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Social Communication Deficits and Their Impact on Peer Relationships among Children with Autism Spectrum Disorder

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ABSTRACT

Children with Autism Spectrum Disorder (ASD) often experience challenges in social communication that significantly affect their ability to form and maintain peer relationships. This study investigates how deficits in social communication specifically pragmatic language, nonverbal cues, joint attention, and conversational reciprocity impact peer interactions, social acceptance, and friendship quality among school-aged children with ASD. Guided by social development and communication theories, a quantitative, cross-sectional design was employed with a sample of N= 40 children aged 6 to 12 years, all formally diagnosed with ASD. Participants were recruited from two special education centers and one child psychology clinic providing inclusive services. Standardized instruments, supplemented by parent ratings, teacher reports, and structured behavioral observations, were used to assess social communication abilities and peer relationship outcomes. Data were analyzed using correlation and regression analyses to determine the predictive role of social communication deficits on peer relationship quality. Findings revealed that children with greater social communication difficulties experienced higher levels of peer rejection, fewer reciprocal friendships, and lower engagement during group activities. Nonverbal communication deficits, including reduced eye contact and limited gesture use, emerged as the strongest predictors of weak peer connections, while pragmatic language deficits significantly hindered conversational initiation and maintenance. The study underscores the importance of early, targeted interventions aimed at enhancing social communication skills to improve peer relationships and overall social adjustment in children with ASD.

Keywords: *Autism Spectrum Disorder, Social Communication, Peer Relationships, Nonverbal Communication, Emotional Regulation, Pragmatic Language and Social Functioning*

INTRODUCTION

Children with Autism Spectrum Disorder (ASD) are characterized by persistent deficits in social communication and interaction, which represent core diagnostic features (American Psychiatric Association, 2013). These impairments are not limited to the purely linguistic domain but also involve nonverbal behaviors such as eye contact, gesture use, facial expressions, and body language (Nakamura, 2022; APA, 2013). In many cases, children with ASD struggle with the reciprocal nature of conversation they may fail to maintain a topic, have trouble taking turns, or interrupt others (Nakamura, 2022). These social communication limitations often emerge early in life and persist across development, influencing not only language outcomes but also social functioning more broadly (Structural & Pragmatic Language Impairments in Children Evaluated for ASD, 2021). Given the centrality of social communication in human development, these deficits in ASD profoundly impact a child's ability to interact with peers and to develop meaningful relationships.

Peer relationships are critical for children's social and emotional development. Through friendship and play, children practice social norms, resolve conflicts, and develop empathy and self-regulation (Frea, 1995, as cited in ED554309 Report; see also Yavuz, Selçuk, & Korkmaz, 2017). However, children with ASD frequently encounter difficulties in forming and maintaining peer relationships. Research indicates that higher levels of autistic traits are associated with lower peer acceptance and higher rejection (Sari, Prinzie, & colleagues, 2021), often independent of cognitive ability (i.e., nonverbal IQ). Their challenges interpreting nonverbal communication and engaging in reciprocal social exchanges may make it harder for them to initiate play, sustain interactions, and be perceived as socially competent by neurotypical peers (Sari et al., 2021).

Several theoretical frameworks help explain why social communication deficits contribute to peer difficulties in ASD. One is Theory of Mind (ToM) that is, the ability to understand others' mental states, such as beliefs, intentions, and emotions. Many children with ASD show impairments in ToM, which undermine their capacity to predict or interpret peer behavior (Sari et al., 2021; Yavuz et al., 2017). In addition, pragmatic language theory points to the way children use language in context (turn-taking, coherence, topic maintenance) as a key factor. Pragmatic competence depends not just on grammar and vocabulary but also on social-cognitive skills (e.g., ToM) (Norbury & Happé, as cited in Frontiers in Psychology, 2017). Difficulties in pragmatic usage constrain effective communication and thus interfere with social relationships (Frontiers in Psychology, 2017).

