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ORIGINAL PAPER

Self-compassion: A Novel Predictor of Stress and Quality of Life in Parents of Children with Autism Spectrum Disorder

Gal Bohadana[1,2] · Shirley Morrissey[1] · Jessica Paynter[1]

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Abstract
The double ABCX model of adaptation has been used to predict parental outcomes in parents of children with autism spectrum disorder (ASD), with predictors including child characteristics, pile up of demands, external resources, coping, parental perceptions, and internal resources. This study investigated whether self-compassion is a unique predictor of parental outcomes of stress and quality of life. One hundred and thirty-nine parents (120 mothers, 19 fathers) completed an online questionnaire investigating known predictors and self-compassion. It was found that higher scores on the positive dimension of self-compassion were associated with better quality of life, and higher scores on the negative dimension of self-compassion were associated with greater stress. This research has implications for developing self-compassion interventions for parents.

Keywords Autism spectrum disorder · Parents · Self-compassion · Stress · Quality of life

Introduction

Parents of children with autism spectrum disorder (ASD) as a group report higher levels of stress (Hayes and Watson 2013), as well as lower levels of quality of life (Vasilopoulou and Nisbet 2016) relative to parents of typically developing children or children with other types of developmental disabilities. While research suggests that periods associated with transitioning into school as well as the period immediately following diagnosis (4–5 years) (Mandell et al. 2005; Shattuck et al. 2009) can be particularly stressful (Davis and Carter 2008; Moh and Magiati 2012), parenting stress is reported to be high throughout the primary school years. Much of the research to date has focussed on negative aspects of parenting in ASD, yet well-being is much more than the absence of negatives, and there has been a call for a broader understanding of positive adaptation in psychological adjustment (Cappe et al. 2011). As such, there has been a call for a broader understanding of positive adaptation in psychological adjustment in parents of primary school-aged children.

The double ABCX model of adaptation (McCubbin and Patterson 1983) is one of the most comprehensive and commonly used models in the literature to explain parental adaptation in families of children with ASD. Parental adaptation refers to the ability of the parent to respond to stress, and can be measured in terms of psychopathology (e.g., stress, anxiety, and depression symptoms) and/or overall well-being (e.g., quality of life; Olson et al. 1979). Predictors within the model include the severity of the stressor, which encompasses the child's level of ASD symptoms, challenging behaviour (Bristol 1987; Hastings et al. 2005; McStay et al. 2014), and pile up of additional life demands such as financial strain (McStay et al. 2014; Paynter et al. 2013; Stuart and McGrew 2009). The model also includes internal and external resources such as self-efficacy (Giallo et al. 2013; Hastings and Brown 2002; Kuhn and Carter 2006), social support (Ekas et al. 2010; Manning et al. 2011; Paynter et al. 2013). Additional factors include parental perceptions of the child's diagnosis (Hastings et al. 2005; Paynter et al. 2013; Pozo and Sarria 2014), and coping strategies (Benson 2010; Pozo and Sarria 2014; Smith et al. 2008). Some outcomes predicted by the model include parent psychological well-being (Pozo and Sarria 2014), parenting stress (measured

✉ Gal Bohadana
gal.bohadana@griffithuni.edu.au

Shirley Morrissey
s.morrissey@griffith.edu.au

Jessica Paynter
j.paynter@griffith.edu.au

[1] School of Applied Psychology, Griffith University, Southport, QLD 4222, Australia

[2] Present Address: Gold Coast, Australia

using the parental distress subscale of the Parenting Stress Index-Short Form:PSI-SF) (Manning et al. 2011; McStay et al. 2014; Minnes et al. 2015) and parenting stress (measured using the total scale score of the PSI-SF) (Paynter et al. 2013). Additional outcomes include the family environment (Pozo and Sarria 2014) and quality of life (McStay et al. 2014). Taken together, previous research has shown combinations of one or more predictors can explain a significant 55% of variance in maternal depression (Bristol 1987), and up to 61% of the variability in parental depression and parental social adjustment (Pakenham et al. 2005).While the double ABCX model has been found to explain a significant proportion of the variance in outcomes in previous research, there remains unexplained variance.

Within the double ABCX model, some factors may be stable and/or less amendable to change, such as the child's diagnosis (Lord et al. 2006) and some core symptoms (Chawarska et al. 2007; Matson and Horovitz 2010). As such, it is important to investigate modifiable factors further. This has implications for better supporting families to adapt to the demands of caring for a child with ASD. In addition, there is a need to identify what other factors may contribute to the model and in turn potentially mitigate negative adaptation and promote optimal adaptation. One factor that has been given little attention, but may be a significant predictor of parental outcomes in addition to established double ABCX predictors, is self-compassion.

Emerging research suggests that self-compassion is associated with parental outcomes (Neff and Faso 2015), although this has received little attention in ASD research to date. Neff (2003) proposed an initial definition for self-compassion comprising of three interrelated components: self-kindness versus self-judgement, common humanity versus isolation, and mindfulness versus over-identification. More recently, researchers have suggested revisions to the structure of self-compassion and proposed that the six components yield a positive dimension (i.e., self-kindness, common humanity, and mindfulness) and a negative dimension (self-judgement, isolation, and over-identification; Barton 2016; Costa et al. 2015). This finding was supported by López et al. (2015), who performed an exploratory factor analysis on the scale.

Self-compassion has not previously been included within the double ABCX model, but it has been investigated in relation to key components of the model. Research on self-compassion in parents of typically developing children, hence without a diagnosis, found that self-compassion was linked to lower levels of stress (Moreira et al. 2014), and to positive perceptions (i.e., viewing the situation in a more positive way; Allen and Leary 2010). Self-compassion strategies may also help prevent maladaptive coping and/or assist in the reduction of social stigma felt by parents who may be judged by others for their child's behaviour, thus reducing negative feelings in parents of children with ASD (Wong et al. 2016) and parents of typically developing children (Duncan et al. 2009). Therefore, it is suggested that the presence of self-compassion in parents may influence the relationship between the initial source of stress and the coping strategies parents may use.

Only a limited number of studies have directly investigated self-compassion in parents of children with ASD (Neff and Faso 2015; Wong et al. 2016). Neff and Faso (2015) found that self-compassion was a stronger predictor of parental well-being than the ASD symptom severity of the child. But more importantly, the study by Neff and Faso (2015) did not include several other known predictors, and it is unclear whether self-compassion would have predicted parent outcomes beyond all factors included in the double ABCX model.

Wong et al. (2016) introduced self-compassion as a protective factor against the affiliate stigma (i.e., the internalisation of external criticisms) experienced by parents of children with ASD. Specifically, self-compassion moderated the association between affiliate stigma and psychological distress, such that the association between affiliate stigma and psychological distress was lower for parents with high-self compassion. Further, research with parents of children with intellectual and developmental disabilities suggests that greater self-compassion is associated with lower stress and depression levels even after accounting for the child's diagnosis, parental burden, and socioeconomic status (Robinson et al. 2018). Thus self-compassion has been shown to predict multiple outcomes, and could also potentially contribute to parenting stress and quality of life.

