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Effects of Typically Developing Siblings on the Social and Emotional Development of Adolescents with Autism Spectrum Disorder

Abstract

The effect typically developing (TD) siblings have on adolescents with autism spectrum disorder (ASD) is rarely studied. Current published research mainly highlights the negative impact siblings with ASD have on their TD siblings. The current study's goal was to explore the beneficial effects that TD siblings may have on their siblings with ASD. Using a survey administered to seven parents of adolescents with ASD who have TD siblings, this study investigated how sibling interactions may contribute to the social and emotional development in adolescents with ASD. I ran correlations between several variables measured in the survey: (1) the quality of the relationship between the siblings, (2) the amount of time spent together, (3) the frequency of conflicts, and (4) how the interactions have affected the child with ASD. I found significant correlations in the relationship between the siblings and how the interactions have affected the child with ASD. This suggests that sibling interactions, regardless of their quality or the amount of time spent together, positively influenced the social and emotional development of the child with ASD. Simply, having a TD sibling may contribute positively to the development of the child with ASD. These findings highlight the need for more research on the positive role of TD siblings in the lives of adolescents with ASD.

Keywords: Autism Spectrum Disorder, Siblings, Social Development, Emotional Development

Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by a combination of social communication challenges and restricted and repetitive behaviors that usually start earlier in life (Lord et al.; American Psychiatric Association). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), ASD is diagnosed based on criteria that include repetitive patterns of behavior, interests, or activities, as well as ongoing deficiencies in social communication and interaction (American Psychiatric Association). These deficiencies include trouble developing, maintaining, and understanding relationships, difficulty maintaining a back-and-forth conversation, and abnormalities in eye contact and body language (American Psychiatric Association). The diagnostic criteria also require the presence of restricted and repetitive behaviors, which can include repetitive motor movements, insisting on routines, and fixated interests (American Psychiatric Association). People with ASD may also show additional challenges (echolalia (meaningless repetition of words), extreme sensitivity, hand flapping, pacing, and resistance to change), which can make it difficult for them to communicate and form meaningful relationships with others, including family members and educators (Mazef-sky, Williams, & Minshew; Robledo & Donnellan). Based on the estimates from the CDC's Autism and Developmental Disabilities Monitoring Network, approximately 1 in 36 children are said to have ASD (Maenner). Autism spectrum disorder is reported to occur across all racial, ethnic, and socioeconomic groups (Maenner).

Also, Maenner found that ASD is close to four times more common among boys than girls. However, estimates of the prevalence of ASD in various populations and settings differ based on the methods of sampling used. Frequently, TD siblings play an essential role in each other's cognitive development. This is due to their close relationships and shared experiences (Knott et al.). TD sibling interactions also allow for better negotiation and conflict-resolution skills, which are essential for cognitive development (Azmitia & Hesser). Existing research on the influence of TD siblings on adolescents with ASD is mainly focused on the negative aspects. According to several studies, TD siblings of children with ASD had more behavioral or emotional problems than siblings of TD children or children with other developmental disorders (e.g., Meyer, Ingersoll, Hambrick; Ferraioli; Jones et al.). One study stated that impairments in social communication, as well as other behaviors that characterize ASD, may impact family members and family dynamics, including TD siblings and sibling relationships (Meadan et al.).

Nevertheless, these results tend to overshadow the positive impacts TD siblings have on their siblings with ASD. The objective of this study is to investigate the effects that TD siblings can have on the social and emotional development of adolescents with ASD. While existing research papers primarily focus on the negative impact that adolescents with ASD have on their TD sibling, this study aims to figure out if there are any benefits that TD siblings may provide. I hypothesize that the better the relationship quality between siblings and the more they spend time together, the more positive the impact would be on the social and emotional growth of adolescents with ASD. I also hypothesize that the fewer conflicts the siblings have, the more positive the effect would be on the social and emotional growth of the adolescent with ASD.

Methods

Participants. To understand the effects TD siblings have on the social and emotional development of adolescents with Autism Spectrum Disorder (ASD), I conducted a survey with the feedback of parents. Parents were eligible to take the survey if they had one adolescent child with ASD and one TD adolescent child (Table 1). Both children had to be within the age range of 10-19 years. Parents must also be able to read and understand English.

