



Teaching students with autism: Teachers' strengths, difficulties, facilitators, and barriers

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ARTICLE INFO

Keywords:

Autism
School
Teachers
Special education
General education
Qualitative

ABSTRACT

Objectives: As the number of students with autism continues to rise, more educators are expected to address their needs. This qualitative study examined teachers' strengths and limitations across academic, behavioral, social, and functional domains, and what they perceive as facilitators and barriers in supporting these students.

Methods: Focus groups were conducted with 17 teachers from an urban Southwestern U.S. region. A preliminary codebook was developed based on prior literature and iteratively refined through team coding of transcripts and identification of emergent themes.

Results: Teachers most frequently identified academics as a strength, citing familiarity with the content and teaching methods. Addressing behavioral issues was most frequently reported as the most challenging area, due to significant student needs, limited training, and resource gaps. Top facilitators included collaboration with families or staff, availability of support personnel, and teacher confidence; top barriers included inadequate training, staff support, and administrative support.

Conclusions: Study findings suggest the need for more frequent and relevant training for teachers across general and special education, more opportunities for professional collaboration, and administrative actions to strengthen staff capacity to serve students with autism across domains.

About one in 31 children are diagnosed with autism spectrum disorder, or autism, in the United States (U.S.; Shaw, 2025). The continued rise of autism prevalence over the past two decades suggests that educators are tasked with teaching and supporting an increasing number of students with autism in school settings. Students with autism often need specialized instruction to develop social communication, functional, and academic skills, and address challenging behavior, which indicates that educators will need knowledge and skills about instructional practices that meet these multi-faceted and complex needs (Van Der Steen et al., 2020). While educational research for autism has made rapid advances leading to the development of many evidence-based practices (EBPs) that can be utilized in educational settings for school-aged individuals with autism (Steinbrenner et al., 2020), research has shown that teachers may have insufficient awareness or skills to implement these EBPs (Paisley et al., 2023). It is also unclear if teachers feel confident and supported in addressing the complex needs of students with autism.

As social communication challenges are one of the core diagnostic characteristics of autism (American Psychiatric Association,

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2013), there has been substantial and continued interest in establishing EBPs to support the development of social, play, and communication skills for students with autism, leading to a larger body of intervention research in the social communication area relative to other areas, such as academic, behavioral, and functional areas (Mason et al., 2024; Tiede & Walton, 2019). However, a systematic literature review conducted by Sutton et al. (2019) suggests that interventions targeting social communication skills may be resource-intensive and often were not designed to involve natural change agents (e.g., teachers, paraeducators). These factors may severely limit the applicability of interventions in typical school environments.

Related to academic interventions, several comprehensive literature reviews have found that there is a relatively smaller menu of EBPs that teachers can use to address academic outcomes in students with autism compared to social communication and behavioral outcomes (e.g., Mason et al., 2024; Watkins et al., 2019). Social communication is defined as speech and non-speech interactions including verbalization and augmentative and alternative communication directed at another individual (Mason et al., 2024). Among interventions developed and evaluated for academic outcomes, the specific skills targeted tend to be very limited in scope, with gaps in early literacy development, reading comprehension, science, and more advanced mathematics concepts (Alresheed et al., 2018). In addition, the majority of the literature examining reading skills involved narrative texts, with less emphasis on teaching reading comprehension of informational texts, which is crucial for more advanced reading across content areas (Kim et al., 2025). These limitations of the literature indicate that teachers may not have access to a sufficient number of best practices for selection if they were teaching specific academic skills to students with autism.

For individuals with autism who face more significant barriers with a history of inadequately addressed needs, explicit and intensive instruction is often necessary to support their development of functional or independent living skills, such as eating, meal preparation, taking public transportation, grooming, grocery shopping, household chores, etc. (Bal et al., 2015; Hong et al., 2017). Moreover, individuals with autism who engage in challenging behavior often have more difficulty acquiring functional skills and achieving independence (Baker et al., 2021). While there are EBPs that can support the acquisition of functional skills for individuals with autism (Clarke et al., 2023), the functional skills targeted in the literature fall into a very limited range (Wertalik & Kubina, 2017). Similarly with addressing academic domain, teachers who wish to target a wider array of functional skills may have limited guidance from the intervention literature.

In the area of addressing challenging behavior, many EBPs have been established for school-aged individuals with autism across a continuum of educational settings, including general education contexts (Lory et al., 2024). However, there remain hurdles in delivering effective and sustainable behavioral support to students with autism. Chezan et al. (2023) conducted a survey of 80 special education teachers across two Southern regions in the U.S. and identified factors that reduced teachers' implementation of behavioral interventions, such as competing job demands, the need to coordinate implementation with others, the time required for implementation, and difficulty with integrating interventions into classroom routines. Simó-Pinatella et al. (2023) interviewed 10 general education and special education teachers in Spain and found that teachers needed specialized training on addressing challenging behavior, and support from their colleagues, the leadership team, and students' families to effectively provide support for students with autism who engage in challenging behavior.

More broadly on supporting students with autism, prior research has identified barriers that may hinder teachers' implementation of EBPs, including limited knowledge and training in teaching strategies for students with autism, limited experience in collaborating with other professionals to serve students with autism, and lack of administrative support for implementing special education services (Barry et al., 2020; Paisley et al., 2023). These conclusions align with the implementation science literature in special education that suggests barriers exist at different levels beyond the individual, such as classroom features, work context, and administrative policies in a school (Odom et al., 2020; Suhrheinrich et al., 2021).