Self-compassion has been shown to be associated with the double ABCX model variables of symptom severity, parental perceptions, parenting stress, and coping. Yet, the inclusion of these variables as part of the double ABCX model to examine whether self-compassion is a unique predictor once other known predictors have been accounted for has not been investigated. Although the findings above provide important basis for research on self-compassion in parents, it is important to investigate self-compassion specifically in parents of children with ASD as they tend to report more distress than other parents. Given self-compassion is a modifiable trait (Benn et al. 2012; Neff 2003; Neff and Germer 2013), establishing more robust evidence on whether self-compassion adds to the prediction of outcomes in addition to previously identified factors in the double ABCX model has the potential to then inform future interventions for this population. Finding modifiable predictors that can be targeted in interventions for parents can not only help the parent, but may also promote favourable child outcomes, as parent stress may hinder the effectiveness of early intervention (Osborne et al. 2008), and is a significant predictor of child challenging behaviour (Osborne and Reed 2009).

Given that parenting stress is more generally associated with psychopathological outcomes such as depression and anxiety (Bitsika and Sharpley 2004; Bitsika et al. 2013), as well as a reduced ability to effectively manage the child's care (Bekhet et al. 2012; Dabrowska and Pisula 2010), providing services for parents to improve their well-being is extremely important.

Current Study

Previous research has highlighted challenges in adaptation in parents of children with ASD, namely regarding parenting stress and quality of life. The double ABCX model has explained significant variance in these outcomes with key factors including child characteristics, pile up of demands, external resources such as social support, internal resources such as self-efficacy, coping, and parental perceptions. Therefore, this research aimed to investigate whether self-compassion would be a significant and unique predictor of parenting stress and quality of life, once established predictors such as child characteristics, pile up of demands, social support, self-efficacy, coping, and parental perceptions were controlled. Consistent with previous research (Bebko et al. 1987; Pozo and Sarria 2014), it was anticipated that parenting stress would be elevated in parents of children with ASD relative to normative data with the general parent population. Further, consistent with double ABCX model and previous research (Manning et al. 2011; McCubbin and Patterson 1983; Paynter et al. 2013; McStay et al. 2014), it was expected that the expanded model would account for a significant amount of the variance in parental outcomes, including parenting stress and quality of life. Finally, self-compassion was anticipated to be a significant predictor of parenting stress and parental quality of life once double ABCX variables were controlled.

Method

Design

This study utilised a quantitative survey design. The study was granted ethical approval by the Griffith University Ethics Committe (GU ref no: 2018/194).

Participants

The final sample included 139 parents (120 mothers, 19 fathers) of children with ASD. Inclusion criteria were verification of the child's diagnosis using the Social Communication Questionnaire (SCQ; Rutter et al. 2003), and children aged 6–12 years. The cut-off used for verification was 11 as suggested by previous research (Allen et al. 2007; Eaves et al. 2006; Norris and Lecavalier 2010). Eleven parents were excluded as their child's SCQ was below 11. Parent and child demographic characteristics are presented in Tables 1 and 2 respectively.

Materials

Demographics

Demographic questions included parent age, gender, relationship to the child, family background, income, employment status, and child demographics.

ASD Symptoms

ASD symptoms were measured using the parent-reported 40-item Social Communication Questionnaire (SCQ), current form (Rutter et al. 2003). Higher scores indicated the presence of more symptoms. This scale is often used as a screening tool to confirm parent-reported professional diagnosis of ASD (Paynter et al. 2013). Previous research demonstrated excellent internal validity ($\alpha = .90$) for this scale (Berument et al. 1999). In the current sample, the scale demonstrated adequate internal consistency ($\alpha = .73$).

Challenging Behaviour

Child challenging behaviour was measured using the Behavior Problems Inventory-Short Form (BPI-SF; Rojahn et al. 2012). The BPI-SF is a 48-item (30 frequency items and 18 severity items) informant-based instrument used to measure maladaptive behaviour in individuals with intellectual and developmental disabilities, including in previous ASD research (Weiss et al. 2015; Williams et al. 2015). The BPI-SF has a good test–retest reliability ranging from .78 to .91 and a good total scale internal consistency ranging from .89 to .94 (Rojahn et al. 2012). The scale measures the frequency of self-injurious, stereotyped, aggressive/destructive behaviour, and the severity of self-injurious and aggressive behaviour. In the current sample, the internal consistency for the self-injurious subscale was adequate ($\alpha = .78$), excellent for the aggressive behaviour subscale ($\alpha = .90$), and poor for the stereotyped behaviour subscale ($\alpha = .62$), but consistent with previous research (Weiss et al. 2015; Williams et al. 2015).

Pile Up of Demands

Pile up of demands was measured using the Revised Social Readjustment Rating Scale (RSRRS; Hobson and Delunas 2001), modified from the original Social Readjustment Rating Scale (SRRS; Holmes and Rahe 1967). This 50-item scale measures stressful life events during the past 12 months on a 5-point Likert scale for endorsed

Table 1 Parent descriptive statistics

	Mothers (n = 120)	Fathers (n = 19)	Total (n = 139)
Parent characteristics			
Age (years)			
Mean (SD)	39.49 (7.66)	35.16 (9.39)	38.85 (8.01)
Birth country (%)			
Australia	73.9	100	77.7
Other	26.1	0	22.3
Language spoken at home (%)			
English	100	100	100
Education (%)			
Junior school: grade 10 or equivalent	4.2	5.3	4.3
High school: grade 12 or equivalent	11.8	15.8	12.2
Vocational training	31.9	26.3	31.7
Bachelor's degree	31.1	31.6	30.9
Postgraduate degree	15.1	21.1	15.8
Other	5.9	0	5.0
Employment status (%)			
Full time	18.2	73.7	25.5
Part time	20.7	5.3	18.4
Casual	12.4	0	10.6
Full time student	1.7	0	1.4
Self-employed	5.0	10.5	5.7
Unemployed but looking for work	5.0	0	4.3
Unemployed but NOT looking for work	14.0	5.3	12.8
Unable to work	5.8	0	5.0
Retired	1.7	0	1.4
Other	15.7	5.3	14.9
Income per annum (%)			
AU$0–$19,999	23.5	5.3	21.6
AU$20,000–$39,999	32.8	0	28.1
AU$40,000–$59,999	14.3	21.1	15.1
AU$60,000–$79,999	12.6	36.8	15.8
AU$80,000–$99,000	5.9	26.3	8.6
AU$100,000 +	10.9	10.5	10.8
Either parent received ASD diagnosis (%)			
Yes	11.8	10.5	11.5
Relationship status (%)			
Married	56.3	68.4	58.3
Widowed	0	0	0
Divorced	7.6	0	6.5
Separated	11.8	15.8	12.2
Never married	1.7	0	1.4
Single	14.3	0	12.2
Living with partner	7.6	15.8	8.6
Other	0.8	0	0.7
Relationship to child (%)			
Parent	97.5	100	97.9
Grandparent	0.8	0	0.7
Foster parent	1.7	0	1.4

Table 2 Child descriptive statistics

	Mothers (n = 120)	Fathers (n = 19)	Total (n = 139)
Child characteristics			
Child gender (%)			
Male	72.3	63.2	71.2
Female	27.7	36.8	28.8
Child age in years			
Mean (SD)	8.94 (2.09)	8.37 (2.31)	8.90 (2.42)
Child age at diagnosis in years			
Mean (SD)	5.57 (2.50)	5.00 (1.50)	5.39 (2.36)
Child additional diagnosis (%)			
No additional diagnosis	27.7	68.4	33.1
Attention deficit/hyperactivity (ADHD)	36.1	26.3	35.3
Learning disorder (e.g., dyslexia)	6.7	0	5.8
Attention deficit disorder (ADD)	7.6	0	6.5
Conduct disorder	1.7	0	1.4
Fragile X syndrome	0	0	0
Fetal alcohol syndrome	0	0	0
Vision/hearing impairment	3.4	0	2.9
Epilepsy/seizures	5	0	4.3
Intellectual disability	10.9	0	9.4
Other	42	10.5	37.4

Other diagnoses included mood disorders, anxiety disorders, reactive attachment disorder, and chromosome duplications

items ranging from 1 (experienced with little distress) to 5 (experienced with extreme distress). Scores are summed to yield a total score, where higher scores indicate higher stress due to life events. Items that were not endorsed were assigned a score of 0. The RSRRS scale has shown good internal consistency in previous research of parents of children with ASD (α = .85) (Paynter et al. 2013). In the current sample, the scale demonstrated adequate internal consistency (α = .78).

