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Parental relationship satisfaction in families of children with Autism Spectrum Disorder
(ASD): A multilevel analysis

Emma Langley, Vasiliki Totsika, Richard P. Hastings

Centre for Educational Development, Appraisal and Research (CEDAR)

University of Warwick

Coventry

CV4 8UW

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Corresponding author:

Emma Langley

Centre for Educational Development, Appraisal and Research (CEDAR)

University of Warwick

Coventry

CV4 8UW

Tel: +44(0)2476523638

Fax: +44 (0)2476524472

Email: e.langley@warwick.ac.uk

Lay abstract

Couples raising a child with Autism Spectrum Disorder (ASD) face many challenges. Research so far has focused on whether these couples are more or less likely to separate or divorce compared to other couples whose children do not have ASD. While this is important, we argue that the quality of the couple relationship is equally- if not more- important to research. Systematic evidence from typical development has shown that the quality of the couple's relationship is related to parenting and also to long-term behavioral and emotional outcomes of children. With this study, we wanted to explore whether mothers and fathers of children with ASD are satisfied with their relationship, and what individual or family-level factors are related to the couple's relationship satisfaction levels. Our data from 146 couples suggested that mothers and fathers agree on how satisfied they are with their relationship, and that relationship satisfaction appears to be related to parents' depressive symptoms and the behavior problems of their child with ASD. The higher the depression levels, the lower the parent reported on the dependent variable relationship satisfaction, for both mothers and fathers. Also, as behavior problems increased, relationship satisfaction decreased. Interestingly, relationship satisfaction was not related to the behavior problems of a sibling, the number of children in the household, or the socioeconomic position of families (SEP). Families include interconnected systems whereby an individual's well-being and behavior can have an impact (positive or negative) on other family dyads such as the couple relationship.

Scientific Abstract

Caring for a child with Autism Spectrum Disorder (ASD) has been linked to a range of negative outcomes for parents but less is known about the putative impact upon the parental couple relationship. We investigated the relationship satisfaction of parents of children with ASD using multilevel modeling. Mothers and fathers (146 couples) reported on their relationship satisfaction, their own well-being, and the behavior problems of the child with ASD and a sibling. Results indicated that mothers and fathers reported similar levels of relationship satisfaction and it was significantly and negatively associated with parental depression and the behavior problems of the child with ASD. Relationship satisfaction was unrelated to the behavior problems of a sibling, the number of children in the household, and family socioeconomic position (SEP). Further longitudinal research that captures a broader range of variables is required to build a theoretical understanding of relationship satisfaction in families of children with ASD. Current evidence suggests that early intervention routes targeting either child behavior problems, parental mental health, or the couple relationship have the potential to benefit inter-connected subsystems within the broader family system.

Key words: Couples, ASD, relationship satisfaction, multilevel modeling

Introduction

Parents of a child with a disability may encounter challenges above and beyond those associated with parenting a typically developing child which may affect their relationship with their partner (Saini et al., 2015). Caring for a child with Autism Spectrum Disorder (ASD) has been linked to a range of negative outcomes for parents such as elevated levels of stress (Eisenhower et al., 2005), depression (Singer, 2006) and burden (Stuart & McGrew, 2009), however, less is known about the couple relationship in families of children with ASD (Saini et al., 2015). The additional practical, emotional and financial demands of raising a child with ASD may change the everyday life and long-term outlook of couples. They may have less time to spend with one another, struggle to cope with their own and their partner's response to having a child with a disability, and face challenges balancing their role as a partner and a parent (Brobst et al., 2009).

There is growing recognition from disability family researchers that systems thinking is required to develop a fuller understanding of the impact of children with developmental disabilities (DD) on family members (Cridland et al., 2014; Hastings, 2016). Family systems theory (FST) is a theoretical framework which emphasises the systematic, inter-relatedness and complexity of family relationships, supporting the view that one family member's experience, such as having a disability, has the potential to affect all others in the family system and all family subsystems (Cox & Paley, 1997; Seligman & Darling, 2007; Smith-Acuña, 2010).

