

PARENTAL PERSPECTIVES ON THE SOCIAL COMMUNICATION BETWEEN  
ADOLESCENT FEMALES DIAGNOSED WITH HIGH FUNCTIONING AUTISM  
SPECTRUM DISORDER AND THEIR TYPICALLY DEVELOPING OLDER

SIBLINGS: A CASE STUDY

by

Victoria Paxton

Liberty University

A Dissertation Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

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April, 2023

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## ABSTRACT

Verbal social communication and nonverbal social communication have been documented as a source of deficiency in adolescents with high-functioning (H-F) autism. Likewise, adolescent females with autism reported an increase in social communication difficulties as they aged into adolescence. While the positive impact on social communication in children with autism by older siblings has been documented, there is no such research that has investigated the nonverbal and verbal social communication characteristics among adolescent females with high-functioning autism and their typically developing older siblings (Ben-Itzhak et al., 2016). In the following research study, parental perspectives on the social communication between female adolescents with high-functioning autism and their typically developing older sibling(s) were examined using a case study approach. Nine parents of an adolescent daughter with high-functioning autism and an older sibling(s) described the nonverbal and verbal social communication between their high-functioning daughter with autism and their siblings during a semi structured interview. Adolescent females with high-functioning autism were between 12 and 16 years of age, sharing fulltime residence with their parent and older sibling(s). Adolescent females with high-functioning autism tended to share typical nonverbal communication with their siblings with moments of typical verbal communication. In comparison, adolescent females with high-functioning autism tended to share more atypical nonverbal and atypical verbal communication with their parent. Parents took on a more careful communication style toward their daughters while older siblings took on a more natural communication style toward their sister with high-functioning autism. Descriptions of the communication between siblings suggest that older siblings may

present adolescent sisters with the opportunity for more authentic communication opportunities.

## **Dedication**

This dissertation is dedicated to the people, big and small, who have spoken into my life in a way that could have only been orchestrated by Divine design. While they have proper names, to me they are known as Britannica, Sis, Jack-Jack, and Lo. They are my children.

A person in isolation has a difficult time getting beyond oneself. My children solved that problem for me. Each have asked something different of me, and each have given me insights that only they could have given. That's the beauty of family. We are stretched beyond what we believe is our best, and we pursue the impossible for the ones that we love.

Britannica, Sis, Jack-Jack, and Lo, thank you for teaching me that the bridges of life that are in disrepair and take us to nowhere can be burned, and more importantly, that new bridges are worth building when they become paths to Life. Your mother is waiting patiently to watch each of you walk across the new bridges that we have built together.

## **Acknowledgments**

Thank you to Dr. Rachel Piferi and Dr. Brittany Hernandez for their guidance and encouragement throughout the dissertation process. God knew who I needed in my corner, and He provided. Last, but certainly not least, thank you to Mr. Paxton who stood by my side and pushed me across the finish line. It's what great husbands do.

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## CHAPTER 1: INTRODUCTION TO THE STUDY

### Introduction

Typically developing siblings may be of benefit to their younger brothers and younger sisters with autism (Ben-Itzhak et al. 2016; Ben-Itzhak et al., 2019; De Veld Danielle et al., 2021; Matthews & Goldberg, 2018; Rosen et al., 2022). Scripture supports this idea as the home is described as an institution of learning. It is a place where familial relationships are encouraged, and social behaviors are cultivated (*New American Standard Bible*, 1960/2021, Colossians 3:20; Deuteronomy 6:6-7; Deuteronomy 4:9; Proverbs 6:20; 1 Timothy 5:8). Likewise, recent research has uncovered correlations between older siblings, cognition, and autism symptomology measures (Ben-Itzhak et al., 2016; Rosen et al., 2022).

Ben-Itzhak et al. (2016; 2018) found that young children with autism that had an older sibling(s) performed better in social communication measures and social functioning measures, with cognition being a moderator of these measures. De Veld Danielle et al. (2021) reported that young children may have the capacity to mimic and learn theory of mind behaviors from older siblings, and it may be that typically developing older siblings have the greatest impact on theory of mind in children with autism as compared to families with autism recurrence (Matthews & Goldberg, 2018).

However, unlike young children with autism, adolescents with autism tend to produce mixed outcomes in social communication measures, and adolescent females with autism may take on a unique social communication trajectory that may or may not be moderated by cognition (Allely, 2019; Kikuchi et al., 2022; Mandy et al., 2018; Pudło & Ewa, 2018). Research investigating social communication, older siblings, and young children is unable to describe the

communication relationship between adolescent females with high-functioning autism and their typically developing sibling(s).

In the current research study, a description of the nonverbal social communication and verbal social communication between adolescent females with high-functioning autism and their typically developing sibling(s) will be reported. For comparison, the study will include a description of the nonverbal social communication and verbal social communication between parents and their adolescent daughter with high-functioning autism.

## **Background**

### **Introduction and Background of the Study**

First documented by Leo Kanner in 1943, autism is a neurodevelopmental disorder that is characterized by social difficulties, communication deficits, restricted interests, and repetitive behaviors (American Psychiatric Association, 2013; Kanner, 1943). Autism may be a heritable disease that impacts the connectivity of neural pathways (Inui & Myowa-Yamakoshi, 2017). Those that are diagnosed with autism are deficient in social reciprocity, non-verbal communication, and relational understanding (American Psychiatric Association, 2013). In addition, those diagnosed with autism exhibit repetitive behaviors, inflexible routines, restricted interests, and hypo/hyperreactivity to sensory input (American Psychiatric Association, 2013).

Diagnosis of this disorder usually occurs between the first and third birthdays (Steinman, 2015). During the 1940's, autism was believed to affect 4 in 10,000 of the population, but presently, diagnosis has grown to 1 in 100 (Kanner, 1943). Historically, Autism Spectrum Disorder (ASD) had been viewed as a disorder that disproportionately affected males (Fombonne, 2003; Kanner, 1943;). Recent research has narrowed the diagnostic outcomes to 4:1 (1 female) with the ratio becoming less than 3 in adults that are diagnosed with autism (Loomes

et al., 2017), and in individuals with average intelligence, the male-female ratio has been reported to be as large as 8:1 (Fombonne, 2003)

## **Female Social Communication**

### *Girls and Social Communication*

In general, children with autism that have higher IQ are more likely to demonstrate better social cognition, but it's only girls with higher cognitive function that are less likely to be diagnosed with autism spectrum disorder (Beggiato et al., 2017; Hirosawa et al., 2020; Livingston et al., 2019; Wood-Downie et al., 2021; Zachor & Ben-Itzhak, 2020). Despite similar levels of theory of mind in boys with autism and girls with autism, girls with autism will camouflage at a greater frequency and proficiency than boys with autism (Bitsika, & Sharpley, 2019; Parish-Morris et al., 2017; van Ommeren et al., 2017; Wood-Downie et al., 2021). As well, autistic girls' social reciprocity and pragmatic language tend to be reported as being more proficient than that of their male counterparts, and they tend to exhibit fewer restrictive, repetitive behaviors (Burton et al., 2020; Conlon et al., 2019; Milner et al., 2019, Parish-Morris et al., 2017; van Ommeren et al., 2017; Wood-Downie et al., 2021).

### *Adolescent Females and Social Communication*

In young girls, it may be that higher cognitive function is a confounding variable that produces perceived social communication differences between girls with autism and boys with autism (Allely, 2018; van Wijngaarden-Cremers et al., 2014; Wood-Downie et al., 2021); however, during adolescence, the gap between the social communication deficiencies of females with autism and males with autism may become less delineated (Mandy et al., 2018). Mandy et al. (2018) reported that autistic social traits became similar between adolescent females with autism and adolescent males with autism with cognition not moderating social autistic traits.

Likewise, adolescent females with autism and adolescent males with autism camouflage at similar rates irrespective of cognition, and adolescent females with autism describe greater social communication difficulties during adolescence (Bargiela et al., 2016; Corbett et al. 2020; Lai et al., 2017; Livingston et al., 2019).

### **Sibling Influence**

None the less, even with these social difficulties, children with autism display a unique relationship with typically developing siblings (Braconnier et al., 2018; Rum et al., 2020). Young children with autism exhibit more interaction with their typically developing siblings than with their parents (Braconnier et al., 2018; Corsano et al., 2017; El-Ghoroury & Romanczyk, 1999; Rum et al., 2020), and typically developing siblings often take on a caregiver role of their siblings with autism (Braconnier et al., 2018; Corsano et al., 2017; El-Ghoroury & Romanczyk, 1999; Rum et al., 2020). While the relationship between typically developing siblings and siblings with autism can be strained, particularly as typically developing siblings begin to age, overall, typically developing siblings tended to rate their relationship with their sibling with autism as affectionate (Braconnier et al., 2018).

Typically developing siblings seem to present younger autistic siblings with social learning opportunities (de Veld Danielle et al., 2021). Older siblings initiate more interactions with ASD siblings, and ASD siblings imitate older siblings (Rum et al., 2020). As well, typically developing siblings provide opportunities for social interactions that are outside of the home for siblings with autism (Cridland et al., 2015; Krieger et al., 2018).

### **Older Sibling Influence**

Children diagnosed with autism exhibit an alleviation of specific autism symptomology when they are second or lower in birth order (Ben-Itzchak et al., 2016; Ben-Itzchak et al., 2019; de

Veld Danielle et al., 2021; Matthews & Goldberg, 2018; Montes, 2018;). While small gains, children having older siblings presented with an improvement in social functioning (Ben-Itzhak et al., 2019). The number of older siblings and level of cognitive functioning increased the chances of improvement in social functioning in younger siblings with autism (Ben-Itzhak et al., 2019). Children with an autism diagnosis who have older siblings developed a more advanced theory of mind. Cognition and having an older sibling accounted for about 30% of the variation in social communication scores between children with autism. (Ben-Itzhak et al., 2016; de Veld Danielle et al., 2021; Matthews & Goldberg, 2018). Despite birth order, adolescents diagnosed with autism with at least one sibling were more likely to show improvement in adaptive functioning across time (Rosen et al., 2022).

### **Problem Statement**

Research has described autism spectrum disorder as a neurodevelopmental disorder that is characterized by social communication deficits (American Psychiatric Association, 2013). Females with autism may exhibit a different social communication trajectory than males with autism (Cook et al., 2018; Greenlee et al., 2019; Isaksson et al., 2019; Mandy et al., 2018). Young girls diagnosed with high-functioning autism tend to project higher levels of social communication success as compared to their male counterparts, but are less successful at social communication than typically developing young girls (Burton et al., 2020; Milner et al., 2019, Parish-Morris et al., 2017; Wood-Downie et al., 2021). Unlike males, young females with autism appear to compensate and camouflage their autistic trait well, but as female adolescents with autism enter into middle adolescence, they are less likely to compensate and camouflage their autistic trait—whether because of increased social complexities or an innate increase in

autistic trait (Almehmadi et al., 2020; Bargiela et al., 2016; Bitsika, & Sharpley, 2019; Mandy et al., 2018; Parish-Morris et al., 2017; van Ommeren et al., 2017; Wood-Downie et al., 2021).

Current research has uncovered social communication benefits for children with autism (Ben-itzchak et al., 2016). These social communication benefits are associated with having an older sibling(s); however, research is limited. Autistic siblings that have taken part in research were  $\leq$  5 years of age and predominately male (Ben-itzchak et al., 2016). There is a lack of current research on the social communication benefits of the older sibling(s)-adolescent female sibling with autism relationship. Given the unique social communication trajectory of adolescent females with autism and the limited understanding of the older sibling(s)-adolescent female with autism relationship, a case study examination on the parental perceptions of the social communication between adolescent, high-functioning (H-F) autistic females and their older siblings is warranted. Through this research, constructs in the social communication patterns between adolescent autistic girls and their older sibling(s) may be identified and utilized in future research.

### **Purpose of the Study**

The purpose of this qualitative case study is to explore parental perceptions of social communication between older typically developing sibling(s) and their adolescent, younger, female sibling diagnosed with H-F Autism Spectrum Disorder, and for comparison, to explore parental perceptions of the social communication between parents and their daughter with high-functioning autism.

### **Research Question(s)**

RQ1: How do parents describe the nonverbal social communication between their typically developing older children and their younger, adolescent daughter

diagnosed with H-F autism?

RQ 2: How do parents describe the verbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with H-F autism?

RQ 3: As compared to the nonverbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with H-F autism, how do parents describe the nonverbal social communication between themselves and their adolescent, autistic daughter.

RQ 4: As compared to the verbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with H-F autism, how do parents describe the verbal social communication between themselves and their adolescent, autistic daughter.

### **Assumptions and Limitations of the Study**

#### **Assumptions**

The assumptions for the study include parental transparency and knowledge of the relationship between typically developing older sibling(s) and daughter with high-functioning autism. It is assumed that all parent participants are answering all interview questions completely and truthfully, not withholding any information that may be pertinent to the investigation. Additionally, it is assumed that parent participants fully understand each semi structured interview question. A final assumption is that parent participants regularly interact with their adolescent daughters with high-functioning autism and her older sibling(s) as to have an intimate understanding of the relationship between their typically developing older children and daughter with high-functioning autism.



## **Limitations**

Limitations for this study include a narrow demographic that cannot be generalized to all children with autism, only to adolescent H-F autistic females between 14 and 16 years of age; furthermore, this study cannot be generalized to all sibling constellations, only to those constellations that include older sibling(s). It is understood that parent participants have limited access to their children's interactions, and their description of sibling communication may include biases that arise from a parental point of view. While they are offering insight into the social communication patterns of their children, it is a possibility that social communication between siblings manifests itself differently when parental supervision is not available. Similarly, parents may simply misinterpret the social communication between typically developing older siblings and the younger sister with autism.

The intent of the study is to describe nonverbal and verbal constructs that may underpin recent research findings that suggest the association between typically developing older siblings and the improved social communication of young children with autism having average cognitive function. While it is an important step in the process of further investigating this association in the demographic of adolescent, H-F autistic females, the current study is not intended for determining how nonverbal and verbal constructs impact social communication within the older sibling(s)-younger H-F autistic sibling relationship, but the case study is a descriptive tool used to further future research.

## **Theoretical Foundations of the Study**

According to social learning theorist Vygotsky, a child's action, social context, and language are instrumental in their cognitive development (Lerner, 2018). Not only are children presented with the opportunity to learn from their environment, but the players in the

environment have the potential of elevating one another to higher developmental plateaus (Lerner, 2018); furthermore, children develop more proficiently when they are engaged with others within a social context rather than when performing tasks alone (Lerner, 2018).

Similarly, Life-Span Development Theory purports that individuals develop continuously across the life-span, and this development takes place within specific relational, temporal, and cultural contexts (Lerner, 2018). Among the contextual influences that produce developmental change is the family (Lerner, 2018). The influence of environmental context and the influence of the individual within an environment are bidirectional—producing developmental changes as the environmental context and individual act and react with one another (Lerner, 2018).

Baltes hypothesized that bidirectional relationships between context and an individual involve adaptation that supports complex development, which manifests itself into differing pathways—supporting the idea that females with autism may take on complex developmental trajectories (Lerner, 2018). Research suggests that older siblings may be key components in the molding of the developmental pathways of individuals with autism (Rosen et al., 2022). As was suggested by Vygotsky, children experience optimal cognitive development when they learn with others rather than in isolation (Lerner, 2018).

Older siblings provide the social context for learning how to engage and communicate with others, and older siblings provide a model and practice partner for learning social communication (Rosen et al., 2022). Older siblings appear to be an advantage that individuals with autism have in learning how to navigate community beyond what would be possible without the close relationships of their siblings (Cridland et al., 2015; Krieger et al., 2018). Children with autism that have older siblings tend to develop more proficient adaptive skills and social skills than

those without older siblings (Ben-Itzhak et al., 2016; Ben-Itzhak et al., 2019; Rosen et al., 2022).

Likewise, God established the family as an institution of learning that encourages healthy social behaviors (*New American Standard Bible*, 1960/2021, Genesis 1:26; Colossians 3:20; Matthew 12:50; Proverbs 6:20). The Biblical perspective of family paints a picture of development that is nurtured within human relationships and presents a hierarchy of relationship within the family that encourages proper social development (*New American Standard Bible*, 1960/2021, I Corinthians 11:31; I Timothy 3:5). Included within this familial hierarchy are sibling relationships that, in scripture, describe sibling social influence and sibling spiritual influence that impacts their brothers and sisters (*New American Standard Bible*, 1960/2021, Genesis 33: 8-10; John 1: 40-42).

