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# The Relationship Between Isolation and Social Emotional Experiences in Children with Autism Spectrum Disorder

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THE RELATIONSHIP BETWEEN ISOLATION AND SOCIAL EMOTIONAL  
EXPERIENCES IN CHILDREN WITH AUTISM SPECTRUM DISORDER

by

JANA ARSLAN

(Under the Direction of Nicolette P. Rickert)

ABSTRACT

Children with ASD often face socioemotional challenges compared to their typical developing classmates (Chamberlain et al., 2006; Deckers et al., 2017; Liu et al., 2021; Locke et al., 2010; Zeedyk et al., 2015). The objective of the current study was to assess the relationship between classroom isolation and social emotional experiences (i.e., social isolation, loneliness, self-efficacy with peers, and friendship quality) in children with Autism Spectrum Disorder (ASD) through self-report surveys in order to foster the best possible academic environment for children with ASD to succeed and create outlets for further research to be developed in regards to this subject. It was hypothesized that children with ASD who are isolated from their peers by being placed in a separate, non-typical classroom setting for longer periods of time (e.g., years vs. months) would feel more isolated and lonely, and have lower perceptions of self-efficacy, and friendship quality. The present study contained four scales assessing social emotional experiences employed on an online, anonymous survey. Analyses of variance (ANOVAs) were used to assess differences between groups of participants based on degree of isolation from the mainstream classroom and the dependent variables feelings of isolation, loneliness, self-efficacy with peers, and friendship quality. While findings of the current study did not exhibit differences between groups on feelings of isolation, loneliness, self-efficacy with peers, and friendship quality specific to conflict and compassion, results of the study did reveal that the longer

participants were isolated from the mainstream classroom, the greater sense of friendship and closeness they experienced. Future research is needed to better understand how isolation relates to psychosocial experiences in children with ASD.

**INDEX WORDS:** Autism spectrum disorder, Social emotional experiences, Social isolation, Isolation inside the classroom, Isolation outside of school, Loneliness, Self-efficacy with peers, Friendship quality, Closeness, Companionship, Conflict

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## CHAPTER 1

### INTRODUCTION

The Centers for Disease Control (CDC) defines Autism Spectrum Disorder (ASD) as a developmental disability due to differences in the brain (2022). Specifically, ASD impairs social interaction and communication. According to the CDC's data collection and analysis in the United States of America, the prevalence of autism in children has increased by roughly about 10%, meaning that 1 in 54 children in the United States of America on average are diagnosed with ASD by the age of 8 (CDC, 2020). Children with ASD are often placed in non-typical classrooms instead of mainstream classrooms to ensure that they are receiving the proper education and individualized support needed to learn and succeed. According to the National Center for Education Statistics (2022), 12% of children with ASD needed special education services in schools under the Individuals with Disabilities Education Act (2022).

There is a growing rationale for potential ramifications of separate classrooms. The need to evaluate relationships between children diagnosed with ASD and their feelings and social experiences in classroom settings is important for the development of children with ASD. Past literature on this subject has suggested concerns about placing children with ASD in a typical classroom setting, while specifically looking at peer acceptance (Chamberlain et al., 2006; Deckers et al., 2017; Liu et al., 2021; Locke et al., 2010; Zeedyk et al., 2015). There is not, however, a clear picture or understanding on whether or not it is better to include children with ASD in the typical classroom setting, or seclude them by placing them in their own classroom. Previous contributions to the field of research have studied classroom inclusion or isolation for children with ASD but there is little on the literature regarding the association with children's feelings and interpersonal relationships. For example, it is unclear how separate classrooms

impact children's friendship quality and self-efficacy. In order to fill this gap in the literature, this study aims to examine the relationship between isolation and loneliness in children with ASD within academic settings specific to loneliness, self-efficacy with peers, and friendship quality.

Social belonging is crucial for children's psychosocial adjustment to ensure no child experiences negative feelings in regards to inclusion. Self Determination Theory (Ryan & Deci, 2022) states that all individuals have three psychological needs which includes: competence (i.e., ability to do something with skill), autonomy (i.e., independent, self reliable), and relatedness (i.e., being connected). Specifically with regards to relatedness, also referred to as a sense of belonging, SDT highlights the importance of feeling related and connected to others, such as peers, friends, teachers, and caregivers. Children who felt a higher sense of relatedness from their teachers and classmates showed greater behavior and overall engagement in the classroom along with more motivation to participate in classroom activities (Furrer & Skinner, 2003). Higher levels of interpersonal relationships contribute to students' well-being, motivation, and academic achievement (Martin and Dowson, 2009), highlighting the importance of relatedness and sense of belonging. In general, being close and related to others suggests a better overall feeling in individuals because it fosters involvement within communities. Building and creating relationships, caring for others, and being a part of a greater community to reduce the risk of an individual feeling alienated is crucial. In order for the strongest environment for children with ASD to be accomplished, a good understanding of social isolation, loneliness, self-efficacy with peers, and friendship quality must be identified.

