

UCLA

UCLA Previously Published Works

Title

Collateral Effects of Youth Disruptive Behavior Disorders on Mothers' Psychological Distress: Adolescents with Autism Spectrum Disorder, Intellectual Disability, or Typical Development

Permalink

<https://escholarship.org/uc/item/4rz5690j>

Journal

Journal of Autism and Developmental Disorders, 49(7)

ISSN

0162-3257

Authors

Blacher, Jan
Baker, Bruce L

Publication Date

2019-07-01

DOI

10.1007/s10803-017-3347-2

Peer reviewed

Collateral Effects of Youth Disruptive Behavior Disorders on Mothers' Psychological Distress: Adolescents with Autism Spectrum Disorder, Intellectual Disability, or Typical Development

Jan Blacher¹ · Bruce L. Baker²

© Springer Science+Business Media, LLC 2017

Abstract Disruptive behavior disorders were assessed in 160 youth aged 13 years, with Autism Spectrum Disorder (ASD, $n=48$), intellectual disability (ID, $n=28$), or typical development (TD, $n=84$). Mothers' reported collateral effects on their psychological adjustment were related to both youth disability status and clinical level behavior disorders. More youth with ASD or ID had clinical level behavior disorders than their TD peers, and their mothers reported significantly higher personal stress and psychological symptoms, as well as lower positive impact of the youth on the family. The youth's clinical level behavior disorders accounted for these differences more than the diagnostic status. Mothers high in dispositional optimism reported the lowest stress and psychological symptoms in relationship to youth behavior challenges.

Keywords Autism spectrum disorder · Intellectual disability · Adolescence · Behavior disorders · Mother stress and well-being · Optimism

Introduction

It has long been known that parenting a child with a developmental disability presents multiple challenges to the family across the lifespan. The very fact of the child's disability would be distressing to any parent, and early

conceptualizations of family adjustment focused on this (Olshansky 1962). Over time, however, our understanding of parent well-being has become more nuanced. For example, it has been suggested that family adaptation may be based on the interplay of experienced stress, available coping resources, and ecological context in which the family functions (Crnic et al. 1983; Gerstein et al. 2009). Other conceptualizations have focused more directly on factors that may lead to the perceived stress in families of children with intellectual disability, suggesting that child characteristics, social support, personal and family system resources, and other life events play important roles (Blacher and Baker 2007; Pottie and Ingram 2008). Thus, sources both of support and stress vary widely across families. One notable challenge is the heightened level of behavior problems and/or psychiatric disorders co-morbid with developmental disabilities, including autism (Baker and Blacher 2015; Emerson and Einfeld 2010; Simonoff et al. 2008; Totsika et al. 2011).

The present study examined distress and positivity in mothers of adolescents, all age 13, with typical cognitive development (TD), intellectual disability (ID), or autism spectrum disorder (ASD). The aim was to assess mothers' psychological adjustment in relation to the youth's disability status, co-morbid behavior disorders, and the protective role of dispositional optimism.

Parenting Stress and Psychological Distress in Mothers of Children with ASD

In its simplest definition, parenting stress is the experience of distress or discomfort that results from demands associated with the role of parenting (Deater-Deckard 1998). Parents of children with ID or ASD have been found to experience heightened parenting stress, and also greater distress in other domains, such as anxiety and depression. There is

✉ Jan Blacher
jan.blacher@ucr.edu

¹ Graduate School of Education, University of California, UCR, Sproul Hall, Riverside, CA 92521, USA

² Department of Psychology, University of California, Los Angeles (UCLA), Franz Hall, Los Angeles, CA 90095, USA

even evidence of more treatment episodes and longer hospitalizations for psychiatric disorders in mothers of these children, despite no previous psychiatric history (Fairthorne et al. 2016).

A meta-analysis of studies with mothers of children with ASD included a number of different measures of parenting stress (Hayes and Watson 2013). Findings showed greater parenting stress in mothers of children with ASD than in mothers of children with typical development (TD), or as compared to mothers of those with some other disability, with large effect sizes in both comparisons. Indeed, parents of children with ASD have been reported to experience levels of stress and biological indicators similar to individuals with post-traumatic stress disorder (Casey et al. 2012).

Behavior Problems and Mental Disorders in Children with ID or ASD

A primary source of parenting challenges is the disruptive behavior disorders that are more frequently seen in youth with ID and/or ASD. Studies focused on children and adolescents with ID have reported rates of behavior problems about three times as high as rates in cognitively typical youth (Baker et al. 2003; Emerson and Einfeld 2010), and studies that have examined specific behavior disorders have found this same heightened risk (Dekker and Koot 2003; Baker et al. 2010). Other studies, using a variety of questionnaire and interview methods, have found co-morbid behavioral disorders at very high rates in youth with ASD. In a UK population based study, Simonoff and colleagues (2008) extracted a stratified randomized sub-sample of 112 youth, aged 10–13.9 years and diagnosed with ASD. Fully 70.8% met criteria for at least one psychiatric disorder, the most prevalent being social anxiety disorder (29.2%), attention deficit hyperactivity disorder (28.2%) and oppositional defiant disorder (28.1%). Lundstrom and co-workers (2015), in a nationwide study, conducted phone interviews with parents of all 9 year olds born in Sweden over a 10-year period ($n = 19,130$). Interviews utilized well-validated modules assessing ASD and eight psychiatric disorders (Hansson et al. 2005), and also asked direct questions about ASD. The diagnosis was confirmed against a National Patient Register. Half (50.3%) of the 190 children with ASD had four or more coexisting psychiatric disorders, and only 4% had no concomitant disorder. We note that the above-cited studies of behavior disorder prevalence were based on large community samples; while many of the children were likely participating in some kind of intervention, the samples were not drawn from clinic or treatment-seeking populations.

While most studies of co-morbid disorders in ASD have limited the focus to children with IQs in the typical range (e.g. > 70 , APA 2013), some studies included the full

range of IQ. Although higher IQ is associated with lower likelihood of behavior disorders in children without ASD, the rates of behavior disorders in ASD are high in youth across the IQ spectrum (Baker and Blacher 2015; Simonoff et al. 2008; Totsika et al. 2011).

Behavior Disorders as a Contributor to Parenting Stress and Distress

The primary focus of the present study was on how co-morbid behavior disorders in adolescents with ID or ASD contribute to parenting stress and distress above the impact of the disability itself. Evidence is accumulating that a primary contributor to distress in families of youth with ASD is the child's ubiquitous behavior problems and/or mental disorders (Abbeduto et al. 2004; Olsson and Hwang 2002; Van Steijn et al. 2014). Externalizing behavior problems are reported to have a greater adverse effect on parents than internalizing ones (Lecavalier et al. 2006; Sikora et al. 2013). In a more nuanced comparison, Firth and Dryer (2013) reported that the behavioral and emotional impairments of the child with ASD predicted parents' overall levels of distress, but the stress associated with parenting was predicted by the severity of the child's social impairment. A longitudinal study of distress experienced by mothers of adolescents or adults with ASD involved five assessments over a 10-year period (Barker et al. 2011). Indicators of mothers' well-being were sensitive to fluctuations in both child and mother contextual variables. For example, on occasions when behavior problems were higher, mother depression and anxiety were higher, and when adult children moved out of the family home, mothers' anxiety was lower. In the present study, mothers' parenting stress and other indicators of negative and positive well-being, were assessed in relationship to co-morbid behavior disorders in their adolescents with ASD.