### **Definition of Terms**

The following is a list of definitions of terms that are used in this study.

**Camouflaging** – Camouflaging is defined as strategies used to appear less autistic in social interactions (Hull et al. 2017).

**Executive Function** – Executive function refers to regional coordination and integration of prefrontal executive processes that integrate with other emotion and social circuits (Demetriou et al., 2018).

**High-Functioning Autism** – High-Functioning Autism refers to a category of autism spectrum disorder distinguished by an  $IQ \geq 70$  or  $IQ \geq 85$  (Alvares et al., 2020).

**Nonverbal Social Communication** – Nonverbal Communication is defined as skills that include eye gaze, facial expressions, vocalizations, gestures, body postures, and body movements (Oryadi-Zanjani, 2020).

**Pragmatic Language** – Pragmatic language is defined as the appropriate social use of language (Lawley et al., 2022).

**Social Autistic Trait** – Social autistic trait is defined as a measure of social cognition, pragmatic language, peer relationships, and social behavior (Mandy et al., 2018).

**Social Cognition** – Social cognition refers to mental processes relevant for the understanding of agents and their interactions, including the self (Isaksson et al., 2019).

**Social Reciprocity** – Social reciprocity is defined as a constellation of communication skills that include interaction, understanding how to react in social situations, the desire to interact with others, the ability to attribute perspective to others, and appropriate management of atypical behaviors in social settings (Sturm et al., 2018).

**Theory of Mind** – Theory of Mind is defined as the ability to attribute mental states and intentions to oneself and others (Happe et al., 2017).

**Verbal Social Communication** – Verbal social communication refers to the use of spoken words and written words to communicate ideas (Clendon et al., 2021).

### **Significance of the Study**

Better understanding the communication dynamics between typically developing older sibling(s) and their younger H-F autistic sister has the potential of advancing intervention strategies that could be implemented to aid in the improvement of social communication in ASD children (Wright et al., 2019). These strategies may be implemented by therapists, teachers, and parents. Secondly, the research may assist in building a foundation for future quantitative research that could measure the impact of specific nonverbal and verbal behaviors between autistic and typically developing siblings that could enhance the social communication development of children with autism.

## Summary

Adolescent females diagnosed with H-F autism represent a unique demographic in the study of autism. While H-F autistic girls' social communication, pragmatic language, and social reciprocity skills are often reported as being more proficient than that of their boy counterparts, adolescence presents H-F females with autism with unique communication and social challenges (Burton et al., 2020; Conlon et al., 2019; Isaksson et al., 2019; May et al., 2021; Milner et al., 2019, Parish-Morris et al., 2017; van Ommeren et al., 2017; Wood-Downie et al., 2021).

The social autistic trait becomes similar between autistic males and autistic females during adolescence with cognition becoming irrelevant in the relationship between social autistic trait and sex (Mandy et al., 2018). Social dynamics begin to become more difficult to navigate, and lack of verbal social communication and nonverbal social communication becomes less acceptable amongst peers (Bargiela et al., 2016; Cresswell et al., 2019; Kelly et al., 2018; Navot et al., 2017).

How these adolescent dynamics take form in older sibling communication with younger, adolescent female siblings with autism is yet to be investigated. Young autistic children seem to reap the social communication benefits of having older sibling(s)—including improved nonverbal communication and improved social affect. Through the current study, parental perspectives on the social communication between their H-F autistic, adolescent daughter and her typically developing older sibling(s) were investigated to better understand the constructs of verbal communication and nonverbal communication that take place within their sibling relationship.

## CHAPTER 2: LITERATURE REVIEW

### Overview

Females tend to be underrepresented in autism research (Alley, 2018). While there are studies that have been conducted that involve young girls with autism, there is a scarcity of research that focuses on adolescent females with autism (Berenguer, 2018; Burton et al., 2020; Conlon et al., 2020; Harrop et al., 2019; Rynkiewicz et al., 2016; Sturrock et al., 2020). Because of the underrepresentation of females with autism in research, the social outcomes and communication outcomes of adolescent females is uncertain.

It has been theorized that females possess the ability to camouflage autistic traits (Bargiela et al., 2016; Cook et al., 2018; Dean et al., 2017). Alley (2018) argued that higher cognition may impact the ability to camouflage. While this theory receives support in girls with autism, it loses support as these same girls age into adolescence (Corbett et al., 2020; Lai et al., 2017; Mandy et al., 2018). The theory has been challenged by research that found no connection between cognition and autistic social trait in adolescents (Mandy et al., 2018) and little difference in the ability of adult males with autism and adult females with autism to camouflage autistic traits (Lai et al., 2017); furthermore, high-functioning adolescents may continue to experience difficulty with verbal and nonverbal social communication despite having better social communication skills during early childhood as compared to low-functioning children with autism during childhood (American Psychiatric Association, 2013; Kuschefski et al., 2019; Pudlo & Ewa, 2018; Mishra et al., 2020; 2021; Von der Lühne et al., 2016; West et al., 2020; Zimmerman et al., 2018).

Given the potential for a shift in social functioning and social communication behaviors in adolescent females with autism, recent research on the impact of older siblings on the social communication skills of young children with autism cannot be extended to adolescent females

with high-functioning autism (Ben-Itzhak et al., 2016; Ben-Itzhak, 2019). While the research offers interesting insight into the role that older siblings may play in the social communication development of young siblings with autism, further investigation is needed to determine if these findings can be translated into positive social communication gains in adolescent females with high-functioning autism (Ben-Itzhak, 2019).

### **Description of Search Strategy**

Literature searches were conducted using the Jerry Falwell Library. When articles could not be ascertained through the Jerry Falwell Library, further searches were completed using Google Scholar. Databases that were utilized during searches included EBSCO, Sage Journals, and PubMed. Key search terms included “female”, “autism”, “autism spectrum disorder”, “ASD”, “adolescent”, “adolescence”, “siblings”, “older siblings”, “communication”, “high-functioning”, “social cognition”, “females”, “mother”, “maternal”, and “family”. Biblical commentary searches were conducted using the Bible Hub website.

## Review of Literature

Autism spectrum disorder is characterized by social and communication impairments, as well as repetitive, restrictive behaviors and sensory deficits across the lifespan. (American Psychiatric Association, 2013; Ying Sng et al., 2018). It affects approximately 1 percent of the population with more documented diagnoses in males as compared to females, with a 4:1 (1 female) ratio in childhood (Loomes et al., 2017).

Autism tends to be categorized within two subdomains, low-functioning autism and high-functioning autism (Barendse et al., 2013). While high-functioning autism is not a formal diagnosis, it is used to describe individuals with autism without intellectual disability. This informal categorization is substantiated through IQ (Barendse et al., 2013). Traditionally, persons demonstrating an IQ score of  $\geq 70$  or  $\geq 85$  are considered to fall within the high-functioning autism criterion (Alvares et al., 2020; Barendse et al., 2013; Howlin, 2003).

Historically, high-functioning autism has been considered to be less debilitating than low-functioning autism (Alvares et al., 2020). It has been surmised that higher IQ acts as a buffer against the deleterious outcomes of autism such that those diagnosed with high-functioning autism produce better long-term outcomes in social functioning, social communication, and adaptive functioning; however, Alvares et al. (2020) argued that this is potentially inaccurate in individuals receiving a high-functioning autism diagnosis.

During infancy and early childhood, high-functioning autism may be reported as having an unremarkable development in receptive language and expressive language (Howlin, 2003; Van Elst et al., 2013). In high-functioning adults with autism, those reported as having language difficulties during childhood and those that were not reported as having language difficulties during childhood fell below age-level language proficiency as adults (Howlin, 2003).



High-functioning individuals that receive a late diagnosis and are older in age may exhibit a discrepancy between IQ and expected adaptive functioning skills; furthermore, Tillman et al. (2019) reported that poor social communication could drive this discrepancy (Alvares et al., 2020), making it possible that adolescent females with high-functioning autism face larger challenges in social communication than has been predicted in prior research.

Social communication difficulties in persons with high-functioning autism tend to include interpreting inferencing, social reciprocity, executing nonverbal body movements, and interpreting facial affect (American Psychiatric Association, 2013). Additionally, adolescents with high-functioning autism may process nonverbal cues more slowly and may have more difficulty predicting behavior as compared to typically developing adolescents (Kuschefski et al., 2019; Mishra et al., 2020; Von der Lühe et al., 2016).

### **Neurocognitive Functioning**

Theory of mind (ToM) is the ability to predict the mental states of others and to understand another person's actions and/or motives, while higher executive function is comprised of attentional and working memory processes (Demetriou et al., 2018; Happe et al., 2017). Ben-Itzchek et al. (2016) writes, "ToM is related to basic social communication skills such as pointing, joint attention and sharing enjoyment, interests and emotions with others, and to more advanced skills such as empathy and social insight that are impaired in ASD" (p. 1614).

Adolescents with high-functioning autism can perform comparably to typically developing adolescents in theory of mind and executive functioning clinical assessments, but it is when they are assessed during real world interactions that their deficits in neurocognitive functioning become most apparent, placing them below their typically developing peers in these neurocognitive measures (Barendse et al., 2018). Barendse et al. (2018) hypothesized that

clinical assessments of theory of mind and executive function allowed for more thoughtful responses to tasks while real world social interactions tax the innate social communication capacities of adolescents with high-functioning autism, revealing their true social communication deficits.

Theory of mind and executive function are believed to impact social reciprocity and facial affect recognition (Ben-Itzchek et al., 2016; Liu et al., 2019; Golan et al., 2018; Griffiths et al., 2017; Sachse et al., 2016; Yeung et al., 2020). Griffiths et al. (2017) reported that difficulty reading negative facial expressions in adolescents with high-functioning autism could suggest that these individuals are more likely to inaccurately read facial expressions that are not negative, and they may experience more difficulty in social settings (Griffiths et al., 2017). Additionally, deficits in a specific executive function known as cognitive shifting—the ability to move fluidly from one mental/physical task to another-- may aid in fueling the restrictive, repetitive behaviors that have the potential of derailing social communication (Zimmerman et al., 2018).

While executive function is a correlate of ToM, the relationship between executive function and social communication is not clearly defined, but it is hypothesized that executive function allows for self-awareness and the monitoring of others' behaviors (Jones et al., 2017; Zimmerman et al., 2018). Poor executive function in individuals with autism may have a cascading effect on ToM—impacting the development of mentalization (Jones et al., 2017). Supporting this idea, Ben-Itzchak et al. (2019), found that while having better baseline social communication skills than those diagnosed with low-functioning autism, those with high-functioning autism did appear to experience a decrease in social communication skills across time.

## **Gender Differences in Social Communication**

High-functioning girls with autism are often reported as having more proficient social communication skills than high-functioning boys with autism but less communication skills than typically developing girls (Berenguer, 2018; Burton et al., 2020; Conlon et al., 2020; Harrop et al., 2019; Rynkiewicz et al., 2016; Sturrock et al., 2020). Girls with high-functioning autism are reported to outperform primary school-aged boys with high-functioning autism in pragmatic, semantic, and affective language, but they do not outperform primary school-aged, typically developing girls (Conlon et al., 2020; Sturrock et al., 2020). As well, girls with high-functioning autism are inclined to exhibit more facial interest and to use more communicative gestures than boys with high-functioning autism but continue to perform below their typically developing female peers (Harrop et al., 2019; Rynkiewicz et al., 2016).

Social communication patterns across time for females with high-functioning autism are unpredictable and poorly understood (Brignell et al., 2018; Franchini et al., 2018; Iverson et al., 2017; Richards et al., 2016). While there is an abundance of research investigating the social communication outcomes for young girls with high-functioning autism, as autistic females age into adolescence, there is a scarcity of research that focuses specifically on investigating female communicative behaviors.

## **Social Communication Hypotheses**

### *Cognition and Camouflaging*

Beyond the primary school-aged years, the social communication trajectory of high-functioning females with autism remains unclear. This may be a consequence of the arguable underrepresentation of high-functioning females in both diagnoses and research—due in part to the high-functioning female’s ability to project more proficient social communication skills as

compared to high-functioning males (Bargiela et al., 2016; Bitsika, & Sharpley, 2019; Conlon et al., 2019; Parish-Morris et al., 2017; Wood-Downie et al., 2021; van Ommeren et al., 2017).

While Van Wijngaarden-Cremers et al. (2014) found that there was not a statistical significance between the social behaviors and communication behaviors of males and females with autism across the lifespan, the study hypothesized that cognitive abilities could influence female diagnosis, which in turn, could suggest that girls with autism that have strong cognitive abilities do display better communication skills. Likewise, Alley (2018) concurred with the Van Wijngaarden-Cremers et al. (2014) conclusion. Cognition may be an integral component in the presentation of more advanced social and communication skills that restrict female diagnoses. The underrepresentation in research of girls with strong cognitive functioning that have autism may misconstrue communication findings (Alley, 2018; Van Wijngaarden-Cremers et al., 2014).

This hypothesis is strengthened by the widening of the male-female autism ratio from 4:1 to as large as 8:1 when cognitive abilities rise (Fombonne, 2003; Loomes et al., 2017). Teachers often underreported autistic traits in female students (Posserud et al., 2006). As well, late diagnosed women with autism reported that their ability to pretend to be normal impacted professionals' diagnoses (Bargiela et al., 2016)

The ability for females with autism to more adequately mimic social-communicative behaviors as compared to males with autism is known as camouflaging (Lai et al., 2017). Specific examples of camouflaging in females with autism include staying in close proximity to social groups while not fully engaging within the groups, vocal distortions, personality changes, and learned behavior from famous personalities (Bargiela et al., 2016; Cook et al., 2018; Dean et al., 2017). Adolescent girls reported that they attempted to achieve this mimicry by studying the actions of others, even going as far as engaging in drama classes to learn how to better express

the social-communicative behaviors of typically developing peers (Allely, 2019; Bargiela et al., 2016; Cook et al., 2018).

### *Increasing Autistic Social Trait*

However, the camouflaging theory loses support as girls age into late adolescence (Mandy et al., 2018). According to this theory, the outward manifestation of autistic social traits should decrease as females with autism age; however, adolescent females report that social communication can become more difficult as they enter into the teen years (Bargiela et al., 2016). This may contribute to the finding that the male-female autistic ratio narrows from 4 in childhood to less than 3 in adulthood (Loomes et al., 2017; Posserud et al., 2021; Wood-Downie et al., 2020).

Research on the camouflaging abilities of adolescents and adults with autism tend to represent cross-sectional studies that fail to address the social and communication trajectory of high-functioning females with autism. Lai et al. (2017) found that high-functioning adults with autism did not produce a relationship between their cognitive abilities and their camouflaging abilities, and while more females did produce camouflaging abilities, there was great variability in both males' abilities and females' abilities to camouflage, a finding that was reproduced by Corbett et al. (2020). Baker and Blacher (2020) found that high-functioning adolescents with autism and adolescents with autism plus intellectual disability did not produce a statistically significant difference in social behavioral measurements, although those without intellectual disability did have slightly higher measures (Baker & Blacher, 2020).

In an earlier longitudinal study, Robinson et al. (2011) analyzed the development of autistic social traits in male and female participants. While females were documented as exhibiting an increase in social autistic traits between the ages of 10 and 13, the study did not present data

beyond this age, leaving the autistic social trait trajectory of females unknown into late adolescence and adulthood (Robinson et al., 2011). Bal et al. (2018) documented an overall improvement in social communication skills from the age of 2 until the age of 19 in individuals with autism. The study recruited 192 participants, measuring social communication at 4 points in time (2, 3, 9, and 19); however, the study was predominantly male.

To extend the research on H-F females' social and communication functioning, in a longitudinal study of males and females with autism, Mandy et al. (2018) surmised that by the age of 16 males and females with autism exhibited comparable levels of autistic social trait (AST; a measure of social and communication traits), with autistic females' AST's increasing throughout adolescence. According to Isaksson et al. (2019), these levels of autistic social trait may be negatively associated with social cognition in young adults and may impact social communication. Also, as in the Lai et al. study (2017) and the Baker and Blacher study (2020), Mandy et al. (2018) did not find a significant correlation between cognition and autistic social traits. Mandy et al. (2018) writes, "It remains to be discovered whether the observed female adolescent increase in ASTs represents the genuine late onset of social difficulties or earlier, subtle, pre-existing difficulties becoming more obvious" (p. 1143).

