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The Relationship Between Autistic Students and Paraprofessionals: An Exploratory Study

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ABSTRACT OF THE THESIS

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In U.S. classrooms, the number of both autistic students and, at the same time, paraprofessionals have been increasing. Though these concurrent increases do not appear to be related, it does imply that there are more autistic students and more paraprofessionals in U.S. classrooms than ever before. The current study sought to understand more about paraprofessionals, the students who receive paraprofessional support, and the relationship between the two of them. It was found that students who had paraprofessional support, had significantly lower cognitive abilities and less internalizing behavior problems compared to those without (though both groups showed similar levels of externalizing behavior and social skills). When comparing the relationships for the same autistic student between teacher-student vs. paraprofessional-student dyads, they were found to be similar across the domains of closeness, conflict, and overall quality, however paraprofessionals reported significantly more dependency than teachers. These findings have implications for future paraprofessional trainings. Although paraprofessionals are not supposed to independently provide instructional support to students, as per federal guidelines, literature indicates it is often a role that they do fill.

Given the results that autistic students with paraprofessional support tend have lower cognitive abilities and are perceived to be overly dependent on paraprofessionals, paraprofessional training should focus on increasing understanding of autism and teaching skills in order promote independence among autistic students. Due to the small sample size and therefore limited analyses, these findings are viewed as exploratory. They do suggest a need for more research in this area to understand the role, and relationship of paraprofessionals in classrooms with autistic students.

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Introduction

Background

The prevalence of autistic students in schools is increasing, with the Center for Disease Control and Prevention (2023) now estimating that 1 in 36 children carry an autism diagnosis. Often, such students require special education services in order to access appropriate schooling (Maenner et al., 2021). Concurrently, the presence of special education paraprofessionals in U.S. schools and classrooms has been increasing. Conversely, as there has been a rise in paraprofessionals, the number of special education teachers has been declining (Fisher et. al., 2022). As of now, special education paraprofessionals (530,637) outnumber special education teachers (429,486; U.S. Department of Education, 2021) in U.S. public schools. Fisher and colleagues (2022) investigated these co-occurring trends; they ultimately concluded that there is not enough evidence to suggest that paraprofessionals are being used as a replacement for special education teachers for working with autistic students (Fisher et al., 2022). However, the fact remains that there is a growing number of autistic students and paraprofessionals in U.S. schools (U.S. Department of Education, 2021). Though there are no data to indicate how many autistic students require paraprofessional support, it is safe to presume that more paraprofessionals are interacting with, working with, and building relationships with autistic students than ever before.

Extensive literature has identified that student-teacher relationships (STR) are tremendously influential in later student achievement (Roorda et al., 2011) and lead to positive student outcomes (Baker, 2006). Students with higher quality STRs are marked

by high levels of closeness and decreased dependency and conflict. Autistic students are at a higher risk of poorer STRs, when compared to non-autistic peers and to peers with intellectual disability (ID; Blacher et al., 2014; Blacher, Baker, & Eisenhower, 2009). Although paraprofessionals have been used increasingly in general education classrooms to support autistic students and other students in special education, little has been researched about their relationships with students generally, but even less is known regarding autistic students. Preliminary evidence by Hamasho et al. (*in progress*) suggests that paraprofessionals report poorer quality relationships with autistic students than classroom teachers. This current study is exploratory, using secondary data analysis and a brief literature review, to better understand what we know about paraprofessionals and their relationship with autistic students.

Paraprofessionals

Legal definition

Before diving into the history of and current research on paraprofessionals, it is prudent to understand from a legal perspective what they are and what their role is. Like most aspects of the education, the paraprofessional's role in the school system is largely influenced by legislation. As such, the United States educational code defines a paraprofessional as follows:

> "The term ''paraprofessional'' means an individual who is employed in a preschool, elementary school, or secondary school under the supervision of a certified or licensed teacher, including individuals employed in language instruction educational programs, special education, and migrant education (United States Code, 2012)."

Put simply, in the eyes of the federal government, a paraprofessional is a person that is works under the supervision of a licensed teacher. Paraprofessionals may be employed to work with students in special education, but also can include school personnel working with English language learners or other at-risk student populations. This paper will focus on paraprofessionals that work with students in special education. The Every Student Succeeds Act (ESSA, 2015) clarified the language, stating that the terms 'paraeducator,' 'education assistant,' and 'instructional assistant' may also be used when referring to a paraprofessional. It should also be noted that individual states and school districts may use these other terms (e.g., paraeducator, education assistant, instructional assistant, aide) to refer to the role of a paraprofessional, but operationally they refer to the same personnel position. Colloquially, terms like 'one-on-one' or 'para' may also be used. Since the educational code and laws pertaining to students with disabilities, including ESSA (2015), the Individuals with Disabilities Act (IDEA, 2004), and No Child Left Behind Act (2001) use the term 'paraprofessional,' that will be the language used throughout this paper, although in the literature and in practice, 'paraeducator' is used just as often.