Parental Self-efficacy

Parental self-efficacy was measured using the self-efficacy subscale of the Parenting Sense of Competence Scale (PSOC; Johnston and Mash 1989). This scale has been validated in parents of both clinical and non-clinical children aged 5–12 (Johnston and Mash 1989). This scale consists of 16 items, rated on a 6-point Likert scale ranging from "Strongly agree" to "Strongly disagree". Only the 6-item self-efficacy subscale, was used as relevant to the model. Items on this subscale are reverse scored so that higher scores indicate higher self-efficacy. This subscale has satisfactory internal consistency (α = .78) for mothers and good internal consistency for fathers using the Australian scoring (α = .82; Rogers and Matthews 2004). In the current sample, this scale demonstrated good internal consistency (α = .80).

Self-compassion

Self-compassion was measured using the 26-item Self-Compassion Scale (Neff 2003). This scale measures the six interrelated dimensions that encompass the definition of self-compassion: mindfulness, over-identification, self-kindness, self-judgement, common humanity, and isolation. The items are scored on a 5-point Likert scale ranging from 1 (Almost never) to 5 (Almost always). A two-factor solution (positive and negative subscales) has been found in recent research (Tóth-Király et al. 2017) and were used in the present study. Good internal consistencies for the positive and negative factors have been found in previous research (α = .86, and α = .90, respectively) (López et al. 2015). In the current sample, the total scale internal consistency was excellent (α = .93). Both the negative and positive dimensions of the self-compassion scale demonstrated excellent internal consistency (α = .91 for both respectively).

Social Support

Social support was measured using the Multidimensional Scale of Perceived Social Support (Zimet et al. 1988). This scale consists of 12 items that were divided into three subscales of source of support: Family, Significant Other, and Friends. Each item is rated on a 5-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). Internal

consistency ranged from good to excellent for each scale (α = .91 to .95). Test–retest reliability following a three-month interval was good (*r* = .72–.85) (Zimet et al. 1988). The total test retest reliability coefficient of the scale was *r* = .85. In previous research, the internal consistency was measured for each subscale, as well as for the total scale. In the present study, the total score was used to calculate internal consistency which showed excellent internal consistency (α = .93).

Parental Perceptions

Parental perceptions of the impact the child's condition had on the family system were measured using the 24-item Impact on Family Scale (Stein and Riessman 1980), originally developed for use with a child with a medical condition aged between 0 and 11 years, has also been used in research with children with developmental disabilities (Paynter et al. 2013). Variations in wording to suit the current ASD parent sample was used with permission from the author. This scale measures parental perceptions of the impact the child's condition has on the family system. The scale is scored on a 4-point Likert scale ranging from 1 (Strongly agree) to 4 (Strongly Disagree). Higher scores indicate more positive perceptions, and lower scores indicate more negative perceptions. The scale demonstrated good internal consistency, α = .88 in previous research (Stein and Riessman 1980). In the current sample the total impact scale score had excellent internal consistency (α = .90).

Coping

Coping was measured using the 28-item Brief COPE (Carver 1997). The items encompass several different ways of coping including: active avoidance, problem-focused, positive coping, and denial/religion (Hastings et al. 2005). Items are summed to obtain a total score for each subscale. Items are rated on a 4-point Likert scale of 1 (I haven't been doing this at all) to 4 (I've been doing this a lot). Higher scores on each subscale indicate greater use of such coping strategies. The internal consistency of the subscales in previous research has ranged from acceptable α = .68 to good α = .82 (Hastings et al. 2005). However, in the current sample, the positive coping (α = .38) and denial/religious coping (α = − .03) items were excluded from the analysis given their low internal consistency and little to no endorsement by participants. Similarly, problem-focused and active avoidance coping showed poor internal consistency, thus items 5, 6, 9, 16, 18, 21, 25 were omitted yielding acceptable internal consistency for problem-focussed (α = .71; using items 16, 26, 19, 21, 7, 14, 2, 10, and 23) and active avoidance (α = .79; using items 11, 4, 13, and 26).

Parenting Stress

Parenting stress was measured using parental distress subscale of the Parenting Stress Index: Short Form (PSI-SF; Abidin and Brunner 1995). The short form was modified from the original Parenting Stress Index (Abidin and Abidin, 1990), and has 36 items divided into three subscales: parental distress, parent child dysfunctional interaction, and difficult child. Items can be summed to obtain a total score of parenting stress and are scored on a 5-point Likert scale ranging from "Strongly agree" to "Strongly disagree", where higher scores indicate more parenting stress. The current study only used the parental distress subscale in line with previous research due to potential overlap between child behaviour as a predictor and dependent variable if the full scale were used (McStay et al. 2014; Minnes et al. 2015). Previous research found good to excellent internal consistency for the Parental Distress subscale (α = .85; McStay et al. 2014) (α = .91; Minnes et al. 2015). In the current sample internal consistency was excellent (α = .90).

Quality of Life

Quality of life was measured using the 28-item Quality of Life in Autism Scale (Eapen et al. 2014). This scale was developed for parents of children with autism aged 2–18 years. Items aim to measure parental perception of quality of life, and are scored on a 5-point Likert scale ranging from 1 (not very much) to 5 (very much), with a non-applicable option also included. Higher scores indicate better parent-reported quality of life. Only applicable items were scored from 1 to 5, whereas non-applicable items were scored as 0. This approach of providing an option of not applicable and scoring as 0 was also used in previous ASD survey research using a different scale (Paynter et al. 2013). The internal consistency of the scale is excellent (α = .96) as validated in an Australian sample of mothers with predominantly young children with ASD (Eapen et al. 2014). In the current sample, internal consistency was good (α = .84).

Procedure

Participants were recruited by contacting clinicians within Australia specialising in ASD whom shared the survey with their parent clients. The survey was also advertised on social media platforms including Australian parent Facebook groups from multiple states ranging from 181 up to 2192 members. The survey was also advertised on ASD organisation websites and pages including Autism Queensland and the Australasian Society for Autism Research. Given that majority of Australians have internet access (69.8%) (Australian Bureau of Statistics 2018), it is likely that most parents could have accessed the survey. Participants provided

their postcodes to ensure they resided within Australia. Participants were presented with an information sheet, and were informed that commencing the survey would indicate their consent.