To further support the growing social communication difficulties of high-functioning females as they aged, Mandy et al. (2022) and May et al. (2021) found that individuals with autism that were diagnosed later in development (disproportionately female and those with higher IQ's) experienced greater levels of bullying and social difficulties by the time that they reached the age of 14 as opposed to those that were diagnosed with autism earlier (7 years or younger) in childhood. This indicated an increase in social difficulties as later diagnosed individuals aged (May et al., 2021).

## **Peer Relationships and Communication**

Aligning with Mandy's et al. (2018) findings, at a time when adolescent females with autism experience an increase in the desire to create and maintain friendships, high-functioning females with autism reported that they were more aware of their communication differences (Cook et al., 2018). These females began to experience worry and elevated levels of anxiety surrounding their peer relationships (Greenlee, et al., 2020). Late-diagnosed females described being characterized as rude, lazy, and antagonistic during adolescence (Bargiela et al., 2016). These characteristics were attributed to the struggle between avoidance and assertiveness during social communication (Bargiela et al., 2016).

Females with high-functioning autism experience a shift in language complexity as they age into adolescence. For example, during adolescence, communication evolves from a more concrete endeavor to a use of more abstract referencing (Falkum, 2019). As a result, female adolescents with autism shared that their social communication difficulties became more obvious as their sociolinguistic landscape became more complex (Bargiela, et al., 2016). Adolescent females with high-functioning autism described their challenges with social media and text messaging, underscoring the difficulty in properly decoding communication (Ryan et al., 2020). They found that interpreting written text on these platforms could be challenging, prompting some of the female adolescents with autism to cease to participate in the use of social technology (Ryan et al., 2020).

These communication complexities are further exacerbated by adolescent females' with autism struggle to initiate and maintain conversational topics (Almehmadi et al., 2020). Adolescent females with autism found it difficult to change topics, take turns in conversation, and to not monopolize conversations during social communication (Almehmadi et al., 2020).

Because of these social communication difficulties, adolescent girls with autism often fell prey to bullying and experienced an increase in mental health diagnoses (Cook et al., 2018; Mandy et al., 2022; May et al., 2021). Greenlee et al. (2019), reported that adolescent females with H-F autism that displayed higher levels of social communication were more likely to experience relational victimization; furthermore, it appeared that while some adolescent females with H-F autism were socially aware and communicated more, it was their attempts at social communication and reading facial expressions that were associated with relational victimization and bullying (Greenlee et al., 2019; Liu et al., 2019).

### **Parental Relationships and Communication**

Krieger et al. (2018) reported that parental support played a pivotal role in their adolescent ASD child's ability to participate in social functions. Parents shared that their relationship with their adolescent with autism was one that required close monitoring (De Clerq et al., 2021;2022). Parents felt frustration with the responsibilities of helping their adolescent child with autism navigate environmental triggers, social landscapes, and communication struggles (De Clerq et al., 2021; 2022). They were often the conduit for successful social connections and consequently, successful social interactions (Krieger et al. 2018).

Parent-child conflict interaction in adolescents with autism seemed to reflect upon the adolescent's ability to navigate peer relationships (Rabin et al., 2019). While adolescents with autism were more engaged in conversation and less withdrawn during conflict with parents, it was their social reciprocity that was associated with peer social-conversational skills (Rabin et al., 2019). Autistic adolescents who displayed less reciprocity during conflict were also less likely to achieve proficient social-conversational relationships with peers (Rabin et al., 2019).



Parents of adolescents with autism described their relationship with their child as challenging due to confusing or misunderstood social signals (De Clercq et al., 2021;2022). Parents were unable to achieve sufficient social exchanges with their ASD adolescent because of their adolescent's poor communication skills or because of the adolescent's desire for isolation (De Clercq et al., 2021; 2022). Parents reported being purposeful in their verbal communication with their children with high-functioning autism (Dieleman et al., 2018). They tended to not rely on nonverbal communication and would keep verbal communication concise as to avoid confusion (Dieleman et al., 2018). Dieleman et al. (2018) wrote, "Parents adjusted their communication by consciously thinking about when to announce things, by asking concrete questions, and by giving explicit instruction" (p. e31).

Additionally, gender seemed to play a part in the parenting behaviors toward adolescents with autism (Chang et al., 2019). Mothers were more likely to parent males with high-functioning autism with an authoritarian parenting style; furthermore, in female adolescents with high-functioning autism, social reciprocity was a moderator of parenting style (Chang et al., 2019). Those that displayed higher levels of social reciprocity were least likely to experience an authoritarian parenting style (Chang et al., 2019).

### **Sibling Relationships and Communication**

Siblings of adolescents with autism are often described as taking on a caregiver role toward their brother or sister, an anomaly termed as parentification (Cridland et al., 2015; Krieger et al., 2018; Tomeny et al., 2017). Shivers et al. (2019) surmised that typically developing siblings often experienced anxiety and overall dysphoria associated with the relationship between themselves and their sibling diagnosed with autism. Krieger et al. (2018), however, reported that typically developing adolescents and their autistic sibling have relationships that are similar to

those of neurotypical siblings. Likewise, for typically developing females, taking on the caregiving role of an adolescent sibling with autism can be positive, especially if the autistic sibling has less severe disability (Cridland et al., 2015).

Mirroring parents, siblings tend to be a mediator of social experiences for siblings with autism (Cridland et al., 2015; Krieger et al., 2018). Typically developing siblings are likely to take the relational lead in the sibling dyad, with siblings with autism mimicking the social behaviors of their typically developing sibling (Braconnier et al., 2018). Typically developing siblings of adolescents with autism were often the gateway for social interactions outside of the home for their ASD sibling and tended to promote an overall improvement in social communication in their ASD sibling (Ferraioli et al., 2012; Krieger et al., 2018).

Typically developing siblings reported similar struggles with the communication needs of their sibling with autism as to those that were experienced by parents of adolescents with autism (Gorjy et al., 2017). Typically developing adolescent siblings of adolescents with autism described recognizing the difference in their relationship with their sibling and the relationship between their friends and their friends' siblings by comparing communication styles (Gorjy et al., 2017). One sister described her communication difficulties with her adolescent brother with autism by stating, "You can see the differences. You can just have a complete full-on conversation with Adam, the one without autism. With Benny, you really have to look him in the eye and make sure he's listening and paying attention" (Gorjy et al., 2017, p. 1491).

Rosen et al. (2022) surmised "Thus, siblings may provide a built-in social companion, communication partner, and daily living skills role model through which individuals with ASD may develop the necessary competencies to live healthy and happy lives" (p. 26). While typically developing siblings may experience social and communication challenges within their

relationship with their brother or sister with autism, the typically developing siblings appear to present a unique opportunity for individuals with autism to connect and communicate with others in order to better understand and learn social proficiencies (Braconnier et al., 2018; Ferraioli et al., 2012; Gorjy et al., 2017; Krieger et al., 2018).

### **Sibling Impact on ASD Symptomology**

Recent research into the theory of mind of children with autism supported the assumption that children with autism do, in fact, learn social competencies from their siblings (de Veld Danielle et al., 2021; Matthews & Goldberg, 2018). De Veld Danielle et al. (2021) described the association between theory of mind, children with autism, and their siblings as a learned behavior. In theory of mind training, children with autism that had more siblings as well as an older sibling were more likely to have better outcomes in theory of mind training, but they did not have better intrinsic ToM knowledge or less autistic trait (de Veld Danielle et al., 2021). To support this summation, Matthews & Goldberg (2018) found that it is only children with autism that had siblings without recurrence that displayed a more innate theory of mind. It is plausible that siblings without recurrence could be associated with higher functioning younger siblings with autism, leaving the child with autism with a more substantial, internal theory of mind. While in general, children with autism could learn more proficient social behaviors from their typically developing older siblings that help to increase the ability of children with autism to camouflage unchanged theory of mind.

Adaptive functioning, social functioning, and social communication, all indicators of social communication proficiencies in children with autism, have been found to be impacted by the presence of siblings (Ben-Itzchak et al., 2016; Ben-Itzchak et al., 2019; Rosen et al., 2022). The strongest indicators of positive change in these constructs were the presence of older siblings

(Ben-Itzhak et al., 2016; Ben-Itzhak et al., 2019; Rosen et al., 2022). A weaker effect in adaptive functioning and social functioning was found when children with autism had younger siblings and better cognition (Ben-Itzhak et al., 2019; Rosen et al., 2022).

When specifically measuring social communication, Ben-Itzhak et al. (2016) reported that having older siblings and higher cognition were associated with better social affect and nonverbal communication skills. Given the young age of the children involved in the study ( $M=29.6$  months), verbal communication skills were unable to be measured. In a longitudinal study across 17 years, Rosen et al. (2022) measured adaptive behavior trajectories in individuals with autism. Participants ranged in age from 9 years to 26 years. The steepest growth in adaptive functioning in individuals with autism included those with a closest-age male sibling and gender matched siblings. Participants with ASD that had older siblings exhibited less social functioning deficits, a finding that supports the Ben-Itzhak et al. (2019) study stating that the more older siblings that a child with autism had, the better their social functioning outcomes.

### **Biblical Foundations of the Study**

#### **God's Sovereignty**

Merriam Webster defines sovereign as “one who exercises complete authority”. For a Christian to speak into the Biblical foundations of disability, one must first come to terms with the sovereignty of God. God extends complete authority over creation (*New American Standard Bible*, 1960/2021, Genesis 1:1). His spoken word is the final authority over all happenings within the created, natural world (*New American Standard Bible*, 1960/2021, Genesis 1:3).

God spoke to Job saying, “Where were you when I laid the foundation of the earth? Tell me if you have understanding. Who set its measurements? Since you know. Or who stretched the line

on it? Or who laid its cornerstone, when the morning stars sang together and all the sons of God shouted for joy?” (*New American Standard Bible*, 1960/2021, Job 38: 4-7).

If God is to be sovereign, then the words to Job aid the reader in discovering the attributes that are God and that allow His title, Sovereign God. A sovereign God is omnipotent, omniscience, and omnipresent (*New American Standard Bible*, 1960/2021, Colossians 1:17; Psalm 147:5). If God is all-powerful, all-knowing, and simultaneously present in His sovereignty, it must be reconciled that He willfully and permissively allows disability. God spoke to Moses, “Who has made man’s mouth? Or who makes him mute or deaf, or seeing or blind? Is it not I, the Lord?” (*New American Standard Bible*, 1960/2021, Exodus 4:14). God actively and purposefully forms the child with autism in the womb for His glory (*New American Standard Bible*, 1960/2021, John 9:3; Psalm 139: 13-16). It can further be said that He is the protector of all children as they are formed in their mother’s womb, even those with autism. Ellicott writes, “But the usual sense of the word [didst weave me] cover or protect, suits equally well. The prime thought is that every birth is a divine creation” (Bible Hub, 2019; *New American Standard Bible*, 1960/2021, Psalm 139:13). If God is protector of the pre-born, then, it is reasonable to conclude that children with autism have intrinsic value (*New American Standard Bible*, 1960/2021, Psalm 127:3). They are a good creation. They are known by the Father. They are loved by the Father, and they are a part of God’s divine plan. (*New American Standard Bible*, 1960/2021, Matthew 19:4).

If children with autism (and adolescents with autism) have intrinsic value and are a part of God’s eternal plans, then the outflowing of this idea is that research is necessary to honor those that God has deemed valuable. They are honored as Christian researchers join with Christ in the restorative process of Creation, which includes the attempt at putting back together the broken

pieces of autism and enhancing the lives of those with autism in a way that allows their unique purpose in God's kingdom to be fulfilled (Wolters, 2005).

### **The Family**

God has created mankind to be conformed into their intellectual, relational, and spiritual best when they involve themselves in divinely established relationships (*New American Standard Bible*, 1960/2021, Genesis 1:26). Relationship allows for man to take on the attributes of God who established that man be made in His image (*New American Standard Bible*, 1960/2021, Genesis 1:26; Romans 8:29). "Man is a living being capable of embodying God's communicable attributes. In his relational life, he was like God in that he could reason and had intellect, will, and emotion..." (MacArthur, 2021, p.17). God has established worldly institutions that draw men into a sanctification process that brings glory upon Himself (*New American Standard Bible*, 1960/2021, Titus 2,3; Wolters, 2005). One such institution is the family (*New American Standard Bible*, 1960/2021, Genesis 2:24; Titus 2; Wolters, 2005). In the family, it is feasible to believe that children with autism are pressed and molded into using cognitive processes to navigate familial relationships.

God has established the family with unique characteristics that set it apart from other established institutions (Wolters, 2005). At the root of its purpose, the family is meant to be a great cultivator of social people, and at its best, it is a cultivator of offspring that are deeply connected to their Creator. The family is a place of safety and education (*New American Standard Bible*, 1960/2021, Deuteronomy 4:9; Deuteronomy 6:6-7; 1 Timothy 5:8). Learning takes place within familial relationships (*New American Standard Bible*, 1960/2021, Deuteronomy 4:9; Deuteronomy 6:6-7). It is a schoolhouse of behavioral expectations that produces self-control (*New American Standard Bible*, 1960/2021, Colossians 3:20; Proverbs

6:20). The family is a system of social hierarchies that encourages and impacts human relationships (*New American Standard Bible*, 1960/2021, I Corinthians 11:3; 1 Timothy 3:5). It is a system that is subject to God's sovereignty, thus requiring not only submission to one another but a commitment to God's statutes concerning family (*New American Standard Bible*, 1960/2021, Ephesians 5:21).

It is within the family and familial hierarchies that research points to the social benefits for children and adolescents with autism (Ben-Itzhak et al., 2019; Rosen et al., 2022). The Biblical ideas of familial structure and familial learning are not far removed from the learning of theory of mind and social communication within the familial hierarchy (Ben-Itzhak et al., 2019; Matthew & Goldberg, 2018).

### **Sibling Relationships**

Paul uses the inclusionary terms "brother" and "sister" to further reinforce the idea that the highest relational aspirations [including Gentiles entering into the family of God] are mirrored within the family and are inseparable from a relationship with Christ (Braconnier et al., 2018; Kim, 2015). Scriptures give insight into the characteristics of sibling relationships. Through these relationships there is evidence of the influence of siblings on the behaviors of their brothers and sisters. Siblings can be advocates (*New American Standard Bible*, 1960/2021, John 11). As described in the relationship between Andrew and Peter in the New Testament, siblings have the propensity to excite personal change in their brothers and sisters (*New American Standard Bible*, 1960/2021, John 1: 40-42). In the case of Peter and Andrew, Peter experienced a social, emotional, and spiritual shift at the bidding of Andrew for Peter to follow Jesus (*New American Standard Bible*, 1960/2021, John 1: 40-42). Similarly, the unconditional commitment and love

of Esau toward Jacob in the Old Testament was a catalyst for social and spiritual change within Jacob (*New American Standard Bible*, 1960/2021, Genesis 33: 8-10).

God's word alludes to the impact that siblings may have on the restorative process of social communication in adolescents with autism. Siblings are potential catalysts in changing the behavior of their brother or sister with autism, and siblings may be caregivers and teachers to their siblings with autism (*New American Standard Bible*, 1960/2021, John 1: 40-42; *New American Standard Bible*, 1960/2021, Luke 10: 41-42).

### **Current Study**

Research describing social communication in adolescent females with autism is scarce and to the researcher's knowledge, there is no qualitative research that exists that attempts to describe the social communication relationship between a female adolescent with high-functioning autism and her older sibling.

In terms of existing qualitative research describing adolescent sibling relationships that involve a sibling with autism, the research tends to be non-discriminant in regard to gender, and while there is some indication that communication influences the typically developing-autism adolescent sibling relationship and parental relationship, there is not a qualitative study that directs its entire attention to social communication (Gorjy et al., 2017; Krieger et al., 2018).

