

COMMUNICATION IN FAMILIES WITH AUTISTIC CHILDREN:
THE IMPACT OF CHILD ANXIETY, AUTISM SEVERITY,
AND PARENTAL BROAD AUTISM PHENOTYPE ON
FAMILY COMMUNICATION

by

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Submitted in partial fulfillment of the
requirements for Departmental Honors in
The Department of Psychology
Texas Christian University
Fort Worth, Texas

May 8, 2023

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ABSTRACT

Communication skills are vital for children to learn, grow, build relationships, and solve problems. Autistic children have unique communication challenges. There is very little research on communication in families with autistic children. My goal was to determine whether parental broad autism phenotype (BAP; the presence of traits resembling autism spectrum disorder), child anxiety, and autism symptom severity were associated with family communication. I focused on three specific elements of family communication: quantity of discourse, conversational topic, and speaker-listener system. Based on previous research, I hypothesized that increased (1) parental BAP, (2) child anxiety, and (3) autism severity would predict a diminished quantity of dialogue and increased on-topic conversation. I also explored the extent to which these factors were differentially associated with the amount of mother-child vs. father-child dialogue. Consistent with hypotheses, the current study found that maternal BAP and children's mental health symptoms were predictors of family communication. In addition, interesting differences between mother and father communication emerged.

Communication in Families with Autistic Children: The Impact of Child Anxiety, Autism Severity, and Parental Broad Autism Phenotype on Family Communication

Autism spectrum disorders are a collection of developmental disabilities that affect a person's thinking, feeling, language, and interaction with others (APA, 2013). Autism spectrum disorder (ASD) has become increasingly common in recent years, rising from a prevalence of 1 in 150 children in 2000 to 1 in 44 children in 2018 (Centers for Disease Control and Prevention, 2022). Due to the dramatic increase in prevalence, ASD is a growing concern. Autism-related research is necessary to improve the quality of life and to meet the needs of autistic individuals. Since the family environment is critical for children's development, family research provides information that could be helpful for improving some of the symptoms and difficulties faced by autistic children.

Raising an autistic child can be challenging. The primary symptoms of ASD include social communication difficulties and engaging in restricted and repetitive behaviors (APA, 2013). In addition, it is estimated that as many as 60% of autistic individuals also have co-occurring mental health problems (Lai et al., 2019). Together, these symptoms can lead to strained family relationships and hindered communication (Kostiukow, 2019). Unfortunately, there is little knowledge about how family communication impacts the development of autistic children. Although there is a substantive amount of research studying communication in families of neuro-typically developing children, less research exists on family communication with autistic children specifically. The current study examined communication levels and patterns in families with autistic children and sought to identify child and parent behaviors that were associated with family communication.

Family Communication

Family communication is defined as the intentional messages that are shared with understood meaning between related individuals (Le Poire, 2006). Brodin and McLaughlin (2019) highlight the importance of effective communication for developing powerful interpersonal relationships. Effective communicators practice active listening and emotional awareness. They send messages with clarity and form meaningful connections with people as they converse (Vyas & Mehta, 2015). Effective family communication is important for establishing fulfilling relationships and developing the necessary social skills for positive long-term outcomes in children (Traub, 2016). Previous research has shown that parents play a vital role in shaping child language development. An increased amount of caregiver speech to their infants was associated with improved child language skills later in life (Swanson et al., 2019). In general, language development is important for social understanding (Fitch et al., 2010). Hockett (1960) describes language to be a result of our drive to share meaning with each other. This research emphasizes that a positive language environment throughout childhood has both social-emotional and developmental benefits, allowing children to form satisfying relationships, learn valuable social and communication skills, and navigate conflict throughout life.

Understanding the quantity of discourse within a family is an important factor in studying family communication. Swanson et al. (2019) found that neuro-typically developing infants in environments with increased caregiver speech had better language skills as adults. However, other research suggests that the quality of communication is more important than the quantity. For example, Zhang (2020) found no significant association between increased parent-child communication and children's self-concept or academic performance. Talkativeness does not necessarily suggest stronger family relationships. Indeed, silence can be appropriate and even comfortable in certain situations (Mushin & Gardner, 2009). Although research suggests that

harmonious, flowing conversation promotes feelings of belonging and high self-esteem in social settings (Koudenburg, 2011). Each family varies in their level of communication, so the quantity of discourse is a factor that should be considered to fully understand family communication.