## **Child Involvement in the Academic Setting**

In recent research and literature, there is mixed evidence with regard to children with ASD experiencing isolation, loneliness, or low friendship quality when it comes to being in the mainstream classroom with fellow peers and classmates. In a study conducted by Chamberlain et al. (2006), involvement of children with ASD in a typical classroom setting was examined. Children with ASD self-reported on friendship qualities, peer acceptance, loneliness, and classroom social networks in surveys. Children with ASD experienced lower centrality (the quality of feeling important), acceptance (the state of feeling included and appreciated), companionship (a feeling of friendship), and reciprocity (mutual benefits) in the typical classroom setting. However, children with ASD did not experience higher rates of loneliness and some did report experiencing strong friendships suggesting that there are fewer ties in the mainstream classroom, but loneliness may not be something that is as bothersome. In addition, Locke et al. (2010) conducted a study to observe and analyze the social-emotional relationships of adolescents with ASD and their typically developing classmates in a high school drama class. Adolescents with ASD experienced significantly more loneliness, helplessness, and poorer friendship quality than their typically developing classmates, even when placed in the same classroom, suggesting that children with ASD may experience more negative psychosocial feelings.

Zeedyk et al. (2015) conducted a study assessing loneliness and social competence in children with ASD while also incorporating parent and teacher perceptions. Children with ASD were included in the mainstream classroom for at least 80% of their school day. Children self-reported responses, while parents and teachers reported on the child. Parent-reported and teacher-reported assessments of children's social skills (i.e., communication with others) and conflict (i.e., opposing actions or words) within the classroom between students and teachers were

associated with children's reports of loneliness, demonstrating that there is consistency between what is noticed by both parents and teachers, and how the child with ASD truly feels in the mainstream classroom. Similarly, Deckers et al. (2017) conducted a study to analyze loneliness and social interaction in adolescents with ASD using a cross sectional design with one group (adolescents with ASD) who were recruited from the health center, and a second group (adolescents with Attention Deficit Hyperactivity Disorder; ADHD) who were recruited from mainstream classrooms from primary and secondary schools. The adolescents completed self-report questionnaires where they answered questions about loneliness and social interaction, while their parents and teachers filled out scales on the child's functioning, including whether or not the child engaged in social skills such as greetings, conversations, and play. Adolescents with ASD reported higher levels of loneliness, social problems, and social anxiety and lower levels of social skills or desire for social interaction than the comparison group (Deckers et al., 2017). Yet, both groups also expressed the wish to belong during their years of growing up through adolescence.

In addition to examining loneliness and friendship quality, concerns of potential bullying when placing children with disorders in classrooms with peers without disorders has also been assessed. Liu et al. (2021) conducted a study that looked at children with ASD or ADHD and how they are especially victims of bullying and are put at risk for traditional bullying throughout a majority of their adolescence. Adolescents reported on their experiences of traditional and cyberbullying perpetration and victimization through self surveys on Facebook, Twitter, and Plurk, or through pictures or video clips, emails, and blogs the year before. As levels of social anxiety increased, the risk of falling victim to traditional bullying and cyberbullying in adolescents with ASD also increased, even when controlling for sex, age, ADHD diagnosis, and autistic social impairment (Liu et al., 2021). More research must be done in order to assess

whether or not inclusion of adolescents with ASD in the typical classroom may impact experiences of isolation, loneliness, bullying, and friendship quality.

### **Potential Solutions**

Previous research on a multitude of interventions and activities suggest that feelings of loneliness in children with ASD is not inevitable, especially outside of the academic setting. For example, online gaming, extracurriculars, and activities outside of the classroom have been researched and used for experimentation. To learn about potential solutions, Sundberg (2018) conducted a study investigating correlations between loneliness and friendships in 85 adolescents and adults with ASD in online multiplayer games. Adolescents with ASD who participated in online multiplayer games self-reported that they had more friends than those adolescents with ASD who did not participate in online gaming. Further, those who participated and played the online games experienced less general feelings of loneliness. However, there was no statistically significant correlation between friendship quality and online gaming.