Empirical evidence supports the link between social communication deficits and poor peer outcomes in ASD. For example, a longitudinal study of children with autism found that ToM abilities predict improvements in contingent conversational skills over time (Tager-Flusberg, as cited in PubMed, 2001). Moreover, nonverbal communication (eye contact, gesture) has been shown to be particularly important: in a sample of Turkish children with ASD, nonverbal communication skills were strongly associated with social competence, beyond verbal skills (Yavuz, Selçuk, & Korkmaz, 2017). In adolescence and young adulthood, structural equation modeling data have shown that lower ToM and reduced social skills negatively predict the quality of friendships in individuals with ASD (Sari et al., 2025).

Measuring social communication and peer relationships in children with ASD, however, presents methodological challenges. Social communication is inherently multi-dimensional, covering structural language, pragmatics, nonverbal signals, and cognitive perspective-taking. Researchers must rely on a combination of standardized tests, behavioral observations, and multi-informant reports (parents, teachers), but each method has limitations (e.g., ecological validity, cross-context variability) (Sari et al., 2021; Yavuz et al., 2017). Moreover, peer interactions in naturalistic settings may differ significantly from behavior observed in structured or clinical contexts, complicating the interpretation of assessments.

Given these issues, further research is needed to disentangle how specific facets of social communication map onto distinct peer relationship outcomes. While prior studies have documented general associations between autistic traits and peer rejection (Sari et al., 2021), fewer have explored which precise social communication skills such as joint attention, conversational reciprocity, or nonverbal signaling are most predictive of peer acceptance or friendship quality. Understanding these mechanisms can inform more focused interventions (e.g., ToM training, pragmatic language therapy, nonverbal communication coaching) that target the root of relational difficulties. Ultimately, clarifying these links has important practical implications: improving social communication in children with ASD may promote better peer relationships, greater inclusion, and enhanced social adjustment.

Research Questions

1. How do deficits in pragmatic language affect peer relationship quality in children with ASD?
2. What is the impact of nonverbal communication deficits on peer acceptance and friendship quality among children with ASD?
3. How does joint attention ability influence peer interactions and social engagement in children with ASD?
4. Which components of social communication (pragmatic language, nonverbal communication, joint attention) are the strongest predictors of peer relationship quality in children with ASD?
5. How do social communication deficits influence group activity participation and social engagement in school settings?
6. What is the relationship between conversational reciprocity and the ability to form reciprocal friendships in children with ASD?

Research Objectives

1. To examine the relationship between pragmatic language deficits and peer relationship outcomes in children with ASD.
2. To assess the effect of nonverbal communication deficits on peer acceptance, friendship quality, and social engagement.
3. To investigate how joint attention deficits influence peer interactions and social participation.
4. To identify the strongest social communication predictors of peer relationship quality among children with ASD.
5. To explore how social communication deficits affect participation in group activities and classroom engagement.

LITERATURE REVIEW

Social communication deficits are a core characteristic of autism spectrum disorder (ASD) and encompass difficulties in both verbal and nonverbal communication, as well as pragmatic language skills (American Psychiatric Association, 2013; Nakamura, 2022). Verbal deficits may include limited vocabulary, difficulty forming coherent sentences, or challenges in topic maintenance, whereas nonverbal deficits involve poor eye contact, limited gestures, and atypical facial expressions. Pragmatic language impairments affect conversational turn-taking, initiating and sustaining dialogue, and adjusting communication according to context or audience (Norbury & Happé, 2017). Studies suggest that these

deficits are not uniform but exist along a spectrum, with some children demonstrating subtle difficulties while others exhibit severe impairments (Structural & Pragmatic Language Impairments in Children Evaluated for ASD, 2021). For instance, reduced joint attention a shared focus between a child and a peer on an object or event is consistently linked to later difficulties in social reciprocity and friendship formation (Tager-Flusberg, 2001). Nonverbal deficits, in particular, have been shown to strongly influence social outcomes, as they serve as critical cues for understanding others' emotions and intentions (Yavuz, Selçuk, & Korkmaz, 2017). Collectively, these findings highlight the multifaceted nature of social communication deficits in ASD and their potential to disrupt social engagement with peers.