Table 1. Survey questions

Sibling Relationship Questions
How would you describe the relationship between your child with autism and their sibling? (Likert scale: 1 - very distant, 5 - very close)
How frequently do your children spend time together? (Likert scale: 1 - rarely, 5 - daily)
How often do conflicts occur between your child with autism and their sibling? (Likert scale: 1 - rarely, 5 - daily)
Social and Emotional Growth Questions
Interactions with their sibling have improved my child's social communication skills. (Likert scale: 1 - strongly disagree, 5 - strongly agree)
Interactions with their sibling have helped my child express their emotions better. (Likert scale: 1 - strongly disagree, 5 - strongly agree)
Interactions with their sibling have helped my child understand other people's feelings better. (Likert scale: 1 - strongly disagree, 5 - strongly agree)
Interactions with their sibling have helped my child make friends. (Likert scale: 1 - strongly disagree, 5 - strongly agree)
Interactions with their sibling have helped my child learn coping strategies for managing stress and anxiety from school, sports, ect. (Likert scale: 1 - strongly disagree, 5 - strongly agree)
Interactions with their sibling have helped my child learn to share and take turns better. (Likert scale: 1 - strongly disagree, 5 - strongly agree)
Interactions with their sibling has a positive impact on my child's mental health. (Likert scale: 1 - strongly disagree, 5 - strongly agree)
Open-Ended Questions
Does your child with autism have any other diagnoses? Please write all diagnoses. Leave blank if not.
What activities do your children commonly do together? (optional)
What do your children tend to have conflicts about? (optional)
Please elaborate on how you think the interactions between your children have influenced your child with autism's social and emotional development. Feel free to comment specifically about any of the social and emotional growth areas you rated above. (optional)
Do you have any additional observations about the relationship between your child with autism and their sibling? (optional)

The survey was distributed through various WhatsApp communities dedicated to parenting and autism support. Data was collected from seven parents over two weeks in July of 2024. As stated in Table 2, six adolescents with ASD were male, and one was female. All adolescents with ASD were Asian, and their ethnicity was not Hispanic or Latino. The adolescents with ASD had varying severities of social communication difficulties, restricted interests, and repetitive behaviors.

Table 2. Demographics table for child with ASD

	Mean (SD)	Range
Age (years)	15.86 (4.10)	10-19
	n	Percentage
Biological sex		
Male	6	85.71
Female	1	14.29
Race		
White	0	0
Black or African American	0	0
American Indian or Alaska Native	0	0
Asian	7	100
Native Hawaiian or Other Pacific Islander	0	0
Multiracial	0	0
Ethnicity		
Hispanic or Latino	0	0
Not Hispanic or Latino	7	100
Social Communication Difficulties		
Mild	1	14.29
Moderate	5	71.43
Severe	1	14.29
None	0	0
Restricted Interests and Repetitive Behaviors		
Mild	1	14.29
Moderate	3	42.86
Severe	2	28.57
None	1	14.29

As illustrated in Table 3, two TD adolescents were male, and five were female. All TD adolescents were Asian, and their ethnicity was not Hispanic or Latino. All adolescents lived in the same household with their parents.

Table 3. Demographics table for child without ASD

	Mean (SD)	Range
Age (years)	15 (2.58)	11-19
	n	Percentage
Biological sex		
Male	2	28.57
Female	5	71.43
Race		
White	0	0
Black or African American	0	0
American Indian or Alaska Native	0	0
Asian	7	100
Native Hawaiian or Other Pacific Islander	0	0
Multiracial	0	0
Ethnicity		
Hispanic or Latino	0	0
Not Hispanic or Latino	7	100

Note. All participants live in the same house as their sibling. All participants have one sibling.

Procedures. The survey was sent to parents with at least one TD sibling and one sibling diagnosed with Autism Spectrum Disorder (ASD). Families were informed of the study's purpose and were provided with instructions on how to participate. Participants were allowed to leave the study at any time. No personal identifying information was collected, and confidentiality was maintained throughout the research. After participation, the participants were thanked and the results were collected. Other than the demographic questions, the survey asked parents three questions about their siblings' relationship and seven questions about the social and emotional growth of the sibling with ASD, using Likert scales. The Likert scale questions were rated from 1 to 5, where the points ranged from 1, representing "strongly disagree", "very distant", and "rarely", to 5, representing "strongly agree", "very close", and "daily". Correlations were run using the Likert scales. Further, five open-ended questions were asked.

