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Correlates of Reciprocity in Adult Siblings of Individuals with Autism

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Abstract:	Sibling relationships often involve exchanges of emotional and tangible support. When one sibling has a disability, the nature of the reciprocity of such support may differ from sibling pairs wherein no disability is present. Specifically, when an individual has autism, the nature of emotional and tangible reciprocity is unclear given the potential for a supportive or caregiving role of the sibling without autism. In this study, 256 adult siblings of autistic individuals completed a national survey. Analyses included descriptive statistics describing the nature of reciprocity and hierarchical regressions to identify the correlates of emotional and tangible reciprocity. Overall, participants often reported not giving or receiving much tangible support to their autistic sibling while they often gave and, to some extent received, emotional support from their autistic sibling. When the autistic sibling had more asocial behaviors, participants were more likely to provide emotional support than receive it. When participants engaged in more caregiving, they both gave and received more emotional and tangible support. Implications for research and practice are discussed.

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Abstract

Sibling relationships often involve exchanges of emotional and tangible support. When one sibling has a disability, the nature of the reciprocity of such support may differ from sibling pairs wherein no disability is present. Specifically, when an individual has autism, the nature of emotional and tangible reciprocity is unclear given the potential for a supportive or caregiving role of the sibling without autism. In this study, 256 adult siblings of autistic individuals completed a national survey. Analyses included descriptive statistics describing the nature of reciprocity and hierarchical regressions to identify the correlates of emotional and tangible reciprocity. Overall, participants often reported not giving or receiving much tangible support to their autistic sibling while they often gave and, to some extent received, emotional support from their autistic sibling. When the autistic sibling had more asocial behaviors, participants were more likely to provide emotional support than receive it. When participants engaged in more caregiving, they both gave and received more emotional and tangible support. Implications for research and practice are discussed.

Correlates of Emotional and Tangible Reciprocity in Adult Siblings of Individuals with Autism

Relationships often involve give and take. According to social theories, relationships include exchanges between each party (Adams, 1965; Cook, 1987). Specifically, there is an exchange of emotions and services that may benefit each person in the relationship (Levi-Straus, 1964). Such reciprocity can be uneven (e.g., one person giving more than receiving) or balanced (e.g., each person equally giving to one another; Sahlins, 1965). Further, the exchange may include emotional support (i.e., providing support to indicate an individual is valued such as companionship) and/or tangible support (i.e., providing instrumental support such as financial assistance; Horwitz et al., 1996). Emotional support is important as reciprocity in emotional support significantly predicts better mental health (Jung, 1990). Tangible reciprocity also matters as when individuals (including care recipients) provide tangible support, caregivers report less stress and burden (Dwyer et al., 1994).

Like all relationships, sibling relationships include exchanges. In alignment with social learning theory (Bandura, 1977), there are four main types of relationships: differential reinforcement, vicarious learning, cognitive processes, and reciprocal determinism (Maisto et al., 1999). The latter posits that there should be bidirectional and reciprocal interactions between siblings—even if the type (i.e., emotional or tangible) of support provided by each sibling differs. Indeed, in family relationships, there can be different abilities to provide support but balance is maintained by exchanging reciprocal types of support (Finch & Mason, 1993). However, when a disability is present, the reciprocity of such exchanges may be different due to caregiving roles. Much of the prior research about siblings of individuals with disabilities has focused on siblings without disabilities as the provider of emotional and tangible support with

the person with a disability as the recipient; however, some would argue that sibling relationships should still be reciprocal (Hayden & Hastings, 2022). A person with a disability may be unable to provide tangible support but could offer companionship (i.e., emotional support) (Horwitz et al., 1996). Further, when caregiving relationships are reciprocal, there are positive benefits to both parties including that reciprocity may enable caregiving to be sustained over time (Perkins & Haley, 2013).

Consider relationships when one sibling has autism. Unlike sibling relationships in the general population, when a sibling has autism, the relationship may include caregiving responsibilities (Orsmond & Seltzer, 2007). Such unique responsibilities may introduce different exchanges into the relationship. Some of the extant research about sibling relationships when a disability is present suggests that reciprocity occurs—but that the individual with a disability contributes differently to the relationship than the sibling without a disability (Kramer et al., 2013; Tozer, Atkin, & Wenham, 2013). Yet, little research has explored the nature of reciprocity. The purpose of this study was to investigate the correlates of emotional and tangible reciprocity among siblings of individuals with autism. Specifically, Bronfenbrenner's (1979) ecological theory (along with extant research about siblings of individuals with autism) was used to identify potential correlates of reciprocity. To this end, the potential variables map onto the micro (i.e., characteristics of the sibling without autism and autistic sibling), macro (i.e., the caregiving interactions between the sibling with and without autism), and meso (i.e., the involvement of the sibling without autism in the disability field) systems.

Research findings about the nature of emotional reciprocity among siblings of individuals with autism is mixed. Rossetti and colleagues (2020) found that siblings of individuals with autism (versus Down syndrome) reported less reciprocal sibling relationships. Conversely, in a

study of individuals with disabilities, including autism, participants reported that their sibling relationships were balanced (i.e., equal giving and receiving) (Giesbers et al., 2020). Yet, research about non-disabled siblings of individuals with disabilities often reports that the sibling relationship is unequal wherein the non-disabled sibling provides more (and receives less) emotional support (Hall & Rossetti, 2018; Tozer & Atkin, 2015). To date, however, research has not delineated the types of exchanges (i.e., emotional or tangible) when examining reciprocity.

Given the mixed findings about the nature of reciprocity in extant literature, it may be that certain micro, macro, and meso-system characteristics correlate with the nature of reciprocity. Micro-system characteristics of the non-disabled sibling may correlate with reciprocity. For example, older individuals who are in better health and have greater income may have more resources to be able to give (versus receive) emotional and tangible support to their younger autistic siblings. Micro-system characteristics of the sibling with autism may also impact the nature of reciprocity. In a dyadic interview study with sibling pairs (i.e., the individual without a disability and the sibling with a disability, including autism), participants suggested that, when maladaptive behaviors were absent, sibling relationships were more reciprocal (Rossetti et al., 2020). Indeed, maladaptive behavior, including asocial behavior, is often a strong predictor of poor sibling relationships among siblings of individuals with autism (Orsmond & Long, 2021). It could also be that when the sibling with a disability, including autism, has less adaptive behaviors, non-disabled siblings are more likely to fulfill caregiving roles (Lee et al., 2019; Orsmond & Long, 2021). Further, in a study of siblings of individuals with autism, Orsmond and Fulford (2018) found that the presence of an intellectual disability related to less reciprocity.