The quality of the couple relationship has been found to be a predictor of parental well-being (Hartley et al., 2016a; Kersh et al., 2006; Norlin & Broberg, 2013), coping (Siman-Tov & Kaniel, 2011) and burden (Hartley et al., 2011) in families of individuals with ASD and DD.

Parental relationship stability

Some researchers have studied the relationship stability (how likely parents are to divorce or separate) of parents of children with ASD (Freedman et al. 2012). Saini et al. (2015) identified 11 studies, two of which directly addressed divorce risk for parents of children with ASD. The first reported that the rate of divorce for parents of children with ASD (23.5%) in the United States was almost twice that of the comparison group (13.8%) (Hartley et al., 2010). The second study explored the occurrence and timing of separation of parents of children with ASD and found that after 10 years 89 out of 119 (74.8%) couples had remained together, suggesting a separation rate of 25.2% (Baeza-Velasco et al., 2013). Clearly more studies are required to further clarify the divorce rates among families of children with ASD, however studying relationship quality among couples allows us to better understand the experiences of parents who remain together and provide better intervention.

Parental relationship quality

Research exploring relationship quality is complicated by the large number of terms used to describe the couple relationship such as relationship (or marital) satisfaction, quality, success, happiness, and dyadic adjustment which are often used interchangeably and captured by a variety of psychometric measures (Fincham & Rogge, 2010). Parents of children with ASD have been found to report lower levels of marital satisfaction compared to parents of children without disabilities (Fisman et al., 1989; Brobst et al., 2009; Lee, 2009; Gau et al., 2012; Santamaria et al., 2012; Sim et al., 2016), and these lower levels of marital satisfaction persist over time (McGrew & Keyes, 2014). Parents of children with ASD have also been found to report lower relationship satisfaction than parents of children with Intellectual Disability (ID) (Kwok et al., 2014), and Down syndrome (Santamaria et al., 2012).

Gender differences in parental relationship satisfaction

It is less clear whether mothers and fathers within the same family report similar or different levels of relationship satisfaction. We might expect in relation to FST that one parent is strongly influenced by the other and thus may report in the same way about their relationship – often referred to as ‘crossover’ (Gerstein et al., 2009). Evidence in relation to ‘co-parenting’ a child with ASD also suggests that the effect on the individual parent may well be shared (Hock et al., 2012). However, there are also reasons to believe that mothers and fathers may report differently about their relationship satisfaction because of reported gender differences in psychological well-being (Jones et al., 2013; Lee, 2009). Gender differences could also reflect the direct impact that raising a child with ASD has on mothers as they are more likely to be the primary caregiver (Hartley et al., 2014) and may have to give up their working role for a caregiving one (Gray, 2003; Twenge et al., 2003). Qualitative evidence also suggests that work and time demands can affect a fathers’ ability to remain an engaged partner (Meadan et al., 2015).

A few studies have explored the within-gender differences in relationship satisfaction of parents of children with ASD using the Dyadic Adjustment Scale (DAS). No significant gender differences have been reported on total DAS scores (Lee, 2009), however some differences have been reported on the degree of consensus (Lee, 2009) and dyadic satisfaction and affection expression (Gau et al., 2012) subscales of the measure.

Correlates of parental relationship satisfaction

Parental mental health

There is evidence to suggest that individual-level factors such as parental mental health may be associated with relationship satisfaction. Parents of children with ASD typically experience elevated levels of stress (Brobst et al., 2009; Shtayermman, 2013) and

depression compared to other groups (Abbeduto et al., 2004; Blacher & McIntyre, 2006; Gau et al., 2012; Lai et al., 2015). A meta-analysis of depression levels for parents of children with DD by Singer (2006) reported higher effect sizes for parents of children with ASD compared to other conditions. Parents of children with ASD with increased levels of psychological well-being have been reported to experience greater marital quality (Benson and Kersh, 2011), whereas lower marital satisfaction has been associated with higher levels of depression (Benson & Kersh, 2011; Shtayermman, 2013; Weitlauf et al., 2014). A study by Timmons et al. (2016) which explored the daily relationship quality of mothers of children with ASD reported that for every unit increase in depressive symptoms, mothers were 1.03 times more likely to engage in conflict with their partner on a given day. It appears that an individual parent's level of well-being could be a significant correlate of parental relationship satisfaction.