We acknowledge studies suggesting that heightened psychopathology in parents of children with ASD is not exclusively attributable to the child's challenging behavior. There is also evidence that parents with pre-existing clinical levels of serious mental illness (e.g. schizophrenia) or internalizing disorders, primarily anxiety and depression, are at increased likelihood of giving birth to a child with ASD (Cohen and Tsiouris 2006; Daniels et al. 2008; Firth and Dryer 2013; McCoy et al. 2014). We note, however, that while these studies primarily focused on parents' serious mental illness (e.g. schizophrenia) and internalizing disorders before birth of the child with ASD, the present study focused on ASD youths' externalizing behavior in adolescence and concomitant parenting stress and overall well-being.

Dispositional Optimism as a Moderator of Child Behavior Challenges and Parent Well-Being

The other primary focus of the present study was to identify parent psychological resources that moderate the effects of youth challenges on mother well-being. Despite the strong relationships found between child behavior challenges and parental well-being, some parents in the face of multiple childrearing challenges are quite resilient. While there are many resources that could moderate this relationship, one psychological source of resilience is the individual parent's positive (or negative) perspective on life. Studies have identified a number of (highly overlapping) protective domains, including hopefulness (Faso et al. 2013; Lloyd and Hastings 2009), hardiness (Weiss et al. 2013), sense of coherence (Olsson and Hwang 2002; Pozo et al. 2014), and dispositional optimism (Carver and Scheier 2014). While each of these speak to the mindset of parents coping with life challenges, we have focused on dispositional optimism, given the considerable evidence that shows that dispositional optimism is a protective factor in a wide range of physical and mental health disorders (Carver and Scheier 2014; Peterson 2000; Taylor et al. 2011). It is well established that dispositional optimism (pessimism), defined as generalized positive and negative expectancies about future outcomes, broadly conceived, represents relatively stable individual difference variables that promote or abate psychological well-being (Carver et al. 2010). Optimists have a favorable outlook on life, believing that good rather than bad things will happen to them (Olason and Roger 2001).

In mothers of children at developmental risk, dispositional optimism has related to greater positive affect and more adaptive coping strategies (Baker et al. 2005; Blacher et al. 2013; Ekas et al. 2010; Willis et al. 2016). In one study involving mothers with young children who were either typically developing or had intellectual disability, this relationship was found to be a bit more complex. Mean levels of optimism did not differ between the two groups of mothers. However, higher optimism strongly buffered the adverse relationship between child behavior problems and parent well-being, whether assessed as stress, depression, or marital adjustment (Blacher and Baker 2007). At low levels of child challenges, optimism was unrelated to well-being; however, at higher levels of child challenge, optimistic mothers were affected little, while pessimistic mothers were quite adversely affected. Ellingsen et al. (2013, 2014) studied a different outcome variable—observed positive parenting behaviors—in mothers of preschool and school age children at different levels of developmental risk. Coded interactions showed that positive parenting decreased significantly as child developmental risk level increased. This relationship, however, was buffered by mothers' dispositional optimism. Positive parenting was lowest when children were at high

developmental risk and mothers were low in dispositional optimism.

Research Questions

The present study built on the literature indicating heightened disruptive behavior problems in youth with ID or ASD, and addressed their impact on mothers' well-being. With a sample of 13-year-old youth with TD, ID, or ASD, we addressed the following three primary questions: (1) Do measures of mothers' parenting stress and distress differ across diagnostic groups in early adolescence? (2) Are parenting stress and/or distress heightened when youth have comorbid behavior disorders? (3) Is the impact of youth behavioral challenges on mothers' parenting stress and distress moderated by the personality trait of dispositional optimism?

Methods

Participants

Participants were 160 youth, all age 13 years, and their families. Most (80%) of the youth with typical development (TD) and intellectual disability (ID) had been involved in a longitudinal study of child behavior problems and family adjustment that began at child age 3 years and had 10 assessments before age 13; 20% were added to the sample at age 13. In recruiting our study participants, school and agency personnel mailed brochures describing the study to families who met selection criteria; interested parents contacted the study team at the research center directly. In the present sample, 84 youth were typically developing and 28 met our criteria for intellectual disability. Recruitment of ASD youth began at our age 13 assessment; of the 48 youth with ASD, 38 entered the study at age 13; the remaining 10 had entered the longitudinal study by age 3 with TD or ID but had subsequently been professionally diagnosed with ASD.

Families of children with ID had been recruited primarily through agencies that provide diagnostic and intervention services for persons with developmental disabilities, or schools. Children in the ID group were all in the moderate to borderline range of cognitive delay, assessed by DSM IV (APA 2000) criteria. They were ambulatory, and not diagnosed with autism. Children with TD were recruited primarily through preschools and daycare programs, scored in the range of normal cognitive development, had not been born prematurely, and had no evidence of developmental disability.

Of the 48 youth with ASD, the 38 who began the study at age 13 were referred through schools. Of these, 21 were in a large private non-profit school for children with ASD where they had received comprehensive ASD evaluation and

educational services. Seventeen youth were referred from other school programs for youth with ASD. Ten youth who had begun the study at age 3 had not been diagnosed with ASD at this time, but were subsequently diagnosed with ASD by age 5 years. All youth with ASD had been diagnosed professionally using multiple indicators of ASD and had a long history of receiving services for children with ASD.

All participating youth at age 13 were administered sub-tests of the Wechsler Intelligence Scales for Children (Wechsler 2003) and their mothers were administered the Vineland Adaptive Behavior Scales (Sparrow et al. 2005). Youth without ASD were classified as intellectually disabled (IQ < 71, n = 18), borderline intellectually disabled (IQ 71–84, n = 10), or typically developing (IQ 85 + n = 84). The youth classified as having intellectual disability and borderline intellectual disability (DSM-IV, APA 2000) had IQ scores and VABS scores below 85; they were combined in the present study and were designated as the ID group. Youth with ID versus Borderline ID did not differ significantly on any behavior disorder variable and their mothers did not differ significantly on any of the well-being variables. The typically developing (TD) youth had IQ scores of 85 or higher, and were assigned to this condition regardless of VABS scores. Youth classification in the autism spectrum disorder (ASD) group was based on the diagnostic history of autism. There was a wide range of IQ within the ASD group, from ID (n = 13) and borderline ID (n = 10), to typical cognitive development (n = 25).

Table 1 shows demographic characteristics at youth age 13, by group status. In the combined sample, there were more boys (61.2%) than girls. Child sex differed by group, due to the expected high percent of males in the ASD group (79.2%). Youth race/ethnicity was distributed as follows: 55.8% white, non-Hispanic, 17.3% Hispanic, 8.6% African-American, 1.5% Asian American and 16.8% classified by parents as “other.” Most (73.8%) mothers were married. Mother race/ethnicity was 69% white, non-Hispanic. The socioeconomic status was generally high; 51% of families had an annual income above \$70,000, and 53% of mothers were college graduates. As shown in Table 1, there were no

significant between-group differences in: child race/ethnicity, mothers’ age, race/ethnicity, marital status, or family income. Mother education differed across groups, and was co-varied in analyses where it also related significantly to the dependent variable.