Likewise, there is supporting quantitative research that suggests the possibility that having a typically developing older sibling and higher cognition may impact the social communication skills of adolescent females with autism; however, the majority of the research investigates children and only one study implements purely social communication measures. (Ben-Itzhak et al., 2016; Ben-Itzhak et al., 2019; de Veld Danielle et al., 2021; Matthews & Goldberg, 2018; Rosen et al., 2022).



De Veld Danielle et al. (2021) reported that theory of mind behaviors of children with autism may be learned from older siblings. Theory of mind deficits have been documented as creating confusion in reading facial affect in adolescents with autism. It is feasible to consider that older siblings of adolescents with autism could act as a moderator of learned facial affect interpretation in their siblings with autism. Likewise, as there appears to only be a positive association between theory of mind in children with autism and having an older sibling(s) without recurrence, it may be that children with autism that have higher cognition or less autistic trait are more likely to benefit from older sibling interactions. Conversely, it is possible that typically developing older siblings offer more benefit in teaching social communication skills to their siblings with autism as opposed to older siblings with autistic trait or an autism diagnosis.

The Ben-Itzhak et al. (2016), Ben-Itzhak et al. (2019), and Rosen et al. (2018) studies investigated the impact of older siblings on the social functioning of individuals with autism. It should be noted that Ben-Itzhak et al. (2019) did not find that the impact of having an older sibling on the social functioning of children with autism was gender dependent. Likewise, Rosen et al (2018) came to a similar conclusion, determining that gender did not play a role on the impact of having a typically developing older sibling on the adaptive functioning trajectory of adolescents with autism; however, both the Ben-Itzhak et al. (2019) and Rosen et al. (2018) study were comprised largely of male samples, leaving the conclusions suspect.

The Ben-Itzhak et al. (2019) and the Rosen et al. (2018) studies also fail to give a clear indication of the possible outcomes of social communication for individuals with autism that have older siblings. While social functioning and adaptive functioning are associated with social communication, measurement of social functioning and adaptive functioning are multifaceted and include non-communication measurements such as daily living skills, leaving possible

confounding influences that do not clearly define social communication proficiency in individuals with autism (Rosen et al., 2018).

This leaves only one remaining research study that investigated the social communication skills of children with autism and the impact of older siblings on these skills (Ben-Itzchak et al., 2016). In the study, Ben-Itzchak et al. (2016) measured social affect and nonverbal communication skills, social communication skills that tend to fall below neurotypical levels in adolescents with high-functioning autism (Golan et al., 2018; Griffiths et al., 2017; Liu et al., 2019; Sachse et al., 2016; Tillman et al. 2019; Yeung et al., 2020); however, this study was comprised of mainly preschool boys and leaves the outcomes for adolescent girls unknown. What's more, this study suggests that cognition may be a factor in the ability of children with autism to learn social communication skills from their older sibling (Ben-Itzchak et al., 2016). Cognition is a variable that is much debated in the adolescent female's ability to camouflage social communication deficits (Allely, 2018; Wijngaarden-Cremers et al., 2014).

As it appears that cognition impacts communication behaviors in the early years of autistic female development, it is less likely to play a part in the later ability for adolescent females with autism to communicate effectively (Burton et al., 2020; Corbett et al. 2020; Lai et al., 2017; Mandy et al., 2018; May et al., 2021; Parish-Morris et al., 2017). Van Wijngaarden-Cremers (2014) reported that the most variability in social function and communication was found between toddler boys with autism and toddler girls with autism as compared to individuals with autism across the lifespan (van Wijngaarden-Cremers, 2014). When toddlers were removed from the analysis, social function and communication became more homogenous amongst males with autism and females with autism (van Wijngaarden-Cremers, 2014).

Additionally, it is likely that social communication deficits become more apparent as females with autism enter into adolescence (Almehmadi et al., 2020). This is supported by the self-reported difficulties of communication and peer relationships in adolescent females with autism and the finding that high-functioning females with autism who verbally express themselves more tend to suffer more peer victimization (Bargiela et al., 2016; Cook et al., 2018; Greenlee et al., 2019).

Based upon prior evidence, it is reasonable to conduct a qualitative study that attempts to offer a description of the social communication relationship between the high-functioning, adolescent female with autism and her typically developing older sibling. Little is understood about the constructs that underpin this communication relationship. As well, it is unclear how being a female, an adolescent, and having higher level cognition may impact the communication between high-functioning, adolescent females with autism and their typically developing sibling.

Often, the social communication between parents and adolescents with autism seems to mirror the experiences of social communication between typically developing siblings and adolescents with autism; however there are differences in these relationships (Cridland et al., 2015; Krieger et al., 2018; Tomeny et al., 2017). Most of the dissimilarities are documented while children with autism are young (El-Ghoroury & Romanczyk, 1999). For instance, while parents tend to engage in more play with their preschool children with autism, preschool children with autism tend to socially engage more with their siblings rather than with their parents (El-Ghoroury & Romanczyk, 1999). It also appears to be the case that children with autism mimic and learn social behaviors from their siblings (Rosen et al., 2022). Given this information, it is also reasonable to investigate the differences in social communication between high-functioning,

adolescent females with autism and their parents and the social communication between high-functioning, adolescent females with autism and their typically developing sibling.

### **Summary**

Families present an opportunity for the healthy social development of children. The Bible indicates that simply being in relationship with family members supports an environment for learning social behavior (*New American Standard Bible*, 1960/2021, Colossians 3:20; Proverbs 6:20). These behaviors can be learned within the home, and they can be supported and modeled by parents and siblings (*New American Standard Bible*, 1960/2021, Colossians 3:20; Deuteronomy 6:6; Deuteronomy 4:9; John 1: 40-42; Proverbs 6:20). Likewise, scientific research intersects with these Biblical ideas, offering support for the impact of older siblings on social communication in children with autism (Ben-Itzhak et al., 2016; Ben-Itzhak et al., 2019; de Veld Danielle et al., 2021; Matthews & Goldberg, 2018; Rosen et al., 2022).

Siblings of brothers and sisters with autism often take on a caregiving role for their autistic sibling (Cridland et al., 2015; Krieger et al., 2018; Tomeny et al., 2017). Children with autism often mimic their older siblings (Braconnier et al., 2018). They are more likely to seek out engagement with their older siblings as compared to their parents; however, both parents and siblings often offer access to the social world that is difficult for their brothers and sisters with autism to achieve (Cridland et al., 2015; El-Ghoroury & Romanczyk, 1999; Krieger et al., 2018;). Similarly, parents and siblings report frustration surrounding social communication (Gorjy et al., 2017).

Research indicated that older siblings may impact adaptive functioning, social functioning, theory of mind, and social communication of individuals with autism (Ben-Itzhak et al., 2016; Ben-Itzhak et al., 2019; de Veld Danielle et al., 2021; Matthews & Goldberg, 2018; Rosen et

al., 2022). Additionally, higher cognition tends to improve the social communication outcomes of children with autism; however, there are unanswered questions surrounding the possible social communication outcomes of adolescent females with high-functioning autism and the impact that their older siblings may have on these outcomes (Ben-Itzhak et al., 2016).

The long-standing theory of camouflaging in females with autism has recently been challenged by research that indicated that cognition may not play a role in the social functioning and the social communication of adolescent girls with autism (Mandy et al., 2018). Likewise, females with autism describe an increase in social communication difficulties as they age into adolescents (Mandy et al., 2022; May et al., 2021). As such, relational victimization increased among high-functioning, adolescent females with autism who attempted to engage in social communication with peers (Greenlee et al., 2019). Studies on female social autistic trait and female experiences during adolescence indicated that there may be a unique social communication trajectory for females with autism that would not produce the same social communication outcomes as has been described for younger children with autism that have older siblings (Ben-Itzhak et al., 2016; Greenlee et al., 2019; Mandy et al., 2018; Mandy et al., 2022; May et al., 2021). Lastly, underrepresentation in research on social functioning and adaptive functioning of females with autism that have older siblings fails to extend the understanding of how gender may impact social communication in children with older siblings and adolescents with older siblings (Ben-Itzhak et al., 2019; Rosen et al., 2022).

The underrepresentation of females with autism in sibling impact studies combined with the uncertain social communication trajectory of female adolescents with autism leaves an opportunity to increase understanding on the specific demographic of adolescent females with high functioning autism and what communication may look like between themselves and their

typically developing sibling (Alley, 2018; Ben-Itzhak et al., 2019; Ben-Itzhak et al., 2019, Mandy et al., 2018; Rosen et al., 2022).

As a means of offering deeper insight into the social communication behaviors of high-functioning females with autism, the current research study will offer a description of communication between parents and high-functioning adolescent females with autism. As well, the study will seek to describe the verbal communication and nonverbal communication between high-functioning females with autism and their typically developing older sibling.

## CHAPTER 3: RESEARCH METHOD

### Overview

The purpose of this qualitative case study was to explore parental perceptions of social communication between older typically developing sibling(s) and their adolescent, younger, female sibling diagnosed with H-F Autism Spectrum Disorder, and for comparison, to explore parental perceptions of the social communication between parents and their daughter with high-functioning autism. Because the nonverbal social communication behaviors and verbal social communication behaviors that are found within the relationship of adolescent females with high-functioning autism and their typically developing older sibling(s) have not been described thus far within research, a qualitative approach to the current study was used to pinpoint these social communication constructs.

Children diagnosed with autism exhibit an alleviation of specific autism symptomology when they are second or lower in birth order (Ben-Itzhak et al., 2016; Ben-Itzhak et al., 2019; de Veld Danielle et al., 2021; Matthews & Goldberg, 2018; Montes, 2018). These symptomology improvements in children with autism include social functioning, Theory of Mind presentation, adaptive functioning, and social communication (Ben-Itzhak et al., 2016; Ben-Itzhak et al., 2019; de Veld Danielle et al., 2021; Matthews & Goldberg, 2018; Montes, 2018; Rosen et al., 2022). While small gains, current research has uncovered social communication benefits for children with autism that are associated with having an older sibling(s) and higher cognition (Ben-itzhak et al., 2016).

Parents may have insight into this beneficial relationship between siblings' communication patterns as they have an intimate knowledge of their children and the relationships that their children share. Parents are likely to have the most access to the observation of the

communications between their typically developing children and their daughter with high-functioning autism and to be qualified to share the small nuances and changes across time that are found within the communication patterns between siblings in the home.

In the current study, parents participated in a semi-structured interview process, presenting them with the opportunity to describe the nonverbal social communication behaviors and the verbal social communication behaviors of their adolescent daughter with high-functioning autism and her typically developing older sibling(s). Using the information that is shared by parents, thematic analysis was completed to produce codes and themes that are shared between case studies.

### **Research Questions**

RQ1: How do parents describe the nonverbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with H-F autism?

RQ 2: How do parents describe the verbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with H-F autism?

RQ 3: As compared to the nonverbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with H-F autism, how do parents describe the nonverbal social communication between themselves and their adolescent, autistic daughter.

RQ 4: As compared to the verbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with H-F autism, how do parents describe the verbal social communication between



themselves and their adolescent, autistic daughter.

### **Research Design**

Because the communication characteristics between adolescent females with high-functioning autism and their sibling(s) is under researched, a qualitative case study approach was used to analyze data (Hampton et al., 2017). Using this approach, nonverbal social communication characteristics and verbal social communication characteristics, which have been reported in prior research as being improved in children with autism, can be further described in the demographic of adolescent females with high-functioning autism and their typically developing older sibling(s). A case study approach allows for a comparison of nonverbal characteristics and verbal characteristics across multiple cases and the thematic analysis of raw data to be used as communication constructs in future research (Harwood et al., 2019).

### **Participants**

Participants included 9 individuals who are the parent of an autistic daughter who has at least one typically developing older sibling. The adolescent daughter was between 12-16 years of age. Inclusion criteria included 1) A parent of an adolescent female (12-16 yrs.) and the same parent of an older sibling(s) who has shared residence from birth with the H-F adolescent female. 2) A parent that has shared full-time residence with the H-F adolescent female and older sibling(s). 3) One parent per household—mother or father

Informed consent was obtained for all participants. Participants were recruited from a social media campaign used to procure participants and included parents/families from the United States. Recruitment was continued until saturation of themes was met.

## Study Procedures

Participants were recruited from various US locations via a social media promotion. The recruitment post was promoted weekly using the researcher's Facebook and Reddit page [See Appendix C and F] . As well, recruitment was posted on a Facebook autism group page once a week for 3 weeks. Lastly, recruitment was posted on 1 Facebook school page. Permission was sought and given for posting on the Facebook autism group page [See Appendix D] and the Facebook school page [See Appendix D and E].

Potential parental participants were directed (via link included in social media recruitment post) to an online survey to screen for study eligibility requirements. Parents were asked to answer questions that included if they have an adolescent daughter with high functioning autism that is between 12-16 years of age, does a typically developing older sibling also reside in the home, and do the parents share a full time residence with their high-functioning adolescent daughter and typical sibling(s)? Upon verification of eligibility, participants signed an informed consent via email utilizing an electronic signature.

Participants who met the eligibility criteria and agreed to participate were scheduled for an interview at a time that was convenient for the participant. Using Google Meet, participants took part in a semi-structured interview in which they were asked to describe the social communication of their adolescent autistic daughter and her older sibling(s). Interview questions are found in Appendix A. Interviews took place in a secure office setting, lasting no longer than 1 hour. One semi- structured interview per participant was needed to gather adequate data. Additionally, demographic information was gathered from parents, describing themselves and their children.

## **Instrumentation and Measurement**

### **Measurement**

Using a semi-structured interview that was developed by the researcher for the purpose of the current study, parents were given the opportunity to describe the nonverbal and verbal social communication behavior between their adolescent daughter with high-functioning autism and her typically developing older sibling(s). Secondly, using a semi-structured interview, parents were given the opportunity to describe their nonverbal and verbal social communication behavior with their adolescent daughter with high-functioning autism in comparison to the siblings' social communication.

### **Participant Reliability**

Parents were chosen to participate in these semi-structured interviews because of the intimate understanding that they potentially have in the communicative practices of their children. Parents had spent 100% of their residential time with their adolescent daughter with high-functioning autism and her older sibling(s); therefore, they had firsthand experience into the benefits and deficits of the communication between their typically developing older children and their adolescent, younger daughter with high-functioning autism. Furthermore, parents were believed to be likely to give a truthful and accurate representation of their perspectives on their younger daughter with high-functioning autism and her older sibling(s)' communication characteristics.

### **Data Analysis**

Interviews were recorded and transcribed. Participants were given the opportunity for a member check of transcripts, providing participants an opportunity to make changes and/or clarifications to their original interview answers. No needed changes to the original interview transcripts were identified by participants. Data responses were manually organized by research

questions to identify specific statements that best described the social communication attributes between the adolescent daughter diagnosed with autism and her older sibling(s) and to describe the social communication attributes between the adolescent daughter diagnosed with autism and her parent. Then, statements were analyzed to develop codes from the data. These codes were further developed into themes by consolidating closely aligned communication characteristics, by the number of participants that reported a code [5 or more], and/or by the action-response nature of the social communication between family members. Additionally, themes that described the adolescent female's nonverbal and verbal communication toward her older sibling(s) and parent were ordered for frequency.

### **Delimitations, Assumptions, and Limitations**

#### **Delimitations**

Adolescent girls diagnosed with H-F autism had an IQ of 85 or higher (Barendse et al., 2013; Howlin, 2003). The adolescent girls were between 12 and 16 years of age (Bargiela et al., 2016; Bitsika & Sharpley, 2019; Cresswell et al., 2019; Kelly et al., 2018; Mandy et al., 2018; Navot et al., 2017). Older sibling(s) were without autism recurrence and shared a residence with his/her younger sister with high-functioning autism. Parent participants shared 100% residency with both their adolescent daughter diagnosed with H-F autism and her typically developing older sibling(s).

#### **Assumptions**

The assumptions for the study included parental transparency and knowledge of the relationship between typically developing older sibling(s) and their daughter with high-functioning autism. It was assumed that all parent participants were answering all interview questions completely and truthfully, not withholding any information that may have been

pertinent to the investigation, and that parent participants fully understood each semi- structured interview question. Finally, it was assumed that parent participants regularly interact with their adolescent daughter with high-functioning autism and her older sibling(s) as to have an intimate understanding of the relationship between the siblings.