Another important aspect of family communication is the speaker-listener system. In the current study, we considered the parent-child system, specifically examining differences between mothers' and fathers' speech. Mothers and fathers have different roles in the development of their children (Gežová, 2015). Previous research has shown that the speech of mothers and fathers may differ due to traditional parental roles. Fathers traditionally engage in the role of an authority figure, whereas mothers generally provide nurturance and sensitivity (Gleason, 1975). Perlmann (1984) found that mothers are the largest contributors to conversation at family dinnertime. Clarke-Stewart (1978) also reported that mothers tend to be more talkative than fathers. Although a mothers' speech may be greater in quantity, this does not imply that a father's speech lacks quality. The research findings show that mothers and fathers are similar in measures of responsiveness, affection, or effectiveness of communication (Clarke-Stewart, 1978). Both mothers and fathers contribute to a child's language environment, and it is important to consider these gender-related language differences to better understand family communication.

Conversational topic is another important element of family communication. Yang (2019) describes topic as the 'organizational unit of conversation' and that topic shapes our talking interactions. Despite this importance, there is little research on conversational topics within the family. Conversational topics could be important for understanding parent-child relationships and overall family cohesion. Wanska et al. (1989) states that topic coherence is important for clear and connected communication. In continuous discourse, conversational

partners monitor each other's responses and make efforts to link ideas for topic maintenance (Wanska, et al., 1989). Especially when interacting with children, topic maintenance could be vital for establishing common ground and reinforcing important communication skills. Topic maintenance is an important skill for effective communication. Some language-delayed children may struggle to maintain cohesive conversations. For example, Maginn (2008) studied children in play environments with both maximal adult conversation support and minimal adult conversational support systems. Maginn found that increased adult input was associated with more child topic maintenance. In the absence of adult support, the language-delayed group was rarely able to achieve topic maintenance. Thus, conversational topic is an important factor to consider when studying family communication patterns.

Supportive family relationships and good communication are necessary to ensure mental health and family stability. Without effective communication, families are less likely to establish fulfilling, supportive relationships. Effective family communication is associated with improved adaptability and cohesion (Phillips-Salimi et al., 2014). Families lacking good communication are more likely to have children diagnosed with depression or anxiety (Xiao et al., 2011). Well-functioning families can listen and express affection to one another (Olson, 2000) and can address conflict and accept problematic issues (Crowe & Lyness, 2014). Burlaka et al. (2019) explains that effective communication is a central characteristic of a healthy family. In families with good communication, neuro-typically developing children have positive physical functioning, psychosocial functioning, self-esteem, and coping strategies (Jackson et al., 1998). In families with poor communication, children have increased internalizing and externalizing symptoms (Stoutjesdijk et al., 2016). Previous research found that decreased family

communication is associated with decreased family closeness (Samek & Reuter, 2011). Together, this highlights the importance of studying family communication.

Communication in Families of Autistic Children

Families with autistic children experience a variety of challenges. Autistic children typically require extra attention, consistent daily routines, behavioral management, and personalized therapeutic interventions. These requirements may negatively impact family finances, parental emotional health, sibling relationships, and overall lifestyle of each family member (Begum & Mamin, 2019). Research has shown that parents of autistic children experience more stress compared to parents of neuro-typically developing children as a result of these added challenges (Lee et al., 2008). The added stress results in less cohesive and poorly functioning families (Kostiukow, 2019). For example, previous research found increased divorce rates among parents of autistic children compared to parents of children with no disability (Begum & Mamin, 2019). Families with autistic children tend to adapt to a structured and less communicative family environment (Segrin & Flora, 2005). New intervention strategies exist to address some of these challenges. Recent research on parent-implemented social intervention confirms that they decrease parental stress and improve child communication skills. (Wetherby et al., 2014; Liao et al., 2022). Further knowledge of family communication will be useful for finding effective solutions for families with autistic children.

Autistic individuals need support from their families, beginning in early childhood. Previous research has shown that early intervention for autistic children can improve outcomes for social, adaptive, and language skills (Mereoiu et al., 2015). Social communication abilities are associated with positive long-term outcomes for autistic children (Prizant et al., 2006). Communication is important for overall functioning in daily life and formation of fulfilling

relationships. Autistic individuals have difficulty in conversation and often struggle to understand social cues (Kuzminskaite et al., 2020). These difficulties can result in relationship strain and social withdrawal, even at the family level. Positive family experiences and daily routines are necessary for children to learn and practice communication skills. (Prizant & Meyer 1993). Given the importance of both communication and healthy family environments, it is important for researchers to identify factors that can improve these. Although there are many factors that could influence communicative behaviors in a family with autistic children, the current study focused on three factors: parental broad autism phenotype, child mental health, and autism severity.