Child characteristics

In addition, child characteristics are related to relationship satisfaction. Child behavior problems have been consistently associated with elevated levels of parental psychological distress (Bromley et al., 2004; Estes et al., 2009; Jones et al., 2013); parenting stress (Lecavalier, 2006); and depression (Abbeduto et al., 2004; Orsmond et al., 2007; Benson & Kersh, 2011) for parents of children with ASD and reported to lower relationship satisfaction (Hartley et al., 2012). The needs of a child with behavior problems are likely to place a constant demand on parents and challenge boundaries in the family unit (Tsibidaki, 2013). Maintaining boundaries between particular subsystems (such as couple and parental) is considered important in order to preserve their function, which may be more of a challenge where the behavioral needs of a child take priority (Tsibidaki, 2013).

A study conducted by Robinson and Neece (2015) of parents of children with DD (where 88% had a diagnosis of ASD) showed that parents with the lowest satisfaction had children who displayed the most behavior problems. Correspondingly, Sikora et al. (2013) reported significant associations between externalising behaviors and marriage impact, and Benson and Kersh (2011) reported a negative association between marital quality and child problem behaviors, and a positive association between marital quality and child pro-social behaviors, in parents of children with ASD. There have been some studies that have failed to find an association between child behavior problems and relationship satisfaction (Weitlauf et al., 2014), and the intensity of behavior problems and relationship satisfaction (Brobst et al., 2009), however overall there is a strong case for exploring the relationship between child behavior problems and parental relationship satisfaction.

Other children in the family

When considering the impact of the child with ASD on parental relationship satisfaction it is prudent to also explore any potential impact of sibling behavior, as they too are within the family system. Studies which have explored the impact of having a brother or sister with ASD on sibling outcomes have shown elevated levels of behavioral and emotional problems when compared to comparable normative groups (Hastings, 2003a; Verte et al., 2003). It is therefore imperative to explore whether a sibling's behavior impacts upon their parent's relationship satisfaction.

Demographic variables

At present, there is no specific theoretical framework to identify factors that may be associated with parental relationship satisfaction in families of children with ASD. However there are models in general developmental psychology such as the Family Stress Model (FSM) which does explore relationship satisfaction in the general population, hypothesising

that financial pressures raise individual symptoms of depression which can result in poorer couple relationships (Conger et al, 2010).

There have been some studies which have investigated income, education and employment or socioeconomic status (SES) more broadly and their longitudinal associations with the wellbeing of parents of children with disabilities. Benson and Kersh (2011) found that marital quality was significantly associated with family SES with mothers of children with ASD. Hartley et al. (2012) examined the marital satisfaction of mothers of adolescents and adults with ASD over a 7-year period and found that it was positively related to household income. In addition, the number of children in the family may also be an additional strain on parents' cognitive and financial resources. A study by Harper et al. (2013) found a negative association between the number of children and relationship quality for both mothers and fathers of children with ASD.

Statistical framework

In addition to a lack of a guiding theoretical framework, there are conceptual analytical problems with much existing research on parental relationship satisfaction in families of children with ASD. Parent data are nested within couples within families and as such require more sophisticated statistical techniques. Multilevel Models (MLM) can account for inter-dependence within their analyses (Enders & Tofighi, 2007) and are considered to be more accurate in estimating error terms for individuals and groups (Krull & MacKinnon, 2001). A selection of studies in this area have used MLM to explore predictors of relationship quality for mothers (Timmons et al., 2016), parental satisfaction (Ekas et al., 2015), and 'spillover' between marital interactions and parenting stress (Hartley et al., 2016b), in families of children with ASD. Given the limited amount of research in this area

which has utilised MLM and the importance of accounting for the nested structure of the data, an MLM analysis approach was adopted.