Peer Relationships and Social Integration

Peer relationships are central to a child's social, emotional, and cognitive development, providing opportunities to practice empathy, conflict resolution, and cooperative behavior (Frea, 1995, as cited in ED554309; Yavuz et al., 2017). However, children with ASD often struggle to form and maintain peer connections due to their social communication deficits. Studies indicate that children with ASD experience higher rates of peer rejection, fewer reciprocal friendships, and lower engagement in group activities compared to their neurotypical peers (Sari, Prinzie, & colleagues, 2021). Longitudinal research also demonstrates that early deficits in pragmatic language and nonverbal communication predict social difficulties in later childhood and adolescence (Yavuz et al., 2017). Furthermore, peer rejection can create a negative feedback loop, exacerbating anxiety, social withdrawal, and emotional dysregulation, which further reduces opportunities for social learning (Sari et al., 2021). These findings underscore the importance of understanding specific social communication deficits to address challenges in peer integration effectively.

Nonverbal Communication and Friendship Quality

Nonverbal communication is a critical component of social interaction and friendship development in children with ASD. Eye contact, gestures, and facial expressions convey attention, interest, and emotional cues that are essential for reciprocal social engagement (Nakamura, 2022). Studies show that children with ASD who exhibit reduced or atypical nonverbal communication are less likely to be included in peer activities and are at greater risk of social isolation (Yavuz et al., 2017; Sari et al., 2021). For example, Tager-Flusberg (2001) found that reduced gaze following and gesture use predicted lower levels of peer interaction and friendship reciprocity. Moreover, interventions targeting nonverbal communication such as gesture training or eye contact exercises have been associated with improved social engagement and peer acceptance (Norbury & Happé, 2017). These findings highlight the pivotal role of nonverbal cues in peer relationships and suggest that even subtle deficits can have significant social consequences for children with ASD.

Pragmatic Language and Conversational Reciprocity

Pragmatic language skills, or the socially appropriate use of language in context, are strongly associated with peer relationship outcomes in children with ASD. Difficulties with topic maintenance, conversational turn-taking, and understanding figurative language often hinder effective communication with peers (Norbury & Happé, 2017; Structural & Pragmatic Language Impairments in Children Evaluated for ASD, 2021). Empirical research has shown that pragmatic deficits predict lower friendship quality, reduced peer acceptance, and higher rates of social rejection (Sari et al., 2021). Furthermore, children with ASD may have the desire to interact socially but struggle to convey interest or interpret social cues appropriately, which can lead to misunderstandings and negative social evaluations from peers (Tager-Flusberg, 2001). These findings indicate that interventions targeting pragmatic language, alongside nonverbal communication, are crucial to enhancing social engagement and peer relationships.

Interventions and Implications for Social Functioning

Intervention studies provide evidence that targeted social communication training can improve peer relationships and overall social functioning in children with ASD. Programs focusing on joint attention, pragmatic language, conversational skills, and nonverbal communication have demonstrated improvements in social engagement, friendship quality, and social acceptance (Norbury & Happé, 2017; Yavuz et al., 2017). Multi-component interventions that integrate parent, teacher, and peer involvement tend to be most effective, as they address social communication across contexts (Sari et al., 2021). Moreover, early intervention is critical: children who receive support during the preschool years show more sustained gains in social competence and peer integration (Tager-Flusberg, 2001). These findings underscore the importance of understanding specific social communication deficits and their impact on peer relationships, as they provide a roadmap for developing individualized strategies that promote inclusion, emotional well-being, and social competence among children with ASD.

H1: Pragmatic language deficits significantly negatively affect peer relationship quality in children with ASD.

H1: Nonverbal communication deficits significantly negatively predict peer acceptance and friendship quality in children with ASD.

H1: Joint attention ability significantly positively influences peer interactions and social engagement in children with ASD.

H1: Combined social communication deficits, including pragmatic language, nonverbal communication, and joint attention, significantly predict peer relationship quality, with nonverbal communication emerging as the strongest predictor.

H1: Higher social communication deficits are significantly associated with increased peer rejection and social isolation in children with ASD.