The broad autism phenotype (BAP) is defined as the set of traits or mild impairments resembling ASD in undiagnosed family members of autistic people (Gertds & Bernier, 2011). BAP is comprised of three major characteristics: aloof personality, rigid personality, and pragmatic language deficits (Hurley et al., 2007). Aloof personality is characterized as a lack of interest in social activity. Rigid personality involves a disinterest in adjusting to change. Pragmatic language deficits cause difficulty in effective communication (Hurley et al., 2007). Parents of children with ASD can have significant deficiencies in each of those characteristics which lead to difficulty in effective communication and social skills (Hurley et al., 2007). These traits can also influence communication at the family level. For example, Yousevfand et al. (2022) found a significant difference between communication skills in parents of autistic children compared to parents of neuro-typically developing children, with parents of autistic children displaying weaker communication skills. Communication skills are vital for social functioning and forming relationships, even at the family level. Previous research has also shown that BAP can influence a person's relationships (Jamil et al., 2017). Jamil et al (2017) found that

participants with higher levels of BAP traits had weaker empathy skills and less interest in long-term friendships. As previously described, good communication, supportive relationships, and early communication skill development are predictors of positive outcomes for autistic children. Little research on the impact of parental BAP on family communication exists. Having knowledge of parental difficulties in communication will allow for a better understanding of family functioning and support for autistic children.

Anxiety disorders are highly prevalent among autistic individuals and may negatively impact family communication. Recent data indicate that 39.6% of autistic children experience at least one anxiety disorder (Vasa & Mazurek, 2015). The most common anxiety disorders in the autistic population include specific phobia, generalized anxiety disorder, social phobia, separation anxiety disorder, and obsessive-compulsive disorder (Kerns & Kendall, 2012). These disorders can have a negative impact on the quality of life for both autistic individuals and their families (Adams et al., 2019). For example, anxiety can lead to strained relationships, adverse physiological symptoms, and impaired communication skills (Adams et al., 2019). In one study, Khaledi and colleagues (2022) confirmed that anxiety was associated with poor communication skills in autistic children. Poor child communication skills can have downstream effects and negatively impact communication within the family context. Previous research has shown parents of autistic children with co-occurring anxiety disorders have higher levels of parental psychological distress (Guerrera et al., 2022). Taken together, this body of research suggests that child anxiety has implications for the larger family environment.

Autism symptoms vary widely across autistic individuals (Baranek et al., 2006). Previous research has shown that the degree of autism severity is a factor in a family's quality of life (Durán-Pacheco, 2022). For example, Beurkens et al. (2013) found that the quality of parent-

child relationships was adversely affected in families with more severely autistic children. Specifically, autistic children with more severely impaired verbal and cognitive skills had parents who were more focused on physical containment and task orientation, while parents of less severely autistic children engaged in more play behaviors (Kasari et al., 1988). Since parents of more severely autistic children engage their child in more task-oriented and contained environments, we may also expect these families to engage in more on-topic conversation. Understanding autism severity as it relates to family communication may provide valuable information for further research or therapies.

Research Questions and Hypotheses

The goal of the current study was to evaluate family communication patterns (quantity of discourse, conversational topics (on-topic vs off-topic), and speaker-listener systems) across families of autistic children and determine whether parental BAP, child mental health, and autism severity were associated with these patterns. Based on previous research, I hypothesized that increased (1) parental BAP, (2) child anxiety, and (3) autism severity would predict a diminished quantity of dialogue and increased on-topic conversation. I also explored the extent to which these factors were differentially associated with the amount of mother-child vs. father-child dialogue. Given the lack of research with fathers, I did not have specific hypotheses for this research question

Methods

Participants

One hundred and eleven families participated in the current study. For eligibility, each family was required to have an autistic child between 10 to 17 years old. The children were required to have a diagnosis of autism with no co-occurring intellectual disabilities. Before

participation, the children were tested to ensure an $IQ \geq 75$ and a vocabulary score > 70 . The parents were required to be married or cohabitating parents for at least one year by the start of the study and living with their child for at least half of the time. All participants were recruited from a large metropolitan area in the Southern USA. Children with serious medical conditions, metabolic disorders, visual, or auditory impairments were excluded from the study.