Taking a different approach to potential solutions, Beiers et al. (2016) conducted a study to evaluate the effects of using prompts (e.g., instructor directed the child to skate to a certain point or pass the hockey puck) and reinforcement (e.g., verbal praise after completing prompted task) procedures to increase the social interaction of two children with ASD in hockey practice. The results indicated that the social interaction of the two participants was increased during hockey practice through the use of these prompting and reinforcement techniques, demonstrating the potential for non-academic contexts and interactions to facilitate social experiences for adolescents with ASD. Similarly, Klinek (2021) conducted a study that examined archery and children with ASD since archery is a sport that provides students the opportunity to try a team sport without the socialization skills necessary for other sports. During the piloted eight-week

program, most participants were engaged, focused, and performed to the best of their ability, and participating in the program was associated with higher levels of self-esteem, socialization, focus, and attention.

Using a different method, Frankel et al. (2011) conducted a study to examine the relationship between mother-reported play date frequency, amount of conflict, and peer interaction observed on the school playground with observations of intellectual functioning, adaptive behavior, and social skills. Children with ASD who had more play dates in their home tended to spend a greater amount of time engaged in behaviors such as mutual offering of objects, conversing, and other turn-taking activities with peers on the school playground. Children with ASD also received more positive responses to their overtures from peers. This is important to note because it provides a solution to non-academic interactions without the implementation of treatments, such as specific sports activities or skills training programs.

Finally, Bohnert et al. (2019) conducted a study assessing connections between organized activity involvement (e.g., sports, performing arts, academic clubs) and adjustment and whether these relationships were moderated by social impairment and executive functions for adolescents with ASD. Greater intensity (number of hours), breadth (different types of organized activities), and academic organized activity involvement (participation) were associated with fewer depressive symptoms, less loneliness, better friendship quality, and stronger socio-emotional adjustment when accounting for risk factors (e.g., inhibition, emotional control, social impairment).

Overall, these studies and their findings show that assessing feelings of loneliness in children with ASD is extremely crucial to understanding how children with ASD feel. There are multiple ways to assess the relationship between isolation and loneliness in children with ASD,

and there are many potential solutions to reducing feelings of loneliness. These findings are not specific to the academic setting and can be useful for other settings in demonstrating that interactions with others can help decrease loneliness and increase social skills for children with ASD.

### **Current Study**

It is important to assess the association between isolation in schools and feelings of loneliness in children with ASD to provide insight and create safe and developmentally appropriate environments for these children. Previous literature has not delved as deep into the emotional aspects of sense of belonging and peer interactions, therefore, the current study sought to understand the emotional experiences that children with ASD face in the academic setting. More specifically, the current study addressed how the history of isolation from mainstream classes is connected to children's interpersonal experiences at school, including: feelings of isolation, loneliness, self-efficacy with peers, and friendship quality. It was hypothesized that children with ASD who are isolated from their peers longer by being placed in a separate, non-typical classroom setting will feel more isolated and lonely, and have lower perceptions of self-efficacy, and friendship quality. No study to date has specifically investigated the associations between length of isolation on children's social experiences, therefore, it was hypothesized that children who have been isolated from mainstream classrooms for longer (e.g., years) will have greater impacts on their interpersonal experiences (e.g., loneliness) compared to children who have been isolated for less time (e.g., months).



## CHAPTER 2

### METHOD

#### **Participants**

The target population identified in this study was children between the ages of 7-18 years diagnosed with Autism Spectrum Disorder. Requirements for participation included being between 7-18 years old; having a professional diagnosis of ASD from either a child psychologist, a child psychiatrist, a pediatric neurologist, or a developmental pediatrician; and enrollment in school. A power analysis was conducted through R studio cloud to determine the number of participants needed in the sample. The alpha level was set to .05, the effect size to .20, and power to .80. The sample size following the power analysis was 193 participants, which is the number of participants needed to detect a .20 correlation 80% of the time if it exists in the population. Therefore, the current study sought to sample at least 200 participants, but ideally more. Due to limits of accessing that population, and requirement criteria for participation, only data from 19 participants was utilized. The final number of participants used was similar to other studies on this subject ranging between 2-20 participants (e.g., Beiers et al., 2016; Chamberlain et al., 2006; Klinek, 2021; Locke et al, 2010; Zeedyk et al., 2015).

The study included 19 total participants who met the inclusion criteria of age, having a professional diagnosis of ASD, and currently being enrolled in school. Reports regarding demographic characteristics revealed that the mean age of participants was 13.79 ( $SD = 2.76$ ). Of the 19 participants, 63% identified as biologically male ( $N = 12$ ), and 37% identified as biologically female ( $N = 7$ ). Ethnic distribution for participants was 63% White ( $N = 12$ ), 26% Black or African American ( $N = 5$ ), 5% Native Hawaiian or Pacific Islander ( $N = 1$ ), and 5% Other ( $N = 1$ ). Gender differences showed that 68% identified as a boy ( $N = 13$ ), 26% identified

as a girl ( $N = 5$ ), and 5% identified as other ( $N = 1$ ). The mean grade level of participants was 8.16 ( $SD = 2.63$ ) with a total range from 4th-12th grade. In regards to years of isolation, 26% reported never having been isolated from the mainstream classroom ( $N = 5$ ), 37% reported having been isolated from the mainstream classroom for less than three years ( $N = 7$ ), and 37% reported having been isolated from the mainstream classroom for three years or more ( $N = 7$ ).