The aim of the present study was to explore parental relationship satisfaction in families where one child has ASD. We focused on the following key research questions:

- Do mothers and fathers of children with ASD report different levels of relationship satisfaction?
- Is parent relationship satisfaction associated with parental depression, and the behavioral and emotional problems of the child with ASD and/or a sibling? And are any such associations still present after controlling for other family factors (socioeconomic position, number of children in the family)?

Methods

Participants

One hundred and forty-six mother-father couples participated in the research. The majority of the couples in the sample were biological parents of their child with ASD, with the remaining including one adoptive parent couple, one foster parent couple, and six couples that included a biological mother and a stepfather. Mothers were on average 42 years-old ($SD = 4.88$, Range = 26-53 years) and fathers 44 years ($SD = 5.20$, Range = 30-64 years). Seventy-three (54.9%) mothers and 60 (45.1%) fathers were educated to university degree level or higher, with 88 (42.1%) mothers and 121 (57.9%) fathers in employment at the time of the research. Modal household income in the sample was £25,000-35,000 (British pounds sterling; approximately \$30,000-\$45,000 US dollars). The majority of parents described their ethnicity as White British (Mothers = 95.8%, Fathers = 94.6%). Most families had two children living in the family home (61.9%).

A family socioeconomic position (SEP) variable was created where families were categorised into one of four groups depending on whether at least one parent was educated to degree level (scoring one), whether at least one parent was employed (scoring one), and whether the household income was above the mode of the sample of £25,000-£35,000 (if so, scoring one). Seven (4.8%) families were categorised into the lowest scoring group of zero (neither parent educated to university level, neither parent in employment, and a household income of less than £35,000). Thirty-eight families (26%) comprised the second lowest group, scoring one indicator of high SEP; thirty-six (24.7%) families had two high SEP indicators; and sixty-five families (44.5%), had three high SEP indicators.

Parents reported that 89 (61%) children with ASD had a diagnosis of autism and 57 (39%) were reported as having a diagnosis of Asperger's syndrome. All children in this study had received their diagnoses before the application of the fifth edition of The Diagnostic and Statistical Manual of Mental Disorders (DSM-V) criteria. One hundred and twenty-two (83.6%) children with ASD were male and 24 (16.4%) were female. The child with ASD was on average 10.56 years of age ($SD = 2.81$, Range = 4-17 years) and the majority of children had received their ASD diagnosis at on average 3.67 years (Range = 0.33 months - 12.83 years). Parents were asked to provide information about any sibling between the ages of 4 and 17 years of age also living in the family who did not have a disability. If there was more than one sibling in this age range, the sibling closest in age to the child with ASD was selected. Seventy three (50%) of the identified siblings were male, and seventy-three (50%) were female. Siblings had a mean age of 10.49 ($SD = 3.44$, Range = 4-17 years). Seventy-three (50%) siblings were younger than the child with ASD, sixty-five (44.5%) were older, and eight (5.5%) were twins. One hundred and fifty-four (52.7%) siblings were the same gender as the child with ASD.

