

Parent–Teacher Collaboration and Classroom Engagement of Autistic Students in Punjab, Pakistan: An Explanatory Sequential Mixed-Methods Study

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Abstract

Parent–teacher collaboration is essential for coordinating educational support across home and school, particularly for autistic students with diverse communication, sensory, behavioral, and

learning needs. This explanatory sequential mixed-methods study examined the relationship between parent–teacher collaboration and teacher-rated classroom engagement among autistic students enrolled in selected special education institutions in Punjab, Pakistan. The quantitative phase included 60 matched parent–teacher dyads representing 60 autistic students. Parents and teachers independently completed parallel collaboration questionnaires, while teachers assessed students’ behavioral, emotional, social, and cognitive engagement. Descriptive statistics, paired-samples analysis, intraclass correlation, and Pearson’s correlation were applied. Semi-structured interviews were subsequently conducted with 10 parents and 10 teachers, and the data were analyzed thematically to explain the quantitative findings. Parent–teacher collaboration was rated high overall ($M = 3.84$, $SD = 0.49$), with mutual trust and respect receiving the highest score and joint planning and decision-making the lowest. Parent and teacher collaboration ratings showed moderate agreement, and no significant mean difference was identified. Overall classroom engagement was also high ($M = 3.53$, $SD = 0.52$). Behavioral engagement was rated highest, whereas social engagement was moderate and represented the weakest dimension. Dyadic parent–teacher collaboration demonstrated a statistically significant moderately strong positive relationship with classroom engagement, $r(58) = .62$, 95% CI [.43, .76], $p < .001$. Qualitative findings indicated that regular two-way communication, parental knowledge, shared goals, consistent home–school strategies, sensory adjustments, and collaborative problem-solving supported engagement. Limited time, inadequate autism-related training, unclear communication procedures, and restricted parental participation were major barriers. The findings highlight the need for structured collaboration systems, shared educational decision-making, professional development, and socially inclusive classroom practices. However, causal conclusions cannot be drawn because of the cross-sectional design and reliance on teacher-rated engagement.

Keywords: autism, parent–teacher collaboration, classroom engagement, family–school partnership, inclusive education

Introduction

Autism is a lifelong neurodevelopmental difference associated with diverse patterns of communication, social interaction, sensory processing, behavior, and learning. Autistic students differ considerably in their abilities, preferences, and support needs; therefore, their participation in classroom activities cannot be understood through a single set of characteristics. Although inclusive education provides autistic students with opportunities to learn alongside their peers, many parents report difficulties in ensuring that schools understand and respond to their children’s individual needs (Carrera et al., 2023). Classroom environments that are socially demanding, unpredictable, or insufficiently adapted may further affect autistic students’ comfort, participation, and access to learning opportunities (Leifler et al., 2021; McKinlay et al., 2025).

Classroom engagement is a multidimensional concept representing the extent to which students actively participate in learning and classroom life. Behavioral engagement includes attention, task participation, attendance, and completion of assigned work, whereas emotional engagement concerns feelings of interest, comfort, belonging, or anxiety. Social engagement refers to interactions and relationships with teachers and peers, while cognitive engagement involves motivation, self-regulation, problem-solving, and meaningful investment in learning (Joshi et al., 2022). These dimensions are interconnected and may be particularly sensitive to the instructional,

sensory, and interpersonal conditions experienced by autistic students. Appropriate teaching strategies, structured routines, positive reinforcement, and individualised supports can increase their academic participation, while acceptance and supportive relationships contribute to positive school experiences (Meindl et al., 2020; McKinlay et al., 2025).

Supporting such engagement requires consistent understanding across the two major settings in which students develop: home and school. Parent–teacher collaboration refers to a reciprocal relationship in which parents and teachers communicate regularly, share knowledge, make decisions, establish common goals, and coordinate strategies for supporting the student. Parents provide detailed knowledge of their child’s strengths, interests, communication style, sensory needs, and behavior outside school, while teachers contribute professional knowledge of curriculum, classroom expectations, peer interactions, and school-based performance (Garbacz et al., 2016). When these forms of knowledge are combined, support can be more individualized and consistent across settings. However, collaboration is influenced by relationship quality, family resources, parental well-being, and the degree of agreement between parents and teachers (Santiago et al., 2022; McIntyre et al., 2023).

Effective collaboration may improve classroom engagement through several pathways. Regular two-way communication can help teachers identify the causes of disengagement, understand students’ behavior more accurately, and select strategies that reflect individual strengths and needs. Consultation models designed for families of autistic children have shown that structured communication can improve parent–teacher problem-solving, information exchange, and confidence in working together (Azad et al., 2021). Similarly, shared goals and consistent behavioral, communication, and learning strategies may reduce confusion for students and strengthen their participation across home and school. Research has also linked stronger family–teacher partnerships with improved family quality of life, satisfaction with educational progress, and positive child-related outcomes (Goldrich Eskow et al., 2018; Hsiao et al., 2017).

Nevertheless, meaningful collaboration is not always achieved. Parents may feel excluded from educational decisions, contacted only when problems occur, or insufficiently recognised as knowledgeable partners. Teachers may experience limited time, heavy workloads, inadequate autism-related training, unclear professional roles, or difficulties communicating with families. Parents of autistic adolescents have emphasised the importance of being respected and actively involved in school-based teams, while also describing personal and organisational factors that shape their participation (Rispoli et al., 2019). Differences in expectations, communication styles, cultural backgrounds, access to resources, and perceptions of the student’s needs may further weaken cooperation. Consequently, examining both parent and teacher perspectives is necessary to identify the practical and relational factors that support or hinder effective collaboration (Brooks et al., 2023; Carrera et al., 2023).

Despite increasing interest in family–school partnerships, limited research has directly examined how parent–teacher collaboration relates to the behavioural, emotional, social, and cognitive classroom engagement of autistic students. Quantitative studies have commonly measured partnership quality, family involvement, stress, or educational outcomes, whereas qualitative studies have mainly explored parents’ or teachers’ experiences separately (Hsiao et al., 2017; Rispoli et al., 2019). A mixed-methods approach can address this limitation by measuring the

levels and relationship of the main variables while also explaining how collaboration operates in everyday educational settings. Therefore, the present study assesses parent–teacher collaboration and the four dimensions of classroom engagement, determines the relationship between them, and explores the experiences and perceived facilitators and barriers reported by parents and teachers (Azad et al., 2021).

Literature Review

Classroom Engagement of Autistic Students

Classroom engagement is broader than students' physical presence in school. It includes their participation in learning tasks, emotional connection with school, interaction with peers and teachers, and willingness to invest mental effort in academic activities. For autistic students, engagement is influenced by individual characteristics and environmental conditions. Parents and educators have identified school belonging, confidence, teacher knowledge, classroom culture, and appropriate support as important factors affecting school participation (Hodges et al., 2020). Similarly, autistic young people have reported that feeling misunderstood, experiencing sensory discomfort, and lacking control over classroom situations can reduce their involvement in learning (Goodall, 2018). Therefore, placement in a mainstream classroom does not automatically ensure meaningful participation, social acceptance, or academic engagement (Lüddeckens, 2021; Hasson et al., 2024).

Behavioral and cognitive engagement may be affected when learning activities are insufficiently adapted to autistic students' communication, sensory, and organizational needs. Behavioral engagement is visible through attention, task completion, attendance, and participation, whereas cognitive engagement involves effort, persistence, self-regulation, and problem-solving. Teachers have identified communication differences, sensory regulation, emotional difficulties, repetitive behaviors, and unsuitable assessment methods as barriers to learning (Howell et al., 2022). Parents have similarly linked school difficulties and absence with inadequate educational adjustments and limited teacher competence regarding autism (Anderson, 2020). However, teachers who understand students' interests and needs can use individual responsibilities, structured instruction, one-to-one interaction, and students' strengths to increase classroom involvement (Bolourian et al., 2022; Petersson-Bloom & Holmqvist, 2022).

Emotional and social engagement are particularly important because autistic students may attend school while still experiencing anxiety, loneliness, exclusion, or limited interaction. A study of school non-attendance found that school refusal and exclusion were significant concerns among autistic students, suggesting that emotional discomfort can eventually affect behavioral participation (Totsika et al., 2020). During home-based learning, some autistic students experienced greater comfort because they had increased control over noise, social demands, daily routines, and the pace of learning (Heyworth et al., 2021). Research also indicates that school-based interventions can improve access to social activities, although increased interaction does not always lead to reciprocal friendships or genuine social inclusion (Tsou et al., 2026). These findings show that engagement depends on emotional safety, acceptance, flexible routines, supportive relationships, and opportunities for meaningful participation rather than forced social conformity (Goodall, 2018; Lüddeckens, 2021).

Parent–Teacher Collaboration

Parent–teacher collaboration involves communication, shared decision-making, mutual respect, information exchange, and coordinated support for students. In autism education, collaboration is especially important because students’ behavior, communication, and engagement may differ across home and school environments. Teachers have reported that parents provide valuable information about their children’s strengths, behavior, communication preferences, and support needs. However, teachers’ perceptions of parental involvement may range from believing that parents are insufficiently involved to considering some parents overly demanding (Schultz et al., 2016). Effective collaboration therefore requires parents and teachers to recognise one another’s knowledge and establish shared educational goals. Research on inclusive education further shows that families’ satisfaction with teachers and schools is associated with more positive attitudes towards inclusion and its perceived benefits (Simón et al., 2023; Hasson et al., 2024).

Several factors influence the quality of collaboration. Clear communication, active listening, trust, professional competence, shared expectations, and regular opportunities for discussion can strengthen parent–teacher relationships. In contrast, limited time, teacher workload, insufficient resources, low expectations, and limited autism-specific knowledge can create tension. A mixed-methods study of school staff identified knowledge, training, support, classroom management, and parental involvement as major issues affecting successful inclusion (Ballantyne et al., 2024). Teachers’ attitudes are also important because greater self-efficacy is generally associated with more supportive attitudes towards autistic students’ inclusion (Russell et al., 2023). Furthermore, traditional school-led approaches may limit genuine collaboration when parents are expected to receive information rather than participate equally in planning and decision-making (Gedik, 2024; Petersson-Bloom & Holmqvist, 2022).

