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Investigating friendship qualities in high ability or achieving, typically-developing, ADHD, and twice-exceptional youth

Staci Fosenburg
University of Iowa

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INVESTIGATING FRIENDSHIP QUALITIES
IN HIGH ABILITY OR ACHIEVING, TYPICALLY-DEVELOPING, ADHD, AND
TWICE-EXCEPTIONAL YOUTH

by

Staci Fosenburg

A thesis submitted in partial fulfillment
of the requirements for the Doctor of Philosophy
degree in Psychological and Quantitative Foundations
(Counseling Psychology) in the
Graduate College of
The University of Iowa

August 2018

Thesis Supervisor: Megan Foley Nicpon, Professor

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Graduate College
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CERTIFICATE OF APPROVAL

PH.D. THESIS

This is to certify that the PhD. thesis of

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has been approved by the Examining Committee for
the thesis requirement for the Doctor of Philosophy degree
in Psychological and Quantitative Foundations
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To—my family, in all its forms.

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ABSTRACT

Current gaps in knowledge about twice-exceptional youth relative to those with only one exceptionality (e.g., high ability or ADHD) include how twice-exceptional students perceive their friendships (Foley Nicpon et al., 2010). Some researchers have found friendship qualities to be less positive for youth with ADHD (Humphrey et al., 2007), yet others have found friendships to be rated more positively by gifted youth (Field et al., 1998). The current investigation sought to determine how friendships are perceived by twice-exceptional youth compared to peers with ADHD or high ability or achievement, and those with average ability or achievement and no diagnosis.

Participants included 65 youth (35 boys, 33 girls) in middle school. Participants completed the Friendship Qualities Scale (Bukowski et al., 1994), in addition to a demographic questionnaire completed by parents. A repeated-measures ANOVA design was utilized to compare friendship quality ratings based on ability or achievement and ADHD diagnosis, as well as gender. Participants with ADHD, regardless of ability or achievement, reported significantly less companionship, help, and security with a best friend than those without a diagnosis. Boys were observed to report significantly less closeness with a best friend than girls.

Implications of the current findings for counseling psychologists in the areas of practice and theory include considerations of how youth are socialized based on societal beliefs about gender and disability. Additionally, recommendations for treatment considerations, particularly for twice-exceptional youth, may include strengths-based interventions to support areas of strength to help accommodate difficulties.

PUBLIC ABSTRACT

Current gaps in knowledge about youth who are gifted and have ADHD compared to those with either giftedness or ADHD include how gifted students with a co-occurring disability view their friendships (Foley Nicpon et al., 2010). Some researchers have found friendship qualities to be less positive for youth with ADHD (Humphrey et al., 2007), yet others have found friendships to be rated more positively by gifted youth (Field et al., 1998). The current investigation sought to determine how friendships are perceived by high ability or achieving middle school students with ADHD compared to peers with ADHD or high ability or achievement, and those with average ability or achievement and no diagnosis.

Participants included 65 students (35 boys, 33 girls) in middle school. Students completed the Friendship Qualities Scale (Bukowski et al., 1994), in addition to a demographic questionnaire completed by parents. Friendship quality ratings were compared based on ability or achievement and ADHD diagnosis, and separately based on gender. Participants with ADHD, regardless of ability or achievement, reported companionship, help, and security with a best friend than those without a diagnosis. Boys reported lower closeness with a best friend than girls. Implications of the current findings for counseling psychologists in the areas of practice and theory include considerations of how boys and girls are socialized to interact based on societal beliefs about gender and disability. Additionally, recommendations for treatment considerations, particularly for high ability or achieving students with ADHD, may include strengths-based interventions to support areas of strength to help accommodate difficulties.

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CHAPTER 1: INTRODUCTION

While difficulties that may be faced by children and adolescents with high ability or a disability (e.g., autism spectrum disorder, attention difficulty, learning disability) have been recognized and researched for decades, awareness of and research regarding concerns for twice-exceptional learners, those with both high ability *and* a co-occurring disability, is relatively new. A dearth of empirical research exists regarding twice-exceptional children and adolescents, particularly those with attention difficulties (Foley Nicpon, Allmon, Sieck, & Stinson, 2010). The lack of knowledge about twice-exceptional learners relative to those with only one exceptionality (e.g., high ability, giftedness, or Attention Deficit/Hyperactivity Disorder; ADHD) is concerning, as twice-exceptional children and adolescents may not receive services necessary to succeed in the classroom and may also experience similar negative social and self-perception consequences as their peers with an ADHD diagnosis alone (Antshel et al., 2008; Moon, Zentall, Grskovic, Hall, & Stormont, 2001).

Researchers have posited strong social connections in early adolescence serve protective functions as children begin to navigate increased autonomy (Sullivan, 1953). Additionally, the quality of close friendships has been shown to affect the navigation of developmental tasks of adolescence, such as structuring free time and developing interpersonal intimacy skills (Rabaglietti & Ciairano, 2008). Some researchers have suggested gifted individuals are uniquely exposed to and utilize psychosocial supports that encourage their success (Olszewski-Kubilius, 2003; Olszewski-Kubilius, Grant, & Seibert, 1993); in contrast, children and adolescents with ADHD are at greater risk for peer victimization (Humphrey, Storch, & Geffken, 2007) and peer rejection (Hoza et al.,

2005b), placing them at greater risk for negative psychosocial outcomes. However, little is known about friendships of early adolescents who hold both identities; thus, knowledge about the risks and protective factors that may stem from these relationships is scarce. A model of potential influences is helpful for understanding the importance of friendships in the broader perspective of child and adolescent development.

Bronfenbrenner's Ecological Systems Model

According to the ecological model outlined by Bronfenbrenner (1979), child development is affected by nested structures as children and adolescents navigate the world. Bronfenbrenner (1979) terms the process of human development as mutual interactions between “an active, growing human being and the changing properties of the immediate setting in which the developing person lives” (p. 21). The developmental process is also affected by the interplay of settings and the larger contexts in which the settings exist. The individual child within this model represents the core of the system to be analyzed, and can include factors such as the child's age, gender, sexual orientation, disability status, and gifted identification, amongst other individual identities.

Microsystems, the smallest systems, are “pattern[s] of activities, roles, and interpersonal relations” (Bronfenbrenner, 1979, p. 22). Microsystems may consist of a child or adolescent's home, school, or neighborhood. Microsystems are nested within *mesosystems*, which are formed by the connections “among two or more settings in which the developing person actively participates” (Bronfenbrenner, 1979, p. 25). A greater number of links between microsystems results in a greater impact on the child or adolescent, such as when parents, teachers, and friends provide the child with similar messages about behaviors and performance (Olszewski-Kubilius, 2003). Similarly, when

parents and teachers of a child communicate about behaviors regularly, the more the child will be affected by this mesosystem.

Exosystems consist of decision-making entities that affect or are affected by the children or adolescents, but in which they do not personally participate (Bronfenbrenner, 1979). Examples may include a school board, legislative body, or teachers' association. The largest systems are *macrosystems*, which are comprised of "consistencies [...] at the level of the subculture or the culture as a whole, along with any belief systems or ideologies underlying such consistencies" (Bronfenbrenner, 1979, p. 26). Macrosystems highlight the ways in which cultural and societal values and beliefs may impact children and adolescents at all levels (micro-, meso-, and exosystems). Macrosystems may include beliefs about ability, disability, gender, giftedness, and appropriate behaviors.

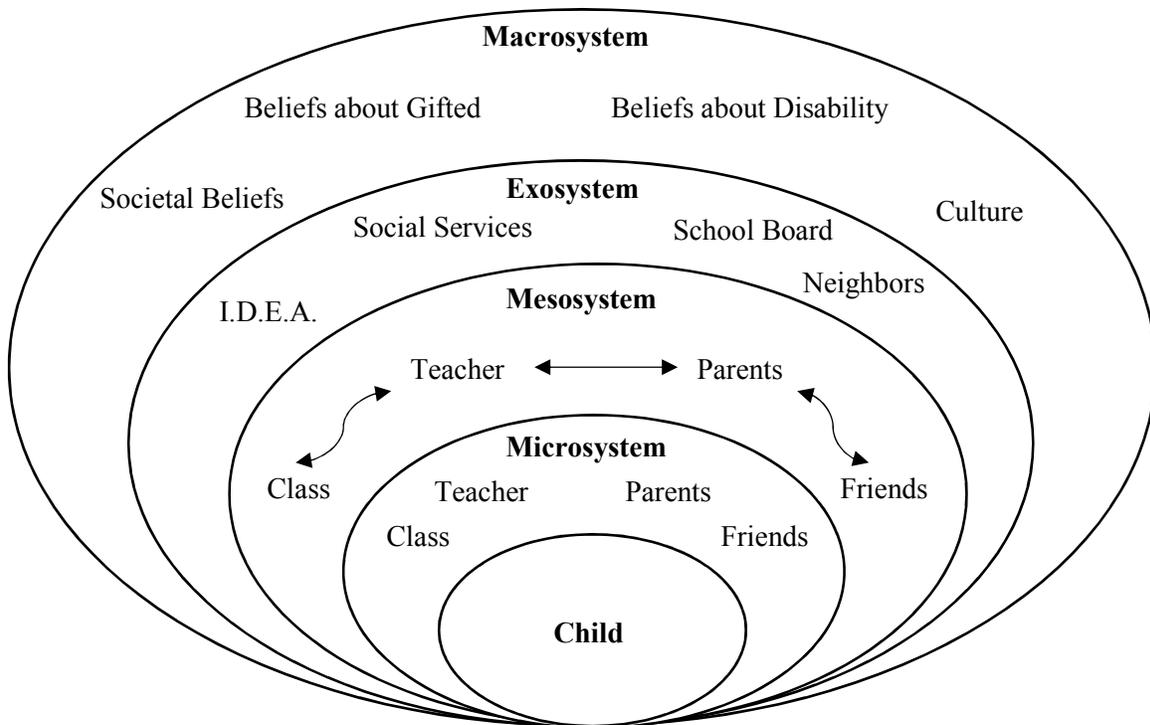


Figure 1. Adapted from Bronfenbrenner's Ecological Systems Model (1979).

Social support networks include all people with whom individuals interact. These individuals can be connected to each other, as well as to the child or adolescent. The greater the number of interconnections between supportive figures, such as teachers with parents and parents with friends' parents, the greater the level of support available to the child or adolescent. As described by Olszewski-Kubilius (2003), for young learners to receive maximal benefit from their social support network, individuals within the network must be able to recognize the child or adolescent's abilities, identify opportunities, value achievement in school, and share similar attitudes toward school and achievement. For twice-exceptional learners, whose difficulties may be perceived as more salient than their abilities, ability and talents may not be fully recognized and embraced by their social support system, including friends in the microsystem. This lack of recognition, in turn, may limit the social support available to them, and consequently, their perception of their abilities and friendships.

Friendship Quality

In a groundbreaking series of lectures, Harry Stack Sullivan (1953) described the development of friendships across the lifespan and commented on the importance of friendships in childhood and early adolescence. He posited a new kind of perspective on friendship begins to develop in preadolescence, including, "a specific new type of interest in a particular member of the same sex who becomes a chum or a close friend" (Sullivan, 1953, p. 245). Navigating developmental tasks in the years approaching and during adolescence, such as increased freedom, independently organizing tasks for success at school, and building and maintaining relationships with others (i.e., intimacy-competence), present unique challenges for youth (La Gaipa, 1979). Friendships, which

can provide intimacy, trust, aid, and security, have been shown to have positive effects in the navigation of developmental tasks of early adolescence (Rabaglietti & Ciairano, 2008).

Friendships in pre- and early adolescence can provide many protective factors and predict more positive psychological, social, and academic outcomes (Bagwell, Newcomb, & Bukowski, 1998; Parker & Asher, 1993; Stocker, 1994). These protective factors even extend into adulthood (Bagwell et al., 1998), as adolescents with friends report higher self-esteem and demonstrate fewer psychopathology symptoms later in life than adolescents without friends.

Friendship quality in recent years has been defined in terms of positive (e.g., intimacy, help, support) and negative (e.g., conflict, rivalry, dominance) aspects in relationships with another individual (Berndt, 2002). Many scholars have explored the important role friendship and social support play in the lives of children and adolescents. Perceived social support can buffer individuals during stressful events when individuals believe that supports can meet their needs and when individuals feel they are part of a larger social network (Cohen & Wills, 1985). Others have posited the more positive self-perceptions of social support from peers and family members, the less adjustment concerns individuals experience (Demaray & Elliott, 2001; Attar-Schwartz, Mishna, & Khoury-Kassabri, 2017).

Notably, the quality, not quantity, of friendship has been found to be most important in counteracting negative experiences and psychosocial outcomes for children and adolescents. In fact, higher reported friendship quality can serve as a protective factor for adjustment problems if children have few friends and low peer acceptance (Waldrip,

Malcolm, and Jensen-Campbell, 2008). If individuals do not see themselves as similar to their friend, they are likely to report lower friendship quality (Linden-Andersen, Markiewicz, & Doyle, 2009), which may have significant implications for forming interventions. Therefore, investigation into the perceived quality of friendships may offer more insight into the potential protective functions and vulnerabilities children and adolescents experience in their friendships. Determining perceptions of the quality of the friendships is also important (Waldrip et al., 2008; You & Bellmore, 2012) in predicting future outcomes, as well as identifying potential areas for intervention.

Specifically, qualities such as help, aid, intimacy, security, companionship, conflict, and closeness emerge most consistently in descriptions of friendship (Berndt, 2004). Per findings by Bukowski, Hoza, and Boivin (1994) and subsequent work highlighting the importance of these factors on adjustment (Demir & Weitekemp, 2007; Sears & McAfee, 2017), the current study will examine qualities of closeness, companionship, security, conflict, and help. The groups outlined below have received little attention in the literature regarding the quality of their friendships, and thus little is known about the benefits of these relationships for each group and areas for intervention. While the literature is mixed regarding friendship qualities of high ability or gifted learners, those with ADHD have a well-documented history (both clinically and in the literature) of poorer friendship quality and interpersonal difficulty. However, little is known about children and adolescents who hold both identities (Foley Nicpon et al., 2010). Learning more about how each of these groups perceive their friendships in relation to one another can help clinicians and researchers develop a better understanding

of their interpersonal relationships, potentially protective identities, and areas for intervention to help improve long-term outcomes.

High Ability or Giftedness

Investigations into perceptions of friendship qualities for gifted learners began in the 1990s and continue to evolve today. High ability students may view themselves as better than or equal to their peers regarding social relationships and academic abilities (Field et al., 1998) and gifted students can benefit from perceived social support (Dunn, Putallaz, Sheppard, & Lindstrom, 1987). Shi, Li, and Zhang (2008) also found younger students reported higher self-concepts than older peers. Additionally, while non-gifted middle school students' general self-concept improved from ages 9-13, gifted students' self-ratings decreased during the same period (Shi et al., 2008). Self-perception ratings of gifted students are often attenuated by gender (Lee, Olszewski-Kubilius, & Turner Thomson, 2012; Shi et al., 2008; Preckel, Goetz, Pekrun, & Kleine, 2008).

Gifted students may experience boredom (Gallagher, Harradine, & Coleman, 1997), perform below their academic potential (Baker, Bridger, & Evans, 1998; ; Blaas, 2014; Emerick, 1992) and, in some cases, have social difficulty (Assouline, Colangelo, VanTassel-Baska, & Lupkowski-Shoplik, 2015; Colangelo, Assouline, & Gross, 2004; Cross, Coleman, & Stewart, 1993) when not sufficiently challenged to their ability level. However, these difficulties may improve when students are placed with peers of similar intellectual ability (Rogers, 2007; Vogl & Preckel, 2014) or experience academic subject acceleration (Lee et al., 2012).

Studies examining friendship qualities amongst high ability and gifted learners have yielded mixed results. For example, some have found high ability students report

lower degrees of friendship intimacy (Maysseless, 1993) and fewer positive friendship qualities (i.e., companionship, help, security, closeness; Schapiro, Schneider, Shore, Margison, & Udvari, 2009) with a best friend than average ability peers. Yet other researchers have found gifted students viewed their friendships as more close and intimate than non-gifted peers (Field et al., 1998) and were more likely to report more positive friendship qualities (Masden, Leung, Shore, Schneider, and Udvari, 2015). These contrasts in findings may be attributed to several factors, including a lack of consistency in measures of friendship. While many measures of friendship quality have overlapping concepts, each measure approaches “positive” and “negative” friendship qualities in slightly different ways, which may in turn affect reporting and results.

Attention-Deficit/Hyperactivity Disorder (ADHD)

The diagnosis of ADHD is marked by difficulties with inattention and/or hyperactivity or impulsivity (American Psychiatric Association, 2013). The three presentations of ADHD include Predominantly Inattentive Presentation, Predominantly Hyperactive/Impulsive Presentation, or Combined Presentation (a combination of difficulty with both inattention and hyperactivity/impulsivity). Individuals with Predominantly Inattentive Presentation present with concerns related to paying close attention to details, sustaining attention, listening, following through on tasks or instructions, losing necessary items, forgetfulness, or difficulty organizing tasks. Individuals with Predominantly Hyperactive Presentation present with concerns related to fidgeting or tapping hands and feet, leaving seat in situations when expected to remain seated, restlessness, playing or participating quietly in leisure activities, talking excessively, blurting out answers, waiting for a turn, or interrupting others. Individuals

with Combined Presentation present with symptoms of both inattention and hyperactivity (American Psychological Association, 2013).