The definition for paraprofessional, as provided by educational code, is broad and vague by design. Qualifications for a paraprofessional were first outlined in No Child Left Behind Act (2002). It stated that paraprofessional had to "1) complete […] at least two years of study at an institution of higher education, 2) obtain[…] an associate's (or higher) degree, or 3) me[e]t a rigorous standard of quality and can demonstrate, through a formal State or local academic assessment, knowledge of and the ability to assist in

instructing reading, writing, and mathematics (or readiness in those subjects, as appropriate) (Section 1119).” IDEA (2004) also presents text on the role of special education paraprofessionals; in addition to the requirements in NCLB (2002), they must have “content knowledge and skills to serve children with disabilities (Section 1412).” Though NCLB (2002) was replaced with the ESSA in 2015, the new legislation used the same requirements for a paraprofessional as the previous legislation. This is the current educational legislation on the books, leaving much to be interpreted by state and local education authorities. This has likely been compounded by the current shortage of educational personnel including paraprofessionals, leading to more individuals in classrooms that may technically meet the requirements, as per ESSA (2015), but still have no training or experience relevant to being in schools. Legislations that pertains to the role of paraprofessionals is broad, leaving it up to the state or local agencies to define the specific requirements of a paraprofessional and, importantly, decide and implement the training of paraprofessionals. Additionally, individual states and local education agencies can have different educational codes that expand upon the definition put forth in federal legislation, thus creating vastly different criteria and requirements for paraprofessionals. In California, Colorado, Kansas, Montana, and Texas educational code, they specify that LEAs may have more specific requirements for the hiring of paraprofessionals (California Education Code, 2005; Colorado Revised Statutes, 2021; Kansas Statutes, 2021; Montana Administrative Statutes and Rules, 2017; Texas Administrative Code, 2019). Bisht et al., (2021) analyzed paraprofessional job requirements in the 10 largest school districts and found that only a few of the districts

had educational or credentialing processes beyond the federal requirement of a high school diploma or equivalent (e.g., GED). The authors identified that only New York State required a paraprofessional certification exam, and Pennsylvania had an optional credentialling process. These differences in state requirements

The common thread echoed throughout legislation pertaining to paraprofessionals is that they not to operate in isolation. Paraprofessionals should work under the direction of a licensed education personnel, most often special education teachers, although administrators such as principals could fulfill this role. Many state definitions of paraprofessionals are largely defined by what they are not rather than what they are. For example, according to California Education Code (2005), a paraprofessional is not able to assign grades and is only supposed to perform duties that certified personnel instruct them to do (ESSA, 2015). In sum, according to education law, paraprofessionals could theoretically be anyone who meets the broad criteria, but, when acting in their role, they should only operate under the direction of certified personnel.

History of paraprofessionals

Pickett and colleagues (2003) provide relevant history of paraprofessionals and their emergence in the educational field. Paraprofessionals were first used in the post-World War II era. There was a shortage of licensed teachers and a need for more educational personnel in order to address staff shortages in regular education as well as special education classrooms. A series of privately funded studies looked into the utility of having college-educated women, who were not licensed teachers, trained to assist in both regular education and special education classrooms (Matheny & Oslin, 1970). These

roles included general clerical work in order to free up the licensed teachers' time so they could conduct more instructional tasks (Pickett et al., 2003). At the time, these personnel were called teacher aides.

Their use in educational settings increased into the 1960s and 1970s, partially due to an increase in federal funding made available by a series of legislation passed aimed to train individuals for a wider variety of jobs and to address educational disparity. Some of these acts included the Training of Professional Personnel Act of 1959 which trained personnel to educate students with disabilities; the Economic Opportunity Act of 1964 which created the Office of Economic Opportunity (OEO); the Mental Retardation Facilities and Community Mental Health Centers Construction Act of 1963 which expanded training for personnel across different disability areas; the Elementary and Secondary Education Act (ESEA) of 1965 which provided funds to educate children with disabilities; and the Handicapped Children's Early Education Assistance Act of 1968 which authorized young children with disabilities to be included in early education programs. These funds guaranteed training and education of paraprofessionals and other school personnel in order to adequately address the needs of students. With this increase in funds to employ paraprofessionals, researchers began looking into their effectiveness (Matheny & Oslin, 1970).

There were early indicators of problems pertaining to paraprofessionals that would continue to reoccur. There were issues of whether or not funding would continue. Even as it stood, paraprofessionals were often only being paid for half the day (Marks, 1975). Additionally, researchers questioned the training provided for paraprofessionals.