Parental measures

The Dyadic Adjustment Scale-7 (DAS-7) (Hunsley et al., 1995) was used to measure the relationship satisfaction of couples. This short-form version of the full (32 item) DAS (Spanier, 1976) contains seven items. Respondents are asked to rate 6 items on aspects such as "philosophy of life", "amount of time spent together" and "working together on a project" on a Five-point scale (0=Always disagree to 5=Always Agree) and then complete one global dyadic satisfaction item ranging from 1 to 7. The DAS-7 has been found to be as psychometrically reliable as the full version of the DAS in assessing marital adjustment in

clinical and community samples (Hunsley et al, 1995), with a reported average internal consistency of .80 (Hunsley et al., 2001). The DAS-7 has been successfully used to assess marital quality in research studies with parents of children with ASD (Benson & Kersh, 2001) and DD (Kersh et al, 2006). A total DAS-7 score used in the present study is generated by summing all items (1-37), with higher scores indicating higher relationship satisfaction. Scores can be used to categorise relationships into distressed (1-21) or adjusted (22-37). Internal consistency (Cronbach's α) in the present study was .88 for mothers and .83 for fathers.

The depression scale of the Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith, 1983) was used to assess parents' depression levels. The HADS has been used extensively as a rapid measure of depression in clinical and general populations (Bjelland et al., 2002). It has previously been used effectively with parents of children with ASD (Hastings, 2003b). Depression has been justifiably entered into the model as it has previously been a valid measure of wellbeing in studies of parents of children with ASD. However this is not the case for anxiety, which was therefore not included in the analysis. The HADS contains seven items assessing depression (HADS-D). Respondents rate items such as "I feel as if I'm slowed down" and "I look forward with enjoyment to things" on a Four-point scale: *Most of the time, a lot of the time, from time to time, or not at all*. The total depression score ranges from 0-21 with higher scores indicating more depressive symptoms. Scores can also be used to classify depression symptoms into normal (0-10) and abnormal (11-21). Internal consistency was very good (Cronbach's α depression: Mothers .80 and fathers .78).

Child behavioral and emotional problems

The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) was completed by primary caregivers as a measure of the behavioral and emotional problems of their children. The SDQ was completed for the child with ASD, and for the sibling that was closest in age to the child with ASD. The 25-item scale generates scores for four problem domains: Emotional symptoms, conduct problems, hyperactivity, and peer problems; and a pro-social behavior domain. Caregivers indicate how likely each statement applies to the target child on a Three-point scale: *Not true, somewhat true, very true*, based on their child's behavior over the past six months. Sample items from each subscale include: "Often unhappy, downhearted or tearful" (emotional symptoms); "Often has temper tantrums or hot tempers" (Conduct problems); "Constantly fidgeting or squirming" (hyperactivity); "Has at least one good friend" (peer problems); "Considerate of other people's feelings" (prosocial behavior). The SDQ is a valid brief measure that has been reported to effectively assess the psychological adjustment of children and adolescent in normative samples (Goodman, 2001) and in research with children with ASD (Totsika et al., 2011) and the adjustment of their siblings (Hastings, 2003a). In the present study, the total problem difficulties score was used. A higher score is indicative of greater behavioral and emotional difficulties. The scores can also be used to categorise problem behavior levels into normal (0-13), borderline (14-16) and abnormal (17-40). Internal consistency (Cronbach's α) obtained for this total difficulties score for the child with ASD was .71 and for the sibling .77.

Procedure

The data used for the present analysis were a part of a larger ASD family research study (Petalas et al., 2012; Jones et al., 2013). Following ethical approval, invitations to families were given to a national ASD charity to distribute to their members. The number of families

contacted at this stage is unknown since national and local groups distributed study information through direct contact, advertisements, and mailing lists. A total of 305 families who expressed an interest met the criteria (a primary caregiver present in the home, with a child with ASD between the ages of 4-17 years old). Both parents were mailed a postal survey and asked to complete it separately. 215 families returned completed questionnaire packs. The present research focused on the data from 146 mother-father couples from families of children with ASD and also at least one sibling.

Statistical analysis approach

Multilevel models were fitted to examine the association of relationship satisfaction and the parent, child and family variables. Data in the study were structured in a 2-tier hierarchical data structure with individual variation at Level 1 and family variation at Level 2. Level 1 variables included parent gender and parent scores on dyadic adjustment and depression levels. Level 2 variables included family measures (family SEP, number of children in the family, behavior problems of the child with ASD, and behavior problems of the sibling). In the current study the family unit was modelled as a random factor, all other variables were modelled as fixed.