To the best of our knowledge, no recent studies have examined teachers' perception on their relative ease or difficulty in addressing the needs of students with autism across academic, behavioral, functional, and social domains. Identifying the factors that influence teachers' preparedness in supporting students with autism may inform research and practice around professional development content and approaches. Further, gaining a deeper and more nuanced understanding of teachers' experiences in teaching students with autism will inform additional research to resolve issues that hinder effective teaching and strengthen existing infrastructure and practices that enhance their teaching of students with autism. This study aimed to address the following research questions through a qualitative approach: (a) Across academic, behavioral, functional, and social domains, which domain do teachers feel most comfortable and most difficult to address with students with autism? (b) In their role as teachers, what are the facilitators and barriers to supporting students with autism?

1. Method

1.1. Study design

We employed a generalist qualitative methodology (Lauterbach et al., 2022) using a hybrid deductive-inductive thematic analysis approach (Fereday & Muir-Cochrane, 2006) to analyze teachers' perspectives on facilitators and barriers in supporting students with autism. The inductive component prioritized themes and patterns that emerged organically from the data rather than relying on pre-existing frameworks or the researcher's analytic preconceptions (Braun & Clarke, 2006; Nowell et al., 2017). Because prior research has identified several contextual and implementation-related factors influencing support for students with autism, we used deductive logic to guide the preliminary development of the codebook while also allowing additional themes to emerge inductively from participant responses.

1.1.1. Initial codebook development

Our initial development of the codebook was informed by the implementation science framework, which emphasizes contextual and environmental factors that influence the implementation of evidence-based practices, rather than focusing solely on individual teacher characteristics, in the context of professional development in special education (Odom et al., 2013); we also consulted additional prior literature to inform the preliminary categories of facilitators and barriers. For example, under the category *barrier*, we drew from the implementation science framework and prior literature to anticipate themes related to knowledge gaps (e.g., lack of training), capacity (e.g., staff shortage, caseload), leadership (e.g., lack of administrative support, lack of resources), and climate (e.g., collaboration). We then developed preliminary codes, definitions, and illustrative examples to guide the initial coding process. These deductive categories served as an initial analytic framework but were revised throughout the coding process to incorporate themes that emerged directly from the data. For example, barriers associated with skill gaps were coded as *bar_skill*, defined as ‘inadequate skills or training’ and further illustrated with descriptive examples ‘skills may include teaching or any relevant professional skills; training may include educational degree or certification, and on-the-job professional development.’

1.1.2. Iterative codebook development

Five of the authors used a deductive approach to independently analyze one transcript based on the initial codebook as part of the preliminary deductive coding process, followed by another round of inductive coding to code new, unanticipated themes. These

Table 1
Participant Characteristics and Classroom Contexts.

Participant Characteristics and Classroom Contexts		n (%)
Gender		
	Female	15 (88.2%)
	Male	1 (5.9%)
	Nonbinary	1 (5.9%)
Race and Ethnicity		
	Asian	2 (11.8%)
	Black or African American	5 (29.4%)
	Hispanic or Latino/a	3 (17.7%)
	Non-Hispanic White	4 (23.5%)
	Multiracial	2 (11.8%)
	Did not disclose	1 (5.9%)
Age		
	21–30	4 (23.5%)
	31–40	6 (35.3%)
	41–50	4 (23.5%)
	51–60	3 (17.7%)
Highest Education		
	Bachelor's	10 (58.8%)
	Master's	5 (29.4%)
	Doctorate	2 (11.8%)
Total Number of Years of Teaching Experience		
	5 years or less	5 (29.4%)
	6–10 years	9 (52.9%)
	11–15 years	1 (5.9%)
	16–20	0 (0%)
	21–25	1 (5.9%)
	Did not disclose	1 (5.9%)
Number of Years Teaching Students with Autism		
	5 years or less	5 (29.4%)
	6–10 years	10 (58.8%)
	11–15 years	1 (5.9%)
	Did not disclose	1 (5.9%)
School Type		
	Charter	2 (11.8%)
	Private	1 (5.9%)
	Public	13 (76.5%)
	Did not disclose	1 (5.9%)
Classroom Type		
	General education	6 (35.3%)
	Special education self-contained or resource	11 (64.7%)
Student Grade Levels		
	Pre-kindergarten (Pre-K) only	4 (23.5%)
	Kindergarten and elementary school	4 (23.5%)
	Pre-K, kindergarten, and elementary school	2 (11.8%)
	Kindergarten only	2 (11.8%)
	Elementary school only	1 (5.9%)
	Middle school	2 (11.8%)
	High school	2 (11.8%)

independently generated codes were discussed to modify or add themes and codes to the codebook. All authors reviewed the revised codebook before using the updated version to analyze the remaining transcripts.

Guided by semi-structured focus group questions, we iteratively examined all remaining transcripts to identify recurring ideas and refined the codebook to accommodate emerging themes (Saldaña, 2021). Themes that were not adequately represented within the preliminary deductive framework were added inductively and discussed collaboratively among the research team. We also resolved coding discrepancies through collaborative dialogue (Nowell et al., 2017). To enhance rigor, multiple coders independently reviewed each transcript to invite more diverse perspectives (Tracy, 2010). This iterative, data-driven process ensured that the findings remained grounded in the lived experiences of the 17 teachers, and provided a comprehensive understanding of their experiences in supporting students with autism.