### **Measures**

Qualtrics was used to administer the survey to participants. Participants needed a stable internet connection in order to access and complete the survey, along with an electronic device, which could have included a computer, laptop, tablet, or phone. For demographics, participants answered a series of questions in regards to their age, gender, sex, race, grade level, professional diagnosis, and years of isolation from the mainstream classroom including asking time length specific to months and years (see Appendix).

The Classmates Social Isolation Questionnaire was used as a measure for assessing feelings of social isolation inside and outside of the classroom setting. The scale consisted of 10 items (e.g., “How many of your classmates speak with you?”) that were rated on a 5-point Likert-scale (0 = *All*, 1 = *Many*, 2 = *Some*, 3 = *Few*, 4 = *None*). Five items targeted social isolation within the classroom while five items targeted social isolation outside of school. Each individual item score was summed with all others where a higher score indicated greater feelings of isolation and a lower score indicated less isolation. This scale has demonstrated good internal consistency in the past ( $\alpha = .73-.76$ ; Alivernini & Manganello, 2016) as well as in the current study (Total scale:  $\alpha = .92$ ; Inside classroom:  $\alpha = .73$ ; Outside classroom:  $\alpha = .93$ ).

The Loneliness and Social Dissatisfaction Questionnaire was used as a measure for assessing children’s feelings of loneliness. The scale consisted of 24 items (e.g., “There’s no

other kids I can go to when I need help in school.”) that were rated on a 5-point Likert-scale (1 = *Not True at All*, 2 = *Hardly Ever True*, 3 = *True Sometimes*, 4 = *True Most of the Time*, 5 = *Always True*). Only 16 questions from this measure were utilized in the survey. The questions that were used were specific to non-hobby items. All responses were summed to create an overall score of loneliness. Internal consistency has historically been high ( $\alpha = .90$ ; Asher & Wheeler, 1985) and was also supported in the current study ( $\alpha = .83$ ).

The Self-Perception Profile for Learning Disabled Students was used to measure children’s self-efficacy with peer interactions specific to situations that may occur in their life. The social competence subscale was used and consisted of five items (e.g., “Some kids understand how to get peers to accept them BUT Other kids don’t understand how to get peers to accept them.”) that were rated on a 4-point scale (1 indicates the lowest perceived competence, and a score of 4 indicates the highest level of competence). All responses were averaged to determine the role of the self in social situations. Internal consistency for this scale was high for each subscale previously ( $\alpha = .80-.85$ ; Harter, 1985) however, this scale had a low reliability score of .39 in the current study indicating that there is potential for the scale having been misunderstood or difficult.

The Friendship Qualities Scale was used to assess children’s perceptions of friendship quality. The scale consisted of 23 items (e.g., “When I do a good job at something, my friend is happy for me.”) that were rated on a 5-point Likert-scale (1 = *Not True*, 5 = *Really True*). All responses were averaged to collect an overall score. Internal consistency of each scale was individually analyzed and was reported being high in previous studies ( $\alpha = .71-.86$ ; Bukowski et al., 1994) as demonstrated in the current study as well ( $\alpha = .83$ ). Additionally, the subscales had

high reliability in the current study (Companionship:  $a = .89$ ; Conflict:  $a = .92$ ; Closeness  $a = .77$ ).

## **Procedure**

The study was performed under IRB approval. A single time point design using a survey method was employed. Although there has been research done with treatment components as potential solutions, the proposed study did not imply or make any causal assumptions or manipulations and was correlational in design. Participants were recruited via distribution of flyers that included the survey link and QR code which were posted on social media platforms such as Instagram and Facebook and allocated to organizations and support groups for children with ASD. Surveys were administered via Qualtrics. Participants were provided with an informed assent, and caregivers were provided with informed consent. If participants agreed to participate, they were provided with the entirety of the survey. If participants did not agree to participate, they were taken directly to the debriefing resources. Survey responses were confidential, and all participants received an ID number. Participants self-identified demographics and self-reported survey responses. Following the survey, all participants received a debriefing. After study completion, 85 participants from the study were randomly selected to receive a \$10 Amazon Gift Card for their participation in the study and were contacted via email with this reward (from COGS funding award).