A variance components (VC) covariance structure was used to estimate the model parameters. VC provides separate variance estimates for each random effect and is often used as the default covariance structure when there is only one random effect (Heck et al, 2014). Predictor and control variables in the study were grand-mean centered, with the exception of family SEP which was median-centered. Centering allows variables to be transformed into meaningful deviations around a fixed value (Heck et al, 2014) and can improve interpretation and accuracy when estimating parameters (Enders & Tofighi, 2007). Statistical analyses in the study were conducted using SPSS Statistics 22.0®.

Results

Descriptive statistics

Table 1 presents the mean relationship satisfaction score for mothers and fathers and the proportion of scores falling into distressed and adjusted categories. The total relationship satisfaction mean was 21.80 with 55.4% of relationships classified within the ‘adjusted’ range.

Insert Table 1 here

The mean for the seven depression items of the HADS was 6.84 with the majority of scores falling into the normal category (80.5%) (Table 2). Mothers were more likely to score above the clinical cut-off than fathers (Table 2) and there was a significant difference in the scores for mothers ($M=7.26$, $SD = 4.15$) and fathers ($M= 6.01$, $SD= 3.86$); $t(129)= 3.10$, $p = .002$, with mothers reporting higher HADS-D scores than fathers (Table 3). Table 4 shows the mean SDQ total problem score to be 21.26 for the child with ASD, with the majority categorised in the abnormal range (81%), and 9.22 for siblings, with the majority of scores in the normal category (77.9%).

Insert Tables 2-4 here

Intercept-only model

In the first stage of the analysis an intercept-only model with no predictors (null model) was fitted to explore the estimated variance in relationship satisfaction scores within (Level 1) and between families (Level 2). The intraclass correlation coefficient (ICC) provides an

estimate of how much of the variance is due to grouping structure – the higher the ICC, the more homogenous units are and the greater variability there is between units (Heck et al, 2014). The ICC in the current sample was 0.77 (77%, $p < .001$) thus indicating that a MLM approach is required because the higher-level grouping meaningfully affects the estimates.

In the next step of the analysis we introduced parent gender as a fixed factor in the model. Parent gender was not significantly associated with relationship satisfaction ($p = .571$).

Further potentially confounding socio-demographic indicators (family SEP, number of children in the family) were then modelled. Neither family SEP ($p = .118$) nor number of children in the family ($p = .759$) were significantly related to relationship satisfaction.

In the final step of the analysis we entered parent gender, family SEP, number of children in the family, parent depression, and the behavioral and emotional problems of the child with ASD and the sibling. In addition, interaction terms between depression and gender were included to explore whether a depression–relationship satisfaction association varied for mothers and fathers.

Models were fitted twice, once using the raw scores on dyadic adjustment and a second time using standardised DAS scores so as to obtain y -standardised coefficients for the predictors. The results of the final model with raw and y -standardised coefficients are shown in Table 5. The addition of all predictors in the final model was associated with a change in the DAS score variance accounting for 9.1% within couples and 10.8% between couples.

Insert Table 5 here.

Final model

In the final model, parental gender was not significantly associated with relationship satisfaction ($p = .293$), with mothers and fathers reporting similar levels of relationship

satisfaction. Level 2 variables, family SEP ($p=.795$), number of children in family ($p=.933$), and sibling behavior problems ($p=.773$), were also not significantly related to relationship satisfaction.

At Level 1, parental depression was significantly and negatively associated with relationship satisfaction ($p=.007$), with elevated levels of depression related to lower levels of relationship satisfaction. However, the magnitude of this association was small: y -standardised coefficients indicate that as depression increases, relationship satisfaction scores decrease by .037 standard deviations. There was no evidence that this association was moderated by parent gender as the Gender x Depression interaction was not significant ($p=.166$).