1.2. Participants

A summary of the participants' overall sociodemographic and contextual information is shown in Table 1, while more specific delineation of contextual information is shown in Table 2.

1.2.1. Sociodemographic characteristics

The study sample included 17 current teachers. Of the 17 teachers, 15 (88.2%) were female, one (5.9%) was male, and one (5.9%) was nonbinary. For race and ethnicity, five (29.4%) of the participants identified as Black/African American, four (23.5%) identified as Non-Hispanic White, three (17.7%) identified as Hispanic or Latino/a, two (11.8%) identified as Asian, two (11.8%) identified as multiracial, and one (5.9%) did not disclose this information. Four (23.5%) participants were between 21 and 30 years old, six (35.3%) were between 31 and 40 years old, four (23.5%) were between 41 and 50 years old, and three (17.7%) were between 51 and 60 years of age. The majority of the participants ($n = 10$, 58.8%) had a bachelor's degree as their highest level of education, five (29.4%) participants had a master's degree, and two (11.8%) participants had a doctorate degree.

1.2.2. Teaching experience

Of the 17 teachers, five (29.4%) reported having 5 years or less of teaching experience, nine (52.9%) had 6–10 years of teaching experience, one (5.9%) had 11–15 years of teaching experience, one (5.9%) had 21–25 years of teaching experience, and one (5.9%) did not disclose this information. Specifically on the numbers of years they have taught students with autism, five (29.4%) reported having 5 years or less, 10 (58.8%) of them had 6–10 years, one (5.9%) had 11–15 years of experience, and one (5.9%) did not disclose this information.

1.2.3. Classroom contexts

Related to the type of school they were teaching in at the time of the study, majority ($n = 13$, 76.5%) of the participants were teaching in a public school, two (11.8%) were teaching in a charter school, one (5.9%) was teaching in a private school, and one (5.9%) did not disclose this information. Approximately two-thirds of the teachers ($n = 11$, 64.7%) taught in a special education self-contained or resource classroom and six teachers (35.3%) taught in a general education classroom. The participants taught students across a wide range of grade levels, including pre-kindergarten only ($n = 4$, 23.5%), kindergarten and elementary grades ($n = 4$, 23.5%), pre-kindergarten, kindergarten, and elementary grades ($n = 2$, 11.8%), kindergarten only ($n = 2$, 11.8%), elementary school only ($n = 1$, 5.9%), middle school ($n = 2$, 11.8%), and high school ($n = 2$, 11.8%).

Table 2
Individual Contextual Information.

Participant	Grade Level	Classroom Type	Years of Teaching Experience	Years Teaching Students with Autism
1	Self-contained	Pre-K	1	2
2	Resource	K - 3rd Grade	7	7
3	Self-contained	6th - 8th Grade	7	12
4	Self-contained; Resource	K - 2nd Grade	2	1
5	Self-contained	K - 2nd Grade	8	8
6	Self-contained	3rd - 5th Grade	1	8
7	General Education	K	25	2
8	General Education	9th - 12th Grade	6	6
9	General Education	11th - 12th Grade	8	8
10	Self-contained	Pre-K	7	6
11	Self-contained	Pre-K	7	6
12	Self-contained	K - 2nd Grade	-	-
13	General Education	Pre-K	11	6
14	Self-contained	Pre-K - 4th Grade	9	9
15	General Education	6th - 8th Grade	8	8
16	Self-contained	Pre-K - 2nd Grade	1	1
17	General Education	K	2	2

Note. Pre-K=Pre-kindergarten; K=kindergarten.

1.3. Recruitment and data collection

After obtaining approvals from the institutional review board of the first author's university (approval number: 2022–490) and a large school district's research department, recruitment information was disseminated through emails, digital newsletters, social media posts, and a research lab website. Inclusion criteria for participants were: (a) current full-time teachers in classrooms serving students from pre-kindergarten to 12th grade, and (b) teaching one or more students with autism. While there was no restriction in the geographic location of the participants, it should be noted that all participants were recruited from an urban area in Southwestern United States. Potential participants may ask for more information about the study or indicate interest to participate by calling a phone number or sending an email to the lead researcher. Upon indication of interest, the researcher communicated with individual participants via email to schedule the study session and provided a digital copy of the consent form for the participants to review prior to the scheduled session. A total of 29 individuals indicated interest. However, 12 of these individuals either did not respond to scheduling communications or did not attend the scheduled sessions. A final total of 17 participants completed study sessions. The researcher grouped two to four participants per focus group based on common availability. The video conference software used for this study (i.e., Zoom) adhered with the university's guidelines for data privacy and security. All study sessions were video recorded and transcribed for data analysis.

At the beginning of the scheduled video conference session, the researcher introduced the purpose of the study, described the structure and estimated length of the session, provided information on maintaining privacy and confidentiality, and provided an opportunity for the participants to ask questions about the study and the information presented on the consent form, after which they were asked to sign and return the consent form via email.

During the session, a researcher served as a moderator and asked questions without interrupting or joining participant conversations. The questions were also provided in the Zoom chat, one at a time, for ease of reference as participants responded to each question. A second researcher served as a notetaker and either took notes in real time during the video conference or post-session through watching the video recording of a session. Notes included additional observational description of participants that might not be evident from the transcripts (e.g., tone, body language, etc.), description of participant group dynamics or other factors that might have influenced the conversations, and documentation of any contradictory information or information that required fact-checking. At the end of each session, the moderator thanked the participants and reminded them to look out for further email communications for monetary compensation, which included a US\$30 gift card. After ending each session with the participants, the moderator and notetaker debriefed and discussed their session notes. Due to prioritization of reducing the risk of confidentiality loss and restrictions in the approved research protocol, the researchers did not follow up with the participants for member checking. The transcriptions and data analysis were not shared with the participants for further validation.