Cultural and linguistic differences may create additional barriers. Parents from minority communities may encounter unfamiliar school systems, language difficulties, discrimination, and limited recognition of their knowledge. Somali mothers of autistic children reported low expectations from schools, insufficient autism-related knowledge, and a lack of genuine communication with teachers (Smith et al., 2023). Such experiences indicate that communication frequency alone does not represent effective collaboration. Communication must also be respectful, understandable, culturally responsive, and focused on shared problem-solving. Parents need opportunities to explain their children’s experiences, while teachers require institutional support and professional development to respond effectively. Inclusive education is therefore strengthened when schools create accessible communication systems and treat parents as equal members of educational planning teams (Hasson et al., 2024; Ballantyne et al., 2024; Gedik, 2024).

Collaboration and Classroom Engagement

Parent–teacher collaboration may support classroom engagement by creating consistency between home and school. Parents can inform teachers about students’ interests, sensory triggers, communication methods, behavior patterns, and strategies that have been successful at home. Teachers can share information about classroom participation, academic progress, peer interaction, and situations that cause disengagement. This exchange can help both parties establish common expectations and respond consistently to behavioral or emotional difficulties (Schultz et al., 2016).

Collaborative planning may also support appropriate classroom adjustments, including visual guidance, predictable routines, flexible task presentation, sensory accommodations, and strength-based learning opportunities (Bolourian et al., 2022; Petersson-Bloom & Holmqvist, 2022). These practices may improve attention, task completion, confidence, emotional security, and social participation.

Nevertheless, previous research has mainly examined parent–teacher relationships, inclusive practices, teacher attitudes, school participation, or autistic students’ experiences as separate areas. Studies have identified several conditions influencing engagement and collaboration, but limited research has directly measured the relationship between parent–teacher collaboration and the behavioural, emotional, social, and cognitive engagement of autistic students. Qualitative evidence provides valuable descriptions of the experiences of parents, teachers, and students, while quantitative research can establish the levels and statistical relationships between the main variables (Hodges et al., 2020; Smith et al., 2023). A mixed-methods study is therefore appropriate because it can determine whether collaboration is related to classroom engagement and explain the practices, experiences, and barriers underlying this relationship (Ballantyne et al., 2024; Hasson et al., 2024).

Background of the Study

Classroom engagement refers to students’ behavioral, emotional, social, and cognitive involvement in learning. It includes attendance, participation, interest, interaction, attention, effort, and persistence. For autistic students, active engagement is important for improving academic learning and social participation in the classroom (Sparapani et al., 2016; Boyd et al., 2018). Autistic students may experience lower engagement because of communication difficulties, sensory sensitivities, anxiety, limited social interaction, and difficulty adjusting to changes. However, these challenges can be reduced through predictable routines, visual support, positive reinforcement, and individualized teaching strategies (Rattaz et al., 2020; Horgan et al., 2023).

Parents and teachers both play an important role in supporting autistic students. Parents understand their child’s behavior, interests, communication needs, and stress triggers, while teachers observe the student’s academic and social performance. Regular communication can help both sides develop consistent strategies for improving classroom participation (Fontil et al., 2020; Azad et al., 2023). However, effective collaboration may be limited by lack of time, poor communication, insufficient training, unclear roles, and differences in expectations. Studying the experiences of both parents and teachers can help identify the factors that support or prevent successful collaboration (Vlcek et al., 2020; Hornby & Blackwell, 2018).

Statement of the Problem

Autistic students frequently experience difficulties in maintaining attention, participating in group activities, completing classroom tasks, and interacting with teachers and peers (Morgan et al., 2018). Although teachers attempt to address these challenges through classroom strategies, their efforts may be less effective when parents and teachers do not communicate regularly or work toward common goals. In many schools, parent–teacher interaction is limited to formal meetings, academic reports, or discussions about behavioural problems. There may be little opportunity for

joint planning, exchange of successful strategies, or regular monitoring of students' progress (Azad et al., 2021). As a result, parents and teachers may use different approaches, creating inconsistency between home and school.

There is a need to examine whether stronger parent–teacher collaboration is associated with higher classroom engagement among autistic students (Santiago et al., 2022). It is also necessary to understand how parents and teachers experience collaboration, what strategies they use, and what barriers prevent them from working together effectively (Brooks et al., 2023). This study addressed this problem through quantitative questionnaires and qualitative interviews.

Research Objectives

The study aims to achieve the following objectives:

1. To assess the extent of parent–teacher collaboration in supporting autistic students.
2. To evaluate the behavioral, emotional, social, and cognitive engagement of autistic students in the classroom.
3. To examine the relationship between parent–teacher collaboration and the classroom engagement of autistic students.
4. To explore parents' and teachers' experiences of collaboration and identify the factors that facilitate or hinder effective cooperation.

Research Questions

1. What is the level of parent–teacher collaboration in supporting autistic students?
2. What are the levels of behavioral, emotional, social, and cognitive classroom engagement among autistic students?
3. Is there a significant relationship between parent–teacher collaboration and the classroom engagement of autistic students?
4. How do parents and teachers experience collaboration, and what factors facilitate or hinder effective cooperation?

Research Hypothesis

H₀: There is no significant relationship between parent–teacher collaboration and the classroom engagement of autistic students.

H₁: There is a significant positive relationship between parent–teacher collaboration and the classroom engagement of autistic students.

Theoretical Framework

This study is guided by Bronfenbrenner's Bioecological Systems Theory, which explains that students' development and behavior are influenced by interactions between their immediate environments. Home and school represent important microsystems, while parent–teacher

collaboration forms the mesosystem that connects these settings. Strong communication, mutual trust, shared goals, and consistent support can therefore create coordinated learning experiences for autistic students (Çelik & Tomris, 2024). In this study, parent–teacher collaboration is the independent variable, while behavioural, emotional, social, and cognitive classroom engagement are the dependent dimensions. Regular information sharing and consistent home–school strategies are expected to reduce anxiety, strengthen students’ sense of security, and improve their participation in classroom learning. Research indicates that effective home–school collaboration supports learning and the overall development of autistic students (Josilowski, 2019).

Conceptual framework

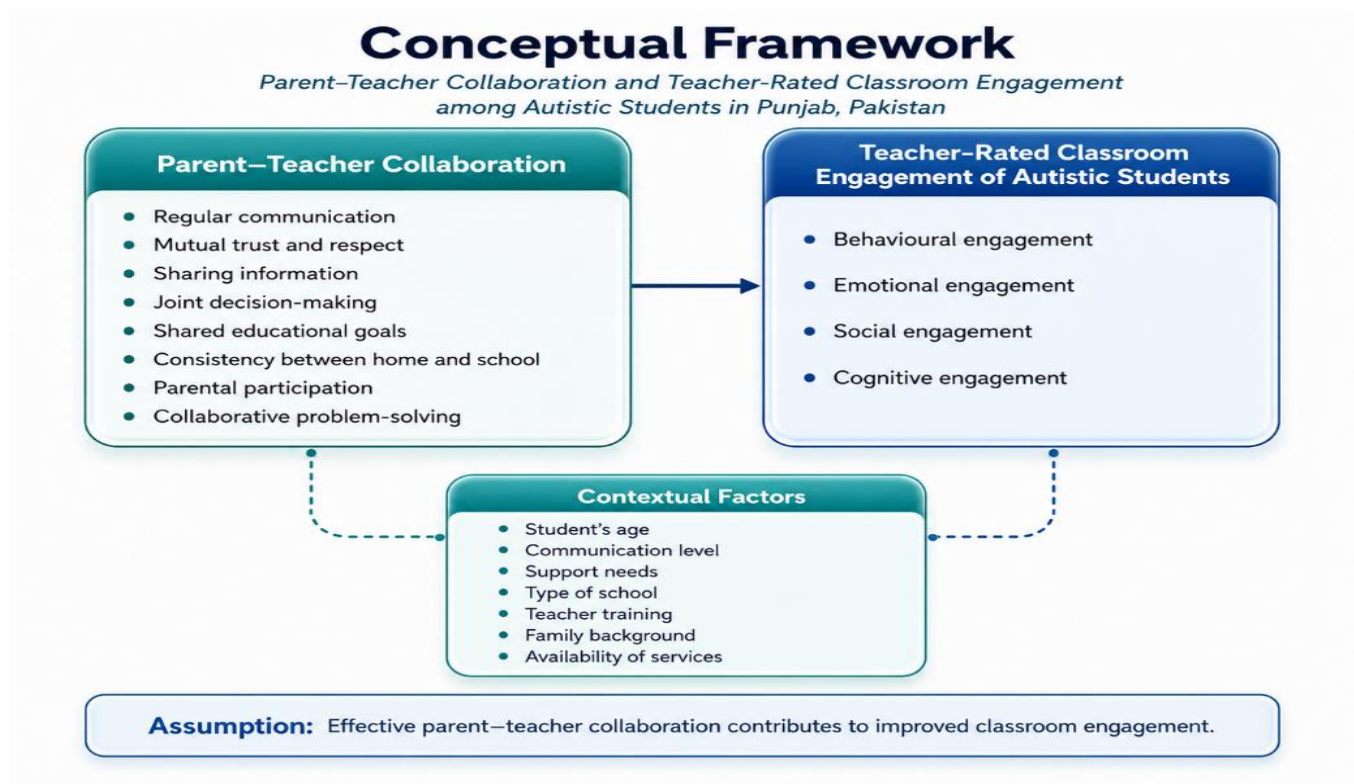


Figure 1: Conceptual Framework

Research Methodology

Research Approach

The study employed a mixed-methods research approach to develop a comprehensive understanding of parent–teacher collaboration and the classroom engagement of autistic students. The quantitative component measured the levels of parent–teacher collaboration and classroom engagement, while the qualitative component explored the experiences, perceptions, and challenges of parents and teachers.

