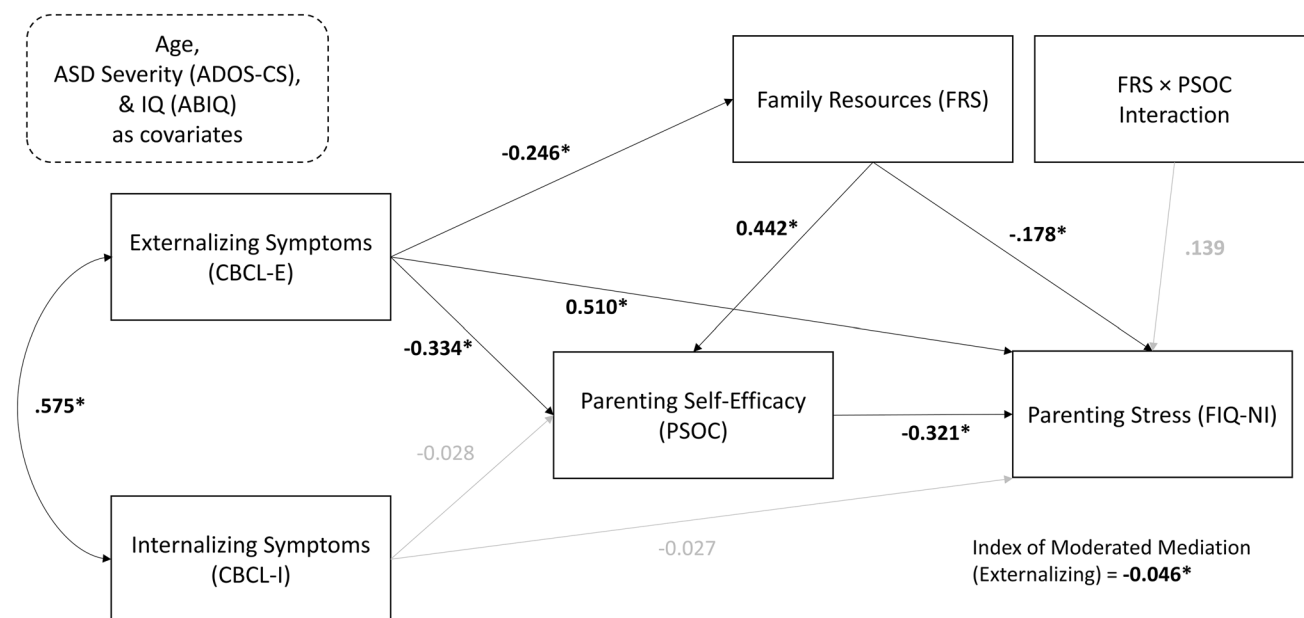
Fig. 2 Summary of final model. Bolded values indicate statistical significance at p < .05. ADOS-CS = Autism Diagnostic Observation Schedule—2nd Edition Comparison Score, ABIQ = Stanford-Binet Intelligence Scales—5th Edition Abbreviated IQ

changes to the paths of the best-fitting hypothesized model. ABIQ scores were significantly related to CBCL-I ($r = 0.315$, $p < 0.001$), CBCL-E ($r = 0.263$, $p = 0.002$), and ADOS-2 CS ($r = -0.189$, $p = 0.04$) scores. Age was significantly related to CBCL-I ($r = -0.458$, $p = 0.02$) and ADOS-2 CS ($r = 0.549$, $p = 0.04$). The planned covariates were not significantly related to other study variables.

The multi-group analysis of the final covariate model based on ethnicity (Hispanic vs. non-Hispanic) indicated no significant improvement in model fit in the freely estimated model compared to the restricted model, indicating no significant differences in the final model based on ethnicity (see Table S1).

Phase 4—Model Interpretation and Mediation/Moderation Analysis

The final model is summarized in Fig. 2. All associations between variables were in hypothesized directions. There was a moderately strong correlation between CBCL-E and CBCL-I scores ($r = 0.575$; 95% CI = 0.404—0.746; $p < 0.001$). Parenting self-efficacy significantly mediated the relationship between externalizing but not internalizing symptoms and parenting stress. Level of family resources moderated the mediation effect between behavioral symptoms and parenting stress such that lower levels of family resources were associated with a larger mediation effect. Although the effect of the FRS × PSOC interaction on parenting stress was not significant, the Index of Moderated Mediation was significant at a value of -0.046, although a

statistically significant interaction effect is not a requirement for establishing moderated mediation (Hayes, 2015). Family resources also functioned as a mediator of the relationship between externalizing symptoms and parenting self-efficacy, mediating 25% of that relationship.

Discussion

Parenting Self-efficacy and Family Resources as Possible Mechanisms

Our data provide preliminary evidence that parenting self-efficacy may mediate the relationship between child externalizing behavior problems and parenting stress in families of children with ASD. Said another way, child externalizing behavior problems may be associated with increased parenting stress through a mechanism of decreased parenting self-efficacy. We found this relationship to be strongest when available family resources were low (i.e., moderated mediation). The fact that this relationship was present in our underserved sample defined by Medicaid-eligibility is noteworthy. In addition to our initial hypothesized relationship, an additional association with family resources emerged in the analysis, namely that family resources also mediated the relationship between externalizing behavior problems and parenting self-efficacy. Externalizing behavior problems were associated with increased family resource strain, which was, in turn, related to decreased parenting self-efficacy.