The mean age of mothers was 43 years ($M = 42.89$ years, $SD = 7.47$) and the mean age of fathers was 45 years ($M = 45.08$ years, $SD = 6.96$). Most parents were married (88.8%). The majority of families had at least one parent with a college degree (mothers: 77.6%; fathers: 76.7%), and earned an average income greater than \$40,000 per year (91.4%). The mean age of children was 13 years ($M = 13.12$, $SD = 2.16$), with 94 children being male.

Procedure

A phone screening was conducted to determine initial family eligibility. After successful screening, families were invited to attend an in-person session on campus at the Families, Autism, and Childhood Emotion Studies (FACES) lab at Texas Christian University. All participants provided informed consent at the beginning of each visit. In the first visit, the child completed IQ and vocabulary comprehension tests. After meeting IQ score and vocabulary comprehension requirements (see above), families were invited back to lab for a second visit that occurred approximately 2 weeks later.

During the second in-person visit the mother, father, and child completed several questionnaires. After completing the questionnaires, the family was seated at a table with the child located between the mother and father. The family was instructed to read Jenga instructions to their child and play the game for 10 minutes. Families were told to continue playing even if

the tower fell. Each family's 10-minute Jenga game was video recorded. Parents completed a second set of questionnaires after completion of the Jenga game.

Measures

Parental Broad Autism Phenotype. The Broad Autism Phenotype Questionnaire (BAPQ; Hurley et al., 2007) was developed to measure parental broad autism phenotype and it is both reliable and valid. Each parent completed this survey at their second visit. Parents rated themselves on 36 statements (e.g., "I feel disconnected or "out of sync" in conversations with others," "I feel a strong need for sameness from day to day," and "I leave long pauses in conversation"). These statements were rated on a 6-point Likert scale (1 = *very rarely*; 6 = *very often*). Three subscale scores were calculated, including aloof personality, rigid personality, and pragmatic language deficits. A higher score on each subscale indicates greater difficulties. The BAPQ was reliable in the current study ($\alpha = .93$ for mothers; $\alpha = .92$ for fathers).

Child Anxiety. The Screen for Child Anxiety Related Disorders (SCARED; Birmaher, et al., 1999) was used to measure parent-reported child anxiety. This survey was completed by each parent at the second visit. This 41-item questionnaire was scored on a 3-point Likert scale (1 = *not true or hardly ever true*; 3 = *very true or often true*). The SCARED measures five subscales, however for this study we only used the general anxiety, social phobia, and total anxiety. Example items include: "My child worries about going to school", "My child follows me wherever I go", and "My child worries about sleeping alone". A higher score indicates greater anxiety symptoms. The internal consistency in the current study was .90 for father-report and .93 for mother-report.

Child Autism Severity. The Social Responsiveness Scale-2 (SRS-2; Constantino & Gruber, 2012) was used to measure autism symptom severity. One parent from each family

completed this survey at their first study visit. This 65-item parent-reported questionnaire was rated on a 4-point Likert scale (1 = *not true*; 4 = *almost always true*) and asked parents to answer based on their child's behavior in the past 6 months. Example items include: "My child has repetitive, odd behaviors such as hand flapping or rocking," "My child is aware of what others are thinking or feeling," and "My child wanders aimlessly from one activity to another." Several subscales can be calculated; however, the current study used the total score. A higher score indicates greater autism symptom severity. The measure was reliable in the current study ($\alpha = .93$).

Family Communication. The current study focuses on three elements of family communication: quantity of discourse, conversational topic, and speaker-listener system. A team of research assistants was trained to code these factors. To complete training, each team member coded eight master videos and achieved 70% or greater agreement with the gold standard coder. Over the 10-week coding period, each team member overlapped on 20% of the videos to ensure inter-rater reliability. While coding, each team member recorded every spoken statement throughout the 10-minute video. Coders were instructed to only record social speech (dialogue with a communicative purpose and commonly indicated by eye contact, conversational indicators, or use of names or pronouns). For each statement, coders recorded the start time, end time, speaker-listener system, and conversational topic. Coders were instructed to use contextual clues such as eye contact, use of pronouns, and conversational indicators to determine the speaker-listener system. Potential speaker-listener systems include father-child, child-father, mother-child, mother-father, mother-both, father-both, child-both, and triad. The listener code "both" was used when two family members were spoken to by one other family member. The code "triad" was used when multiple family members spoke at the same time (e.g.,

