Positive and Negative Social Exchanges Experienced by Fathers and Mothers of Children with Autism

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Abstract

When faced with child-related challenges associated with autism spectrum disorder, positive and negative social exchanges may be critical to parents' psychological well-being. This study examined the types and sources of positive and negative social exchanges reported by mothers and fathers of children with autism spectrum disorder and their association with parental depressive symptoms in 176 families of children (5–12 years; 85% male) with autism spectrum disorder. One-way repeated measure multivariate analyses of variance and multilevel modeling were used. Results indicated that informational was the most frequent type, and one's spouse was the primary source, of both positive and negative social exchanges. Fathers reported fewer positive, and also fewer negative, social exchanges with family, friends, and health professionals than mothers. Positive and negative social exchanges with one's spouse were most strongly associated with depressive symptoms. Findings have implications for interventions designed to foster optimal outcomes in families of children with autism spectrum disorder.

Keywords

AUTISM; DEPRESSION; FATHERS; PARENT; SOCIAL SUPPORT

Parents of children with autism spectrum disorder (ASD) face extraordinary challenges associated with their son or daughters' ASD symptoms (i.e. impairments in social communication, restricted/repetitive behaviors, and sensory sensitivities) and often co-occurring intellectual disability and behavior problems (American Psychological Association (APA), 2013). These parenting challenges contribute to the poorer psychological well-being (e.g. higher parenting stress and mental health symptoms) of mothers and fathers of children with ASD relative to parents of children without disabilities and parents of children with other types of intellectual and developmental disabilities (IDD) (Hayes and Watson, 2013; Ingersoll and Hambrick, 2011). Social relationships have long been recognized as an important determinant of psychological well-being when faced with stressors (e.g. Cohen and Willis, 1985; Pearlin et al., 1981). Three aspects of social relationships distinguished by researchers are social embeddedness (i.e. extent or structure of social support), perceived social support (i.e. perceived availability and satisfaction with

social support network), and positive and negative social exchanges (i.e. relational content of enacted social exchanges) (Okun and Keith, 1998). To date, research on parents of children with ASD has focused on the first two aspects with little known about positive and negative social exchanges. The purpose of this study was to examine the types and sources of positive and negative social exchanges experienced by mothers and fathers of children with ASD and their association with parental depressive symptoms.

There is evidence from studies on the general population (e.g. August et al., 2007) that positive social relationships are critical for optimal psychological well-being in contexts of high stress. Given these associations, researchers have begun to investigate the importance of social relationships in parents of children with ASD. Findings indicate that higher levels of perceived social support and greater social embeddedness (i.e. a larger social network) are related to better psychological well-being in mothers of children with ASD cross-sectionally (Ekas et al., 2010; Mackintosh et al., 2005) and over time (Smith et al., 2012). However, most of these studies offer little insight into the type or source of positive social exchanges that lead to these global perceptions. In addition, these studies have also almost exclusively focused on mothers, without inclusion of fathers, and it is not clear if findings are relevant to fathers. There is also a paucity of research on negative social exchanges, including interference/demands, insensitivity, and criticism, experienced by parents of children with ASD. In their sample of mothers of grown children with ASD, Smith et al. (2012) found that negative social exchanges, rated globally, were a stronger determinant of change in psychological well-being across 18 months than positive social exchanges. Building on previous studies, there is a need to identify the types and sources of positive and negative social exchanges, as this level of information can be used to tailor supports and interventions to meet the overlapping and unique needs of mothers and fathers of children with ASD.

Three commonly identified types of social exchanges are: instrumental (i.e. assistance or material aid (positive) or a lack of needed assistance and/or intrusive assistance (negative)), informational (i.e. helpful advice or offered solutions (positive) or unwanted advice, meddling, and doubting decisions (negative)), and emotional (i.e. expressions of warmth, sympathy, and caring (positive) or expressions of negativity, insensitivity, and rejection (negative)) (Newsom et al., 2005). Research on mothers of children with ASD has typically lumped these types together (e.g. Smith et al., 2012), such that little is known about their relative association with psychological well-being. There is evidence from research on the general population that emotional social exchanges (positive and negative) have particularly robust links with psychological well-being (e.g. Willis and Ainette, 2012). This same pattern may be true for parents of children with ASD. Alternatively, given the extraordinarily level of child-related challenges associated with ASD, tangible social exchanges (instrumental and informational) may be most critical for parental psychological well-being. Indeed, Simmerman et al. (2001) found that satisfaction with spousal tangible support in childcare was a critical determinant of psychological well-being in mothers of children with ASD.

