Loneliness, friendship quality and the social networks of adolescents with high-functioning autism in an inclusive school setting


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By definition, children with autism have poor peer relationships despite age and ability. When children enter adolescence, social problems typically worsen and feelings of loneliness and isolation may emerge. Thus, the overarching goal of the current study is to examine the social–emotional relationships of adolescents with autism and their typically developing (TD) classmates. Participants included 20 adolescents, 7 adolescents with autism and 13 TD classmates. All participants were enrolled in a drama class at a regular education high school in the Los Angeles area. Results indicate that adolescents with autism experienced significantly more loneliness than their TD classmates, had significantly poorer friendship quality in companionship and helpfulness, and had significantly lower social network status than their TD classmates. In addition, 92.4% of TD adolescents had secondary or nuclear social network centrality, which means that those adolescents were significantly connected and recognized in their classroom social structure although 71.4% of the adolescents with autism were either isolated or peripheral in their classroom. These findings imply that although inclusion in regular classrooms may allow adolescents with autism to be involved in the social structure of their classroom, they experienced more loneliness, poorer friendship quality, and social network status as compared with their classmates. These results suggest that, perhaps, more intensive social skills’ interventions that focus on friendship development are needed in adolescents with autism.

Supporting Information

Given that social skills are a core deficit of autism spectrum disorders (ASD), traditional views have assumed that individuals with ASD lack the desire and the skills to foster meaningful relationships with others (Kanner, 1943). However, recent research has documented that some individuals with autism report having at least one friendship (Bauminger and Kasari, 2000; Bauminger, Shulman, and Agam,
Although research is beginning to increase in this area, relatively little is still known about the nature and quality of these relationships, particularly in older children with autism. As inclusion is an increasingly common practice in both primary and secondary education (Kasari, Freeman, Bauminger et al., 1999), children and adolescents with ASD have many daily opportunities to interact with neurotypical age mates which may build their social networks (Grenot-Scheyer, Staub, Peck et al., 1998). Yet these opportunities may be overwhelming in high school when classmates change each class period. As a result, adolescents with ASD may experience feelings of loneliness in the increasingly complex social world of high school.

Loneliness

Loneliness is defined as an undesirable feeling associated with negative affect (Margalit, 1994) and may result from an unfulfilled desire to have friends, an understanding of the gap between an actual and desired social status, and a lack of affective bonding (Asher, Parkhurst, Hymel et al., 1990; Bauminger and Kasari, 2000; Peplau and Perlman, 1982). According to Asher et al. (1990), loneliness is a powerful motivating factor for neurotypical children to initiate or to take part in social relationships and interactions with peers. Perhaps this holds true for individuals with ASD as well, but because of social skills' deficits and difficulties in understanding the subtleties and nuances of social interaction, efforts to seek out social engagement with others are not always successful and may make them easy targets for ridicule, which in turn, may lead to deeper feelings of loneliness (Bauminger et al., 2003). As such, it is important to uncover the reasons for loneliness and its effects in individuals with autism in order to obtain a more accurate conceptualization of their social desire for different forms of interaction and engagement.

In one study, Bauminger and Kasari (2000) found that children and pre-adolescents with high-functioning autism reported greater loneliness and less satisfaction with their friendships as compared with their typically developing peers. These data suggest that children with high-functioning autism seem aware of their social situations and desire social engagement with others, but may lack the skill and opportunity to do so. In a follow-up study, Bauminger et al. (2003) delved further into the loneliness construct and examined whether children with autism would be able to understand the complexity of loneliness, including its more emotional aspect of closeness and affective ties. Consistent with Bauminger and Kasari (2000), the authors found that children with autism experienced more loneliness than their typically developing (TD) counterparts. However, children with autism were as good as their neurotypical peers in understanding that a close friend might protect them from loneliness. Although these two studies provide invaluable information about children with autism and their understanding and feelings of loneliness, less is known about older adolescents with ASD, particularly those who are fully included in regular education. Thus, one goal of the present study is to identify whether these feelings of loneliness continue and worsen in adolescents with ASD.