interruptions). The team coded ‘on-task’ dialogue for statements related to the game (e.g., “I’m far away from the table,” “you took a loose block!” “I’m gonna make the game as annoying as possible,” “don’t mess it up!”). The team coded ‘off task’ dialogue for statements unrelated to the game (e.g., “I wonder what would happen if there was an earthquake,” or “what’s for dinner tonight?”).

Results

To address the research questions, I first examined correlations between (1) parental BAP and quantity of dialogue, (2) parental BAP and conversational topic, (3) child anxiety and quantity of dialogue, (4) child anxiety and conversational topic, (5) child autism severity and quantity of dialogue, and (6) child autism severity and conversational topic. Next, a paired-samples t-test was used to evaluate communication differences between parents. Refer to Table 1 for parental BAP correlation data, refer to Tables 2 and 3 for child anxiety correlation data, and refer to Table 4 for child autism severity correlation data.

Descriptive Statistics

For the current sample, the mean length of conversational interchange was 2.80 minutes ($SD = 1.18$). There was an average of 126 conversational episodes per family ($SD = 34.97$). Families were engaged in on-task conversation 90% of the time ($SD = .11$). Parents in the current sample were higher functioning with respect to BAP. The total BAPQ scores for both mothers ($M = 2.77$) and fathers ($M = 3.05$) were below the cutoff value of 3.15 (Hurley et al., 2007). The mother-reported child anxiety ($M = 20.10$, $SD = 13.60$) was greater than father-reported child anxiety ($M = 16.70$, $SD = 9.80$). The mean score for child autism severity ($M = 99.87$, $SD = 26.43$) was above the cutoff value of 75 (Constantino & Gruber, 2012).

Associations between Parental BAP and Family Communication

To determine whether there were associations between parental BAP and family communication I conducted correlation analyses. With respect to the quantity of dialogue, there was a small, positive correlation between mothers' rigidity and the total number of conversational episodes ($r = .21, p = .031$). There was no significant correlation between mother aloofness, pragmatic language, or total BAP and the average length of interchange. There was no significant correlation between any father BAP subscales (aloofness, pragmatic language, rigidity, or total BAP), and the total number of conversational episodes or the average length of interchange.

Next, I examined whether parental BAP and conversational topic (on-task, off-task) were associated. The results revealed a small, positive correlation between mother rigidity and the number of instances of on-task conversation ($r = .26, p = .006$). There was no significant correlation between the instances of on-task or off task conversation and aloofness, pragmatic language, or total BAP for mothers. There was no significant correlation between the instances of on-task or off task conversation and any of the father BAP subscales (aloofness, pragmatic language, rigidity, or total BAP).

Associations between Children's Anxiety and Family Communication Patterns

To determine the relationship between children's anxiety and family communication, I conducted correlation analyses. With respect to quantity of dialogue, there was a small, positive correlation between mother-reported child social anxiety and the average length of interchange ($r = .25, p = .010$). Likewise, there was a small, positive correlation between father-reported child social anxiety and average length of interchange ($r = .20, p = .033$). The results also revealed that lower levels of total child-directed speech were correlated with increased father-reported child social anxiety ($r = -.19, p = .050$) and mother-reported child social anxiety ($r = -.20, p = .032$).

No significant correlation was found between the total number of conversational episodes and parent-reports of child anxiety (for all SCARED subscales). With respect to conversational topic, there was a small, positive correlation between father-reported child general anxiety and the amount of off-task conversation ($r = .22, p = .019$). No significant correlation was found between mother-reported child social anxiety, general anxiety, or total anxiety with the instances of on or off task conversation.

Associations between Child Autism Severity and Family Communication Patterns

Next, I conducted correlation analyses to determine the relationship between child autism severity and family communication. With respect to quantity of dialogue, there was a small, positive correlation between child autism severity and the total amount of speech directed to the child ($r = .24, p = .013$). There was no significant correlation between child autism severity and the total number of conversational episodes ($r = .10, p = 0.282$). There was also no significant correlation between child autism severity and the average length of conversation ($r = .00, p = .979$). No significant correlation was found between child autism severity and the instances of on or off task conversation.