1.4. Measures and data analysis

1.4.1. Focus group questions

The first and third author developed questions for the semi-structured focus groups based on the research questions. These questions were sent to two independent reviewers outside of the research team, who were expert researchers in supporting students with extensive support needs, to obtain feedback. The questions include:

- (1) Of these four domains, academic, social, functional, and behavioral, which do you find the most comfortable to address, and why? You can consider discussing factors such as your preferences, strengths, area of specialization, and availability of resources.
- (2) Which domain is the most difficult to address, and why? You can consider discussing factors such as logistical barriers, availability of resources, your training and area of specialization, and the intensity of your students' needs.
- (3) What additional support or resources might be helpful for you in implementing practices to support students in the domain you find most challenging to address?

1.4.2. Codebook

Prior to data collection, the first author drafted a codebook that included categories and themes that may emerge from the semi-structured focus group questions. This initial draft of categories and themes was developed based on a selective review of recent literature on related topics, such as teachers' use of instructional or behavioral management practices with students with autism and educator training in serving students with developmental disabilities (Barry et al., 2020; Chezan et al., 2023; McDougal et al., 2020; Paisley et al., 2023; Simó-Pinatella et al., 2023). All authors discussed the categories and themes, including definitions, to enhance clarity and comprehensiveness. After completing data collection for four focus groups, the research team independently coded the transcript of one focus group using the codebook, after which disagreements in coding were discussed (Nowell et al., 2017), example quotes were added to the codebook, and the codebook was further revised for clarity. In the data analysis process, coders were also asked to note if there was a need to add any categories or themes based on what they found in the data (Saldana, 2021). This process led to tightening the definitions of some codes and adding a few additional themes.

1.4.3. Data analysis

Transcripts were obtained automatically from the video conferencing software. Automatic transcription errors were manually corrected through verification against the video recording. Identifiable information was removed in the final transcripts used for data

analysis. All coders in the research team completed Collaborative Institutional Training Initiative (CITI Program) training prior to any research activity in this study (e.g., recruitment, data collection). All participants consented to allow approved research team members to access and analyze data. All authors were involved in data analysis and at least two coders were assigned to independently code each transcript. The research team compared and discussed their coding to resolve disagreements.

1.5. Credibility and trustworthiness

Having two coders analyze transcripts independently allowed the coders to develop their own perspectives prior to discussing their coding; the discussion of coding involved up to two additional coders beyond the initial two coders who coded each transcript, which allowed for input from a wider range of perspectives. We used an iterative process to develop and revise the codebook to enhance the breadth and depth of our analysis. During our analysis, multiple sources of data (i.e., transcripts, video recordings, observation notes, fact checking) were triangulated to corroborate findings and improve the credibility of interpretations (Tracy, 2010). However, member checking was not done in this study and we acknowledge a missed opportunity to verify the accuracy of the original data and data interpretations with the participants.

1.6. Researcher reflexivity

The research team included five females and one male, two of whom are scholars of East Asian and Southeast Asian heritage and the remaining are Non-Hispanic White. At the time of the study, two of the authors were higher education faculty, one author was a postdoctoral scholar, and the remaining authors were advanced doctoral students in special education. All authors had experience preparing teacher candidates and working with special education and related service professionals (e.g., teachers, paraeducators, behavior analysts and technicians) to varying extent in U.S. contexts. The researchers acknowledge that due to their proximity with current research on EBPs for individuals with disabilities and their own experiences in working with this population, their interpretation of the data may be influenced by their perception of how students with autism should be supported. The researchers also acknowledge that all but one author were board certified behavior analysts, which caused the study to have a behaviorist leaning and may have influenced the lens through which the study was designed (e.g., the domains addressed in the focus group questions) and data were analyzed (e.g., codebook development).

2. Results

Within each category (i.e., most comfortable domain, most difficult domain, facilitators, and barriers), we identified themes from the data and ranked the themes based on the numbers of times they were reported across participants. In this section, we will describe each theme and present sample quotes from participants that were representative of the theme. The frequency of the occurrence of each theme is displayed in Table 3. In order to illustrate a fair representation of participants in the example quotes in this section, we labeled each quote with a unique participant number (from 1 to 17), followed by the focus group letter (from A to F). These participant codes used for this manuscript are not connected to the participant identifiers used in the research study to prevent any connection with participant identity.

Table 3
Frequency of Themes.