Researchers have suggested individuals with ADHD are at increased risk for peer victimization (Humphrey et al., 2007), substance use (Realmuto et al., 2009), and peer rejection (Hoza et al., 2005b). The social skills of children and adolescents with ADHD are frequently rated below those of their peers by parents, peers, and teachers (Bagwell, Molina, Pelham, & Hoza, 2001; Hoza et al., 2004), and are significantly less likely to have reciprocated friendships (Gresham, MacMillan, Bocian, Ward, and Forness, 1998; Hoza et al., 2005b). Considering the interpersonal concerns related to aspects of the ADHD diagnosis, children and adolescents with ADHD may be less able to benefit from protections offered by close friendships (Humphrey et al., 2007).

Some researchers posit that girls and boys with ADHD demonstrate similar impairments in friendship and social skills (Hoza et al., 2005b; Normand et al., 2011). Still other researchers have reported girls with ADHD tend to rate relationships more positively than boys (Glass, Flory, & Hankin, 2012), and experience fewer negative social impacts than boys with ADHD (Mikami & Lorenzi, 2011).

Notably, children and adolescents with ADHD may overestimate their academic competence and social skills (Hoza et al., 2004), a phenomenon termed “positive illusory bias.” While children may perceive themselves to be as socially adept as their peers, parents and other raters often have reported children with ADHD to have much lower social competence than peers without a diagnosis (DeWolfe, Byrne, & Bawden, 2000; Owens & Hoza, 2003). However, some researchers have found positive illusory bias to

be more closely related to academic achievement level than ADHD symptomatology (Ehm, Merkt, Gawrilow, & Hasselhorn, 2014).

Twice-Exceptionality

The Reauthorization of Individuals with Disabilities Education Improvement Act (IDEA) was the first public policy acknowledgement of twice-exceptional students' unique needs (IDEA, 2004). The IDEA reauthorization provided the chance for twice-exceptional students to receive services commensurate with their peers who were not gifted but had similar disabilities. Despite the legislation, twice-exceptional children continue to face challenges in obtaining resources to accommodate their difficulties and bolster their gifts (Foley Nicpon et al., 2011). Twice-exceptional individuals with ADHD may experience significant difficulties with lower-order cognitive abilities, such as working memory and processing speed (Assouline, Foley Nicpon, & Whiteman, 2010; Foley Nicpon, Assouline, & Stinson, 2012). Impairments in these areas of functioning can lead to difficulties in many classroom situations when accommodations are lacking, with resulting potential performance below their capabilities (Foley Nicpon et al., 2011). In this sense, their true abilities can be masked by their difficulties. The most current definition indicates twice-exceptional individuals are those “who demonstrate the potential for high achievement or creative productivity in one or more domains [...] AND who manifest one or more disabilities as defined by federal or state eligibility” (Reis, Baum, & Burke, 2014, p. 222).

Within this encompassing twice-exceptional definition, diagnoses of ADHD, autism spectrum disorders, and specific learning disabilities have been most widely studied (Reis et al., 2014). Twice-exceptional individuals with ADHD were recruited for

the current study because the diagnostic criteria of ADHD do not include social deficits (as in autism spectrum disorders), which may disproportionately skew ratings of friendship quality. Notably, individuals with ADHD demonstrate similar symptomatology, regardless of IQ (Katusic et al., 2011). Several authors have suggested twice-exceptional individuals may not receive appropriate services, as their challenges and concerns do not precisely fit either exceptionality (Foley-Nicpon et al., 2010; Reis et al., 2014; Ronksley-Pavia, 2015). Additionally, twice-exceptional students with ADHD demonstrate the same behavior regulation challenges as their peers with ADHD (Katusic et al., 2011; Moon et al., 2001), but may have different expectations of their behavior in gifted compared to general education classrooms.

Compared to those with high ability or ADHD alone, a dearth of research exists addressing concerns for twice-exceptional individuals. Antshel and colleagues (2008) found twice-exceptional students with ADHD demonstrate greater impairments in social and academic functioning than gifted students without ADHD. A qualitative study of twice-exceptional learners revealed positive self-concept affected learning outcomes (Wang & Neihart, 2015). Moon and colleagues (2001) found twice-exceptional boys reported fewer friendships and required more assistance for emotional concerns than gifted boys without ADHD. Foley-Nicpon, Rickels, Assouline, and Richards (2012) noted lower happiness/satisfaction and self-esteem ratings among twice-exceptional students than high ability peers without ADHD. In this sense, twice-exceptional identities present an apparent paradox, as high ability and gifted learners benefit from more positive friendships and self-concepts, while those with ADHD have reported lower self-

perceptions of their social abilities and more interpersonal difficulty as rated by parents, teachers, and peers.

High ability or gifted children and adolescents are often compared to their peers of average ability (Litster & Roberts, 2011; Shi et al., 2008), individuals with ADHD are often compared to their peers without a diagnosis (Merrell & Wolfe, 1998; Hoza et al., 2005b), and twice-exceptional students are compared to high ability or gifted peers without a diagnosis (Antshel et al., 2008; Foley Nicpon et al., 2012). However, few researchers have compared the four groups (high ability or achieving, twice-exceptional, ADHD alone, or typically-developing) to one another in their regards to friendship quality (Moon et al., 2001). The current study will examine the friendship qualities of children and adolescents who are high ability or achieving, diagnosed with ADHD, twice-exceptional, and typically-developing to explore how twice-exceptional students' experiences do or do not align with either exceptionality. Though gifted learners report greater perceived social support in their friendships, and learners with ADHD experience less social support, perceptions of friendship quality for twice-exceptional remains unknown. Considering individuals who see themselves as similar to their friend report higher friendship quality (Linden-Anderson et al., 2009), investigating these friendship perspectives can help develop awareness of how best to help students thrive within the systems where they grow and develop (Bronfenbrenner, 1979).

Definitions

Friendship Quality

Friendship quality is defined as an individual's perception of positive (e.g., intimacy, trust, aid) and negative (e.g., conflict, rivalry, dominance) aspects in his or her

relationship with another individual (Berndt, 2002). Friendship quality is one of many factors that may influence an individual's friendship or relationships with others (Berndt, 2002; Waldrip et al., 2008). In the current study, friendship qualities to be explored include companionship, conflict, security, help, and closeness.

High Ability or Achieving

The definitions of high ability and high achieving differ greatly, and no universal criteria exist to identify high ability or achieving individuals. The term is often used interchangeably with “gifted” and “talented” within the research literature. Gagné's (2008) definition of giftedness includes individuals who demonstrate outstanding natural ability (i.e., falls within the top 10% of performance) in at least one area compared to peers of the same age. This definition encompasses many types of giftedness, including athletic, artistic, and academic talents (Gagne, 2008). However, schools rely on district definitions of giftedness for students to qualify for gifted programming. In the state of Iowa, gifted students are those who have outstanding abilities and have high performance potential while additionally requiring services beyond those offered in regular classrooms to meet their needs (Iowa Code, 1989). Students are identified based on achievement and/or potential ability in creative thinking, general intellectual ability, specific ability aptitude, leadership, or visual and performing arts ability (Iowa Code, 1989).

Great heterogeneity exists among districts' definitions as well as among researchers' definitions of giftedness. For the purposes of the current study, giftedness will be defined as standardized assessment (either cognitive ability or achievement) scores at or above the 91st percentile. Scores at this level are classified as “Superior” on standardized ability measures and represent a level of performance greater than one

standard deviation above the mean (Wechsler, 2003). The 91st percentile has been used as a consistent method of identifying high ability students in the literature (Antshel et al., 2008; Assouline et al., 2010; Foley Nicpon et al., 2012; Lovecky & Silverman, 1998). While high ability and high achievement are not synonymous, scores from both concepts are used in the identification of gifted students. Additionally, achievement scores at or above the 91st percentile will also be classified as high achievement, and have been used to assist in identification of gifted students in the literature (Hannah & Shore, 2008).

Twice-Exceptional

Reis and colleagues (2014) defined twice-exceptional children and adolescents as individuals who demonstrate potential for high achievement or creativity and also meet criteria for one or more state- or federally-defined disabilities, such as those related to learning, emotional, physical, sensory, and/or developmental abilities. In the current study, twice-exceptional students are defined as those who have obtained standardized assessment scores at or above the 91st percentile *and* have received a diagnosis of ADHD (any presentation) by a doctor, psychologist or other qualified mental health provider.

Typically-Developing

For the current study, typically-developing students include those who have not received a diagnosis of ADHD or any other mental health disorder, and have obtained scores between the “average” and “high average” range on standardized assessments (25th to 90th percentile).

CHAPTER 2: LITERATURE REVIEW

In the following sections, I will begin by outlining the research findings related to friendship quality and its implications for young adolescents. This section will include a discussion of the importance of having friends in early adolescence, as well as positive and negative features of friendship for typically-developing adolescents. Next, I will discuss research findings for each of the specific populations described in the previous chapter (i.e., high ability or achieving, ADHD, and twice-exceptional) related to friendships and self-perceptions of friendship quality, when available.

Friendship Qualities

Early researchers looking to understand friendships amongst children and adolescents began with the degree to which friends are similar in areas such as economic backgrounds, IQ, and physical characteristics (Jenkins, 1931). However, these methods examining similarities were criticized as overly simplistic and “reduces the relationship to a mechanistic patterning and tells us virtually nothing about its dynamics” (Potashin, 1946, p. 49) when attempting to understand interpersonal relationships. Additionally, Sullivan (1953) highlighted the dynamic nature, rather than degree of similarity, of early friendship:

But if you will look very closely at one of your children when he finally finds a chum—somewhere between eight-and-a-half and ten—you will discover something very different in the relation—namely, that your child begins to develop a real sensitivity to what matters to another person. And this is not in the sense of “what should I do to get what I want,” but instead “what should I do to

contribute to the happiness or to support the prestige and feeling of worth-whileness of my chum.” (p. 245)

Following these revelations, researchers began utilizing sociometric ratings, asking children to rate the degree to which they would prefer others as friends or non-friends. Potashin (1946) conducted one of the earliest sociometric studies of friendship by asking students to rank other children as friends. Potashin (1946) discovered students who have a mutual friend, or someone who also rated the child as a first-choice friend, experience more acceptance from their classmates than those who do not have a mutual first-choice friend. Additionally, those who did not have a mutual friend were less sought out by their classmates (Potashin, 1946). A particularly interesting finding in this early exploration was children who had lower acceptance attempted to select peers who were most popular in the class, but with whom they had little in common. While mutual friends were observed to talk openly together, be more relaxed, and have longer conversations, less-accepted children appeared in awe of social partners and attempted to either impress their peers or agree to every suggestion (Potashin, 1946). Having a mutual friend offered social benefits, while those without a mutual friend appeared to have more difficulty navigating social systems.

With a preliminary understanding that friendships provide adaptive benefits for children and adolescents, researchers next began exploring what defines a friendship. In his early discussions of friendship, Sullivan (1953) also acknowledged several positive aspects of friendship quality, such as self-disclosure, mutually-satisfying interactions, and awareness of what others may need. Berndt (2004) outlines how researchers attempting to define intimacy in friendships eventually returned to Sullivan’s (1953) initial

proposition that children expect their friends to provide help and support, share, express acceptance, enhance self-esteem, and participate in mutually-enjoyed play or activities. However, these friendship qualities are not inherent expectations that remain static across the lifespan.

Bigelow (1977) provided initial evidence for the idea that expectations of friendship change with age. For example, younger children have expectations that a friend shares common activities, older children's friendships focus on moral values, and adolescents and adults expect friends to understand, self-disclose, and demonstrate empathic responses (Bigelow, 1977). Similarly, Reisman and Shorr (1978) found in a cross-sectional analysis of friendship expectations younger children believed friends to be partners in entertainment, while older children and adults expected friends to share more about their lives and problems. Recent studies, in contrast, have moved away from determining specific developmental stages and moved toward exploring individual differences in friendship quality (Berndt, 2004).

Bigelow and La Gaipa (1975) identified common themes of children's friendship beliefs by asking them to write about friendship and its meaning. Participants indicated help received and given to someone, shared common activities, stimulation value, acceptance, loyalty and commitment, and intimacy potential were important aspects of friendship, amongst others (Bigelow & La Gaipa, 1975). Of interest, intimacy and disclosure were not listed by participants as important factors until early adolescence, and then were infrequently endorsed (Bigelow & La Gaipa, 1975), which lends support to Bigelow (1977) and Sullivan's (1953) hypotheses that expectations of friendship change

with age. Taking these findings into consideration, self-report measures specific to some aspects of intimacy may not be most appropriate for pre- and early adolescents.

A discussion of the pervasiveness of friendship and the above-mentioned qualities across cultures is also warranted. Verkuyten and Masson (1996) found individuals from collectivistic cultures reported fewer but closer friendships, were less intimate with others than a best friend, and demonstrated greater sensitivity to their friends. Participants from individualistic cultures, however, demonstrated less sensitivity to a best friend and were more reserved with others (Verkuyten & Masson, 1996). In a study of late-elementary Arab- and Jewish-identified students, researchers found better overall reported peer relationships amongst boys and Arab-identified students, which was considered a collectivistic culture by the researchers (Scharf & Hertz-Lazarowitz, 2003). Girls and Jewish-identified students (considered more individualistic) had higher best-friendship quality (Scharf & Hertz-Lazarowitz, 2003). While these studies provided initial information on how cultures may differ in views of friendship, the comparison of collectivistic to individualistic societies has been criticized as overly simplistic (Voronov & Singer, 2002).

Gummerum and Keller (2008) instead examined ideas about friendship amongst samples from China, Russia, Germany, and Iceland to determine if defining qualities of friendship established in western culture also exist in other cultures. Researchers found largely similar understandings and ideas about friendship across cultures, with older participants having more intricate views of friendship than younger participants (Gummerum & Keller, 2008). However, in China and Russia, close friends are expected to support and help one another despite criticism or conflict (Gummerum & Keller,

2008). Additionally, children in China and Russia experience expectations of mutual responsibility and emotional dependence, more psychological functions of friends, than other cultures. The researchers hypothesize that these expectations create lived, cultural concepts of intimate relationships, rather than ideas created from social experiences or from media, as in other cultures (Gummerum & Keller, 2008). These findings together suggest that ideas about friendship may have similarities across cultures, but emphasis on particular aspects of friendship quality may differ as a function of cultural identities.

Positive Friendship Qualities

Positive friendship qualities received the most attention in research literature for many years (Berndt, 2004). These qualities have included the concepts explored by Bigelow and La Gaipa (1975), or variations of these areas. Many scholars have believed the core components of friendships to be companionship, association, and play (Buhrmester & Furman, 1987; Weiss, 1974). Additionally, children and adolescents themselves describe play and companionship as friendship's defining features (Bigelow, 1977). Individuals who perceived more companionship with a best friend may also experience increases in self-reported happiness (Demir & Weitekamp, 2007). Companionship ratings have also been observed to moderately to strongly correspond between best friends, as opposed to other qualities of friendship (Simpkins, Parke, Flyr, & Wild, 2006).

As observed in Bigelow and La Gaipa (1975), help and aid have also emerged as important positive features of friendships. Friends are commonly believed to provide mutual help and assistance, regardless of age (Berndt, 2004). In addition, Davies (1984) posits friendship serves to protect children and adolescents against victimization from

peers. Researchers have observed children and adolescents are more likely to seek help and assistance from individuals they identify as friends (Sears & McAfee, 2017), and measures of help and aid are included on multiple measures of friendship quality to determine the degree to which individuals feel they can rely on someone for these purposes (Bukowski et al., 1994; Grotzinger & Crick, 1996)

Several researchers have suggested friendship for children and adolescents is based on beliefs that their friendships are secure and can endure through conflicts, and that friends can be trusted (Berndt, 2004; Davies, 1984). Researchers have found higher levels of security in friendships for preadolescents positively affected anxiety reduction (Wood, Bukowski, & Santo, 2017). Additionally, children and preadolescents have been observed to behave more freely and openly in the presence of friends with whom they feel secure (Zarbatany, Van Brunschot, Meadows, & Pepper, 1996). In other studies, children's belief that a friend could be trusted to keep promises influenced how other classmates perceived them (Chen, 2014).

Children and adolescents, as well as investigators, have noted for decades the belief that friendships offer opportunities for individuals to feel accepted and connected to another person (Bukowski et al., 1994; Sullivan, 1953). Researchers have shown engaging in problem-talk and providing engaged responses, letting a peer know that they are heard, result in increased perceptions of closeness amongst friends (Rose, Glick, Smith, & Schwartz-Mette, 2016). As Sullivan (1953) mentioned in his early work, children and adolescents want to know that they are of value to another person.

Negative Friendship Qualities

Referencing the work of Sullivan (1953), Berndt (2004) suggests individuals driven by self-interests who try to interact with one another will undoubtedly experience conflict. Conflict has been significantly correlated with the continuation of friendships (Berndt, 1982), and most specifically to the dissolution of friendships when it exists at high levels (Bukowski et al., 1994). Conflict measures often explore the frequency of which individuals get into fights or arguments, annoy one another, or disagree (Bukowski et al., 1994). Notably, ratings of negative aspects of friendship have not shown strong relationships to positive qualities in the same friendship (Berndt, 2004), suggesting positive and negative qualities in a friendship are perceived independently of one another. The way children respond to and deal with conflict in their friendships has also been shown to predict the number and quality of children's friendships (Rose & Asher, 1999).