Friendship quality
When considering loneliness in individuals with autism, it is important firstly to determine the types of friendships typical children have. Typically, individuals tend to choose friends who have similar social and demographic characteristics to their own, what Farmer and Farmer (1996) considered homophilic affiliation. However, unlike most TD children, children with autism may have limited experiences with peers and may also be less able to understand the meaning of friendship. As children with autism enter adolescence, social problems typically worsen. Peers are often not as understanding and accepting, especially during high school where interests vary tremendously, leaving teenagers with autism marginalized. In addition, with age, the valued aspects of friendship change; for example, in adolescence, intimacy emerges as a defining and important quality (Howard, Cohn, and Orsmond, 2006). However, qualities that define friendship in TD peers may not be the same for individuals with autism. As a result, it is crucial to understand the types of relationships that exist between adolescents with autism as well as the quality of those relationships so that ways of promoting more social skills can be identified that will ultimately foster healthy interpersonal interactions and relationships.

The importance of having a friend to a child's development and adjustment has been well documented in the literature on neurotypical children (Ladd, Kochenderfer and Coleman, 1996; Nangle, Erdley, Newman et al., 2003). Researchers have elaborated upon the impacts of the number of friendships children has (Gest, Graham-Bermann and Hartup, 2001; Ladd et al., 1996). However, relatively less attention has been afforded to friendship quality, which has been defined as features of the dyadic relationship such as the level of support, companionship or conflict it provides to the child (Bukowski, Newcomb and Hartup, 1996). Friendship quality has been proposed to create various psychological benefits and costs for children that, in turn, affect their development and adjustment (Ladd et al., 1996). Therefore, it is not just whether children have friendships that are important but rather the quality of these friendships that makes a difference in terms of the function of that friendship. For example, friendship quality has been shown to be a protective factor against bullies (Bollmer, Milich, Harris et al., 2005), a predictor of later school adjustment (Ladd et al., 1996), a precursor to feelings of loneliness and social isolation (Parker and Asher, 1993), and even a catalyst for psychopathological symptoms (Bagwell, Bender, Andreassi et al., 2005).

Despite the growing research on friendship quality in neurotypical children, this construct has rarely been studied in children with autism. Altogether, friendships in children with autism have long been overlooked in research primarily because of the false belief that friendship formation was a rare phenomenon or an impossible feat for these individuals. Recent studies have shown that children with autism do report having friendships although these relationships may be strained and not always reciprocated (Bauminger and Kasari, 2000; Bauminger et al., 2003; Chamberlain, Kasari and Rotheram-Fuller, 2007). The existence of friendships in children with autism suggests that those children possess, at the very least, some basic social skills that enable them to interact and connect to another child. Although these skills may suffice in establishing friendships among younger children with autism, less is known about adolescents with ASD. Thus far, researchers have shown that children and adolescents with ASD have lower friendship quality in terms of companionship, security/trust, and helpfulness as compared with TD children (Bauminger and Kasari, 2000). Adolescents with ASD, particularly those that are higher functioning, are tremendously aware of their social status and often desire a reciprocal high-
quality friendship. When these expectations are not met, feelings of loneliness and isolation may surface, perpetuating the cycle between these interrelated constructs. Therefore, another aim of this study is to examine friendship quality in adolescents with autism and their perceived best friends.

Social networks

Much of the current literature focuses on the dyadic friendship; however, children often belong to a social network. Social networks refer to the peer groups to which a particular student belongs (Boutot and Bryant, 2005; Farmer and Farmer, 1996) and are often calculated as the frequency of nominations children receive by classmates as members of informal peer groups (Cairns, Cairns, Neckerman et al., 1988). The number of friendships and social network status of children has been shown to be moderately correlated. These findings are consistent with the premise that mutual friendships are frequently but not always embedded within larger, informal peer groups (Cairns et al., 1988; Gest et al., 2001). Despite these findings, less attention has been given to the study of social networks for children and adolescents with autism.

Studies have shown that children with autism are poorly accepted by their peers and are often not engaged with them. Young children with autism initiate interactions less often with peers, are less proximal and engaged with peers, show more non-social behaviors, and score less than expected on teacher ratings and standardized measures of social behavior (Koegel, Koegel, Frea et al., 2001; McConnell, 2002). The difficulties children with autism show in interactions with peers may be because of a number of factors, including the lack of social skills and social understanding, and the low frequency of experience with peers. Although caregivers make extraordinary attempts to provide their children with opportunities for social interactions (Chamberlain et al., 2007), when children with autism are observed in the presence of other children, they make fewer attempts to engage with them and are less responsive to others’ bids for social interaction (Sigman and Ruskin, 1999). These missed opportunities are likely to affect children’s social status in a group, particularly in their classroom social structure.