Data Analysis

To address the research question of whether self-compassion will be a unique and significant predictor parenting stress and quality of life, two multiple regression analyses were conducted; one for parenting stress, and one for quality of life. To reduce the number of predictor variables and screen for collinearity, data were first screened using zero-order correlations between possible predictors and parenting stress, and quality of life (see Table 3). Next, a hierarchical multiple regression was conducted by first adding significant double ABCX variables, followed by the negative and positive dimensions of self-compassion. For the model involving parenting stress, the significant predictor variables were: child ASD symptoms, self-injurious behaviour severity, aggressive behaviour frequency and severity, stereotyped behaviour frequency, pile up of demands, social support, active avoidance coping, parental perceptions, and both dimensions of self-compassion. For the model involving quality of life, the significant predictor variables were: child ASD symptoms, aggressive behaviour severity, stereotyped behaviour frequency, pile up of demands, social support, active avoidance coping, parental self-efficacy, parental perceptions, and both dimensions of self-compassion. At step two, positive and negative dimensions of self-compassion were added for both models, with all other variables that showed significant zero order correlations entered at step 1. Thus, at step two, the model was expanded by the addition of the positive and negative dimensions of self-compassion.

Table 3 Descriptive statistics for predictor variables (N = 139)

Measure	Mean	Standard deviation	Range
Child ASD symptoms			
Social communication questionnaire	20.46	5.57	11–36
Child challenging behaviour			
Self-injurious behaviour frequency	5.20	4.80	0–22
Self-injurious behaviour severity	3.10	3.22	0–19
Aggressive behaviour frequency	12	8.80	0–35
Aggressive behaviour severity	7.86	6.43	0–33
Stereotyped behaviour frequency	9.56	5.70	0–26
Pile up of demands	16.57	14.88	0–70
Social support			
Total	4.84	1.57	1–8
Coping			
Active avoidance	7.38	2.77	4–16
Problem-focused	24.04	5.19	11–36
Parental perceptions	53.24	9.76	29–76
Parental self-efficacy	15.66	5.89	6–33
Self-compassion			
Positive dimensions	2.92	.75	1.31–4.77
Negative dimensions	3.22	.82	1–4.85
Total scale score	2.85	.70	1.38–4.62

Results

Data Screening

There was no missing data as the survey was offered online and participants were unable to proceed unless they responded to every question. Assumptions for a multiple regression analysis were checked. First, normality was checked for both dependent variables, parenting stress and quality of life. According to the Shapiro–Wilk's test, normality was violated for parenting stress ($p = .037$), but not for quality of life ($p = .357$). However, given the relatively large sample size, as per recommendations (e.g., Field 2009), Q–Q plots were inspected and data were approximately normally distributed with means around the middle of the distribution and close to the median value. For parenting stress, standardised residuals were within normal range (− 2.78 to 2.41), and Cook's D was below 1 (maximum = 0.09). For quality of life, the data was normally distributed according to the histogram, Q–Q plot, and Shapiro–Wilk's test of normality ($p = .15$). Additionally, standardised residuals were within normal range (− 2.24 to 2.54), and Cook's D was below 1 (maximum = .09). Thus it was deemed that the assumptions to conduct the regression were satisfied and no violations were detected. As only 13.7% of the sample were fathers, analyses were conducted with/without their inclusion, and as inclusion did not substantively alter the results, their data were retained.

Parenting Stress and Quality of Life

Approximately half (52.5%) of parents scored above the cut-off for clinically significant level of parenting stress (91st percentile and above) and 21.3% of parents scored above the cut-off for high parenting stress relative to normative data (81st–90th). The mean level of parenting stress was 38.57 ($SD = 10.91$) which is within the high parenting stress percentile (with the raw score for the clinical percentile 40 and above). Parents reported a mean quality of life score of 72.24 ($SD = 13.88$). Descriptive statistics are displayed in Table 4. Parenting stress and quality of life shared a strong, negative correlation ($r = -.72$).

Table 4 Correlations between double ABCX model hypothesised predictors and parent outcomes (stress and quality of life)

	Parenting stress	Quality of life
Child ASD symptoms	.30**	− .24**
Child challenging behaviour		
Self-injurious behaviour frequency	0.08	− 0.01
Self-injurious behaviour severity	.19*	− 0.06
Aggressive behaviour frequency	.17*	− 0.15
Aggressive behaviour severity	.33**	− .22*
Stereotyped behaviour frequency	.18*	− .19*
Pile up of demands	.19*	− .32**
Social support		
Total	− .53**	.62*
Coping		
Active avoidance	.51**	− .25**
Problem-focused	− 0.1	0.04
Parental perceptions	.75**	− .55**
Parental self-efficacy	− .29**	.24**
Self-compassion		
Self-compassion ~ positive dimensions	− .41**	.44**
Self-compassion ~ negative dimensions	.50**	− .36**

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

Predictors of Parenting Stress

At step one, child ASD symptoms, self-injurious behaviour severity, aggressive behaviour frequency and severity, stereotyped behaviour frequency, pile up of demands, social support, active avoidance coping, parental self-efficacy and parental perceptions were entered as they were the significant double ABCX model predictor variables associated with parenting stress. These predicted a significant 64.3% of the variance in parenting stress (F_{change} (10, 125) = 22.49, $p < .001$). Statistically significant predictors at step one in order were parental perceptions ($sr^2 = .23$), social support ($sr^2 = .03$), and parental self-efficacy ($sr^2 = .02$). The negative and positive dimensions of self-compassion added at step two accounted for a significant additional 11.0% of the variance in parenting stress (F_{change} (2123) = 27.39, $p < .001$). At step two, significant predictors were parental perceptions ($sr^2 = .18$), self-compassion negative dimension ($sr^2 = .07$), and social support ($sr^2 = .03$). The total model predicted 75.3% of the variance in parenting stress. Model coefficients are presented in Table 5.

Predictors of Quality of Life

At step one, child symptoms, aggressive behaviour severity, stereotyped behaviour frequency, pile up of demands, social support, active avoidance coping, parental self-efficacy, and parental perceptions were entered and accounted for a significant 49.9% of the variance in quality of life (F_{change} (8, 109) = 13.55, $p < .001$). At step one, significant predictors were social support ($sr^2 = .12$), parental perception ($sr^2 = .07$), and pile up of demands ($sr^2 = .03$). Self-compassion added significantly to the prediction of variance at step two and accounted for 8.9% of the variance in quality of life (F_{change} (2107) = 11.57, $p < .001$). At step two, significant predictors were social support ($sr^2 = .10$), parental perception ($sr^2 = .05$), self-compassion positive dimension ($sr^2 = .03$), and pile up of demands ($sr^2 = .03$). The total model predicted 58.8% of the variance in quality of life scores. Model coefficients are presented in Table 6.

Discussion

We investigated whether self-compassion would be a unique predictor of parenting stress and quality of life once variance explained by the double ABCX model variables was controlled. The first hypothesis, which stated that parenting stress would be elevated in parents of children with ASD, was supported, as over half of the parents reported parenting stress levels within the clinically significant range, with the mean rating in the elevated range. This finding is consistent with previous research (Hayes and Watson 2013). As in previous research, parents of children with ASD also tended to report lower quality of life compared to normative data (Eapen et al. 2014; Vasilopoulou and Nisbet 2016). These findings highlight the importance of investigating factors that may mitigate parenting stress and/or improve their quality of life.