Research Design

An explanatory sequential mixed-methods design was adopted. The study was completed in two phases. In the first phase, quantitative data were collected from parents and teachers through structured questionnaires. The data were analyzed to determine the levels of collaboration and classroom engagement and to examine the relationship between the two variables.

In the second phase, semi-structured interviews were conducted with selected parents and teachers. The qualitative findings were used to explain important, unexpected, or unclear results obtained during the quantitative phase. The research process followed the sequence of quantitative data collection, quantitative analysis, qualitative interviews, qualitative analysis, and integration of findings.

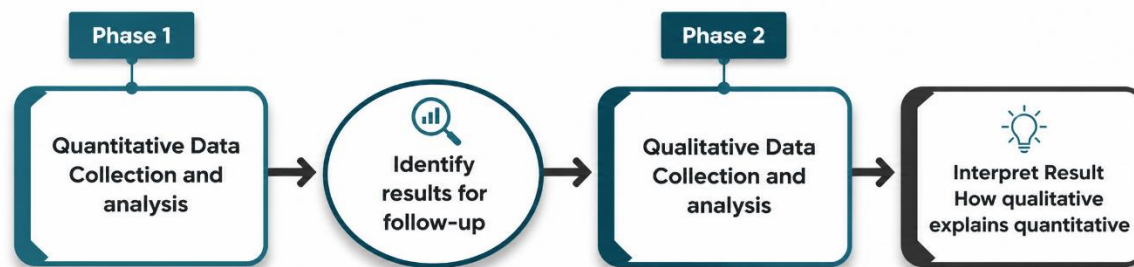


Figure 2: Sequential Explanatory Design of the study

Population of the Study

The population consisted of parents or primary caregivers of autistic students, special education teachers, mainstream teachers teaching autistic students, and autistic students enrolled in the selected schools. The autistic students did not complete the questionnaires directly. Their classroom engagement was assessed through teacher ratings.

Sample Size

The quantitative sample included 60 parents or primary caregivers, 60 teachers, and 60 autistic students linked with the participating parent–teacher pairs. Therefore, the total number of adult questionnaire respondents was 120.

For the qualitative phase, a purposive subsample of 10 parents and 10 teachers was selected. A total of 17 semi-structured interviews were conducted, the final number depended on the point of data saturation.

Sampling Technique

The study was conducted in selected special education institutions in Punjab, Pakistan, that enrolled autistic students. A combination of purposive, criterion, and simple random sampling techniques was used. Purposive sampling was used to select eligible institutions, while criterion sampling was applied to identify parent–teacher–student cases that met the inclusion requirements. A total of 60 autistic students, including 39 girls and 21 boys, were selected. Students were eligible if they had a confirmed autism diagnosis recorded in school, clinical, or medical documents and were regularly enrolled in a selected institution. Each student was required to have a parent or primary caregiver and a teacher willing to participate. Parents were eligible if they were involved in the child’s education, while teachers were required to have taught the student for at least three months. Parents and teachers were also required to have communicated about the student’s education and to provide informed consent. Cases with an unverified diagnosis, incomplete information, or refusal to participate were excluded. Where a complete list of eligible cases was available, simple random sampling was used to select participants for the quantitative phase. Where a complete list of eligible participants was available, simple random sampling was used to select respondents for the quantitative phase. For the qualitative phase, purposive sampling was used to select parents and teachers representing high, moderate, and low levels of parent–teacher collaboration.

Research Instruments

Parent–Teacher Collaboration Questionnaire

A parent–teacher collaboration questionnaire was used in two parallel versions: one for parents and one for teachers. Both versions contained the same number of items and measured the same five dimensions:

- Communication frequency and quality
- Mutual trust and respect
- Sharing of student-related information
- Joint planning and decision-making
- Collaborative problem-solving and consistency of support

The wording of the items was adjusted according to the respondent’s role. Parent-version items referred to teachers, whereas teacher-version items referred to parents. Responses were recorded on a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Higher scores indicated stronger parent–teacher collaboration.

Teacher-Rated Classroom Engagement Questionnaire

A structured teacher-rated questionnaire was used to assess the classroom engagement of the 60 autistic students included in the study. Each participating teacher completed the questionnaire for the autistic student linked to the corresponding parent–teacher pair. The instrument measured four dimensions of classroom engagement:

- Behavioral engagement
- Emotional engagement
- Social engagement
- Cognitive engagement

Behavioral engagement covered attention, task completion, participation, and compliance with classroom instructions. Emotional engagement assessed interest, motivation, comfort, and positive responses to learning. Social engagement examined interaction with teachers and classmates, while cognitive engagement measured effort, persistence, concentration, and problem-solving during classroom activities. Responses were recorded on a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Higher scores indicated a higher level of classroom engagement. The instrument was reviewed by experts, pilot-tested, and assessed for internal consistency before its administration in the main study.

Semi-Structured Interview Guides

Semi-structured interview guides were developed for parents and teachers. The parent interview guide explored communication with teachers, involvement in educational planning, sharing information about the child, consistency between home and school, perceived changes in classroom engagement, barriers to collaboration, and suggestions for improvement.

The teacher interview guide examined communication with parents, the usefulness of parental information, joint planning and problem-solving, changes in students' classroom engagement, barriers to parental involvement, institutional support, and recommendations for improving collaboration. Each interview lasted approximately 30–45 minutes.

Validity and Reliability of the Quantitative Instruments

The questionnaires were reviewed by experts in special education, educational psychology, research methodology, and autism education. The experts evaluated the relevance, clarity, wording, organization, and appropriateness of the questionnaire items according to the research objectives and variables. Their feedback and recommendations were incorporated into the final versions of the instruments, thereby establishing their face and content validity.

Reliability of the Quantitative Instruments

A pilot study was conducted with 50 participants, comprising 25 parents and 25 teachers who were not included in the main study. Questionnaires for the parents and teacher contained 37 items measured on a five-point Likert scale while teacher rated classroom engagement questionnaire consisted of 31 items. Cronbach's alpha was calculated to assess the internal consistency of the quantitative instruments. The parent version of the Parent–Teacher Collaboration Questionnaire obtained a Cronbach's alpha coefficient of .891, while the teacher version obtained a coefficient of .932. The Teacher-Rated Classroom Engagement Questionnaire produced a Cronbach's alpha coefficient of .938. These values indicated high to excellent internal consistency and confirmed that all three instruments were reliable for use in the main study. (Taber, 2018).

Validity and Reliability of the Qualitative Instruments

The semi-structured interview guides for parents and teachers were validated by three experts representing special education, educational psychology, research methodology, and autism education. The experts evaluated the relevance, clarity, sequence, and suitability of the interview questions according to the research objectives. Their feedback was incorporated into the final interview guides, establishing their face and content validity.

The trustworthiness of the qualitative data was ensured through member checking, audio recording, verbatim transcription, detailed field notes, peer review of the coding process, and comparison of parent and teacher responses. An audit trail was maintained to document the procedures followed during data collection and analysis. Direct quotations from participants were also used to support the identified themes. These procedures strengthened the credibility, dependability, confirmability, and transferability of the qualitative findings (Nowell et al., 2017; Korstjens & Moser, 2018).

Data Collection and Analysis

Quantitative data were collected from parents and teachers through structured questionnaires, while qualitative data were obtained through semi-structured interviews with selected participants. The questionnaire data were coded and analyzed using SPSS. Frequencies, percentages, means, and standard deviations were calculated, while Pearson's correlation coefficient was applied to examine the relationship between parent–teacher collaboration and classroom engagement. The interviews were audio-recorded with participants' consent, transcribed verbatim, coded, and analyzed thematically. The emerging themes were then integrated with the quantitative results to provide a comprehensive interpretation of the findings.

Findings of Quantitative phase

Data Structure and Sample-Size Adequacy

The quantitative data were collected from 120 adult respondents, consisting of 60 parents or primary caregivers and 60 teachers. Each parent or caregiver was matched with the teacher of the same autistic student, resulting in 60 parent–teacher dyads representing 60 autistic students. The autistic students did not complete the questionnaires directly. Parents and teachers independently evaluated the level of parent–teacher collaboration, while teachers assessed the classroom engagement of the corresponding autistic students. Respondent-level descriptive analyses of parent–teacher collaboration was initially conducted using all 120 adult responses. However, analyses examining agreement between parent and teacher ratings and the relationship between parent–teacher collaboration and student classroom engagement were based on the 60 matched parent–teacher–student cases. Therefore, the parent and teacher responses were treated as paired observations rather than as 120 independent cases.

An a priori sample-size calculation was conducted using an anticipated moderate correlation of ($r=.40$), a two-tailed significance level of ($\alpha=.05$), and a desired statistical power of .80. The calculation indicated that at least 47 matched cases were required. The final analysis included 60

complete matched cases, exceeding the minimum sample-size requirement. The sample was therefore considered adequate for detecting the anticipated relationship between parent–teacher collaboration and classroom engagement. All 60 matched cases contained complete data for the principal study variables. Consequently, no cases were removed from the main analyses because of missing collaboration or classroom-engagement scores.

Demographic Characteristics of Respondents

The demographic analysis was based on the full sample of 120 adult respondents. Of these respondents, 80 were female, representing 66.7% of the total sample. The largest age group consisted of respondents between 30 and 39 years of age, accounting for 48 respondents or 40.0% of the sample. The relatively high proportion of female respondents reflected the greater participation of mothers among parent respondents and the higher representation of women among the participating teachers. Among the 60 parents or primary caregivers, 42 respondents were mothers, representing 70.0% of the parent sample. Parents holding bachelor's degrees formed the largest educational group, accounting for 20 respondents or 33.3% of the parent sample. These findings indicated that mothers were the principal family respondents involved in reporting parent–teacher collaboration. Among the 60 teacher respondents, 38 were female, representing 63.3% of the teacher sample. A total of 34 teachers, or 56.7%, held master's degrees. The largest teaching-experience group consisted of 24 teachers, or 40.0%, who had between six and ten years of professional teaching experience. These characteristics indicated that most participating teachers were professionally qualified and had several years of teaching experience.