Studies have not always found that children with autism differ from neurotypical peers in social network affiliations. Boutot and Bryant (2005) found no differences between students with autism and students without disabilities. Students with autism were considered to be members of a very definite group, with the same frequency as students without disabilities (Boutot and Bryant, 2005). Most children with autism are not social isolates in their classroom as reported by peer nominations of social network centrality (Chamberlain et al., 2007). Instead, Chamberlain et al. (2007) report that children with autism included in regular education are often on the periphery of their classroom social structure and tend to associate with a small group of other children. These findings suggest that children with autism included in regular education are able to establish social connections with other children in their classroom. However, less is known about the social networks of older children and adolescents with autism. It may be even more difficult for adolescents with autism to fit into peer social groupings because adolescents often have six classroom periods or more in high school and groups of friends are more highly selective and based on common interests.

Purpose of the study
As current practices focus on early intervention and younger children with autism, the purpose of this study was to explore several social constructs in adolescents with autism. As children enter adolescence, services become fewer and the gap between neurotypical peers and individuals with autism generally widens. In recent years, there has been an increase in the number of intervention programs that aim to enhance social skills and friendship development for children on the autism spectrum, yet little is known about the social inclusion of these children once they enter a mainstreamed high school. Understanding what happens during adolescence may inform interventions and/or may provide invaluable information regarding the social outcomes for these children. Given the difficulty that the adolescent period poses for all individuals, it is particularly important to understand the social relationships of adolescents with ASD. As a result, this study sought to examine the feelings of loneliness, friendship quality, and social networks of adolescents with ASD included in a regular high school. Consistent with the literature on younger children with ASD, the authors predicted that adolescents with ASD would experience more feelings of loneliness than their typically developing peers and poorer friendship quality with their reported best friend (Bauminger and Kasari, 2000; Causton-Theoharis, Ashby and Cosier, 2009; Jobe and White, 2007). In contrast with these negative self-reports, it was predicted that adolescents with ASD would be included in their classroom social networks per peer report (Chamberlain et al. 2007).

Participants

Participants were recruited from one high school that has an autism spectrum program in the Los Angeles area. Eligibility for the autism spectrum program was based on having a previous clinical diagnosis of autism spectrum disorder, conversational speech, and minimal behavior problems. This program uses a narrative curricular structure that emphasizes social coherence and understanding via non-traditional techniques such as drama, film, and experience-based exercises. Despite age or grade level, all participants were enrolled in a regular education drama class at their high school. A total of seven adolescents with autism (4 male and 3 female) mean age = 14.71 years (SD= 1.11) and 13 TD classmates [mean age = 14.20 years (SD= 0.63)] participated in this study. The adolescents with autism were predominantly Caucasian (72% Caucasian, 14% African American, and 14% Latino). Further demographic data were not collected on the adolescents or their TD classmates because of school restrictions and policies.

Measures

Loneliness Scale (Asher et al., 1984). This 24-item questionnaire assesses individuals' feelings of loneliness and social dissatisfaction. Sixteen items focus on individuals' feelings of loneliness (e.g., 'I'm lonely', 'There's nobody I can go to when I need help') and feelings of social adequacy versus inadequacy (e.g., 'I'm good at working with other children'). The remaining eight items were distracter items and focused on individuals' hobbies or preferred activities (e.g., 'I like to read', 'I like to paint and draw'). Reporters rate how true each item is using a five-point scale (1 = always true to 5 = not at all true), yielding a total score.

Friendship Qualities Scale (Bukowski, Boivin and Hoza, 1994). The Friendship Qualities Scale is a 23-item questionnaire that examines five features of friendship quality: (1) companionship (voluntary time
spent together); (2) help (encompassing both aid and protection from victimization); (3) security (including trust and the idea the relationship will transcend specific problems); (4) closeness (consisting of both the child's feelings towards the partner and his or her perceptions of the partner's feelings); and lastly, (5) conflict (disagreements, fights or arguments in the friendship). Reporters rate how true a sentence description is of one of their friendships (typically the best friendship), using a five-point Likert scale (1 = never to 5 = always).

Friendship survey. Adolescents were asked to identify who they like to hang out with (friends) and who they do not like to hang out with (rejects) in their classroom. This free recall list of friends determined the adolescent's number of friendships. From this list the adolescents generated, they were instructed to star their best friend from the listed names. In addition, information was gathered on social networks, representing students' perceptions of the social environment of the entire classroom, not just reports of their own friendships. By aggregating perceptions in this way, a robust picture of the full set of networks emerges (Cairns and Cairns, 1994, p. 101). Participating students were asked: ‘Are there kids in your class who like to hang out together? Who are they?’ Subsequently, the adolescents listed the names of other classmates who hang around together in groups; they were reminded to include themselves and groups of the opposite sex as well.