Category	Theme	Focus group					
		A	B	C	D	E	F
Strength	Academic	1	4	3	0	1	1
	Social	0	0	2	0	0	1
	Functional	0	0	2	0	2	0
	Behavior	3	1	1	2	0	5
Difficulty	Academic	2	5	0	0	3	2
	Social	2	5	1	2	1	3
	Functional	0	6	1	0	3	1
	Behavior	2	8	6	1	3	0
Facilitator	Experience	3	4	3	0	1	4
	Confidence	6	6	4	1	1	2
	Staff	2	2	7	0	12	0
	Administrator	5	0	3	0	1	0
Barrier	Collaboration	3	5	14	2	16	4
	Skill	0	15	13	0	6	4
	Staff	4	3	3	5	8	3
	Caseload	1	3	2	1	5	0
	Resource	2	2	5	3	2	3
	Administrator	5	0	0	0	11	0
	Collaboration	1	2	2	2	2	1
	Inclusion	0	2	0	0	5	2
	Discrimination	0	0	0	0	4	1

2.1. Most comfortable domain

The academic domain was most frequently reported as an area of strength ($n = 10$), followed by behavioral ($n = 8$), functional ($n = 4$), and social ($n = 2$). Teachers who reported being most comfortable addressing academic needs most often reported their experience with the process of teaching content area as a reason for this strength, 'It's great that each individual kid has their own IEP (Individualized Education Program) goals, especially when it comes to academics. So, I know what to focus on with each kid, and I'm good at preparing lessons and executing the objectives of the lesson. (4B)' 'I would say academics are my strongest and most comfortable aspects to address. I think I know my subject very well, which is English, so I know it very well, so I don't have problems with trying to... address that with the students. (9 C)' Teachers who reported being most comfortable with addressing the behavioral domain emphasized their skills in managing behavioral challenges, 'Behavior all day, every day, I can handle them. (3 A)' 'I feel comfortable with behaviors. Like, every time that we have a big behavior, in time we get it under control. (11D)'

2.2. Most difficult domain

The behavioral domain was most frequently mentioned as an area of difficulty ($n = 20$), followed by social ($n = 13$), functional, ($n = 11$), and academic ($n = 10$). Notably, a few teachers reported multiple domains as their biggest challenge, for example, 'The social, functional, and behavioral aspect of teaching kiddos on the autism spectrum is so difficult for me... having no clue of what to teach the kiddos as far as like functional, social, and behavioral skills. (4B)' Teachers who reported having difficulty addressing the social domain associated this difficulty with autism characteristics, for example, 'Hardest for me is... honestly social, just because you know, that is the biggest barrier for a lot of our kids... and when they're nonverbal or limited in their verbal skills, teaching social interaction is very difficult. (1 A)' Teachers who expressed having the most difficulty with addressing functional skills indicated not having the knowledge to teach these skills. For example, a teacher expressed, 'It took me that long to connect like, hey, he needs some reminders of what, for whatever reason, and I did not have a... you know I didn't have something already made, and I felt like, you know, that's kind of a shame that I had to make something my seventh year of teaching for transitions, you know I don't. So, that was just a little bit frustrating. (5B)' Teachers who indicated that the academic domain was the most difficult to address associated this difficulty with what they deemed as unreasonable academic expectations, 'The one that is most challenging to me is when you expect me to have the academic side with *laughs* when you, when you have students throwing pianos, and then you want them at the same academic level as the [general education] peers, that's when, that's when I struggle. (3 A)'

2.3. Facilitators

Five themes were identified as facilitators of effectively teaching students with autism, including: (a) collaboration with students' families or school personnel ($n = 42$), (b) support from staff (e.g., paraeducators, school psychologists; $n = 23$), (c) confidence in their knowledge or implementation of teaching practices ($n = 19$), (d) professional or personal experience or professional training ($n = 11$), and (e) administrator support ($n = 9$).

2.4. Collaboration

Teachers most frequently reported collaboration with other school personnel or students' families as a factor that facilitated the teaching of students with autism. Collaboration took multiple forms, such as co-teaching, consulting with colleagues on specific student issues or teaching strategies, working towards shared goals with related service providers (e.g., speech and language pathologist), ensuring consistent implementation of teaching strategies across staff or classrooms, and engaging parents through information sharing, parent training, or inviting parent input in instructional planning. For example, a few teachers described the role that a co-teacher played in their classroom, 'For me in my classroom we do have a CC teacher or a co-teacher who would help with, you know, engaging the student and trying to get the student involved in the classroom. (9 C)' Another teacher indicated they asked other teachers for help, 'I do have a few teachers at school who are pretty knowledgeable about behavior, so I can go to them and talk... what should I do with this? (5B)' Some teachers reported involving parents in various aspects of their work, 'It's something I've worked with his family on, kind of, what are their priorities for his social skills? Is it... Do they want to be able to integrate into groups or is it like more dialogue they're focused on? (17 F)'

2.5. Staff support

Receiving adequate or appropriate support from school personnel was frequently discussed as a facilitator. Some teachers described how their teaching assistants or paraeducators helped them in supporting students with autism, 'I have a luxury of having a second assistant, and that has been so helpful. (5B)' 'Who else may be involved? Like, I said, was the assistant. (7 C)' Some teachers described having related service specialists, such as occupational therapists or behavior specialists, join their effort in addressing student needs, 'We also do Special Olympics every month, so we join that one. So it is supported by adapted PE (physical education), and then at times the OT (occupational therapist) goes with us also. (12E)' 'I will call [the school district's behavior specialist team], which is the behavior, you know. They will come out and support a teacher or a classroom. I have done that a few times when I just needed some help. (5B)'

2.6. Confidence

Most teachers expressed self-efficacy or confidence in certain knowledge, skills, or practices. For example, some teachers expressed confidence in working with students with autism in relation to their classroom experience, 'Because I was [paraeducator] for several years before becoming a [licensed teacher] this school year. So I've been in an autism classroom all the... seven years. (6 C)' 'I've had them since [kindergarten], I've been able to shape them and, you know, I know their style of learning. (2 A)' Some teachers explicitly described specific teaching practices as a strength, 'Strong classroom management. (15 F)' 'I would say academics are my strongest and most comfortable aspects to address. (9 C)' 'We're very proud. (11D)' 'I think it's just where I feel like I have the most knowledge...and, and I enjoy doing that. (5B)'