Conflict may not always represent a negative aspect of friendship, as friendships have been observed to be more meaningful when conflict can be effectively navigated and resolved (Johnson & Johnson, 1996). Higher levels of conflict in friendships also have been linked to less school success for young adolescents (Rabaglietti & Ciairano, 2008); however, perceived peer support was observed to moderate the negative effects of conflict.

Benefits of Friendship

As a better understanding was developed of what comprises a friendship, researchers have since established several benefits typically-developing children and adolescents receive from having friends. Some findings have suggested having a high-quality friendship can provide a way to develop positive contact with other peers,

creating a small network of positive relationships (Waldrip et al., 2008). This network widens over time and results in more positive perceptions of the adolescent (Berndt, 2004). For instance, Stocker (1994) found an inverse relationship between perceived warmth in a friendship and behavioral conduct problems. Higher friendship quality has been associated with less loneliness and more positive self-regard (Parker & Asher, 1993) and increased engagement at school (Berndt & Keefe, 1995).

Researchers have also explored the effects of friendship on academic achievement and school performance. In one study, students' academic achievement (specifically, grades) changed over time to be more like that of their friend as friendship connections grew (Gremmen, Dijkstra, Steglich, & Veenstra, 2017). Similarly, Gallardo, Barrasta, and Guevara-Viejo (2016) found academic achievement was positively predicted by degree of peer acceptance, especially in early adolescence. Carroll, Houghton, and Lynn (2013) highlight while peer acceptance helps students enter social groups at school, similarly to Berndt's (2004) findings, close friendships can provide emotional support and connectedness. Carroll and colleagues (2013) also comment, "However [...] it is not just the presence or number of friends, but the quality and personality characteristics of friends that contribute to students' adjustment" (p. 70).

Waldrip and colleagues (2008) found individuals with greater levels of teacher-rated difficulties also had fewer friends and lower reported friendship quality and acceptance. However, having one friend with higher reported friendship quality served as a protective factor against maladjustment (Waldrip et al., 2008). Similarly, Rubin and colleagues (2004) found girls were less likely to be rejected or victimized if they had at least one high-quality friendship. Put in other words, individuals without many friends

could still experience benefits of friendship by having at least one friend with high reported friendship quality.

Lastly, You and Bellmore (2012) conducted a study examining relational peer victimization of adolescents and the effects friendship quality may have on these outcomes. You and Bellmore (2012) found individuals who were victimized demonstrated more internalizing and externalizing behaviors; however, quality of an individual's best friendship mediated these relationships. Specifically, individuals who were victimized also had more conflict in their best friendship and demonstrated more internalizing and externalizing behavior. Perceived help was also found to mediate the relationship between peer victimization and internalizing behaviors (You & Bellmore, 2012). These findings suggest perceptions of help and conflict between friends may mediate stressful negative experiences in adolescence.

Key Findings. Over the last several decades, researchers have developed a better understanding of components that contribute to successful close friendships. These components include both positive (e.g., intimacy, companionship, security, closeness, help) and negative (e.g., conflict, competition) aspects of friendship. Children and adolescents with high-quality friendships may experience less loneliness (Parker & Asher, 1993) and better academic outcomes (Gremmen et al., 2017). Notably, and contrary to historical and popular beliefs, research suggests that it is the quality of friendships, rather than the quantity, that can provide protective benefits for children and adolescents (Rubin, 2004; Waldrip et al., 2008). As demonstrated from the above studies, there are multiple social and psychological advantages to be gained from having high-quality friendships. However, these benefits may not be realized for populations that have

demonstrated poorer friendship qualities, such as early adolescents with high ability, ADHD, or both exceptionalities.

ADHD

The child and adolescent friendship literature regarding those with ADHD, much like friendship literature on the whole, has evolved from the observation of social interactions between children, to perceptions of peers, to a focus on self-perceived friendship quality. Data have been collected through multiple different means since friendship amongst children and adolescents with ADHD has been explored from multiple angles.

Observational Data. Though not the first researchers to examine social interactions in children, Merrell and Wolfe (1998) were among the first to compare social skills in children with ADHD using a quantitative measure. They selected 190 preschool and kindergarten students from the norming group for the Preschool and Kindergarten Behavior Scales (PKBS; Merrell, 1994) based on age and sex. The study included two groups of 95 students, one consisting of students rated in the top 5% on the PKBS by teachers (ADHD group), and the other consisting of age- and sex-matched peers with PKBS scores within the normal range (non-ADHD group). Within the group with ADHD, 13 (13.7%) had developmental delays, compared to 22 (23.5%) children in the non-ADHD group. The PKBS was given to teachers with instructions to complete the form to reflect their perceptions of children's behavior. Subscale scores for social skills were then analyzed, which included Social Cooperation, Social Interaction, and Social Independence.

Significant differences were found between groups on all three subscales ($p < .001$), with large effect sizes for the subscales (Cooperation = 2.32, Interaction = 1.04, Independence = 1.1) and total score (Total = 1.66; Merrell & Wolfe, 1998). Social Cooperation was best able to distinguish the ADHD and non-ADHD groups ($r = .99$, $p < .001$). Fifty-nine (62%) of children in the ADHD group and 11 (12%) of the non-ADHD group demonstrated social skills deficits 1.5 standard deviations below the mean, which suggests that children with ADHD were significantly different from their peers in the way they interacted with other children. Merrell and Wolfe's (1998) findings highlighted the social skills deficits children with ADHD may experience when compared to and interacting with their same-age peers. However, the researchers in this study did not require children to have a previous diagnosis of ADHD, but rather identified students as *likely* to have ADHD based on their high PKBS scores. In addition, the study relied heavily on teacher ratings, a developmentally appropriate decision for classifying preschool and kindergarten students. This method may have limited generalization to those with a confirmed diagnosis of ADHD.

Focusing on moving research out of the laboratory and toward longer-term measurement, Realmuto et al. (2009) explored the psychosocial outcomes of an ADHD diagnosis in a community sample over the course of five years. Participants ($N=212$) were identified as having ADHD ($n=119$) or no diagnosis ($n=93$) and were assessed between ages seven and nine, again between ages eleven and 15, and lastly between ages 12 and 16. Children with ADHD were separated further into four groups using the Behavioral Assessment System for Children and Adolescents (Reynolds & Kamhaus, 1992) Teacher Form's Externalizing Problems subscale across time, including "persisters

(n=27), desisters (n=15), escalators (n=9), resisters (n=42), and others (n=26)” (Realmuto et al., 2009, p. 175). Persisters consisted of children who maintained BASC t-scores greater than 60 at both measurement times. Resisters maintained scores less than 55 at both measurement times. Desisters demonstrated initial t-scores greater than 60 and less than 55 at time 2, while escalators had initial scores less than 55 and greater than 60 at time 2. Parents also completed the BASC Parent Form (Reynolds & Kamphaus, 1992), from which the Leadership and Social Skills scales were used to determine interpersonal problems. At time 3, participants were given the Adolescent Diagnostic Interview (Winters & Henly, 1993) to determine comorbidities and outcomes in addition to questions from the DSM-IV related to substance use and conduct disorder to measure self-reported delinquency.

In the Realmuto and colleagues (2009) study, participants in the ADHD group who had a lower socioeconomic status were less likely to be eligible to continue the study than those from a higher status ($p < .05$). Participants with ADHD had more severe interpersonal problems than participants without ADHD ($p < .001$). Participants in the ADHD group also endorsed greater amounts of delinquent behaviors ($p < .001$), and had worse reported outcomes on psychosocial functioning variables, such as more physical health problems and more relationship difficulty, than those without ADHD. Children identified with ADHD also were at greater risk for drug use and other psychosocial difficulties than those without ADHD; however, the authors posit individuals who do not demonstrate externalizing behaviors may not be at the same risk. Of interest, no main effects of gender were found in this study (Realmuto et al., 2009). No significant gender effects may have been due to a small proportion of females to males (4.1:1) observed in

this sample; however, this gender proportion is reflective of that observed in the population of individuals with ADHD (American Psychological Association, 2013). Realmuto and colleagues (2009) emphasized the longer-term effects of an ADHD diagnosis on social relationships into adolescence.

Moving toward understanding how children's own perceptions of their performance may affect communication, Hoza, Waschbusch, Pelham, Molina, and Milich (2000) sought to assess behavior, self-evaluations, and attributions to social success and failure of boys with and without ADHD. Participants consisted of 120 boys with ADHD and 65 without the diagnosis (ages 7.4 to 12.7 years, $M=9.6$), all of whom had IQ scores greater than or equal to 78. The children completed a dyadic "get-acquainted" task in a laboratory setting, during which they were instructed to convince another child (a confederate) to like him and to convince the child to go to a camp. The children experienced three interactions: success/failure manipulation, neutral, and follow-up. The child confederate was instructed to act positively by smiling warmly and maintaining eye contact, or negatively by not greeting the child participant and avoiding eye contact. Research assistants provided either positive or negative feedback to the child participant on his ability to get the confederate to come to camp the next year.

Trained observers coded children's interactions on Likert scales for "friendliness, effort, persuasiveness, enthusiasm, frustration, responsiveness, negative self-statements, conversation relevance, persistence, effectiveness, self-disclosure, positive emotions, sad affect, helplessness, and anger" (Hoza et al., 2000, pp. 436-437). Children were also asked expectancy questions about their performance (e.g., "How well do you think you will do talking him into coming to camp?" p. 437) and completed self-evaluation

measures to assess the children's views of their ability to get the confederate to like him and come to camp. Children also indicated the degree to which they believed ability, task difficulty, effort, and luck contributed to their success or failure (Hoza et al., 2000).

Researchers discovered boys with ADHD had less objectively effective interactions than boys without ADHD ($p < .01$), yet demonstrated less frustration and helplessness ($p < .05$; Hoza et al., 2000). Boys with ADHD had significantly more positive self-ratings of their abilities than boys without ADHD ($p < .01$). Overall, all children in the study were more likely to attribute success to internal phenomena and failure to more external phenomena. However, boys with ADHD who experienced success/failure before failure/success were more likely to believe that the task was easy, while boys with ADHD who experienced failure/success first were more likely to attribute success to luck. The findings indicate boys with ADHD made more external attributions to performance than boys without ADHD (Hoza et al., 2000). This study also was monumental in its use of self-report ratings of children's own behavior and success, which can provide clues related to self-efficacy and self-concept. Hoza and colleague's (2000) emphasis on self-statements and beliefs was important in identifying how children perceived themselves as social communicators.

Sociometric Data. Blachman and Hinshaw (2002) focused specifically on patterns of friendship amongst girls. Researchers compared those with an ADHD diagnosis ($n=140$) to those without a diagnosis ($n=88$) between the ages of 6 and 12 years. Researchers recruited girls who were participating in a 5-week summer camp. All participants completed the Verbal IQ subtests from the Wechsler Intelligence Scale for Children, 3rd edition (WISC-III; Wechsler, 1991), the Friendship Qualities Measure

(Grotper & Crick, 1996), and various sociometric nominations at Weeks 1, 3, and 5 of camp. Sociometric nominations were used to determine patterns of reciprocal friend nominations amongst girls both with and without ADHD. To confirm ADHD diagnosis, researchers required evaluations of participants using the Diagnostic Interview Schedule for Children, 4th Edition (DISC-IV; Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000). Participants who were identified as having ADHD were then separated into groups based on ADHD presentation (i.e., Inattentive, Hyperactive/Impulsive, and Combined). Girls who met criteria for Hyperactive/Impulsive presentation were not included in the study to maximize statistical power.

Blachman and Hinshaw (2002) found girls in the ADHD group were more likely to have no friends at the end of camp [$\chi^2(1, n=220) = 6.42, p < .01$] and to have fewer mutual friends than girls without ADHD [$\chi^2(1, n=220) = 11.62, p < .001$]. Only 29% of the girls with ADHD reported having multiple friendships at the end of camp, while 52% of girls without ADHD had multiple friends. Girls with ADHD also endorsed higher levels of conflict [$F(2, 154) = 6.64, p < .01$] and relational aggression in their friendship [$F(2, 154) = 9.44, p < .001$] than girls without a diagnosis. Of note, self-reports of positive relationship features in friendships, such as companionship, validation, and support, did not differ amongst girls with and without ADHD (Blachman & Hinshaw, 2002).

Hoza and colleagues (2005b) exacted a different approach to assessing friendships in young children. The researchers explored various components of friendship that may be affected in children with ADHD. Their study included 165 children with ADHD (35 girls) and 1,298 classmates of the participants without ADHD (272 girls) between the

ages of seven and ten years. Researchers collected sociometric data by asking children to circle and order the names of their best friends in the class. Children were then provided with a new list to circle names of people with whom they did not want to be friends. A sociometric rating scale was also administered, on which children were asked to use a five-point Likert rating scale indicating degree of preference for each of their classmates. All rating scale scores were converted to z-scores for each child to create “acceptance” and “rejection” categories, which were also combined to create an additional “social impact” category.

Researchers found children with ADHD in the study had greater social impacts (Cohen’s $d = -1.17$; $p < .001$), were less preferred by peers (Cohen’s $d = -0.15$, $p < .001$; Hoza et al., 2005b), and had significantly fewer dyadic friendships than children without ADHD ($\chi^2(2, N=304) = 21.5$, $p < .01$). While 14% of participants without ADHD were rejected by their peers, more than half (52%) of participants with ADHD were rejected by peers (Hoza et al., 2005b). Hoza and colleagues’ use of sociometric data provided a way for children to rate their peers and to gain insight into children’s perceptions of peers with ADHD, which appear to be less positive than their peers without a diagnosis. They established that children with ADHD have a greater social impact in their classrooms, yet in a negative manner and with fewer friendships. The researchers required participants to have a pre-existing ADHD diagnosis, which stood in contrast to Merrell and Wolfe (1998). However, Hoza and colleagues assessed social relationships from a classroom perspective in their rating system, rather than gaining insight into the children’s views of their own friendship skills.

Building on Hoza and colleagues' (2005b) methods, Mikami and Lorenzi (2011) also utilized sociometric ratings to study the effects of gender, ADHD, and conduct problems on social relationships. Participants included 63 children with ADHD (21 girls) and 62 children without ADHD (20 girls) between the ages of 6 and 10. Within the ADHD group, 47 were diagnosed with Combined Type, and 16 were diagnosed with Predominantly Inattentive Type, yet no differences were found between the subtypes and they were collapsed. Quantitative measures were also used; children's teachers completed the Dishion Social Acceptance Scale (Dishion & Kavanagh, 2003). Parents completed the Quality of Play Questionnaire—Conflict Subscale (Frankel & Mintz, 2011). Children with conduct problems were identified from the Teacher Report Form's Rule Breaking Behavior (Achenbach, 1991) subscale and from behavior coding by trained observers. Children participated in play groups with same-age peers, which consisted of a structured activity for ten minutes and free play with toys for 30 minutes. Children then circled the names of playmates they liked and did not like on a roster.

Mikami and Lorenzi (2011) found children with ADHD exhibited poorer social functioning than children without ADHD on parent, teacher, and peer reports. Children with ADHD had more parent-reported conflict during playdates, more teacher-rated peer rejection, and less teacher-rated social acceptance. Children with ADHD also received fewer positive sociometric nominations from their peers than children without a diagnosis. While Mikami and Lorenzi did not find any significant effects for gender and diagnosis on peer functioning, conduct problems for girls were positively correlated with conflict ($\beta = .54, p < .01$). Conduct problems for girls were also positively related to teacher reports of peer rejection ($\beta = .67, p < .01$). The researchers did not find any

significant difference in the impact of diagnosis on conduct problems. Lastly, boys with ADHD had fewer positive friend nominations than other children ($\beta = .20, p < .05$). The nominations of girls with ADHD, however, were not affected in the same way, suggesting that girls with ADHD experienced less of a social impact than boys (Mikami & Lorenzi, 2011). This study was one of the first to include gender as a variable impacting social relationships in addition to the effects of an ADHD diagnosis. In addition, Mikami and Lorenzi (2011) used teacher, parent, and peer reports in their analysis, rather than only sociometric data. However, this study did not directly investigate children's own views of their friendships.

Self-Perceptions of Friendship. While Demaray and Elliott (2001) did not use a friendship-specific measure, their quantitative work established connections between perceived social support and other variables in a child's life. Demaray and Elliot (2001) studied perceptions of social support from peers and adults in boys with and without characteristics of ADHD (N=94; with characteristics n=48; without characteristics n=46). Participants in the "with characteristics" group were also identified as having "extreme ADHD characteristics" (Demaray & Elliot, 2001, p. 75) if their cutoff scores on the ADHD measure were above an age-appropriate threshold (n=27). Children completed the Student Social Support Scale (SSSS; Nolten, 1994), Social Skills Rating System (SSRS; Gresham & Elliott, 1990), and the Student Self-Concept Scale (SSCS; Gresham, Elliott, & Evans-Fernandez, 1993). Teachers and parents completed the Attention-Deficit/Hyperactivity-IV Rating Scale (DuPaul et al., 1997), Social Support Questionnaire for Teachers and Social Support Questionnaire for Parents, which were developed for the study. ADHD characteristic classifications were determined based on

teacher reports from the Inattention Overactivity with Aggression on the Conners' Teacher Rating Scale (Loney & Milich, 1982).