Other macro-system and meso-system characteristics such as caregiving factors and disability involvement may also impact the nature of reciprocity. In a national study of 632 siblings of individuals with intellectual and developmental disabilities, including autism, Sanderson and colleagues (2019) found that siblings with larger caregiving support networks (i.e., more people who served as caregivers) reported higher levels of support but siblings often did not receive much support across caregiving domains. Unfortunately, with respect to autism (versus families of individuals with Down syndrome and cerebral palsy), there may be less caregiving support available for families due to poorer family relationships (Lee et al., 2019). Thus, it may be that when greater caregiving supporters are present and siblings engage in fewer caregiving domains themselves, they are less likely to provide emotional and tangible support for their siblings with autism. Siblings who opt into caregiving roles and feel competent in their caregiving abilities may also be more likely to provide more (versus less) support to their siblings with autism. Although unexplored in siblings of individuals with autism, parents of individuals with disabilities, including autism, who feel “captive” (versus “captivated”) with their caregiving roles often experience greater stress and more pessimism (Haley & Perkins, 2004); it is unclear whether such findings extend to reciprocity among siblings. Finally, aspects of disability involvement such as future planning, disability advocacy, knowledge of disability policy, and connectedness to the disability community may impact reciprocity. Across each of these domains, family members, including siblings, may engage in activities (e.g., creating a letter of intent, advocating for services, educating themselves about policies, and being involved in disability groups; Hodapp et al., 2017; Taylor et al., 2017) that, thereby, increase the amount of support given to (but not received from) their siblings with autism.

It is critical to better characterize emotional and tangible reciprocity among siblings for individuals with autism. While not examined in a large dataset of siblings of individuals with autism, parents of individuals with disabilities often give (more than receive) support to their offspring with disabilities; the uneven nature of support significantly contributes to poor parent mental health and well-being (Perkins & Haley, 2013). In the sibling literature, it has been suggested that when there are long-term inequities (e.g., the non-disabled sibling is giving more support than receiving support), there may be resentment and negative implications for caregiving (Seltzer & Krauss, 1993). Given the increasing incidence of autism in the United States (Interagency Autism Coordinating Committee, 2020) and the likelihood that individuals may assume caregiving roles for their siblings with autism (Orsmond & Seltzer, 2007), it is important to understand reciprocity in sibling relationships wherein an individual has autism. To this end, there were three research questions for this study: Among adult siblings of individuals with autism, (1) what is the nature of emotional and tangible reciprocity; (2) what are the correlates of emotional reciprocity; and (3) what are the correlates of tangible reciprocity? As with prior research examining reciprocity in the context of caregiving (e.g., Perkins & Haley, 2013; Williams & Robinson, 2001), we examined the correlates of emotional and tangible reciprocity separately. Based on the extant literature, we hypothesized that participants who were older, had better health and more income as well as had siblings with autism with fewer asocial behaviors, without an intellectual disability, and more adaptive behaviors would be more likely to give (versus receive) emotional and tangible support. We also hypothesized that participants with fewer caregiving supporters, who engaged in more caregiving domains themselves, who felt captivated (not captive), and who felt competent in their caregiving roles would be more likely to give (versus receive) support. Finally, we hypothesized that participants who engaged in more

future planning and disability advocacy and had greater disability knowledge and connectedness to the disability community would be more likely to give (versus receive) support.

Method

Participants

For this study, participants included 256 individuals. To be included in this study, participants needed to be: over 18 years of age; willing to complete a web-based survey; and have an adult sibling with autism. Given that the focus of this study was on adult siblings, we restricted the sample to include only participants over 18 years of age. On average, participants were 32.9 years of age ($SD = 10.98$, range 20 to 73). Participants reflected 39 states and Washington D.C., excluding Alabama, Arizona, Delaware, Hawaii, Iowa, Mississippi, Montana, North Dakota, Rhode Island, Vermont, and West Virginia. Most participants were female (87.9%, $n = 229$) and single (61.7%, $n = 158$). Altogether, 14.8% ($n = 38$) of the participants reflected racial minority backgrounds. On average, the siblings with autism were 25.0 years of age ($SD = 12.19$, range 6 to 65). See Tables 1 and 2.

Recruitment

To recruit a diverse national sample, information about the survey was disseminated through several platforms. Specifically, e-mails and recruitment flyers were distributed to the Sibling Leadership Network and its statewide chapters as well as local and state disability organizations. In addition, the flyer was distributed to the 22 state and local chapters of The Arc as well as the 67 University Centers for Excellence in Developmental Disabilities. E-mails were also distributed to the 7,843 agencies listed in the Yellow Pages for Kids with Disabilities. Such agencies included: service providers ($n = 3,025$), advocacy and legal agencies ($n = 1,725$),

schools and educational agencies ($n = 1,386$), nonprofit disability agencies ($n = 1,271$), and parent support groups ($n = 436$). No compensation was provided for completing the survey.

Procedures

We developed the Adult Sibling Survey using multiple sources. First, we reviewed the literature about siblings of individuals with disabilities, including autism, to inform the survey measures (e.g., Rossetti et al., 2020; Kramer et al., 2013; Burke et al., 2012). Then, we received feedback from three professors with research expertise about siblings of individuals with disabilities, five professionals in the autism field, and ten siblings of individuals with disabilities, including autism. Upon receiving their feedback, we revised the survey. We piloted the survey with five siblings of individuals with disabilities, including autism. Revisions were minimal (e.g., adding branching logic and correcting typographical errors). For example, we revised a multiple-choice question to a ranked order question; also, we added a response option with respect to family size.

All recruitment and study procedures were approved by the University Institutional Review Board. The survey was put onto a secure survey platform, Qualtrics. The survey was available from September 2018 to May 2019. Altogether, there was a total of 250 questions; because of branching logic, the survey took 20 to 25 min, on average, to complete. Although there was a paper and pencil option for the survey, all surveys were completed electronically. To access the survey, respondents were asked to click on a uniform resource locator provided in the recruitment information. Responses were stored in Qualtrics Survey Software and downloaded periodically to guard against computer malfunctions.

Survey

Dependent variable: Emotional Reciprocity (Perkins & Haley, 2013). Reflecting six items with a 5-point Likert scale (ranging from 0 = *none* to 4 = *a great deal*), the emotional reciprocity scale gauges the extent of emotional support given and received. For this study, we separately analyzed how much emotional support is given to the autistic individual and how much support is received from the autistic individual. Items included “How much companionship do you give your sibling?” and “How much companionship do you receive from your sibling?” Originally, the scale yielded the sum of all items and was scored from -12 to +12 with 0 reflecting balanced reciprocity. For this study, for the separate variables of emotional support given and received, the scores ranged from 0 to 12. In the original study of the full scale of emotional reciprocity, the Cronbach’s alpha was .75 (Perkins & Haley, 2013). In this study, the Cronbach’s alpha was .86 for emotional support given and .90 for emotional support received.