Level of Parent–Teacher Collaboration

The Parent–Teacher Collaboration Questionnaire was completed independently by 60 parents or primary caregivers and 60 teachers. Parallel forms of the questionnaire were used, with equivalent statements adapted according to the role of each respondent. Descriptive statistics were initially calculated across all 120 adult responses to determine the overall level of collaboration and the relative strengths of its five dimensions.

Table 1 *Descriptive Statistics for the Dimensions of Parent–Teacher Collaboration*

Dimension	N	Mean	SD	Interpretation
Communication frequency and quality	120	3.86	0.61	High
Mutual trust and respect	120	4.02	0.57	High
Sharing of student-related information	120	3.91	0.64	High
Joint planning and decision-making	120	3.68	0.69	High
Collaborative problem-solving and consistency of support	120	3.74	0.66	High
Overall parent–teacher collaboration	120	3.84	0.49	High

Note. The respondents consisted of 60 parents or primary caregivers and 60 teachers. The values in this table represent respondent-level descriptive statistics rather than 120 independent

parent–teacher cases. Mean scores were interpreted as follows: 1.00–1.80 = very low, 1.81–2.60 = low, 2.61–3.40 = moderate, 3.41–4.20 = high, and 4.21–5.00 = very high.

The findings demonstrated a high overall level of parent–teacher collaboration, ($M=3.84$, $SD=0.49$). All five dimensions of collaboration were classified within the high category. Mutual trust and respect received the highest mean score, ($M=4.02$, $SD=0.57$). This result indicated that parents and teachers generally perceived their relationships as respectful, dependable, cooperative, and supportive. Sharing of student-related information received the second-highest mean score, ($M=3.91$, $SD=0.64$). It was followed by communication frequency and quality, ($M=3.86$, $SD=0.61$). These findings suggested that parents and teachers generally communicated regularly and exchanged relevant information concerning students' educational progress, behavior, social interaction, learning needs, and developmental requirements. Collaborative problem-solving and consistency of support also received a high rating, ($M=3.74$, $SD=0.66$). This finding indicated that parents and teachers generally attempted to address students' difficulties collaboratively and provide reasonably consistent support across home and school environments. Joint planning and decision-making received the lowest mean score among the five collaboration dimensions, ($M=3.68$, $SD=0.69$), although it remained within the high category. Its comparatively lower score indicated that parents and teachers were less consistently involved in jointly establishing educational goals, making decisions, and designing interventions than they were in maintaining communication, trust, and information exchange.

Agreement Between Parent and Teacher Collaboration Ratings

Because parents and teachers completed their questionnaires independently, separate descriptive statistics were calculated for the two respondent groups. The mean parent-rated collaboration score was ($M=3.81$, $SD=0.52$), while the mean teacher-rated collaboration score was ($M=3.87$, $SD=0.48$).

Table 2 *Descriptive Statistics for Parent, Teacher, and Dyadic Collaboration Scores*

Collaboration measure	N	Mean	SD
Parent-rated collaboration	60	3.81	0.52
Teacher-rated collaboration	60	3.87	0.48
Dyadic collaboration score	60	3.84	0.44

Pearson's product–moment correlation was used to examine the association between parent and teacher collaboration ratings. The analysis revealed a statistically significant moderate positive relationship between the two sets of ratings, ($r(58)=.54$), 95% CI [.33, .70], ($p<.001$). This finding indicated that parent–teacher pairs receiving relatively high collaboration ratings from one respondent also tended to receive relatively high ratings from the other respondent. However, a correlation measures the extent to which two sets of scores vary together and does not, by itself, demonstrate absolute agreement. Two respondents may rank cases similarly while systematically providing different mean ratings. Therefore, additional analyses were conducted to assess whether parents and teachers differed significantly in their overall collaboration ratings. A paired-samples t-test indicated that the mean difference between parent and teacher collaboration ratings was not

statistically significant, ($t(59)=-0.97$), ($p=.338$). The mean difference was (-0.06), with a 95% confidence interval ranging from approximately (-0.18) to (0.06). The paired effect size was small, ($d_z=-0.12$). Because the confidence interval included zero and the effect size was small, the results indicated that neither parents nor teachers consistently provided meaningfully higher collaboration ratings than the other respondent group. Agreement was further evaluated using a two-way mixed-effects, absolute-agreement intraclass correlation coefficient calculated for the mean of the two raters. The analysis indicated moderate absolute agreement between parent and teacher collaboration ratings, ($ICC(A,2)=.68$), 95% CI [.51, .80], ($p<.001$). The confidence interval suggested that the level of agreement in the wider population was likely to range from moderate to good. Taken together, the significant positive correlation, absence of a statistically significant mean difference, small paired effect size, and moderate absolute-agreement coefficient supported the construction of a combined collaboration measure. Therefore, a dyadic collaboration score was calculated for each of the 60 matched cases by averaging the corresponding parent and teacher collaboration scores. The resulting dyadic collaboration score was ($M=3.84$, $SD=0.44$). The standard deviation of 0.44 was calculated from the 60 averaged dyadic scores. It was therefore different from the standard deviation of 0.49 obtained from the 120 separate parent and teacher responses.

Level of Classroom Engagement

The classroom engagement of the 60 autistic students was assessed by their corresponding teachers. Each teacher rated the behavioral, emotional, social, and cognitive engagement of one selected autistic student. The students did not directly complete the classroom-engagement questionnaire.

Table 3 *Descriptive Statistics for Teacher-Rated Classroom Engagement of Autistic Students*

Engagement dimension	N	Mean	SD	Interpretation
Behavioral engagement	60	3.72	0.63	High
Emotional engagement	60	3.48	0.68	High
Social engagement	60	3.31	0.72	Moderate
Cognitive engagement	60	3.59	0.65	High
Overall classroom engagement	60	3.53	0.52	High

Note. N represents 60 autistic students whose classroom engagement was assessed through teacher ratings. Mean scores were interpreted as follows: 1.00–1.80 = very low, 1.81–2.60 = low, 2.61–3.40 = moderate, 3.41–4.20 = high, and 4.21–5.00 = very high.

The results demonstrated a high overall level of classroom engagement, ($M=3.53$, $SD=0.52$). Behavioral engagement received the highest mean score, ($M=3.72$, $SD=0.63$). This finding indicated that the students generally attended classroom activities, followed instructions, remained involved in assigned tasks, and demonstrated observable participation during lessons. Cognitive engagement received the second-highest mean score, ($M=3.59$, $SD=0.65$). This result suggested that the students generally invested mental effort in classroom learning, attempted to understand

academic content, and persisted in completing learning activities. Emotional engagement was also classified as high, ($M=3.48$, $SD=0.68$), although its mean was relatively close to the lower boundary of the high category. This finding indicated that the students generally demonstrated positive emotional involvement in classroom learning, but their emotional engagement was less consistent than their behavioral and cognitive engagement. Social engagement received the lowest mean score, ($M=3.31$, $SD=0.72$), and was the only dimension classified within the moderate category. The comparatively lower social-engagement score indicated that interaction, communication, cooperation, and participation with teachers and classmates remained more challenging for autistic students than behavioral participation, emotional involvement, or cognitive effort.

Relationship Between Parent–Teacher Collaboration and Classroom Engagement

Pearson’s product–moment correlations were conducted to examine the relationship between parent–teacher collaboration and teacher-rated classroom engagement. Separate analyses were conducted using parent-rated collaboration, teacher-rated collaboration, and the combined dyadic collaboration score. All correlation analyses were based on the 60 matched parent–teacher–student cases.

Table 4 *Relationships Between Collaboration Ratings and Overall Classroom Engagement*

Collaboration predictor	Outcome variable	N	Pearson’s r	95% CI	p
Parent-rated collaboration	Overall classroom engagement	60	.48	[.26, .65]	< .001
Teacher-rated collaboration	Overall classroom engagement	60	.59	[.40, .73]	< .001
Dyadic collaboration score	Overall classroom engagement	60	.62	[.43, .76]	< .001

Parent-rated collaboration demonstrated a statistically significant moderate positive relationship with teacher-rated classroom engagement, ($r(58)=.48$), 95% CI [.26, .65], ($p<.001$). Higher collaboration ratings reported by parents were therefore associated with higher classroom-engagement ratings independently reported by teachers. Because the predictor and outcome in this analysis were obtained from different respondents, the parent-rated analysis was less vulnerable to common-method variance than an analysis in which the same respondent rated both variables. This cross-informant relationship provided important evidence that the association between collaboration and engagement was not based entirely on teachers’ perceptions. Teacher-rated collaboration demonstrated a statistically significant moderately strong positive relationship with teacher-rated classroom engagement, ($r(58)=.59$), 95% CI [.40, .73], ($p<.001$). Teachers who perceived stronger collaborative relationships with parents also tended to report higher classroom engagement among the corresponding autistic students. However, this relationship was interpreted cautiously because the same teacher rated both parent–teacher collaboration and classroom engagement. Similar response tendencies, general impressions of the student–family relationship, or other shared-rater influences may have increased the strength of the observed association. The dyadic collaboration score demonstrated the strongest positive relationship with overall classroom

engagement, ($r(58)=.62$), 95% CI [.43, .76], ($p<.001$). The confidence interval indicated that the population relationship was likely to range from moderate to strong. The coefficient of .62 represented approximately 38.4% shared variance between dyadic parent–teacher collaboration and overall classroom engagement. The observed dyadic correlation was also greater than the anticipated correlation of ($r=.40$) used in the sample-size calculation. This finding indicated that autistic students associated with parent–teacher pairs reporting stronger collaboration also tended to receive higher classroom-engagement ratings. Nevertheless, the dyadic collaboration score included the teacher’s collaboration rating, while classroom engagement was also rated by the teacher. Therefore, the dyadic association was not completely independent of possible common-method influence. For this reason, the dyadic result was interpreted alongside the parent-rated cross-informant correlation rather than being treated as wholly independent evidence.