Differences in Parent Communication

To determine the differences between mother and father communication, I used *t*-tests. There were significantly more instances of mother-initiated conversation ($M = 48.1, SD = 15.5$) than father-initiated conversation ($M = 40.0, SD = 15.4$), $t(110) = 4.68, p = .000$. There were more instances of mother to child speech ($M = 24.6, SD = 11.8$), than father to child speech ($M = 19.4, SD = 10.3$), $t(110) = 4.07, p = .000$. There were more instances of child to mother speech ($M = 14.7, SD = 8.85$), than child to father speech ($M = 10.7, SD = 7.53$), $t(110) = 3.92, p \leq .000$.

Associations between Differential Parent Communication and Parent and Child Factors

Next, I conducted analyses to examine the relationship between differential parent communication and parent and child factors (parental BAP, children's anxiety, and child autism severity). Regarding BAP, there was a small, negative correlation between the amount of father-initiated conversation and fathers' aloofness, $r = -.29, p = .002$, and the amount of father-initiated conversation and fathers' total BAP, $r = -.19, p = .047$. Regarding child anxiety, results revealed that lower levels of mother to child speech were correlated with increased father reports of child general anxiety ($r = -.27, p = .004$), social anxiety ($r = -.21, p = .025$), and total anxiety ($r = -.22, p = .019$). Low levels of mother to child speech were also correlated with increased mother reports of child social anxiety ($r = -.24, p = .010$). In contrast, no significant correlations were found between father to child speech and any subscales of parent-reported child anxiety. Regarding child autism severity, there was a small, positive correlation between the amount of mother to child speech and child autism severity ($r = .28, p = .003$). In contrast, there was no significant correlation between the amount of father to child speech and child autism severity ($r = .07, p = .439$)

Discussion

Although there is a great amount of research focusing on communication in families with neurotypically developing children, there is much less research studying communication in families with autistic children. The current study examined whether parent and child factors were associated with family communication among families raising an autistic adolescent. Consistent with hypotheses, the current study found that maternal broad autism phenotype (BAP) and children's mental health symptoms were associated with family communication. In addition,

interesting differences between mother and father communication emerged. The findings and directions for future research are discussed below.

Consistent with the study hypothesis, the results showed that mothers with higher BAP scores, specifically in the domain of rigidity, had increased on-topic family conversation. People with rigid behaviors typically demonstrate inflexibility and a preference for consistent routines. In general, parental BAP is associated with pre-occupation on specific details (Landa et al., 1992; Piven et al., 1997). As seen in the current study, mothers with these behaviors may promote structure and on-task behavior at the family level. This finding is consistent with previous research showing that parental BAP characteristics impact how parents engage with their children (Parr et al., 2015). Contrary to the study hypothesis, mothers with higher BAP scores, specifically in the rigidity domain, had an increased amount of conversation. As previously described, highly rigid mothers are more likely to promote task-oriented and structured environments for their families. Typically, greater communication is required to create an organized and focused family environment. This finding is also consistent with previous research showing that mothers with increased BAP may be overly detailed or overtalkative, which results in an increased mothers' mean length of utterance in conversation (Piven et al., 1997).

The current study also examined the extent to which father characteristics impacted family communication. There were no associations between conversational factors and the level of BAP in fathers, which was counter to study hypotheses in which we expected to find that increased father BAP would predict diminished overall conversation and increased on topic conversation. Past research has shown that mothers tend to be larger contributors to family conversation in general (Perlmann, 1984). This finding suggests that mothers may play a larger

role in guiding both the amount and topic of family conversation. In addition, research has shown that mothers tend to score higher on subscales of BAP rigidity compared to fathers (Shi et al., 2015). As the more rigid parent, mothers may be more likely than fathers to take control of family conversation, directing both the quantity of speech and task-orientation compared to fathers.