The researchers found children with ADHD characteristics reported less social support than those without characteristics on the SSSS ($t[92] = -2.49, p = .015$); however, no significant difference was observed on self-reported importance of social support (Demaray & Elliot, 2001). The extreme ADHD characteristics group reported significantly less social support from classmates ($p = .002$) and close friends ($p = .04$) than other students. The relationship between teacher- and self-reported social skills was weaker for the ADHD characteristics group ($r = -.07$) than for the group without characteristics ($r = .21$). Lastly, the relationship between social support and academic competence for the entire sample was statistically significant. For children without ADHD, perceived support from a close friend was significantly correlated with self-reports of academic competence ($r = .35, p < .01$; Demaray & Elliot, 2001). This study established a positive relationship between perceived social support and academic self-perceptions in children with ADHD. While the study did not require participants to have an ADHD diagnosis prior to participation, researchers utilized validated and empirically-supported quantitative measures in their exploration of the impact of social support on children with and without ADHD.

Friendship-Specific Self-Report Measures. The studies detailed above often utilized quantitative measures of social skills, friendship, and social support, yet none incorporated detailed measures of friendship qualities. Heiman (2005) explored perceptions of friendship for children with ($n=39$; 8 girls) and without ADHD ($n=17$; 5 girls) in mainstream classrooms using a friendship quality-specific measure, the

Friendship Qualities Questionnaire (Heiman, 1995). Children also completed the Loneliness Questionnaire (Asher, Parkhurst, Hymel, & Williams, 1990). Participants ranged in age from 7-12 years ($M=10.7$, $SD=1.57$). Those in the control group did not meet ADHD criteria on parent or teacher reports. Parents completed the adult forms of the above measures to assess caregiver perceptions of the children's loneliness and quality of friendships.

Significant differences were found between the ADHD and non-ADHD groups on self-reported aspects of close friendship ($\chi^2(4) = 14.75$; $p = .05$). While children without ADHD believed close friends were emotionally supportive and partners to self-disclosure, children with ADHD viewed close friends as partners in fun and entertainment. Children with ADHD met with friends at school and on the playground, while more children without ADHD endorsed meeting friends at their homes ($\chi^2(4) = 16.52$, $p < .01$). However, no differences were observed between groups when asked how to make friends. Adults viewed children with ADHD as more lonely than children without ADHD ($p < .001$), but no difference was found on self-reported perceived loneliness of children with and without a diagnosis (Heiman, 2005). Through its use of a friendship quality-specific measure, this study outlined what components of friendship children with ADHD perceived differently than their peers.

Glass and colleagues (2012) explored self-perceptions in even greater depth than previous researchers. Their research investigated the potential relationship between adolescents' ADHD symptoms and close friendship quality, but researchers were also interested in whether severity of ADHD symptoms affected relationship ratings of adolescents and their friends. Researchers sought to determine whether adolescents' own

perceptions were aligned with adult ratings of their social skills. The study included 41 adolescents and their close, same-sex friends between the ages of 11 and 17. Twenty-four (58%) of the dyads were female. Parents completed the ADHD Rating Scale-IV (DuPaul, Power, Anastopoulos, & Reid, 1998), the Impairment Rating Scale (Fabiano et al., 2006) and a clinical structured interview. Adolescents and their friends completed the Network of Relationships Inventory (Furman, 1998), which included ratings of reliable alliance, companionship, affection, intimacy, nurturance, admiration, instrumental aid, and support. Teachers completed a measure of social acceptance and rejection created for this study. Adolescents were divided into groups for analysis based on the ADHD symptoms reported on the ADHD Rating Scale-IV: inattention, hyperactivity/impulsivity, and total ADHD.

Glass and colleagues (2012) found hyperactivity/impulsivity ($r = .42, p < .01$), inattention ($r = .35, p < .05$), and total ADHD ($r = .41, p < .01$) were positively related to positive self-ratings of friendship quality. Hyperactivity/impulsivity ($r = .27$) and total ADHD ($r = .28$) were moderately correlated with positive peer-rated friendship quality ($p < .01$). These findings suggest peers rated friends with greater ADHD symptomatology more positively than children with less symptomatology. However, ADHD symptoms were not significantly correlated with negative friendship quality reports from adolescents or their friends. Female dyads in the study provided higher friendship quality ratings ($p < .05$) than male dyads. Symptoms of inattention, hyperactivity/impulsivity, and total ADHD were positively related to positive self-reported friendship quality, and symptoms of inattention and total ADHD were positively related to friend-reported friendship quality (Glass et al., 2012).

Positive Illusory Bias. Glass and colleagues (2012) also assessed for the presence of positive illusory bias, or the tendency for individuals to rate their own skills or abilities more positively than others rate them. They found ADHD symptoms correlated positively with teacher reports of peer rejection ($r = .40, p = .06$) and parent-rated social difficulty ($r = .78, p < .01$), suggesting parents and teachers reported rejection and impairment in friendships for adolescents with ADHD. The adolescents and their friends, however, reported multiple positive qualities to the friendships; in fact, ADHD symptomatology was not correlated with negative peer- or self-rated friendship quality (Glass et al., 2012). The study highlighted the potential presence of positive illusory bias, but the findings may also be cause to question the validity of parent and teacher ratings. While parents and teachers reported social deficits for participants, the participants themselves, as well as their friends, did not report the same difficulty.

Building on the work of Glass and colleagues (2012), Normand et al. (2013) sought to explore differences between children with and without ADHD through changes in their perceptions and actions within friendships. Researchers studied 133 children (87 with ADHD, 46 without ADHD) between the ages of 7 and 13 years, as well as one best friend of the children. The sample was comprised mostly of boys (76%), and most participants were White. Participants attended a session with their best friend, during which they completed self-report measures of friendship and were observed by trained research assistants during three structured tasks. Parents and teachers completed the Conners' Parent and Teacher Rating Scales-Revised Long Form (Conners, Sitarenios, Parker, & Epstein, 1998a, 1998b) to ascertain ADHD diagnoses, while children completed friendship nominations and the Friendship Qualities Measure (Grottpeter &

Crick, 1996). Participants also completed the Car-Race Task (Fonzi, Schneider, Tani, & Tomada, 1997; Normand et al., 2011), in which the goal was to beat the opponent in transporting blocks across the table in small cars, The Card-Sharing Task (Normand et al., 2011), which required children to select five cards both friends liked and had to decide how to share the cards, and the Game-Choice Task (Normand et al., 2011), in which the friendship dyad decided which board game to play together at the end of session. The children completed the activities and measures twice, once at the initial session and again at a six-month follow-up.

Results from the study indicated a significant difference in friendship stability between children with ADHD and those without the diagnosis (Normand et al., 2013). Children with ADHD were less likely to maintain friendships over the course of six months ($\chi^2(1,333) = 5.27; p = 0.02$). Nearly 25% of children with ADHD no longer had reciprocal friendships with their selected best friend at the six-month follow-up, while approximately 9% of controls no longer had reciprocal friendship. Children with ADHD also reported less positive and more negative aspects of friendship. Similarly, the best friends of children with ADHD reported less favorable and more negative aspects of their friendships. In contrast, the pattern was reversed for friend pairs without ADHD (Normand et al., 2013).

While children with ADHD experienced a decrease in their reported satisfaction with their friendships, children without ADHD reported an increase in their friendship satisfaction (Normand et al., 2013). In addition, children with ADHD had more insensitive, self-focused proposals and were less likely to ask for their friends' preferences in the Card-Sharing task. This pattern was observed to increase in frequency

over the course of six months. While this study had different findings than Glass and colleagues (2012), the researchers used more detailed questionnaires in the methods to generate richer results about friendship qualities amongst children with ADHD.

Participants in the Normand and colleagues (2013) study were also younger (7-13 years old) than those in the Glass and colleagues (2012) study (11-17 years old), which could suggest that friendships at younger ages are not as stable or differ in their quality.

Key Findings. In summary, past work exploring friendship qualities for children and adolescents with ADHD began with parent and teacher evaluations of social skills, and later moved to sociometric data collection in which children ranked their peers based on the degree to which they liked others. Researchers then moved toward assessing children and adolescent's rankings of their own social skills and perceived social support, and more recently have begun examining perceived quality of their friendships and close relationships for children with ADHD. Research to date includes reports that, compared to children and adolescents without a diagnosis, young people with ADHD experience less social support (Demaray & Elliott, 2001), perceive friendship as more for fun and entertainment (Heiman, 2005), and have more difficulty sustaining friendships over time (Normand et al., 2013). However, findings are inconclusive regarding the self-perceptions of specific positive and negative friendship qualities for children and adolescents with ADHD.

High Ability and Gifted

A comparative dearth exists in the literature regarding the examination of friendships and their quality in high ability and gifted students. However, unlike the research path for friendship in children with ADHD, researchers have focused more on

gifted student's beliefs about friendship. For example, Janos, Marwood, and Robinson (1985) compared very high IQ children to moderately high IQ children by asking about their own perceptions of friendship. In the high IQ group, 32 students (age mean=8, SD=1.33 years) were identified as having very high IQ (IQ mean=167.9, SD=18.26). These students were compared to 47 children of similar age with moderately high IQs, between 125 and 140 (M=131.2, SD=6.14). Parents of participants completed the Child Behavior Checklist (Achenbach, 1979) and Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1981). Children completed the Piers-Harris Children's Self-Concept Scale (Piers & Harris, 1969) and the Children's Friendship Questionnaire, developed for the study to measure friendship quality, quantity, and satisfaction.

While no differences were observed between the high and moderately high IQ groups on most items, high IQ children indicated a stronger preference than moderately high IQ children to spend time with older children ($\chi^2(2)=13.11$, $p < .001$; Janos et al., 1985). High IQ children also endorsed having too few friends ($\chi^2(2)=7.2$, $p = .03$), and being smart made making friends difficult ($\chi^2(2)=7.73$, $p = .02$) to a greater degree than moderately high IQ students. Parents of high IQ children believed their children did not have close friends more often than parents of moderately high IQ students ($\chi^2(2)=8.46$, $p = .01$) and were more likely to report their children infrequently played with friends ($\chi^2(2)=8.92$, $p = .01$). Of note, 13 of the high IQ students (43%) were in special gifted programs, compared to only 7 (15%) of moderately high IQ students ($\chi^2(1)=6.02$, $p < .01$; Janos et al., 1985). This work highlighted the idea that even within the gifted population, perceptions of friendship may differ based on degree of ability. Participants also suggested that children with very high IQs may have preference for friends of different

ages and believe themselves to have too few friends. However, this study did not use a validated measure of friendship quality, and instead sought information regarding general feelings about the construct of friendship rather than its quality. Additionally, this study compared high ability students to one another, rather than to peers who were not high ability.

Mayseless (1993) broadened the scope of examination to explore friendship intimacy in same-sex friendships, as well as attachment style, between 56 students in 9th grade who were high ability (IQ>130; n=28, 50% female) and average ability (n=28, 50% female). Participants complete two questionnaires: Hazan & Shaver's (1987) attachment measure and the Sharabany Intimacy Questionnaire (Sharabany, 1974), which assessed intimacy in same-sex friendships using a 6-point Likert scale.

Girls in this sample, regardless of group, endorsed greater degrees of friendship intimacy than did boys ($F_{1,52} = 7.15, p < .01$; Mayseless, 1993). However, adolescents (both girls and boys) in the high ability group reported lower degrees of friendship intimacy with their best friend than average ability peers ($F_{1,52} = 13.48, p < .001$). Of note, the means for the high ability and average ability students on the best friend intimacy item were one standard deviation apart, indicating a large effect size. High ability students had significantly lower scores on seven of the eight intimacy scales, including Attachment ($F=7.32, \alpha = .01$), Taking and Imposing ($F=11.12, \alpha = .001$), Frankness and Spontaneity ($F=4.81, \alpha = .05$), Giving and Sharing ($F = 13.55, \alpha = .001$), Exclusiveness ($F=4.67, \alpha = .05$), Sensitivity and Knowing ($F=13.2, \alpha = .001$), and Common Activities ($F=11.22, \alpha = .001$; Mayseless, 1993). Findings from this study indicate high ability adolescents experience less social intimacy with their best friend

than adolescents who are not high ability, an effect that encompasses several aspects of intimacy. Maysless (1993) measured intimacy, which is an aspect of friendship, but did not explore additional qualities of friendships, which may include more components than intimacy.

An amalgamation of the previously discussed work, Field et al. (1998) sought to explore differences in perceived intimacy and support with family and peers, family responsibilities, self-beliefs, and risk-taking in adolescents who were gifted (n=62) and non-gifted (n=162). The gifted group consisted of 32 girls, while the non-gifted group included 85 girls. The average age for the participants was 14.5 years old. Students in the gifted group were selected from a gifted education program, which required an IQ greater than 132 for admission. Participants completed a Background Information Questionnaire (Field & Yando, 1991), The Intimacy Scales (Blyth, Hill, & Thiel, 1982), Social Support Scale (Field & Yando, 1991), Family Responsibility Scale (Field & Yando, 1991), Self-Esteem Scale (Field & Yando, 1991), Center for Epidemiological Studies Depression Scale (Radloff, 1977), Risk-Taking Scale (Field & Yando, 1991), and the Perceptions about Giftedness Scale (Field & Yando, 1991).

The researchers found for the sample, parents' education level and ethnic representation were not consistent across groups; thus, these variables were covaried (Field et al., 1998). Gifted students viewed their friendships as more intimate than non-gifted students ($p = .05$). Gifted students also reported that they have fewer family responsibilities than their non-gifted peers ($p = .01$) and endorse more risk-taking in sports and activities than their non-gifted peers ($p = .05$). Gifted students reported that they feel closer to their friends than to family members compared to non-gifted students

($\chi^2(2)=9$, $p < .005$). Lastly, gifted students rated their academic and social skills as equal to or better than non-gifted students. Field et al. (1998) highlighted that gifted students perceive their abilities differently than non-gifted peers and see themselves as having more intimacy with their best friends. The latter finding stands in stark contrast to the findings of Maysless (1993). While the Field et al. (1998) study utilized quantitative measures aspects of friendship, the measures were not validated or widely used.

Schapiro and colleagues (2009) investigated the relationship between competitive goal orientation, friendship quality, and friendship stability in adolescent friendship. Participants included 152 adolescent friendship dyads (76 boys, 76 girls) in 7th and 8th grades (ages 12-14 years). Friendships were identified as gifted (38 dyads) if both friends were enrolled in the school's enrichment program; enrichment program involvement included measures of ability and achievement for enrollment. Friendships were identified as non-gifted (38 dyads) if they were not enrolled in the enrichment program. Participants completed the Peer Competition Rating Scale and the Self-Competition Rating Scale (Schneider, Woodburn, del Pilar Soteras del Toro, & Udvari, 2005), the Friendship Quality Rating Scale (modified from Bukowski, Hoza, & Boivin, 1994), and Rating the Behavioral Characteristics of Superior Students scale (Renzulli, 1978). Adolescents also completed the Friendship Nomination interview (Berndt, 1984) and the Friendship Termination Interview (based on Rose & Serfica, 1986). A language arts teacher completed the Teacher Competition Rating Scales (cognitive scales; Schneider et al., 2005) and the physical education teacher completed the physical scales. Data were collected at the end of the first semester of the school year, at the end of the school year, and at the start of the next school year (Schapiro et al., 2009).

Pertinent findings by Schapiro and colleagues (2009) included gifted adolescents being rated as more task-oriented than non-gifted students, while non-gifted students were rated as more other-referenced than their gifted peers. Gifted students were rated by peers as more task-oriented in academics than non-gifted students. Notably, participants with self-rated task-oriented competitive goal orientation in academics also reported fewer negative friendship qualities. Researchers also found gifted students endorsed fewer positive friendship qualities (e.g., companionship, help, security, closeness) than non-gifted students. However, differences in endorsement of negative friendship quality (e.g., conflict) between groups were not significant. Regardless of group, girls in this study endorsed more positive friendship qualities than boys. Friendship qualities reported at the beginning of the year were not good predictors of friendship status after six months or one year (Schapiro et al., 2009). Schapiro and colleagues highlighted important findings that gifted students may view friendships as more task-oriented and related to academics, taking a more nuanced view of friendship than previous work. An additional important finding in this study was that friendship qualities were not good determinants of friendship stability for students.

Lastly, Masden and colleagues (2015) used a correlational method to examine how academic ability may affect friendship quality. They studied 120 early adolescents in 7th and 8th grades (59 girls, 61 boys). Eighty-one of the participants were gifted. They were identified as having an IQ at or above 80th percentile on the Canadian Cognitive Abilities Test (Thorndike & Hagen, 1997). The researchers used the Friendship Nomination Interview (Wiener & Schneider, 2002), Friendship Quality Scale-Revised (Schneider & Udvari, 1997), The Relationship Questionnaire-4 + Version (Schultz &

Selman, 1999), and Self-Perception Profile for Adolescents-What I am Like (Harter, 1988).

The researchers found adolescents with stronger perceptive-taking ability and interpersonal skills (measured by a hypothetical dilemma) were significantly more likely to have lower degrees of competition with social comparison (Masden et al., 2015).