Procedures

The Institutional Review Boards of the participating universities approved all procedures; all research staff and project personnel were qualified to perform study-related procedures. Mothers and their adolescents came to the research center for an assessment session lasting 2–3 h. The session began by reviewing procedures and obtaining informed consent. All youth whose cognitive development was in the typically developing range also completed an informed consent form. During the center visit, measures of relevance to the present study included assessments of youth intelligence, adaptive skills, mental health diagnoses, and family demographics. Questionnaire measures of youth behavior problems and parent well-being were obtained in separate batteries completed independently by mothers and fathers, either at the center or at home and returned to the center. Families received a \$75 honorarium for their participation in the assessment.

Measures

Youth Intelligence and Adaptive Functioning

Two measures, of youth intelligence and adaptive behavior, were administered for purposes of determining group status (TD or ID).

Wechsler Intelligence Scale for Children-Fourth Edition (WISC-IV; Wechsler 2003). Full Scale IQ (FSIQ) at youth age 13 years was estimated using three subtests of the WISC-IV (Vocabulary, Matrix Reasoning, and Arithmetic) administered to the youth. Sattler and Dumont (2004) reported that this prorated IQ correlated highly ($r = .91$) with the FSIQ from the full WISC-IV administration. While they did not specify whether this correlation was consistent across

Table 1 Child, parent, and family demographics

Demographics	TD n=84	ID n=28	ASD n=48	F or Chi square
Child sex: % male	52.4	57.1	79.2	$X^2 = 9.47, p = .009$
Child IQ: mean	109.7	62.8	89.1	$F = 80.72, df = (2, 154), p < .001$
Mother age: years (SD)	45.5	43.3	45.7	$F = 0.98, df = (2, 154), ns$
Mom race/ethnicity % Caucasian	71.4	60.7	70.8	$X^2 = 1.20, ns$
Mother education: years of school (SD)	16.1	14.3	15.3	$F = 4.42, df = (2, 154), p = .009$
Mother marital status (% married)	77.4	67.9	70.8	$X^2 = 4.46, ns$
Family income (% > \$70 K)	58.5	39.3	45.8	$X^2 = 3.91, ns$

all levels of cognitive functioning, their sample included a substantial number of children with mild and moderate ID, learning disabilities, ADHD, and other childhood disorders.

Vineland Scales of Adaptive Behavior-II (VABS; Sparrow et al. 2005). The VABS is a commonly used semi-structured interview that asks the caregiver to report on adaptive behaviors that the youth usually demonstrates. The standardized Adaptive Behavior Composite score was used, which has a mean of 100 and a SD of 15. This score was comprised of three subscales: communication, daily living skills, and socialization. The VABS has excellent validity and reliability (de Bildt et al. 2005).

Youth Behavior Problems and Mental Disorders

Child Behavior Checklist for Ages 6–18 (CBCL; Achenbach and Rescorla 2001). Youth behavior problems were assessed with the widely used CBCL, completed by mothers. For each of the 113 problems listed, the respondent indicates whether it is “not true” (0), “somewhat or sometimes true” (1), or “very true or often true” (2). The CBCL yields a total score, two broad band scales (Externalizing and Internalizing), 7 narrow band scales, and 6 clinical scales that map onto specific diagnoses. In the present study, only the total score was used. The CBCL has high concurrent validity (Achenbach and Rescorla 2001; Braet et al. 2011). The internal validity (coefficient alpha) for the CBCL total score in the present sample was 0.97.

NIMH Diagnostic Interview Schedule for Children version IV (DISC; Schaffer et al. 2006). The DISC, administered to mothers in the present study, is a highly structured diagnostic interview covering DSM-IV (APA 2000) criteria for child psychiatric disorders; these interviews were scored, for this study, following criteria in DSM-5 (APA 2013). Respondents are asked about the presence of symptoms that fall under the major diagnostic categories and also the degree of impairment. The DISC (all versions) has undergone extensive testing, refinement, and revision (Shaffer et al. 1993) and has shown good test–retest reliability as well as concurrent and predictive validity for ADHD and ODD diagnoses (Friman et al. 2000; McGrath et al. 2004). In the present study, we administered the ADHD and ODD modules to every parent. We also read a brief summary of the diagnostic criteria for Conduct Disorder (CD) and went on to administer that module to those parents ($n = 15$) who acknowledged it somewhat applied. Of these, only 4 youth met diagnostic criteria for CD, too few for further analyses.

Parent Stress and Well-Being

Family Impact Questionnaire (FIQ; Donenberg and Baker 1993). The FIQ is a 50-item parent report questionnaire that asks about the “child’s impact on the family compared to

the impact other children his/her age have on their families” (e.g. Item 1: “My child is more stressful.”) Parents endorse items on a 4-point scale ranging from (1) “not at all” to (4) “very much.” Of the six scales, those of interest here are the composite 20-item negative impact score and the 7-item positive impact score. Alphas were 0.94 and 0.84 respectively in the present sample. The FIQ negative impact score is considered an indicator of parenting stress, and does not assess child ability or challenging behavior. It was designed to avoid the circular reasoning of stress measures that ask about child challenges and then infer parenting stress from these (e.g. Parenting Stress Index, Abidin 1990). However, although conceptually different, the FIQ negative impact score relates highly to the Parenting Stress Index Child Domain scores ($r = .84$; Donenberg and Baker 1993).

Symptom Checklist (SCL, Derogatis and Coons 1993). This 35-item version of the longer SCL questionnaire assesses dimensions of adult mental health (somatization, interpersonal sensitivity, anxiety, depression, and hostility). Item responses range from (0) “not at all” to (4) “extremely,” so the total score can range from 0 to 140. In the present sample, the total score alpha = 0.95.

Life Orientation Test (LOT; Scheier et al. 1994). The LOT is a six-item (plus four filler items) self-report measure of dispositional optimism, or generalized positive (or negative) expectancies about the future. Sample items include: “In uncertain times, I usually expect the best,” and “If something can go wrong for me, it will.” Each item is rated on a 5-point scale ranging from (0) “I disagree a lot” to (4) “I agree a lot.” Answers to three negatively worded items are reversed and the six items are summed for scoring (possible range 0–24). Alpha for the present sample = 0.79.

Results

Analyses

Child developmental status (TD, ID, ASD) and diagnostic status (behavior disorders in the clinical range) were examined in relation to the three indicators of mothers’ psychological well-being. Analyses were conducted with SPSS v24. Reported p values were not adjusted for multiple comparisons, though we set $p < .01$ as the criterion for statistical significance in most analyses. The first question, about the relationship of youth status to mother well-being, was addressed with three one-way ANOVAs, and LSD post-hoc tests. The second question, about the added effect on mother well-being of youth psychiatric disorder, was addressed in three general linear models; DVs were the mother well-being variables and IVs were the three-level youth status group and two-level clinical diagnosis variables. The third question, about the additive effects of mother’s dispositional

optimism, was examined in two ways. First, in six regression analyses, we examined the contributions of group status, youth behavior disorders, and mother optimism to parenting stress and psychological symptoms. Second, we created a youth risk variable, by dividing youth challenges (status and diagnosis) into a three-level risk variable, and dividing optimism scores into high, medium, and low thirds. We examined main and moderating effects of optimism on relationships of risk and mother well-being.