Bowman (1970) found that trainers said paraprofessionals were overwhelmed by training, perhaps lacking the base knowledge in order to access the additional training. Throughout the 1960s, paraprofessionals duties included the clerical work previously outlined, as well as direct work with students regarding instructional support and emotional support (Thomson, 1963; Matheny & Oslin, 1970). Although paraprofessionals showed promise to address educational gaps, there were already issues regarding their compensation, training, and ambiguity surrounding the role. The role of a paraprofessional had evolved from simply performing clerical duties, to working directly with students in an educational capacity.

The role of a paraprofessional continued to evolve, especially with the landmark legislation in 1975, the Education for All Handicapped Children Act (EHA), later renamed the Individuals with Disabilities Act (IDEA) in 1990, which expanded educational access to students with disabilities. This legislation included the now commonplace term in education: free appropriate public education (FAPE). FAPE ensures students with disabilities are educated at their level, utilizing an Individualized Educational Program (IEP). At the time, IEP teams would determine the need of a paraprofessional to aid in the implementation of the IEP (Katsiyannis, Hodge & Lanford, 2000). French (2003) further noted a shift from paraprofessionals working alongside teachers, to now working alongside students directly - particularly students with disabilities (Pickett & Gerlach, 1997; French, 2003). Likewise, training of these paraprofessionals was also left out of the federal description, making training highly variable amongst states and individual school districts (Picket, 2003; French, 2003).

In the year immediately following ratification of EHA, the number of students enrolled in schools with disabilities increased to 3,640,000. In order to match this increase in students with disabilities, hiring of special education teachers and paraprofessionals also expanded (Picket, 2003; U.S Department of Education, 2022). This trend continued. Each year, the number of students served under IDEA increased, as did the number of special education personnel including paraprofessionals and special education teachers. In 1990, when EHA was reauthorized and renamed to IDEA, it also introduced autism as an eligibility category for special education.

Matching previous special education trends, the number of students in schools designated as having autism increased each year around the turn of the century, as did the number of paraprofessionals and special education teachers. This trend diverted in 2006, the number of special education teachers started to decline but the number of paraprofessionals continued to rise. Currently, paraprofessionals outnumber special edition teachers. Moreover, the percentage of students in special education who are eligible under the category of autism has continued to increase, although the total number of students in special education has actually dipped in recent years. From 2010 to 2019, the number of students in special education found eligible under autism had doubled. On the other hand, the most common eligibility category, specific learning disability (SLD), has been decreasing in recent years (U.S. Department of Education, 2022).

Fisher et al., (2022) posed the question directly: Are paraprofessionals replacing special educators? They cited the simultaneous increase in paraprofessionals being employed and the decrease in special education teachers. They also explored whether the

paraprofessionals were being hired to address the increase in students eligible under ASD or OHI or to support students in special education, being served in general education classrooms. The researchers ultimately concluded that those opposing employment trends were not related to each other. In fact, paraprofessional employment was more likely to be related to state factors, especially funding, rather than special education teacher employment rates or prevalence rates of ASD in schools. Even though there is no evidence of a causal link between the number of paraprofessionals employed and the number of students with autism, there still remains the fact that 1) there are currently more students than ever before with autism and 2) more paraprofessionals than ever before working with these students. As it stands now, there were 7,278,380 students with disabilities in the 2018-2019 school year, 756,834 found eligible under autism. At the same time, there were 520,637 paraprofessionals and 429,486 special education teachers.

Through modern educational history, paraprofessionals have been utilized to address gaps in schooling. Special education paraprofessionals work directly with students with disabilities, including autism, in general education and special education classrooms. Though the legislation states that paraprofessionals operate under the direction of qualified individuals, it is often unclear whether that is the special education teacher, general education teacher, or principal.

Who are paraprofessionals?

In the 2019- 2020 school year, only 5.8% of special education paraprofessionals were not qualified for their position. Though that is encouraging, it is important to remember that there were relatively few qualifications necessary to be a

paraprofessional. In fact, many states have programs put in place for paraprofessionals to eventually become teachers. Previous research describes principals' and teachers' initial excitement when hiring highly qualified paraprofessionals. However, those with backgrounds in education or prior experience with children with disabilities, often will leave the profession in pursuit of higher paying jobs (Giangreco et al., 2010).

There are few sources of descriptive data regarding paraprofessionals. A 2009 national survey indicated that the majority of paraprofessionals were female, between the ages of 19 to 38 and 68% were white (Liston, 2009). Another study in 2012 did not even collect gender and racial data because, in the participating school districts, men and people of color were considered easily identifiable, and scarce (Fisher & Pleasants, 2012). Nearly three-quarters of the paraprofessionals in Coogle and colleagues' 2022 study were white, though gender data were not reported. Bisht and colleagues (2021) used census classification data, incorporating those designated as a "teaching assistant" in elementary and secondary schools, to look at paraprofessional characteristics. Similar to the data found in previous studies, 86.8% were female and 60.9% were white. Moreover, they identified that the average age of a paraprofessional was 43.7 years, with most paraprofessionals being aged 30 to 49. Interestingly, over a quarter (27.9%) of paraprofessionals are over 55 years old.