The relationships remained statistically significant regardless of whether collaboration was represented by parent ratings, teacher ratings, or the combined dyadic collaboration score. The consistency of the results across all three collaboration measures indicated that the overall finding did not depend exclusively on a single method of measuring parent–teacher collaboration. On the basis of these findings, the null hypothesis stating that there was no statistically significant relationship between parent–teacher collaboration and the classroom engagement of autistic students was rejected. The alternative hypothesis proposing a statistically significant positive relationship between the two variables was supported. The findings demonstrated a meaningful moderately strong association between parent–teacher collaboration and student classroom engagement. However, the results did not establish a causal relationship. The cross-sectional design, non-experimental measurement of collaboration, and reliance on teacher-rated classroom engagement prevented the conclusion that stronger parent–teacher collaboration directly caused higher classroom engagement. Other student, family, teacher, classroom, or school-related factors may also have influenced the observed relationship.

Findings of Qualitative phase

Thematic Analysis of Parent Interviews

The parent interview data were analyzed thematically to explore parents’ experiences of collaboration with teachers and its perceived influence on the classroom engagement of autistic students. five main themes and related subthemes emerged from the analysis.

Theme 1: Communication with Teachers

Communication emerged as the foundation of effective parent–teacher collaboration. Parents believed that regular, respectful, and two-way communication helped both parties understand students’ classroom progress, emotional condition, behavior, and changing support needs.

“When the teacher and I communicate regularly, we understand the child better and can respond before a small issue becomes a serious problem.” — Parent 04

Subtheme 1.1: Regularity of Contact

Parents valued frequent communication because it allowed them to remain informed about their child’s progress and difficulties. Regular contact also enabled parents and teachers to make timely adjustments to classroom and home-based strategies.

“The teacher sends me an update every week, so I know whether my son is completing his work and participating in class.” — Parent 03

Some parents reported that communication occurred only when a behavioral or academic problem developed.

“I usually receive a call only when he refuses to work or becomes upset. I would also like to hear about his positive progress.” — Parent 08

Subtheme 1.2: Communication Methods

Parents reported using telephone calls, messaging applications, communication diaries, school reports, and face-to-face meetings. Digital communication was considered convenient for sharing immediate information, while face-to-face meetings were preferred for detailed discussions.

“A message in the morning helps me tell the teacher if my daughter has not slept properly or is feeling anxious.” — Parent 01

“For small updates, messages are suitable, but for educational planning, I prefer to sit with the teacher and discuss everything properly.” — Parent 06

Subtheme 1.3: Openness and Responsiveness

Parents expressed greater satisfaction when teachers listened carefully, responded promptly, and considered their concerns seriously. Responsiveness strengthened trust and encouraged parents to share sensitive information about their child.

“When I explain a problem, the teacher tries to find a solution instead of simply saying that the child is difficult.” — Parent 09

Some parents reported that delayed or incomplete responses reduced their confidence in the collaboration.

“Sometimes I send an important message, but I do not receive a response for several days. By then, the situation has already changed.” — Parent 6

The findings indicated that effective communication depended not only on frequency but also on accessibility, responsiveness, balance, and a shared commitment to problem-solving.

Theme 2: Parental Involvement in Educational Planning

Parents considered active participation in educational planning essential for meaningful collaboration. They wanted to contribute to decisions concerning learning goals, classroom support, behavioral strategies, communication needs, and expected outcomes.

Subtheme 2.1: Participation in Meetings

Parents valued opportunities to participate in school meetings and discuss their child's academic, behavioral, social, and emotional development. Meetings helped them understand classroom expectations and identify strategies that could be reinforced at home.

"During the meeting, the teacher explains what is happening in class, and I explain what we observe at home." — Parent 05

"These meetings are helpful because they allow us to review the educational goals that were previously established for the child. They also provide an opportunity to discuss the child's progress, continuing difficulties, and the effectiveness of the strategies already being used. After reviewing this information together, the teacher and I can decide which learning or behavioral goal should receive priority next." — Parent 2

A parent reported that meetings were too brief or infrequent to support meaningful planning.

"The meeting lasts only a few minutes, and most of the time is spent discussing marks. There is little time to discuss support strategies." — Parent 8

Subtheme 2.2: Contribution to Goal Setting

Parents wanted to contribute to the selection of educational and behavioral goals because they understood their child's abilities, interests, limitations, and daily functioning.

"I suggested that communication should be the first goal because my son becomes frustrated when he cannot express his needs." — Parent 03

"When the teacher and I decide the goals together, they become more realistic and easier to practice at home. This helps me support my child consistently in both settings." — Parent 06

Subtheme 2.3: Involvement in Decision-Making

Some parents reported being consulted before changes were made to classroom routines, behavioral plans, or educational support. Others felt that decisions were made by school staff without meaningful parental involvement.

"The teacher discussed the new classroom strategy with me before using it, and we agreed to follow the same approach at home." — Parent 02

“Sometimes I am informed after the decision has already been made. At that point, my opinion cannot change anything.” — Parent 10

Subtheme 2.4: Recognition of Parental Knowledge

Parents appreciated teachers who recognized their knowledge of the child. They believed that their observations could help teachers interpret behavior and select appropriate support strategies.

“The teacher respects that I understand my daughter’s signs of anxiety before they become obvious to others.” — Parent 04

“When my suggestions are considered, I feel that I am part of the educational team rather than an outsider.” — Parent 09

The theme demonstrated that meaningful parental involvement extended beyond attending meetings. It required genuine participation in goal setting, decision-making, and the development of individualized educational support.

Theme 3: Sharing Information About the Child

Parents viewed information sharing as a major contribution to collaboration. They provided teachers with knowledge about their child’s communication style, behavioral triggers, sensory sensitivities, strengths, interests, and successful support strategies.

“The teacher sees my child in the classroom, but I can explain what certain behaviors mean and what usually helps him calm down.” — Parent 07

Subtheme 3.1: Communication Needs

Parents shared information about how their children understood instructions, expressed needs, requested help, and responded to verbal or visual communication.

“My son understands better when instructions are short and given one step at a time.” — Parent 02

Parent 05 reported that “The child becomes confused when several instructions are given at the same time. As a result, he finds it difficult to understand what to do. He may then stop responding altogether.”

This information helped teachers adapt classroom instructions and reduce misunderstandings.

Subtheme 3.2: Behavioral Triggers

Parents informed teachers about circumstances that could lead to anxiety, withdrawal, repetitive behavior, refusal, or emotional distress.

“Unexpected changes are a major trigger. When the routine changes without warning, he may refuse to participate.” — Parent 07

“Difficult tasks often make her frustrated, particularly when she is unsure how long the activity will continue. This uncertainty increases her discomfort and makes it difficult for her to remain engaged.” — Parent 1

“Waiting for a long time without clear instructions often causes restlessness. In such situations, the child may also begin showing repetitive behaviors.” — Parent 9

Parents believed that identifying triggers allowed teachers to prevent problems rather than responding only after they occurred.

Subtheme 3.3: Sensory Sensitivities

Sensory information was considered particularly important because classroom noise, bright lighting, crowded spaces, physical contact, and strong smells could affect engagement.

“Loud noise affects his concentration, so the teacher now allows him to sit in a quieter part of the classroom.” — Parent 04

“He does not like unexpected physical contact, so the teacher now warns him before helping him with an activity.” — Parent 08

Sensory adjustments were perceived to improve comfort, attention, and willingness to remain in classroom activities.

Subtheme 3.4: Interests, Strengths, and Successful Strategies

Parents also shared their children’s preferred activities, interests, talents, rewards, and calming strategies. Teachers could use this information to increase motivation and participation.

“He is very interested in numbers, so the teacher uses counting activities to encourage him to participate in other subjects.” — Parent 08

“A visual schedule works well at home, and after the teacher started using one, she became more independent in class.” — Parent 06

“Drawing is her strength. When it is included in the lesson, she remains engaged for a longer time.” — Parent 5

“A short movement break helps him feel calm and relaxed. It prevents him from becoming overwhelmed during the activity. After the break, he is able to focus again. He can then return to the task more comfortably.” — Parent 9

The theme showed that child-specific information enabled teachers to interpret behavior more accurately and provide support based on individual strengths and needs.

Theme 4: Consistency Between Home and School

Consistency emerged as an important condition for helping autistic students understand expectations and transfer skills across settings. Parents believed that students responded more positively when similar routines, instructions, reinforcement methods, and behavioral strategies were used at home and school.

Subtheme 4.1: Common Routines

Parents reported that predictable routines reduced anxiety and helped students prepare for learning activities.

“We use the same morning routine at home that the teacher follows when he enters the classroom.”
— Parent 03

Subtheme 4.2: Consistent Behavioral Strategies

Parents valued agreement regarding how adults responded to refusal, emotional distress, repetitive behavior, and task avoidance.

“We agreed that the task should not be removed immediately when he refuses to complete it. Instead, we allow him a short break to calm down and then gently encourage him to try the same task again.” — Parent 05

“The same reward system is followed both at home and at school. This consistency helps him understand which behaviors are expected and motivates him to respond in a more positive way.”
— Parent 10

“At home, we encourage her to communicate and request a break when she feels overwhelmed. However, at school, she was sometimes allowed to leave the activity without communicating, which created confusion and inconsistency in her behavior.” — Parent 9

Theme 5: Perceived Changes in Classroom Engagement

Parents associated effective collaboration with improvements in behavioral, emotional, social, and cognitive classroom engagement. They believed that coordinated strategies helped students feel secure, understand expectations, and participate more confidently.

“After the teacher and I started following the same plan, my child became calmer, more attentive, and more willing to participate.” — Parent 02

Subtheme 5.1: Improved Attention

Parents reported improvements in students' ability to remain attentive when teachers used strategies shared by the family.

"The visual schedule has helped him focus because he can see what activity is coming next." — Parent 04

"A quieter seating position helped him remain focused instead of covering his ears and leaving the task." — Parent 07

Subtheme 5.2: Increased Task Participation

Parents observed greater willingness to begin, continue, and complete classroom activities.