Dependent variable: Tangible Reciprocity (Perkins & Haley, 2013). There were six items with each item having a five-point Likert scale ranging from 0 = *none* to 4 = *a great deal*. The scale gauges the extent of tangible support given and received. For this study, we separately analyzed how much tangible support is given to the autistic individual and how much tangible support is received from the autistic individual. Sample items included “How much help do you give your sibling with cleaning tasks around the home?” and “How much help do you receive from your sibling with cleaning tasks around the home?” Originally, the scale yielded the sum of all items and was scored from -12 to +12 with 0 reflecting balanced reciprocity. For this study, the scores for given and received tangible support ranged from 0 to 12. In the original study of the full scale of tangible reciprocity, the Cronbach’s alpha was .93 (Perkins & Haley, 2013). In

this study, the Cronbach's alpha was .86 for tangible support given and .82 for tangible support received.

Independent variable: Sibling Age. Participants answered the year of their birth. Then, responses were transformed into the participant's age (in years).

Independent variable: Sibling Health. Participants answered: "How would you describe your health?" Responses included: (1) *poor*; (2) *fair*; (3) *moderate*; (4) *good*; and (5) *excellent*. This one-item measure has been found to accurately predict health and mortality (Idler & Benjamini, 1997). Also, this item has been used in previous studies about families of individuals with disabilities, including autism (e.g., Burke et al., 2012).

Independent variable: Sibling Household Income. Participants reported their annual household income. Response options included: (1) *less than \$20,000*; (2) *between \$20,001 and \$40,000*; (3) *between \$40,001 and \$60,000*; (4) *\$60,001 and \$80,000*; (5) *\$80,001 to \$100,000*; and (6) *more than \$100,000*.

Independent Variable: Presence of Intellectual Disability (ID). Participants reported whether their sibling with autism had a co-occurring intellectual disability. Response options included: (0) *no* and (1) *yes*.

Independent Variable: Individual with Autism Adaptive Behavior (Seltzer & Li, 1996). The Activities of Daily Living Index is a 15-item scale to measure the functional abilities of individuals with disabilities. Participants were asked, "Can your sibling with a disability perform the following activities with total help, some help, or without help?" Activities included housework, laundry, and prepare meals. For each item, there were three potential responses: (1) *without help*; (2) *with some help*; and (3) *with total help*. Variables were summed into a single, cumulative score ranging from 15 to 45, with higher scores indicating less functional

independence. Prior studies with siblings of adults with IDD have reported high reliability for this scale (e.g., $\alpha = .93$, Lee et al., 2019). For this sample, the Cronbach's alpha was .94.

Independent variable: Sibling with Autism Asocial Behavior (Bruininks et al., 1996).

The Scales of Independent Behavior-Revised (SIB-R) is an eight-item scale of maladaptive behaviors with subscales measuring internalizing, externalizing, and asocial behaviors. Given the nature of autism, in this study, only the asocial behavior subscale was used as an independent variable. The frequency of the behavior was gauged by a six-point Likert scale: (1) *never*; (2) *less than once a month*; (3) *1-3 times per month*; (4) *1-6 times per week*; (5) *1-10 times per day*; and (6) *1 or more times per hour*. If the participant indicated that the behavior occurred more than *never*, the severity of the behavior was measured by a six-point Likert scale: (1) *does not apply*; (2) *not severe*; (3) *slightly severe*; (4) *moderately severe*; (5) *very severe*; and (6) *extremely severe*. The composite score reflects the frequency and severity of the asocial behavior with lower scores indicating more frequent and/or severe asocial behaviors. An example item was "Does the sibling have any unusual behaviors that they may do over and over again...". In a previous study using the SIB-R, high reliability was reported (Cronbach's alpha = .81, Burke & Heller, 2016). In this study, reliability was high (alpha = .92).

Independent variable: Caregiving Tasks (Penrod et al., 1995). Participants were asked whether individuals (i.e., parents, other siblings, relatives, friends, community members, paid helpers, and others) help with direct assistance, financial assistance, or decision-making for their siblings with autism. Items were summed with higher numbers indicating receiving greater caregiving support from others. In a prior study, Cronbach's alpha was .80 (Williams & Dilworth-Anderson, 2002). For this sample, the Kuder-Richardson coefficient was .60.

Independent variable: Caregiving Domains (Horwitz, 1985). Participants were asked “In which domains do you provide caregiving for your sibling with a disability?” for eleven domains of caregiving (e.g., transportation, household help). Response options were rated on a 5-point Likert scale ranging from 1 = *never* to 5 = *frequently*. A summed variable ranging from 11 to 55 was used for this study. Prior studies have reported high reliability for this scale (e.g., $\alpha = .94$, Burke, Lee, & Arnold, 2019). For this sample, the Cronbach’s alpha was .96.

Independent variable: Caregiving Role Captivity (O’Malley & Qualls, 2017). This is a subscale of the Caregiver Reaction Scale which taps into feelings of being trapped in the caregiving role. Items are scored using a 4-point Likert-type scale, where 1 = *not at all* and 4 = *completely*. For example, an item was “Wish you were free to lead a life of your own”. Scores are averaged, with higher mean scores indicating more negative experiences. A mean variable ranging from 1 to 4 was used for this study. Prior studies have reported high reliability for this scale (e.g., $\alpha = .89$, O’Malley & Qualls, 2022). For this sample, the Cronbach’s alpha was .72.

Independent variable: Caregiving Competence (O’Malley & Qualls, 2017). This is a subscale of the Caregiver Reaction Scale which appraises feelings of confidence and caregiving skills and ability. Items are scored using a 4-point Likert-type scale, where 1 = *not at all* and 4 = *completely*. Scores are averaged, with higher mean scores indicating higher levels of negative and positive experiences. A mean variable ranging from 1 to 4 was used for this study. Prior studies have reported high reliability for this scale (e.g., $\alpha = .88$, O’Malley & Qualls, 2022). For this sample, the Cronbach’s alpha was .90.

Independent variable: Future Planning (Heller & Kramer, 2009). This scale consisted of eleven future planning activities. Sample activities included: creating a letter of intent and locating an attorney. Response options dichotomous: 0 = *no* or 1 = *yes*. A summed

variable ranging from 0 to 11 was used for this study. In a prior study about siblings of individuals with disabilities, this scale had strong internal consistency (Kuder-Richardson coefficient = .86; Burke & Heller, 2016). For this sample, the Kuder–Richardson coefficient was .88.

Independent variable: Disability Advocacy (Author, submitted). This scale consisted of 15 items for parent advocacy encompassing three domains (i.e., six items for advocacy for one’s own child, four items for advocacy for other families, and five items for advocacy for systemic change). Sample items included whether the respondent had ever: “searched the internet to find agencies and/or services to meet their child’s needs”; or “facilitated trainings or support groups for other families of individuals with disabilities”. Questions were answered on a 5-point Likert scale: (1) *not at all*; (2) *a little*; (3) *sometimes*; (4) *often*; and (5) *very often*. A cumulative variable was used, ranging from 15 to 75. Prior studies have reported high reliability for this scale (e.g., $\alpha = .91$, Lee et al., 2022). For this sample, the Cronbach’s alpha was .91.