### **Limitations**

Limitations for this study included a narrow demographic that cannot be generalized to all children with autism, only to adolescent H-F autistic females between 12 and 16 years of age. Furthermore, this study cannot be generalized to all sibling constellations, only to those constellations that include older sibling(s). It was understood that parent participants had limited access to their children's interactions, and their description of sibling communication may have included biases that arise from a parental point of view. While they were offering insight into the social communication patterns of their children, it is a possibility that social communication between siblings manifests itself differently when parental supervision is not available. Similarly, parents may have simply misinterpreted the social communication between typically developing older siblings and the younger sister with autism.

The intent of the study was to describe nonverbal and verbal constructs that may underpin recent research findings that suggest the association between typically developing older siblings and the improved social communication of young children with autism having average cognitive function. While it is an important step in the process of further investigating this association in the demographic of adolescent, H-F autistic females, the current study was not intended for determining how nonverbal and verbal constructs impact social communication within the sibling relationship, but the case study was a descriptive tool used to further future research.

## **Summary**

A case study research design was used to describe the communicative characteristics in the relationship of adolescent females with high-functioning autism and their typically developing older sibling(s). The case study utilized the firsthand perspective of parents to describe these characteristics. The case study included a description of nonverbal and verbal social communication between adolescent females with high-functioning autism and their older sibling(s), and for comparison, parents described their own nonverbal and verbal social communication that is shared with their adolescent daughter with high-functioning autism.

## CHAPTER 4: RESULTS

### Overview

The purpose of this qualitative case study was to explore parental perceptions of social communication between older typically developing sibling(s) and their adolescent, younger, female sibling diagnosed with H-F Autism Spectrum Disorder, and for comparison, to explore parental perceptions of the social communication between parents and their daughter with high-functioning autism.

Participant recruitment and data collection were completed using the methods described in Chapter 3. Participants took part in a semi-structured Google Meet interview. Interviews were transcribed using Tactiq and video recorded using Google Meet. Next, data was organized by research questions to identify specific statements that best described the social communication attributes between the adolescent daughter diagnosed with autism and her older sibling(s) and to describe the social communication attributes between the adolescent daughter diagnosed with autism and her parent. Then, statements were analyzed to create codes within the data. These codes were further developed into themes that aided in answering the following research questions.

RQ1: How do parents describe the nonverbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with H-F autism?

RQ 2: How do parents describe the verbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with H-F autism?

RQ 3: As compared to the nonverbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with

H-F autism, how do parents describe the nonverbal social communication between themselves and their adolescent, autistic daughter.

RQ 4: As compared to the verbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with H-F autism, how do parents describe the verbal social communication between themselves and their adolescent, autistic daughter.

### **Descriptive Results**

Research participants consisted of 7 mothers and 2 fathers. One father was African American, and 1 father was Caucasian. Two mothers were African American. One mother was Hispanic, and 4 mothers were Caucasian. Six families were comprised of two siblings, the younger sister diagnosed with H-F autism and an older sibling. Of the three remaining families, one family was comprised of 3 older siblings, and two families were comprised of two older siblings. Of the 9 families, 6 of the families had children with no more than a 5 year age difference between the younger sister with H-F autism and the older/oldest sibling. The 3 remaining families had children with more than a 5 year age difference between the younger sister with H-F autism and the older/oldest sibling. Of the older siblings, 6 were female and 7 were male. All siblings shared the same residence with the exception of 1 family in which the youngest older sibling had moved from the home 2 months prior. In this case, the older siblings regularly frequented the home and had recently lived together with the mother and sibling with H-F autism during the passing of their ex-husband/father. [See Table 1]



Table 1

	Male	Female	African American	Hispanic	Caucasian	2 Siblings	3 Siblings	4 Siblings	Age ≤ 5 years	Age > 5 years	Male Sibling	Female Sibling
Participant 1		x	x			x				x	x	
Participant 2		x			x	x				x	x	
Participant 3		x	x			x			x		x	
Participant 4		x			x	x			x			x
Participant 5		x			x			x		x		xxx
Participant 6		x		x			x		x		x	x
Participant 7		x			x	x			x		x	
Participant 8	x		x				x		x		x	x
Participant 9	x				x	x			x		x	
Total	2	7	3	1	5	6	2	1	6	3	7	6

## **Study Findings**

After data was organized by research questions to identify specific statements that best described the social communication attributes between the adolescent daughter diagnosed with H-F autism and her older sibling(s) and the social communication attributes between the adolescent daughter diagnosed with H-F autism and her parent, statements were analyzed to create codes within the data. Codes are presented with a short definition followed by participant statements to underscore the meaning of each code. Participants and participants' children's names were changed for privacy.

### **Code 1: Change in Verbal Communication**

The code of change in verbal communication emerged as participants described the pattern of communication as shifting when their daughters entered adolescence. They reported that within the last few years, even as early as one year ago, the communication expressed from their daughter with H-F autism had changed. Participant 1 expressed this code in the statement, "...So now when he [brother] comes over and brushes her and tries to hug her, say hi, she barely says anything to him."

### **Code 2: Change in Nonverbal Communication**

The code of change in nonverbal communication emerged when participants described a shift in the nonverbal communication skills of their daughters as they entered adolescence. Participant 11 shared, "She's gotten a whole lot better about reading body language."

### **Code 3: Periods of Silence**

The code of periods of silence emerged as participants described periods of time in which verbal communication ceased between the adolescent daughter with H-F autism and her parent

and/or older sibling. Participant 1 shared, “Sometimes she’ll be silent for like, three days with him [older brother].”

#### **Code 4: Pointed Verbal Communication**

The code of pointed verbal communication reflects the proclivity of the adolescent sister with H-F autism to communicate without expecting or intending reciprocity from her parent or older sibling(s). Social communication tended to be succinct. When asked how her daughter verbally communicated with her older son, Participant 2 responded, “Um, [she communicates] at him... So but yeah, more of at him than to him.”

#### **Code 5: Extensive Vocabulary**

The code of extensive vocabulary emerged when a participant described her H-F daughter’s ability to use vocabulary that was unknown and confusing when communicating with family members. The daughter with H-F autism used this level of communication with her mother and older brother. Participant 2 stated, “Her vocabulary’s just out of this this world. Um, so she uses a lot of words that we scratch our head around. She’s really intelligent.”

#### **Code 6: Undiscerning Verbal Communication**

The code of undiscerning verbal communication emerged when participants described their H-F daughter’s communication as being characterized by an inability to judge the impact of her words spoken to her parent and/or sibling. Their daughters were too transparent in their verbal communication, and they were unaware of the social implications of their words. Participant 9 shared, “She’s more inclined to speak her mind.”

**Code 7: Typical Verbal Communication**

The code of typical verbal communication emerged as participants described points in time when their daughter with H-F autism would communicate with parents or her older sibling in what appeared to be typical verbal communication. Although this communication was not necessarily consistent, it was part of the communication paradigm shared with parents and siblings. Participant 3 stated, “She speaks to him [older brother] like a regular person.”

**Code 8: Typical Nonverbal Communication**

The code of typical nonverbal communication emerged as participants described points in time when their daughter with H-F autism would communicate with her parent and/or older sibling(s) in what appeared to be typical nonverbal communication. Although this communication was not necessarily consistent, it was part of the communication paradigm shared with siblings and/or parents. Participant 2 shared, “[She has] facial emotions...normal ones, carrying on a conversation [with her brother].”

**Code 9: Isolation**

The code of isolation emerged as participants described the need or desire for their H-F daughter to self-isolate. This behavior was noted by parents as a barrier to communication with older siblings and parents. Participant 5 stated, “Sometimes they’ll [older siblings] come in, and she won’t even come out of her room.”

**Code 10: Emotional Variability**

The code of emotional variability emerged as participants described the shift in moods that occurred within the H-F daughter. These mood changes lent themselves to behaviors such as self-isolation or silence toward the parent and/or her sibling(s). These behaviors tended to break

down communication between family members. Participant 3 said, “But sometimes, you know, one of her moods, as to where it's like, she doesn't want to be bothered.”

### **Code 11: Childlike Verbal Communication**

The code of childlike verbal communication emerged as a participant described her H-F daughter’s communication with her older sibling as reflecting trust and dependence within the sibling relationship. When asked to describe the verbal communication that her H-F daughter used with her older sister, Participant 4 stated that it was “more childlike.” Participant 4 described the relationship between the two sisters by stating, “She looks to Rose for cues on you know, if something is safe. Or, it's you know, Holly can be easily, manipulated, too. She trusts that Rose will guide her in the right direction.”

### **Code 12: Desire Driven Verbal Communication**

The code of desire driven verbal communication emerged as participants reflected on instances in which their daughter with H-F autism would initiate verbal communication with her sibling(s). A strong desire or interest in a particular activity or subject would give rise to communication with her older sibling(s). Participant 5 shared, “If it's something that she wants to do, it's not as difficult to have the communication.”

### **Code 13: Lack of Verbal Communication**

The code of lack of verbal communication emerged as a participant described her H-F daughter’s verbal communication as only sharing small amounts of conversation with her sisters. Participant 5 described the verbal communication as, “rarely, scarcely.”

### **Code 14: Reticence in Verbal Communication**

The code of reticence in verbal communication emerged when participants described their daughters with H-F autism as reluctant to share her desires or opinions with her siblings. When

sharing about her H-F daughter's thought process behind speaking with her older siblings, Participant 6 said, "I [H-F daughter] don't want to upset them like that."

### **Code 15: Reticence in Nonverbal Communication**

The code of reticence in nonverbal communication emerged when participants described their H-F daughter's tendency to mask her body language from her older siblings. Participant 5 described her H-F daughter's body language toward her siblings as "restrained."

### **Code 16: Slow Speech**

The code of slow speech emerged as a participant shared that his daughter with H-F autism spoke more slowly as compared to her older siblings. Participant 8 shared, "Um I mean she probably speaks slower. The older siblings speak a little faster."

### **Code 17: Repetitive or Stuttering Speech**

The code of repetitive or stuttering speech emerged as participants described their daughters with H-F autism as having difficulty with producing cohesive speech patterns. Participant 8 described his daughter's communication with her older siblings as, "like repetitive or stuttering or something of that nature."

### **Code 18: Comfortable Sibling Relationship**

The code of comfortable sibling relationship with older siblings emerged as participants described their daughters with H-F autism as having an organic and relaxed relationship with their older siblings. Also, this code emerged when participants described the comfortable relationship as being demonstrated by older siblings toward their younger sister with H-F autism. Participant 2 described the relationship by stating, "[She's] normal relaxed, not fidgeting... he [older brother] communicates with her just like she's like the other sisters. No different--he treats her no different."

**Code 19: Older Sibling Caretaker Role**

The code of older sibling caretaker role emerged as a participant described the relationship between her daughter with H-F autism and her older sibling as one in which the older sibling took it upon herself to ensure that her sister was protected and nurtured—paralleling a parental role. Participant 4 shared that her older daughter was “very nurturing and caretaking of her [younger H-F sister]”.

**Code 20: Older Sibling Frustration**

The code of older sibling frustration emerged as participants described the emotional distress felt by older siblings that was caused by the confusion of poor communication or lack of communication demonstrated by the younger sibling with H-F autism. This frustration was described as being observed in the body language of older siblings during their interactions with their younger sister. Participant 5 shared, “When they get aggravated, you see it on their faces.”

**Code 21: Older Sibling Initiative to Communicate**

The code of older sibling initiative to communicate emerged as participants described their older sons and daughters as taking the lead in communication with their younger sister with H-F autism. This attempt to communicate was described as being a continuous endeavor. Participant 9 shared, “He started trying to hang out with her more.” Participant 1 shared, “And sometimes he'll comment [to his sister]. She'll, you know, play with him a little bit.”

**Code 22: Trust in Parental Verbal Communication**

The code of trust in parental verbal communication emerged when a participant described her H-F daughter’s ability to share information or personal thoughts/feelings freely with her. Participant 6 stated, “She isn't afraid to tell me things--at least [for] now.”

**Code 23: Greater Verbal Communication with a Parent**

The code of greater verbal communication with a parent emerged as participants described the willingness for their daughter with H-F autism to engage more in social communication with the parent than with older siblings. Participant 6 shared, “I feel like she's not afraid to like yo know, just let it loose with me, and she's more embarrassed in front of them because she's afraid. You know, they're her older siblings.

**Code 24: Greater Nonverbal Communication with Siblings**

The code of greater nonverbal communication with siblings emerged as participants described the willingness for their daughter with H-F autism to engage more in nonverbal communication with their older siblings than with the parent. Participant 4 shared, “I think because they're sisters, they have like this hidden, you know, understanding with each other, or sometimes, they don't even have to say anything, and they know what the other's thinking.”

**Code 25: Lack of Eye Contact**

The code of lack of eye contact emerged as participants described the reluctance or inability for their daughters with H-F autism to engage in eye contact with parents and siblings. Participant 7 described her H-F daughter's eye contact with herself and the older sibling by stating, “Just [only] trouble with eye contact, but then again, so, do I?”

**Code 26: Preferred Nonverbal Communication**

The code of preferred nonverbal communication emerged as a participant described the tendency for his H-F daughter to use nonverbal communication toward her brother rather than communicating with him by using words. Participant 9 shared, “[She] look[s] at him kind of like a grimace...she'll also have hand gestures and everything, you know, with him. In particular if he



does something that, you know, irritates her. Show, you know, nothing abusive at all but just like her fist, like she's mad, but she won't say she's mad.”

### **Code 27: Preferred Verbal Communication**

The code of preferred verbal communication emerged when a participant described the tendency of his typically developing older son to use verbal communication with his H-F sister as compared to using nonverbal communication. Participant 9 shared, “He's more outspoken, and he won't tolerate, you know, her nonverbal communication, in a sense. He has to explain, you know, how he's feeling.”

### **Code 28: Overuse of Facial Expressions**

The code of overuse of facial expressions emerged when a participant described her H-F daughter's nonverbal communication toward the mother as containing a large number of facial expressions. The daughter used more facial expressions than what the mother would have considered typical use of facial expressions. Participant 2 stated, “I don't know if it's with all autistic people, but she makes a lot of different facial expressions.”

### **Code 29: Flat Affect**

The code of flat affect emerged as participants described the tendency of their daughter with H-F autism to not display appropriate emotions that aligned with her internal feelings. This anomaly took place within the communication with older siblings and with the parent. Participant 7 shared, “She doesn't show a whole lot of emotion.”

### **Code 30: Pointed Sibling Verbal Communication**

The code pointed sibling verbal communication emerged as participants described the verbal communication used by older siblings when communicating with their younger sister with H-F autism. Parents described the communication as pared down without extraneous or abstract

language that may cause confusion. Participant 7 shared, “Will is sarcastic and likes to joke around, and she doesn't really get that. [He] tries to be more direct, like not joke around so much with her.”

### **Code 31: Typical Sibling Nonverbal Communication**

The code typical sibling nonverbal communication emerged when participants described the nonverbal communication of older siblings towards their younger H-F sister as what would be expected from a typical sibling relationship. Participant 2 shared, “It was just normal. I mean, like I said, he's laid back charismatic.”

### **Code 32: Typical Sibling Verbal Communication**

The code typical sibling verbal communication emerged when participants described the verbal communication of older sibling towards their younger H-F sister as what would be expected in a typical sibling relationship. Participant 6 shared, “Oh, well, you know, the same way that you'd expect somebody who's 18 to kind of communicate with a 13 year old.”

### **Code 33: Parental Reticence in Nonverbal Communication**

The code of parental reticence in nonverbal communication emerged when participants described the need to mask their body language in fear of causing emotional distress or a meltdown in their H-F daughter. Participant 1 shared, “And now, with the new personality she has, I think, yes, I think I'm a little more stiff or kind of like not sure how to approach [her].”

### **Code 34: Parental Demonstrative Nonverbal Communication**

The code of parental demonstrative nonverbal communication emerged when a participant described having to be more illustrative in her gesturing when communicating with her H-F

daughter. Participant 3 shared, “[When we] speak to her, we like, you know, act out with things like, you know, like active.”

### **Code 35: Parental Hyper-Focused Nonverbal Communication**

The code parental hyper-focused nonverbal communication emerged as participants described the need to pay close attention to their H-F daughter’s body language in an attempt to read her emotions and to ensure that their daughter, in turn, understood the parent’s verbal and nonverbal communication. Participant 6 shared, “I look her right in the face.”