The second hypothesis, which states that the expanded model would account for a significant amount of the variance in both parenting stress and quality of life, was supported. The expanded model, with the inclusion of both dimensions of self-compassion, explained over half of the variance in quality of life and over three quarters of the variance in parenting stress. Consistent with previous research, the current study has demonstrated the ability of the double ABCX model to predict important parental outcomes (Bristol 1987; Davis and Carter 2008; Hastings et al. 2005; McStay et al. 2014; Saloviita et al. 2003; Stuart and McGrew 2009). However, different predictors seem to explain parenting stress and quality of life.

In respect to parenting stress, the significant predictors identified in order of strength at step one were parental perceptions, social support and parental self-efficacy. This is consistent with previous research, which found that parental perceptions, social support, and parental self-efficacy significantly predict parenting stress (Benson 2006; Boyd 2002; Ekas et al. 2010; Giallo et al. 2013; Paynter et al. 2013; Stuart and McGrew 2009). At step two, the

Table 5 Standardised coefficients for predictor variables for parenting stress as dependent variable (n = 139)

	B	t	*p*	*r*	*sr*	R^2
Step 1						.643
Child ASD symptoms	− .03	− .47	.640	.02	− .03	
Child challenging behaviour						
Self-injurious behaviour severity	− .03	− .46	.648	.17	− .02	
Aggressive behaviour frequency	− .12	− 1.28	.203	.14	− .07	
Aggressive behaviour severity	.13	1.28	.203	.32	.07	
Stereotyped behaviour frequency	− .08	− 1.38	.169	.19	− .07	
Pile up of demands	.06	1.01	.315	.20	.05	
Social support	− .21	− 3.36	.001**	− .51	− .18	
Coping						
Active avoidance	.04	.60	.548	.31	.03	
Self-efficacy	− .13	− 2.41	.021*	− .29	− .13	
Parental perceptions	.62	8.91	.000***	.76	.48	
Step 2						.753
Child ASD symptoms	− .03	− .65	.519	.02	− .03	
Child challenging behaviour						
Self-injurious behaviour severity	.00	.08	.939	.17	.01	
Aggressive behaviour frequency	− .08	− 1.01	.316	.14	− .05	
Aggressive behaviour severity	.10	1.88	.282	.32	.05	
Stereotyped behaviour frequency	− .10	− 1.94	.054	.19	− .09	
Pile up of demands	− .04	− .74	.462	.20	− .03	
Social support	− .22	− 4.05	.000***	− .51	− .18	
Coping						
Active avoidance	.00	.01	.990	.31	.00	
Self-efficacy	− .06	− 1.23	.223	− .29	− .06	
Parental perceptions	.56	9.93	.000***	.76	.42	
Self-compassion						
Self-compassion positive dimensions	− .02	− .24	.810	− .43	− .01	
Self-compassion negative dimensions	.37	5.92	.000***	.56	.27	

B beta standardised coefficient, *p* significance level, *r* zero-order correlation, *sr* semi-partial correlation
*p < .05, **p < .01, ***p ≤ .001

negative and positive dimensions of self-compassion significantly added to the prediction of parenting stress, resulting in parental perceptions, social support, and the negative dimension of self-compassion as the only significant predictors of parenting stress. In support of the third hypothesis, the addition of self-compassion added unique variance to the model. Further, the addition of the negative dimension of self-compassion reduced the amount of variance explained by parental self-efficacy to a non-significant level, and also reduced the amount of variance explained by parental perceptions. This could indicate that the negative dimension of self-compassion, which includes isolation, over-identification, and self-judgement partially explains the levels of self-efficacy in the context of parenting. Likewise, the negative dimension of self-compassion could also partially explain the greater perceived negative impact parenting a child with ASD has on the family.

In terms of quality of life, a different pattern emerged. The strongest significant predictors at the first step were social support, parental perceptions, and pile up of demands. In support of the third hypothesis, self-compassion added a unique amount of the variance to the prediction of quality of life. Once self-compassion was added, significant predictors of quality of life included in the model were social support, parental perceptions, the positive dimension of self-compassion, and pile up of demands. The final model shows that parents with greater social support, more positive perceptions of parenting their child, greater scores on the positive dimension of self-compassion (i.e., self-kindness, sense of common humanity, and mindfulness), and less non-child related stress, tend to report greater quality of life. Such findings are consistent with previous research, which suggests social support (Pozo and Sarria 2014), and parental

Table 6 Standardised coefficients for predictor variables for quality of life as dependent variable (n = 139)

Quality of life in autism questionnaire						
	Quality of life					
	B	t	*p*	*r*	*sr*	R^2
Step 1						.499
Child ASD symptoms	− .01	− .16	.877	− .07	− .01	
Child challenging behaviour						
Aggressive behaviour severity	− .00	.06	.955	− .26	.00	
Stereotyped behaviour frequency	− .02	− .22	.828	− .18	− .02	
Pile up of demands	− .20	− 2.71	.008**	− .28	− .18	
Social support	.40	5.15	.000***	.58	.35	
Coping						
Active avoidance	.05	.67	.504	− .21	.05	
Self-efficacy	.06	.86	.392	.24	.06	
Parental perceptions	− .36	− 3.91	.000***	− .57	− .27	
Step 2						.588
Child ASD symptoms	.03	.49	.626	− .07	.03	
Child challenging behaviour						
Aggressive behaviour severity	.02	.33	.741	− .26	.02	
Stereotyped behaviour frequency	− .03	− .49	.628	− .18	− .03	
Pile up of demands	− .18	− 2.52	.013**	− .28	− .16	
Social support	.37	5.12	.000***	.58	.32	
Coping						
Active avoidance	.03	.39	.695	− .21	.02	
Self-efficacy	− .03	− .39	.701	.24	− .02	
Parental perceptions	− .30	− 3.57	.001**	− .57	− .22	
Self-compassion						
Self-compassion positive dimensions	.25	2.71	.008**	.47	.17	
Self-compassion negative dimensions	− .11	− 1.16	.248	− .46	− .07	

B beta standardised coefficient, *p* significance level, *r* zero-order correlation, *sr* semi-partial correlation
*p < 05, **p < .01, ***p ≤ .001

perceptions (McStay et al. 2014) are important predictors of family quality of life.

Previous research has mostly used the total scale score on the self-compassion scale, so the separate analysis of the negative and positive dimensions of self-compassion as suggested by Krägeloh (2011), within an established model is novel to the literature. The non-perfect correlation between parenting stress and quality of life, and the differences in their predictors indicate that while individuals can be stressed, they may not necessarily experience lower quality of life. These findings are consistent with the view that well-being/adaptation is not merely the absence of negative outcomes, but can also be impacted by positive outcomes. Furthermore, these findings reinforce the need to focus on positive outcomes such as the individual quality of life, in understanding psychological adjustment (Cappe et al. 2011), rather than simply emphasising negatives such as stress and mental health, which has tended to be the main focus in much of the previous research (Hayes and Watson 2013).