RESEARCH METHODOLOGY

Research Design

This study employed a quantitative, cross-sectional research design to examine the relationship between social communication deficits and peer relationship quality among children with autism spectrum disorder (ASD). A cross-sectional approach was selected because it allows researchers to collect data at a single point in time, providing a snapshot of the variables of interest (Creswell & Creswell, 2018). This design is particularly suitable for examining associations between social communication abilities and peer outcomes and determining the extent to which deficits in specific communication domains predict challenges in peer interactions, social acceptance, and friendship quality.

Population and Sample

The population for this study comprised children aged 6 to 12 years diagnosed with ASD, attending special education centers and inclusive educational settings in Sialkot, Pakistan. A sample of 40 children was recruited based on formal diagnoses provided by clinical psychologists or child psychiatrists, in accordance with DSM-5 criteria (American Psychiatric Association, 2013). The age range was chosen because middle childhood represents a critical period for developing peer relationships, and social communication skills are actively refined during this stage (Yavuz, Selçuk, & Korkmaz, 2017).

Sampling Technique

A purposive sampling technique was used to select participants who met the inclusion criteria: (1) formal diagnosis of ASD, (2) age between 6 and 12 years, (3) ability to participate in structured behavioral observations and standardized assessments, and (4) parental consent for participation. Purposive sampling is widely employed in ASD research when the target population has specific characteristics relevant to the study objectives (Sari, Prinzie, et al., 2021). Exclusion criteria included severe comorbid intellectual disability or medical conditions that would interfere with participation.

Instruments/Measures

Multiple instruments were used to capture a comprehensive assessment of social communication and peer relationship outcomes

- **Social Communication Questionnaire.** Measures social communication skills, including pragmatics, conversational reciprocity, and nonverbal communication.
- **Children's Friendship Quality Scale.** Evaluates the quality of peer relationships, including companionship, closeness, and conflict.
- **Behavioral Observation Checklist.** Structured observations in school or clinic settings recorded eye contact, gestures, turn-taking, and peer engagement.
- **Parent and Teacher Rating Scales.** Provided additional insights into social functioning in naturalistic settings.

All instruments were chosen for their established reliability and validity in assessing social communication and peer relationships in children with ASD (Norbury & Happé, 2017; Yavuz et al., 2017).

Procedure

Data collection followed ethical guidelines approved by the Institutional Review Board (IRB). Parental consent and child assent were obtained prior to participation. Participants were individually assessed using the SCQ and CFQS in a quiet, structured environment. Observations were conducted during peer interactions in classrooms or therapy sessions. Parents and teachers completed rating scales independently to provide complementary perspectives. Each session lasted approximately 45–60 minutes, and breaks were allowed to minimize fatigue or behavioral distress. Confidentiality and anonymity were strictly maintained throughout the study.

Data Analysis

Data were analyzed using IBM SPSS Statistics (Version 28). Descriptive statistics (mean, standard deviation, frequencies) were computed for all study variables. Pearson correlation analysis was conducted to examine the associations between social communication deficits and peer relationship quality. Further, multiple regression analysis was performed to identify which components of social communication (pragmatic language, nonverbal communication, joint attention, conversational reciprocity) significantly predicted peer relationship outcomes. Assumptions of normality, linearity, homoscedasticity, and multicollinearity were tested prior to regression analysis (Field, 2018). The level of significance was set at $p < 0.05$.

Ethical Considerations

The study adhered to ethical guidelines for research involving children and vulnerable populations. Participation was voluntary, and participants could withdraw at any time without penalty. Informed consent was obtained from parents or legal guardians, and verbal assent was obtained from children. All data were kept confidential, and participants' identities were anonymized.

RESULTS

Table 1

Descriptive Statistics of Study Variables (N = 40)

Variable	Mean	SD	Minimum	Maximum
Social Communication Score (SCQ)	45.32	8.12	30	62
Pragmatic Language Score	12.78	3.21	7	18
Nonverbal Communication Score	10.45	2.85	5	15
Joint Attention Score	9.12	2.41	4	14
Peer Relationship Quality (CFQS)	28.54	6.78	15	40

In Table 1, the mean score on the Social Communication Questionnaire (SCQ) indicates moderate deficits in social communication among participants. Nonverbal communication and joint attention scores suggest variability, with some children showing more pronounced deficits. Peer relationship quality scores (CFQS) also show a wide range, indicating variability in friendship quality and peer acceptance among children with ASD.