Analyses. Pearson's correlations were performed between variables measured in the survey. The variables included all questions with likert scales: the quality of the relationship between the siblings (variable 1), the amount of time spent together (variable 2), the frequency of conflicts (variable 3), and how the interactions have affected the child with ASD (variables 4-10). Additionally, I qualitatively summarized the open-ended responses to understand better what the siblings tend to have conflicts over and what activities they do together.

Hypotheses. I hypothesized that the better the relationship quality between siblings (variable 1) and the more they spent time together (variable 2), the more positive the impact would be on the social and emotional growth of the adolescent with ASD (variables 4-10). I also hypothesized that the fewer conflicts the siblings had (variable 3), the more positive the impact would be on the social and emotional growth of the adolescent with ASD (variables 4-10).

Results

Quantitative findings. According to Table 4, the quality of the sibling relationship had a moderately positive correlation with the ability to make friends more easily (r = 0.65), learning coping strategies (r = 0.65), and understanding how to take turns better (r = 0.69). There was a moderately negative correlation between the frequency of conflicts and the overall relationship quality (r = -0.66).

The improvement in social communication skills for adolescents with ASD was strongly correlated with their ability to express emotions better (r = 0.92), understand the feelings of others better (r = 0.92), make friends more easily (r = 0.83), learn coping strategies (r = 0.83), understand how to take turns better (r = 0.86), and improvement of mental health (r = 0.96).

The ability to express emotions better was a perfect positive correlation with understanding the feelings of others better (r = 1). Expressing emotions better and understanding the feelings of others were strongly positively correlated with making friends more easily (r = 0.87), learning coping strategies (r = 0.87), understanding how to take turns better (r = 0.79), and improving mental health (r = 0.89).

Another perfect positive correlation was between making friends more easily and learning coping strategies (r = 1). Making friends more easily and learning coping strategies both correlated positively with understanding how to take turns better and the improvement of mental health for the child with ASD (r = 0.94 and r = 0.68, respectively). Lastly, there was a strong correlation between taking turns better and improvement of mental health for the child with ASD (r = 0.71).

Very weak correlations were observed between a few variables (r = -0.04 to r = 0.31; Table 4). The amount of time adolescents spent together showed very weak correlations with all other variables. Very weak correlations were also observed between the frequency of conflicts among the adolescents and all the other variables. Additionally, the quality of the relationship between the adolescents had very weak correlations with social communication skills, ability to express emotions, understanding the feelings of others, and the mental health of the child with ASD.

Table 4. Correlations between variables

	Relationship b/w both adolescents	Time that both adolescents spend together	Frequency of conflicts between adolescents	Social communication skills have improved for the child w/ ASD	Child w/ ASD can express emotions better	Child with ASD can understand the feelings of others better	Child w/ASD can make friends more easily	Child w/ ASD has learned coping strategies	Child w/ ASD understands how to take turns better	The mental health for the child w/ ASD has improved
lationship b/w th adolescents										
me that both olescents end together	-0.06									
equency of nflicts b/w olescents	**-0.66**	-0.37								
cial mmunication lls have proved for the ld with ASD	0.25	0.02	0.11							
ild w/ ASD can press emotions tter	0.31	0.22	0.10	**0.92**						
ild w/ ASD can derstand the elings of others tter	0.31	0.22	0.10	**0.92**	**1**					
ild w/ ASD can ake friends ore easily	**0.65**	-0.04	-0.16	**0.83**	**0.87**	**0.87**				
ild w/ ASD has rned coping ategies	**0.65**	-0.04	-0.16	**0.83**	**0.87**	**0.87**	**1**			
ild w/ ASD derstands how take turns tter	**0.69**	-0.09	-0.27	**0.86**	**0.79**	**0.79**	**0.94**	**0.94**		
e mental health the child w/ D has proved	0.01	0.14	0.25	**0.96**	**0.89**	**0.89**	**0.68**	**0.68**	**0.71**	

Qualitative findings. One parent noted that their children engaged in crafting, drawing, and building blocks together. Two parents mentioned that their children enjoyed playing cards

and board games together. One parent said their children liked going on walks together. Another parent stated that their children did pretty much everything together. One parent reported that their children do not participate in any activities together. One parent did not respond.

Parents noted that their children tended to have conflicts over entertainment, eating without sharing, and not keeping things clean. Of the seven responses for the children with ASD, one adolescent had OCD, one had cerebral palsy, and one had OCD and anxiety (i.e., did not specify what type of anxiety disorder).