Understanding the discrepancies between the predictors of parenting stress and quality of life is important. For example, non-child related life stress may impact upon individual quality of life without influencing parenting related stress. Specifically, parenting stress could be more specific to the context of raising a child, rather than influenced as strongly by more general life stressors. Moreover, the negative dimension of self-compassion (i.e., isolation, over-identification, and self-judgement) may correspond to psychopathological outcomes such as parenting stress, whereas the positive dimension of self-compassion (common humanity, mindfulness, and self-kindness) is related to positive and adaptive outcomes such as quality of life. Such findings are novel, yet consistent with previous research of parents of children with ASD (Neff and Faso 2015; Wong et al. 2016) and parents of children with other developmental disabilities (Robinson et al. 2018). The current study expanded on previous research by analysing the negative and positive dimensions of self-compassion independently,

which gave us a better indication of their individual influence within the model. The findings presented here suggest that the negative dimension of self-compassion exacerbates the impact of child symptoms and behaviour, on parenting stress. In contrast, positive dimensions of self-compassion act as a buffer between the child's symptoms and behaviour, and parental quality of life. Previous research supports this notion, suggesting that self-compassion can act as a buffer in predicting psychological outcomes in parents of children with ASD (Wong et al. 2016), and parents of children with developmental disabilities (Robinson et al. 2018). Consistent with Wong et al. (2016), our findings suggest that the positive and negative dimensions of self-compassion may serve as protective factors against the effect of child characteristics in predicting quality of life and parenting stress, respectively.

Limitations and Future Research

We provide a novel contribution to the literature on self-compassion in parents of children with ASD, although limitations are acknowledged. First, this study is of a cross-sectional nature, thus the direction of causality between self-compassion and parental outcomes cannot be confirmed. Clearly longitudinal studies to confirm causality are needed. In addition, though there is sufficient evidence to suggest that interventions to increase self-compassion may be beneficial, evaluating such interventions and their impacts on parental outcomes is warranted. Second, measurement of coping was limited through use of the Brief COPE, which showed low internal consistency with almost none of the parents in this study endorsing items that correspond to the positive coping and religious/denial coping subscales. This suggests that at least in the current Australian sample, such coping strategies are not used by many parents. Since this is consistent with previous research that examined the religious/denial coping subscale (Krägeloh 2011), future research should consider developing a measure of coping better suited to the strategies used in this population. Third, consistent with much of the previous literature in the area (Manning et al. 2011; Paynter et al. 2013; Pozo and Sarria 2014), this research relied on self-reports and quantitative data. Thus future studies may wish to employ a qualitative approach to gather richer data on parental experiences of self-compassion that are not covered by questionnaire items. Fourth, the use of social media for recruitment could be a source of biases, as mothers and fathers in the same groups may know each other or share similar views and could have discussed their responses to the survey. Therefore, future research should aim to employ more randomised recruitment methods. Fifth, given that no comparison group was included, it is unclear whether the findings of the current study are unique to parents of children with ASD, or whether they may generalise to other parents. Future research should include a comparison group to investigate this further. Understanding whether findings are unique to parents of children with ASD can inform whether specific interventions are needed for parents of children with ASD, or whether similar supports may be useful for all parents, particularly given that child related variables were not unique predictors of outcomes in this study.

Implications and Conclusion

This research has provided preliminary evidence of the additional contribution of self-compassion on parental outcomes beyond established predictors from the double ABCX model. The finding that the two dimensions of self-compassion independently predicted a significant portion of both parenting stress and quality of life is noteworthy. Given that self-compassion is considered to be a modifiable trait (Benn et al. 2012), it may be targeted in parent interventions to reduce parenting stress or improve quality of life. Such interventions also have potential to reduce the significant challenges related to parenting stress and quality of life such as depression and anxiety (Bitsika and Sharpley 2004; Bitsika et al. 2013), as well as improving child outcomes (Bekhet et al. 2012; Dabrowska and Pisula 2010; Osborne et al. 2008; Osborne and Reed 2009). Thus designing new interventions that incorporate theoretically relevant components to help parents reduce their stress and improve their quality of life is essential as they may also indirectly support the child.

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Compliance with Ethical Standards

Conflict of interest There was no conflict of interest in conducting this research.

References

Abidin, R. R., & Abidin, R. R. (1990). *Parenting Stress Index (PSI)* (p. 100). Charlottesville: Pediatric Psychology Press.

Abidin, R. R., & Brunner, J. F. (1995). Development of a parenting alliance inventory. *Journal of Clinical Child Psychology, 24*(1), 31–40. https://doi.org/10.1207/s15374424jccp2401_4.

Allen, A. B., & Leary, M. R. (2010). Self-compassion, stress, and coping. *Social and Personality Psychology Compass*, *4*(2), 107–118. https://doi.org/10.1111/j.1751-9004.2009.00246.x.

Allen, C. W., Silove, N., Williams, K., & Hutchins, P. (2007). Validity of the social communication questionnaire in assessing risk of autism in preschool children with developmental problems.

Journal of Autism and Developmental Disorders, 37(7), 1272–1278. https://doi.org/10.1007/s10803-006-0279-7.

Australian Bureau of Statistics. (2018). *Internet activity, Australia, cat. no. 8153.0.* Retrieved February 28, 2018 from https://www.abs.gov.au/ausstats/abs@.nsf/mf/8153.0/.

Barton, J. M. (2016). *Investigating the psychometric properties of the self-compassion scale: Using Confirmatory and Exploratory Factor Models* (Unpublished master's thesis). University of North Florida, Florida (FLA), USA.

Bebko, J. M., Konstantareas, M. M., & Springer, J. (1987). Parent and professional evaluations of family stress associated with characteristics of autism. *Journal of Autism and Developmental Disorders, 17*(4), 565–576. https://doi.org/10.1007/BF01486971.

Bekhet, A. K., Johnson, N. L., & Zauszniewski, J. A. (2012). Resilience in family members of persons with autism spectrum disorder: A review of literature. *Issues in Mental Health Nursing, 33*(10), 650–656. https://doi.org/10.3109/01612840.2012.671441.

Benn, R., Akiva, T., Arel, S., & Roeser, R. W. (2012). Mindfulness training effects for parents and educators of children with special needs. *Developmental Psychology, 48*(5), 1476–1487. https://doi.org/10.1037/a0027537.

Benson, P. R. (2006). The impact of child symptom severity on depressed mood among parents of children with ASD: The mediating role of stress proliferation. *Journal of Autism and Developmental Disorders, 36*(5), 685–695. https://doi.org/10.1007/s10803-006-0112-.

Benson, P. R. (2010). Coping, distress, and well-being in mothers of children with autism. *Research in Autism Spectrum Disorders, 4*(2), 217–228. https://doi.org/10.1016/j.rasd.2009.09.008.

Berument, S. K., Rutter, M., Lord, C., Pickles, A., & Bailey, A. (1999). Autism screening questionnaire: Diagnostic validity. *The British Journal of Psychiatry, 175*(5), 444–451. https://doi.org/10.1192/bjp.175.5.444.

Bitsika, V., & Sharpley, C. F. (2004). Stress, anxiety and depression among parents of children with autism spectrum disorders. *Australian Journal of Guidance and Counseling, 14*(2), 151–161. https://doi.org/10.1017/S1037291100002466.

Bitsika, V., Sharpley, C. F., & Bell, R. (2013). The buffering of resilience upon stress, anxiety and depression in parents of a child with an autism spectrum disorder. *Journal of Developmental and Physical Disabilities, 25*(5), 533–543. https://doi.org/10.1007/s10882-013-9333-5.