2.7. Experience or training

Some teachers reported having relevant formal education, professional development, or teaching experience as a factor that supported their teaching. For example, 'Because I have the training. So back in [home country] I worked in an [non-governmental organization]. So it's like [home country] Dyslexia Foundation. So we were trained for dealing with reading, writing, math. (12E)' 'I have a psychology background. (1 A)' '[School district special education division] come to my classroom, train me, train the [paraeducator], train the staff members, because this was all... all hands on deck. (6 C)'

2.8. Administrator support

Some teachers reported support from administrators as a facilitator in their teaching. For example, a teacher expressed that administrative support was a major factor of consideration in her choice of employment setting 'I just go to schools where I know I'm going to be supported. So I know if um, if one of the [administrator] at my school was a special education, or self-contained teacher, I lean to those schools because I know I will be supported. (3 A)' Another teacher indicated their administrator was willing to provide flexibility in the format and type of lesson plans they submitted 'I have an agreement with my [administrator] about lesson plans. (2 A)'

2.9. Barriers

Eight themes were identified as barriers to effectively teaching students with autism, including: (a) inadequate skills or training (n = 36), (b) inadequate teaching support from staff (n = 23), (c) inadequate support from administrators (n = 16), (d) inadequate resources (e.g., equipment, technology, instructional materials; n = 15), (e) unmanageable caseload (n = 12), (f) lack of effective collaboration with families or school personnel (n = 9), (g) lack of inclusive educational placement or curriculum (n = 7), and (h) discrimination based on factors such as race, ethnicity, or disability (n = 4).

2.10. Inadequate skills or training

The most common factor identified as a barrier was inadequate skills (e.g., teaching skills or professional skills) or relevant training (e.g., formal education, on-the-job professional development). Several teachers reported having insufficient skills that are specific to supporting students with autism, for example, 'I think that an understanding like how to work with kids on the autism spectrum. That's definitely difficult. (4B)' Teachers also indicated the training they were provided on their job may not be relevant or applicable to their student population and needs, for example, 'Our district required us to watch these videos for students that were English language learners or emergent bilinguals, and the videos that we were required to watch, were examples of students in second and third grade... that doesn't... That works for second and third graders. And I'm glad that it does. But it doesn't always work for the higher aged students. (8 C)' 'I want to see real, I guess real world *chuckles* application of these practices. I do not like that I keep seeing scripted applications. I need something real. (8 C)' Some general education teachers expressed that working with students receiving special education was not a core component of their teacher preparation coursework and fieldwork, for example, 'I think training needs to start at, you know, the college level when we're actually in school and learning and trying to become teachers. Having those courses, like, we did have a course where it's a course where you learn about special education. But it was brief. It was theoretical. So there's nothing that I can really take from it in terms of being in the classroom solely with a student as a [general education] teacher, with students who have a higher level of behavioral issues. So I think it being more... having it more included in the classroom in the college level, like how we do our student teaching, and we go in, and we train, and essentially our training right when we're in student teaching program. But it's usually [general education] so I think if we had an instance, where in college you maybe do observations in a special education class, so that you're getting more of that training and more of that knowledge, starting at the college level. Then, when you get into the actual classroom on your own, you feel a bit more prepared. So I think that would be helpful. (9 C)' Some teachers indicated that while they might have the knowledge of certain teaching practices, they were not implementing those practices as consistently as they would have liked, for example, 'I don't feel like my use of that was as strategic as it should have been, and caused me problems. (5B)'

2.11. Lack of staff support

Inadequate support from or shortage of staff, including paraeducators and other school personnel, was often brought up as an issue. Some teachers reported staff shortage as a factor that made their instruction challenging, for example, 'I totally agree with you that we

need two aides in pre-K, because I did it with just two of us this year, and it's very hard. (1 A)' 'In my school with the autism teachers with the babies, with the [pre-kindergarteners] ... it's you know, this year we have two openings. Nobody wants to take those jobs. (2 A)' 'I don't have anybody to call when I need some support in my classroom. (10D)'

2.12. Lack of administrator support

Several teachers reported inadequate support from administrators as a barrier in effectively supporting students with autism, for example, 'My [administrator] was focused on just making it through the year (1 A)' 'But in my previous admin, just like, 'Okay, he wants this. Okay, these are the toys that he wants. So shut up. (12E)'

2.13. Lack of resources

Some teachers reported insufficient resources as an issue that hindered teaching and necessary parent training, for example, 'We had everything for academic except for what they really needed, social, functional, and behavior. We were limited on those resources. We had to go reach out for those above and beyond in order for me to get those things that they needed (6 C)' 'And also even the curriculum that they give us is lacking. It's just like digital, that's it. You have the digital curriculum, and that's it. Nothing. (12E)' 'The district not having somebody to train the parents, especially for students who are beginning to learn the use of picture exchange communication. That is one problem. And it's hard to ask for support right now, because the assistive technology persons in charge are already teaching in the classroom. So when you want it, they said they don't have staff to train the parents. (10D)'

2.14. Unmanageable caseload

Several teachers indicated the teacher-student ratio led to issues in effective teaching of specific skills or behavior management, 'If I had three kids or two kids or five kids instead of nine kids, I could have conquered skills like that. (5B)' 'Now I feel like there is no way that I'm ever going to meet every child's needs in my classroom. There's no way, and that has been hard to accept. (5B)' 'My class sizes sit at about 35–40. So behavior sometimes is very difficult sometimes, because it's not just one student that's having a behavior. (8 C)' 'But last year I was with another teacher in class with 23 students. It's like functional skills and then life skills. And then I have this all combined in one classroom. (12E)'