The spousal relationship is often the greatest source of positive social exchanges in men and women in the general population (Okun and Keith, 1998; Walen and Lachman, 2000). There is evidence that mothers of children with ASD similarly experience a higher level of positive social exchanges with their spouse than with family or friends (Davis and Gavidia-Payne,

2009; Mackintosh et al., 2005) and that positive social exchanges with one's spouse are positively associated with optimal psychological well-being (Ekas et al., 2015). However, Hartley et al. (2016) found that experiencing a day with a high level of negative social exchanges with one's spouse (e.g. arguments) predicted an increased parenting stress the following day in mothers of children with ASD. However, there was not an association between level of negative social exchanges and next-day parenting stress in fathers of children with ASD. Thus, it is possible that mothers are more affected by negative social exchanges with their spouse than fathers.

In general, women experience a higher level of positive social exchanges with family and friends than men (e.g. Dalgard et al., 2006). There is also evidence that individuals undergoing stress withdraw from peripheral social relationships—such as those with friends and family (Wrzus et al., 2013). High child-related challenges associated with ASD may mean that parents experience few social exchanges with family and friends. Little is known about the positive and negative social exchanges that parents of children with ASD have with health professionals (e.g. physicians and therapists). Social exchanges with health professionals may be primarily instrumental and informational, given the nature of these relationships. Mothers of children with ASD are more likely to interact with their child's health professionals than the fathers (Sofronoff and Farbotko, 2002); thus, mothers may experience a higher level of positive social exchanges with health professionals than fathers. However, in previous studies, mothers of children with ASD often expressed frustrations with health professionals including inadequate communication, not adjusting to the family's needs, and lack of needed services (Lin et al., 2010; Schieve et al., 2011) and thus may also experience a higher level of negative social exchanges with health professionals than fathers.

This study extends prior research by (1) examining the types (informational, instrumental, and emotional) and sources (spouse, family, friends, and health professionals) of positive and negative social exchanges in mothers and fathers of children with ASD and (2) determining the association between type and source of positive and negative social exchanges and parental depressive symptoms. We predicted that emotional and instrumental social exchanges would have a stronger association with parental depressive symptoms than informational social exchanges, and social exchanges with one's spouse would have a stronger association with parental depressive symptoms than social exchanges with family, friends, and health professionals. Based on a previous study (Hartley et al., 2016), negative social exchanges with one's spouse were expected to have a stronger association with depressive symptoms in mothers of children with ASD than fathers. We hypothesized that mothers of children with ASD would experience a higher level of positive and negative social exchanges with health professionals than fathers.

Methods

Participants

Participants were part of a larger study involving 184 couples (368 parents) of children with ASD (aged 5–12 years). Recruitment involved mailings to families of children with an educational label of ASD, flyers at ASD clinics and community settings, and research registries. Eligibility criteria included being a parent of a child aged 5–12 years diagnosed

with ASD. Parents provided documentation of ASD diagnosis (diagnostic assessment had to include the Autism Diagnostic Observational System; Lord et al., 2000). Parents had to be in a long-term relationship (≥3 years), and both partners had to agree to be in the study. Parents independently completed the Social Responsiveness Scale: second edition (SRS2; Constantino and Gruber, 2012) to assess their child's current ASD symptoms. On the SRS2, five children received a total t-score below 60 by both parents and were excluded. Three additional families were removed due to missing items on the social exchange measure; thus, 176 families (352 parents) of children with ASD were included in analyses. Chi-squared and independent sample t-tests indicated that the three families did not differ from the remaining families in parent (age, race/ethnicity, education, income, and number of children) or child (age, sex, ASD symptoms, intellectual disability, and behavior problems) factors. Two couples were not married (lived together ≥8 years). In 13 couples, one parent was a step-parent. In total, 12 families had multiple children with ASD aged 5–12 years; the oldest was the target child. Table 1 presents socio-demographics for the 176 families.

Measures

Socio-demographics.—Socio-demographics were individually reported on by parents. Parental education was coded: 1 = high school, 2 = some high school, 3 = General Educational Development (GED)/high-school diploma, 4 = some college, 5 = associate's/ bachelor's/registered nurses (RN) degree, 6 = some graduate school, and 7 = graduate degree. Household income was coded: 0 = US$1–US$9999 to 14 = US$160,000+, increasing by US$10,000 to US$20,000. Number of children was used to assess family size. Parent race/ethnicity was coded: 0 = White, non-Hispanic and 1 = other. Child's age was calculated using date of birth. Pearson correlations were conducted to examine the association between family socio-demographics and parent depressive symptoms. Parent education was significantly negatively associated with mothers' depressive symptoms ($r = -0.21$, $p = 0.02$). Income was significantly negatively associated fathers' depressive symptoms ($r = 0.23$, $p = 0.01$). No other socio-demographic was significantly ($p < 0.05$) correlated with parental depressive symptoms. Parent education and income were included in models of the second study aim to control for their impact on parental depressive symptoms.