Boyd, B. A. (2002). Examining the relationship between stress and lack of social support in mothers of children with autism. *Focus on Autism and Other Developmental Disabilities, 17*(4), 208–215. https://doi.org/10.1177/10883576020170040301.

Bristol, M. M. (1987). Mothers of children with autism or communication disorders: Successful adaptation and the double ABCX model. *Journal of Autism and Developmental Disorders, 17*(4), 469–486. https://doi.org/10.1007/bf01486964.

Cappe, E., Wolff, M., Bobet, R., & Adrien, J. L. (2011). Quality of life: A key variable to consider in the evaluation of adjustment in parents of children with autism spectrum disorders and in the development of relevant support and assistance programmes. *Quality of Life Research, 20*(8), 1279–1294. https://doi.org/10.1007/s11136-011-9861-3.

Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the brief cope. *International Journal of Behavioral Medicine*, *4*(1), 92–100. Retrieved November 20, 2017, from http://www.psy.miami.edu/.

Chawarska, K., Klin, A., Paul, R., & Volkmar, F. (2007). Autism spectrum disorder in the second year: Stability and change in syndrome expression. *Journal of Child Psychology and Psychiatry, 48*(2), 128–138. https://doi.org/10.1111/j.1469-7610.2006.01685.x.

Costa, J., Marôco, J., Pinto-Gouveia, J., Ferreira, C., & Castilho, P. (2015). Validation of the psychometric properties of the Self-compassion Scale. Testing the factorial validity and factorial mindfulness invariance of the measure among borderline personality disorder, anxiety disorder, eating disorder and general populations. *Clinical Psychology Psychotherapy, 23*(5), 460–468. https://doi.org/10.1002/cpp.1974.

Dabrowska, A., & Pisula, E. (2010). Parenting stress and coping styles in mothers and fathers of pre-school children with autism and Down syndrome. *Journal of Intellectual Disability Research, 54*(3), 266–280. https://doi.org/10.1111/j.1365-2788.2010.01258.x.

Davis, N. O., & Carter, A. S. (2008). Parenting stress in mothers and fathers of toddlers with autism spectrum disorders: Associations with child characteristics. *Journal of Autism and Developmental Disorders, 38*(7), 1278–1291. https://doi.org/10.1007/s10803-007-0512-z.

Duncan, L. G., Coatsworth, J. D., & Greenberg, M. T. (2009). A model of mindful parenting: Implications for parent–child relationships and prevention research. *Clinical Child and Family Psychology Review, 12*(3), 255–270. https://doi.org/10.1007/s10567-009-0046-3.

Eapen, V., Črnčec, R., Walter, A., & Tay, K. P. (2014). Conceptualisation and development of a quality of life measure for parents of children with autism spectrum disorder. *Autism Research and Treatment, 2014,* 1–11. https://doi.org/10.1155/2014/924182.

Eaves, L. C., Wingert, H., & Ho, H. H. (2006). Screening for autism: Agreement with diagnosis. *Autism, 10*(3), 229–242. https://doi.org/10.1177/1362361306063288.

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), 1274–1284. https://doi.org/10.1007/s10803-010-0986-y.

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). Los Angeles: Sage.

Giallo, R., Wood, C. E., Jellett, R., & Porter, R. (2013). Fatigue, well-being and parental self-efficacy in mothers of children with an autism spectrum disorder. *Autism, 17*(4), 465–480. https://doi.org/10.1177/1362361311416830.

Hastings, R. P., & Brown, T. (2002). Behavior problems of children with autism, parental self-efficacy, and mental health. *American Journal on Mental Retardation*, *107*(3), 222–232. Retrieved November 20, 2017, from http://www.aspires-relationships.com/hastings6.pdf.

Hastings, R. P., Kovshoff, H., Brown, T., Ward, N. J., Espinosa, F. D., & Remington, B. (2005a). Coping strategies in mothers and fathers of preschool and school-age children with autism. *Autism, 9*(4), 377–391. https://doi.org/10.1177/1362361305056078.

Hastings, R. P., Kovshoff, H., Ward, N. J., Degli Espinosa, F., Brown, T., & Remington, B. (2005b). Systems analysis of stress and positive perceptions in mothers and fathers of pre-school children with autism. *Journal of Autism and Developmental Disorders, 35*(5), 635–644. https://doi.org/10.1007/s10803-005-0007-8.

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*(3), 629–642. https://doi.org/10.1007/s10803-012-1604-y.

Hobson, C. J., & Delunas, L. (2001). National norms and life-event frequencies for the revised social readjustment rating scale. *International Journal of Stress Management, 8*(4), 299–314. https://doi.org/10.1023/A:1017565632657.

Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research, 11*(2), 213–218. https://doi.org/10.1016/0022-3999(67)90010-4.

Johnston, C., & Mash, E. J. (1989). A measure of parenting satisfaction and efficacy. *Journal of Clinical Child Psychology, 18*(2), 167–175. https://doi.org/10.1207/s15374424jccp1802_8.

Krägeloh, C. U. (2011). A systematic review of studies using the Brief COPE: Religious coping in factor analyses. *Religions, 2*(3), 216–246. https://doi.org/10.3390/rel2030216.

Kuhn, J. C., & Carter, A. S. (2006). Maternal self-efficacy and associated parenting cognitions among mothers of children with autism. *American Journal of Orthopsychiatry, 76*(4), 564–575. https://doi.org/10.1037/0002-9432.76.4.564.

López, A., Sanderman, R., Smink, A., Zhang, Y., van Sonderen, E., Ranchor, A., et al. (2015). A reconsideration of the Self-compassion Scale's total score: Self-compassion versus self-criticism. *PLoS ONE*. https://doi.org/10.1371/journal.pone.0132940.

Lord, C., Risi, S., DiLavore, P. S., Shulman, C., Thurm, A., & Pickles, A. (2006). Autism from 2 to 9 years of age. *Archives of General Psychiatry, 63*(6), 694–701. https://doi.org/10.1001/archpsyc.63.6.694.

Mandell, D. S., Novak, M. M., & Zubritsky, C. D. (2005). Factors associated with age of diagnosis among children with autism spectrum disorders. *Pediatrics*, *116*(6), 1480–1486. Retrieved November 20, 2017, from http://pediatrics.aappublications.org/content/116/6/1480.short.

Manning, M. M., Wainwright, L., & Bennett, J. (2011). The double ABCX model of adaptation in racially diverse families with a school-age child with autism. *Journal of Autism and Developmental Disorders, 41*(3), 320–331. https://doi.org/10.1007/s10803-010-1056-1.

Matson, J. L., & Horovitz, M. (2010). Stability of autism spectrum disorders symptoms over time. *Journal of Developmental and Physical Disabilities, 22*(4), 331–342. https://doi.org/10.1007/s10882-010-9188-y.

McCubbin, H. I., & Patterson, J. M. (1983). The family stress process: The double ABCX model of adjustment and adaptation. *Marriage and Family Review, 6*(1–2), 7–37. https://doi.org/10.1300/J002v06n01_02.

McStay, R. L., Trembath, D., & Dissanayake, C. (2014). Stress and family quality of life in parents of children with autism spectrum disorder: Parent gender and the double ABCX model. *Journal of Autism and Developmental Disorders, 44*(120), 3101–3118. https://doi.org/10.1007/s10803-014-2178-7.