### **Code 36: Typical Parental Verbal Communication**

The code of typical parental verbal communication emerged as participants described points in time when they would communicate with their daughter with H-F autism with typical verbal communication. Although this communication was not necessarily consistent, it was part of the communication paradigm between parent and H-F daughter. Participant 3 shared, “We be happy talking to each other.”

### **Code 37: Parental Modified Verbal Communication**

The code of parental modified verbal communication emerged when participants described paring down verbal information, slowing, or using more basic sentence structure while communicating with their daughter with H-F autism. Parents described these communication strategies as an attempt to lessen the confusion and frustration of their daughter that was associated with sharing a conversation with her. Participant 2 shared, “Sometimes we need a moderator...sentence structure. That's for her to process properly So, sometimes I've had to learn how to structure my conversations with her to where she doesn't have meltdowns, and I don't have explosions.”

**Code 38: Parental Encouragement**

The code of parental encouragement emerged as participants described using bribery or coaxing to encourage their H-F daughter to communicate more readily. Participant 1 shared, “So I would like usually try to bribe her and give her something that she loves and stuff like that.”

**Code 39: Parent Mediator**

The code of parent mediator emerged as participants described the felt responsibility to encourage a relationship and communication between their younger daughter with H-F autism and her older siblings. When describing his attempt to encourage communication between his children, Participant 8 stated, “[to older siblings] we went over this, you know, like you just gotta go slow...”

**Code 40: Parental Reticence in Verbal Communication**

The code of parental reticence in verbal communication emerged when participants described the desire to mask frustrations or emotions when communicating with their daughter. Participant 4 shared, “I try to be very patient with Maggie in speaking to her.”

**Code 41: Choice in Verbal Communication**

The code of choice in verbal communication emerged when participants described ending or avoiding conversations with their H-F daughter when she indicated that she did not want to communicate with them. Participant 5 shared, “[I do] not force her to communicate when she's just giving me a ‘For real, stop’.”

**Code 42: Choice in Nonverbal Communication**

The code of choice in nonverbal communication emerged when participants described not forcing their daughters to engage in nonverbal communication when they felt that the

engagement was uncomfortable to their H-F daughter. Participant 6 shared, “If she doesn't want to look at me, I'm not gonna force her to.”

### **Evidence of Trustworthiness**

#### **Credibility**

A case study approach allowed for a comparison of nonverbal characteristics and verbal characteristics across multiple cases of familial relationships, which included a daughter diagnosed with high-functioning autism, and it allowed for the thematic analysis of raw data (Harwood et al., 2019). Parent participants were recruited as first-hand experts on the social communication that was shared within their households. To ensure credibility, participants were asked to review the transcript of their semi-structured interview. Following the member check, participants were given the opportunity to clarify or make changes to their original answers, at which time, participants verified the accuracy of the transcript. Furthermore, data was collected until saturation was met.

#### **Transferability**

To ensure transferability, participant recruitment was managed by following the predetermined participant parameters documented in chapter 3. As well, basic familial demographics were collected from each participant. Because this was a narrow sample, results can only be transferred to relationships and demographics that have been defined by the study.

#### **Dependability**

Dependability was established by video recording each semi-structured interview. The video recordings were transcribed using the Google extension Tactiq, and transcripts were verified by

each participant. Videos and transcripts were reviewed by the researcher before results were compiled.

### **Confirmability**

Confirmability was established by participant check of interview transcripts and interview transcripts being rechecked by the researcher before data was ordered. Data was documented by organizing information using the original research questions. Following, codes were identified and documented. Finally, codes were analyzed for broader themes within the data.

### **Reflexivity**

The researcher was aware of her own biases during the collection of data for this research project as she shares a similar, but not identical, familial experience as to those that took part in the study. To ensure that her bias did not interfere with the collection of data, she took care to not share personal information that may bias the participants' responses to the semi-structured questions. Furthermore, she was careful to not ask leading questions during the interview but allowed the participants to simply share the information that they deemed important when answering questions. Lastly, she set her research aside and did not review it after her interview questions had been established. This was in an attempt to not have an expectation of the responses that she would receive from participants.

### **Study Results**

Of the 9 interviews, 42 codes emerged from the data. Of the 42 codes, 16 themes emerged. The themes included: (a) typical eye contact (b) body language aligning with emotions, (c) older sibling natural nonverbal communication (d) lack of verbal communication, (e) moments of typical verbal communication, (f) pointed/undiscerning verbal communication, (g) emotional variability/sibling frustration, (h) older sibling initiative, (i) choice/reticence in nonverbal

communication, (j) atypical nonverbal communication, (k) demonstrative/hyper-focused nonverbal communication, (l) reticence in verbal communication/parental encouragement, (m) change in verbal communication/emotional variability toward parent (n) atypical/modified verbal communication, (o) parent mediator, and (p) parental reticence/choice in verbal communication,

### **Research Question 1**

How do parents describe the nonverbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with H-F autism?

When answering research question 1, 3 themes emerged from the data. This themes were typical eye contact, body language aligning with emotions, and older sibling natural nonverbal communication.

#### *Typical Eye Contact*

The theme of typical eye contact emerged when participants described their daughters with high-functioning autism as appearing to share typical eye contact with their older sibling (Participants 1, 2, 3, 4, 8 and 9). This included looking their older sibling(s) in the eyes or toward their older sibling's face.

Participant 4 shared about her high-functioning daughter's body language toward her older sister, "Um, I think she does well making a, you know, understanding. And again, I think it's like that trust factor, but like she looks at her in the face. She'll shrug her shoulders if she's not sure. So it seems like it's a, you know, really appropriate." Participant 4 continued describing her older daughter's body language toward her sister with H-F autism by stating, "I think Rose is more tuned in and like again patient with her, reassuring."

### *Body Language Aligning with Emotions*

The theme body language aligning with emotions emerged as participants described their daughter with H-F autism as demonstrating body language that aligned with their felt emotions. Participants 1, 2, 3, 4, and 9 reported that their H-F daughter expressed body language such as hand gesturing, head nodding, and facial expressions that were reflective of their emotions while communicating with their older siblings.

Participant 2 shared her children's nonverbal interactions as, "just normal relaxed, not fidgeting--no facial emotions except for normal ones, [when she's] carrying on a conversation." She described the older sibling's interactions as also being, "just normal. I mean, like I said, he's laid back charismatic. I mean, even when she has her meltdowns whether in public or home, it doesn't, he's used to it."

### *Older Sibling Natural Nonverbal Communication*

The theme older sibling natural nonverbal communication emerged when participants described the older sibling's nonverbal communication as being unfiltered toward their younger sister (Participants 1, 2, 3, 5, 6, and 7). They described their older children as not making an attempt to mask or modify their nonverbal communication for their younger sister. Participants 1, 2, 3, and 7 reported the older children as expressing positive nonverbal communication toward their younger sister while participants 5 and 6 reported that their older children expressed unhidden frustration or exasperation in their nonverbal communication toward their younger sister.

Participant 1 reported, "He's like smiling, playing with his hands with her, and stuff. Trying to like bother her, pull her hair, or something like that."

Participant 5 shared, "When they [older sisters] get aggravated, you see it on their faces."



## Research Question 2

How do parents describe the verbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with H-F autism?

When answering research question 2, 5 themes emerged from the data. The themes were (a) lack of verbal communication, (b) moments of typical verbal communication, (c) pointed verbal communication/undiscerning verbal communication, (d) emotional variability/sibling frustration, (e) older sibling initiative.

### *Lack of Verbal Communication*

The theme of lack of verbal communication emerged as parents described the small amount of verbal communication that would take place between their daughter with H-F autism and her older sibling(s). Lack of verbal communication tended to be described as periods of silence or reticence in sharing thoughts or opinions, and may have been dependent on the need for solitude. Participants 5 and 9 reported that the lack of verbal communication tended to be reciprocated by the older sibling(s). Six out of 9 participants described a lack of verbal communication between their daughter with H-F autism and her older sibling(s) (Participants 1, 2, 3, 5, 8, 9).

Participant 5 shared, “Sometimes, they'll come in, and she won't even come out of her room. I mean and I have to be like telling the older ones, ‘So, say hey’, and you know, everyone's feelings, get hurt. That's one of the things I've had about it with everybody. You can't let your feelings get hurt.”

### *Moments of Typical Verbal Communication*

The theme moments of typical verbal communication emerged when parents described the verbal communication that was shared between their daughter with H-F autism and her older sibling(s) as expected communication behavior between teenage siblings. While 6 participants

described their H-F daughters as lacking in verbal communication, 3 of the same parents described moments when their children did communicate with sibling(s) with relaxed, comfortable, and typical verbal communication. It seems that while irregularities in conversations were reported by parents, there were times in which siblings communicated in what appeared to be typical communication patterns. In total, 8 participants characterized the verbal exchanges between their children as typical communication between teenage siblings (Participants 1, 2, 3, 4, 5, 6, 7, and 8)

Participant 6 shared,

“I would say that she [H-F sister] talks to them the same way that she talks to adults. They argue like siblings tend to, but it’s nothing really unusual.” Of the older siblings, Participant 6 shared, “Oh, well, you know. [It’s] the same way that you’d expect somebody who’s 18 to kind of communicate with a 13 year old and 15—being a boy. You know?”

Participant 3 shared that while her daughter had typical verbal communication with her older brother, she also shared that her daughter would spend time alone stating, “She speaks to him like a regular person..., but sometimes, you know, one of her moods, as to where it’s like, she doesn’t want to be bothered--even with me, and her younger, and her younger cousin, and her brother. She has to go, like when she get into one of her moods, she goes, and you know, she sits by herself.”

#### *Pointed/ Undiscerning Verbal Communication*

The theme of pointed/undiscerning verbal communication emerged when participants described their H-F daughter’s verbal communication with their older sibling(s) as being characterized by what seemed to be the inability to take into consideration their siblings’ feelings or responses during verbal exchanges. The younger sister lacked reciprocity and did not expect

reciprocity from her older sibling(s); furthermore, the younger sister's responses tended to be succinct, without explanation or detail. Conversely, parents reported that older siblings tended to adjust their own verbal communication to become more concrete and direct. Five out of 9 participants described their children's conversations as being characterized by pointed and/or undiscerning verbal communication. Participants 2, 7, and 9 reported pointed and/or undiscerning verbal communication from their H-F daughter towards her older sibling(s). Participants 4, 5, and 7 reported pointed verbal communication from their older children towards their sister with H-F autism.

Participant 5 shared about the older sister, "Beth has her own psychological issues. [She] Has battled with depression, has battled with suicidal thoughts, [and] has been medicated for a lot of years, and so they have commonalities. And, then, Beth will also, you know, [will say] stop being so f\*\*\*\* stupid, you know. Beth will just get in her face and tell her stuff that she may not want to hear—that I may not need to say. So, she brings a different perspective and matter of fact..."

When asked how her H-F daughter verbally communicated with her son, Participant 2 shared, "Um, at him. Her... vocabulary's just out of this this world. Um, so she uses a lot of words that we scratch our head around. She's really intelligent. So, but yeah, more of at him than to him. He has a harder time carrying on a conversation with her because she's real short in her answers. She's direct, and she doesn't ask questions."

#### *Emotional Variability/Sibling Frustration*

The theme of emotional variability/sibling frustration emerged when participants described the changes in their daughter's desire to verbally communicate with her older sibling(s). This change in desire to communicate tended to be explained by the emotional variability that had

been demonstrated by their daughter with H-F autism since entering adolescence. The lack of desire to communicate and emotional variability was returned with older sibling hurt and frustration. Six out of 9 participants described their children's verbal communication as being characterized by emotional variability and/or older sibling frustration. Participants 1, 2, 3, and 5 reported emotional variability demonstrated by their H-F daughter. Participants 1, 3, 5, 6, and 9 reported sibling frustration associated with the verbal communication with their younger sister.

Participant 1 shared, "So right now, she has become moody. So, when she comes home, he likes to play with her and joking, all that kind of stuff. You know, they just have their own private jokes last year, and I'm like, 'What's so funny?' Like [they] say that one language. So, now she's like moody. So, now when he comes over and brushes and tries to hug her, say hi, she barely says anything to him. Sometimes she'll be silent for like, three days with him. And sometimes he'll comment. She'll but, you know, play with him a little bit. So, but now she can't be bothered with him. His feelings are hurt."

#### *Older Sibling Initiative*

The theme of older sibling initiative emerged when participants described their older children as continuing to attempt to engage their younger sister in verbal conversation, even when the conversation was not always reciprocated. Six out of 9 participants described their older children as continuing to engage in conversation with their sister with H-F autism. Participants 1, 2, 3, 4, 5, 8 reported that their older children demonstrated initiative in their verbal communication with their younger sister.

Participant 8 shared, "She probably talks slow and the older sibling speaks a little faster and all. I guess. Like the oldest sibling has learned to say, oh, just yes or whatnot to that nature...and

she knows she's gonna have to pace herself with her younger sibling and all, and just like instead of like, just coming and going. She's kind of adapted to it all.”

Participant 1 shared, “He keeps trying. He's like, you're being mean to me, give me a hug, you know, that kind of stuff. He just keeps trying a little bit.”

### **Research Question 3**

As compared to the nonverbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with H-F autism, how do parents describe the nonverbal social communication between themselves and their adolescent, autistic daughter.

When answering research question 3, 3 themes emerged as participants shared their perspectives on the nonverbal communication shared between themselves and their daughter with H-F autism. The themes were (a) choice/reticence in nonverbal communication, (b) atypical nonverbal communication toward parent, and (c) demonstrative/hyper-focused nonverbal communication.

#### *Choice/Reticence in Nonverbal Communication*

The theme choice/reticence in nonverbal communication emerged as participants described their experience of trying to mask their emotions/body language from their daughter and pulling back from responding when their daughter was uncommunicative. Five out of 9 participants described their nonverbal communication with their H-F daughter as allowing a choice in nonverbal communication and/or attempting to mask their own emotions. Participants 1, 2, and 9 reported reticence in their nonverbal communication towards their H-F daughter. Participants 5 and 6 reported allowing their daughter to dictate her level of nonverbal communication with the parent.

Participant 2 attributed the need to mask her emotions to her daughter's improved ability to read body language,

“She's gotten a whole lot better about reading body language as she's gotten older. Um, she'll notice when I'm getting ready to say something. I know that it's going to upset her, or because she'll say that I make a face. I don't even realize it, but she notices it. Sometimes, she'll just cut me off.”

Participant 6 shared, “And I look her right in the face and, you know, but I also try to give her space. Like, if she doesn't want to look at me, I'm not gonna force her to.”

#### *Atypical Nonverbal Communication*

The theme atypical nonverbal communication emerged when participants described the nonverbal communication that was received from their daughter with H-F autism. This atypical nonverbal communication included flat affect, lack of eye contact, and exaggerated facial expressions. Six out of 9 participants described atypical nonverbal communication demonstrated by their daughters toward her parent (Participants 2, 4, 5, 6, 7, and 8). Of the 6 participants, all described poor eye contact with their daughter. Participants 4 and 7 reported flat affect in their daughter, and Participant 2 reported exaggerated facial expressions.

Participant 8 shared, “She doesn't really make good eye contact or consistent eye contact. If she does, she might start talking and, then, eventually look up, look to the right.”

Participant 2 shared, “She does not make eye contact with anybody. It makes her acutely uncomfortable, but she does use a lot...of her facial expressions. I don't know if it's with all autistic people, but she makes a lot of different facial expressions.”

### *Demonstrative/Hyper-Focused Nonverbal Communication*

The theme demonstrative/hyper-focused nonverbal communication emerged when participants described the behaviors that they exhibited in order to attempt to communicate nonverbally with their H-F daughter. This included parents acting out their verbal message or paying close attention to their daughter's body language. Five out of 9 participants described modifying their body language to communicate and/or trying to tune into their daughter's nonverbal communication. Participants 3, 4, 6, 7, and 8 reported demonstrative/hyper-focused nonverbal communication toward their H-F daughter.

Participant 7 shared, "We talk with our hands a lot here, and again, laugh, smile and all that good stuff."

Participant 4 shared, "You know, I still, I'm in tune. I'm patient. I look for cues and things like that, and I think with Holly, to me, you know, she's not as open as she is with Rose."