Positive and Negative Social Exchanges.—The positive and negative social experiences (PANSE; Newsom et al., 2005), independently completed by parents, was used to assess type and source of positive and negative social exchanges. The 18 items assessing informational (3 positive, 3 negative), instrumental (3 positive, 3 negative), and emotional (3 positive, 3 negative) social exchanges were used. Informational social exchanges included offering helpful advice, making useful suggestions, and offering solutions (positive) and unwanted or intrusive advice, doubting decisions, and meddling (negative). Instrumental social exchanges included doing favors, helpful assistance and aid, and helping with an important task (positive) and not providing assistance, letting you down, and asking for too much help (negative). Emotional social exchanges included doing or saying things that were considerate, cheering you up, and discussing personal matters or concerns (positive) and acting unsympathetic or critical, acting angry and upset toward you, and doing things that were thoughtless or inconsiderate (negative). The frequency of each item over the past

month was rated 0 "never" to 4 "very often" across four sources—spouse, family, friends, and health professionals. No instructions were given regarding whom to consider in each category.

Parental Depression Symptoms.—Parent's depressive symptoms were assessed by the Center for Epidemiological Studies–Depression Scale (CES-D; Radloff, 1977), a 20-item self-report questionnaire indexing depressive symptoms over 1 week. The CES-D has high internal consistency in general adult samples (Radloff, 1977) and parents of children with ASD (Taylor and Warren, 2012). The CES-D had strong internal reliability in this sample (Cronbach's $\alpha = 0.84$ in mothers and $\alpha = 0.82$ in fathers). In this sample, 30.3% of mothers and 24.2% of fathers scored above the clinically significant cutoff for depressive symptoms.

Data Analysis Plan

To address our first study aim, we conducted two one-way 2 (parent gender) $\times$ 3 (type) $\times$ 4 (source) repeated measure multivariate analysis of variance (MANOVA) to examine relative levels of positive and negative social exchanges. The MANOVA was conducted at a couple level, allowing us to examine both within-person differences in level of positive and negative social exchange by type (informational, instrumental, and emotional) and source (spouse, family, friends, and health professionals), and mother– father, within-couple differences (parent gender). Follow-up Bonferroni comparisons were used.

To address the second study aim, dyadic multilevel models (MLMs) using hierarchical linear modeling software were conducted to examine the association between social exchanges and depressive symptoms. Models were separately conducted to examine positive versus negative social exchanges, so that the effect of negative social exchanges (often more strongly linked to psychological well-being) did not overshadow that of positive social exchanges. The first two dyadic MLMs (positive and negative) examined the association between the four sources and depressive symptoms. The second two dyadic MLMs (positive and negative) examined the association between the three types of social exchanges and depressive symptoms. Parent education and household income (socio-demographics associated with depressive symptoms) were included at Level 2 (between-couple level), grand-mean centered, to control for their effect when examining associations between social exchanges and depressive symptoms. In addition to modeling within-parent effects, the dyadic MLMs allowed us to control for the yoked nature of couple data. In models, Level 1 variables included mother (1 = mother, 0 = father), father (1 = father, 0 = mother), both uncentered, and source (spouse, family, friends, and health professionals) or type (informational, instrumental, and emotional) of social exchanges for mothers and fathers, grand-mean centered. The Level 1 intercept was removed; an intercept for the mother and father variables was created at Level 2, to separately model the impact of Level 2 variables on the initial depressive symptoms for mothers and fathers

Level 1 Model: Depressive symptoms $= \beta_{1j}(\text{mother}) + \beta_{2j}(\text{father}) + \beta_{3j}(\text{mother } Spouse) + \beta_{4j}(\text{mother } Family) + \beta_{5j}(\text{mother } Friends) + \beta_{6j}(\text{mother } Health\ Professionals) + \beta_{7j}(\text{father } Spouse) + \beta_{8j}(\text{father } Family) + \beta_{9j}(\text{father } Friends) + \beta_{10j}(\text{father } Health\ Professionals)$

$$\text{Level 2 Model: } \beta_{1j} = \gamma_{10}(\text{mother education}) + \gamma_{11}(\text{income}) + u_{1j}$$

$$\beta_{1j} = \gamma_{20}(\text{father education}) + \gamma_{21}(\text{income}) + u_{2j}$$