There appears to be a wide range in education and experience with individuals with disabilities amongst paraprofessionals. Liston (2009) reported that, of the 202 respondents, 54% had a friend or relative with a disability. Fisher and Pleasants (2012) were able to survey 1,867 paraprofessionals from a midwestern state. All the respondents

had at least a high school or high school equivalency degree; beyond that, education ranged from completion of a 2 year program (19%), completion of a 4-year undergraduate degree (16%), completion of a graduate degree (3%), and advanced graduate work, beyond a master's degree (0.6%). Other surveys found similarly mixed results for education. Coogle et al. (2022) had reported that 32.1% of 768 paraprofessionals surveyed had a bachelor's degree, 21.8% had a high school diploma, 10.6% had a professional certificate, and 6.7% had a graduate degree. Bisht and colleagues (2021) reported proportionally more paraprofessionals (73.7%) with less than a bachelor's degree. They did not specify for high school diploma, GED, or associate degree. They found 21.2% with a bachelor's degree and 5.1% with a master's degree or higher. Although there are some paraprofessionals with master's degrees, it is not known the nature of those degrees, whether they are in a field related to education or not (e.g., MBA, MFA, MPA).

Years in the profession was equally varied, ranging from 3 months to 34 years (Fisher & Pleasants, 2012). In Coogle et al., (2022)'s participants, almost half of the respondents (43.2%) had 10 or more years of paraprofessional experience; with roughly a third with 3 to 10 years of experience (34.7%), and the remaining quarter (22.0%) with less than three years of experience.

These profiles illustrate the wide range of education and experience of paraprofessionals. This makes training across paraprofessionals challenging, as individuals with different backgrounds may require entirely different training in order to meet the needs of the students they serve. For example, LEAs are theoretically

responsible for the initial training or orientation, with the onus of ongoing training and on-the-job training lying on classroom teachers (IDEA, 1975). However, most teachers do not feel prepared to implement training to the paraprofessionals they work with (Douglas et al., 2016).

In actuality, paraprofessionals are not consistently trained with evidence-based interventions to support students. In fact, most available training materials for paraprofessionals, though they may align with federal legislation requirements, do not include information regarding implementing skills in the natural environment (Douglas et al., 2019). There is a strong body of evidence that shows that paraprofessionals can implement evidence-based practices and interventions with fidelity to the autistic students they work with (Respoli et al., 2011; Mason et al., 2021; Walker et al., 2021) including behavioral strategies (Grundon et al., 2010; Reddy et al., 2021; Zarate & Barcus, 2022), instructional strategies (Hoff, 2008), and social skills (Mazurik-Charles & Stefanou, 2010; Mrachko & Kaczmarek, 2017). Additionally, research studies have found that interventions and training can be taught using the teacher-as-coach model (Mason et al., 2017; Wermer et al., 2018; Walker et al, 2021) when the teachers are given the support and mechanisms to train paraprofessionals. Furthermore, paraprofessionals themselves have indicated a desire for training, regardless of their base knowledge prior to entering the profession (Carter et al., 2009).

In sum, the profession is largely dominated by white women with a range in experience and years in education. There is no consistent training of the paraprofessional, maintaining the wide range in disability specific education among paraprofessionals.

Qualitative studies have highlighted the fact that many of these women are mothers themselves, and often mothers of individuals with disabilities.

Educators and Autistic Students

Relationships between autistic students and teachers

Student-teacher relationship quality is typically measured along three dimensions: conflict, dependency, and closeness (Birch & Ladd, 1997). A high-quality relationship is characterized with high levels of closeness and low levels of both dependency and conflict (Hamre & Pianta, 2001). High levels of closeness are associated with later academic success, better school adjustment, and less disruptive behavior in young children. On the other hand, high levels of dependency and conflict are associated with poorer school adjustment, academic performance, and behavior problems. Additionally, high levels of conflict were associated with negative attitudes towards school (Pianta et al., 2012; Bitch & Ladd, 1997; Breeman et al., 2014, Hambre & Pianta, 2001). These findings held true, even when controlling for gender, ethnicity, and cognitive ability. The literature indicates early STRs are uniquely predictive of students' later behavior and success.