Our cross-sectional findings identify parenting self-efficacy and family-level resources as possible mechanisms underlying the association between child challenging behaviors and parenting stress in underserved families of children with ASD. Parenting self-efficacy has been shown to improve with therapy. Previous studies have shown that parent management training programs result in increased parenting self-efficacy and decreased parenting stress in families of children with ASD (Sofronoff & Farbotko, 2002; Iadarola et al., 2018) as well as ADHD (Pisterman et al., 1992; Heath et al., 2015). In addition, changes in parenting self-efficacy appear to be related to child therapeutic outcomes in children without ASD (Warren et al., 2011). Given growing evidence of the central role of parenting self-efficacy to behavior-stress associations and intervention response, parenting self-efficacy should be considered an important therapeutic target and treatment outcome. An explicit focus on parenting self-efficacy through modules integrated within existing treatments or through standalone interventions may be particularly important for families with limited resources and heightened child developmental and behavioral comorbidities.

Racial and ethnic minorities and those experiencing socioeconomic disadvantage are underrepresented in psychological research, as are children with ASD and co-occurring intellectual disability. The racial, ethnic, and developmental diversity of our sample of families with Medicaid-eligibility represents a significant strength and enhances the ecological validity of our findings. Within this sample, we found that family resources played a complex role in the face of child behavior problems. Our results suggest that families experiencing greater resource strain were at increased risk for reduced parenting self-efficacy and, in turn, more parenting stress. Moreover, greater child externalizing behavior problems were associated with more depletion of family resources and further undermining of perceived parental control. These processes appeared to operate similarly across Hispanic and non-Hispanic participants and were not influenced significantly by core child characteristics such as age, IQ, or ASD symptom severity, underscoring the potential primacy of child externalizing behavior problems and family resource strain for this sample. Evidence from this study that families with limited resources may be uniquely at risk for low parenting self-efficacy and heightened parenting stress in the context of child behavior problems underscores the importance of identifying these families and providing targeted supports. Disparities highlight the need for integrating supports across professional disciplines and systems of care to address basic needs and practical as well as psychological barriers (Fenning & Butter, 2019), perhaps through comprehensive care coordination (Ziring et al., 1999) and medical homes (Hyman & Johnson, 2012; Farmer et al., 2014).

The associations between internalizing behavior problems and parenting self-efficacy and parenting stress were not significant after accounting for externalizing behavior problems, suggesting that externalizing behaviors may be especially important in understanding parenting stress. According to previous research among children with general developmental disabilities, child-driven effects of internalizing symptoms on parenting stress have been found in early to mid-childhood, but not in later childhood and adolescence (Woodman et al., 2015). However, in a study specifically investigating families of children with ASD ages 5–12, child-driven effects on parenting stress were only observed for externalizing (and not internalizing) behavior problems using the CBCL (Rodriguez et al., 2019). It is worth noting that separate cross-lagged structural equation models were used for internalizing and externalizing behaviors in these two studies, thus the effects of one group of symptoms were not controlled for by the other. Given the moderate correlation between the related but distinct characteristics of internalizing and externalizing behaviors, and high co-occurrence in children with ASD, controlling for their overlap is warranted. When this has been done in other research, a similar result of a nonsignificant relationship of internalizing symptoms on parenting stress has also been found (Lecavalier et al., 2006). Further longitudinal study will be important for clarifying directional and transactional effects. Attention to the way in which these processes may change over time or may be influenced by periods of developmental transition or family structure will be particularly valuable to informing clinical supports.

Limitations and Future Directions

A major limitation of this study was the cross-sectional sampling of the data. True causal influences (and true mediation) cannot be established without longitudinal data and experimental intervention. However, this study is consistent with existing theoretical conceptualizations and research suggesting that child externalizing behavior problems may drive stress-related processes (Woodman et al., 2015; Rodriguez et al., 2019), and our findings provide insight into new developmental pathways that can be tested in future longitudinal studies. We believe our study adds evidence that longitudinal study of the potential mediating effects of parenting self-efficacy and moderated mediation effects of family resources is a promising and worthwhile investment.

In our study, we found preliminary statistical support for parenting self-efficacy mediating the relationship between child externalizing behavior problems and parenting stress. This relationship fit the data better than a model with reverse directionality (i.e., parenting stress functioning as a mediating factor and parenting self-efficacy as the outcome). Our analyses were theory driven; thus, we did not test all possible

combinations of variables, nor all possible pathways, and it is conceivable that an untested model would have fit our data even better. Lastly, we did not investigate the positive impact of children with ASD on their families. Future research with larger samples would be positioned to test three-way interactions that could reveal important buffering effects that may come from perceived positive impact. Research would also benefit from additional focus on resilience processes and identification of protective factors for children and their parents and families. Lastly, specific domains of family resources (e.g., social support, income, time to be with family) may differentially affect aspects of parenting stress. While outside the scope of the current study, future research could investigate these domains and how they relate to parenting stress.

Conclusion

Overall, our study provides preliminary evidence of complex roles of parenting self-efficacy and family resources in the relationship between child behavior problems and parenting stress. There are many avenues of future research to confirm our study findings using longitudinal methods. Based on these initial results, we recommend providing additional clinical attention to supporting families of children with ASD experiencing marginalization and disadvantage, with a particular focus on ameliorating children's co-occurring externalizing behavior problems, improving parenting self-efficacy, and enhancing access to resources in a combined effort to reduce parenting stress.

Declarations

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