Independent variable: Knowledge of Disability Policy (Author, submitted). Participants were asked about their knowledge of six family support and disability policies (e.g., Home and Community-Based Services; the Affordable Care Act). Responses were marked on a 4-point Likert scale ranging from (0) *I have not heard of it* to (3) *I am well-informed about this policy*. Responses were aggregated into a total score with higher scores indicating greater policy knowledge. In the original study (Author, submitted), the Cronbach’s alpha was .81. In this study, reliability was also high ($\alpha = .81$).

Independent variable: Disability Connectedness (Author, in press). With ten items, participants were asked about their degree of insidership in the disability community. Items included “To what extent have you devoted time to disability-related groups, causes or

activities?” and “To what extent do you have friends or socialize with parents of individuals with disabilities or individuals with disabilities themselves?”. Response options ranged from (1) *not at all* to (5) *very much so*. In the original study establishing the reliability of the measure, there was high reliability ($\alpha = .88$, Author, in press). In this study, reliability was also high ($\alpha = .95$).

Analyses

We used descriptive statistics (e.g., frequencies, means, standard deviations, and ranges) to examine the nature of emotional and tangible reciprocity. Two methods were used to identify multicollinearity between the independent variables: correlations of above .65 (Burns & Grove, 2005) and Variance Inflation Factor (VIF) above 2.5 (Tabachnik & Fidell, 2007). Upon conducting correlations among the independent variables, none of the correlations were found to be high (i.e., r 's $\leq .50$), and the VIFs were all below 2.5. Thus, multicollinearity was not a concern (see Table 3). To understand the contribution of siblings, individuals with autism, caregiving, and disability involvement factors to emotional and tangible reciprocity, we conducted four hierarchical regression analyses. Specifically, hierarchical regressions were chosen so we could decipher the variables in terms of who (i.e., the sibling without autism or the autistic sibling) and what (i.e., aspects of caregiving, disability knowledge activities) correlate with giving and receiving emotional support as well as giving and receiving tangible support (i.e., the four dependent variables). Notably, there was no high correlations (r 's $> .50$) between emotional and tangible reciprocity (see Table 4). The first block included participant demographic variables: age, health, and household income. The second block included functioning variables (i.e., adaptive and asocial behavior, presence of an intellectual disability) of the individual with autism. The third block included sibling caregiving variables: caregiving tasks, caregiving domains, caregiving role captivity, and caregiving competence. The fourth

block included variables related to disability involvement by the participant: future planning, disability advocacy, knowledge of disability policy, and disability connectedness. Change in the amount of variance in emotional and tangible reciprocity accounted for at each step of the regression model was examined.

Results

Nature of Emotional and Tangible Reciprocity

With respect to emotional reciprocity, the average score was 5.22 ($SD = 3.13$; range = 0 to 9) for support given and 4.89 ($SD = 3.74$; range = 0 to 12) for support received. Further, there was a significant, high correlation between emotional support given and received ($r = .61$). For the tangible reciprocity score, participants averaged 3.25 ($SD = 3.09$; range = 0 to 9) for support given and .81 ($SD = 1.57$; range = 0 to 9) for support received; there was no significant correlation between tangible support given and received ($r = .17, p = ns$). The distributions of participants' emotional reciprocity scores were normal for both support given and received. The distribution of participants' tangible reciprocity scores was negatively skewed for both support given and received. See Figures 1 and 2. We also examined each individual item. With respect to tangible reciprocity, most participants reported that they neither gave nor received tangible support. Regarding emotional reciprocity, most participants reported that they gave and received some emotional support. See Table 5.

Correlates of Emotional Reciprocity

Emotional Support Given To the Autistic Sibling

The first block of variables accounted for 6.8% of the variance of emotional support given to the autistic sibling ($F = 7.170, p < .001$). Specifically, older participants were significantly less likely to give emotional support to their autistic siblings ($p < .01$). After adding

functioning variables of the sibling with autism in the second block, an additional 4.2% of the variance in emotional reciprocity was accounted for, an R^2 change that was significant, $F(3, 249) = 4.984, p = .002$. Participants whose siblings with autism had fewer asocial behaviors were significantly more likely to provide emotional support ($p < .05$). With the third block, the regression model explained more of the variance ($\Delta R^2 = 17.5\%$), and was a significant increase, $F(4, 245) = 16.203, p < .001$. The number of caregiving tasks that others engaged in correlated negatively with providing more emotional support to their siblings with autism ($p < .05$).

Participants who engaged in more caregiving domains provided significantly more emotional support to their siblings with autism ($p < .001$). Including the fourth block increased the variance accounted for by 4.0%, an R^2 change that was significant, $F(4, 241) = 4.666, p < .01$. Future planning activities correlated positively with providing more emotional support to their siblings with autism ($p < .01$). Participants who were more connected with the disability community were significantly more likely to give emotional support to their siblings with autism ($p < .01$). In total, the final model explained 32.5% of the variance ($F = 9.770; p < .001$) for emotional support given by the participant. See Table 6.

Emotional Support Received From the Autistic Sibling

The first block of variables accounted for 3.1% of the variance of emotional support received from the autistic sibling ($F = 3.697, p = .012$). Specifically, older participants were significantly less likely to receive emotional support from their autistic siblings ($p < .05$). After adding functioning variables of the individual with autism in the second block, an additional 3.6% of the variance in emotional support received was accounted for, an R^2 change that was significant, $F(3, 249) = 4.287, p < .01$. Participants whose siblings with autism had fewer asocial behaviors were significantly more likely to receive emotional support ($p < .01$). With the third

block, the regression model explained more of the variance ($\Delta R^2 = 15.2\%$), and was a significant increase, $F(4, 245) = 13.134, p < .001$. Participants who engaged in more caregiving domains received significantly more emotional support from their siblings with autism ($p < .001$). Participants who felt more competent with their caregiving ability received significantly more emotional support from their siblings with autism ($p < .001$). Including the fourth block increased the variance by 4.8%, an R^2 change that was significant, $F(4, 241) = 4.985, p < .001$. Participant's future planning activities correlated positively with receiving more emotional support from their siblings with autism ($p < .01$). Participants who were more connected with the disability community were significantly more likely to receive emotional support from their siblings with autism ($p < .01$). In total, the final model explained 26.7% of the variance ($F = 7.638; p < .001$) for emotional support received from the autistic sibling. See Table 7.