$$\beta_{1j} = \gamma_{30}$$

$$\beta_{1j} = \gamma_{40}$$

$$\beta_{1j} = \gamma_{50}$$

$$\beta_{1j} = \gamma_{60}$$

$$\beta_{1j} = \gamma_{70}$$

$$\beta_{1j} = \gamma_{80}$$

$$\beta_{1j} = \gamma_{90}$$

$$\beta_{1j} = \gamma_{100}$$

Results

Positive Social Exchanges

Table 2 presents the mean and standard deviation for each type of positive social exchanges by source. A one-way 2 (parent gender) × 3 (type) × 4 (source) repeated measure MANOVA of positive social exchanges was significant $F(1, 175) = 2466.41$, $p < 0.001$, $\eta 2 = 0.92$. Univariate analyses of variance (ANOVAs) indicated a significant difference in positive social exchanges by parent gender (Wilk's $\Lambda = 0.84$, $F(1, 175) = 33.09$, $p > 0.001$, $\eta 2 = 0.16$), type (Wilk's $\Lambda = 0.81$, $F(2, 174) = 20.62$, $p < 0.001$, $\eta 2 = 0.20$), and source (Wilk's $\Lambda = 0.16$, $F(3, 173) = 305.45$, $p < 0.001$, $\eta 2 = 0.85$). There were also significant gender ×type (Wilk's $\Lambda = 0.93$, $F(2, 174) = 6.62$, $p = 0.003$, $\eta 2 = 0.07$), gender ×source (Wilk's $\Lambda =$

0.89, $F_{(3, 173)} = 6.99$, $p < 0.001$, $\eta^2 = 0.11$), type ×source (Wilk's $\Lambda = 0.30$, $F_{(6, 170)} = 64.39$, $p < 0.001$, $\eta^2 = 0.70$), and gender ×type ×source (Wilk's $\Lambda = 0.73$, $F_{(6, 170)} = 10.45$, $p < 0.001$, $\eta^2 = 0.27$) interactions. Follow-up Bonferroni comparisons were used.

Within-person comparisons.—At a within-person level, mothers experienced a similar level of positive *informational, instrumental*, and *emotional* social exchanges. In contrast, fathers experienced significantly more *informational* social exchanges than *emotional* social exchanges. On average, mothers and fathers both experienced the highest level of positive social exchanges with *spouse* and lowest level with *health professionals*, with *friends* and *family* (these two sources are not different) in the middle.

In regard to positive *informational* social exchanges, both mothers and fathers experienced more with *spouse* than with *family, friends*, or *health professionals* (these three sources are not different). In terms of positive *instrumental* social exchanges, both mothers and fathers experienced the significantly highest level with *spouse*, followed by *family*, then *friends*, and finally *health professionals*. Both mothers and fathers experienced the highest level of positive *emotional* social exchanges with *spouse* and lowest with *health professionals*, with *family* and *friends* (these two sources are not different) in the middle.

Both mothers and fathers experienced significantly more *informational* and *instrumental* than *emotional* positive social exchanges with *spouse*. Similarly, both mothers and fathers experienced a significantly higher level of *informational* than *instrumental* or *emotional* social exchanges with *health professionals*. There were no significant differences by type for positive social exchanges with *family* or *friends*.

Mother-father comparisons.—Mothers experienced significantly fewer positive *informational* social exchanges with *spouse* but more with all other sources than fathers. Mothers also experienced significantly more positive *instrumental* social exchanges with *spouse, family*, and *friends* than fathers but a similar level with *health professionals*. Mothers experienced significantly more positive *emotional* social exchanges with *family, friends*, and *health professionals* than fathers but a similar level with *spouse* as fathers.

Negative Positive Social Exchanges

Table 2 also presents the mean and standard deviation for each type of negative social exchanges by source. A one- way 2 (parent gender) × 3 (type) × 4 (source) repeated measure MANOVA of negative social exchanges was significant $F_{(1, 175)} = 480.96$, $p < 0.001$, $\eta^2 = 0.73$. Univariate ANOVAs indicated a significant difference in negative social exchanges by parent gender (Wilk's $\Lambda = 0.96$, $F_{(1, 175)} = 8.51$, $p = 0.004$, $\eta^2 = 0.05$), type (Wilk's $\Lambda = 0.79$, $F_{(2, 174)} = 24.26$, $p < 0.001$, $\eta^2 = 0.21$), and source (Wilk's $\Lambda = 0.26$, $F_{(3, 173)} = 166.74$, $p < 0.001$, $\eta^2 = 0.74$). There were significant gender ×type (Wilk's $\Lambda = 0.95$, $F_{(2, 174)} = 4.80$, $p = 0.009$, $\eta^2 = 0.05$), gender ×source (Wilk's $\Lambda = 0.94$, $F_{(3, 173)} = 3.82$, $p = 0.01$, $\eta^2 = 0.06$), type ×source (Wilk's $\Lambda = 0.57$, $F_{(6, 170)} = 21.66$, $p < 0.001$, $\eta^2 = 0.43$), and gender ×type ×source (Wilk's $\Lambda = 0.86$, $F_{(6, 170)} = 4.77$, $p < 0.001$, $\eta^2 = 0.14$) interactions. Follow-up Bonferroni comparisons were used.