Behavior problems of the child with ASD (Level 2) were significantly related to relationship satisfaction ($p=.046$) with relationship satisfaction decreasing as the level of child behavior problems increased. This was a small effect: as child behavior problems increased, relationship satisfaction scores decreased by .019 standard deviations.

Discussion

The current study used a multilevel approach to explore whether mothers and fathers of children with ASD report different levels of relationship satisfaction and some of the factors that may be associated with this outcome. We found no difference in the way that mothers and fathers reported on their relationship, supporting other studies that have also found no gender differences on the DAS for parents of children with ASD (Lee, 2009; Gau et al., 2012). The finding suggests that mothers and fathers appear to experience similar levels of relationship satisfaction, rejecting the gender narrative. The absence of gender differences may reflect systems thinking in that parents have shared experience of child and family factors, and there may be an element of ‘crossover’ whereby one partner’s level of satisfaction transfers to the other partner in the household (Gerstein et al., 2009). Our findings showed that the proportion of mothers and fathers categorised as being in the ‘distressed’ range on the DAS-7 was 44.6% (44.6% mothers, 44.5% fathers). This is a higher proportion than other studies that have used the DAS-7 among mothers of children with ASD (26%) (Benson & Kersh, 2011) and the full 32-item DAS in the general population (21% women, 22% men) (South et al., 2009).

We found an association between depression and relationship satisfaction scores. These findings echo other studies that have reported a significant and negative association between depression and relationship satisfaction in parents of children with ASD (Benson & Kersh, 2011; Shtayermman, 2013; Sim et al., 2016; Weitlauf et al., 2014). This association may not be unique to families of ASD as it has also been robustly reported in population-based studies (Fincham et al., 1997). It may be more likely to be reported in families raising a child with ASD because parents typically report elevated levels of depression compared to other groups (Abbeduto et al., 2004; Blacher & McIntyre, 2006; Gau et al., 2012; Lai et al.,

2015), however in our sample the majority of parents reported depressive symptoms in the normal range.

Previous studies have found gender differences in depression levels with mothers of children with ASD reporting higher levels of depression (Lee et al., 2009; Jones et al., 2013). This was also found within the present study with mothers reporting significantly higher depressive symptoms than fathers. However, our findings show that gender did not moderate the depression-relationship satisfaction relationship. The finding suggests that the association between mental health (depression in this case) and relationship satisfaction is experienced in a similar way by both mothers and fathers.

A negative association between child behavior problems and relationship satisfaction in parents of children with ASD was found within the present study and contributes to the existing literature which has also reported this association (Benson et al., 2011; Hartley et al., 2012; Sikora et al., 2013; Robinson & Neece, 2015). FST refers to the importance of maintaining couple and parental boundaries for well-functioning subsystems, however these boundaries appear to be tested when raising a child with challenging behavior. This association appears to be specific to the child with ASD given that we found no evidence that sibling behavior problems were related to parent relationship satisfaction. Parents may be more confident in dealing with the behavior problems of a typically developing child producing a lesser impact on their partner role.

Family SEP was not found to be a statistically significant correlate of relationship satisfaction, once all other factors were accounted for. This finding contrasts previous work which has found an association between deprivation and relationship satisfaction in families of children with ASD (Benson et al., 2011; Hartley et al., 2012). Our analysis was largely exploratory and looked more broadly at SEP rather than deprivation, and the lowest SEP

category included very few families ($n=7$), suggesting limited variability of SEP scores. In contrast to previous research (Harper, 2013), we found no association between DAS scores and the number of children in the family, indicating that added emotional and financial pressures associated with having more children in the household, may not be related to how parents in this sample report on their relationship. However, it is important to note that unlike the study by Harper, our study required families to have at least two children to participate.

The study has provided an initial insight into some of the factors associated with relationship satisfaction in families of children with ASD, however further research is needed to expand upon the range of parent, child and family factors measured in the current study.