Correlations Among the Well-Being Variables

The two mother distress measures (negative impact and symptom checklist) were positively related ($r = .55$, $p < .001$). Mothers' positive impact scores correlated negatively with negative impact, $r = -.60$, $p < .001$, and symptom checklist, $r = -.24$, $p < .01$.

Mother Well-Being by Child Diagnostic Groups

The first question asked whether mothers' scores on the measures of parenting stress, psychological symptoms, and positive perceptions varied across diagnostic status groups. Table 2 shows the sum scores on each of these well-being measures. The status group scores differed significantly across the measures of stress and psychological symptoms. ASD group mothers scored highest on each of the two distress indicators, and scored lowest on the measure of positive perceptions. While the scores of the ASD group mothers differed significantly from the TD group mothers on all measures, they did not differ significantly from the ID group mothers on any measure.

Mother Well-Being and Child Disruptive Behavior Disorders

The second question asked whether the measures of mother well-being indicated greater distress when the youth also had clinical level disruptive behavior disorders. Previous examination of this sample found that the youth in the TD, ID, and ASD diagnostic groups differed significantly on every measure of behavior disorders examined (Baker and

Blacher 2015). These included CBCL scales (Total, Externalizing and Internalizing broad bands, and ADHD, and ODD clinical scales) and DISC domains (ADHD, ODD). In every one of these comparisons, youth with ASD had the highest scores.

The present analyses included three measures of behavior disorders (CBCL total scores and DISC ADHD and ODD scores). These were transformed into binary variables, denoting at or above vs. below clinical level cut-offs. The CBCL total score cut-off for borderline/clinical level is a score of 60 or higher. For DISC diagnoses (ADHD and ODD) clinical level criteria followed those designated in the DSM-5 (APA 2013). These behavior disorder measures were related to three measures of mother well-being—reported negative and positive impact of the youth on the family, and mother psychological well-being.

Table 3 shows analyses of the parent well-being variables, by status group (TD, ID, ASD) and the presence (Yes, No) of youth clinical level behavior disorders. The table shows the results when the behavior disorder outcome was CBCL total score in the clinical range, DISC diagnosis of ADHD, or DISC diagnosis of ODD. Status Group was significant in 7 of the 9 analyses, not accounting for significant variance in FIQ Positive scores in two analyses. Clinical behavior diagnosis was significant in all 9 analyses, and also accounted for more variance than the status group in all but one analysis. Thus, mothers' parenting stress and psychological symptoms in the presence of a developmental disability (ID or ASD) were additionally impacted by the presence of a youth's clinical level behavior disorder. Too, positive perceived impact of the youth on the family was significantly lessened in the presence of a behavior disorder.

Dispositional Optimism as a Protective Factor

Our third question asked whether the negative impacts of youth disability group and behavior disorder diagnosis on maternal well-being would be affected by mothers' dispositional optimism. The LOT-R measure of optimism correlated negatively with FIQ negative impact ($r = -.44$, $p < .001$) and the Symptom Checklist ($r = -.35$, $p < .001$); it was not correlated significantly with FIQ positive impact

Table 2 Mother wellbeing by status group

Mother wellbeing variable	TD	ID	ASD	F	p
N	84	28	48		
	Mean, SD	Mean, SD	Mean, SD		
FIQ negative impact (stress)	10.0 ^a (8.4)	21.6 ^b (14.2)	24.4 ^b (14.3)	29.94	<0.001
SCL symptom checklist	14.2 ^a (14.3)	25.9 ^b (24.5)	32.1 ^b (24.9)	13.19	<0.001
FIQ positive impact	15.1 ^a (5.3)	13.4 ^{ab} (5.3)	12.8 ^b (5.8)	3.01	0.052

Means with different letters differ at, $p < .05$ (e.g. means marked "a" do not differ from other means marked "a," but differ significantly from means marked "b")

Table 3 Relationship of child status group and clinical level behavior problems to measures of parent well-being (general linear model)

Motherwell-being	CBCL total		ADHD		ODD	
	Status group	Clinical behavior disorder	Status group	Clinical behavior disorder	Status group	Clinical behavior disorder
	F	F	F	F	F	F
FIQ negative impact (stress)	7.00*	66.44**	12.85**	15.93**	17.27**	43.15**
Symptom checklist	6.36*	7.50*	5.15*	11.08**	10.57**	9.36*
FIQ positive impact	0.04	19.22**	5.63*	15.52**	0.45	11.86**

Status group X clinical behavior disorder interactions are not shown, as all were NS

*<0.01; **<0.001

Table 4 Regression analyses with FIQ negative impact and SCL as dependent measures, R² as overall variance explained, and status group, clinical behavior disorder, and optimism as independent measures

Measure	FIQ negative impact (stress)				Symptom checklist			
	R ²	Status group	Clinical behavior disorder	Optimism	R ²	Status group	Clinical behavior disorder	Optimism
CBCL TOTAL	0.521**	2.00^	8.46**	-2.70*	0.342**	1.77	3.86**	-4.76**
DISC ADHD	0.380**	4.48**	4.43**	-3.61**	0.333**	2.72*	3.48*	-5.49**
DISC ODD	0.462**	6.21**	6.78**	-3.64**	3.22**	3.91**	3.06*	-5.41**

Scores are t values

^<0.05; *<0.01; **<0.001

($r = .14, p = .075$). Six regression analyses were run, with two mothers' scores as DVs (FIQ negative and the SCL). Predictors were youth status group, clinical range behavior problem (yes, no), and level of mothers' optimism. Table 4 shows these results, with dispositional optimism accounting for additional significant variance in each analysis.

Level of Risk

We further examined these data from the perspective of combined risk. We created a three level "risk" variable, based on whether the child had ASD or ID (No, Yes) and whether there was a clinically significant behavior disorder, ADHD and/or ODD (No, Yes). A risk score of 0 was assigned to typically developing youth with no behavior disorder. A risk score of 1 was assigned to youth with either a developmental disorder (ID, ASD) OR a clinical level disruptive behavior disorder. A risk score of 2 was assigned to youth who had both a developmental disorder AND a disruptive behavior disorder—arguably presenting the greatest challenge to their parents. We examined the effect of optimism in the presence of risk; for illustration, we recoded optimism as a three-level variable. Cut-off points were determined from the frequency distribution and were selected to yield three groups as equal

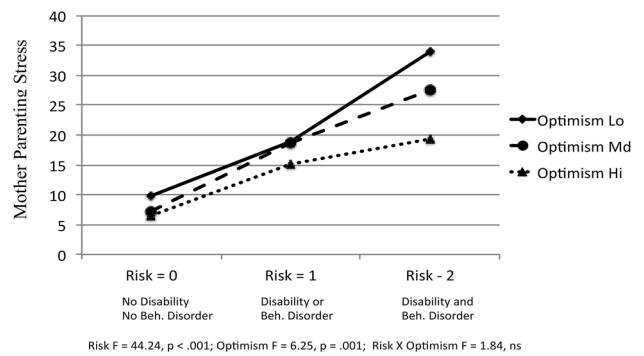


Fig. 1 Mother parenting stress (family impact questionnaire) by youth risk and maternal optimism

in size as possible. The low optimism group scored 14 or below; the moderate optimism group scored 15–18, and the high optimism group scored 19 or above.