Within-person comparisons.—At a within-person level, overall, mothers experienced a significantly higher level of negative informational and instrumental social exchanges (these two types are not different) than emotional social exchanges. Fathers experienced a significantly higher level of negative informational social exchanges than instrumental or emotional social exchanges (these two types are not different). Mothers and fathers experienced the highest level of negative social exchanges with spouse, followed by family, then friends, and finally health professionals.

In regard to negative informational social exchanges, mothers experienced the significantly highest level with spouse and family, while fathers experienced the significantly highest level with spouse. For negative instrumental social exchanges, mothers and fathers experienced the significantly highest level with spouse, followed by family, then friends, and finally health professionals. Mothers and fathers experienced the highest level of negative emotional social exchanges with spouse and lowest level with health professionals, with family and friends (these two sources are not different) in the middle.

Both mothers and fathers experienced a significantly higher level of negative informational and instrumental social exchanges than emotional social exchanges with spouse and friends. Mothers and fathers experienced the highest level of negative informational social exchanges with family, followed by instrumental, and then emotional social exchanges with family. There was no significant difference among the types for negative social exchanges with health professionals.

Mother-father comparisons.—Mothers experienced a significantly lower level of negative informational social exchanges with spouse but a higher level with family, than fathers. Mothers and fathers experienced a similar level of negative informational social exchanges with friends and health professionals. Mothers experienced significantly more negative instrumental social exchanges with all sources than fathers. Mothers experienced significantly higher negative emotional social exchanges with family and health professionals but similar level with spouse and friends as fathers.

Positive and Negative Social Exchanges and Depressive Symptoms.

Results of two dyadic MLMs examining the association between type of positive and negative social exchanges and parental depressive symptoms are shown in Table 3. Mother's education was significantly negatively associated with depressive symptoms when examining type of negative social exchanges. When Level 2 socio-demographics were at their mean-level, there was not a significant association between positive instrumental, informational, or emotional social exchanges and depressive symptoms for mothers or fathers. However, a higher level of negative emotional social exchanges was significantly associated with higher depressive symptoms in mothers ($\beta = 0.79$, standard error (SE) = 0.19) and fathers ($\beta = 0.49$, SE = 0.25). A higher level of negative instrumental social exchanges was significantly associated with higher depressive symptoms in fathers ($\beta = 0.38$, SE = 0.16). Level of negative informational social exchanges was not significantly associated with depression symptoms.

Results of two dyadic MLMs examining the association between source of positive and negative social exchanges and parental depressive symptoms are shown in Table 4. When Level 2 socio-demographics were at their mean, a lower level of positive social exchanges with spouse was significantly associated with higher depressive symptoms in mothers (β = −0.37, SE = 0.08). In contrast, a lower level of positive social exchanges with family (β = −0.23, SE = 0.11), but higher level of positive social exchanges with friends (β = 0.20, SE = 0.10) and health professionals (β = 0.19, SE = 0.08), was associated with higher depressive symptoms in fathers. A higher level of negative social exchanges with spouse was significantly associated with higher depressive symptoms in mothers (β = 0.49, SE = 0.12) and fathers (β = 0.441, SE = 0.17). A higher level of negative social exchanges with family was significantly associated with higher depressive symptoms in fathers (β = 0.30, SE = 0.14). Level of positive social exchanges with friends and health professionals were not significantly associated with depression symptoms.

Discussion

The goal of this study was to elucidate the types and sources of positive and negative social exchanges experienced by mothers and fathers of children with ASD and understand their association with parental depressive symptoms. At a within-person level, mothers of children with ASD were equally likely to experience the three types of positive social exchanges, whereas fathers experienced more informational than emotional positive social exchanges. This finding is consistent with evidence that women seek out and/or receive more emotional social exchanges than men (Walen and Lachman, 2000). In support of our hypothesis, and research on the general population (Okun and Keith, 1998), one's spouse was the primary source of positive social exchanges, yet also the primary source of negative social exchanges, for both mothers and fathers of children with ASD.

Overall, mothers of children with ASD reported not only more positive but also more negative social exchanges with family, friends, and health professionals than fathers. Thus, mothers' positive and negative social exchanges occur across a wider range of social relationships than fathers in families of children with ASD. The mother–father difference in social exchanges with family and friends may reflect differences in daily activities. Parents of children with ASD often have a disparate division of labor, with mothers retracting from employment to focus on childcare and fathers focusing on employment (Hartley et al., 2014; Warfield, 2005). As a result, fathers may have fewer opportunities for social exchanges with family and friends relative to mothers. Moreover, on average, mothers of children with ASD are more involved in child ASD services than fathers (Sofronoff and Farbotko, 2002), which may not only lead to more positive but also negative social exchanges with health professionals (Schieve et al., 2011). Interventions and supports aimed at mothers of children with ASD, relative to fathers, may be best aimed at strengthening social exchanges across multiple key social relationships. Alternatively, ratings of social exchanges were subjective (i.e. what does "often" mean); it is possible that gender differences in baselines (as opposed to actual level of social exchanges) contributed to findings.