"He now attempts the task instead of refusing immediately because the teacher divides it into smaller steps." — Parent 05

"My daughter has started completing more classroom activities since the reward system became consistent." — Parent 09

Subtheme 5.3: Greater Emotional Comfort

Collaboration was perceived to reduce students' anxiety and increase their sense of safety in the classroom.

"She is less anxious about going to school because she knows that the teacher understands her needs." — Parent 01

Parents linked emotional security with improved participation and willingness to attend school.

Subtheme 5.4: Enhanced Interaction and Persistence

Some parents observed improvements in communication with teachers, interaction with classmates, and persistence during challenging tasks.

"He has started asking the teacher for help whenever he finds an activity difficult. Previously, he would often leave the task without saying anything. Now, he tries to communicate his needs more clearly. This change has helped him remain involved in classroom activities. He is gradually becoming more confident in seeking support." — Parent 03

"She now feels more comfortable sitting near other children. She sometimes responds when a classmate speaks to her. This shows gradual improvement in her social interaction." — Parent 4

"When a task becomes difficult, he does not give up as quickly as before. He tries to complete it again with encouragement from the teacher. The teacher uses the same supportive words that we

use at home. This consistency helps him feel secure and motivated. As a result, he is showing greater persistence during challenging tasks.” — Parent 07

The theme suggested that collaboration supported engagement by producing coordinated, predictable, and individualized responses to students’ needs.

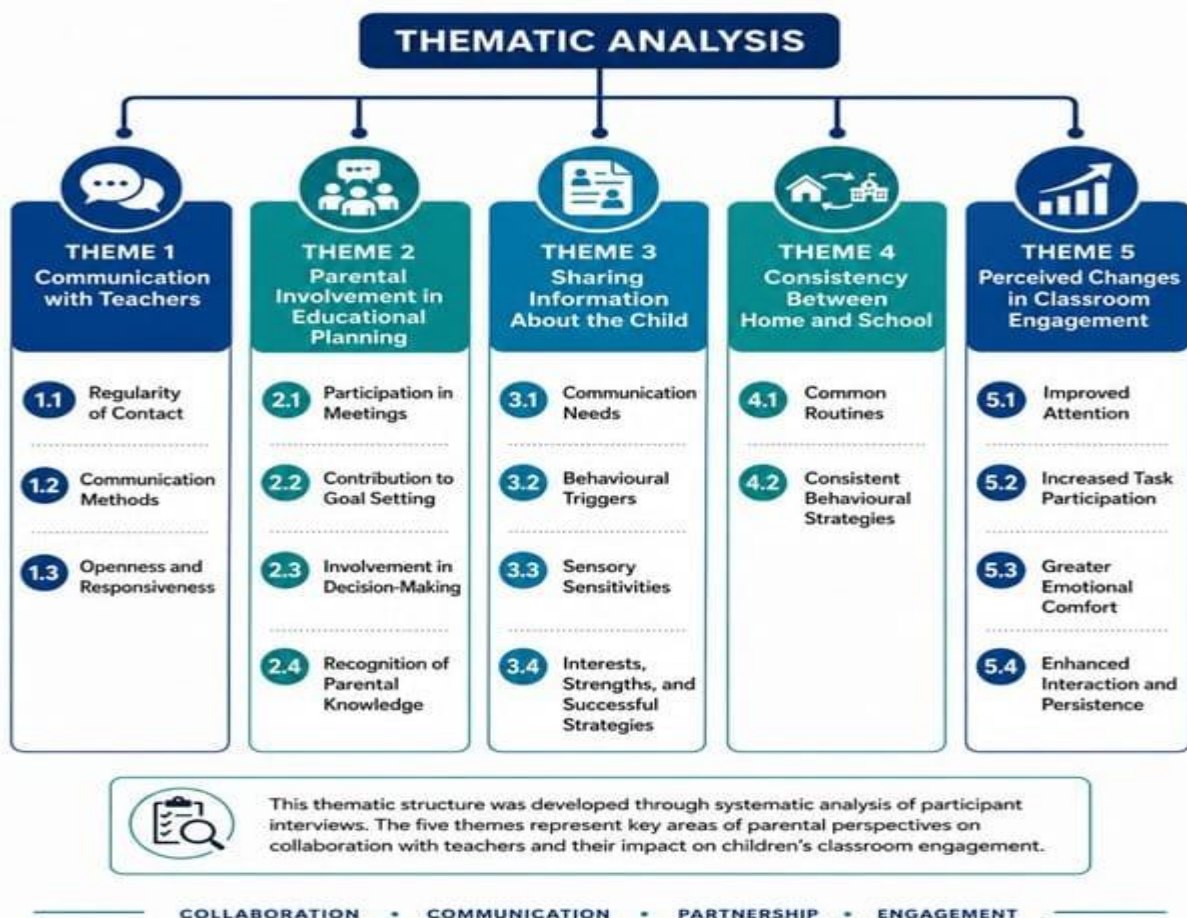


Figure 3: Themes and subthemes emerging from parents’ interviews regarding parent–teacher collaboration and autistic students’ classroom engagement.

Thematic Analysis of Teacher Interviews

The teacher interview data were analyzed thematically to understand teachers’ experiences of collaborating with parents and the perceived influence of collaboration on autistic students’ classroom engagement. Seven main themes and related subthemes emerged from the analysis. The quotations included below are illustrative and should be replaced with the participants’ exact statements before submission.

Theme 1: Communication with Parents

Communication was described as the foundation of effective collaboration between teachers and parents. Teachers explained that regular and respectful communication helped them understand students' needs, share classroom progress, and respond quickly to behavioral, emotional, and academic concerns.

“When parents and teachers communicate regularly, we develop a clearer understanding of the student and can respond to difficulties before they begin to affect classroom participation.” — Teacher 03

Subtheme 1.1: Frequency of Communication

Teachers considered regular contact necessary for monitoring students' progress and maintaining consistency between home and school. Brief but frequent communication was often viewed as more useful than relying only on formal meetings.

“I try to provide parents with a short update every week because regular contact helps us monitor whether the student is progressing or facing new difficulties.” — Teacher 01

“When communication takes place only during formal meetings, many small but important changes in the student's behavior can be missed.” — Teacher 07

One teacher reported that communication became more frequent when a serious behavioral or academic concern developed.

“Unfortunately, communication sometimes increases only after a problem occurs, although regular contact could help prevent the problem from becoming serious.” — Teacher 10

Subtheme 1.2: Methods of Communication

Teachers used telephone calls, messaging applications, written diaries, school reports, and face-to-face meetings to communicate with parents. The choice of method depended on the urgency and complexity of the information.

“Messages are useful for sharing quick updates, but detailed concerns about learning or behavior are better discussed during a meeting.” — Teacher 04

“The communication diary helps both the parent and teacher record daily progress, especially when the student cannot explain what happened at school.” — Teacher 08

“A telephone call is sometimes necessary when an immediate behavioral or emotional concern needs to be discussed.” — Teacher 02

Subtheme 1.3: Responsiveness of Parents

Teachers valued parents who responded promptly, shared relevant information, and remained available for discussion. Timely responses helped teachers make suitable classroom adjustments.

“When parents respond quickly, I can understand whether a change in behavior is related to something that happened at home.” — Teacher 06

Subtheme 1.4: Balanced and Respectful Communication

Teachers believed that communication should include students’ strengths and progress rather than focusing only on difficulties. Respectful communication reduced defensiveness and encouraged parental participation.

“Parents are more willing to discuss challenges when teachers also recognize the child’s achievements and positive behavior.” — Teacher 05

“Communication should not make parents feel blamed; it should focus on understanding the problem and finding a solution together.” — Teacher 09

The findings indicated that effective communication depended on regularity, suitable communication methods, responsiveness, mutual respect, and balanced reporting of both progress and difficulties.

Theme 2: Usefulness of Parental Information

Teachers regarded parents as an important source of knowledge about autistic students. Information provided by parents helped teachers understand students’ communication styles, sensory sensitivities, interests, routines, and behavioral triggers.

“Parents often explain aspects of the student’s behavior that are not immediately visible in the classroom, and this information helps us provide more individualized support.” — Teacher 02

Subtheme 2.1: Understanding Communication Needs

Parents informed teachers about how their children expressed needs, understood instructions, requested help, or responded to verbal and visual communication.

“The parent explained that the student understands instructions better when they are supported with pictures, so I began using visual prompts in class.” — Teacher 03

“After speaking with the parent, I realized that long verbal instructions were confusing the student and reducing his participation.” — Teacher 07

Subtheme 2.2: Identifying Behavioral Triggers

Parental information helped teachers identify situations that could lead to anxiety, withdrawal, refusal, or repetitive behavior.

“The parent informed me that unexpected changes were a major trigger, so I began preparing the student before changing the classroom routine.” — Teacher 04

“Knowing that difficult tasks caused frustration helped me divide the work into smaller and more manageable steps.” — Teacher 09

Subtheme 2.3: Recognizing Sensory Sensitivities

Teachers found parental information particularly useful for identifying students’ responses to noise, light, crowded spaces, physical contact, or classroom materials.

“The parent explained that loud noise affected the student’s concentration, so I moved him to a quieter area of the classroom.” — Teacher 01

“We learned from the family that unexpected physical contact often caused him distress. This information helped us understand his reactions more clearly. We began warning him before providing physical assistance. As a result, he became calmer and more comfortable during activities.” — Teacher 10

“Information about sensory needs helped us understand that the student was overwhelmed rather than deliberately refusing to participate.” — Teacher 06

Subtheme 2.4: Using Students’ Interests and Strengths

Parents shared information about students’ interests, preferred activities, strengths, rewards, and successful strategies. Teachers used these interests to improve motivation and classroom participation.

“The student was strongly interested in numbers, so I incorporated counting activities into other subjects to increase his engagement.” — Teacher 08

“When we include the student’s preferred topics in lessons, he becomes more willing to communicate and complete tasks.” — Teacher 05

The theme demonstrated that parental knowledge helped teachers interpret behavior accurately, adapt classroom practices, and design support suited to each student’s individual needs.