In order to minimize the potential for order effects in the survey, item randomization was conducted in the software Qualtrics. Item randomization was crucial for reducing the possibility of selection bias, which could have affected the studies outcomes or results if not controlled for. Measure randomization was also used in the survey meaning that the measures used were in no particular order. Finally, participants in this study were asked at the end of the survey to report if

they felt as though they responded to the survey accurately, or poorly. Although there is potential for false responses, this is usually beneficial to the researcher when analyzing the data. (Curran, 2016).

## CHAPTER 3

### RESULTS

#### **Preliminary Analyses**

Descriptive statistics (e.g., mean, standard deviation) for each outcome variable along with correlations are presented in order to summarize all variables (see Table 1). Preliminary correlation analyses were conducted in order to assess the relationship between isolation and each measure of social emotional experiences (e.g., feelings of isolation, loneliness, self-efficacy with peers, friendship quality) in children with ASD (see Table 2). Unexpectedly, a sense of closeness in regards to friendship quality was positively correlated with years of isolation from the mainstream classroom such that a higher number of years of isolation from the mainstream classroom was related to a higher sense of closeness to friends. There was no statistically significant association, however, between years of isolation from the mainstream classroom and all other outcome variables such as loneliness, self-efficacy with peers, and companionship and conflict in regards to friendship quality. When comparing outcome variables, isolation inside the classroom and isolation outside of the classroom were positively correlated. Similarly, companionship and closeness were positively correlated in regards to friendship quality, while closeness and feelings of loneliness were negatively correlated.

#### **Main Analyses**

To measure the main research questions in this study, a series of analyses of variance (ANOVA) were conducted in order to examine if participants who have experienced various levels of isolation from the mainstream classroom differ in their feelings of isolation, loneliness, self-efficacy with peers, and friendship quality. While the original measure of length of isolation offered five options (0 = Never isolated, 1 = Isolated less than 6 months, 2 = Isolated 6.1 months

to 1 year, 3 = Isolated 1.1 years to 3 years, 4 = Isolated more than 3 years), some of the groups had only one participant in them. Therefore, the five groups were recoded into three groups of length of isolation: never, less than three years, and three years or more.

The results of the ANOVAs revealed that there were no statistically significant differences in group means specific to years of isolation from the mainstream classroom and the outcome variables of feelings of isolation, loneliness, self-efficacy with peers, and friendship quality (companionship, conflict; see Table 3). The ANOVAs did however, reveal a marginally statistically significant difference specific to the subscale of closeness when assessing for friendship quality ( $F(2, 15) = 3.27, p = .07$ ). LSD post-hoc analyses were conducted in order to more closely look at where the marginally significant differences between the three groups occurred. The results of the LSD post-hoc analyses demonstrated that the more than three years of isolation group ( $M = 3.83, SD = .67$ ) had statistically significantly ( $p < .05$ ) higher ratings of closeness in regards to friendship quality in comparison to the less than three years ( $M = 2.87, SD = .71$ ) and never ( $M = 2.84, SD = 1.01$ ) groups of isolation. There were no differences between the never or less than three years of isolation groups.

## CHAPTER 4

### DISCUSSION

The purpose of the current study was to examine the link between isolation from the mainstream classroom and feelings of loneliness in children with Autism Spectrum Disorder specific to feelings of isolation, loneliness, self-efficacy with peers, and friendship quality. Past research in the field has concluded that children with ASD are more likely to experience feelings of loneliness than children without ASD, along with fewer friendships and poorer quality of friendships than their classmates (Chamberlain et al., 2006; Deckers et al., 2017; Liu et al., 2021; Locke et al, 2010; Zeedyk et al., 2015). Prior research has also discussed the importance of a sense of relatedness and belonging, highlighting that an increased sense of relatedness and degree of interpersonal relationships contributes to student's motivation, engagement, well-being, and success in the realm of educational settings (Furrer & Skinner, 2003; Martin & Dowson, 2009).

While this study did not have any statistically significant group difference findings, it was found that friendship closeness was correlated with years of isolation from the mainstream classroom and there were marginally statistically significant differences between those with more isolation (more than three years) compared to those with less (never or less than three years), suggesting that participants who were isolated for longer periods of time perceived greater friendship closeness. This does not support previous findings on friendship quality within this population, however, a potential reason for this finding may be because those who have been isolated for longer amounts of time have built friendships and connected with their peers who have similarly been isolated from the mainstream classroom for greater periods of time. Additionally, those with congruous experiences of isolation as opposed to others with dissimilar



experiences may be able to relate in understanding one another's emotions, thus, prompting and maintaining close relations. Drawing on theories of relatedness and belonging, it could be that those who have had similar experiences in regards to isolation from the mainstream classroom may have been able to connect with one another on a genuine level and created secure bonds of closeness, mitigating adversity and enhancing a sense of belonging. Another possible explanation for this finding is that these individuals may have found sources of close friendships outside of school, which was not assessed in the current study. Future research is needed in order to investigate this unexpected finding and these potential explanations.