When asked whether interactions between the adolescents have influenced the child with ASD's social and emotional development, one parent stated that "interactions between [the] siblings helped [the] ASD kid understand the emotions of others and value them." Another parent said that the child with ASD mimicked everything the child without ASD did, and the friends of the child without ASD were the friends of the child with ASD. The parent also noted that the child with ASD had someone to share their feelings with other than the parents. Two parents stated that they saw improvement in the social and communication aspects of their child with ASD. Lastly, one parent said there was not much interaction between the children. Thus, there was no influence.

Discussion

To summarize, many parents said that interactions with siblings, regardless of the quality of their interactions, had a positive impact on the social and emotional development of their child with ASD. Siblings without ASD often acted as role models, encouraging their siblings with ASD to engage in social activities and develop their skills. I hypothesized that the better the relationship quality between siblings, the more they spent time together, and the fewer conflicts they had, the more positive the impact would be on the social and emotional growth of the adolescent with ASD. Contrary to my hypothesis, the results showed very weak correlations between the amount of time adolescents spent together and all other variables. The results also showed very weak correlations between the frequency of conflicts among the adolescents and all the different variables.

Additionally, the quality of the relationship between the adolescents had very weak correlations with social communication skills, ability to express emotions, understanding the feelings of others, and the mental health of the child with ASD. Taken together, this demonstrates relationship quality, amount of time spent together, and frequency of conflicts did not have a significant impact on the social and emotional development of the adolescent with ASD, as I predicted. This means that the interactions between siblings are not as strongly connected to the social and emotional development of adolescents with ASD as I expected. This could be because of age gap differences, parental influences, the small sample size, or lack of diversity. Exploring some of these aspects in further studies may be critical to understanding these dynamic relationships better. It is also possible that rather than the frequency of conflicts, what matters is the intensity of conflict.

Similarly, the quality of time spent together may be more important than the quantity. This would potentially have had a stronger relationship with social communication skills, expressing

emotions, understanding the feelings of others, or the mental health of the adolescent with ASD. Future research should examine both the frequency and intensity of conflicts and see if the relationships with these variables are different. Furthermore, siblings without ASD could potentially benefit from intervention programs that aim to improve their ability to interact positively with their siblings with ASD.

Furthermore, parents also said that the child with ASD often mimicked what the child without ASD did. One parent said that the child with ASD learned a lot of social cues from their sibling. This finding illustrates that simply having a sibling, engaging in interactions, and observing what they do contributes positively to the social and emotional development of adolescents with ASD. However, several limitations should be considered in this study. As mentioned earlier, the sample size plays a significant role in the observed correlations, and hundreds of participants would be needed to validate these results. The survey is also biased in terms of race/ethnicity, surveying only Asians. Future research should consider including more diverse demographics that reflect the whole population better. Distribution of the survey through various channels, other than just WhatsApp, would be necessary for obtaining a more diverse sample. Future research should target channels like groups and organizations dedicated to autism support. Future research could also reach out to schools and healthcare providers to recruit participants. I was also not able to investigate how age and gender affect these relationships, as the majority of participants with ASD were male, and the sample size was small. This limitation is significant to address because the interactions between siblings could vary between males and females, especially given sex effects in ASD diagnosis (i.e., ASD occurs more often in males). Future research should explore these gender differences and age-related variations.

Furthermore, this brief survey was intended to take less than 5 minutes. A more detailed survey, in-person interviews, or even dedicated time to observing relationships between siblings first hand would provide better results in the future. To do this, funding will be needed to pay participants for their time. Additionally, I asked parents to think about the relationship between a child with ASD and one child without ASD. It is possible that relationships could differ between other siblings or that more siblings could have a more significant impact. Lastly, a few of the parents stated that their children had other neurological or neurodevelopmental disorders. These comorbidities are additional challenges that may make it more complicated for the adolescent with ASD to interact with their sibling, leading to more conflicts. This could impact the social and emotional development of the adolescent with ASD, influencing the overall results. Therefore, comorbidities should be accounted for in future work.

The findings of this study indicate that interactions between TD siblings and adolescents with ASD can have a positive impact on the social and emotional development of the adolescent with ASD. This aligns with existing research that emphasizes the importance of sibling relationships in cognitive and emotional growth (Knott et al.; Azmitia & Hesser). While previous studies have focused on challenges faced by TD siblings due to their sibling with ASD, my findings reveal that sibling interactions also have positive contributions. This finding is important

because it goes against the prevailing view that sibling interactions are primarily negative and highlights the need for further research into these interactions.

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