However, they also found greater degrees of interpersonal skills (measured by a real-life situation) were significantly related to less avoidance of competition for adolescents.

Researchers discovered that gifted students ($\beta = .23$, $sr^2 = .05$, $p < .05$) and girls ($\beta = .26$, $sr^2 = .06$, $p < .01$) had significantly greater degrees of psychosocial competency. Positive friendship quality was significantly predicted by greater psychosocial competency ($sr^2 = .04$) and close friendships ($sr^2 = .04$). In addition, more positive friendship qualities were more likely to be reported by gifted students ($sr^2 = .03$) than non-gifted students, girls ($sr^2 = .04$) than boys, and younger students ($sr^2 = .07$) than older students (Masden et al., 2015). Other researchers have found gifted students tend to endorse better psychosocial competency, better friendship quality, and greater intimacy with friends than non-gifted students. These results may be dependent on the instrument used to measure friendship quality, as Maysless (1993) found poorer friendship quality ratings of gifted students than non-gifted and others reported very high-ability students' lack of friendships (Janos et al., 1985).

Key Findings. Research investigating friendship qualities of gifted or high ability children and adolescents remains inconclusive. Some researchers indicate gifted students report greater intimacy with their best friend (Field et al., 1998), more positive friendship qualities, and more self-reported psychosocial competence than non-gifted peers (Masden

et al., 2015; Field et al., 1998). Still others have found gifted students reported less intimacy with their best friend (Mayseless, 1993) and fewer positive friendship qualities than non-gifted peers (Schapiro et al., 2009). Notably, no differences between gifted and non-gifted learners were found for negative friendship qualities (Schapiro et al., 2009). Discrepancies in findings may be related to the lack of standardized and universally-implemented measures specific to friendship quality and intimacy. Children and adolescents with very high ability may view their friendships differently than those with moderately high ability and may have fewer friends (Janos et al., 1985). Regardless of ability status, girls reported more positive friendship qualities and intimacy than boys (Mayseless, 1993; Masden et al., 2015; Schapiro et al., 2009).

Twice-Exceptional

An extensive review of the literature resulted in only one qualitative study pertaining to friendship qualities for students who are twice-exceptional. Moon and colleagues (2001) conducted a qualitative multiple-comparison case study to explore the emotional and social characteristics of three boys who were gifted and had ADHD (twice-exceptional), three boys with ADHD only, and three boys who were gifted. All participants were between the ages of 8 and 10 years. Giftedness was determined by group achievement and aptitude tests, in addition to parent and teacher referrals.

Researchers gathered semi-structured interview data and rating scales, which included the Conners' Parent Rating Scale-Revised (Conners, 1997), Home Situations Questionnaire-Revised (HSQ-R; Barkley & Edelbrock, 1987), Conners' Teacher Rating Scale-Revised (Conners, 1997), and School Situations Questionnaire-Revised (SSQ-R; Barkley & Edelbrock, 1987). The HSQ-R and SSQ-R were used in this study to assess

the pervasiveness of attention difficulty in home and school situations. Qualitative interviews were conducted with parents, teachers, and children. Parent interviews were approximately 30 to 45 minutes, while child interviews were approximately 20 minutes. Parents were also given the Family Environment Scale to assess family cohesiveness and potential areas of home conflict.

Two major themes that emerged from the data were differences in emotional characteristics and peer relationships amongst the boys. Parent and teacher ratings for twice-exceptional boys indicated less maturity and a lack of synchrony between emotional/social immaturity and high intelligence compared to peers. Twice-exceptional boys more frequently used extremes to describe themselves (e.g., “a brain,” “weird,” and “stupid” pg. 221). However, the researchers indicated the descriptors seemed to reflect the children’s search for creative descriptors rather than their overall self-concept. Twice-exceptional boys’ parents reported the boys overreact to situations at home. Twice-exceptional boys also required and received interventions for emotional difficulties, like counseling for coping strategies and antidepressant medication.

Boys with ADHD only used positive self-descriptors and appeared to have good maturity and age-typical emotional adjustment (Moon et al., 2001). However, they experienced some emotional difficulties at school, such as intense frustration with being the last to finish tasks and assignments. Boys with ADHD demonstrated emotional intensity at home and school as well, but recovered easily when upset. Boys who were gifted did not experience emotional adjustment difficulties and were mature, per parent and teacher reports. They infrequently over-responded emotionally and had stable family relationships (Moon et al., 2001).

Regarding peer relationships, twice-exceptional boys demonstrated “immature, annoying, and irresponsible behavior” (Moon et al., 2001, p. 225), which was believed to affect peer rejection in the boys’ gifted classroom. They lacked friends and rarely were picked as partners for work or play. Twice-exceptional boys’ friends tended to share an aggressive play style. Twice-exceptional boys demonstrated poor emotion regulation, were often the victims of bullying, had tearful outbursts in the classroom, and were difficult for more mature students in the gifted classroom to tolerate. The twice-exceptional boys also demonstrated behavioral challenges, such as inappropriate physical contact, tapping, and fixating.

Twice-exceptional boys in this study experienced difficulty completing work and working in groups, and their teachers reported difficulty complying with classroom demands and teacher requests (Moon et al., 2001). Twice-exceptional boys were rejected by intellectual peers, but had friends outside of school who shared their physical play style. Boys with ADHD reportedly experienced minor effects of their symptoms on social interactions at school. They were described as “hyperactive and annoying, outcasts, silly and immature” (Moon et al., 2001, p. 228), but were not rejected by peers. The boys with ADHD had friends with similar active play styles at home and at school. Boys who were gifted demonstrated great variation in social relationships. For instance, one had social difficulty following his parents’ divorce and relocation, and another had difficulty with being socially advanced and adjusting his interaction style to match peers (Moon et al, 2001).

Key Findings. Only one qualitative study was available for review to begin to draw conclusions about twice-exceptional students’ friendships. Moon and colleagues’

(2001) study was the only published manuscript that attempted to identify ways in which twice-exceptional children perceive friendships, and the only study to compare three groups (i.e., ADHD, twice-exceptional, gifted). The research by Moon and colleagues (2001) highlights important components of interactional styles of twice-exceptional boys when compared to peers who are gifted or have ADHD. Twice-exceptional boys demonstrated less maturity and more emotional reactivity than their peers, and they often required interventions for these difficulties. While boys with ADHD alone experienced only minor effects of behaviors on social interactions, twice-exceptional boys were often rejected by intellectual peers and were believed to be annoying and immature. These findings also suggest twice-exceptional students may demonstrate similar behavioral challenges and be described similarly to their peers with ADHD (e.g., annoying, silly, immature; Moon et al., 2001), but differing expectations in gifted learning environments and social circles may increase social difficulty for twice-exceptional students. Twice-exceptional students may find more friends outside of these learning environments.

Summary

Friendships in early adolescence present unique opportunities for children and adolescents to develop social skills (Berndt, 2004; Sullivan, 1953) and navigate the developmental tasks of adolescence (Rabaglietti & Ciairano, 2008). High-quality friendships can protect young adolescents against loneliness (Parker & Asher, 1993) and peer victimization (You & Bellmore, 2012). Notably, the quality of friendships, rather than the quantity, provide protective benefits for children and adolescents (Rubin, 2004; Waldrip et al., 2008).

Children with ADHD have been found to demonstrate significant social skills deficits and greater levels of peer rejection than peers without ADHD (Merrell & Wolfe, 1998; Hoza et al., 2005). Peers, teachers, and parents also rate children with ADHD as having poorer social functioning than their peers (Mikami & Lorenzi, 2011). Within friendships, children and adolescents with ADHD are less likely to maintain friends over six months, and their friends are more likely to report less positive and more negative features of the friendship than with peers who do not have a diagnosis (Normand et al., 2013). Individuals with ADHD are also more likely to view friends as partners in play and fun, while those without ADHD are more likely to see friends as emotional supports (Heiman, 2005). For some individuals with ADHD, perceived support from a close friend was positively correlated with perceived academic competence (Demaray & Elliott, 2001).

Gifted individuals, in contrast, have reported greater levels of intimacy with their friends than their peers (Field et al., 1998; Masden et al., 2015). Children and adolescents with very high ability have also demonstrated preferences for older friends (Janos et al., 1985), and girls have typically reported more positive friendship qualities than boys (Masden et al., 2015). Only one study was found to have explored friendships for twice-exceptional boys with ADHD. Moon and colleagues (2001) found intellectual peers in gifted classrooms rejected twice exceptional boys due to their behaviors related to an ADHD diagnosis. Boys with ADHD alone, however, were not viewed negatively and had friends within their average ability classrooms (Moon et al., 2001). Twice-exceptional learners may have more difficulty functioning in gifted classrooms due to challenging behaviors of ADHD and an expectation that gifted students behave in more mature ways.

Research Questions

The current study aimed to gain further insight into how children and adolescents identified as high ability or achieving, ADHD, typically-developing, and high ability or achieving plus ADHD perceive aspects of their closest social relationship. The following questions were explored using the methods outlined in the following chapter:

1. Do self-perceptions of friendship quality differ amongst students who are high ability or achieving, have ADHD, have high ability or achievement plus ADHD, and those who are typically-developing?

Hypothesis: A review of the literature available reveals inconclusive evidence related to self-perceptions of friendship quality based on high ability or achievement and ADHD status; thus, a specific hypothesis for this question cannot be generated.

2. Do self-perceptions of friendship quality differ as a function of gender amongst middle-school age adolescents?

Hypothesis: Multiple researchers have found robust gender effects in studies of friendship quality. Specifically, girls are more likely to report significantly higher levels of positive friendship qualities. It is hypothesized that girls will report more positive qualities than boys in the areas of Companionship, Help, Security, and Closeness. No significant differences are anticipated between genders in the area of Conflict.

CHAPTER 3: METHODS

Participants

Participants consisted of 65 middle school students in Grade 6, Grade 7, or Grade 8 between the ages of 11 and 14 years old ($M=12.28$, $SD=0.934$). One participant did not report age, and another participant did not report grade. Self-reported gender of participants included male, female, and transgender male. Most respondents (86.2%) reported their race-ethnicity as White/Caucasian, while others identified as White/Caucasian and Hispanic/Latino, Hispanic/Latino, Asian/Pacific Islander, and Black/African American. One participant did not report race/ethnicity. The majority of participants reported living in Iowa (95.4%) and attending a public school (87.7%). School locations included suburban (50.8%), urban (33.8%), and rural (15.4%).

Inclusion and Exclusion Criteria

Participants with comorbid diagnoses, such as learning disabilities (dyslexia, dysgraphia, dyscalculia, dysnomia), generalized anxiety disorder, gender dysphoria, tic disorder, obsessive-compulsive disorder, non-verbal learning disorder, sensory processing difficulty, and any comorbid medical conditions were included in the current study. The following diagnoses were considered as exclusion criteria because of the social functioning components associated with these conditions: depression, autism spectrum disorder (Asperger's, Pervasive Developmental Disorder-Not Otherwise Specified), social (pragmatic) communication disorder, or intellectual disability/cognitive impairment.

Table 1

Participant Demographic Information

	n	%
Gender		
Male	34	52.3
Female	30	46.2
Transgender Male	1	1.5
Grade		
6	19	29.7
7	16	25
8	29	45.3
Age		
11	17	26.6
12	16	25
13	27	42.2
14	4	6.3
Race/Ethnicity		
White/Caucasian	56	86.2
White/Caucasian, Hispanic/Latino	3	4.6
Hispanic/Latino	2	3.1
Asian/Pacific Islander	2	3.1
Black/African American	1	1.5
State of Residence		
Iowa	62	95.4
Illinois	1	1.5
North Carolina	1	1.5
Oregon	1	1.5
School Setting		
Suburban	33	50.8
Urban	22	33.8
Rural	10	15.4
School Type		
Public School	57	87.7
Private School	4	6.2
Homeschool	2	3.1
Specialty School for Gifted, 2E, STEM	2	3.1
Participation in School's Gifted Program		
Yes, currently	22	33.8
Yes, previously	15	23.1
No	25	38.5
Not Offered by School	3	4.6
Mental Health Diagnosis		
Yes	21	32.3
Taking Medication	14	
Not Taking Medication	7	
No	43	66.2

Recruitment of Participants

Recruitment began in Summer 2017 and continued through Spring 2018. Individuals were recruited to participate in the study through several means. The first round of recruitment began in Summer 2017 and included multiple methods. A recruitment message was posted to a twice-exceptional listserv and Facebook page, which includes approximately 3,700 subscribers. A mass email recruitment message was sent through the University of Iowa to all faculty, staff, and retirees, or approximately 25,000 people. Recruitment through the Belin-Blank Center for Gifted Education and Talent Development occurred through distribution of flyers to gifted programming participants, approximately 300 people, and recruitment messages posted to the center's Facebook page, which is followed by 1,810 people. Recruitment also took place in assessment clinics with flyers distributed in the University of Iowa Hospitals and Clinics Department of Psychology's ADHD assessment clinic and the Assessment and Counseling Clinic within the Belin-Blank Center. During this initial phase of recruitment, a \$10 electronic Amazon gift card was offered to the first 50 participants who completed the study.

After several months of recruitment and low enrollment of individuals with ADHD, recruitment was modified to focus exclusively on middle school students with ADHD. This round of recruitment took place in Winter 2018, during which an additional mass email was sent to the University of Iowa faculty, staff, and retirees (approximately 25,000 people), and an ADHD-specific recruitment message was posted to the Belin-Blank Center's Facebook page and blog. During the second phase of recruitment,

participants who completed all components of the study were offered the opportunity to enter a drawing for one of ten \$10 electronic Amazon gift cards.

Procedures

One hundred and forty-six individuals expressed initial interest in participating in the study during the first phase of recruitment. Five participants were excluded from participation based on co-occurring diagnoses of autism (n=3), Pervasive Developmental Disorder (n=1), and depression (n=1). In the second phase of recruitment, 27 individuals expressed interest in participation. Four participants were excluded from participation based on co-occurring diagnoses of autism.

One hundred and thirty-six parents were provided links to complete the parent consent. One hundred and eleven parents completed the consent document. Children and adolescents were sent links to the assent following completion of the parent consent document. Of the 111 participants who received child assent documents, 83 participants completed the form. Children and adolescents next completed the survey measures. Seventy-six participants completed the parent consent, child assent, and child survey. Lastly, parents were sent an electronic link to complete the demographic questionnaire about their child. REDCap survey software was used for all forms and documents. All participants were assigned a participant ID number to maintain anonymity and to connect participant information across surveys. Participants (both parents/guardians and children) were sent reminder messages after one week and one month to complete the surveys. Participants were identified based on eligibility for the following four groups.

High Ability or Achieving. Adolescents were included in the high ability or achieving group (n=39) if they obtained any score at or above the 91st percentile on a standardized

measure of ability (e.g., Wechsler ability scales, Stanford-Binet, Cognitive Abilities Test/CogAT, Measure of Academic Progress Test/MAP) or achievement (e.g., Wechsler achievement scales, state standardized tests). Scores at this level are classified as “Superior” on ability measures and represent a level of performance greater than one standard deviation above the mean. The 91st percentile has been used as a consistent cutoff method of identifying high ability students in the literature (Antshel et al., 2008; Assouline, Foley Nicpon, & Whiteman, 2010; Foley Nicpon et al., 2012; Lovecky & Silverman, 1998; Lovett & Sparks, 2011). Additionally, achievement scores within this range are used by school districts to aid in identification of gifted students (Iowa Code, 1989), and they have also been used in the literature and talent searches as components of gifted identification (Baker et al., 1998; Hannah & Shore, 2008; Lee et al., 2012).

Documentation of ability or achievement scores was obtained for 56 participants and included Iowa Assessments (n=45), Wechsler Intelligence Scale for Children (n=5), Cognitive Abilities Test (n=2), MAP (n=2), Reynolds Intellectual Assessment Scales (n=1), and ACT Explore (n=1). The mean national percentile rank on standardized assessments for this group was 97.51. If documentation of test scores was not provided, participants who indicated that they were enrolled in gifted education programs at the time of the study were classified in this group.

ADHD. Adolescents were included in the ADHD group (n=7) if they reported they had received a diagnosis of ADHD (Predominantly Inattentive Presentation, Predominantly Hyperactive-Impulsive Presentation, or Combined Presentation; American Psychiatric Association, 2013) from a doctor, psychologist, or mental healthcare professional.

Documentation of ADHD diagnosis was obtained for 9 of the 15 participants who

reported an ADHD diagnosis. The mean national percentile rank on standardized assessments for this group was 71.5.

High Ability or Achieving Plus ADHD. The high ability or achieving plus ADHD (twice-exceptional) group (n=8) was comprised of individuals who reported having both a diagnosis of ADHD and at least one standardized assessment score at or above the 91st percentile. The mean national percentile rank on standardized assessments for this group was 96.99.

Typically-Developing. The typically-developing group (n=11) consisted of individuals who did not report a mental health disorder and who demonstrated average to high average intellectual abilities or achievement on standardized assessments (25th to 90th percentile). The mean national percentile rank on standardized assessments for this group was 82.85.