### **Limitations and Future Directions**

Several limitations of this study need to be recognized and considered for future research on this subject. One possible limitation of this study was that the survey was administered through a link and QR code, meaning that no researchers were in person administering the study and ensuring participants were following along correctly. This has the potential of participants having outside help on the survey or not being able to ask for assistance from a trained researcher. Prompts were given throughout the entirety of the survey for when caregivers should or should not have been around to help participants with certain questions like demographics, but this also opened up the possibility of caregivers over helping participants. Another limitation was the use of only self-reported data. This can cause participants to falsely assess themselves and misidentify themselves (e.g., having a professional diagnosis). The researcher was aware of this risk but believed that reports from the children themselves were important for truly understanding social emotional experiences in academic settings, thus, self-report was needed. The inclusion of multiple reporters, such as parents and teachers showcased in the studies that Zeedyk et al. (2015) and Deckers et al. (2017) conducted, could offset this problem in the future.

Further, doctor or therapist reports could help to verify that participants had a proper diagnosis of ASD, the length of time since that diagnosis, and the severity of symptoms and functioning for each participant. Future studies on this subject could benefit from the use of multiple reports from caregivers, other close family members, teachers, and medical providers.

Another limitation of this study was that it was a single time point design, meaning that differences are noted only once and are not measured over a period of time. A longitudinal design looks at a multitude of variables with individuals over a period of time. By utilizing a longitudinal design, future studies could look more closely at the long-term impacts of classroom isolation or how children's experiences of isolation, loneliness, and friendship quality develop over time. Another limitation was the potential for confounds or third variables. Specifically, there could have been other factors such as other social interactions (e.g., with teachers, caregivers, mentors, siblings) that may have prevented feelings of loneliness and promoted a sense of belonging, self-efficacy with friends, peer social acceptance, and friendship quality that was beyond the scope of the current study to assess. In particular, this confound could explain the marginally statistically significant difference found between participants who had been isolated the longest (more than three years) compared to those who had been isolated for less time (less than three years or never); those who have been isolated longer may have sought out close friendships outside of the school setting, generating a greater sense of friendship closeness. Another confound that could explain the marginally significant findings could be the potential effects of age and developmental stage in participants such that participants who fell in the older age range felt a closer sense of friendship; this could be because as children get older, friendships become more crucial and essential for overall well being and development. Future research should work to recognize the potential for confounding factors and implement ways to minimize

the likelihood of this occurring or control for those confounding variables such as randomization in experimental designs, restriction, or matching. Further, one of the measured variables, self-efficacy with peer interactions, had an unacceptable internal reliability in this study (despite adequate reliability in previous studies), which could explain the lack of statistically significant findings for that specific variable.

Perhaps the greatest limitation of this study was the sample size. The sample size was much smaller than the power analysis had projected. Due to the time constraint of this study and the difficulty with recruitment methods of this particular population, this might have impacted the ability to recruit enough participants in each of the three or more isolation groups or have enough power to detect a noticeable statistically significant difference between groups on the dependent variables. The one marginally statistically significant finding could have been due to a Type I error; with a larger sample size, the probability of a Type I error decreases and power increases. Future research should implement a longer data collection period in order to maximize the sample size and collect greater insight on social emotional experiences overtime. Further, future research should look to partner with recruitment sites, organizations, and centers specific to children diagnosed with ASD in order to target a larger sample of children with ASD, which could potentially increase opportunity for participation and statistical power. Additionally, future research should implement more incentives to encourage more people to participate in studies on this subject.

### **Implications**

Although the study's findings revealed to be non-significant, the results are informative in providing future researchers with improvements for structuring new research questions, designing experimental studies, data collection, and directions for exploring other social

emotional experiences on this subject outside of the scope of this study. Future research on this subject should continue to examine the relationship between isolation from the mainstream classroom and social emotional experiences such as, but not limited to, feelings of isolation, loneliness, self-efficacy, and friendship quality in order to understand where exactly the highest feelings of isolation are exhibited with reference to psychosocial factors. Future research should explore strategies to maintain a sense of belonging, acceptance, and friendship quality, thus promoting a wider range of inclusivity within schools and socioemotional development. It is important to grasp a better understanding of the experiences of children with ASD who are isolated from mainstream classrooms to ensure their feelings are acknowledged from caregivers and teachers with the intention that safe and secure academic environments are upheld.