These findings were replicated with autistic students – high quality STRs were associated with better outcomes including more social inclusion and better school adjustment (Robertson et al., 2003; Caplan et al., 2015). However, when compared to their typically developing peers, autistic students were more likely to have poorer relationships – with higher conflict and dependency, and lower ratings of closeness (Longobardi et al. 2012). When compared to students with intellectual disability, autistic

students had lower levels of closeness and higher levels of conflict but comparable levels of dependency (Blacher et al., 2014). In each case, autistic students are at a greater risk for poorer STRs – especially for lower levels of closeness and higher levels of conflict. This presents a unique phenomenon where autistic students can benefit from having a positive STR, but they are conversely at-risk of having poorer STRs.

There are several proposed reasons for this occurring. The unique symptomology of autism can put autistic students at great risk of developing poorer quality STRs. Autism is a neurodevelopmental disorder that is characterized by 1) deficits in social communication and 2) presence of restrictive, repetitive behaviors. The deficit in social communication indicates that autistic students may have difficulty in reading social cues. The presence of restrictive or repetitive behaviors can interfere with students' ability to engage in conversations with teachers. Taken together, this symptomology can make it particularly difficult for a student to form meaningful relationships with their teachers.

Relationships between autistic students and paraprofessionals

A relatively unexplored aspect of this research pertains to the relationship between paraprofessionals and autistic students (Walker et al., 2020). Paraprofessionals are increasingly being utilized in special education and general education classrooms to support students, particularly students with ASD (U.S. Bureau of Labor Statistics, 2019; U.S. Department of Education, 2021; Reddy et al., 2021). Paraprofessionals report spending the majority of their time in close proximity of the student they work with (Giangreco & Broer, 2005). Researchers have posited that this can not only lead to increased dependence on the paraprofessional, but also impede with the student's

interactions with others in the classroom, including peers and teachers (Giangreco, 1997). At the time of this paper, only one study explored the relationship between paraprofessionals and autistic students. Brown and McIntosh (2012) reported on a quantitative study of the relationship between autistic students with their paraprofessional as well as the relationship between autistic students and their classroom teacher. The authors found no significant differences in the relationships between teachers and paraprofessionals. Additionally, they found that increased problem behavior negatively predicted the relationship between teachers and autistic students, but problem behavior was not predictive for the paraprofessional relationship. The amount of time spent in general education was also a significant, predictive factor for teacher-student relationships, where increased time in general education predicted more positive relationships. However, for paraprofessionals, time spent in general education was not a predictor. Training in autism was not predictive of improved relationship for either educator (Brown & McIntosh, 2012).

Current Study

The current study aims to better understand the role of paraprofessionals who work closely with autistic students, as well as the relationship between the paraprofessional and the student. Since the inception of paraprofessionals in schools, back in the 1950s, researchers have urged caution with their use as they were, and still are, undertrained to instruct students. In fact, to start, paraprofessionals were not intended to work with students at all. Their original duties included largely clerical work, but then steadily progressed to include first self-help support (e.g., toileting, dressing), then

eventually the role evolved to include behavioral and instructional support, as well as the facilitation of social interactions. This role evolved to include students with disabilities, including autism, with the passage of Education for All Handicapped Children Act in 1975. In the years following this landmark legislation, the employment of paraprofessionals increased; however, there was no legal guidance for the hiring of or training of these essential personnel. The research indicates that autistic students are at risk of having poorer quality relationships with teachers. Even though paraprofessionals are ubiquitous in classrooms across the U.S., little is known about the relationship between autistic students and paraprofessionals. In order to better understand these relationships, we examined characteristics of paraprofessionals, teachers, and their students. The research questions are as follows:

1. Do paraprofessionals and classroom teachers differ significantly in their levels of education and years of experience?

2. Do autistic students with paraprofessional support and those without differ significantly in their behavior, cognitive abilities, and social skills?

3. Are paraprofessional's relationships with autistic students lower in quality than those between teachers and autistic students, with increased dependency and conflict and decreased closeness?

Methods

Participants

Participants included teachers, paraprofessionals, and students in pre-K to 3rd grade classrooms in Southern California and Massachusetts. The entire sample included a

total of 171 teachers and 28 paraprofessionals. To be a part of the study, teachers and paraprofessionals had to have at least one autistic student in their class. Inclusion criteria for the student included a diagnosis of autism and either a score on the Autism Diagnostic Observation Schedule (ADOS-2; Lord et al., 2000) in the autism range, and a Full-Scale IQ greater than or equal to 50 on the Wechsler Preschool and Primary Scale of Intelligence (WPPSI; Wechsler, 2002). Participating teachers had to be the primary teacher of the autistic student. Paraprofessionals had to work specifically with the student, either as a one-to-one or shared support. General classroom paraprofessionals were not included.