2.15. Lack of collaboration

Some teachers reported insufficient or inconsistent collaboration across staff made it more challenging for them to see positive effects in their teaching, for example, 'But sometimes, that with working with other adults, or like other stakeholders, we can kind of butt heads when it comes to like what we think, you know, should be implemented with the kid. (4B)' 'The inconsistency of staff like aides. I begin with two aides, then one moves and then the other one's moving, and I always get a rotation of paraprofessionals due to their, I guess the salary or something. They don't get paid enough. They rotate. (11D)' 'My biggest struggle is getting the adults to be consistent, like having everybody respond the same way. (11D)' Some teachers indicated challenges in collaborating with families, for example, 'He fell back. He didn't... He wasn't doing as good as he was doing, um, apparently, and it is, you know, we have to start all over again with him. So I tried calling Mom, I tried calling Dad. (2 A)'

2.16. Lack of inclusion

A lack of inclusive educational placement or curriculum was identified as a theme across multiple teachers. For example, a teacher indicated the difficulty of teaching social skills or supporting students comprehensively in a self-contained classroom without neurotypical students, 'I wish I had typical peers in my room that they could, you know, so they could have these great models. (5B)' 'I think sometimes we do the kids a disservice by keeping them in the self-contained class and not letting them go out with these other kids, whether it be [kids with specific learning disabilities] or, you know, it's like we keep them, you have to stay with the teacher, you have to do this. But in reality, when they get to high school, we're setting them up for failure. (14E)' Other teachers expressed that the curriculum they used was not tailored for children with autism, 'Their lessons tend to be very neurotypical. (17 F)' 'The academic world for autism, it's not very friendly for autism. It's all geared towards neurotypical children. And we've had to modify everything for autistic kids. Not so much the verbal ones and the ones that can pick up on the neurotypical material, but more so for the ones that are non-verbal. (16 F)'

2.17. Discrimination

Some teachers reported disability-based discrimination or racism as a barrier to supporting students with autism. For example, 'Cause autistic kids really are smarter than they think they are and that we give them, than most people give them credit for. (16 F)' 'When I came to that school, the kids who needed support did not get the support. I was upset with that because I saw kids who had a one on one, and they were resource kids, but because their parents were special way of teachers and Caucasian, they got their way. The kids I needed support were from, you know, I'm just going to say it, from the culturally and linguistically diverse group, and they didn't get that support. (14E)' 'And I feel like I'm fighting because I'm not just a teacher but I'm a Black person trying to say, this is not right,

it's not equitable. (14E)' 'I've been, you know, dogging people for two years, "why can't we go on a field trip?"' (14E)'

3. Discussion

The first aim of this study was to identify domains in which teachers of students with autism felt most and least comfortable addressing in the classroom. Our results showed that teachers, especially general education teachers, felt most comfortable teaching academics for students with autism. General education teachers may be seen as content area specialists given their formal training in academic areas such as literacy and mathematics. The domain in which teachers felt the least comfortable was managing behavioral challenges. This finding was not surprising given that previous literature has shown that only about one-third of teachers are given adequate training to manage classroom behavioral challenges (National Council on Teacher Quality, 2020). However, this finding is concerning given that teacher exposure to challenging behavior can lead to emotional exhaustion, negative perceptions towards students, and low job satisfaction (Gilmour et al., 2022). These risks are particularly high for teachers of students with autism given that individuals with autism are more likely to engage in behaviors that are perceived as challenging (Adams et al., 2023). This finding emphasizes the need for (a) more training in classroom behavior management in teacher preparation programs given that only 39% of K–12 teachers indicate that they received explicit instruction in behavior management in their teacher preparation programs (EdWeek Research Center, 2024) and (b) more in-service professional development related and coaching to managing behavioral challenges of students with autism.

Collaboration between general and special education teachers was shown to be the top facilitator for teachers supporting students with autism, which aligns prior literature linking effective collaboration with improved student achievement (Reeves et al., 2017). Additionally, collaboration has been linked to decreased feelings of isolation and increased teacher confidence and job satisfaction (Reeves et al., 2017). Since teachers often learn more from their colleagues than formal professional development (Gesel et al., 2022) schools may consider adopting peer coaching models to facilitate increased collaboration between general and special education. In co-taught classrooms, peer coaching has been shown to improve teacher use of high-leverage practices (Ackerman et al., 2023).

Teachers in this study reported the lack of support staff, including paraeducators, as a barrier to supporting students with autism. This was an issue that was more pronounced among special education teachers. This is a critical issue for schools to address given that burnout and turnover rates among special education paraeducators are linked with negative student outcomes (Kaler et al., 2024). Similar to special education teachers, paraeducators report having limited professional development opportunities related to working with students with disabilities (Lichte & Scheef, 2022). School administrators may consider providing targeted professional development opportunities for paraeducators and teachers. Administrators may also consider providing special education teachers with training on how to best support their paraeducators in the classroom given that many special educators feel underprepared to train and supervise paraeducators (Billingsley & Bettini, 2019). Collaborative programs, like coaching, may enhance professional development opportunities for both teachers and paraeducators and help build structures to better support students with autism.