Theme 3: Joint Educational Planning

Teachers viewed joint planning as an important part of collaboration because it allowed parents and teachers to establish shared priorities, educational goals, and support strategies.

“Educational planning becomes more meaningful when classroom observations are combined with the parent’s knowledge of the child’s behavior and abilities at home.” — Teacher 07

Subtheme 3.1: Setting Shared Goals

Teachers reported that goals were more realistic when they were developed with parental input. Shared goal setting also made it easier for parents to reinforce the same skills at home.

“When goals are agreed upon together, both the teacher and parent understand what the student is expected to achieve.” — Teacher 03

“A shared goal helps us observe the same behavior at home and school. It allows both parents and teachers to compare the child’s progress. This makes it easier to identify improvement and adjust support strategies.” — Teacher 06

Subtheme 3.2: Participation in Educational Meetings

Teachers valued parents who actively participated in meetings, asked questions, and shared observations about the child.

“Meetings are productive when parents discuss their concerns and contribute ideas instead of only receiving information.” — Teacher 02

“Parents’ participation helps us review whether the strategies being used at school are also practical at home.” — Teacher 09

One of the teachers reported that attendance at meetings was affected by parents’ employment, transport difficulties, or family responsibilities.

“Some parents are interested in participating but cannot attend because meetings are arranged during their working hours.” — Teacher 4

Subtheme 3.3: Shared Decision-Making

Teachers described shared decision-making as a process in which both parties considered available information before selecting classroom or behavioral strategies.

“Before making any changes to the student’s behavioral plan, I discussed the proposed strategy with the parent. This helped us understand how the approach could be applied in both settings. We agreed to use the same response at home and at school. The consistency made the support clearer and more effective for the student.” — Teacher 05

“Parents should be consulted before important changes are made because they understand how the child may respond.” — Teacher 10

“When decisions are imposed from one side, it becomes difficult to maintain cooperation and consistency.” — Teacher 6

Theme 4: Collaborative Problem-Solving

Teachers described collaboration as particularly important when students experienced behavioral, emotional, social, or academic difficulties. Joint problem-solving allowed teachers and parents to examine the causes of disengagement and agree on suitable responses.

“Instead of blaming the student or the family, we need to understand why the difficulty is occurring and decide together how it should be addressed.” — Teacher 04

Subtheme 4.1: Identifying the Cause of Difficulties

Teachers explained that student behavior could not always be understood through classroom observation alone. Parental information often clarified whether the difficulty was related to anxiety, sleep, medication, family circumstances, sensory overload, or changes in routine.

“A student suddenly became less attentive, and the parent informed me that his sleeping routine had changed, which helped explain the behavior.” — Teacher 02

“When the family shares recent changes at home, we can avoid interpreting every behavior as a classroom discipline problem.” — Teacher 08

Subtheme 4.2: Developing Common Strategies

Teachers and parents jointly selected strategies such as visual schedules, reward systems, movement breaks, simplified instructions, or gradual exposure to group activities.

“The parent and I agreed to use the same reward system, which made the student’s expectations clearer in both settings.” — Teacher 06

“We developed a visual routine together because the student was becoming anxious during transitions.” — Teacher 10

Subtheme 4.3: Monitoring the Effectiveness of Strategies

Teachers emphasized that strategies needed to be reviewed and adjusted according to the student’s response.

“After using the strategy for two weeks, I discussed the results with the parent and we decided to modify it.” — Teacher 03

Subtheme 4.4: Managing Differences in Opinion

Some teachers experienced disagreements with parents regarding academic expectations, behavioral approaches, or the level of support required.

“At times, parents expect immediate academic progress, while the student first needs support with communication and classroom adjustment.” — Teacher 07

“Differences can be managed when both sides listen carefully and focus on the child’s needs rather than defending their own position.” — Teacher 01

The theme indicated that collaborative problem-solving was strengthened by shared information, common strategies, regular monitoring, and respectful management of differing perspectives.

Theme 5: Perceived Changes in Classroom Engagement

Teachers associated strong parent–teacher collaboration with improvements in behavioral, emotional, social, and cognitive engagement. They reported that students responded more positively when home and school followed coordinated strategies.

“When parents and teachers use the same approach, students become more secure, attentive, and willing to participate in classroom activities.” — Teacher 09

Subtheme 5.1: Behavioral Engagement

Teachers observed improvements in attention, task completion, compliance with instructions, and participation in classroom routines.

“After we introduced a consistent visual schedule, the student began starting tasks with less prompting.” — Teacher 02

“The student is now able to remain involved in the activity for a longer period. This improvement occurred because the same reinforcement system is used at home and school. Consistent rewards help the student understand what behavior is expected. As a result, participation and task persistence have gradually improved.” — Teacher 08

Subtheme 5.2: Emotional Engagement

Teachers reported that students appeared calmer, more comfortable, and more motivated when their needs were understood and support was predictable.

“The student became less anxious after we began informing him in advance about changes in routine.” — Teacher 04

“She now enters the classroom more comfortably because the same morning routine is reinforced by the family.” — Teacher 10

“Emotional security improved when the student realized that both the parent and teacher understood his needs.” — Teacher 05

Subtheme 5.3: Social Engagement

Some teachers observed improvements in interaction with teachers and classmates, although social engagement often remained challenging.

“The student has started asking for help rather than leaving the activity when he becomes confused.” — Teacher 01

“Parents helped us identify preferred activities that could be used to encourage interaction with peers.” — Teacher 06

Theme 6: Barriers to Parental Involvement

Teachers identified practical, relational, and personal barriers that limited some parents’ participation in collaboration.

“Most parents want to support their children, but work commitments, limited knowledge, communication difficulties, and previous negative experiences sometimes reduce their involvement.” — Teacher 01

Subtheme 6.1: Time and Work Commitments

Teachers reported that parents’ employment and family responsibilities affected their availability for meetings and regular communication.

“Some parents cannot attend school meetings because they work during school hours.” — Teacher 04

“Parents may respond late because they are managing employment and the needs of other children.” — Teacher 09

Subtheme 6.2: Limited Understanding of Educational Strategies

Some parents required additional guidance regarding classroom goals, behavioural techniques, or the importance of consistent practice.

“A strategy may not continue at home because the parent has not fully understood how or why it should be used.” — Teacher 02

“Parents sometimes need practical demonstrations rather than only written instructions.” — Teacher 08

Theme 7: Institutional Support and Recommendations

Teachers emphasized that effective collaboration required formal support from school leadership. Individual effort alone was considered insufficient without clear procedures, adequate time, training, and administrative encouragement.

“Collaboration is stronger when the school provides clear systems, sufficient time, and professional support rather than leaving each teacher to manage it independently.” — Teacher 06

Subtheme 7.1: Administrative Support

Teachers valued school leaders who encouraged parental participation, arranged meetings, and supported teachers in addressing complex cases.

“The administration helps when it arranges meetings and ensures that all relevant staff members attend.” — Teacher 03

“School leadership is important because teachers need support when communication involves complex behavioral or educational concerns.” — Teacher 10

Subtheme 7.2: Professional Development

Teachers recommended practical training in autism, family communication, collaborative planning, and management of sensory and behavioral needs.

“Teachers need practical autism training to better understand students’ individual needs. The training should explain how lessons can be adapted to support participation and learning. It should also develop effective communication skills for working with families. This would strengthen collaboration and improve support for autistic students.” — Teacher 02

“Training should include real classroom examples rather than only theoretical information.” — Teacher 08

Subtheme 7.3: Dedicated Time for Collaboration

Teachers reported that collaboration required protected time within the school schedule.

“Teachers need scheduled time for parent communication because meaningful discussion cannot always take place during a short break.” — Teacher 04

“Monthly meetings would allow teachers and parents to review the student’s progress regularly. They would help identify small difficulties at an early stage. Support strategies could then be adjusted before the problems become serious. This regular communication would strengthen collaboration between home and school.” — Teacher 09

Subtheme 7.4: Clear Communication Procedures

Teachers recommended a defined communication system that clarified who should contact parents, how information should be recorded, and how different professionals should coordinate.

“Parents should know exactly whom to contact instead of receiving different information from several staff members.” — Teacher 01

Subtheme 7.5: Strengthening Parent Participation

Teachers recommended flexible meetings, parent training sessions, simple written guidance, and greater recognition of parental knowledge.

“Schools should arrange meetings at flexible times so that working parents can participate.” — Teacher 05

“Short parent workshops could demonstrate how classroom strategies may be reinforced at home.” — Teacher 07