Mothers and fathers of children with ASD experienced similar levels of positive and negative emotional social exchanges with one's spouse, suggesting a balanced flow of

emotional exchanges within couples. In contrast, mothers experienced more positive and negative instrumental social exchanges with one's spouse than fathers, whereas fathers experienced more positive and negative informational exchanges with one's spouse than mothers. Thus, fathers of children with ASD may be more likely to offer instrumental support to mothers (experienced positively and negatively), while mothers offer informational support to fathers (experienced positively and negatively). This finding may reflect the tendency for mothers to take on more childcare than fathers and thus have a greater need for assistance with tasks. If so, this mother–father difference may be reduced in families with a more even division of labor.

The most frequent types of positive social exchanges for all sources were informational (e.g. useful suggestions) or instrumental (e.g. helpful assistance) for both mothers and fathers of children with ASD. The most frequent type of negative social exchange was informational (e.g. intrusive advice), and this was particularly true for social exchanges with one's spouse and family. Thus, it may be beneficial for interventions to encourage parents of children with ASD to direct their spouse, family, and friends to listen to concerns or provide aid, as opposed to offering advice, which is often experienced negatively. Moreover, parents of children with ASD may benefit from interventions that encourage them to communicate preferences for informational social exchanges (e.g. how to frame and when to provide) with spouse and family.

In contrast to our hypothesis, none of the types of positive social exchanges were associated with parental depressive symptoms. Thus, the type of positive social exchange may not matter as much as who is providing the positive social exchange. In contrast, type and source appear to matter for negative social exchanges. Negative emotional social exchanges were positively associated with depressive symptoms in both mothers and fathers of children with ASD (medium and small effect, respectively), as hypothesized. Negative instrumental social exchanges were also positively associated with depressive symptoms in fathers (small effect). Thus, in the context of child-related challenges associated with ASD, experiencing adequate assistance appears to be more important for psychological well-being in fathers than mothers. Neither positive nor negative informational social exchanges were associated with parent depressive symptoms; thus, despite occurring frequently, informational social exchanges may not be as integral as the other types of social exchanges for parent psychological well-being.

In terms of source of positive and negative social exchanges, social exchanges with one's spouse were most strongly associated with depressive symptoms in mothers and fathers of children with ASD. Specifically, positive social exchanges with one's spouse had a medium-sized negative association with depressive symptoms in mothers, while negative social exchanges with one's spouse had a medium-sized positive association with depressive symptoms in mothers and fathers of children with ASD. These findings support previous studies indicating that spousal support has important links to psychological well-being in mothers of children with ASD (Ekas et al., 2015). Parents of children with ASD are at risk of poor couple relationship quality (Hartley et al., 2010); interventions and supports that target social exchanges with one's spouse may be critical for both mothers and fathers. Positive and negative social exchanges with family were also associated (negatively and

positively, respectively) with depressive symptoms in fathers of children with ASD (small effect). Thus, although mothers experience higher levels of social exchanges with family, these social exchange are more strongly tied to psychological well-being in fathers.

Unexpectedly, positive social exchanges with friends and health professionals were positively associated with depressive symptoms in fathers of children with ASD. One hypothesis is that fathers with higher depressive symptoms seek out social exchanges with friends and health professionals to deal with symptoms and/or compensate for negative social exchanges with their spouse. It is not clear why social exchanges with health professionals were not associated with mothers' depressive symptoms. Parents were not given instructions about which health professionals to refer. The extent to which ratings capture medical versus mental health professionals or those directed at the parent versus child with ASD is unknown. If these ratings, at least in part, reflect ASD professionals, there may be low-cost strategies to modify ASD services to target the entire family and facilitate positive social exchanges for parents. In our sample, families received an average of 13.8 h of weekly child ASD services, providing many opportunities for social exchanges between ASD health professionals and parents.

There are several strengths to this study including a large sample of families of children with ASD at a similar age and thus undergoing many of the same experiences. Dyadic MLMs were used to control for between-family effects and the linked nature of couple data. There are also study limitations. Our sample was largely Caucasian, non-Hispanic, and of middle socio-economic status; this reflects the Midwestern state from which the sample was recruited and population-level trends in ASD diagnosis (Durkin et al., 2010). Our sample, primarily represented married heterosexual couples and has limited generalizability to same sex couples, non-married couples, and single parents. Our study was cross-sectional. Discussion drew from theory and evidence that high positive and low negative social exchanges improve psychological well-being (Rook, 2014; Smith et al., 2012). Longitudinal studies, however, should investigate directional effects. This study captured perceived social exchanges, which may differ from observed. Nevertheless, this is also a strength in that perceived ratings of social relationships have been found to be stronger predictors of psychological well-being than observed (Siklos and Kerns, 2006). This study also relied on single-reporter data; it is possible that having high depressive symptoms distorted ratings of social exchanges (e.g. discounted positive exchanges and exaggerated negative exchanges) as opposed to actual social exchanges. Future studies should examine the extent to which positive and negative social exchanges serve as moderators or mediators of the impact of child symptoms and behavior problems on parent psychological well-being. In addition, future studies should examine partner (spouse) effects of positive and negative social exchanges on psychological well-being.