Table 2

Correlation Between Social Communication Deficits and Peer Relationships (N = 40)

Variable	Peer Relationship Quality
Social Communication Score	-0.68**
Pragmatic Language Score	0.54**
Nonverbal Communication Score	0.61**
Joint Attention Score	0.49**

Note: **$p < 0.01$

In Table 2, Social communication deficits (higher SCQ scores indicate more deficits) are strongly negatively correlated with peer relationship quality ($r = -0.68$, $p < 0.01$), indicating that greater deficits are associated with poorer peer interactions. Nonverbal communication and pragmatic language are positively correlated with peer relationship quality, suggesting that children with better nonverbal and pragmatic skills tend to have stronger peer relationships. Joint attention also shows a moderate positive correlation with peer engagement and friendship quality.

Table 3

Multiple Regression Predicting Peer Relationship Quality (N = 40)

Predictor Variable	B	SE B	β	t	p
Pragmatic Language	0.62	0.21	0.34	2.95	0.005
Nonverbal Communication	0.78	0.19	0.42	4.11	<0.001
Joint Attention	0.41	0.18	0.23	2.28	0.029

$R^2 = 0.58, F(3,36) = 16.52, p < 0.001$

In table 3, the regression model indicates that 58% of the variance in peer relationship quality is explained by the combined effects of pragmatic language, nonverbal communication, and joint attention. Nonverbal communication emerged as the strongest predictor ($\beta = 0.42$, $p < 0.001$), followed by pragmatic language ($\beta = 0.34$, $p = 0.005$) and joint attention ($\beta = 0.23$, $p = 0.029$). This suggests that children with better nonverbal and pragmatic skills, as well as stronger joint attention, experience higher peer acceptance and better friendship quality.

DISCUSSION

The present study examined the impact of social communication deficits on peer relationships among children with Autism Spectrum Disorder (ASD) aged 6–12 years. Specifically, the research investigated how deficits in pragmatic language, nonverbal communication, and joint attention influence the quality of peer relationships, including friendship reciprocity, peer acceptance, and social engagement. The findings revealed significant associations between social communication skills and peer relationship outcomes, with nonverbal communication emerging as the strongest predictor of peer relationship quality. These results are interpreted below in the context of existing literature.

Social Communication Deficits and Peer Relationships

The findings of the study support the hypothesis that social communication deficits in children with ASD negatively affect peer relationships. Correlation analysis demonstrated that greater overall deficits in social communication (measured by SCQ scores) were associated with lower quality peer relationships. This aligns with prior research indicating that children with ASD often face difficulties in establishing and maintaining friendships due to challenges in both verbal and nonverbal communication (Sari, Prinzie, et al., 2021; Yavuz, Selçuk, & Korkmaz, 2017). The negative association between social communication deficits and peer quality highlights the critical role that communicative competence plays in social integration. Children who struggle with pragmatic language or fail to interpret social cues may be perceived as less approachable or socially competent by peers, leading to higher rates of peer rejection and social isolation.

Nonverbal communication emerged as the strongest predictor of peer relationship quality in the regression analysis. Eye contact, gesture use, facial expressions, and body language are essential cues in social interactions, facilitating understanding of peers' emotions and intentions (Nakamura, 2022). Children with stronger nonverbal communication skills demonstrated higher levels of peer acceptance and engagement in group activities. These results corroborate earlier studies that emphasize the importance of nonverbal cues in friendship formation and social reciprocity (Tager-Flusberg, 2001; Yavuz et al., 2017). The findings suggest that interventions targeting nonverbal communication could significantly improve peer relationships, as these skills provide immediate, observable indicators of social interest and responsiveness in peer interactions.