Correlates of Tangible Reciprocity

Tangible Support Given To the Autistic Sibling

The first block of variables accounted for .4% of the variance of tangible support given and was not significant ($F = 1.308, p = .272$). With the second block, the regression model explained more of the variance ($\Delta R^2 = 6.3\%$) and was a significant change, $F(3, 249) = 6.742, p < .001$. When siblings with autism scored higher in adaptive functioning, their siblings were significantly more likely to provide tangible support ($p < .001$). Participants whose siblings with autism had fewer asocial behaviors were significantly more likely to provide tangible support ($p < .05$). After adding sibling caregiving variables in the third block, an additional 21.3% of the variance in tangible support given was accounted for, an R^2 change that was significant, $F(4, 245) = 32.358, p < .001$. Participants who engaged in more caregiving domains provided significantly more tangible support to their siblings with autism ($p < .001$). Including the fourth

block increased the variance by 1.7%, an R^2 change that was significant, $F(4, 241) = 2.756, p < .05$. Participants who engaged with more disability advocacy were significantly less likely to give tangible support to their siblings with autism ($p < .05$). The final model for tangible support given explained 39.7% of the variance ($F = 13.000; p < .001$). See Table 8.

Tangible Support Received From the Autistic Sibling

The first block of variables accounted for 3.5% of the variance of tangible reciprocity ($F = 4.050, p = .007$). Specifically, higher income participants were significantly less likely to receive tangible support from their siblings with autism ($p < .01$). With the second block, the regression model explained more of the variance ($\Delta R^2 = 3.9\%$) and was a significant change, $F(3, 249) = 4.533, p = .004$. Participants whose siblings with autism had fewer asocial behaviors were significantly more likely to receive tangible support ($p < .001$). After adding sibling caregiving variables in the third block, an additional 9.6% of the variance in tangible support received was accounted for, an R^2 change that was significant, $F(4, 245) = 8.236, p < .001$. Participants who engaged in more caregiving domains received significantly more tangible support from their siblings with autism ($p < .001$). Including the fourth block increased the variance by 5.4%, $F(4, 241) = 1.952, p = .01$. Participants who were more connected with the disability community were significantly more likely to receive tangible support from their siblings with autism ($p < .05$). The final model for tangible support received explained 18.3% of the variance ($F = 5.074; p < .001$). See Table 9.

Discussion

In this study, we examined emotional and tangible reciprocity among siblings of individuals with autism. We had four main findings. First, siblings reported reciprocal exchanges of emotional support. Given impairments in social communication among individuals with

autism and the extant literature (e.g., Kramer et al., 2013; Rossetti et al., 2020), it has been suggested that sibling relationships when an individual is autistic may be less reciprocal.

However, our study disconfirms that premise. Altogether, this finding contributes to a positive psychological approach to understanding sibling relationships (Dykens, 2006). Indeed, it may not only be that there are positive aspects of being a sibling of an individual with a disability (Hodapp et al., 2017) but also that, on average, sibling relationships are bidirectional with both siblings contributing equal emotional support to one another.

Relatedly, our study suggests that emotional and tangible reciprocity are two different constructs given their unique correlates and the absence of high correlations between the two scales. Further, for many tangible reciprocity items, most siblings neither received nor gave tangible support whereas for many emotional reciprocity items siblings received and gave some support. Future research may more closely examine the predictors of giving (versus receiving) support from the autistic sibling. Suggested by this study, characteristics of the individual with autism may significantly impact aspects of reciprocity. Rather than the type of support (i.e., emotional versus tangible), there may be aspects of the autistic individual that impact the extent to which support is received (versus given). Specifically, the extent of support needs of the autistic individual may impact the direction of support.

Second, asocial behavior matters for emotional and tangible reciprocity. When a sibling with autism engaged in fewer asocial behaviors, participants reported providing and receiving significantly more emotional and tangible support. This finding aligns with other research suggesting that asocial behaviors in sibling relationships can make the relationship more difficult (e.g., siblings may derive less benefits, report less closeness, and feel more guilt, Hodapp &

Urbano, 2007). Further, this finding extends the research suggesting that specific autism-behaviors (e.g., asocial behaviors) matter in the context of reciprocity.

Further research is needed to understand the role of asocial behaviors, reciprocity, and sibling health. In a study of parent caregivers of adults with intellectual disability, Perkins and Haley (2013) found that when parents provided more tangible support to their offspring with disabilities, parents reported increased depressive symptoms and worse mental health. Thus, it may be that siblings likewise experience worse depressive symptoms and mental health when their siblings exhibit asocial behaviors and, correspondingly, they provide and receive less emotional and tangible support. Indeed, in this scenario, unlike a positive psychology approach to understanding sibling relationships, a stress-coping paradigm (Lazarus & Folkman, 1984) may be more appropriate wherein asocial behaviors and reciprocity predict poor health of the sibling of the individual with autism.

Third, caregiving relates to reciprocity. Altogether, when participants engage in more caregiving, they both give and receive more emotional and tangible support. Many siblings provide support across multiple domains. Indeed, in a national study of siblings of individuals with disabilities, Burke and colleagues (2012) found that if siblings engage in caregiving, they are likely to do all of the caregiving (e.g., financial planning, companionship, guardianship). Thus, there may be some overlap between caregiving responsibilities and the provision of emotional and tangible support. However, this finding is notable in that when participants engage in more caregiving, they also receive more emotional and tangible support from their autistic siblings. This finding may suggest that greater caregiving can be sustained because, in part, of receiving more support from the autistic sibling (Perkins & Haley, 2013).

This finding related to caregiving is important given the potential impending caregiving roles for many siblings of individuals with disabilities. Across the United States, there are more than 86,953 sibling caregivers of individuals with disabilities (Sonik et al., 2016) and that number is just expected to grow as individuals with disabilities continue to outlive their parents. It is critical to understand how to support siblings in their newfound caregiving roles. This study suggests that addressing reciprocity may relate to sibling caregiving.

Finally, future planning and disability connectedness matter for emotional support (both given and received) while disability advocacy negatively relates to tangible support given to the autistic sibling. This finding suggests two ideas. First, to improve the reciprocity of emotional and tangible support, there are some different variables to target. Thus, emotional and tangible support are not one and the same. This finding is important as prior research about reciprocity (e.g., Kramer et al., 2013; Rossetti et al., 2020) has treated reciprocity as a singular construct when it seems that there are different aspects of reciprocity that matter. In addition, this finding suggests that disability involvement matters in relation to reciprocity. Siblings often report struggling to engage in future planning (Lee & Burke, 2020), lacking the ability to advocate for their siblings with disabilities, and wanting to be connected to the disability community (Burke et al., 2015). Educating and empowering siblings of individuals with autism may also improve the reciprocity of support with their siblings with autism.

Limitations

While an important launching point for understanding sibling reciprocity, this study had a few limitations. First, the sample was primarily White, college-educated, and female. Thus, there may be limited generalizability of the findings. Second, the data were cross-sectional. Without longitudinal data, causal inferences cannot be determined. Third, the survey was based on self-

report and only from the perspective of the sibling without autism. Research is needed that includes different data sources as well as the perspective of both siblings to holistically understand the exchange of emotional and tangible support. To that end, it would be helpful to conduct follow-up interviews with siblings (including the individual with autism and the individual without autism). In this way, we can discern how perceptions of reciprocity differ between siblings of individuals with autism and their autistic siblings. Fourth, other variables may explain reciprocity including autism symptoms and communication skills.