Recognizing the limitations of this study is helpful insight for the potential issues that can arise from research such as challenges regarding recruitment methods, administration, study designs, implementation of measures, and self-reported data. The limitations can aid upcoming research on this subject by exploring outlets for stronger strategies for recruitment of the target population such as collaborating with ASD centers and organizations in order to increase the likelihood of obtaining a larger and more diverse sample, expanding timelines of research, and comprehending group differences. Identifying and controlling for potential third variables may help to target exactly what social emotional experiences children with ASD face, allowing for a more in depth awareness of possible solutions, resources, and supports that can be implemented inside and outside of academic settings. Utilizing multiple reporters in future research can be very beneficial in recognizing balances and imbalances in what a child is revealing about their experiences, and what is observed by caregivers and teachers. Research on this subject must

continue to expand in order to grasp even more knowledge to further create or maintain comfortable learning environments for children diagnosed with ASD.

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## APPENDIX

### **Demographics:**

The following questions regarding demographics were created by the researcher of this study.

1. Age (7-18 years old)
2. Sex (Female, Male, Unspecified)
3. Gender (Boy, Girl, Transgender, Gender neutral, Non-binary, Unspecified, Other)
4. Race (White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and Other)
5. Professional diagnosis of ASD by a child psychologist, a child psychiatrist, a pediatric neurologist, or a developmental pediatrician (yes or no)
6. Length of time in isolation from the mainstream classroom (less than or equal to 6 months, 6.1 months to 1 year, 1.1 years to 3 years, and more than 3 years)
7. Grade level (2nd, 3rd, 4th, 5th, etc.)
8. School (current enrollment yes or no)

### **Classmates Social Isolation Questionnaire:**

The scale consisted of 10 items that participants answered on a 5-point Likert-scale (4 = None , 3 = Few, 2 = Some, 1 = Many, and 0 = All). Each individual item score was summed with all others. A high score indicated high feelings of isolation and a low score indicated less isolation. This scale holds good internal consistency ( $\alpha = .73 - .76$ ; Alivernini & Manganelli, 2016). *CSIQinside is SIWC and CSIQoutside is SIOS*

1. How many of your classmates do you sometimes “have a chat” with?

2. How many of your classmates do you meet outside school?
3. How many of your classmates speak with you?
4. How many of your classmates have you talked or chatted with on a cell phone?
5. How many of your classmates do you get on well with?
6. How many of your classmates do you study with outside school?
7. How many of your classmates would you help if they were in some kind of trouble?
8. How many of your classmates do you do other things with (apart from studying) in your free time?
9. How many of your classmates do you consider as your “friends”?
10. How many of your classmates do you ever go out with and have fun with?

Student’s social isolation within the Classroom scale: item 1, 3, 5, 7, 9.

Student’s social isolation out of school scale: item 2, 4, 6, 8, 10.

### **Loneliness and Social Dissatisfaction Questionnaire:**

The scale consisted of 24 items that participants rated on a 5-point Likert-scale (5 = Always True, 4 = True Most of the Time, 3 = True Sometimes, 2 = Hardly Ever True, 1 = Not True at All). Internal consistency for this scale has been high in the past ( $\alpha = .90$ ; Asher & Wheeler, 1985).

1. It's easy for me to make new friends at school.
2. I like to read.
3. I have nobody to talk to in class.
4. I'm good at working with other children in my class.
5. I watch TV a lot.

6. It's hard for me to make friends at school.\*
7. I like school.
8. I have lots of friends in my class.
9. I feel alone at school.\*
10. I can find a friend in my class when I need one.
11. I play sports a lot.
12. It's hard to get kids in school to like me.\*
13. I like science.
14. I don't have anyone to play with at school.\*
15. I like music.
16. I get along with my classmates.
17. I feel left out of things at school.\*
18. There's no other kids I can go to when I need help in school.\*
19. I like to paint and draw.
20. I don't get along with other children in school.\*
21. I'm lonely at school.\*
22. I am well liked by the kids in my class.
23. I like playing board games a lot.
24. I don't have any friends in class.\*

Items 2, 5, 7, 11, 13, 15, 19, and 23 were classified as hobby or interest items. Only the non-hobby questions will be used in the study (1, 3, 4, 6, 8, 9, 10, 12, 14, 16, 17, 18, 20, 21, 22, 24)

\*Items for which response order was reversed in scoring.