### **Research Question 4**

As compared to the verbal social communication between their typically developing older children and their younger, adolescent daughter diagnosed with H-F autism, how do parents describe the verbal social communication between themselves and their adolescent, autistic daughter.

When answering research question 4, 5 themes emerged from the data. The themes were (a) reticence in verbal communication/parental encouragement, (b) change in verbal communication/emotional variability toward parent (c) atypical verbal communication/modified verbal communication, (d) parent mediator, (e) parental reticence in verbal communication/choice in verbal communication.

### *Reticence in Verbal Communication/Parental Encouragement*

The theme reticence in verbal communication/parental encouragement emerged when participants described their H-F daughter as tending to not share verbal information. In turn, this behavior lent itself to pressing parents to encourage their daughters to produce more verbal communication. Five out of 9 parents described their daughters as being reticent in their verbal communication and parents attempting to encourage verbal communication. Participants 3, 8, and 9 reported reticence in their daughter's verbal communication toward the parent. Participants 1, 4, 5, and 9 reported attempting to encourage communication from the H-F daughter.

Participant 4 shared, "I don't know if it's all that much different. I think it's more like if I don't ask specifics, I won't get the answer. Like it's hard like, you know, I can't really read her. I have to ask a lot of questions. I have to coax and maybe repeat questions."

Participant 9 shared, "For example, last year she wanted to go on a hayride during the fall, but it was an overnight, you know, program and everything. She was hesitant to ask me just because she thought, maybe I would get upset, or I would handle it differently. And I just told her, I said, 'This is an amazing opportunity for you, of course, to interact with other kids.' ...Even if I say something she doesn't want to hear, it's better to ask me than it isn't. So we have a very open communication."

### *Change in Verbal Communication/Emotional Variability Toward Parent*

The theme change in verbal communication/emotional variability toward parent emerged when participants described a change in their daughter's verbal communication since entering adolescence. Participants 1 and 3 described a negative change in their H-F daughter's verbal communication attributed to emotional variability. As well, Participant 2 described her own



verbal communication as changing in response to her daughter's emotional variability, and Participants 5 and 9 described a positive change in their H-F daughter's verbal communication. Five out of 9 participants indicated a change in verbal communication.

Participant 1 shared about her daughter's lack of communication by stating, "Oh, I get the same treatment [lack of verbal communication due to emotional variability]. [It] seems like the last six, seven months or something like that."

Participant 5 shared, "But when she gets frustrated is when she wants to throw something and hit something...At this point, it's changed since, you know, she's grown along with our communication in the last few years.

#### *Atypical/Modified Verbal Communication*

The theme atypical verbal communication/modified verbal communication emerged when participants described their daughter's verbal communication as pointed, undiscerning, slow in speech, and repetitive speech. In turn, parents modified their verbal communication to meet the communication needs of their daughter. Six out of 9 participants described atypical communication and/or modifying their verbal communication to meet their daughter's communication needs. Participants 2, 7, 8, and 9 reported atypical verbal communication from their daughters. Participant 2 reported pointed communication. Participant 7 reported undiscerning communication. Participant 8 reported slow communication, and Participant 9 reported repetitive communication. Participants 2, 4, 6, 7, 8, and 9 reported modifying their verbal communication toward their H-F daughter to meet her communication needs.

Participant 4 shared, "...Sometimes, she'll get stuck on like the details and repeat things, and you know, [there's] the clarification phase. I would be concrete...write it down sometimes [chores]."

Participant 6 shared, “I’m trying not to explain things too quickly so that she can fully grasp what I’m trying to say.”

Participant 9 shared, “I’ll say shorter sentences... I usually just leave it with a one question and then let her respond.”

#### *Parent Mediator*

The theme parent mediator emerged when participants described their attempt at encouraging communication between their younger daughter with H-F autism and her older sibling(s). Five out of 9 participants described themselves as instructing or encouraging their children to communicate with each other. Participants 3, 5, 7, 8, and 9 reported taking on the role of parent mediator.

Participant 5 shared, “I try to remind Anna, you know, you have to reach out to your sisters...but it’s not something that is high on her priority.”

Participant 8 shared, “We’ve had a couple of conversations with the, with the other siblings and what not, and we just like, whenever we’re in the house, you know, we just got [to] talk slower. We gotta, we got to adapt to our surroundings. Like instead of like just saying like, oh, we gotta talk slowly around her, let’s just talk slow, all in general, so she don’t really notice that’s what we’re doing.”

#### *Parental Reticence/Choice in Verbal Communication*

The theme of parental reticence/choice in verbal communication emerged when participants described their desire to respond gently and to mask their emotions toward their daughters. As well, they allowed space for their daughter to choose not to verbally communicate with them. Eight out of 9 participants described being calm, patient, or gentle with their daughter and/or allowing her to dictate the amount of verbal communication engagement. Participants 2, 3, 4, 6,

and 8 reported parental reticence in verbal communication, and participants 1, 5, and 9 reported giving their daughter choice in when she would like to communicate with the parent.

Participant 5 shared about her daughter’s verbal communication with her by stating, “It’s a lot of weighing, you know, and I doubted myself a lot, a lot, in the beginning, but now I just try to follow my heart. Not force her to communicate when she’s just giving me a, ‘For real, stop.’ Give me a soft stop, and I can kind of get it.”

Participant 8 shared, “[I] don’t correct or don’t get too loud where you might just scare [her].”

Of the themes describing the social communication between adolescent females with high-functioning autism and their older siblings, 6 themes emerged that described the social communication demonstrated by sisters with high-functioning autism toward their older sibling(s). Moments of typical verbal communication was the most reported characteristic of social communication communicated by adolescent females with H-F autism toward their sibling— reported by 8 participants. This was followed by typical eye contact and lack of verbal communication—both being reported by 6 participants. Body language aligning with emotions was reported by 5 participant. Emotional variability was reported by 4 participants, and pointed/undiscerning verbal communication was reported by 3 participants. [See Table 2]

Table 2

#### Social Communication Characteristics Toward Older Siblings

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Moments of Typical Verbal Communication	8 participants
Typical Eye Contact	6 participants
Lack of Verbal Communication	6 participants
Body Language Aligning with Emotions	5 participants
Emotional Variability	4 participants
Pointed/Undiscerning Verbal Communication	3 participants

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Of the themes describing the social communication between parents and their daughter with H-F autism, 4 themes emerged that described the social communication demonstrated by adolescent females with H-F autism toward her parent. The most reported theme was atypical nonverbal communication—reported by 6 participants. This was followed by change in verbal communication which was reported by 5 participants. Atypical verbal communication was reported by 4 participants, and reticence in verbal communication was reported by 3 participants. [See Table 3]

Table 3

#### Social Communication Toward Parents

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Atypical Nonverbal Communication	6 participants
<i>Poor Eye Contact</i>	<i>6 participants</i>
<i>Flat Affect</i>	<i>2 participants</i>
<i>Exaggerated Facial Expressions</i>	<i>1 participant</i>
Change in Verbal Communication	5 participants
Atypical Verbal Communication	4 participants
<i>Pointed Verbal Communication</i>	<i>1 participant</i>
<i>Undiscerning Verbal Communication</i>	<i>1 participant</i>
<i>Slow Verbal Communication</i>	<i>1 participant</i>
<i>Repetitive Verbal Communication</i>	<i>1 participant</i>
Reticence in Verbal Communication	3 participants

*Italics* denotes components of atypical verbal and nonverbal communication.

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### Summary

Chapter 4 provides an examination of the data collected during the current study. Social communication characteristics between adolescent females with H-F autism and their older sibling(s) along with the social communication characteristics between adolescent females with

H-F autism and their parent were collected using a semi-structured interview with parents. Participants described the verbal and nonverbal communication that took place between themselves and their H-F daughter and between their older children and their daughter with H-F autism. Forty-two codes emerged from the interview responses. The number of codes is indicative of the varied responses that were received from participants. Of the 42 codes, 16 themes emerged from the data. Themes were determined by consolidating closely aligned communication characteristics, by the number of participants that reported a code [5 or more], and/or by the action-response nature of the social communication between family members. For example, emotional variability in H-F sisters tended to elicit sibling frustration.

The themes that emerged in the nonverbal communication between adolescent females with H-F autism and their older sibling(s) were typical eye contact, body language aligning with emotions, and older sibling natural nonverbal communication. The themes that emerged in the verbal communication between adolescent females with H-F autism and her older siblings were lack of verbal communication, moments of typical verbal communication, pointed /undiscerning verbal communication, emotional variability/sibling frustration, and older sibling initiative.

The themes that emerged in the nonverbal communication between adolescent females with H-F autism and her parent were choice/reticence in nonverbal communication, atypical nonverbal communication, and demonstrative/hyper-focused nonverbal communication. The themes that emerged in the verbal communication between adolescent females with H-F autism and her parent were reticence in verbal communication/parental encouragement, change in verbal communication/emotional variability, atypical/modified verbal communication, parent mediator, and parental reticence/choice in verbal communication.

In Chapter 5, the possible implications of these findings and how they align with prior research will be discussed.

## CHAPTER 5: DISCUSSION

### **Overview**

The purpose of this study was to allow parents of adolescent daughters with H-F autism to describe the verbal and nonverbal communication between typically developing older siblings and their younger, adolescent sister diagnosed with H-F autism. Additionally, parents were asked to describe the verbal and nonverbal communication between themselves and their adolescent daughter with H-F autism. In this chapter, how the findings of the current study align with prior research and implications of the research will be discussed, along with its alignment with Biblical foundations. Lastly, limitations and future research will be discussed.

### **Summary of Findings**

The themes that emerged in the nonverbal communication between adolescent females with H-F autism and her older sibling(s) were typical eye contact, body language aligning with emotions, and older sibling natural nonverbal communication. The themes that emerged in the verbal communication between adolescent females with H-F autism and her older siblings were lack of verbal communication, moments of typical verbal communication, pointed/undiscerning verbal communication, emotional variability/sibling frustration, and older sibling initiative.

The themes that emerged in the nonverbal communication between adolescent females with H-F autism and her parent were choice/reticence in nonverbal communication, atypical nonverbal communication, and demonstrative/hyper-focused nonverbal communication. The themes that emerged in the verbal communication between adolescent females with H-F autism and her parent were reticence in verbal communication/parental encouragement, change in verbal communication/emotional variability, atypical/modified verbal communication, parent mediator, and parental reticence/choice in verbal communication.

Typically developing older siblings were reported to have more typical nonverbal and verbal communication with their younger sister as compared to parents. Older siblings were reported to be more likely to continue to initiate conversation despite feelings of frustration toward their younger H-F sister as compared to parents. More parents than typically developing older siblings described themselves as masking nonverbal communication, receiving atypical communication, and modifying their verbal communication toward their H-F daughter. Parents also described giving their H-F daughters space when she did not want to communicate. Lastly, parents demonstrated an obligation to mediate communication between their typically developing older siblings and their adolescent daughter with H-F autism.

### **Discussion of Findings**

In the data that was collected from participants, the adolescent daughter with H-F autism and her older siblings were described as tending to have a comfortable, organic relationship that was marked by periods of typical verbal communication and a greater amount of typical nonverbal communication than was found in the parent-H-F daughter relationship. Siblings tended to initiate conversation despite their own frustration with the communication that was shared with the younger sibling. Overall, rather than siblings with autism showing reticence in their verbal and nonverbal communication, their verbal communication tended to be direct and succinct despite periods of silence; furthermore, it was reported that some older siblings would modify their verbal communication to match the pointed, succinct verbal communication directed at them from their H-F younger sister; however, older siblings were less reported to modify verbal communication as compared to parents. This pointed communication was also reported to arise in text messages rather than only in face to face conversations.



Findings aligned with prior research that describes the relationship between adolescent autistic siblings and typically developing teens as not being all that different from that of typical sibling relationships (Krieger et al., 2018). While there were communication struggles and frustration (Shivers et al., 2019), typical nonverbal and verbal communication was also reported by participants. Parents tended to respect the wishes of their daughters to not engage in verbal or nonverbal communication, but siblings tended to continue to initiate conversation and engage in natural nonverbal communication, possibly cultivating an environment of social communication learning (Lerner, 2018; Rosen et al., 2022).

It may be that autistic sisters camouflaged less with siblings as compared to parents. Participant 2 shared that her older son was her younger daughter's "comfort zone." Additionally, Participant 4 described the relationship between her typically developing older daughter and her younger daughter diagnosed with autism as nurturing, with the older daughter taking on a caregiver role, which supports the findings that typically developing females, taking on the caregiving role of an adolescent sibling with autism can be positive, especially if the autistic sibling has less severe disability (Cridland et al., 2015). It is to be noted that in the current study, only Participant 4 described the relationship between her children as the older sister taking on the role of caretaker.

As was described by 5 participants, their children's conversation was marked by direct and concrete language which supports research by Gorjy et al. (2017). Typically developing adolescents tended to recognize the difference in their communication with the sibling with autism as compared to typically developing sibling communication, and they modified their language to best fit the complexities of the verbal communication. Similarly, supporting research

by Ryan et al. (2020), Participant 2 reported that her son struggled with texting his sister who tended to give short and undetailed responses in her communication.

Parents described themselves as being reticent in their verbal and nonverbal communication with their H-F adolescent daughter. They reported receiving more atypical nonverbal communication than older siblings, and they described modifying their verbal communication in greater detail as compared to older siblings—pausing between sentences, slowing speech, speaking concretely, and simplifying sentence structure. Additionally, parents reported being hyper-focused and demonstrative in their nonverbal communication with their daughter with autism. Parents also described giving their H-F daughters space when she did not want to communicate and demonstrated an obligation to mediate communication between their typically developing older siblings and their adolescent daughter with H-F autism.

These themes seem to reflect the prior findings of De Clerq et al (2021; 2022) who reported that parents felt that their adolescent with autism required close monitoring. Likewise, the same parents reported that their relationship with their adolescent was challenging due to misunderstood social signals. Participant 9 exemplified the Dielman et al. (2018) finding that reported that parents tended to rely on verbal communication and would keep communication concise. When asked about his nonverbal communication with his daughter, Participant 9 shared, “I don't show her any nonverbal communication.” He went on to describe his verbal communication with his daughter by stating, “I'll say shorter sentences.”

Parents reported that they were likely to allow their daughters with autism to dictate the amount of verbal and nonverbal communication that took place within their relationship. This may indicate a less authoritarian parenting style, supported by Chang et al. (2019) in which girls with higher reciprocity, as compared to nonverbal or lower functioning females with autism, tend

to encounter a more authoritative parenting style from their mother. Overall, it appears that parents of adolescent females with high-functioning autism take on a more deliberate and instructional approach in communicating with their daughters and in monitoring the relationship between their younger daughter and her older siblings.

Adolescent females with H-F autism were described as having a change in their verbal and nonverbal communication as they entered adolescence. In the sibling relationship, the change was described as emotional variability and isolation that led to a decrease in verbal communication. In the parental relationship, the change was mixed. While 2 parents described the change in verbal relationship as similar to that shared with older siblings, 2 parents described a positive change in verbal communication, and 1 parent described an increase in her daughter's ability to read nonverbal communication.

A negative change in social communication is in line with the findings of Robinson et al. (2011) and Mandy et al. (2018), and while parents did report some positive change in their daughter's communication, the preponderance of their descriptions suggested that ongoing social communication issues existed. While not specifically related to the sibling relationship, Participant 7's statement may be telling of the difficulties that adolescent females with H-F autism face, "[Communication is] getting a little better. At least, she's making effort to socialize, but it's more of a challenge. It's like interacting with the kids is more...it's harder than the academics." It may be that peers simply outpace the communication capacities of adolescent females with H-F autism.

Lastly, to address the findings of Alvares et al. (2020) who reported that a high-functioning diagnosis does not always equal better long-term social communication outcomes, parents in the current research described varying levels of verbal competency in their H-F daughters.

Participant 8 and 9 described their daughters' difficulties with articulation while the remaining participants did not describe this difficulty—making an argument for the possibility that females with H-F autism do have differing developmental trajectories.

The current study underscores the Biblical principles of the family. The themes that emerged in the study reflected the established institution of the family, and its capacity to press and mold children into the best version of themselves (Walters, 2005). This is found within the differing descriptions of the parent relationship with their H-F daughter and the older sibling relationship with their H-F sister.