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Table 1.

Socio-demographics of families of children with autism spectrum disorder (ASD)

Couples (n = 176)	
Income (M[SD])	$80–89,999 ($30,000)
Number children (M[SD])	2.13 (1.03)
Parents	
Mother age, years (M[SD])	38.69 (5.20)
Father age, years (M[SD])	40.93 (5.80)
Education (n [%])	
> High school	13 (3.5%)
High school degree/GED	33 (8.7%)
Some college	60 (15.9%)
College Degree	167 (44.2%)
Some graduate	22 (5.8%)
Graduate degree	77 (19.0%)
Race/ethnicity (n [%])	
Caucasian, Non-Hispanic	308 (87.5%)
Hispanic	26 (6.9%)
African-American	4 (1.1%)
American Indian	1 (0.3%)
Asian/Pacific Islander	9 (2.4%)
Multiple	4 (1.1%)
Child with ASD	
Age, years (M [SD])	7.97 (2.30)
Male (n [%])	156 (85.2%)
Intellectual disability (n [%])	64 (34.8%)
CBCL (M[SD])	67.84 (9.32)
SRS (M[SD])	76.26 (.24)
ABAS (M[SD])	65.99 (15.32)

Note.

SRS = Social Responsiveness Scale; CBCL = Child Behavioral Checklist; ABAS = Adaptive Behavior Assessment System.

Table 2.

Means and standard deviations for positive and negative social exchanges by type across sources

	Mother						Father					
	Spouse (1)	Family (2)	Friends (3)	Professionals (4)	Total	Difference by source	Spouse (1)	Family (2)	Friends (3)	Professionals (4)	Total	Difference by source
Positive Social Exchanges												
Informational (5)	7.39 (3.51)[a]	4.55 (3.31)[a]	4.28 (3.20)[a]	3.59 (3.93)[a]	19.75 (9.20)	1>2,3,4	8.16 (3.05)	3.11 (2.71)	2.94 (2.69)	2.68 (3.31)	16.90 (7.59)	1>2,3,4
Instrumental (6)	8.76 (3.04)[a]	4.96 (3.63)[a]	3.58 (3.30)[a]	1.51 (2.90)	18.85 (7.84)	1>2>3>4	7.93 (3.14)	3.98 (3.19)	2.89 (2.81)	1.04 (2.06)	15.86 (7.60)	1>2>3>4
Emotional (7)	6.34 (2.66)	4.96 (3.16)[a]	5.31 (3.04)[a]	1.86 (2.91)	18.51 (7.86)	1>2,3>4	5.90 (2.61)	3.33 (2.95)	3.20 (2.69)	1.04 (2.22)	13.49 (6.97)	1>2,3>4
Total	22.62 (7.64)	14.47 (8.41)	13.25 (8.01)	6.81 (8.46)			2.92 (7.46)	10.31 (7.47)	8.99 (6.97)	4.74 (6.66)		
Difference by type	5,6>7	----	----	5>6,7			5,6>7	----	----	5>6,7		
Negative Social Exchanges												
Informational (5)	3.14 (2.55)[b]	3.36 (3.32)[a]	1.36 (2.03)	0.38 (1.10)	8.26 (6.67)	1>2,3 4	4.03 (2.67)	2.35 (2.77)	1.05 (1.68)	0.16 (0.64)	7.60 (6.02)	1>2,3,4
Instrumental (6)	2.80 (2.91)[a]	2.35 (2.69)[a]	1.51 (2.35)[a]	0.45 (1.12)[a]	7.12 (6.78)	1>2>3>4	2.12 (2.49)	1.59 (2.18)	0.96 (1.65)	0.14 (0.61)	4.77 (5.46)	1>2>3>4
Emotional (7)	1.71 (2.18)	0.95 (1.93)[a]	0.24 (0.96)	0.13 (0.62)[a]	2.68 (4.05)	1 >2,3>4	11.50 (1.71)	0.60 (1.25)	0.17 (0.53)	0.02 (0.18)	2.56 (0.20)	1>2,3>4
Total	7.66 (6.96)	7.95 (7.49)	3.91 (5.43)	1.06 (2.68)			7.74 (6.51)	5.53 (6.12)	2.79 (4.03)	0.35 (1.36)		
Difference by type	5,6>7	5>6>7	5,6>7	----			5,6>7	5>6>7	5,6>7	----		

Note.