The relationships between optimism and the three levels of risk are shown in Fig. 1 for mothers' parenting stress and in Fig. 2 for psychological symptoms. The levels of risk and of optimism have highly significant relationships with the mother well-being variables in both analyses. The risk x optimism interaction approached statistical significance

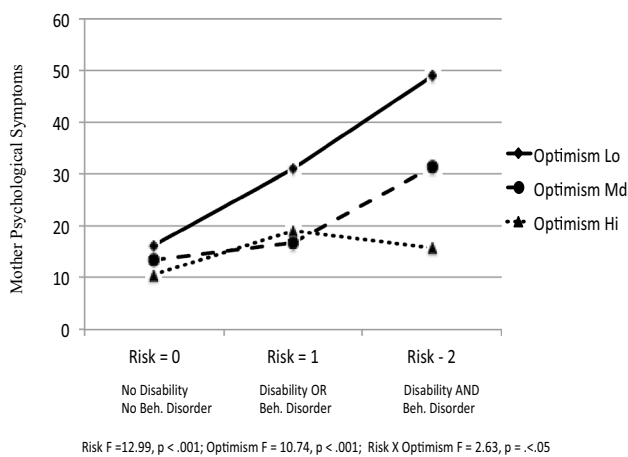


Fig. 2 Mother psychological symptoms (symptom checklist) by youth risk and maternal optimism

for psychological symptoms ($p < .05$) but not for parenting stress. As seen in the figures, while there were no apparent benefits of higher dispositional optimism when the risk score was zero (youth with TD and no clinical level behavior disorder), the protective value of high optimism relative to pessimism became apparent by risk level 2 for parenting stress and by risk level 1 for psychological symptoms.

Discussion

This study examined 13-year-old adolescents and their mothers, to address questions stemming from the demonstrated heightened disruptive behavior problems in youth with intellectual disability (ID) or autism spectrum disorder (ASD) compared to those with typical cognitive development (TD). The first aim was to determine the impact of the developmental disorder itself on mothers' well-being. The second aim was to examine whether the presence of a youth's co-morbid behavior disorder heightened the negative impact. The third aim was to assess whether the personality trait of dispositional optimism mitigated some of the negative impact of youth developmental disorders and behavior disorders on mothers' well-being. While most studies in this area include only one measure of behavior disorder and a wide age range of participants, here we have broadened the assessment protocol to include multiple assessments of mothers' well-being and narrowed the focus to early adolescence.

To summarize, we found that mothers of youth with ASD or ID, on average, experienced heightened stress and psychological symptoms and lower positive impact compared to mothers of children with TD. While mothers of youth with ASD reported consistently higher distress than mothers of youth with ID, these differences generally were not

significant. However, we note that Totsika et al. (2011), studying parent well-being in a much larger sample of children ranging in age from 5 to 16 years, found that ASD but not ID was associated with greater maternal emotional distress. We further found that mother's well-being related more significantly with youths' clinical level disruptive behavior disorders than disability status. However, a positive outcome was that the impacts of both youth disability and disruptive behavior disorder on mothers' well-being were buffered somewhat if she had an optimistic outlook on life. Simply put, dispositional optimism lessened the impact of child challenges.

As noted, our findings were a snapshot at one adolescent age. Other studies of youth during the "storm and stress of adolescence" (Casey et al. 2010) found that heightened emotional distress was not uncommon in typically developing youth, but for most, this tumultuous period did subside. Future research might follow the trajectory of clinically significant behavior problems, both internalizing and externalizing, in youth with ASD, to determine whether clinical level behavior disorders persist across adolescence into young adulthood. It would be equally as important to determine whether collateral effects continue to be felt by parents.

We will highlight three important questions raised by the present findings. First, is there a reciprocal relationship between youth disorders and maternal well-being, such that these two domains affect each other across time? Our study was limited to correlations obtained at only one time-point. However, related evidence, obtained from this same sample assessed annually from ages 3 through 9 years, are suggestive. Neece, Green, and Baker (2012) employed cross-lagged panel analyses to examine the mutual effects of child behavior problems and parenting stress across these years. There was strong evidence for repeated bi-directional influences for both mother-child and father-child analyses.

Second, if further research supports the reciprocal influence of youth behavior disorders and parental well-being, what are possible mechanisms mediating these relationships? For example, does lowered maternal well-being lead to fewer, or different, facilitative parenting behaviors that in turn negatively affect the child? Seymour et al., (2013) posited fatigue as a mediator, whereby child behavioral challenges wear mother out. In turn, fatigue may lead her to utilize ineffective coping strategies and thus increase her own stress. Others have posited the notion of "autism related parenting," whereby parents adjust their own behavior to accommodate the ASD of their child (Maljaars et al. 2014).

Third, what are the implications of these findings for interventions with youth, parents, or families? Even in the absence of evidence that the correlational relations revealed herein are bi-directional, it is clear that interventions that reduce disruptive behavior problems would benefit youth, and interventions that reduce stress and increase

coping would benefit parents. While ASD interventions are focused primarily on the youth, the present study, and others documenting parents' increased stress in the presence of disability and/or behavior disorders, support the value of interventions also focused on parents' coping and well-being (Karst and Van Hecke 2012). Some recent interventions have involved cognitive restructuring, relaxation training, or mindfulness education to promote a change in parents' outlook or perspective in youth adolescence (Crnic et al. 2017; Singh et al. 2014). Others involve parents and youth together. One promising intervention that reduces the transportation and waiting burden on parents, especially in rural areas, is *Facing your Fears*. This "telehealth" program delivers cognitive behavior therapy for anxiety disorders to small groups of youth with ASD and their parents, through clinic-to-home videoconferencing (Hepburn et al. 2016). The program was based on a manualized, family-focused, group intervention for youth with ASD (Reaven et al. 2012).

As in every study, there are inherent limitations here. First, we did not have a standardized diagnostic protocol for the youth with ASD, which some readers may view as a limitation. As all of these youths were 13 years old, with long histories of autism diagnoses and reimbursed services as youth with ASD, we did not at the time consider a further assessment necessary. Second, while having a sizeable sample of all 13-year-old adolescents yields interpretive advantages, there are limits to our ability to generalize findings over a wider age range or longitudinally. The onset of adolescence, however, is one of the most challenging periods in the lives of most families (Casey et al. 2010; Wiener et al. 2015), adding yet another stressor to the "double whammy" of having a child with a disability and a behavior disorder. In a conceptual paper, Picci and Scherf (2014) speak to the dramatic changes adolescence brings in behavior and neural organization, and the greater risk for individuals with autism, where almost a third show marked decline in adaptive functioning during this time. Thus, while the present study views parents and youth through a narrow window, it provides a clearer look into this potentially difficult developmental period.