School activity questionnaire. An open-ended questionnaire was designed to elicit a discussion on friendships with the participants in this study. The prompts included: (1) What is a friend?; (2) List five qualities you like and dislike about yourself; and (3) List five qualities you want in a friend. This questionnaire was used to provide additional information about the participants' understanding of friendships. Cronbach's alpha between raters was 0.83.

Procedure

Research personnel attended the participants' drama classroom at school, and distributed consent forms to all students in the class. Once parents completed the informed consent process and adolescents provided assent, the Loneliness and Friendship Qualities Questionnaires as well as the Friendship Survey were administered during the inclusive drama class period during the Fall semester.

Coding nominations of friendships, connections and rejections. These variables were coded from the Friendship Survey. The total number of outward friendship nominations was coded as outdegrees – the number of classmates the adolescent listed as ‘someone they like to hang out with’. Classroom connections were coded as the total number of classmates that were significantly linked on the social network map. Each line segment from the social network map indicates a significant connection to a classmate from that adolescent. See Figure 2. Lastly, rejects were coded as the total number of times adolescents were identified as someone their classmates ‘did not like to hang out with’.

Coding social network centrality (Cairns and Cairns, 1994). Following Cairns and Cairns (1994), a series of social network analyses were conducted in order to obtain each subject's social network centrality score. As mentioned previously, social network centrality refers to the prominence of an individual in the overall classroom social structure. Three related scores are calculated in order to determine a student's level of involvement in the classroom's social networks: (1) the student's 'individual centrality'
(the child's independent status based on nominations to any group); (2) the group's ‘cluster centrality’ (the average of the two highest connected scores in a cluster); and (3) the student's ‘social network centrality’ (the combination of individual and cluster centrality). Using methods developed by Cairns and Cairns (1994), the first two types of centrality are used to determine the third (Cairns, Gariepy and Kindermann, 1990; Farmer and Farmer, 1996). Based on categorizations by Farmer and Farmer (1996), four levels of social network centrality are possible: isolated, peripheral, secondary and nuclear. These four levels of involvement in the classroom’s social structure, ranging from isolated to nuclear, were coded from 0 to 3 to provide a system for describing how well the adolescent with ASD is integrated in his/her informal peer networks.

Seven adolescents with ASD and 13 TD peers were included in the following analyses. Outcome measures of social network status, friendship quality, and loneliness were analyzed using univariate general linear models.

Loneliness

The first analysis focused on the adolescents' reports of feelings of loneliness. A univariate general linear model with group (ASD versus TD) as the independent variable and total loneliness from the Loneliness Scale as the dependent variable revealed that adolescents with autism (37.71 ± 10.93) experience significantly more loneliness than their TD classmates (26.25 ± 7.02), F(1, 16) = 7.40, P < 0.05.

Friendship quality

All seven adolescents with ASD identified another adolescent with ASD as a best friend prior to completing the Friendship Qualities Scale. Of the friendship nominations by the adolescents with ASD, 22 of the 24 nominations were directed towards other adolescents with ASD; only two nominations were directed to TD adolescents. Five domains of friendship quality were examined, including companionship, help, security, conflict, and closeness. Separate univariate general linear models were conducted with group as the independent variable and total scores from each subscale of the Friendship Qualities Scale. The results indicated that adolescents with ASD had significantly poorer friendship quality in companionship (10.86 ± 3.08), F (1, 16) = 8.58, P < 0.05 and helpfulness (17.71 ± 4.15), F (1, 16) = 5.51, P < 0.05 as compared with their TD classmates (14.20 ± 1.62; 21.80 ± 3.05, respectively). See Figure 1.

Figure 1. Differences in loneliness and friendship quality in adolescents with autism compared with their typically developing (TD) peers. ASD, autism spectrum disorders, FQ, friendship quality
The models exploring the differences between adolescents with ASD and TD peers in the domains of closeness, security and conflict from the friendship qualities measure were not significant. Adolescents with ASD provided each other with statistically similar levels of closeness, security, and conflict in terms of their best friendships as compared with their TD classmates.