Within the hierarchical structure of the family (*New American Standard Bible*, 1960/2021, I Corinthians 11:3; I Timothy 3:5), parents described themselves as monitors—taking deliberate care to meet the needs of their daughter with H-F autism. They were described as the overseers of the home, attempting to mediate the communication between their younger daughter and her older siblings, creating an environment of safety and education (*New American Standard Bible*, 1960/2021, Deuteronomy 4:9) Conversely, siblings were described as companions who were less accommodating in their communication with their sister, possibly because the relationship was more intimate and relaxed as compared to the relationship between parents and their H-F daughter. Within this relationship, the unconditional love demonstrated by older siblings had the potential to produce personal and social change within their sister with H-F autism (*New American Standard Bible*, 1960/2021, John 1: 40-42; Genesis 33: 8-10).

### **Implications**

This study extends the understanding of the social communication relationship between adolescent females with high-functioning autism and their typically developing siblings. As well,

it helps to describe the differences between the parental relationship of adolescent females with H-F autism and the older sibling relationship of adolescent females with H-F autism.

In general, this research offers knowledge into the autism traits and implications of those traits in the life of adolescent females. The trajectory of all individuals diagnosed with high-functioning autism and with females diagnosed with high-functioning autism is not well understood (Alvares et al., 2020; Mandy et al. 2018; Robinson et al. 2011). The mechanisms that influence the report of increased autistic traits are understudied and vague. This study offers insight into the behavioral and communication changes that overshadow the familial interactions of adolescent females with high-functioning autism. Outlining these changes has the potential of developing into individual cognitive behavioral therapies and family therapies that will increase the potential for girls with autism to better navigate the teenage years. Adolescent females with H-F may be given the strategies to progress in their social communication rather than exhibit social communication regression in their communication with family members.

Research suggests that siblings may have a unique opportunity to influence the social communication of their sibling with autism (Ben-Itzhak et al., 2016; Rosen et al., 2022) . The social communication characteristics reported by parents in the current study proposes that older siblings and younger female sibling with H-F autism share a relationship that is comfortable and yet challenges younger sisters in their social communication with their older siblings. Females with H-F autism may be presented with communication learning opportunities within this relationship. Potentially, older siblings may become part of a therapeutic solution for increasing the social communication of their younger siblings. Additionally, the siblings' social communication characteristics reported by parents have the possibility of being mimicked in supporting the growth of communication in non-sibling relationships.

The constructs outlined in the research could be utilized within future research studies. These constructs may be used in comparative studies to lend themselves to better understanding the statistical significance or lack of statistical significance in a variety of autistic relationships embedded within the familial unit. The current study gives researchers more tools to expand the research and understanding of females with autism and to move the research forward.

Lastly, this research supports the importance of the family in the healthy growth of children. It's an idea that gives credence to the ongoing mission of the church to support and to help ensure healthy, thriving families within communities. The research outcomes have the potential of aiding laymen and professionals within the church body to better understand the communication challenges of adolescent females with H-F autism, and in turn, these laymen and professionals are better equipped to meet the needs of this particular demographic of girls—within the church and outside of the church.

### **Limitations**

Limitations for this study include a narrow demographic that cannot be generalized to all children with autism, only to adolescent H-F autistic females between 12 and 16 years of age; furthermore, this study cannot be generalized to all sibling constellations, only to those constellations that include older sibling(s). It is understood that parent participants have limited access to their children's interactions, and their description of sibling communication may include biases that arise from a parental point of view. It may be that parents were able to provide more detailed experiences of their own social communication interactions with their daughter with H-F autism as compared to the experiences that they described between their daughter with H-F autism and her older siblings. For example, parents tended to give a more detailed description of modifying their own verbal communication toward their H-F daughter to

accommodate her language difficulties as compared to parents' descriptions of their typically developing child's modifications of their verbal communication toward their younger sister. It is a possibility that if older siblings were interviewed that they would provide more of the same details about their own verbal interactions with their younger H-F sister as were described by parents about their own verbal modifications. Also, while they are offering insight into the social communication patterns of their children, it is a possibility that social communication between siblings manifests itself differently when parental supervision is not available. Similarly, parents may simply misinterpret the social communication between typically developing older siblings and the younger sister with autism.

The intent of the study is to describe nonverbal and verbal constructs that may underpin recent research findings that suggest the association between typically developing older siblings and the improved social communication of young children with autism having average cognitive function. While it is an important step in the process of further investigating this association in the demographic of adolescent, H-F autistic females, the current study is not intended for determining how nonverbal and verbal constructs impact social communication within the older sibling(s)-younger H-F autistic sibling relationship, but the case study is a descriptive tool used to further future research.

Lastly, research participants were determined based upon parental responses to the eligibility survey. The questions included: Has your daughter received a high-functioning, level 1, or Asperger's diagnosis? While average IQ is a criteria for these diagnoses, parents were not specifically asked to provide IQ results.

### **Recommendations for Future Research**

While this study describes the social communication constructs found between typically developing older siblings and their adolescent sister with H-F autism, it does not answer the question as to the statistical impact of having a typically developing older sibling on the social communication of adolescent females with H-F autism; however, the descriptive constructs found in the current study have the potential of being utilized in quantitative/comparative studies.

Future research could include cross-sectional quantitative studies of sibling constellations and the constellations' impact on the social communication of H-F females—as well as the moderating effect of cognition on these social communication outcomes. As was modeled in the Rosen et al., 2022 study on adaptive functioning in individuals with autism and having siblings, the social communication benefits of sibling constellations on females with autism could be followed across time and into adulthood with a longitudinal study. It is possible that as sibling relationships become more distanced, the effect on social communication could change.

Because the trajectory of autism trait is reported to differ in females as compared to males, future research is needed to better understand how sibling relationships impact the social communication of adolescent males with autism (Mandy et al. 2018). Would the effect on social communication produce the same outcomes in adolescent males with autism as compared to adolescent females with autism? Would the same sibling constellations produce an enhancement in social communication in both adolescent males and females with autism?

Additionally, the Ben-Itzhak et al. (2016) study measured the impact of siblings on affect and nonverbal communication in siblings with autism. Verbal communication was not included within the study. The current study reported stronger nonverbal communication between siblings and less consistent verbal communication. This leaves a question to be answered by researchers.



Is the impact on nonverbal communication greater in the sibling relationship as compared to verbal communication? Does it differ based on the sex of the sibling with autism?

Compared to the social communication shared by siblings in the study, the social communication shared between adolescent daughters with autism and their parents were descriptively different than those shared between siblings. This leaves an opportunity for more research into the differences between the communication between siblings and the communication between parents and their daughter with autism. Potentially, if older siblings create a positive change in the social communication in their younger sister with autism, what is different about their communication as compared to parents' communication that would cause these changes? Also, parents reported the tendency to hide their frustrations and allow their daughters to take the lead in the communication between themselves and their daughter. Would this behavior be described differently if the sex of their autistic child were a male? Is this truly a statistical anomaly with parents of adolescent females with H-F autism? Future larger, quantitative studies could answer these questions.

### **Summary**

The nonverbal communication themes that emerged between adolescent females with H-F autism and her older sibling(s) was typical eye contact, body language aligning with emotions, and older sibling natural nonverbal communication. In verbal communication, the themes that emerged between adolescent females with H-F autism and her older sibling(s) were lack of verbal communication, typical verbal communication, pointed/undiscerning verbal communication, emotional variability/sibling frustration, and older sibling initiative.

The themes that emerged in the nonverbal communication between adolescent females with H-F autism and their parents were choice/reticence in nonverbal communication, atypical

nonverbal communication, and demonstrative/hyper-focused nonverbal communication. The themes that emerged in the verbal communication between adolescent females with H-F autism and their parents were reticence in verbal communication/parental encouragement, change in verbal communication/emotional variability, atypical/modified verbal communication, parent mediator, and parental reticence/choice in verbal communication.

The emerging themes have the potential to be used in future research to extend the understanding of the impact of older sibling relationships on the social communication of adolescent girls with autism. They underscore the unique relationship between adolescent females with autism and their older siblings.

This relationship is descriptively different from that of the parental relationship with adolescent H-F daughters. While demonstrating somewhat adaptive social communication by using more concrete, direct language, typically developing older siblings tend to be less accommodating in their communication with their younger sister with H-F autism. Older siblings are more likely to initiate and engage in conversation more indiscreetly than parents. Additionally, there appears to be unique relational and communicational familiarity between the younger sister with H-F autism and her older siblings. These described social communication characteristics give credibility to the idea that typically developing older siblings may have the potential of enacting positive change within the communication of their adolescent sister with H-F autism.

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## APPENDIX A: SEMI-STRUCTURED INTERVIEW QUESTIONS

1. Tell me about how having an older sibling has impacted your daughter.
2. How would you describe the verbal communication between your daughter and her older sibling(s)?
3. *How would you describe the verbal communication of your daughter toward her sibling(s)?\*\**
4. *How would you describe the verbal communication of your older child(ren) toward your daughter?*
5. What has your experience been with your verbal communication with your daughter as compared to her verbal communication with her older siblings?
6. *How would you describe your daughter's verbal communication towards yourself?*
7. *How would you describe your verbal communication towards your daughter?*
8. Can you tell me about the nonverbal communication between your daughter and her older sibling(s)?
9. *What does the nonverbal communication used by your daughter toward her older sibling(s) look like?*
10. *What does the nonverbal communication used by your older child(ren) toward your daughter look like?*
11. *Could you describe any examples of nonverbal communication that are used by your daughter or her siblings during communication?*
12. What has been your experience with the nonverbal communication between yourself and your daughter as compared to her nonverbal communication with her older siblings?

13. *Can you describe the nonverbal communication that is used by your daughter to communicate with you?*
14. *Can you describe the nonverbal communication that is used by yourself to communication with your daughter?*

\*\* Italics denotes possible follow-up questions

## APPENDIX B: INFORMED CONSENT FORM

**Consent**

**Title of the Project:** Parental Perspectives on the Social Communication Between Adolescent Females Diagnosed with High-Functioning Autism Spectrum Disorder And Their Typically Developing Older Siblings: A Case Study

**Principal Investigator:** Victoria Paxton, Developmental Psychology PhD Candidate, Liberty University

<b>Invitation to be Part of a Research Study</b>
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You are invited to participate in a research study. To participate, participants must be the parent of a daughter diagnosed with high-functioning autism. The daughter must be between 12 and 16 years of age and have an older sibling(s) without autism. The parent and siblings must share full time residence with the daughter with high-functioning autism, and her sibling(s) and she must have shared the same residence from birth. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

<b>What is the study about and why is it being done?</b>
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The purpose of the study is to gain parental insight into the social communication between their daughter with high-functioning autism and her older siblings. Additionally, the purpose of the study is to gain parental insight into the social communication between their daughter with high-functioning autism and themselves.

<b>What will happen if you take part in this study?</b>
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If you agree to be in this study, I will ask you to do the following things:

1. You will be asked to provide basic demographic information about yourself, your daughter, and her siblings (Name, age, participant email address)
2. Secondly, you will be asked to participate in an online interview (using Zoom or Google Meet) lasting approximately 1 hour.
3. Lastly, you will be asked to review the interview transcripts for errors, clarification, and any changes that you would like to make to your initial responses.

<b>How could you or others benefit from this study?</b>
---

Participants should not expect to receive a direct benefit from taking part in this study.

**What risks might you experience from being in this study?**

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

**How will personal information be protected?**

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher[s] will have access to the records.

- Participant responses will be kept confidential through the use of pseudonyms. Interviews will be conducted in a private office where others will not easily overhear the conversation.
- Data will be stored on a password-locked computer and may be used in future presentations. After three years, all electronic records will be deleted.
- Interviews will be recorded and transcribed. Recordings will be stored on a password locked computer for three years and then erased. Only the researcher[s] will have access to these recordings.

**How will you be compensated for being part of the study?**

Participants will be compensated for participating in this study. At the conclusion of the interview participants will receive a \$ 25 Visa gift card.

**Is study participation voluntary?**

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

**What should you do if you decide to withdraw from the study?**

If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you will be destroyed immediately and will not be included in this study.

**Whom do you contact if you have questions or concerns about the study?**

The researcher conducting this study is Victoria Paxton. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her. You may also contact the researcher's faculty sponsor, Rachel Piferi.

**Whom do you contact if you have questions about your rights as a research participant?**

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at [irb@liberty.edu](mailto:irb@liberty.edu).

*Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.*

**Your Consent**

By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

*I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.*

The researcher has my permission to video-record me as part of my participation in this study.

\_\_\_\_\_  
Printed Subject Name

\_\_\_\_\_  
Signature & Date



## APPENDIX C: RECRUITMENT FLYER

# Research Participants Needed

Parental Perspectives on the Social Communication Between Adolescent Females Diagnosed with High-Functioning Autism Spectrum Disorder And Their Typically Developing Older Siblings: A Case Study

- Are you the parent of a teenage daughter with high-functioning autism?
  - Is she between the ages of 12-16?
- Does she have older siblings that are not diagnosed with autism?

If you answered **yes** to each of the questions listed above, you may be eligible to participate in a research study.

The purpose of this research study is to better understand the communication between teenage females with high-functioning autism and their older siblings.

Participants will be asked to participate in a 1 hour interview.

Participants will receive a **\$25 Visa gift card** after completion of interview.

If you would like to participate, please click here <https://www.surveymonkey.com/r/TQRGH6W> and complete the eligibility survey.

Upon eligibility verification, you will receive a consent form to sign electronically and a Zoom or Google Meet interview will be scheduled.

Victoria Paxton, a doctoral candidate in the School of Psychology at Liberty University, is conducting this study.

## APPENDIX D: SOCIAL MEDIA PERMISSION REQUEST

Dear Administrator,

As a graduate student in the developmental psychology department/School of Psychology at Liberty University, I am conducting research as part of the requirements for a PhD degree. The title of my research project is Parental Perspectives on the Social Communication Between Adolescent Females Diagnosed with High-Functioning Autism Spectrum Disorder And Their Typically Developing Older Siblings: A Case Study and the purpose of my research is to describe the social communication that is shared between adolescent females with high-functioning autism and their typically developing older siblings based on parental perspectives.

I am writing to request your permission to post to members of your social media group to invite them to participate in my research study.

Participants will be asked to complete an online survey to determine study eligibility. Participants will be contacted to gather demographic information and to complete a 1 hour interview. Participants will be asked to review interview transcripts once the interview is completed and transcribed. Participants will be presented with informed consent information prior to participating. Taking part in this study is completely voluntary, and participants are welcome to discontinue participation at any time.

Thank you for considering my request. If you choose to grant permission, respond by email. A permission letter document is attached for your convenience.

Sincerely,

Victoria Paxton  
Developmental Psychology PhD Candidate

## APPENDIX E: SOCIAL MEDIA PERMISSION-RESPONSE

Dear Victoria Paxton:

After careful review of your research proposal entitled Parental Perspectives on the Social Communication Between Adolescent Females Diagnosed with High-Functioning Autism Spectrum Disorder And Their Typically Developing Older Siblings: A Case Study, I have decided to grant you permission to post to members of my social media group to invite them to participate in your research study.

Check the following boxes, as applicable:

I grant permission for Victoria to contact members of my FB group to invite them to participate in her research study.

I am requesting a copy of the results upon study completion and/or publication.

Sincerely,

Group Administrator

## APPENDIX F: SOCIAL MEDIA RECRUITMENT

ATTENTION FACEBOOK FRIENDS: I am conducting research as part of the requirements for a developmental psychology PhD at Liberty University. The purpose of my research is to describe the communication between teenage females with autism and their older siblings without autism. To participate, participants must be the parent of a daughter diagnosed with high-functioning autism. The daughter must be between 12 and 16 years of age and have an older sibling(s) without autism. The parent and siblings must share full time residence with the daughter with high-functioning autism, and her sibling(s) and she must have shared the same residence from birth. Participants will be asked to participate in an interview using Zoom or Google Meet, which should take about 1 hour to complete. If you would like to participate, please click here <https://www.surveymonkey.com/r/TQRGH6W> to complete an online survey to determine study eligibility. If you are eligible to participate, a consent document will be emailed to you to be electronically signed, and your interview will be scheduled at a time that is convenient for you.