Table 2

Verification of Test Scores and Diagnoses

Group	n	Verification of Ability/Achievement (n)	Verification of Diagnosis (n)
High Ability or Achieving	39	37	n/a
<i>Iowa Assessments</i>		32	
<i>CogAT</i>		2	
<i>Wechsler IQ</i>		2	
<i>ACT Explore</i>		1	
ADHD	7	4	4
<i>Iowa Assessments</i>		2	
<i>Wechsler IQ</i>		1	
<i>MAP</i>		1	
High Ability or Achieving plus ADHD	8	7	5
<i>Iowa Assessments</i>		4	
<i>Wechsler IQ</i>		2	
<i>RIAS</i>		1	
Typically-Developing	11	8	n/a
<i>Iowa Assessments</i>		7	
<i>MAP</i>		1	

Measures

Friendship Qualities Scale (FQS)

The FQS (Bukowski, Hoza, & Boivin, 1994) is a self-report measure of several components of young adolescents' friendships. The 23 items require the respondent to identify and answer the items based on the respondent's best friend. It has been implemented with individuals in pre-adolescence to adolescence (ages 9-16 years). The FQS assesses five friendship dimensions outlined in the conceptual framework of friendship by Bukowski and colleagues (1994): closeness, security, help, conflict, and companionship.

The Closeness scale addresses the degree to which the respondent feels acceptance, validation, and attachment to his or her best friend. The Security scale measures the respondent's belief in the ability of the friendship to continue despite conflict and the levels of trust and reliance. The Help scale measures aid and mutual assistance, or the degree to which the respondent believes the friendship will help to protect each person from peer victimization. Conflict assesses the degree to which the respondent and his or her friend argue and disagree, which have been associated with the ending of friendships. The Companionship scale measures the amount of time the respondent willingly spends with his or her best friend engaging in shared activities. Items are scored on a 5-point scale (1 = Not True, 5 = Really True). Scale scores are obtained by calculating the sum divided by number of items on each scale. The measure takes approximately 10-15 minutes to complete. Internal reliability for the subscales using Cronbach's alpha coefficients ranges between .73 and .86. Validity was assessed by comparing means of reciprocated friendships to those of non-reciprocated friendships.

Reciprocated friendships had higher scores on companionship, closeness, help, and security and lower scores on conflict than non-reciprocated friendships. Validity was also evaluated based on stable friendships receiving higher ratings than non-stable friendships (Bukowski et al., 1994).

Parent Demographic Questionnaire

The adolescents' parents or guardians answered a series of questions pertaining to demographic variables for the adolescents and their families. Questions included inquiries about the adolescents' age, gender identity, race/ethnicity, grade in school or homeschool, type of school setting (public, private, homeschool), state of residence, residence type (urban, rural, suburban), psychological diagnoses (learning disability, emotion regulation, attention difficulty, autism spectrum disorder), participation in gifted programming or academic acceleration, and any medications taken to manage diagnoses. Per Southern and Jones (2015), types of academic acceleration included early admission to kindergarten or 1st grade, grade-skipping, continuous progress, self-paced instruction, subject-matter acceleration, combined classes, curriculum compacting, telescoping curriculum, mentoring/tutoring, extracurricular programs, distance learning courses, dual enrollment, Advanced Placement courses, International Baccalaureate, credit by examination, and early entrance to middle school/high school/college.

Analysis

A quantitative methodology best aligned with the research questions to determine whether scores on a measure of friendship qualities differed based on a diagnosis of ADHD or high ability or achievement. To address the research question regarding group differences in perceived friendship quality, a two-way repeated-measures analysis of

variance (RM ANOVA) was conducted. A 2 (Ability or Achievement) x2 (ADHD status) structure was utilized to determine differences between the friendship quality scores. This design created four groups based on the two levels and two factors (high ability or achieving alone, ADHD alone, high ability or achieving plus ADHD, or typically-developing). The five subscales of the FQS were identified as the within-subjects factors, and high ability or achievement (yes, no) and ADHD (yes, no) were between-subjects factors. To investigate the second research question related to gender effects on perceptions of friendship qualities, a repeated-measures ANOVA was conducted. Within-subjects factors included the five subscales of the FQS, while gender was the between-subjects factor.

Four participants had missing responses for 1-2 items, and means for these participants were calculated proportionally using items to which the participant did respond. One participant in the ADHD alone group did not respond to two items on the Security scale, and one participant in the high ability or achieving alone group did not respond to one item on the Security scale. One participant in the high ability or achieving group did not respond to one item on the Closeness scale, and one participant in the high ability or achieving plus ADHD group did not respond to one item on the Closeness scale. For gender analyses, one participant who indicated he identified as a transgender male was placed in the “male” gender category, as this most closely aligned to the gender with which he identifies. Lastly, participant responses to one item on the Security subscale (“If I said I was sorry after I had a fight with my friend, he or she would still stay mad at me.”) were reverse-scored to maintain consistency in item responses across the scale.

CHAPTER 4: RESULTS

The sixty-five respondents were separated into the four groups outlined in the previous chapter based on information provided in the Parent Demographic Questionnaire, specifically regarding ability or achievement scores and ADHD diagnosis. Chronbach's alpha coefficients for the five subscales for the current sample were as follows: Companionship $\alpha = .746$; Conflict $\alpha = .804$; Help $\alpha = .842$; Security $\alpha = .785$; Closeness $\alpha = .814$.

Current sample means fell within the standard deviations observed in the norming sample provided by Bukowski and colleagues (1994) with the exception of the ADHD group mean for Companionship, which was below the observed norming sample means for this scale. Possible means ranged from 1 to 5, with a mean of 1 suggesting that participants experienced low levels of a particular quality and a mean of 5 suggesting participants experienced high levels of a particular quality. See Table 3 for means and standard deviations for each group.

Table 3

FQS Scale Group Means by Ability or Achievement and ADHD Diagnosis

Scale	Group	Mean	SD
Companionship	High Ability or Achieving	3.60	0.73
	ADHD	2.71	0.92
	HA+ADHD	3.13	1.00
	Typically-Developing	3.45	0.72
	Combined	3.42	0.82
Conflict	High Ability or Achieving	2.00	0.71
	ADHD	1.68	0.49
	HA+ADHD	2.47	1.35
	Typically-Developing	2.11	0.74
	Combined	2.04	0.80
Help	High Ability or Achieving	4.25	0.62
	ADHD	3.43	0.98
	HA+ADHD	3.78	0.80
	Typically-Developing	4.05	0.68
	Combined	4.07	0.73
Security	High Ability or Achieving	4.17	0.65
	ADHD	3.55	0.78
	HA+ADHD	3.75	0.89
	Typically-Developing	4.00	0.59
	Combined	4.02	0.70
Closeness	High Ability or Achieving	4.35	0.63
	ADHD	4.26	0.55
	HA+ADHD	4.04	0.78
	Typically-Developing	4.27	0.66
	Combined	4.29	0.64

Note. ADHD = Attention-Deficit/Hyperactivity Disorder. HA+ADHD = High Ability or Achieving Plus ADHD.

Ability or Achievement and ADHD Diagnosis: Repeated-Measures ANOVA

To examine whether self-perceptions of friendship quality differ amongst students who are high ability or achieving, have ADHD, have high ability or achievement plus ADHD, and those who are typically-developing, a repeated-measures ANOVA design was utilized using the five FQS subscales as within-subjects variables and gender as the between-subjects variable. The assumption of sphericity was violated (Mauchly's $W=.283$; $p<.01$); therefore, the Greenhouse-Geisser correction was utilized. The

interaction between the FQS scales, ADHD diagnosis, and ability for the within-subjects effects was not significant ($F(2.336, 142.502)=1.14$; $p = 0.328$). However, the within-subjects test for the main effect of FQS scales was significant ($F(2.336, 142.502)=68.874$, $p < .01$; partial $\eta^2 = 0.530$), suggesting that the means of the subscales were significantly different. This finding was not of central importance to the research question; however, the finding is generally expected given the similarity of this sample to the sample Bukowski and colleagues (1994) used to create the measure. The tests of between-subjects effects yielded a significant main effect for ADHD ($F(1,59)=9.661$; $p < .01$; partial $\eta^2 = 0.141$), suggesting participants with ADHD ($M = 3.279$) reported lower friendship qualities than those without ADHD ($M = 3.626$).

Table 4

Within-Subjects Effects for Ability or Achievement and ADHD Diagnosis

Source	Type III SS	df	Mean Square	F	Significance
FQS Scales	122.06	2.34	52.25	68.87	0.00**
FQS*ADHD	2.93	2.34	1.26	1.65	0.19
FQS*Gifted	1.08	2.34	0.46	0.61	0.57
FQS*ADHD*Gifted	2.02	2.34	0.87	1.14	0.33
Error	108.10	142.50	0.76		

Note. ** denotes significance < 0.01 .

Table 5

Between-Subjects Effects for Ability or Achievement and ADHD Diagnosis

Source	Type III SS	df	Mean Square	F	Significance
ADHD	6.27	1	6.27	7.46	0.00**
Gifted	2.07	1	2.07	2.458	0.12
ADHD*Gifted	0.58	1	0.58	0.693	0.41
Error	51.26	61	0.84		

Note. ** denotes significance < 0.01 .

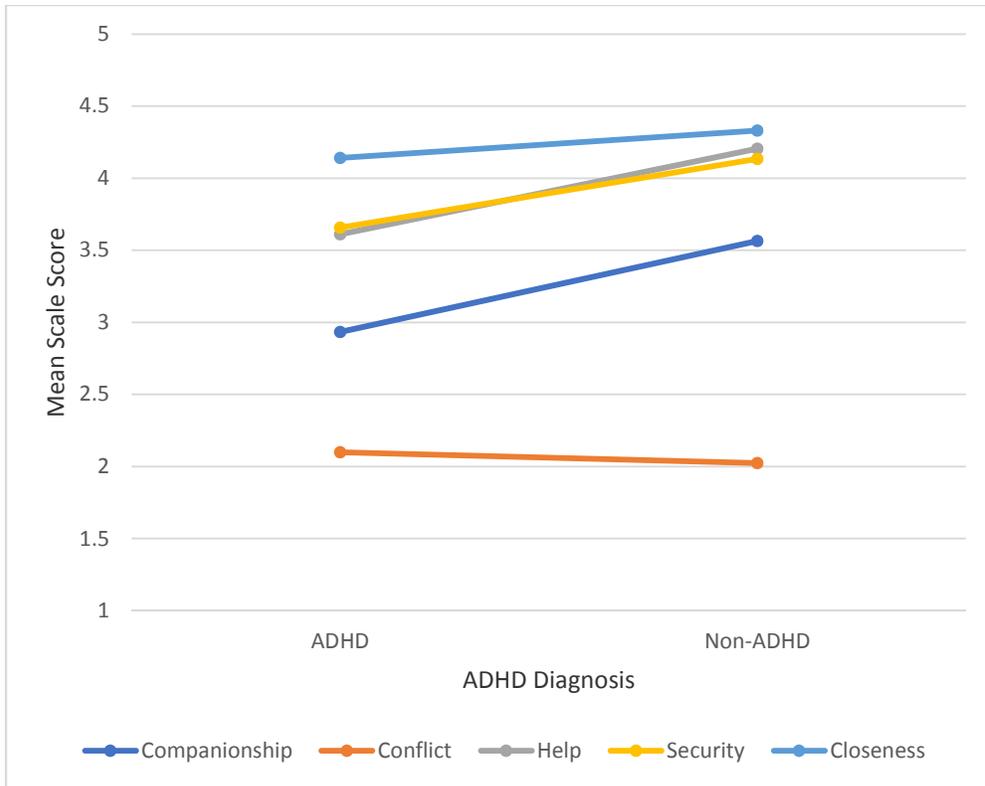


Figure 2. Comparisons of FQS scores by ADHD diagnosis.

Ability or Achievement and ADHD Diagnosis: Two-Way ANOVAs

To further explore the significant difference on the repeated-measures ANOVA, two-way ANOVAs were conducted for each FQS scale. See Table 3 for group means across scales.

Companionship

Due to unequal sample sizes across the four groups, Levene's test of equality of error variances was conducted, and the variance in responses across groups was determined to be equal (Levene statistic = 0.622, $p > .05$). Normality in distribution of responses was confirmed by observed Q-Q plots. A two-way ANOVA evaluating differences in Companionship Scale scores indicated a significant main effect of ADHD [$F(1, 61) = 6.192, p = .016, \text{partial } \eta^2 = 0.092$]. Participants with ADHD ($M = 2.933,$

SD = 0.951) were observed to report lower companionship ratings than participants without an ADHD diagnosis (M = 3.565, SD = 0.725). The main effect of ability or achievement and interaction between ADHD and ability or achievement were not significant.

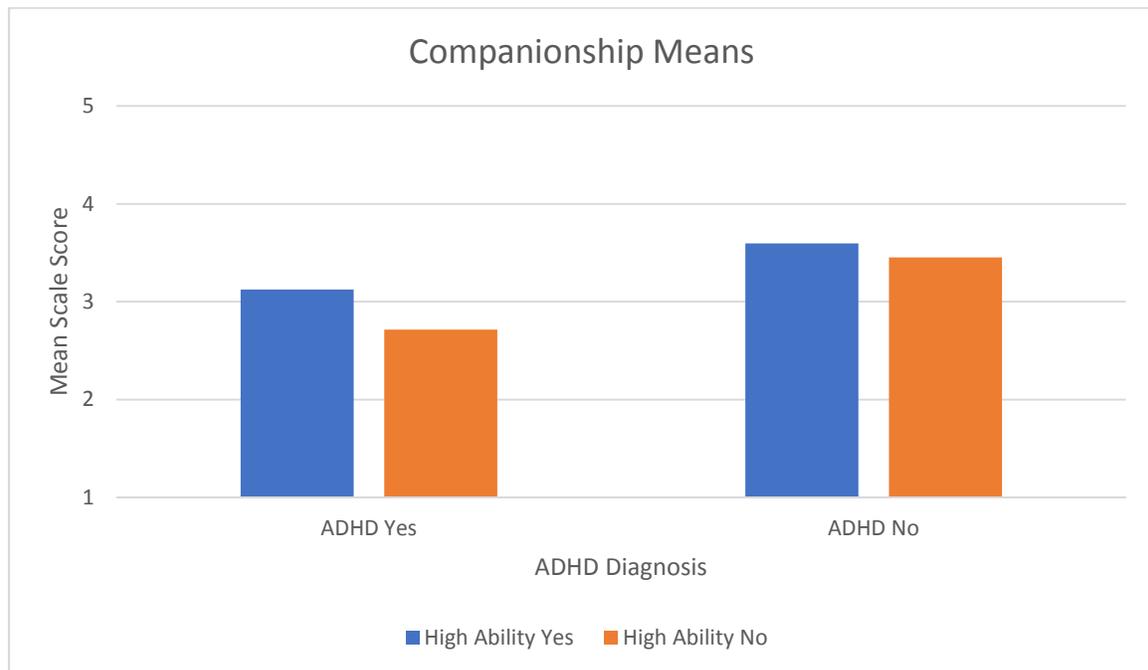


Figure 3. Companionship means comparisons by ADHD diagnosis.

Table 6

Between-Subjects Effects for Companionship

Source	Type III SS	df	Mean Square	F	Significance
ADHD	3.82	1	3.82	6.19	0.02*
Ability	0.79	1	0.79	1.29	0.26
ADHD*Ability	0.19	1	0.19	0.31	0.58
Error	37.61	61	0.62		

Note. * denotes significance < 0.05.

Conflict

Due to unequal sample sizes across the four groups, Levene’s test of equality of error variances was conducted, and the variance in responses across groups was determined to be unequal (Levene statistic = 3.810, $p < .05$). The assumption of

normality was confirmed on observed Q-Q plots. A two-way ANOVA evaluating differences in Conflict Scale scores yielded no significant interaction or main effects of ADHD or ability.

Table 7

Between-Subjects Effects for Conflict

Source	Type III SS	df	Mean Square	F	Significance
ADHD	0.00	1	0.00	0.01	0.95
Ability	1.19	1	1.19	1.88	0.18
ADHD*Ability	2.13	1	2.13	3.36	0.07
Error	38.56	61	0.63		

Help

Due to unequal sample sizes across the four groups, Levene’s test of equality of error variances was conducted, and the variance in responses across groups was determined to be equal (Levene statistic = 0.492, $p > .05$). Normality in distribution of responses was confirmed by observed Q-Q plots. A two-way ANOVA evaluating differences in Help Scale scores yielded a significant main effect of ADHD [$F(1, 61) = 6.498$, $p = .013$, partial $\eta^2 = 0.096$]. Participants with ADHD ($M = 3.6133$, $SD = 0.877$) were observed to report lower help ratings than participants without an ADHD diagnosis ($M = 4.204$, $SD = 0.629$). The main effect of ability and interaction between ADHD and ability were not significant.

Table 8

Between-Subjects Effects for Help

Source	Type III SS	df	Mean Square	F	Significance
ADHD	3.13	1	3.13	6.50	0.01*
Ability	0.75	1	0.75	1.56	0.22
ADHD*Ability	0.06	1	0.06	0.13	0.72
Error	29.39	61	0.48		

Note. * denotes significance < 0.05 .