Social network centrality

Another research aim of this study was to understand the social networks and connections of adolescents with ASD in an inclusive setting in comparison with their TD peers. Descriptive analyses indicated that 92.4% of the TD adolescents had either secondary or nuclear social network ratings. In contrast, adolescents with ASD were either isolated or peripheral 71.4% of the time in this particular classroom. A univariate general linear model revealed that adolescents with ASD (1.14 ± 0.29) had significantly lower social network ratings as compared with their TD peers (2.23 ± 0.22), F (1, 19) = 8.68, P < 0.01. More specifically, of the seven adolescents with ASD, one was isolated in the classroom social structure and the other six were not significantly connected to any TD classmate. Rather, the adolescents with ASD were connected to each other forming two smaller groups on the periphery of the classroom. See Figure 2.

Nominations of friendships, connections, and rejections

Next, the writers examined whether other friendship variables from the friendship survey were significantly different in adolescents with ASD in comparison with their TD peers. Namely, the researchers were interested in examining the number of total connections, rejections and perceived friendships within this classroom. When examining adolescents' overall connections with other peers within the classroom, a significant group effect was observed which suggests that adolescents with ASD had fewer connections (1.43 ± 0.98) in comparison with their TD peers (3.69 ± 1.84), F(1,19) = 9.03, P < 0.01. On examining the overall number of rejections received, a marginal group effect was observed, suggesting that adolescents with ASD had a trend towards more rejection nominations (0.86 ± 1.07) in comparison with their TD peers (0.23 ± 0.44), F(1,19) = 3.51, P= 0.077. Lastly, when the number of nominated friends was examined (children's perceived friendships or outdegrees), there was a marginal group effect with adolescents with ASD with fewer perceived friendships (3.43 ± 1.51) in comparison with their TD peers, (5.60 ± 2.50), F (1, 16) = 4.15, P= 0.06. See Figure 3.

Figure 3. Differences in social network status and other friendship variables. ASD, autism spectrum disorders; SNC, Social Network Centrality; TD, typically developing

Qualitative responses

Responses to the open-ended school activity questionnaire were coded for common themes by two researchers. These data illustrated their conceptual understanding of friendship and revolved around friendship quality, namely security and intimacy. Adolescents with high-functioning autism most
commonly used phrases such as ‘someone you can relate to’ and ‘someone you can talk to’ when defining a friend. In addition, they reported that trustworthiness, patience, helpfulness, and kindness were some defining characteristics of a friend. Interestingly, these characteristics were also the most commonly listed qualities they desired in a friend.

However, when asked to list qualities that adolescents with high-functioning autism liked about themselves, their responses pertained to their talents and abilities, not qualities about their personality. One student wrote, ‘I love how smart I am. I impress myself so much sometimes, especially with music. In that aspect, I consider myself and am considered a genius!!!’ Other responses included ‘my ability to learn languages’, ‘my knowledge about cars’, ‘I'm good at making floor plans’, ‘my organizational skills’, ‘my map skills’, ‘the way I write stories’, ‘good at hiking’, ‘good at board games’, ‘good at cards’ and ‘my artistic skills’. On the other hand, when asked to list qualities that they disliked about themselves, their responses pertained to qualities about their personalities. Some adolescents reported they disliked their ‘impatience’, ‘inflexibility’, ‘intolerance’ and ‘temper’, yet they listed the opposite traits as desired qualities to find in a friend (i.e., someone who is ‘patient’, ‘helpful’, ‘trustworthy’ and ‘tolerant’). These adolescents had a clear understanding of what traits friends should have and were aware that they did not exhibit these traits. Instead, they reported that they disliked being the opposites of these desired qualities in friends. Consistent with normative adolescent friendships, adolescents with ASD defined friendships based on intimacy and quality but there is a lack of connection between their understanding of the definition of friendship and what they think about themselves.

This study examined loneliness, friendship quality and the social networks of 20 adolescents with and without high-functioning autism who were included in a regular education drama class. First, the results indicate that there is a significant difference in feelings of loneliness in adolescents with ASD in comparison with their classmates. These results are consistent with Bauminger and Kasari's (2000) study of younger children with autism, such that adolescents with ASD reported significantly more loneliness as compared with their TD classmates. From their reports, it seems as though these adolescents have the social desire to forge relationships with other adolescents their age. However, they may experience a lack of connection between what they want and what is actually occurring within their social networks and friendships. This seems to be the result of the adolescents' difficulty with reciprocating what they believe to be necessary in a healthy relationship. Questionnaire responses showed that adolescents with ASD tend to view themselves negatively in terms of the qualities that they believe are essential in a friendship. For instance, one student admitted that she did not like the fact that she was impatient and later explains that patience is necessary in a friendship. Her conceptualization of what is acceptable as a friend did not reflect what she thought about her own personality.