A third limitation, though also common to studies pertaining to families, is the over-reliance on mother-report measures to assess both child challenges and her own well-being. This was countered somewhat by incorporating the DISC (Shaffer et al. 2006) as a second measure of child mental health. Even though mothers were still the respondents, trained interviewers administered a highly structured protocol that was less susceptible to biased responding. There is evidence of high agreement between mothers' scores on the CBCL and on an interview-based assessment of co-morbid psychopathology in children with ASD (Gjevick et al. 2015).

We conclude with the message that there is a silver lining to these findings, as the prevailing literature that suggests

dispositional optimism is beneficial to one's physical health (Carver et al. 2010; Taylor 2010) appears to be applicable to mothers' mental health during the onset of adolescence in their children, especially in the presence of disability and/or behavior disorders (Blacher et al. 2013). Future research directions might explore whether these mothers can maintain positivity in other contexts (Algood et al. 2013) or during other periods of the life-course if, or when, adverse events occur.

Acknowledgments This paper was based on the activities of the Collaborative Family Study, a two-site longitudinal study supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (Grant Number 34879-1459). This work was done in collaboration with The Help Group-UCLA Autism Research Alliance and Dr. Elizabeth Laugeson, and with partial support from the SEARCH Family Autism Center at UC Riverside and the UCR Vice Chancellor for Research. We appreciate the efforts of our doctoral students, staff, colleague Dr. Keith Crnic and participating families.

Author Contributions JB conceptualized the study. BLB conducted the analyses and both JB and BLB interpreted the findings. JB and BLB drafted the manuscript and conducted manuscript editing. Both BLB and JB directed the conduct of study, interviews with families, etc. BLB was P.I. of the grant which funded in, and JB was co-P.I.

Funding Funding for this study was obtained from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (Grant Number 34879-1459).

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in this study.

References

- Abbeduto, L., Seltzer, M. M., Shattuck, P., Krauss, M. W., Orsmond, G., & Murphy, M. M. (2004). Psychological well-being and coping in mothers of youths with autism, Down syndrome, or fragile X syndrome. *American Journal on Mental Retardation*, *109*, 237–254.
- Abidin, R. R. (1990). *Parenting stress index manual* (3rd ed.). Charlottesville, VA: Pediatric Psychology Press.
- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms and profiles*. Youth, and Families: University of Vermont.
- Algood, C. L., Harris, C., & Hong, J. S. (2013). Parenting success and challenges for families of children with disabilities: An ecological

- systems analysis. *Journal of Human Behavior in the Social Environment*, 23, 126–136. doi:10.1080/10911359.2012.747408.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders, DSM-IV, Fourth edition text revision*. Washington, DC: American Psychiatric Association. doi:10.1176/appi.books.9780890423349.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing. doi:10.1176/appi.books.9780890425596.
- Baker, B. L., & Blacher, J. (2015). Disruptive behavior disorders in adolescents with ASD: Comparisons to youth with intellectual disability or typical cognitive development. *Journal of Mental Health Research in Intellectual Disabilities*, 8, 98–116. doi:10.1080/19315864.2015.1018395.
- Baker, B. L., Blacher, J., & Olsson, M. B. (2005). Preschool children with and without developmental delay: Behavior problems, parents' optimism-pessimism, and well-being. *Journal of Intellectual Disability Research*, 49, 575–590. doi:10.1111/j.1365-2788.2005.00691.x.
- Baker, B. L., McIntyre, L. L., Blacher, J., Crnic, K., Edelbrock, C., & Low, C. (2003). Preschool children with and without developmental delay: Behavior problems and parenting stress over time. *Journal of Intellectual Disability Research*, 47, 217–230. doi:10.1046/j.1365-2788.2003.00484.x.
- Baker, B. L., Neece, C., Fenning, R. M., Crnic, K. A., & Blacher, J. (2010). Mental disorders in five-year-old children with or without developmental delay: Focus on ADHD. *Journal of Clinical Child and Adolescent Psychology*, 39, 492–505. doi:10.1080/15374416.2010.486321.
- Barker, E. T., Hartley, S. L., Seltzer, M. M., Floyd, F. J., Greenberg, J. S., & Orsmond, G. I. (2011). Trajectories of emotional well-being in mothers of adolescents and adults with autism. *Developmental Psychology*, 47, 551–561. doi:10.1037/a0021268.
- Blacher, J., & Baker, B. L. (2007). Positive impact of intellectual disabilities on families. *American Journal on Mental Retardation*, 112, 330–348.
- Blacher, J., Baker, B. L., & Berkovits, L. D. (2013). Family perspectives on child intellectual disability: Views from the sunny side of the street. In M. L. Wehmeyer (Ed.), *Handbook of positive psychology* (pp. 166–181). New York: Oxford University Press. doi:10.1093/oxfordhb/9780195398786.013.013.0013.
- Braet, C., Callens, J., Schittekatte, M., Soye, V., Druart, C., & Roeyers, H. (2011). Assessing emotional and behavioural problems with the Child Behavior Checklist: Exploring the relevance of adjusting the norms for the Flemish community. *Psychologica Belgica*, 51, 213–235. doi:10.5334/pb-51-3-4-213.
- Carver, C. S., & Scheier, M. F. (2014). Dispositional optimism. *Trends in Cognitive Science*, 18, 293–299. doi:10.1016/j.tics.2014.02.003.
- Carver, C. S., Scheier, M. F., & Segerstrom, S. C. (2010). Optimism. *Clinical Psychology Review*, 30, 879–889. doi:10.1016/j.cpr.2010.01.006.
- Casey, B. J., Jones, R. M., Levita, L., Libby, V., Pattwell, S. S., Ruberry, E., ... Somerville, L. H. (2010). The storm and stress of adolescence: Insights from human imaging and mouse genetics. *Developmental Psychobiology*, 52, 225–235. doi:10.1002/dev.20447.
- Casey, L. B., Zankas, S., Meindl, J. N., Parra, G. R., Cogdal, P., & Powell, K. (2012). Parental symptoms of posttraumatic stress following a child's diagnosis of autism spectrum disorder: A pilot study. *Research in Autism Spectrum Disorders*, 6, 1186–1193. doi:10.1016/j.rasd.2012.03.008.
- Cohen, I. L., & Tsiouris, J. A. (2006). Maternal recurrent mood disorders and high-functioning autism. *Journal of Autism and Developmental Disorders*, 36, 1077–1088. doi:10.1007/s10803-006-0145-7.
- Crnic, K. A., Friedrich, W. N., & Greenberg, M. T. (1983). The adaptation of families of mentally retarded children: A model of stress, coping, and family ecology. *American Journal of Mental Deficiency*, 88, 125–138.
- Crnic, K. A., Neece, C. L., McIntyre, L. L., Blacher, J., & Baker, B. L. (2017). Intellectual disability and developmental risk: Promoting intervention to improve child and family well-being. *Child Development*, 88(2), 436–445. doi:10.1111/cdev.12740.
- Daniels, J. L., Forssen, U., Hultman, C. M., Cnattingius, S., Savitz, D. A., Feychting, M., & Sparen, P. (2008). Parental psychiatric disorders associated with Autism Spectrum Disorders in the offspring. *Pediatrics*, 121, 1357–1362. doi:10.1542/peds.2007-2296.
- De Bildt, A., Kraijer, D., Sytema, S., & Minderaa, R. (2005). The psychometric properties of the Vineland Adaptive Behavior Scales in children and adolescents with mental retardation. *Journal of Autism and Developmental Disorders*, 31, 53–62. doi:10.1007/s10803-004-1033-7.
- Deater-Deckard, K. (1998). Parenting stress and child adjustment: Some old hypotheses and new questions. *Clinical Psychology: Science and Practice*, 5, 314–332. doi:10.1111/j.1468-2850.1998.tb00152.x.
- Dekker, M. C., & Koot, H. M. (2003). DSM-IV disorders in children with borderline to moderate intellectual disability. I: Prevalence and impact. *Journal of the American Academy of Child & Adolescent Psychiatry*, 42, 915–922. doi:10.1097/01.CHI.0000046892.27264.1A.
- Derogatis, L. R., & Coons, H. L. (1993). Self-report measures of stress. In L. Goldberger & S. Breznitz (Eds.), *Handbook of stress: Theoretical and clinical aspects* (2nd ed., pp. 200–233). New York: Free Press.
- Donenberg, G., & Baker, B. L. (1993). The impact of young children with externalizing behaviors on their families. *Journal of Abnormal Child Psychology*, 21, 179–198. doi:10.1007/BF00911315.
- Ekas, N. V., Lickenbrock, D. M., & Whitman, T. L. (2010). Optimism, social support, and well-being in mothers of children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 40(10), 127401284. doi:10.1007/s10803-010-0986-y.
- Ellingsen, R., Baker, B. L., Blacher, J., & Crnic, K. (2013). Resilient parenting of preschool children at developmental risk. *Journal of Intellectual Disability Research*, 58, 664–678. doi:10.1111/jir.12063.
- Ellingsen, R., Baker, B. L., Blacher, J., & Crnic, K. A. (2014). Resilient parenting of children at developmental risk across middle childhood. *Research in Developmental Disabilities*, 35, 1364–1374. doi:10.1016/j.ridd.2014.03.016.
- Emerson, E., & Einfeld, S. (2010). Emotional and behavioural difficulties in young children with and without developmental delay: A bi-national perspective. *Journal of Child Psychology and Psychiatry*, 51, 583–593. doi:10.1111/j.1469-7610.2009.02179.x.
- Fairthorne, J., de Klerk, N., & Leonard, H. (2016). Brief report: Burden of care in mothers of children with autism spectrum disorder or intellectual disability. *Journal of Autism and Developmental Disorders*, 46, 1103–1109. doi:10.1007/s10803-015-2629-9.
- Faso, D. J., Neal-Beevers, A. R., & Carlson, C. L. (2013). Vicarious futurity, hope, and well-being in parents of children with autism spectrum disorder. *Research in Autism Spectrum Disorders*, 7, 288–297. doi:10.1016/j.rasd.2012.08.014.
- Firth, I., & Dryer, R. (2013). The predictors of distress in parents of children with autism spectrum disorder. *Journal of Intellectual and Developmental Disability*, 38, 163–171. doi:10.3109/13668250.2013.773964.
- Friman, P. C., Handwerk, M. L., Smith, G. L., Larzelere, R. E., Lucas, C. P., & Shaffer, D. M. (2000). External validity of conduct and oppositional defiant disorders determined by the NIMH diagnostic interview schedule for children. *Journal of Abnormal Child Psychology*, 28, 277–286. doi:10.1023/A:1005148404980.