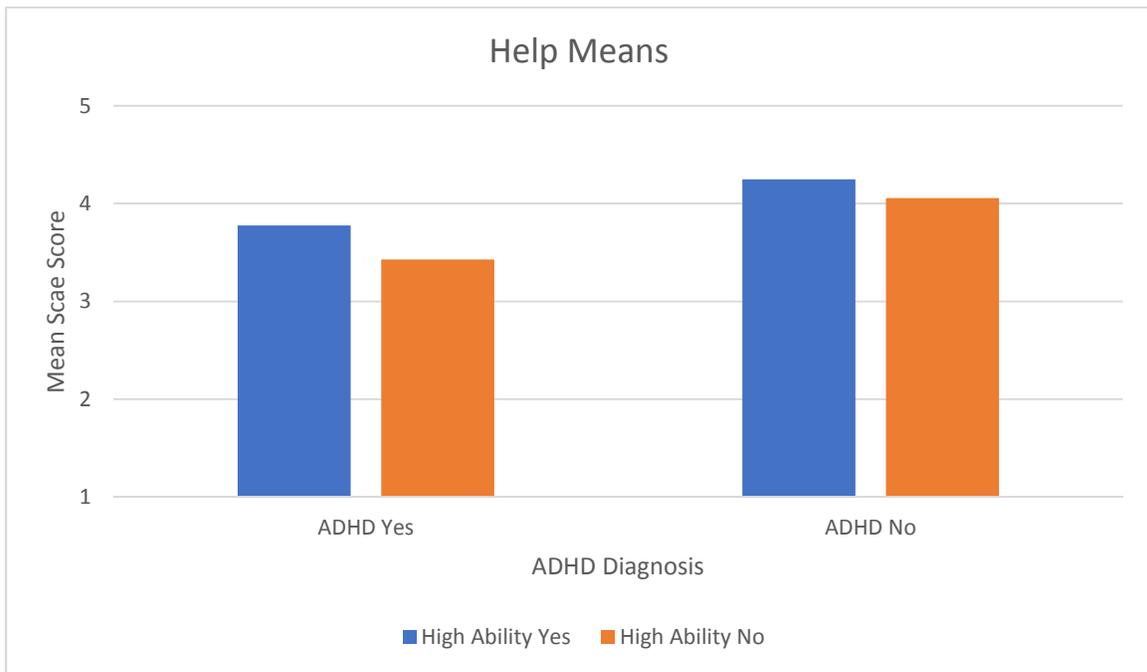


Figure 4. Help means comparison by ADHD diagnosis.

Security

Due to unequal sample sizes across the four groups, Levene’s test of equality of error variances was conducted, and the variance in responses across groups was determined to be equal (Levene statistic = .585, $p > .05$). Normality in distribution of responses was confirmed by observed Q-Q plots. A two-way ANOVA evaluating differences in Security scale scores yielded a significant main effect of ADHD [$F(1, 61) = 4.226, p = .044, \text{partial } \eta^2 = 0.065$]. Participants with ADHD ($M = 3.658, SD = 0.818$) were observed to report lower security ratings than participants without an ADHD diagnosis ($M = 4.135, SD = 0.631$). The main effect of ability and interaction between ADHD and ability were not significant.

Table 9

Between-Subjects Effects for Security

Source	Type III SS	df	Mean Square	F	Significance
ADHD	1.97	1	1.97	4.23	0.04*
Ability	0.36	1	0.36	0.77	0.39
ADHD*Ability	0.00	1	0.00	0.00	0.95
Error	28.47	61	0.47		

Note. * denotes significance < 0.05.

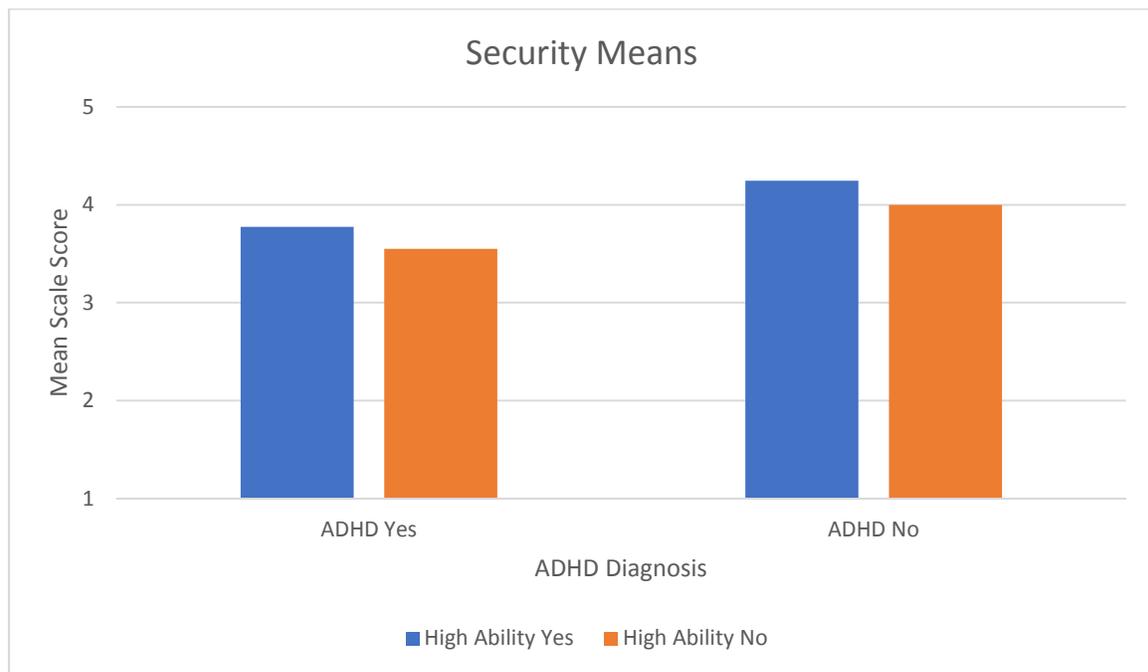


Figure 5. Security means comparison by ADHD diagnosis.

Closeness

Due to unequal sample sizes across the four groups, Levene’s test of equality of error variances was conducted, and the variance in responses across groups was determined to be equal (Levene statistic = 0.102, $p > .05$). Normality in distribution of responses was confirmed by observed Q-Q plots. A two-way ANOVA evaluating differences in Closeness scale scores yielded no significant interaction or main effects of ADHD or ability.

Table 10

Between-Subjects Effects for Closeness

Source	Type III SS	df	Mean Square	F	Significance
ADHD	0.28	1	0.28	0.66	0.42
Ability	0.06	1	0.06	0.13	0.72
ADHD*Ability	0.23	1	0.24	0.54	0.46
Error	25.33	61	0.42		

Gender: Repeated-Measures ANOVA

To examine whether self-perceptions of friendship quality differ as a function of gender amongst middle-school age adolescents, a repeated-measures ANOVA design was utilized using the five FQS subscales as within-subjects factors and gender as the between-subjects factor. See Table 11 for a comparison of subscale score means by gender.

Table 11

FQS Scale Means by Gender

Scale	Gender	Mean	SD
Companionship	Girls	3.63	0.83
	Boys	3.24	0.78
	Combined	3.42	0.82
Conflict	Girls	2.12	0.89
	Boys	1.98	0.73
	Combined	2.04	0.80
Help	Girls	4.15	0.80
	Boys	3.99	0.67
	Combined	4.07	0.73
Security	Girls	4.10	0.76
	Boys	3.96	0.65
	Combined	4.02	0.70
Closeness	Girls	4.47	0.61
	Boys	4.13	0.63
	Combined	4.29	0.64

The assumption of sphericity was violated (Mauchly's $W=.289$ $p<.01$); therefore, the Greenhouse-Geisser correction was utilized. The interaction between the FQS scales

and gender for the within-subjects effects was not significant. However, the tests of within-subjects effects yielded a significant main effect of FQS scale ($F(2.313, 145.743)=119.219$; $p < .01$; partial $\eta^2 = 0.654$), suggesting that FQS subscale score means differed. Again, these findings were not of central importance to the research question but are generally expected given the similarity of the sample to the norming group (Bukowski et al., 1994). The tests of between-subjects effects yielded a significant main effect for gender ($F(1,63)=5.003$; $p < .05$; partial $\eta^2 = 0.074$). Across the subscales, girls ($M=3.695$) reported significantly higher friendship quality scores than boys ($M=3.459$). This finding was inconsistent with one of the two samples with whom the measure was created, in which boys reported slightly greater companionship than girls, but is consistent with the second sample group with which the measure was created (Bukowski et al., 1994).

Table 12

Within-Subjects Effects for Gender

Source	Type III SS	df	Mean Square	F	Significance
FQS Scales	215.46	2.31	93.13	119.29	0.00**
FQS*Gender	0.99	2.31	0.43	0.55	0.61
Error	113.79	145.74	0.78		

Note. ** denotes significance < 0.01 .

Table 13

Between-Subjects Effects for Gender

Source	Type III SS	df	Mean Square	F	Significance
Gender	4.49	1	4.49	5.00	0.03*
Error	56.49	63	0.90		

Note. * denotes significance < 0.05 .

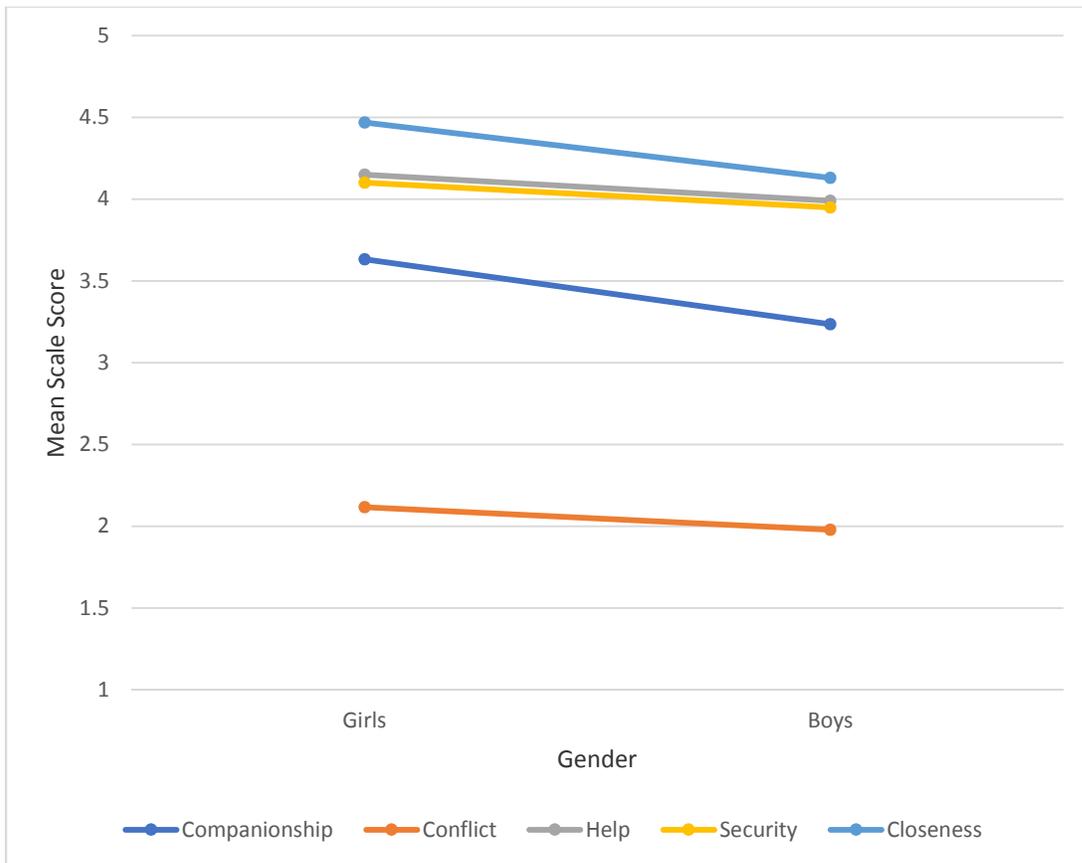


Figure 6. Gender comparisons of FQS mean scores.

Gender: One-Way ANOVAs

To further explore the significant difference on the repeated-measures ANOVA, one-way ANOVAs were conducted for each FQS scale based on gender. See Table 11 for group means across scales by gender.

Companionship

Due to unequal sample sizes across the two groups, Levene’s test of equality of error variances was conducted, and the error variance in responses across groups was determined to be equal (Levene statistic = 0.010, $p > .05$). Normality in distribution of responses was confirmed by observed Q-Q plots. A one-way ANOVA evaluating differences in Companionship Scale scores yielded no significant main effect of gender.

Table 14

Between-Subjects Effects for Companionship by Gender

Source	Type III SS	df	Mean Square	F	Significance
Gender	2.55	1	2.55	3.98	0.05
Error	40.46	63	0.64		

Conflict

Due to unequal sample sizes across the two groups, Levene's test of equality of error variances was conducted, and the error variance in responses across groups was determined to be equal (Levene statistic = 0.635, $p > .05$). The assumption of normality was confirmed on observed Q-Q plots. A one-way ANOVA evaluating differences in Conflict Scale scores yielded no significant main effect of gender.

Table 15

Between-Subjects Effects for Conflict by Gender

Source	Type III SS	df	Mean Square	F	Significance
Gender	0.31	1	0.31	0.48	0.49
Error	40.76	63	0.65		

Help

Due to unequal sample sizes across the two groups, Levene's test of equality of error variances was conducted, and the error variance in responses across groups was determined to be equal (Levene statistic = 2.193, $p > .05$). Normality in distribution of responses was confirmed by observed Q-Q plots. A one-way ANOVA evaluating differences in Help Scale scores yielded no significant main effect of gender.

Table 16

Between-Subjects Effects for Help by Gender

Source	Type III SS	df	Mean Square	F	Significance
Gender	0.05	1	0.05	0.76	0.39
Error	33.77	63	0.54		

Security

Due to unequal sample sizes across the two groups, Levene's test of equality of error variances was conducted, and the variance in responses across groups was determined to be equal (Levene statistic = 1.472, $p > .05$). Normality in distribution of responses was confirmed by observed Q-Q plots. A one-way ANOVA evaluating differences in Security scale scores yielded no significant main effect of gender.

Table 17

Between-Subjects Effects for Security by Gender

Source	Type III SS	df	Mean Square	F	Significance
Gender	0.33	1	0.33	0.67	0.42
Error	31.17	63	0.50		

Closeness

Due to unequal sample sizes across the two groups, Levene's test of equality of error variances was conducted, and the variance in responses across groups was determined to be equal (Levene statistic = 0.170, $p > .05$). Normality in distribution of responses was confirmed by observed Q-Q plots. A one-way ANOVA evaluating differences in Closeness scale scores yielded a significant main effect of gender [$F(1, 63) = 4.879$, $p = .031$, partial $\eta^2 = 0.072$]. Girls ($M = 4.47$, $SD = 0.606$) were observed to report significantly higher closeness ratings than boys ($M = 4.13$, $SD = 0.629$).

Table 18

Between-Subjects Effects for Closeness by Gender

Source	Type III SS	df	Mean Square	F	Significance
Gender	1.87	1	1.87	4.88	0.03*
Error	24.11	63	0.38		

Note. * denotes significance < 0.05 .

CHAPTER 5: DISCUSSION

The purpose of the current study was to investigate perceptions of different aspects friendship amongst middle school students, and how gender, high ability or achievement, or a diagnosis of ADHD may affect these perceptions. Currently, few researchers have examined specific aspects of friendship quality for students who are high ability or have ADHD (Glass et al., 2012; Heiman, 2005; Masden et al., 2015; Normand et al., 2013; Schapiro et al., 2009). Fewer researchers still have explored these concepts for students with both exceptionalities (Foley Nicpon et al., 2010). In many studies related to high ability identification and ADHD diagnosis, girls have reported more positive friendship qualities than boys, regardless of gifted identification or diagnosis (Glass et al., 2012; Masden et al, 2015; Mayseless, 1993). The primary focus of the current investigation was to determine whether self-perceptions of friendship quality differ amongst middle school students with ADHD, high ability or achieving and ADHD, those who are high ability or achieving, and those who are typically-developing. The secondary focus of the current investigation was to determine whether gender affected self-perceptions of friendship quality.

In this chapter, I will first include a discussion of the results of the analyses and outcomes based on the observed sample of middle school students, including an understanding of how the results may generalize to the population. I will next consider limitations of the current study and future directions for research with this population. Lastly, I will finish the chapter by discussing the implications of this study for counseling psychology.

Relationships Between Variables

The current research study sought to answer two questions. The primary question of interest related to perceptions of friendship qualities based on ability or achievement and ADHD diagnosis. The second question of interest pertained to whether gender differences in perceptions of friendship quality were present in the sample. Each research question and findings will be outlined and explored in the context of previous literature.

- 1. Do self-perceptions of friendship quality differ amongst students who are high ability or achieving, have ADHD, have high ability or achievement plus ADHD, and those who are typically-developing?*
- 2. Do self-perceptions of friendship quality differ as a function of gender amongst middle-school age adolescents?*

Friendship Qualities, Ability or Achievement, and ADHD Diagnosis

The analyses of the effects of high ability or achievement identification and ADHD diagnosis first and foremost indicated that twice-exceptional individuals (high ability or achievement plus ADHD) were not statistically different from those with ADHD in their reports of friendship quality. When statistically significant differences in friendship quality ratings were observed, the main effect for ADHD and lack of interaction with high ability or achievement on these scales suggests that twice-exceptional individuals responded in a manner consistent with their peers with ADHD alone. In a qualitative study of twice-exceptional boys, Moon and colleagues (2001) reported twice-exceptional boys demonstrated significant behavioral and friendship difficulty in the classroom, particularly when compared to their gifted-only peers. These findings also align with previous findings suggesting children with ADHD, regardless of intellectual ability, demonstrate similar symptomatology (Katusic et al., 2011).