Future Directions for Research

Longitudinal research is needed to understand the nature of reciprocity over time. In this study, there was a positive correlation between age and reciprocity. However, it is unclear at what point reciprocity changes over the lifespan. Further, a longitudinal exploration of other variables over time may help explain how reciprocity changes across life stages. Our regression analyses explained 18-39% of the variance; other variables need to be identified that explain the remaining variance in reciprocity. For example, variables directly measuring the support needs of the autistic individual should be included in future research. It may also be that physical and mental health should be examined in relation to reciprocity. Based on prior research (Perkins & Haley, 2013), there is a relation between health and reciprocity among parents of individuals with disabilities; longitudinal research may help determine whether that relation extends to siblings of individuals with autism. Finally, although a premise of this study is that sibling relationships should be reciprocal, it may be that reciprocity changes over time, ebbing and flowing as autistic individuals and their siblings have changing needs and abilities to provide support. A longitudinal study could help flesh out changes in reciprocity over time, including whether the ideal of equal reciprocity is possible.

In addition, future research should include the perspectives of both siblings—the individual without autism and the individual with autism. Dyadic interviews (Caldwell, 2014) wherein the sibling without autism is interviewed, the sibling with autism is interviewed, and then they are interviewed together may help us develop a holistic understanding of reciprocity from both siblings' viewpoints. To ensure that the data collection is accessible for individuals with autism, researchers may turn to existing examples of ways to collect data with autistic individuals (Nicolaidis et al., 2011). Moving forward, research about siblings should include both individuals in the sibling pair.

Implications for Practice

There are also several implications for practice. Based on this study, practitioners may help families find other caregiving supporters. Adult siblings often report feeling disconnected from other siblings of individuals with disabilities (Burke et al., 2015). Yet, this study suggests that when individuals are connected to a caregiving network, they experience more balanced exchanges of support with their siblings with autism. Thus, practitioners may make concerted efforts to refer siblings to support groups. Such groups may include the Sibling Leadership Network, a national non-profit organization for siblings of individuals with disabilities, or The Arc's Sibling Council wherein siblings can attend quarterly meetings to connect with one another and provide peer support. To focus on supporting siblings of autistic individuals, practitioners may refer siblings to Sam's Sib's, a national organization that offers resources, webinar, and research opportunities for siblings of autistic individuals.

Practitioners may also want to encourage siblings to conduct future planning. Future planning is critical to prevent crisis situations for individuals with autism and their families. This study suggests that future planning activities may also help improve the emotional support

provided to and received from the autistic sibling. To not only help plan for the future but also help improve reciprocity in sibling relationships, practitioners may encourage participation in future planning programs. For example, practitioners may offer the Siblings FORWARD (Focusing on Relationships, Well-Being, and Responsibility ahead) program, which is a 6-7 session future planning program for siblings of individuals with autism. To date, the program has been highly feasible and acceptable to siblings (Long, Gordillo, & Orsmon, 2020).

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Table 1*Participant Demographics*

Characteristic	% or \bar{x} (<i>n</i> or <i>SD</i>)
Age in Years	32.9 (10.98)
Gender	
Female	87.9% (225)
Marital Status	
Single	61.7% (158)
Race/Ethnicity*	
White	85.2% (218)
Hispanic/Latino	8.6% (22)
Black/African American	5.1% (13)
Asian/Pacific Islander	3.9% (10)
Educational Background	
Some high school	1.6% (4)
High school graduate	5.1% (13)
Some college	23.4% (60)
College graduate	31.3% (80)
Some graduate school	12.9% (33)
Graduate school graduate	25.8% (66)
Household Income	
Less than \$20,000	14.8% (38)
Between \$20-40,000	16.0% (41)
Between \$40-60,000	15.2% (39)
Between \$60-80,000	19.9% (51)
Between \$80-100,000	14.1% (36)
More than \$100,000	19.9% (51)

Note: * Percentages do not add up to 100% as participants could choose to check multiple responses.

Table 2*Sibling with Autism Demographics*

Characteristic	% or \bar{x} (<i>n</i> or <i>SD</i>)
Age in Years	25.0 (12.19)
Gender	
Male	71.9% (184)
Co-occurring Diagnoses*	
Developmental Delay	26.6% (68)
Learning Disability	24.2% (62)
Intellectual Disability	17.6% (45)
Speech or Language Impairment	17.6% (45)
Other	12.9% (33)
Other Health Conditions	11.7% (30)
Physical Disability	10.9% (28)
Down Syndrome	6.3% (16)
Cerebral Palsy	5.1% (13)
Visual Impairment	4.7% (12)
Hearing Impairment	2.7% (7)

Note. *Percentages do not add up to 100% as participants could choose to check multiple responses.

Table 3*Multicollinearity Among the Independent Variables*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. P Age	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2. P Health	-.088	--	--	--	--	--	--	--	--	--	--	--	--	--
3. P Household Income	.270**	.222**	--	--	--	--	--	--	--	--	--	--	--	--
4. SA Presence of ID	-.152*	-.008	.060	--	--	--	--	--	--	--	--	--	--	--
5. SA Adaptive Behavior	-.179**	.019	.024	.050	--	--	--	--	--	--	--	--	--	--
6. SA Asocial Behavior	.222**	.074	.052	.010	-.431**	--	--	--	--	--	--	--	--	--
7. Caregiving Tasks	-.049	.053	.017	.154*	.092	-.073	--	--	--	--	--	--	--	--
8. Caregiving Domains	-.032	-.145	-.129	-.014	.249**	-.117	.088	--	--	--	--	--	--	--
9. Caregiving Role Captivity	.081	-.161*	.038	.149*	.099	-.133	.041	.299**	--	--	--	--	--	--
10. Caregiving Competence	.023	.119	-.019	.015	.052	.130	.172**	.287**	.076	--	--	--	--	--
11. Future Planning	-.014	.148	.043	.125	.200*	-.133	.232*	.054	.160	.168	--	--	--	--
12. Disability Advocacy	.255**	-.076	.078	.195**	.033	-.144*	.134	.318**	.306**	.226**	.272**	--	--	--
13. Knowledge of Disability Policy	.245**	-.070	.045	.069	-.039	-.066	.057	.080	.068	.159*	.033	.505**	--	--
14. Disability Connectedness	.115	-.027	-.022	.144*	-.037	-.070	.062	.139*	.112	.176*	.118	.607**	.560**	--

Note: * $p < .05$. ** $p < .01$. P = Participant. SA = Sibling with Autism.