Minnes, P., Perry, A., & Weiss, J. A. (2015). Predictors of distress and well-being in parents of young children with developmental delays and disabilities: The importance of parent perceptions. *Journal of Intellectual Disability Research, 59*(6), 551–560. https://doi.org/10.1111/jir.12160.

Moh, T. A., & Magiati, I. (2012). Factors associated with parenting stress and satisfaction during the process of diagnosis of children with autism spectrum disorders. *Research in Autism Spectrum Disorders, 6*(1), 293–303. https://doi.org/10.1016/j.rasd.2011.05.011.

Moreira, H., Gouveia, M. J., Carona, C., Silva, N., & Canavarro, M. C. (2014). Maternal attachment and children's quality of life: The mediating role of self-compassion and parenting stress. *Journal of Child and Family Studies, 24*(8), 2332–2344. https://doi.org/10.1007/s10826-014-0036-z.

Neff, K. D. (2003). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*(3), 223–250. https://doi.org/10.1080/15298860309027.

Neff, K. D., & Faso, D. J. (2015). Self-compassion and well-being in parents of children with autism. *Mindfulness, 6*(4), 938–947. https://doi.org/10.1007/s12671-014-0359-2.

Neff, K. D., & Germer, C. K. (2013). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of Clinical Psychology, 69*(1), 28–44. https://doi.org/10.1002/jclp.21923.

Norris, M., & Lecavalier, L. (2010). Screening accuracy of level 2 autism spectrum disorder rating scales: A review of selected instruments. *Autism, 14*(4), 263–284. https://doi.org/10.1177/1362361309348071.

Olson, D. H., Sprenkle, D. H., & Russell, C. S. (1979). Circumplex model of marital and family systems: I. Cohesion and adaptability dimensions, family types, and clinical applications. *Family Process*, *18*(1), 3–28. Retrieved November 20, 2017, from http://www.sciencedirect.com.

Osborne, L. A., McHugh, L., Saunders, J., & Reed, P. (2008). Parenting stress reduces the effectiveness of early teaching interventions for autistic spectrum disorders. *Journal of Autism and Developmental Disorders, 38*(6), 1092–1103. https://doi.org/10.1007/s10803-007-0497-7.

Osborne, L. A., & Reed, P. (2009). The relationship between parenting stress and behaviour problems of children with autistic spectrum disorders. *Exceptional Children, 76*(1), 54–73. https://doi.org/10.1177/001440290907600103.

Pakenham, K. I., Samios, C., & Sofronoff, K. (2005). Adjustment in mothers of children with Asperger syndrome: An application of the double ABCX model of family adjustment. *Autism*, *9*(2), 191–212. https://doi.org/10.1177/1362361305049033.

Paynter, J., Riley, E., Beamish, W., Davies, M., & Milford, T. (2013). The double ABCX model of family adaptation in families of a child with an autism spectrum disorder attending an Australian early intervention service. *Research in Autism Spectrum Disorders, 7*(10), 1183–1195. https://doi.org/10.1016/j.rasd.2013.07.006.

Pozo, P., & Sarria, E. (2014). A global model of stress in parents of individuals with autism spectrum disorders (ASD). *Anales de Psicología, 30*(1), 180–191. https://doi.org/10.6018/analesps.30.1.140722.

Robinson, S., Hastings, R. P., Weiss, J. A., Pagavathsing, J., & Lunsky, Y. (2018). Self-compassion and psychological distress in parents of young people and adults with intellectual and developmental disabilities. *Journal of Applied Research in Intellectual Disabilities, 31*(3), 454–458. https://doi.org/10.1111/jar.12423.

Rogers, H., & Matthews, J. (2004). The parenting sense of competence scale: Investigation of the factor structure, reliability, and validity for an Australian sample. *Australian Psychologist, 39*(1), 88–96. https://doi.org/10.1080/00050060410001660380.

Rojahn, J., Rowe, E. W., Sharber, A. C., Hastings, R., Matson, J. L., Didden, R.,… & Dumont, E. L. M. (2012). The behavior problems inventory-short form for individuals with intellectual disabilities: Part I: Development and provisional clinical reference data. *Journal of Intellectual Disability Research*, *56*(5), 527–545. https://doi.org/10.1111/j.1365-2788.2011.01507.

Rutter, M., Bailey, A., & Lord, C. (2003). *The social communication questionnaire: Manual*. Los Angeles: Western Psychological Services.

Saloviita, T., Itälinna, M., & Leinonen, E. (2003). Explaining the parenting stress of fathers and mothers caring for a child with intellectual disability: A double ABCX model. *Journal of Intellectual Disability Research, 47*(4–5), 300–312. https://doi.org/10.1046/j.1365-2788.2003.00492.

Shattuck, P. T., Durkin, M., Maenner, M., Newschaffer, C., Mandell, D. S., Wiggins, L.,… & Baio, J. (2009). Timing of identification among children with an autism spectrum disorder: Findings from a population-based surveillance study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *48*(5), 474–483. https://doi.org/10.1097/chi.0b013e31819b3848.

Smith, L. E., Seltzer, M. M., Tager-Flusberg, H., Greenberg, J. S., & Carter, A. S. (2008). A comparative analysis of well-being and coping among mothers of toddlers and mothers of adolescents with ASD. *Journal of Autism and Developmental Disorders, 38*(5), 876–889. https://doi.org/10.1007/s10803-007-0461-6.

Stein, R. E., & Riessman, C. K. (1980). The development of an impact-on-family scale: Preliminary findings. *Medical Care, 18*(4), 465–472. Retrieved November 20, 2017, from http://www.jstor.org.

Stuart, M., & McGrew, J. H. (2009). Caregiver burden after receiving a diagnosis of an autism spectrum disorder. *Research in Autism Spectrum Disorders, 3*(1), 86–97. https://doi.org/10.1016/j.rasd.2008.04.006.

Tóth-Király, I., Bőthe, B., & Orosz, G. (2017). Exploratory structural equation modeling analysis of the self-compassion scale. *Mindfulness, 8*(4), 881–892. https://doi.org/10.1007/s12671-016-0662-1.

Vasilopoulou, E., & Nisbet, J. (2016). The quality of life of parents of children with autism spectrum disorder: A systematic review. *Research in Autism Spectrum Disorders, 23,* 36–49. https://doi.org/10.1016/j.rasd.2015.11.008.

Weiss, J. A., MacMullin, J. A., & Lunsky, Y. (2015). Empowerment and parent gain as mediators and moderators of distress in mothers of children with autism spectrum disorders. *Journal of Child and Family Studies, 24*(7), 2038–2045. https://doi.org/10.1007/s10826-014-0004-7.

Williams, S., Leader, G., Mannion, A., & Chen, J. (2015). An investigation of anxiety in children and adolescents with autism spectrum disorder. *Research in Autism Spectrum Disorders, 10,* 30–40. https://doi.org/10.1016/j.rasd.2014.10.017.

Wong, C. C., Mak, W. W., & Liao, K. Y. H. (2016). Self-compassion: A potential buffer against affiliate stigma experienced by parents of children with autism spectrum disorders. *Mindfulness, 7*(6), 1385–1395. https://doi.org/10.1007/s12671-016-0580-2.

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment*, *52*(1), 30–41. Retrieved November 20, 2017, from http://www.tandfonline.com.