Findings from the current investigation suggest that twice-exceptional students may align more closely with their peers who have an ADHD diagnosis than peers who are high ability or achieving regarding their views of friendship. Barber and Mueller (2011) also found twice-exceptional students with a learning disability reported self-perceptions more similar to peers with a learning disability than peers who were high ability. The current findings are also not suggestive of positive illusory bias, or overly positive reporting of skills and abilities (Bourchtein, Langberg, Owens, Evans, & Perera, 2017).

Notably, early adolescents with ADHD reported significantly less companionship, help, and security with their best friend than peers without a diagnosis. When examined in light of previous research, these findings are consistent. Companionship, a measure of the amount of time willingly spent in shared activities with a best friend, has been demonstrated by researchers to be particularly challenging for children and adolescents with ADHD. Moon and colleagues (2001) found the task of sharing activities to be difficult for twice-exceptional boys, who often found peers outside of school who shared in their play style. Similarly, Normand and colleagues (2013) observed children with ADHD had difficulty asking for friends' preferences in shared activities. Children and adolescents with ADHD may have more difficulty finding activities to share with a friend. Heiman (2005) found children with ADHD expected friends to be partners in fun and entertainment, while similar-age peers without a diagnosis expected friends to be emotionally supportive partners in thoughts and secrets. This misalignment may be reflected in the lower perceived companionship scores for participants with ADHD.

Individuals who had an ADHD diagnosis in the current study reported lower perceived security (or trust), alliance, and belief a friendship will continue despite conflict in relationships with a best friend than those without a diagnosis. Given previous findings stating children and adolescents with ADHD are less likely to have stable, reciprocated friendships (Blachman & Hinshaw, 2002; Gresham et al., 1998; Normand et al., 2013), these findings are not unexpected. It also may suggest early adolescents with ADHD have difficulty navigating conflict successfully (Johnson & Johnson, 1996), thus potentially decreasing their believe in the ability of a friendship to continue after conflict.

Early adolescents with ADHD in the current study also perceived less help, aid, and protection from peer victimization from their best friend than peers without a diagnosis. This finding makes sense when considered in the context of experiences of children and adolescents with ADHD. These individuals are at increased risk of peer victimization (Humphrey et al., 2007) and rejection (Hoza et al., 2005). You and Bellmore (2012) found perceived help in a friendship could possibly protect against peer victimization; however, if early adolescents do not believe a friendship is secure or based in trust, they likely will not perceive a friend to be helpful or protective in potentially hurtful situations. These findings are promising, in that early adolescents with ADHD are able to perceive and report the above-mentioned difficulties in their friendships, and, consequently, may benefit from additional intervention regarding social skills development.

Another interesting finding was a lack of main effect for giftedness, suggesting that individuals identified as high ability or achieving do not have significantly more positive friendship qualities than those who are not high ability or achieving. Current

research regarding perceptions of friendship quality in high ability youth offers different perspectives. For example, some researchers have found high ability students report significantly more positive friendship qualities (Masden et al, 2015) and intimacy (Field et al., 1998) than average ability students. Others have reported high ability students perceive less intimacy with their best friend than average ability students (Mayseless, 1993). These discrepancies may in part be due to differences across measurements of friendship quality.

Friendship Qualities and Gender

An additional finding of interest was the observed difference in self-perceptions of friendship based on gender. Boys reported significantly lower friendship qualities than girls, a finding that has been well-documented in the literature (Glass et al., 2012; Masden et al., 2015; Mayseless, 1993). Specifically, boys reported experiencing less closeness with their best friend than girls. Given findings by Rose and colleagues (2016) suggesting closeness can be affected by engagement in problem-talk, boys may be less likely to engage in these discussions than girls. This dynamic may contribute to lower perceived closeness. Alternatively, boys may be socialized to behave differently than girls (Endendijk, Groeneveld, M. G., & Mesman, 2018). Additionally, no differences were observed related to conflict (negative friendship qualities) between boys and girls. This finding is expected, given that most literature to this point has not shown boys' friendships to be more conflictual than girls' friendships (Schapiro et al., 2009).

Limitations

The current study included limitations related to inclusiveness of diverse populations, challenges in data collection, and observed sample size. While recruitment

for the current study consisted of multiple methods, including listservs, blog posts, flyers, and mass emails, the sample consisted of mostly White participants from Iowa.

Participants were not equally distributed in accordance with a national sample of children in regards to location and race/ethnicity. The information gathered from the current study therefore may not be considered a representative sample of the broader population of children with or without ADHD. This limitation is problematic, in that children of ethnic minorities are more likely to be diagnosed with ADHD; however, Barbarin and Soler (1993) note that effects of chronically stressful living conditions may be mistaken for ADHD symptoms, accounting for the higher prevalence rates of ADHD in minority youth. Additionally, identification of and research involving gifted students has historically included largely White populations (Hodges, Tay, Maeda, & Gentry, 2018). As suggested by Gummerum and Keller (2008), aspects of friendship quality may differ across cultures, which limits the ability to translate these findings to children and adolescents from a variety of cultural backgrounds.

The current study consisted of a community-based convenience sample of participants. To maximize opportunities for participation, the PI did not require documentation of ADHD diagnosis or cognitive ability or achievement to participate. Documentation of diagnosis was obtained for 9 of 15 participants who self-reported an ADHD diagnosis, and documentation of cognitive ability or achievement scores was obtained for 56 participants; thus, some data collected for the study was self-report, which may be prone to bias.

The sample size obtained for the current study was small (N=65), particularly for the groups with ADHD. A low sample size when making comparisons and attempting to

generalize findings to populations of interest results in low power. As there were only 15 participants with an ADHD diagnosis, and gender as a variable was also studied, low power in the current study indicates that results should be interpreted with caution when attempting to explain true population differences. However, the sample obtained in the current study was comparable to the sample with which the measure was created (Bukowski et al., 1994), which lends support to the generalizability of the current findings.

Future Directions

While more studies specifically focused on twice-exceptional learners are being conducted, there remains a great deal to learn about this population and their self-perceptions (Foley Nicpon et al., 2011). The current study provides some insight into how twice-exceptional learners may view their friendships; however, additional information about the stability of twice-exceptional students' friendships and their satisfaction with friends is yet unexplored. Children with ADHD have shown to benefit from friendships in functioning and psychosocial outcomes (Becker, Fite, Luebbe, Stoppelbein, & Greening, 2012; Glass et al., 2012), but does this apply to those who are also high ability? Additionally, some evidence exists to suggest that accelerative experiences provide psychosocial benefits for high ability students (Lee et al., 2012), but is the same also true for those with an ADHD diagnosis?

Across the literature, researchers have varied in their definitions of giftedness and high ability (Gagné, 2008). Criteria for classification as gifted in research studies have ranged from IQ scores at or above the 91st percentile (Assouline et al., 2010; Lovecky & Silverman, 1998) to involvement in the school district's talented and gifted program

(Anderer, 1993; Faouri, 1998; Nielson, 2002). While the current study offered opportunities for individuals to provide either ability or achievement scores, most participants provided achievement scores, specifically those administered each year by school districts. Achievement and ability scores were accepted by the current study with the hopes of increasing the pool of potential participants, as the number of individuals who have participated in standardized ability testing is far fewer than those who have completed standardized achievement testing. This definition espouses a more inclusive approach to giftedness, from which future research may benefit (Cramond, 2004).

Researchers in future explorations of children and adolescents with ADHD and those who are twice-exceptional should emphasize expansion of sample sizes. Many of the studies in this review, in addition to the current investigation, utilized small sample sizes. Such difficulty leads to greater potential for faulty assumptions to be made when attempting to generalize to the broader population of children and adolescents with ADHD (Kukull & Ganguli, 2012). Similarly, little is known about how the relationship between diversity regarding race, ethnicity or gender expression may affect self-perceptions for students with ADHD. Future studies should also emphasize representative inclusion to aid in generalization of findings (Hervey-Jumper, Douyon, Falcone, & Franco, 2008). Previous research has shown that girls with ADHD may experience different social consequences than boys with ADHD (Hoza et al., 2005), yet research will benefit from more gender inclusion to better understand how this aspect of identity is impactful for twice-exceptional students.

Due to small sample sizes, the current investigation included separate analyses of friendship qualities based on ability, ADHD diagnosis, and gender. As all of these

identities are likely influential in individual development (Bronfenbrenner, 1979), future studies will benefit from the inclusion of gender when examining the self-perceptions of friendship qualities in twice-exceptional youth. Results from the current investigation indicated that girls report more positive friendship qualities than boys; however, does a twice-exceptional identity influence these more positive friendship qualities?

Some researchers have found gifted students who experience academic subject acceleration report better social skills (Lee, et al., 2012) and experience better psychosocial outcomes (Steenbergen-Hu & Moon, 2011). Unfortunately, due to small sample sizes, incorporation of academic acceleration could not be utilized in the current investigation; however, accelerative experiences may be a factor in perceptions of friendship quality for high ability or achieving students.

Additionally, future studies will benefit from brief and simple study protocols, which will likely also assist in obtaining larger sample sizes. The current study required multiple steps and contacts with the research team, which may have been a barrier to complete participation in this study. This may have been particularly true for individuals with attention difficulties, as evidenced by the smaller sample sizes in these groups. Simplification of study procedures for both parents and children will be especially beneficial for individuals with attention difficulties.

Implications for Counseling Psychologists

Theory

When considered in the framework of Bronfenbrenner's ecological systems theory, findings from the current investigation highlight the complexity of the microsystem of a best friendship, particularly for early adolescents with ADHD. As

suggested by Bronfenbrenner (1979), social support networks offer the most benefit when others in the network recognize the early adolescent's abilities, value similar interests, and share similar attitudes toward school and achievement. However, as suggested by Moon and colleagues (2001), twice-exceptional individuals may receive conflicting messages about aspects of their identity and expectations for behavior.

For example, societal messages and expectations related to giftedness may be more positive and reverential (Carber, 2002) while societal messages and expectations related to disability may be less positive and polarizing (Clark, 2011). Per the ecological systems theory, these macrosystem ideas may impact the ways in which children see themselves and the world (Bronfenbrenner, 1979). Considering the stigma surrounding neurodevelopmental diagnoses, twice-exceptional individuals may be more influenced by certain messages from systems (particularly those related to disability) than others. Findings from this study and others (Barber & Mueller, 2011) indicate that the microsystem-level relationships are influenced by different aspects of identity (e.g., disability versus ability). Additionally, societal ideas (macrosystems) related to disability may be more influential for children's self-perceptions than those related to ability.

The current investigation's findings also suggest microsystem level differences in perceptions of friendship based on gender. Boys reported less positive friendship qualities than girls, as friendship quality was measured in this study. These findings may be partially explained by societal (macrosystems) expectations about the behavior of girls and boys in friendships. These expectations affect the way in which parents (Endendijk et al., 2018) and teachers (Allard, 2004) differentially interact with and coach children. This, in turn, may create expectations for children about how they should behave in

friendships, and may influence their self-perceptions about where their behaviors and relationship with a best friend stand in relation to those expectations.

Practice

As suggested by Graber and colleagues (2016) and Waldrip and colleagues (2008), high-quality best friendships in adolescence can serve protective functions and increase resiliency. Therefore, helping to foster friendships for individuals at greater risk for negative psychosocial outcomes (e.g., ADHD; Realmuto et al., 2009) may facilitate more positive coping skills and resiliency for these individuals.

The positive illusory bias suggests that individuals with ADHD may not perceive relationship difficulties in the same way as their parents, teachers, or peers (DeWolfe et al., 2000). However, multiple researchers have found youth with ADHD have fewer or no friends compared to those without a diagnosis (Gresham et al., 1998; Hoza et al., 2005). The current findings suggest children with ADHD rate their friendships less positively than peers without a diagnosis, indicating that they may be more attuned to particular aspects of friendship measured in this study. As high-quality friendships have been shown to be protective factors for adjustment problems (Waldrip et al., 2008), this finding is promising in that early adolescents may be more open to interventions aimed at establishing more secure companionships with peers.

Children and adolescents with ADHD may benefit from perspective-taking and coaching interventions (see Bellini, Akullian, & Hopf, 2007) to foster opportunities for connection and emotional attunement with their peers. Gardner and Gerdes (2015) offer a comprehensive overview of social difficulties experienced by children with ADHD, including disruptive and inappropriate social behaviors, social problem-solving, and

emotion regulation. The researchers also provide a review of social interventions for addressing these difficulties, including the Summer Treatment Program (Pelham & Hoza, 1996) for emotion regulation and disruptive behaviors, and friendship-building programs. Such interventions have been utilized to increase perceptions of help in friendships of high ability youth with social skills difficulties (Foley Nicpon et al., 2017). In Foley Nicpon and colleagues' study (2017), video self-modeling was used to foster perspective taking, social scripts, and self-awareness during a lunch group for students simultaneously involved in enrichment programming. Strengths-based interventions (i.e., fostering strengths of academic ability) may be particularly useful for counseling psychologists to consider when working with twice-exceptional students.

Counseling psychologists should also be aware of bias and practices that may inhibit students from reaching their full potential. This is particularly true for twice-exceptional students with ADHD, whose behavioral difficulties may overshadow their talents. In a study by Baum and Olenchak (2002), researchers found students were less likely receive assessments to determine high ability if a child already received a diagnosis of ADHD. Counseling psychologists must actively work to ensure all identities of the young person are considered and, when necessary, accommodated to encourage successful outcomes.

Conclusion

The primary purpose of the current investigation was to investigate whether identification as high ability or achieving, ADHD, high ability or achieving with ADHD, or typically-developing affected perceptions of friendship quality. Findings suggest that students who are twice-exceptional may have views of friendship that are more consistent

with their peers with ADHD than those who are high ability or achieving. Adolescents with ADHD (regardless of cognitive ability) reported significantly lower friendship qualities (i.e., companionship, help, and security) than adolescents without a diagnosis of ADHD. This finding was not suggestive of a positive illusory bias, or tendency of youth with ADHD to under-report their difficulties (Bourchtein et al., 2017). These findings may also suggest that within the microsystem, individuals with ADHD perceive fewer positive friendship qualities with their best friend. While the current study examined only microsystem-level interactions, future researchers would benefit from exploring whether macrosystem beliefs (Bronfenbrenner, 1979) about disability (ADHD) are more internalized than protective beliefs about ability or giftedness.

The secondary purpose of the current investigation was to investigate whether gender affected perceptions of friendship quality. Consistent with previous research, boys reported significantly lower friendship qualities than girls, specifically in the area of closeness. This finding has been well-replicated in the literature (Glass et al., 2012; Masden et al., 2015; Mayseless, 1993), and may have important implications for how boys and girls may be socialized to behave differently in friendships. Bronfenbrenner's (1979) Ecological Systems Theory provides a framework in which to understand how societal beliefs (macrosystems) about gender behavior may affect how parents, teachers, and other adult supports teach children to behave in friendships. Such differences in socialization may result in boys and girls valuing different behaviors and values within their friendships.

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APPENDIX

Your Child's Gender:

Male Female Transgender Male Transgender Female Prefer not to respond

I would describe my child's ethnicity as... (select all with which your child identifies)

Black/African American Asian or Pacific Islander Native American
Latino(a)/Hispanic White/Caucasian

Child's Age in Years

Child's Grade in School

6th grade 7th grade 8th grade

School Child Currently Attends

Private School Public School
Specialty School (Gifted, Twice-Exceptional, STEM) Homeschool

State of Residence

Location of Child's School

Urban Rural Suburban

Has your child received a psychological diagnosis from a medical doctor, psychologist, or other mental health professional (e.g., ADHD, Autism Spectrum Disorder, depression, learning disability, etc.)?

Please list any psychological diagnoses your child has received from a medical doctor, psychologist, or other mental health professional (e.g., ADHD, Autism Spectrum Disorder, cognitive impairment, etc.).

Please list any medications your child takes to manage the diagnosis/diagnoses mentioned above.

Select all types of academic acceleration that your child has received during his/her education.

Early admission to kindergarten	Early admission to 1 st grade
Grade-skipping	Continuous progress
Paced self-instruction	Subject-matter acceleration
Combined classes	Curriculum compacting
Telescoping curriculum	Mentoring

Extracurricular programs
Concurrent/dual enrollment
International Baccalaureate Program
Early entrance to middle or high school

Distance/online learning programs
Advanced Placement
Credit by examination

Did or does your child currently participate in your school's TAG (talented and gifted) or ELP (extended learning program) program?

Yes, currently Yes, previously No My child's school does not offer these programs

If you have documentation available, please upload a copy of your child's assessment scores here (e.g., Wechsler cognitive ability tests, IOWA assessments). If these documents are not available, that's OK. You may redact (black out) any identifying information, such as your child's name, birthday, or MRN.

If you have documentation available, please upload your child's psychological diagnoses here (e.g., page from a diagnostic assessment report, doctor's note, etc.). If these documents are not available, that's OK. You may redact (black out) any identifying information, such as your child's name, birthday, or MRN.