Consistent with the study hypothesis, the results showed that children with higher reports of anxiety (general anxiety and social anxiety) were spoken to less by their parents. Research has shown that parent-child communication plays an important role in the level of their child's anxiety (Percy et al., 2016). More specifically, children with greater anxiety tend to have parents who are less engaged and more socially withdrawn (McLeod, 2007). It is possible that parents who speak less to their children may be viewed by their children to be withdrawn or uninterested in their lives. This has potential to impact a child's emotional socialization (Eisenberg et al. 2008). Yet, it is also possible that children with greater anxiety provide their parents fewer opportunities to engage with them. Prior research highlights that children with anxiety tend to be less actively engaged, passive, and withdrawn in social situations (Barlow, 2002). Additionally, the results of the current study showed that children with higher reports of anxiety were spoken to less specifically by their mothers. This is consistent with previous research showing that mothers of children with greater anxiety tend to be less elaborative during emotional conversation and less interested in their children (Brumariu & Kerns, 2015). Research has also shown that mother-child conversation is vital for the development of child emotional management (Brumariu & Kerns, 2015). Increased difficulty in emotional management could result in greater child anxiety. Yet again, as previously described, mothers may encounter obstacles in talking to their more anxious children due to child withdrawal due to social anxiety.

Contrary to the study hypothesis, the results showed that children with higher reports of anxiety had families with a higher average length of conversational interchange. This contradicts prior research which shows that people with anxiety tend to avoid communication (Baker & MacIntyre, 2003). This suggests that the parents, rather than children, may be the source of increased length conversational interchange. Research has shown that anxious child behavior is associated with overinvolved and intrusive parenting (Hudson & Rapee, 2004; Manassis & Bradley, 1994). It is possible that parents of anxious children in the current study spoke more during conversation to ease their child's distress. Results of the current study also showed that children with higher reports of general anxiety had families with a greater amount of off-task conversation. In a previous study, researchers found that children with greater anxiety had impaired executive attention compared to children without anxiety (Mogg et al., 2015). Children with greater anxiety may have difficulty inhibiting off-task information and switching attention between tasks (Mogg et al., 2015). This is consistent with our study's findings, which show that families with more anxious children had difficulty focusing on the Jenga game, resulting in increased off-topic conversation.

Finally, our results showed that children with higher levels of autism severity were spoken to more by their parents. This contradicts prior research which shows that increased severity of autism adversely affects parent-child responsiveness, emotional expressiveness, and mood (Beurkens, Hobson, & Hobson, 2013). Yet, it is important to note that children with more severe autism benefit from greater emotional and physical support from their caregivers (Marsack-Topolewski, & Maragakis, 2021). Parents of autistic children may be more attuned to the needs of their child and have adapted to addressing conflict with their child (Meirsschaut, Roeyers, & Warreyn, 2011). Additionally, the current study found that children with higher

levels of autism severity were spoken to more by their mothers; however, there was no significant association between child autism severity and the amount of father-child speech. Previous research has found differences in the way fathers and mothers communicate with their autistic children. For example, fathers are more likely to use directive statements, while mothers tend to engage in active conversation (Flippin, & Watson, 2015). In addition, researchers have found that mothers of autistic children tend to view themselves as more controlling or directive than mothers of neurotypically developing children (Kasari, Sigman, Mundy, & Yirmiya, 1988). Therefore, mothers with more controlling behaviors, as well as greater involvement in active conversation, may be more likely to speak more to their child compared to fathers. Together, this past research is consistent with our findings.

Finally, in contrast to the study hypothesis, there was no significant association between children's autism severity and the conversational topic (on-task v. off-task). This is likely due to the study parameters. Participants were directly instructed to play Jenga for 10 minutes and replay the game until the ten minutes ended. Due to these explicit instructions, it is likely that families made an intentional effort to remain on-task and direct their child's focus towards the game, regardless of their child's autism severity. It would be interesting for future research to incorporate an alternative task with fewer directions for families to follow.

While conducting analyses, I noticed that there was no significant correlation between parents' pragmatic language and the total number of conversational episodes or the average length of interchange. Although this specific BAP subscale was not a primary variable of interest, it is an interesting finding. It is possible that participants felt motivated to maintain social norms of conversation, especially in this video-recorded setting. Prior research has shown that silence in interpersonal conversation can threaten group members' feelings of belonging and

promote feelings of rejection. (Koudenburg, Postmes, & Gordijn, 2011). Parents are likely to display more positive, socially acceptable behaviors while being recorded due to the observation effect. As a result, I believe that parents minimized the amount of conversational silence in their family interactions while being recorded.