Although we know that having at least one friend can serve as a protective factor against peer victimization and overall adjustment for children and adolescents (Hartup and Stevens, 1997; Waldrip, Malcolm and Jensen-Campbell, 2008), additional research suggests that it is not just whether children have friendships that is important but rather the quality of these friendships that makes a difference as to whether the friendship will serve in a protective capacity (Bollmer et al., 2005). In spite of the natural progression of growing intimacy in adolescent friendships, adolescents with ASD have poorer friendship quality with their perceived best friendships as compared with their TD peers within this drama class.
Although it is important that adolescents with ASD perceived relationships with a best friend, this relationship is significantly poorer in terms of companionship and helpfulness. This difference may be because of the fact that all of the adolescents with ASD thought about their friendships with other adolescents with ASD when answering questions about friendship quality. Therefore, adolescents with ASD are not providing the same type of companionship and helpfulness that their TD classmates provide each other.

As the formation and maintenance of high-quality friendships are built upon interpersonal social skills, perhaps these results are because of differences in social skills between the groups. All of the adolescents with ASD nominated another adolescent with ASD as his/her best friend. As both members of the perceived best friendship were on the autism spectrum, perhaps the lower scores are because of challenges in social skills. Nonetheless, these friendships are likely to be just as important and meaningful as friendships among TD adolescents. It is important to note that despite potential disparities in skill levels, adolescents with ASD were no different in their reports of security, conflict, and closeness with their best friendships when compared with their TD peers. Thus, friendships may be similar in both groups with respect to these domains and that best friendships among adolescents with ASD are not drastically different from friendships between TD adolescents.

Although these adolescents with ASD successfully identified a best friend, the majority of these adolescents with ASD were still isolated or on the periphery of their classroom social structure and were not recognized as being part of a friendship group as often as their TD classmates. Despite their poorer social network status, six of the seven adolescents with ASD had at least one friend, which is consistent with recent research that disproved the traditional view that individuals with autism were incapable and reluctant of forming friendships (Kanner, 1943). These six adolescents with ASD formed clusters with each other, lending support to Farmer and Farmer's (1996) theory of homophily within social networks that suggest that individuals are more likely to establish and maintain social bonds with others who are similar to them in terms of their personal, behavioral, and social characteristics. Farmer and Farmer (1996) noted that students with learning disabilities tended to interact with other students with similar characteristics. In addition, students that were 'academically gifted' tended to interact with other students that fell into that category as well. Therefore, it is not surprising that adolescents with ASD tend to interact and choose friends who are also on the autism spectrum. Friendships between adolescents with ASD may not be considered high in quality under the normative model of friendship, but may be appropriate for these adolescents with ASD and just as valuable in terms of overall development.

Although this study is unique in that one regular education classroom included seven adolescents with high-functioning autism from one high school, future studies would benefit from including more participants from other classes as well as examining class relationships of these adolescents with ASD across other classes. Furthermore, the cross-sectional design of this study also limits understanding of what changes might occur across age groups, grade levels, and classrooms. As adolescents progress through the high school years, academic demands increase and may add additional social pressures, particularly for those on the autism spectrum. Having longitudinal studies examine these social issues and outcomes over time could help specify the exact challenges and difficulties that arise for
adolescents with autism. This information may be invaluable for social skill interventions that could alleviate feelings of loneliness and enhance friendship quality.

In summary, this study provides a glimpse of the feelings of loneliness, friendship quality and the social networks for adolescents with high-functioning autism in a fully included high school. In particular, these adolescents with ASD show a considerably different pattern of social network inclusion from their TD classmates. Despite the progressive curriculum at this high school, it appears that mere classroom inclusion may be insufficient to integrate fully adolescents with ASD with their TD age-mates. Perhaps successful assimilation is dependent on how adolescents with ASD are perceived by their TD classmates in terms of their ‘normality’ and ‘abnormality’ (Humphrey and Lewis, 2008). Thus, additional supports such as sensitivity training for peers may be needed to facilitate true social inclusion in high school. Future longitudinal studies are needed to follow and understand adolescents with autism so that one can begin to bridge the social gap between adolescents with autism and their TD peers.

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