Of the 171 teachers, 46 reported not having a paraprofessional in their classroom. Students without a paraprofessional (n = 46) were participants whose teachers reported that there was no other adult in their primary classroom. Students with a paraprofessional (n = 28) were participants who had one paraprofessional that worked with them individually. Students spent most of their time in general education (with paraprofessional, 76.0%; without, 71.7%). Most of them were male (with paraprofessional, 92.9%; without, 78.3%) and white (with paraprofessional, 62.5%; without, 47.8%). Students without paraprofessionals had an average age of 81.0 months (SD = 11.0), the average was 76.2 months (SD = 13.4) for those without. Full demographic data for the students are shown in Table 1.

Table 1.
Demographics of students with paraprofessionals and without paraprofessionals

	Student Demographics				
	Students with paraprofessional (n = 28)			Students without paraprofessional (n = 46)	
			t(df)		
Age in months *M* (*SD*)	81.0 (11.0)		1.7 (70)	76.2 (13.4)	
	n	%	χ^2 *(df)*	*n*	%
Child Sex			2.7 (1)		
Male	26	92.9		36	78.3
Female	2	7.1		10	21.7
Race			7.8 (5)		
White	15	62.5		22	47.8
Bi/multi-racial	1	4.2		15	32.8
African American/ Black	1	4.2		2	4.4
Asian-American	3	12.5		3	6.5
Latino	3	12.5		3	6.5
Other	1	4.2		1	2.2
Child Grade			7.1 (4)		
PreK	3	10.7		15	33.3
Kindergarten	10	35.7		9	20.0
1st Grade	12	42		13	28.9
2nd Grade	3	10.7		7	15.6
3rd Grade	0	0		1	2.22
Class Type			.2 (1)		
General Education	19	76.0		33	71.7
Special Education	6	24.0		13	28.3
Family Income			12.4 (11)		
0 to 15,000	1	4.4		3	7.3
15,001 to 25,000	0	0		1	2.4
25,001 to 35,000	3	13.0		6	14.6
35,001 to 50,000	0	0		8	19.5
50,001 to 65,000	3	13.0		1	2.4
65,001 to 80,000	2	8.7		3	7.3
80,001 to 95,000	1	4.4		3	7.3
95,001 to 110,000	5	21.7		6	14.6
110,001 to 125,000	2	8.7		3	7.3
125,001 to 140,000	1	4.4		1	2.4
140,001 to 155,000	2	8.7		0	0
155,001 and up	3	13.0		6	14.6

Note. $* p \leq 0.05; ** p \leq .01; *** p \leq 0.001$

Furthermore, a subsample of paraprofessional-teacher dyads who worked with the same student was examined. Twenty-two teachers and twenty-two paraprofessionals filled out the student-teacher relationship scale (STRS) regarding the same autistic student. The two groups were similar with regard to demographic information. The majority of both groups had at least a bachelor's degree, and were female (paraprofessionals, 89.5%; teachers, 94.4%). For full demographic data for the educators, both paraprofessionals and teachers, see Table 2.

Table 2.
Paired paraprofessional and teacher demographics.

	Educator Demographics				
	Paraprofessionals (n = 22)			Teachers (n = 22)	
			t (df)		
Years of experience *M* (*SD*)	5.6 (6.1) [1.0 – 27.0]		- 4.1 (38)***	16.7 (10.4) [3.0 – 35.0]	
Months working with student *M* (*SD*)	12.9 (12.5) [1.0 – 48.0]		0.5 (41)	11.0 (11.0) [1.0 – 36.0]	
	n	%	χ^2 *(df)*	*n*	%
Educator Sex			.3 (1)		
Female	17	89.5		17	94.4
Male	2	10.5		1	5.6
Highest level of education			6.8(3)		
High School	1	5.3		1	5.6
Junior College or Community College	4	21.0		0	0
Bachelor's Degree	9	47.4		6	33.3
Master's Degree	5	26.3		11	61.1

*Note. * $p \leq 0.05$; ** $p \leq .01$; *** $p \leq 0.001$*

Measures

Autism Characteristics

Characteristics related to autism were determined through the ADOS-2, Lord et al., 2000). The ADOS-2 is a semi-structured observational assessment, often considered the "gold standard" for autism diagnosis for both research and clinical purposes (Hurwitz & Yirmiya, 2014). This was administered by clinicians to determine eligibility for the study, where participants who score in the autism or spectrum range included. The ADOS-2 scores individuals on a number of items, with a select number being used in an algorithm to determine whether the individual meets criteria for autism. Scores reported are based on the revised algorithm, aligned with the diagnostics and Statistics Manual, fifth Edition (DS-5; APA, 2013). The algorithm score includes the scores for social affect and restrictive/repetitive behaviors domains. The ADOS-2 has shown strong validity, with 94% of examinees receiving accurate classifications. Due in part to strict research reliability thresholds, interrater relatability is above 85% (Gotham et al., 2007).