Table 4*Multicollinearity Among the Dependent Variables*

Variable	1	2	3	4
1. Emotional Support Given	--	--	--	--
2. Emotional Support Received	.612**	--	--	--
3. Tangible Support Given	.372**	.022	--	--
4. Tangible Support Received	.277**	.340**	.166	--

*Note: * $p < .05$. ** $p < .01$.*

Table 5*Descriptive Statistic of Emotional and Tangible Reciprocity*

Item	None (<i>n</i>)	Some (<i>n</i>)	Quite a bit (<i>n</i>)	A lot (<i>n</i>)	A great deal (<i>n</i>)	\bar{x} (<i>SD</i>)
“How much do you give...?”						
E1. Companionship to your sibling with IDD?	34.6% (73)	18.0% (38)	21.3% (45)	26.1% (55)	0% (0)	2.4 (1.2)
E2. Verbal (e.g. saying “I love you”) and non-verbal expressions (e.g. smiles, happy vocalizations) of positive emotion to your sibling with IDD?	21.2% (46)	15.2% (33)	18.4% (40)	45.2% (98)	0% (0)	2.9 (1.2)
E3. Physical expression of affection (e.g. hugs, kisses) to your sibling with IDD?	28.6% (58)	13.8% (28)	21.7% (44)	36.0% (73)	0% (0)	2.7 (1.2)
T4. Help to your sibling with IDD with laundry-related tasks?	67.3% (70)	7.7% (8)	13.5% (14)	11.5% (12)	0% (0)	1.7 (1.1)
T5. Help to your sibling with IDD with cleaning tasks around the home?	51.8% (59)	16.7% (19)	17.5% (20)	14.0% (16)	0% (0)	1.9 (1.1)
T6. Help to your sibling with IDD with preparing drinks, snacks, and meals?	45.8% (66)	17.4% (25)	16.7% (24)	20.1% (29)	0% (0)	2.1 (1.2)
“How much do you receive...?”						
E7. Companionship from your sibling with IDD?	19.7% (45)	45.2% (103)	10.1% (23)	10.5% (24)	14.5% (33)	2.6 (1.3)
E8. Verbal (e.g. saying “I love you”) and non-verbal expressions (e.g. smiles, happy vocalizations) of positive emotion from your sibling with IDD?	20.6% (47)	34.2% (78)	14.0% (32)	15.4% (35)	15.8% (36)	2.7 (1.4)
E9. Physical expression of affection (e.g. hugs, kisses) from your sibling with IDD?	25.1% (57)	33.0% (75)	12.8% (29)	11.9% (27)	17.2% (39)	2.6 (1.4)
T10. Help from your sibling with IDD with laundry-related tasks?	86.0% (196)	11.0% (25)	1.8% (4)	.9% (2)	.4% (1)	1.2 (.5)
T11. Help from your sibling with IDD with cleaning tasks around the home?	78.0% (177)	17.2% (39)	4.0% (9)	.4% (1)	.4% (1)	1.3 (.6)
T12. Help from your sibling with IDD with preparing drinks, snacks, and meals?	74.2% (170)	20.1% (46)	3.9% (9)	.9% (2)	.9% (2)	1.3 (.7)

Note: E1-3 = Emotion Support Given; T4-6 = Tangible Support Given; E7-9 = Emotion Support Received; T10-11 = Emotion Support Received.

Table 6*Results of Hierarchical Regression Analyses on Emotional Support Given to the Autistic Sibling*

Independent Variables	Model 1			Model 2			Model 3			Model 4		
	β	t	p	β	t	p	β	t	p	β	t	p
P Factors												
Age	-.018	-3.028	.003**	-.016	-2.671	.008**	-.018	-3.342	.001***	-.016	-2.918	.004**
Health	.027	.396	.693	.026	.387	.699	.051	.837	.403	.033	.551	.582
Household Income	-.093	-2.448	.015*	-.095	-2.543	.012*	-.067	-1.986	.048*	-.056	-1.711	.088
SA Factors												
Presence of ID				-.129	-.822	.412	-.034	-.238	.812	-.069	-.486	.627
Adaptive Behavior				.221	3.563	<.001***	.126	2.210	.028*	.103	1.832	.068
Asocial Behavior				.138	2.227	.027*	.105	1.844	.066	.116	2.095	.037*
Caregiving Factors												
Caregiving Tasks							-.125	-2.272	.024*	-.137	-2.545	.012*
Caregiving Domains							.393	6.751	<.001***	.424	7.208	<.001***
Caregiving Role Captivity							-.039	-.702	.483	-.055	-1.013	.312
Caregiving Competence							.124	2.184	.030*	.099	1.761	.079
Disability Involvement Factors												
Future Planning										.158	2.875	.004**
Disability Advocacy										-.094	-1.354	.177
Knowledge of Disability Policy										-.017	-.265	.791
Disability Connectedness										.189	2.735	.007**
F			7.170			6.247			11.150			9.770
R^2			.068			.110			.285			.325
ΔR^2			-			.042			.175			.040

Note: * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. P = Participant. SA = Sibling with Autism.

Table 7*Results of Hierarchical Regression Analyses on Emotional Support Received from the Autistic Sibling*

Independent Variables	Model 1			Model 2			Model 3			Model 4		
	β	t	p	β	t	p	β	t	p	β	t	p
P Factors												
Age	-.015	-2.569	.011*	-.018	-2.981	.003**	-.018	-3.212	.002**	-.015	-2.657	.008**
Health	.076	1.088	.277	.073	1.073	.284	.040	.633	.527	.018	.286	.775
Household Income	-.036	-.936	.350	-.032	-.841	.401	-.014	-.389	.698	-.001	-.040	.968
SA Factors												
Presence of ID				.160	.993	.322	.141	.937	.350	.111	.746	.456
Adaptive Behavior				.105	1.648	.101	.041	.687	.493	.013	.226	.822
Asocial Behavior				.210	3.313	.001**	.165	2.788	.006**	.176	3.039	.003**
Caregiving Factors												
Caregiving Tasks							.102	1.770	.078	.091	1.622	.106
Caregiving Domains							.181	2.975	.003**	.221	3.601	<.001***
Caregiving Role Captivity							-.019	-.330	.742	-.035	-.614	.540
Caregiving Competence							.296	4.968	<.001***	.272	4.646	<.001***
Disability Involvement Factors												
Future Planning										.176	3.080	.002**
Disability Advocacy										-.119	-1.647	.101
Knowledge of Disability Policy										-.034	-.510	.610
Disability Connectedness										.203	2.813	.005**
F			3.697			4.064			8.168			7.638
R^2			.031			.067			.219			.267
ΔR^2			-			.036			.152			.048

Note: * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. P = Participant. SA = Sibling with Autism.