Differences by source, type, and parent gender based on repeated measure multivariate analysis of variance and Bonferroni comparisons.

[a] = mothers higher in type by source than fathers.

[b] = fathers higher in type by source than mothers.

1 = spouse, 2 = family, 3 = friends, 4 = professionals, 5 = informational, 6 = instrumental, 7 = emotional.

Table 3.

Dyadic multilevel models of type of positive and negative social exchanges predicting mothers' and fathers' depressive symptoms

| | Positive Social Exchanges | | | | | | Negative Social Exchanges | | | | | |
| | Mother | | | Father | | | Mother | | | Father | | |
	Coeff (SE)	t-ratio	Effect size r	Coeff (SE)	t-ratio	Effect size r	Coeff (SE)	t-ratio	Effect size r	Coeff (SE)	t-ratio	Effect size r
Level 1												
Instrumental	0.01 (0.14)	0.06	.00	0.09 (0.17)	0.55	.04	0.21 (0.16)	1.29	.10	0.38 (0.16)*	2.32	.18
Informational	−0.17 (0.14)	−1.26	.10	−0.02 (0.14)	−0.12	.01	−0.18 (0.13)	−1.33	.10	0.06 (0.19)	0.30	.02
Emotional	−0.09 (0.14)	−0.68	.05	−0.11 (0.12)	−0.97	.07	0.79 (0.19)**	4.12	.30	0.49 (0.25)*	1.98	.15
Level 2												
Intercept	16.24 (1.74)**	9.34	.58	9.10 (1.74)**	5.24	.37	13.66 (0.86)**	15.96	.77	11.73 (0.76)**	15.40	.75
Parent Education	−0.51 (0.49)	−1.04	.08	−0.38 (0.36)	−1.04	.08	−0.85 (0.41)*	−2.06	.15	−0.31 (0.32)	−0.99	.02
Income	−0.26 (0.18)	−1.50	.11	−0.22 (0.15)	−1.46	.11	−0.07 (0.14)	−0.51	.00	−0.16 (0.13)	−1.24	.10
	Standard Deviation (Variance)											
Level-1 Intercept	8.83 (77.96)						7.71 (59.49)					

Note.

*
p .05,

**
p < .01.

Effect size: $r = \sqrt{[t^2/(t^2 + df)]}$; small: $r > .10$, medium: $r > .24$ and large: $r > .37$

Table 4.

Dyadic multilevel models of sources of positive and negative social exchanges predicting mothers' and fathers' depressive symptoms

| | Positive Social Exchanges | | | | | | Negative Social Exchanges | | | | | |
| | Mother | | | Father | | | Mother | | | Father | | |
	Coeff (SE)	t-ratio	Effect size r	Coeff (SE)	t-ratio	Effect size r	Coeff (SE)	t-ratio	Effect size r	Coeff (SE)	t-ratio	Effect size r
Level 1												
Spouse	$-0.37\ (0.08)^{**}$	4.27	.28	$-0.12\ (0.08)$	-1.48	.11	$0.49\ (0.12)^{**}$	4.15	.31	$0.44\ (0.12)^{**}$	3.53	.26
Family	$-0.10\ (0.08)$	-1.22	.09	$-0.23\ (0.11)^{*}$	-2.24	.17	$0.14\ (0.13)$	1.08	.08	$0.30\ (0.14)^{*}$	2.07	.16
Friends	$-0.07\ (0.08)$	-0.89	.01	$0.20\ (0.10)^{*}$	1.98	.15	$0.29\ (0.20)$	1.47	.11	$0.31\ (0.30)$	1.05	.08
Professionals	$0.11\ (0.08)$	1.38	.11	$0.19\ (0.08)^{*}$	2.31	.18	$-0.24\ (0.31)$	-0.77	.06	$0.09\ (0.74)$	0.12	.01
Level 2												
Intercept	$17.20\ (1.78)^{**}$	9.67	.59	$8.19\ (1.77)^{**}$	4.62	.33	$13.04\ (0.97)^{**}$	13.49	.70	$12.30\ (0.82)^{**}$	15.04	.76
Parent Education	$-0.79\ (0.46)$	-1.73	.13	$-0.29\ (0.35)$	-0.83	.06	$-0.71\ (0.41)$	-1.74	.13	$-0.37\ (0.33)$	-1.13	.03
Income	$-0.12\ (0.15)$	-0.79	.06	$-0.22\ (0.14)$	-1.57	.12	$-0.10\ (0.15)$	-0.66	.00	$-0.20\ (0.14)$	-1.47	.11
				Standard Deviation (Variance)								
Level-1 Intercept	8.60 (73.91)						7.76 (60.16)					

Note.

*
p .05,

**
p <.01.

Effect size: $r = \text{sqrt}\ [t^2/(t^2 + df)]$; small: $r > .10$, medium: $r > .24$ and large $r > .37$