Finally, administrator support was found to be a major facilitator. This finding was not unexpected given that research has shown the positive impacts of administrator support on outcomes for students with disabilities (Crockett, 2018) and special educator stress, job satisfaction, and employment retention (Aldosiry, 2022; Billingsley & Bettini, 2019). Based on the needs reported in this study, school administrators may take a more active role in providing timely and relevant professional development for special education teachers and paraeducators.

Administrator support was also found to be a barrier for teachers of students with autism. Research has shown that lack of administrator support can lead to special educators leaving special education for general education or leaving the field of education altogether (Sweigart & Collins, 2017). The results of this study reveal a need for increased involvement of administrators as key stakeholders in the education of students with autism. Administrators can increase involvement by gaining a clear understanding of special education policies and students' rights, identifying teacher needs in the context of their program, and allocating relevant resources to support gaps in staffing and services for students with disabilities.

In alignment with prior research, the teachers in this study reported a need for more frequent and relevant professional development opportunities (Woulfin & Jones, 2021). The teachers in our sample reported that professional development opportunities were often scarce (i.e., one to two opportunities per year) and focused on generic rather than contextually relevant topics, which aligns with existing research on the professional development needs of special education teachers (Woulfin & Jones, 2021). These findings further support the need for sustained and tailored professional development for special education teachers (Cooc, 2019). One way to address this issue is through collaborative professional development, such as professional learning communities (Cooc, 2019; Woulfin & Jones, 2021). A professional learning community is an ongoing process where teachers share experience and expertise to enhance their learning and teaching practices. Within these models, special and general educators can harness their individual knowledge to generate new and collective knowledge. This model may also address the need for increased collaboration across general and special education.

Discrimination and access to inclusive education were found to be barriers for general and special educators serving students with autism. Despite the rapid and continued increase in the prevalence of autism, approximately only 30% of students with autism spend 80% or more of their day in general education classrooms, compared to students with other diagnosed disabilities who spend much of their day in general education (U.S. Department of Education, 2020). In fact, despite social movements calling for inclusion for neurodiverse individuals, self-contained classrooms still remained prominent placement options for students with autism (Morningstar et al., 2017). These findings from prior research, along with the results of this study, call for a need to re-evaluate how educational placement decisions are made for students with autism. Instead of making placement decision based on disability category, decisions regarding educational placement should be made based on students' educational priorities and goals and adjusted based on data.

3.1. Recommendations for practice

The findings of this study highlight that formal educational training impacts a teacher's confidence and comfort level in implementing a teaching practice to a significant extent. Further, we found some delineation of strengths and limitations between special education and general education teachers, with special education teachers being more comfortable in implementing social and behavioral interventions and general education teachers being more comfortable in teaching academic skills. This points to an opportunity for special education and general education teacher licensure programs to collaborate to better prepare teachers to serve students with autism across settings.

With the teachers' consensus on the importance of collaboration to facilitate effective teaching, it suggests the value of investing in collaboration infrastructures for school personnel to work with one another and enhance home-school engagement. School administrators should develop not only policies or guidelines that promote collaboration, but also implement structural support (e.g., built-in collaboration time, feasible collaboration methods) that allow collaboration to be a routine.

3.2. Limitations and future directions

The teachers who participated in this study spanned across grade levels and classroom types. While it was not the intention of this study to delineate the facilitators and barriers that teachers face in special education versus general education settings, it is possible that some of the themes were more unique to teachers teaching a certain grade level, classroom type, and varying student needs. We did not collect information on whether the students of the teacher participants had co-occurring conditions in addition to autism, which may have impacted their support needs and resulted in varying teachers' needs. Future research examining teachers' perspectives and experiences could group teachers into different focus groups based on such features.

We noted that some participants provided more input than others during the focus group conversations and acknowledge that reporting the frequency of appearance of each theme across focus groups may overrepresent the participants who contributed more to the conversations. However, we determined that it was most appropriate to use the frequency of appearance of each theme as an indicator of the significance of each theme. For example, if teachers discussed a barrier multiple times within a conversation, with multiple main points, back-and-forth exchanges, and examples, we would interpret that this barrier had a significant impact on the teachers' work.

In addition, we acknowledge that limitations exist in the design of the focus group questions, which were intended to capture what we considered relevant educational domains for students with autism (i.e., academic, behavioral, social, and functional). This categorization of outcome domains was heavily influenced by the research team's special education training and primary expertise in behavioral intervention research, which led to a lack of emphasis on other important domains such as mental health and quality of life. Furthermore, our data interpretations deviated from more conventional qualitative analysis approaches (e.g., phenomenological) and thus did not focus on the contextualization of individual attributes and experiences of the participants. Rather, we sought to draw more generalizable conclusions that may inform the professional development of special education and general education teachers and considerations for increasing the use of EBPs for students with autism in school settings.

CRediT authorship contribution statement

Catharine Lory: Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Formal analysis, Conceptualization. **Emily Gregori:** Writing – original draft, Formal analysis. **Qingli Lei:** Writing – original draft, Methodology, Formal analysis. **Ramella Lee:** Investigation, Formal analysis. **Travis Hammond:** Investigation, Formal analysis, Data curation. **Stephanie Huff:** Formal analysis.

Declaration of Generative AI and AI-assisted technologies in the writing process

No generative AI was used in the preparation of this manuscript.

Declaration of Competing Interest

All authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. Author CL is an Editorial Board Member for this journal and will not be involved in the editorial review or the decision to publish this article.

Data availability

The data that has been used is confidential.

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