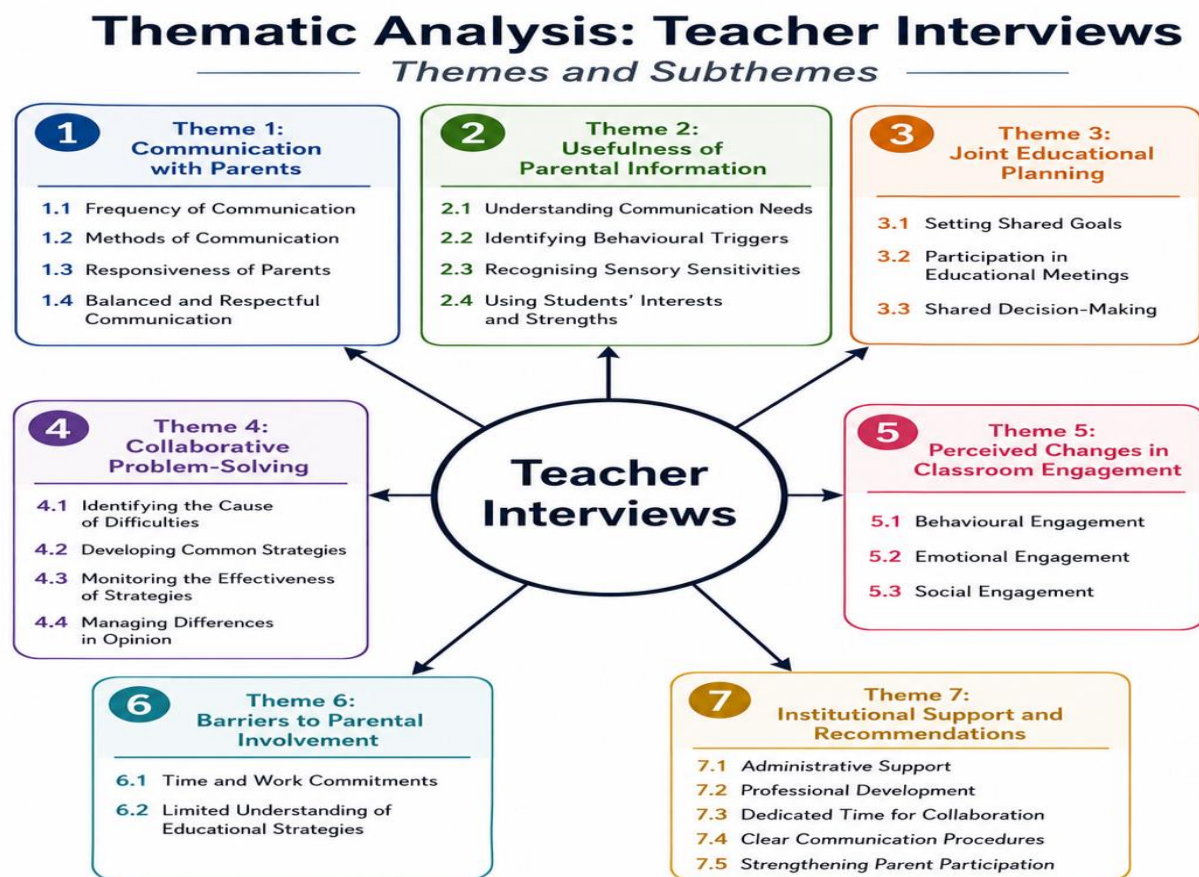


Figure 4: Themes and subthemes emerging from teacher interviews on parent–teacher collaboration and autistic students’ classroom engagement.

Discussion

The study found a high overall level of parent–teacher collaboration across the 120 parent and teacher responses ($M = 3.84$, $SD = 0.49$). Mutual trust and respect received the highest score ($M = 4.02$, $SD = 0.57$), indicating that parents and teachers generally viewed their relationships as respectful, dependable, and supportive. This finding agrees with Garbacz et al. (2016) and Rispoli et al. (2019), who identified trust, family involvement, and recognition of parental knowledge as central components of effective school partnerships. The qualitative findings supported this result by showing that regular communication and the exchange of information about communication needs, sensory sensitivities, behavioral triggers, strengths, and successful strategies strengthened collaboration. Sharing of student-related information also received a high score ($M = 3.91$, $SD = 0.64$), followed by communication frequency and quality ($M = 3.86$, $SD = 0.61$). These findings suggest that parents and teachers generally exchanged useful information about students' progress, behavior, emotional condition, learning needs, and classroom participation. However, some interview participants reported that communication was irregular or occurred mainly when a problem developed. This indicates that effective collaboration requires regular, balanced, and two-way communication rather than contact that focuses only on difficulties.

Joint planning and decision-making received the lowest score among the collaboration dimensions ($M = 3.68$, $SD = 0.69$), although it remained within the high category. This finding suggests that parents were more consistently involved in communication and information sharing than in establishing goals or making educational decisions. Some parents reported being consulted before strategies were introduced, whereas others were informed only after decisions had been made. This supports Azad et al. (2021) and Rispoli et al. (2019), who emphasized that meaningful collaboration requires shared goal setting and active parental participation rather than one-way communication. Schools should therefore involve parents directly in planning, reviewing, and modifying educational and behavioral strategies. Parents and teachers provided similar overall collaboration ratings. Parent-rated collaboration was $M = 3.81$ ($SD = 0.52$), while teacher-rated collaboration was $M = 3.87$ ($SD = 0.48$). Their ratings were moderately and positively related, $r(58) = .54$, $p < .001$. The paired-samples *t*-test also showed no significant difference between the two groups, $t(59) = -0.97$, $p = .338$. These findings suggest that parents and teachers generally shared similar perceptions of collaboration. The moderate absolute agreement, $ICC(A,2) = .68$, further supported the construction of the combined dyadic collaboration score ($M = 3.84$, $SD = 0.44$).

The overall classroom engagement of the 60 autistic students was high ($M = 3.53$, $SD = 0.52$). Behavioral engagement received the highest score ($M = 3.72$, $SD = 0.63$), indicating that students generally attended classroom activities, followed instructions, remained involved in tasks, and demonstrated observable participation. This finding is consistent with Losh et al. (2022) and Bolourian et al. (2022), who reported that structured instruction, positive teacher relationships, and individualized support contribute to stronger classroom participation. Parents and teachers similarly described visual schedules, simplified instructions, quiet seating, movement breaks, task division, and consistent reinforcement as useful practices.

Cognitive engagement received the second-highest score ($M = 3.59$, $SD = 0.65$), while emotional engagement was also high ($M = 3.48$, $SD = 0.68$). The qualitative findings indicated that

predictable routines, preparation for changes, visual support, and coordinated home–school strategies helped students remain focused, persist with difficult tasks, and feel more secure. These findings support Hodges et al. (2020), who concluded that autistic students' participation is influenced by educator knowledge, environmental adjustments, and consistency of support. However, observable participation should not automatically be interpreted as emotional comfort. Autistic students may complete tasks while still experiencing anxiety, sensory overload, or limited feelings of belonging (Horgan et al., 2023). Social engagement received the lowest score ($M = 3.31$, $SD = 0.72$) and was the only dimension classified as moderate. This suggests that interaction, communication, cooperation, and participation with teachers and classmates remained more challenging than behavioral or academic participation. The finding aligns with Dean et al. (2023), who associated limited social engagement with loneliness among autistic students, and Horgan et al. (2023), who identified friendship difficulties, bullying, and social pressure as barriers in mainstream schools. Therefore, physical attendance and task completion should not be treated as complete evidence of inclusion. Schools should provide structured peer interaction, shared-interest activities, supportive group work, and flexible communication opportunities.

A statistically significant positive relationship was found between dyadic parent–teacher collaboration and overall classroom engagement, $r(58) = .62$, 95% CI [.43, .76], $p < .001$. This moderately strong relationship represented approximately 38.4% shared variance and indicated that stronger collaboration was associated with higher classroom engagement. Parent-rated collaboration was also significantly related to engagement, $r(58) = .48$, $p < .001$, while teacher-rated collaboration showed a stronger relationship, $r(58) = .59$, $p < .001$. The significant parent-rated relationship is particularly important because parents rated collaboration while teachers independently rated engagement. The qualitative findings explained these relationships through information sharing, coordinated routines, consistent behavioral strategies, sensory adjustments, and collaborative problem-solving. These findings agree with Azad et al. (2021) and Hodges et al. (2020), who highlighted the importance of aligning support across home and school. Nevertheless, these relationships should not be interpreted as causal. The cross-sectional design cannot establish whether stronger collaboration improved engagement or whether students with higher engagement made collaboration easier. Other factors, including communication ability, support needs, teacher training, family resources, classroom conditions, school type, and service availability, may have influenced both variables. In addition, teachers rated classroom engagement and contributed to the dyadic collaboration score, which may have increased the relationship through shared-rater or common-method influence. Future studies should include classroom observations, longitudinal designs, separate informant analyses, and accessible student perspectives. The qualitative findings also identified time limitations, irregular communication, limited autism-related training, unclear responsibilities, and parents' employment commitments as barriers. These findings support Bolourian et al. (2022), who emphasized the importance of teacher knowledge and relationship-building skills. Effective collaboration therefore requires institutional support, including protected meeting time, practical professional development, flexible communication systems, and formal opportunities for shared decision-making. Overall, parent–teacher collaboration was positively associated with autistic students' classroom engagement, but greater attention is required to strengthen joint educational planning and meaningful social participation.

Conclusion

The study concluded that parent–teacher collaboration played an important role in supporting the classroom engagement of autistic students. High levels of mutual trust, regular communication, information sharing, and consistent strategies between home and school were associated with stronger behavioral, emotional, social, and cognitive engagement. When parents and teachers shared knowledge about students' communication needs, sensory sensitivities, behavioral triggers, interests, and learning strengths, they were better able to provide coordinated and individualized support. The findings also showed that joint planning and decision-making were comparatively less developed, while social engagement remained the weakest dimension of classroom engagement. This suggests that positive communication alone is not sufficient unless parents are meaningfully involved in setting goals, selecting strategies, and reviewing students' progress. Schools should therefore provide regular opportunities for shared planning, clear communication procedures, practical autism-related teacher training, and structured activities that promote peer interaction. Overall, stronger and more balanced home–school partnerships may contribute to more inclusive, supportive, and engaging classroom experiences for autistic students.

Practical and Institutional Recommendations

1. Schools should establish regular and structured communication systems between parents and teachers. Monthly meetings, communication diaries, telephone calls, and secure messaging platforms may be used to share information about students' academic progress, behavior, emotional condition, sensory needs, and classroom participation.
2. Parents should be actively involved in educational planning and decision-making. Teachers should consult parents when setting learning goals, developing behavioral plans, selecting classroom strategies, and reviewing students' progress rather than informing them only after decisions have been made.
3. Schools should provide practical professional development for teachers on autism, sensory sensitivities, communication difficulties, behavioral support, and family collaboration. Training should include classroom-based examples and strategies such as visual schedules, simplified instructions, movement breaks, and positive reinforcement.
4. Greater attention should be given to improving autistic students' social engagement. Schools should introduce structured peer activities, shared-interest groups, guided cooperative learning, peer-support programs, and flexible communication opportunities to improve interaction and reduce social isolation.

Recommendations for Future Research

5. Future studies should use longitudinal or experimental research designs to examine whether stronger parent–teacher collaboration directly improves classroom engagement. Researchers should also include classroom observations, separate parent and teacher analyses, larger samples, and accessible methods for collecting autistic students' own perspectives.

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