Cognitive Abilities

Three subtests (Vocabulary, Matrix Reasoning, and Picture Completion) from the WPPSI-III (Wechsler, 2002), were administered. Students were eligible if they scored at or above 50. This cutoff was used to ensure students had the cognitive abilities to participate in the larger study. Sattler (2008)'s conversion tables were used to derive an Estimated Full-Scale IQ score (normative mean of 100, SD of 15). This abbreviated version of the WPPSI-III has demonstrated high reliability (.91 to .94) and validity with the complete FSIQ test (.92; LoBello, 1991) with the full version.

Behavior

The Child Behavior Checklist (CBCL) measures a wide variety of behavior concerns, in both internalizing and externalizing domains. There are several versions of the CBCL for different age ranges, the CBCL for ages 1.5 to 5 years was used in this study. This parent-reported questionnaire consists of 100 items. Each item describes a specific behavior, and the frequency is indicated on a three-point Likert scale (0 = Not True, 1 = Somewhat or Sometimes True, and 2 = Very True or Often True). Scores are summed and converted to T-scores (M 50, SD 10) on seven different syndrome scales (Emotionally Reactive, Anxious/Depressed, Somatic Complaints, Withdrawn, Sleep Problems, Attention Problems, and Aggressive Behavior), as well as five different DSM-oriented scales (Affective Problems, Anxiety Problems, Pervasive Developmental Problems, Attention Deficit/Hyperactivity Problems and Oppositional Defiant Problems). These scores combine to yield three composite scores: Internalizing Problems, Externalizing Problems, and Total Problems. Only the Internalizing Problem and Externalizing Problems composites were used in this study. The manual for the CBCL reports adequate test-retest reliability (.80 to .94) and interrater reliability being moderate to high. It shows validity for scale scores (Achenbach & Rescorla, 2000; Naar-King et al., 2004).

Social Skills

Social skills were reported in a 46-time measure, Social Skills Improvement System (SSIS; Gresham & Elliott, 2008), completed by the student's teacher. The SSIS measure prosocial traits as well as interpersonal strengths and challenges. These are

expressed in different subscales. The social skills subscales include communication, cooperation, assertion, responsibility, empathy, engagement, and self-control. The problem behaviors checklist including externalizing, bullying, hyperactivity/inattention, internalizing, and autism spectrum. For this study, only the social skills subscales were used. This measure demonstrates strong concurrent validity with other relevant scales and test-retest reliability (greater than .80; Crosby, 2011).

Student-Educator Relationship Quality

Relationship quality between educator (e.g., teacher, paraprofessional) and student was measured through the Student-Teacher Relationship Scale (STRS; Pianta, 2001), a 28-item instrument. STRS measures relationship quality by looking at three domains: conflict, dependency, and closeness) which together yield a total relationship quality score. Conflict, which is made up of 12 items, measures the educator's feelings of negativity and conflict towards the student. Closeness, which is made up of 11 items, measures the educator's warmness and affection towards the student. Dependency, which is made up of 5 items, measures the degree the educator perceives the student as over dependent (Pianta, 2001). A high quality relationship has high levels of closeness and low levels of dependency and conflict. This measure has demonstrated strong convergent and discriminant validity for closeness and conflict (Doumen et al., 2009); as well as test-retest reliability (Pianta, 2001).

Procedure

Data were collected as a part of a larger study of the transition to early schooling for young autistic schooling. IRB approval was obtained prior to data collection [IES

R324A110086, J. Blacher, P.I. Participants were recruited in both California and Massachusetts. Data was collected at three time points over the course of two school years. The WPPSI and ADOS were administered at the initial eligibility session, in the summer and early fall before Time 1. Time 1 took place in the fall immediately following the eligibility session, Time 2 was 6 months later in Spring of the first year, and Time 3 was 10 months later in winter of the following year. This study prioritized data from Time 2 for teacher and paraprofessional measures, in order to maximize the amount of time teachers and paraprofessionals spent with students. Student WPPSI and ADOS scores was from the initial eligibility session and the CBCL, SSIS were also collected at Time 2.

Data Analysis

Data analysis took place using SPSS (IPM Corp., 2019). To answer research questions 1 and 2, data was examined using independent samples t-tests for continuous variables (e.g., age, years of experience, months working with students) and chi-square for categorical variables (e.g., gender, level of education, race, grade, class type, and family income). For research question 3, data was examined using paired-samples t-test to because the same child used for both the teacher and paraprofessional's STRS score. Due to the limited sample of paired data, results of are considered exploratory (Skaik, 2015).

Results

Data Preparation

Missing Data

Missing data was looked at using the Little's Missing Completely at Random (MCAR) test to see if missing data was completely random. Missing data ranged from 0 to 3% across most variables, though other variables had higher rates of missingness including SSIS (9.5%), educator sex (8.1%), and educator degree of education (8.1%). The MCAR test failed reject the data was missing at random, indicating that the data is likely missing at random [X^2 (32, N = 22) = 443.4, p = .085]. Listwise deletion was used for all missing data.