Limitations and Future Directions

There are several limitations of the current study. Measures of parental BAP were self-reported, and measures of child anxiety and child autism severity were parent-reported. People often have difficulty accurately assessing themselves and may misremember important information. Therefore, the questionnaires used for the study are subject to bias. In addition, parents' own BAP characteristics may hinder their ability to accurately rate their child's behavior. In future studies, measures could be taken to confirm participant responses by using multiple reporters or including clinical interviews. Next, the video-recorded environment likely caused participants to behave differently. Future studies should indirectly observe families in their home where most family communication occurs on a daily basis. Microphones could be utilized to discreetly record family members throughout their day. This would eliminate the pressure of being directly observed in an unfamiliar space. Lastly, the game of Jenga may have inhibited some level of typical family conversation. Although this game was useful for studying the amount of on vs off task conversation, it did not facilitate an accurate representation of common family conversation. Future studies may consider prompting families to discuss a relevant family topic, allowing families to fully focus on the conversation at-hand.

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Table 1**Correlations Between Parental Broad Autism Phenotype and Family Communication Factors**

	Mother- Child Speech	Mother- Initiated Speech	Father- Child Speech	Father- Initiated Speech	Child- Mother Speech	Child- Father speech	On Task Speech	Off Task Speech	Total Child- Directed Speech	Average Length of Interchange	Total Conversation
Mother Aloofness	-0.045	-0.016	-0.010	0.023	-0.061	0.090	0.033	0.023	-0.036	-0.070	0.042
Mother Pragmatic Language	-0.088	-0.017	-0.059	-0.025	0.003	0.066	0.038	-0.027	-0.093	-0.163	0.025
Mother Rigidity	0.024	0.062	0.131	0.141	0.027	.196*	.262**	-0.106	0.092	-0.061	.206*
Mother Total BAP	-0.044	0.011	0.027	0.058	-0.017	0.146	0.136	-0.042	-0.014	-0.118	0.112
Father Aloofness	0.002	-0.008	-0.169	-.287**	0.179	0.083	0.007	-0.176	-0.098	0.037	-0.068
Father Pragmatic Language	-0.048	-0.004	-0.044	-0.052	0.112	0.091	0.023	0.060	-0.058	-0.176	0.048
Father Rigidity	-0.023	0.015	-0.080	-0.088	.189*	0.157	0.104	-0.075	-0.063	-0.103	0.068
Father Total BAP	-0.025	0.001	-0.127	-.189*	.200*	0.134	0.053	-0.091	-0.092	-0.086	0.012

Table 2**Correlations Between Mother-Reports of Child Anxiety and Family Communication Factors**

	Mother-Child Speech	Mother-Initiated Speech	Father-Child Speech	Father-Initiated Speech	Child-Mother Speech	Child-Father speech	On Task Speech	Off Task Speech	Total Child-Directed Speech	Average Length of Interchange	Total Conversation
General Anxiety	-0.016	0.046	0.025	0.071	-0.028	.189*	0.019	0.164	0.004	-0.108	0.088
Social Anxiety	-.243*	-0.109	-0.069	0.028	-0.136	0.055	-0.114	0.066	-.204*	.245**	-0.080
Total Anxiety	-0.063	0.025	0.009	0.067	-0.028	.190*	0.032	0.113	-0.037	0.025	0.079

Table 3**Correlations Between Father-Reports of Child Anxiety and Family Communication Factors**

	Mother-Child Speech	Mother-Initiated Speech	Father-Child Speech	Father-Initiated Speech	Child-Mother Speech	Child-Father speech	On Task Speech	Off Task Speech	Total Child-Directed Speech	Average Length of Interchange	Total Conversation
General Anxiety	-.274**	-0.042	-0.043	.214*	-0.171	0.124	-0.075	.222*	-.209*	0.059	0.023
Social Anxiety	-.213*	-0.076	-0.074	0.030	-0.176	0.016	-0.125	0.025	-.187*	.202*	-0.109
Total Anxiety	-.222*	-0.086	-0.003	0.160	-0.179	0.172	-0.071	0.132	-0.151	0.099	-0.012

Table 4**Correlations Between Child Autism Severity and Family Communication Factors**

	Mother- Child Speech	Mother- Initiated Speech	Father- Child Speech	Father- Initiated Speech	Child- Mother Speech	Child- Father speech	On Task Speech	Off Task Speech	Total Child- Directed Speech	Average Length of Interchange	Total Conversation
Autism Severity	.284**	0.166	0.074	-0.021	0.073	-0.011	0.120	-0.028	.235*	0.002	0.103