It is a challenge to study relationship satisfaction as a cross-sectional analysis, as relationships vary over time. The wide age range of the target children and parents may mean that families involved in the study were at different stages of the lifecycle and thus may be experiencing different stresses. It is also important to note that the DAS-7 omits other important relationship aspects such as decision-making, affection and sexual relations. We also do not know for certain whether mothers and fathers did indeed complete their questionnaires separately. Furthermore, studies like this one inevitably focus on relationship ‘survivors’ - the 75% of parents of children with ASD that have remained together or are not experiencing significant relationship problems; therefore exploring co-parenting in future studies would include more parents.

The current study has furthered our understanding of relationship satisfaction in parents of children with ASD with a large dataset of 146 mother-father couples using an MLM approach. The study was designed to begin to provide evidence towards a theoretical model specific to the relationship satisfaction of parents of children with ASD and emphasised the importance of systemic thinking when exploring the family relationships of

parents of children with a disability. With mothers and fathers reporting in the same way it suggests that the influence of family context on how parents report about themselves and their family could be greater than previously predicted. The influence of parent-level (depression) and child-level (child behavior problems) variables on dyadic measures (relationship satisfaction) reinforce the importance of exploring factors and their interactions on a range of levels.

These findings have a number of practical implications, namely that the impact of raising a child with a disability should extend to explore the effect on family subsystems that do not just include children. Fathers and partners are just as likely to be affected as mothers in a positive or negative way by raising a child with a disability and professionals should continue to recognise the value of supporting all family members in relation to their family unit. The importance of supporting parents of children with ASD to manage challenging behavior is also clear given the negative outcomes it can have for the parent relationship. The negative association between individual levels of depression and relationship satisfaction points towards the need for services to be continually aware of the impact of such mental health difficulties on the personal relationships of parents of children with ASD, in order to provide timely support and advice.

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Table 1

Mean dyadic adjustment score and proportion of sample scoring in adjusted and distressed categories (mothers and fathers)

Measure	Mean (SD)	Reported range	Distressed (0-21)	Adjusted (22-37)
DAS-7 (Total)	21.80 (6.05)	1-36	44.6%	55.4%
DAS-7 (Mothers)	21.52 (6.52)	1-36	44.6%	55.4%
DAS-7 (Fathers)	22.11 (5.46)	4-35	44.5%	55.5%

Table 2

Mean depression score and proportion of sample scoring in the normal and abnormal categories (mothers and fathers)

Measure	Mean (SD)	Reported range	Normal (0-10)	Abnormal (11+)
HADS-D (Total)	6.84 (4.16)	0-20	80.5%	19.5%
HADS-D (Mothers)	7.54 (4.28)	0-17	41.3%	14.8%
HADS-D (Fathers)	5.96 (3.83)	0-20	39.3%	4.7%

Table 3*Paired sample t-test of maternal and paternal depression scores*

Paired samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	HADS-D Mothers - HADS-D Fathers	1.25262	4.59993	.40344	.45440	2.05083	3.105	129	.002

Table 4*Mean strengths and difficulties score and proportion of sample scoring in SDQ categories**(individually for child and a sibling)*

Measure	Mean (SD)	Reported range	Normal (0-13)	Borderline (14-16)	Abnormal (17-40)
SDQ Child	21.26 (6.46)	6-37	7.7%	11.3%	81%
SDQ Sibling	9.22 (6.86)	0-32	77.9%	7.0%	15.1%

Table 5*Final multilevel model results; raw and y-standardised coefficients of all fixed variables*

Variable	Raw coefficients	SE	y-standardised coefficients
Parent gender	-.401	.38	-.066
Family SEP	.141	.54	.023
Number of children in family	.056	.67	.009
Parental depression	-.228**	.08	-.037**
SDQ Child with autism	-.117*	.05	-.019*
SDQ Sibling	-.020	.07	-.003
Parent Gender x Depression	-.153	.11	-.025

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