- Gerstein, E. D., Crnic, K. A., Blacher, J., & Baker, B. L. (2009). Resilience and the course of daily parenting stress in families of young children with intellectual disabilities. *Journal of Intellectual Disability Research, 53*, 981–997. doi:10.1111/j.1365-2788.2009.01220.x.
- Gjevik, E., Sandstad, B., Andreassen, O. A., Myhre, A. M., & Sponheim, E. (2015). Exploring the agreement between questionnaire information and DSM-IV diagnoses of comorbid psychopathology in children with autism spectrum disorders. *Autism: The International Journal of Research and Practice, 19*, 433–442. doi:10.1177/1362361314526003.
- Hansson, S. L., Svanstrom Rojavall, A., Rastam, M., Gillberg, C., & Anckarsater, H. (2005). Psychiatric telephone interview with parents for screening of childhood autism, tics, attention-deficit hyperactivity disorder, and other comorbidities (A-TAC): Preliminary reliability and validity. *British Journal of Psychiatry, 187*, 262–267. doi:10.1192/bjp.187.3.262.
- Hayes, S. A., & Watson, S. L. (2013). The impact of parenting stress: A meta-analysis of studies comparing the experience of parenting stress in parents of children with and without autism spectrum disorder. *Journal of Autism and Developmental Disorders, 43*, 629–642. doi:10.1007/s10803-012-1604-y.
- Hepburn, S. L., Blakeley-Smith, A., Wolff, B., & Reaven, J. A. (2016). Telehealth delivery of cognitive-behavioral intervention to youth with autism spectrum disorder and anxiety: A pilot study. *Autism: The International Journal of Research and Practice, 20*, 207–218. doi:10.1177/1362361315575164.
- Karst, J. S., & Van Hecke, A. V. (2012). Parent and family impact of autism spectrum disorders: A review and proposed model for intervention evaluation. *Clinical Child and Family Psychology Review, 15*, 247–277. doi:10.1007/s10567-012-0119-6.
- Lecavalier, L., Leone, S., & Wiltz, J. (2006). The impact of behaviour problems on caregiver stress in young people with autism spectrum disorders. *Journal of Intellectual Disability Research, 50*, 172–183. doi:10.1111/j.1365-2788.2005.00732.x.
- Lloyd, T. J., & Hastings, R. (2009). Hope as a psychological resilience factor in mothers and fathers of children with intellectual disabilities. *Journal of Intellectual Disability Research, 53*, 957–968. doi:10.1111/j.1365-2788.2009.01206.x.
- Lundstrom, S., Reichenberg, A., Melke, J., Rastam, M., Kerekes, N., Lichtenstein, P., ... Anckarsater, H. (2015). Autism spectrum disorders and coexisting disorders in a nationwide Swedish twin study. *Journal of Child Psychology and Psychiatry, 56*, 702–710. doi:10.1111/jcpp.12329.
- Maljaars, J., Boonen, H., Lambrechts, G., Van Leeuwen, K., & Noens, I. (2014). Maternal parenting behavior and child behavior problems in families of children and adolescents with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 44*, 501–512. doi:10.1007/s10803-013-1894-8.
- McCoy, B. M., Rickert, M. E., Class, Q. A., Larsson, H., Lichtenstein, P., & D'Onofrio, B. M. (2014). *Annals of Epidemiology, 24*, 629–634. doi:10.1016/j.annepidem.2014.05.010.
- McGrath, A. M., Handwerk, M., Armstrong, K. J., Lucas, C. P., & Friman, P. C. (2004). The validity of the ADHD section of the diagnostic interview schedule for children. *Behavior Modification, 28*, 349–374. doi:10.1177/0145445503258987.
- Neece, C. L., Green, S. A., & Baker, B. L. (2012). Parenting stress and child behavior problems: A transactional relationship across time. *American Journal of Intellectual and Developmental Disabilities, 117*, 48–66. doi:10.1352/1944-7558-117.1.48.
- Olason, D. T., & Roger, D. (2001). Optimism, pessimism and 'fighting spirit': A new approach to assessing expectancy and adaptation. *Personality and Individual Differences, 31*, 755–768. doi:10.1016/S0191-8869(00)00176-8.
- Olshansky, S. (1962). Chronic sorrow: A response to having a mentally defective child. *Social Casework, 43*, 190–193. doi:10.1177/088307388700200113.
- Olsson, M. B., & Hwang, C. P. (2002). Sense of coherence in parents of children with different developmental disabilities. *Journal of Intellectual Disability Research, 46*, 548–559. doi:10.1046/j.1365-2788.2002.00414.x.
- Peterson, C. (2000). The future of optimism. *American Psychologist, 55*, 44–55. doi:10.1037/0003-066X.55.1.44.
- Picci, G., & Scherf, K. S. (2014). A two-hit model of autism: Adolescence as the second hit. *Clinical Psychological Science, 3*, 349–371. doi:10.1177/2167702614540646.
- Pottie, C. G., & Ingram, K. M. (2008). Daily stress, coping, and well-being in parents of children with autism: A multilevel modeling approach. *Journal of Family Psychology, 22*, 855–864. doi:10.1037/a0013604.
- Pozo, P., Sarria, E., & Brioso, A. (2014). Family quality of life and psychological well-being in parents of children with autism spectrum disorders: A double ABCX model. *Journal of Intellectual Disability Research, 58*(5), 442–458. doi:10.1111/jir.12042.
- Reaven, J., Blakeley-Smith, A., Culhane-Shelburne, K., & Hepburn, S. (2012). Cognitive behavior therapy for children with high-functioning autism spectrum disorders and anxiety: A randomized trial. *Journal of Child Psychology & Psychiatry, 53*, 410–419. doi:10.1111/j.1469-7610.2011.02486.x.
- Sattler, J. M., & Dumont, R. (2004). *Assessment of children: WISC-IV and WPPSI-III supplement*. LaMesa, CA: Jerome M Sattler Publisher Inc.
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A re-evaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67*(6), 1063–1078. doi:10.1037/0022-3514.67.6.1063.
- Seymour, M., Wood, C., Giallo, R., & Jellett, R. (2013). Fatigue, stress, and coping in mothers of children with an autism spectrum disorder. *Journal of Autism and Developmental Disorders, 43*(7), 1547–1554. doi:10.1007/s10803-012-1701-y.
- Shaffer, D., Fisher, P., Lucas, C., & Comer, J. (2006). *Scoring manual: diagnostic interview schedule for children (DISC-IV)*. New York: Columbia University.
- Shaffer, D., Schwab-Stone, M., Fisher, P., & Cohen, P. (1993). The diagnostic interview schedule for children-revised version (DISC-R): I. Preparation, field testing, inter-rater reliability, and acceptability. *Journal of the American Academy of Child & Adolescent Psychiatry, 32*(3), 643–650. doi:10.1097/00004583-199305000-00023.
- Sikora, D., Moran, E., Orlich, F., Hall, T. H., Kovacs, E. A., Delahaye, J., ... Kuhlthau, K. (2013). The relationship between family functioning and behavior problems in children with autism spectrum disorders. *Research in Autism Spectrum Disorders, 7*(2), 302–315. doi:10.1016/j.rasd.2012.09.006.
- Simonoff, E., Pickles, A., Charman, T., Chandler, S., Loucas, R., & Baird, B. (2008). Psychiatric disorders in children with autism spectrum disorders: Prevalence, comorbidity, and associated factors in a population-derived sample. *Journal of the American Academy of Child and Adolescent Psychiatry, 47*, 921–929. doi:10.1097/CHL.0b013e318179964f.
- Singh, N. N., Lancioni, G. E., Winton, A. S. W., Karazsia, B. T., Myers, R. E. ... Singh, J. (2014). Mindfulness-based positive behavior support (MBPBS) for mothers of adolescents with autism spectrum disorder: Effects on adolescents' behavior and parental stress. *Mindfulness, 5*, 646–657. doi:10.1007/s12671-014-0321-3.
- Sparrow, S. S., Cicchetti, D. V., & Balla, B. A. (2005). *Vineland scales of adaptive behavior*. (2nd ed.). Circle Pine, MN: American Guidance Service.