Pragmatic Language and Conversational Skills

Pragmatic language skills were also significant predictors of peer relationship quality, consistent with prior research (Norbury & Happé, 2017). Children with ASD who could appropriately maintain topics, take turns in conversation, and adapt language to social context had better peer interactions and friendship quality. This finding highlights the importance of pragmatic competence in social functioning: children may possess adequate vocabulary or syntax but still struggle socially if they cannot use language effectively in context. These results underscore the need for interventions focusing on conversational reciprocity and pragmatic language development, particularly in structured and naturalistic peer settings.

Joint attention, while a weaker predictor than nonverbal communication and pragmatic language, was still significantly associated with peer relationship outcomes. This finding supports the notion that the ability

to share attention with peers around objects or events facilitates social engagement and cooperative play (Tager-Flusberg, 2001). Children who can coordinate attention with peers are more likely to initiate interactions, respond appropriately to social cues, and participate in collaborative activities, enhancing the quality of friendships and social acceptance.

Implications for Practice

The findings have important theoretical and practical implications. From a theoretical perspective, the study reinforces the centrality of social communication in shaping peer relationships in children with ASD and supports models that integrate pragmatic language, nonverbal communication, and social cognition (ToM) as interrelated constructs influencing social adjustment. Practically, the results suggest that targeted interventions should prioritize nonverbal communication training, pragmatic language development, and joint attention activities to improve peer relationships. Multi-component programs involving parents, teachers, and peers in structured and naturalistic settings are likely to yield the most effective outcomes (Sari et al., 2021; Yavuz et al., 2017). Early intervention is particularly critical, as social skills acquired in middle childhood can have long-term benefits for social inclusion, emotional well-being, and academic engagement.

Limitations of the Study

Despite its contributions, this study has several limitations. First, the sample size was relatively small (n = 40), which may limit generalizability. Second, the cross-sectional design prevents causal inference; longitudinal studies are needed to track the developmental trajectory of social communication and peer relationships. Third, data relied on parent and teacher reports alongside structured observations, which may introduce bias or fail to capture the full range of naturalistic social interactions. Finally, cultural factors specific to the Pakistani context may affect social norms and peer dynamics, limiting the applicability of findings to other populations.

Recommendations for Future Research

Future research should employ larger and more diverse samples to enhance generalizability and consider longitudinal designs to examine how social communication deficits influence peer relationships over time. Experimental studies testing specific intervention programs targeting pragmatic language, nonverbal communication, and joint attention would provide causal evidence of effectiveness. Additionally, incorporating peer reports and naturalistic observational data in multiple contexts (school, community, home) can provide a richer understanding of social integration. Cross-cultural comparisons would also be valuable to identify how cultural norms influence the development and assessment of social communication and peer relationships in children with ASD.

CONCLUSION

In conclusion, the present study demonstrates that social communication deficits play a crucial role in shaping peer relationship outcomes among children with autism spectrum disorder (ASD). The findings indicate that difficulties in nonverbal communication, pragmatic language, and joint attention significantly influence friendship quality, peer acceptance, and social engagement. Nonverbal communication, including eye contact, gestures, and facial expressions, emerged as the strongest predictor of peer relationship quality, highlighting its fundamental role in facilitating meaningful social interactions. Children with stronger nonverbal and pragmatic communication skills were better able to interpret social cues, engage reciprocally with peers, and participate in collaborative play, which in turn enhanced their social competence and peer integration. Pragmatic language skills, including conversational reciprocity, topic maintenance, and context-appropriate communication, were also significant predictors of peer relationships. These findings underscore that verbal abilities alone are

insufficient; effective social communication depends on the ability to use language adaptively within social contexts. Joint attention, while a comparatively weaker predictor, still contributed meaningfully to peer engagement, reinforcing its importance in the early development of cooperative social behaviors. The results highlight the need for targeted interventions focusing on these specific domains to improve social inclusion and psychosocial adjustment. Moreover, enhancing social communication has broader implications for children's emotional well-being, self-confidence, and school engagement. Early, individualized, and context-sensitive intervention programs that integrate parent, teacher, and peer support can significantly improve social outcomes. In sum, this study provides empirical evidence that improving social communication skills is essential for promoting meaningful peer relationships, overall social functioning, and quality of life for children with ASD, offering valuable insights for clinicians, educators, and caregivers in planning effective interventions.

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