Table 8*Results of Hierarchical Regression Analyses on Tangible Support Given to the Autistic Sibling*

Independent Variables	Model 1			Model 2			Model 3			Model 4		
	β	t	p	β	t	p	β	t	p	β	t	p
P Factors												
Age	-.005	-.915	.361	-.003	-.579	.563	-.005	-1.110	.268	-.006	-1.229	.220
Health	-.097	-1.368	.172	-.098	-1.433	.153	-.043	-.750	.454	-.035	-.613	.540
Household Income	-.024	-.623	.534	-.028	-.731	.466	.005	.156	.876	.006	.185	.853
SA Factors												
Presence of ID				-.040	-.247	.805	-.032	-.238	.812	-.027	-.203	.840
Adaptive Behavior				.272	4.280	<.001***	.136	2.564	.011*	.142	2.668	.008**
Asocial Behavior				.152	2.397	.017*	.152	2.875	.004**	.146	2.784	.006**
Caregiving Factors												
Caregiving Tasks							.060	1.167	.244	.061	1.191	.235
Caregiving Domains							.564	10.401	<.001***	.582	10.450	<.001***
Caregiving Role Captivity							.016	.317	.752	.035	.677	.499
Caregiving Competence							.023	.428	.669	.024	.459	.647
Disability Involvement Factors												
Future Planning										-.069	-1.325	.187
Disability Advocacy										-.153	-2.344	.020*
Knowledge of Disability Policy										.077	1.254	.211
Disability Connectedness										.123	1.889	.060
F			1.308			4.070			16.610			13.000
R^2			.004			.067			.380			.397
ΔR^2			-			.063			.213			.017

Note: * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. P = Participant. SA = Sibling with Autism.

Table 9*Results of Hierarchical Regression Analyses on Tangible Support Received from the Autistic Sibling*

Independent Variables	Model 1			Model 2			Model 3			Model 4		
	β	t	p	β	t	p	β	t	p	β	t	p
P Factors												
Age	-.003	-.534	.594	-.007	-1.182	.238	-.008	-1.371	.172	-.007	-1.145	.253
Health	.072	1.032	.303	.069	1.011	.313	.092	1.389	.166	.091	1.382	.168
Household Income	-.120	-3.108	.002**	-.110	-2.910	.004**	-.093	-2.578	.011*	-.092	-2.563	.011*
SA Factors												
Presence of ID				-.010	-.064	.949	-.039	-.249	.804	-.084	-.534	.594
Adaptive Behavior				-.008	-.124	.901	-.084	-1.362	.174	-.072	-1.162	.247
Asocial Behavior				.224	3.538	<.001***	.224	3.664	<.001***	.213	3.490	<.001***
Caregiving Factors												
Caregiving Tasks							.096	1.626	.105	.108	1.827	.069
Caregiving Domains							.296	4.721	<.001***	.297	4.588	<.001***
Caregiving Role Captivity							.026	.435	.664	.030	.496	.620
Caregiving Competence							.042	.687	.492	.047	.767	.444
Disability Involvement Factors												
Future Planning										-.091	-1.506	.133
Disability Advocacy										-.030	-.392	.695
Knowledge of Disability Policy										-.128	-1.798	.073
Disability Connectedness										.178	2.337	.020*
F			4.050			4.377			6.226			5.074
R^2			.035			.074			.170			.183
ΔR^2			-			.039			.096			.013

Note: * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. P = Participant. SA = Sibling with Autism.

Figure 1

Distribution of Scores for Emotional Reciprocity

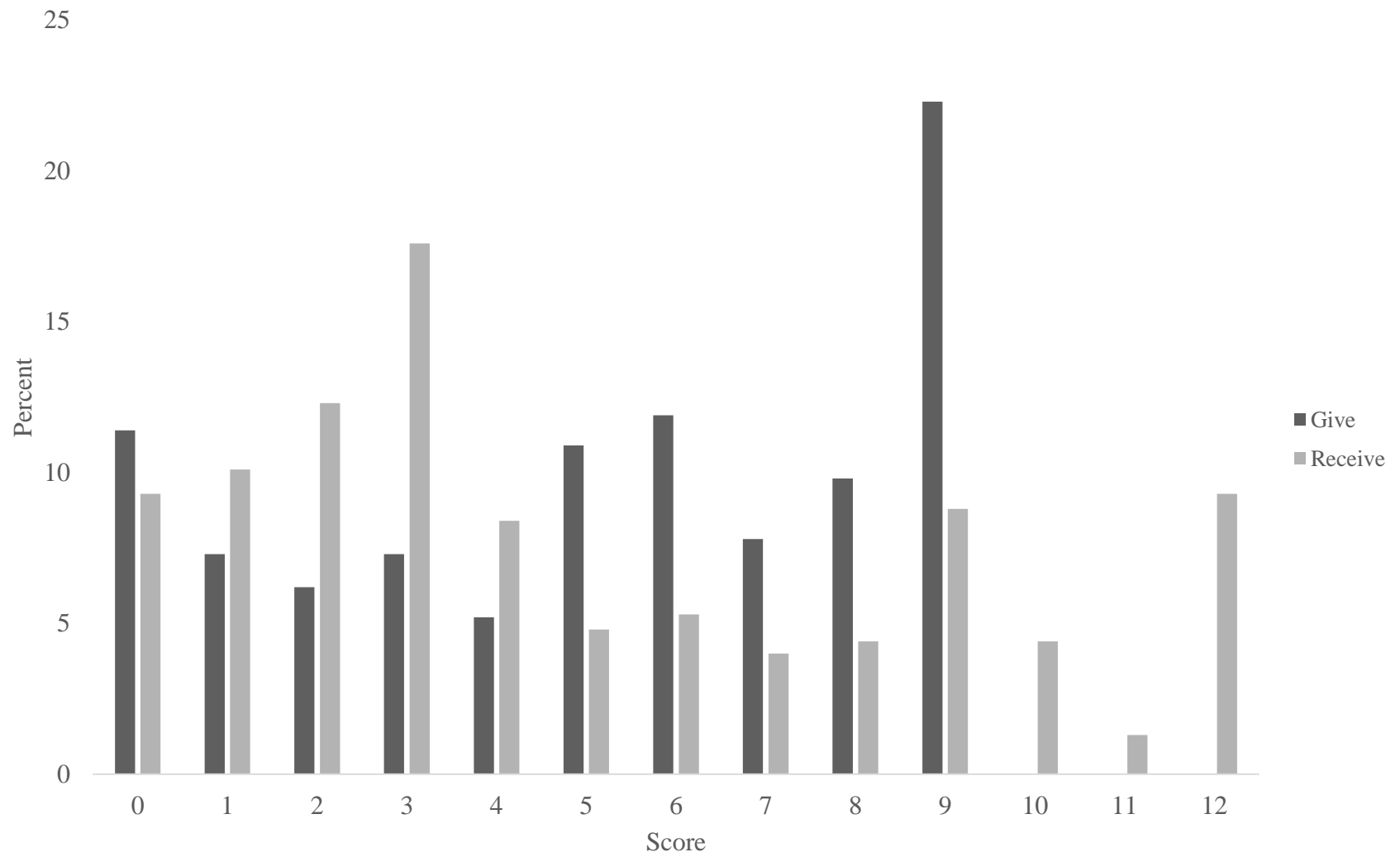


Figure 2

Distribution of Scores for Tangible Reciprocity