- Taylor, S. E. (2010). Mechanisms linking early life stress to adult health outcomes. *Proceedings of the National Academy of Sciences*, *107*(19), 8507–8512. doi:[10.1073/pnas.1003890107](https://doi.org/10.1073/pnas.1003890107)
- Taylor, Z. E., Widaman, K. F., Robins, R. W., Jochem, R., Early, D. R., & Conger, R. D. (2011). Dispositional optimism: A psychological resource for Mexican-origin mothers experiencing economic stress. *Journal of Family Psychology*, *26*, 133–139. doi:[10.1037/a0026755](https://doi.org/10.1037/a0026755).
- Totsika, V., Hastings, R. P., Emerson, E., Lancaster, G. A., & Berridge, D. M. (2011). A population-based investigation of behavioural and emotional problems and maternal mental health: Associations with autism spectrum disorder and intellectual disability. *Journal of Child Psychology and Psychiatry*, *52*, 91–99. doi:[10.1111/j.1469-7610.2010.02295.x](https://doi.org/10.1111/j.1469-7610.2010.02295.x).
- Van Steijn, J. D., Oerlemans, A. M., Van Aken, M. A. G., Buitelaar, J. K., & Rommelse, N. N. J. (2014). The reciprocal relationship of ASD, ADHD, depressive symptoms, and stress in parents of children with ASD and/or ADHD. *Journal of Autism and Developmental Disorders*, *44*, 1064–1076. doi:[10.1007/s10803-013-1958-9](https://doi.org/10.1007/s10803-013-1958-9).
- Wechsler, D. (2003). *Wechsler intelligence scale for children* (4th ed.). San Antonio, TX: Harcourt Assessments.
- Weiss, J. A., Robinson, S., Fung, S., Tint, A., Chalmers, P., & Lunskey, Y. (2013). Family hardiness, social support, and self-efficacy in mothers of individuals with autism spectrum disorders. *Research in Autism Spectrum Disorders*, *7*(11), 1310–1317. doi:[10.1016/j.rasd.2013.07.016](https://doi.org/10.1016/j.rasd.2013.07.016).
- Wiener, J., Biondic, D., Grimbos, T., & Herbert, M. (2015). Parenting stress of parents of adolescents with attention deficit hyperactivity disorder. *Journal of Abnormal Child Psychology*, *44*(3), 561–574. doi:[10.1007/s10802-015-0050-7](https://doi.org/10.1007/s10802-015-0050-7).
- Willis, K., Timmons, L., Pruitt, M., Schneider, H. L., Alessandri, M., & Ekas, N. V. (2016). The relationship between optimism, coping, and depressive symptoms in Hispanic mothers and fathers of children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *46*(7), 2427–2440. doi:[10.1007/s10803-016-2776-7](https://doi.org/10.1007/s10803-016-2776-7).