### **The Self-Perception Profile for Learning Disabled Students:**

The social competence subscale was used and consisted of 5 items that were rated on a 4-point scale (1 indicates the lowest perceived competence, and a score of 4 indicated the highest level of competence). Internal consistency for this scale was high for each subscale ( $\alpha = 0.80-0.85$ ; Harter, 1985)

2. Some kids find it hard to make friends BUT For other kids it's pretty easy

12. Some kids know how to make classmates like them BUT Other kids don't know how to make classmates like them

22. Some kids don't have the social skills to make friends BUT Other kids do have the social skills to make friends

32. Some kids understand how to get peers to accept them BUT Other kids do not understand how to get peers to accept them

42. Some kids know how to become popular BUT Other kids don't know how to become popular

### **Friendship Qualities Scale:**

The scale consisted of 23 items that participants rated on a 5-point Likert-scale (1 = Not true, 5 = Really true). Internal consistency of each scale was individually analyzed and was reported being high ( $\alpha = 0.71-0.86$ ; Bukowski et al., 1994).

#### Companionship

1. My friend and I spend all our free time together.
2. My friend thinks of fun things for us to do together.
3. My friend and I go to each other's houses after school and on weekends.

4. Sometimes my friend and I just sit around and talk about things like school, sports, and things we like.

#### Conflict

1. I can get into fights with my friend.
2. My friend can bug me or annoy me even though I ask him not to.
3. My friend and I can argue a lot.
4. My friend and I disagree about many things.

#### Closeness (specific to affective bond)

1. If my friend had to move away, I would miss him.
2. I feel happy when I am with my friend.
3. I think about my friend even when my friend is not around.

#### Closeness (specific to reflected appraisal)

1. When I do a good job at something, my friend is happy for me.
2. Sometimes my friend does things for me, or makes me feel special.

#### **Attention Checks:**

**Response Reliability.** The following questions regarding participant responses were adapted from Curran (2016).

1. If you were the researcher conducting this study, would you include your responses?
2. Do you feel you responded to the survey accurately and to the best of your ability?
3. Did you respond to each question honestly?
4. Are you satisfied with your responses to this survey?

**Table 1**

*Descriptive Statistics for Isolation Inside the Classroom, Isolation Outside of School, Self-efficacy With Peers, Companionship, Conflict, Closeness, and Loneliness*

Measure	<i>M</i>	<i>SD</i>	Min	Max
Isolation Inside the Classroom	11.53	2.62	5	14
Isolation Outside of School	13.67	5.63	1	20
Self-efficacy With Peers	2.39	.51	1.2	3.4
Companionship	2.22	.90	1	4.25
Conflict	2.66	1.14	1	4.5
Closeness	3.23	.89	1.4	5
Loneliness	51.29	8.73	38	66

*Note.* Isolation Inside the Classroom, Isolation Outside of School, Companionship, Conflict, Closeness, and Loneliness were measured on a 5-point Likert Scale. Self-efficacy With Peers was measured on a 4-point Likert Scale.

**Table 2***Correlations Between All Variables*

	Isolation Inside the Classroom	Isolation Outside of School	Self-efficacy With Peers	Companionship	Conflict	Closeness	Loneliness	Years of Isolation
Isolation Inside the Classroom	-	.86*	-.30	.03	.27	-.05	.02	.01
Isolation Outside of School		-	-.18	-.05	.19	-.05	.15	.32
Self-efficacy With Peers			-	.13	-.23	.10	-.31	.03
Companionship				-	.21	.67**	-.33	.10
Conflict					-	-.19	.30	-.11
Closeness						-	-.50*	.49*
Loneliness							-	-.23

\* $p < .05$ , \*\* $p < .01$ .

**Table 3***One-Way Analysis of Variance of Years for Isolation Group Differences*

Model	Source	Sum of Squares	df	Mean Square	F	Sig
Isolation Inside the Classroom	Between Groups	2.10	2	1.05	.14	.87
	Within Groups	108.13	14	7.72		
	Total	110.24	16			
Isolation Outside of School	Between Groups	73.967	2	36.98	1.20	.33
	Within Groups	464.03	15	30.94		
	Total	538.00	17			
Self-efficacy With Peers	Between Groups	.75	2	.38	1.56	.25
	Within Groups	3.13	13	.24		
	Total	3.88	15			
Companionship	Between Groups	.15	2	.07	.08	.92
	Within Groups	13.59	15	.91		
	Total	13.74	17			
Conflict	Between Groups	.27	2	.13	.09	.91
	Within Groups	20.60	14	1.47		
	Total	20.87	16			
Closeness	Between Groups	4.06	2	2.03	3.27	.07 <sup>†</sup>
	Within Groups	9.32	15	.62		
	Total	13.38	17			
Loneliness	Between Groups	63.23	2	31.62	.38	.69
	Within Groups	1156.30	14	82.59		
	Total	1219.53	16			

<sup>†</sup> $p < .08$