Checking Assumptions

Before interpreting the data, the data must first be checked for assumptions. For t-tests, the assumptions of independence and interval data must be met. This is ensured through study design, the data for the two groups are independent from each other and the data being used for t-tests are continuous. The next assumption is that the data is normally distributed this can be checked using the Shapiro-Wilk test of normality. The Shapiro-Wilk test was found to be not significant ($p < .05$) for both educator and student variables, meaning they are normally distributed.

The assumption of homogeneity of variance, meaning the variances of the different conditions are equal. This is tested using Levene's test. Most variables failed to reject the null hypothesis, indicating that we can assume the groups had equal variance. Levene's test was significant for educator years of experience, indicating the groups do not have

equal variance. Visual analysis revealed that paraprofessional years of experience had a positive skew, with nearly all paraprofessionals having less than 10 years of experience and only one paraprofessional with more than 15 years. Whereas teachers ranged from 0 to 30 years. This is understandable given the characteristics of teachers and paraprofessionals, differences in these results should be interpreted with caution. This is further addressed in the discussion.

Research Question 1

Independent samples t-tests and chi-square tests were used to answer research question 1. Teachers and paraprofessionals were statistically similar across most demographic data (e.g., sex, years knowing the student). Teachers (M = 16.7, SD = 10.4) did have significantly more years of experience (t (38) = -4.1; p <.001) than paraprofessionals (M = 5.6, SD = 6.1). Notably, paraprofessionals had a wide range of experience, ranging from 0 to 27 years in the profession. Nearly half of the paraprofessionals held an undergraduate degree (45.5%) and most of them worked in the general education setting (76.0%). Almost all of the teachers held at least bachelor's degree (94.4%) with over half of the teachers holding a master's degrees (61.1%).

Research Question 2

Independent samples t-tests were used to answer research question 2. Descriptive statistics are shown in Tables 1 and 2. Students with paraprofessionals were statistically similar to students without paraprofessionals. They did not significantly differ across any of the variables (e.g., family income, race, age, class type, grade, and sex). To answer this question, child characteristics, including child behavior (total, internalizing, and

externalizing; CBCL), autism characteristics (ADOS), social skills (SSIS), and cognitive functioning (WPPSI) were compared between students with a paraprofessional and without a paraprofessional. Student without paraprofessional support had similar behavior problems as those with paraprofessionals, as reported by parents in the CBCL. As per teacher report, there was no difference for total behavior problems and externalizing behavior problems. Students with a paraprofessional had significantly fewer teacher reported internalizing behavior problems than those without (t (70) = -2.00, p = .049). They also had significantly lower FSIQ (t (72) = -2.26, p = .026) and teacher reported social skills (t (70) = -2.16, p = .034) than those students without a paraprofessional. Students with a paraprofessional demonstrated significantly more autistic characteristics (t (70) = 4.26, p < .001) than those without a paraprofessional. See Table 3.

Table 3.
Characteristics of students with a paraprofessional and without paraprofessionals

	Student Characteristics					
	Students with paraprofessional (n = 28)				Students without paraprofessional (n = 46)	
	M	*SD*	*Cohen's d [95% CI lower, upper]*	*t*	*M*	*SD*
Autism Characteristics						
ADOS	17.1	5.1	1.0 [.52, 1.5]	4.6***	12.3	4.5
Behavior						
CBCL – Internalizing	60.9	7.8	-.45 [-.93,.03]	-2.0*	65.2	11.6
CBCL – Externalizing	60.5	7.3	-.21 [-.68, -.27]	-0.85	62.6	11.6
CBCL – Total	64.0	7.7	-0.28 [-.75,.20]	-1.1	66.8	11.2
Social Skills						
SSIS	81.1	13.3	-.53 [-1.0, -.40]	-2.2*	88.3	14.1
Cognitive Abilities						
WPPSI – FSIQ	84.4	18.8	-.54 [-1.0, -.06]	-2.2*	94.4	18.1

*Note. * $p \leq 0.05$; ** $p \leq .01$; *** $p \leq 0.001$*

Research Question 3

Paired samples t-tests were used to answer this question. This question utilized the subset of paired paraprofessional-teacher dyads (n = 22). Twenty-two paraprofessionals and 22 teachers completed the STRS at the same timepoint and with reference to the same child. Results indicated no significant differences between teachers and paraprofessionals on total relationship quality (t (21) = .26, p >.05), closeness (t (21) = .26, p > .05), and conflict (t (21) = -.67, p > .05). However, paraprofessionals reported significantly more dependency than teachers (t (21) = -2.77, p < .05). These results appear in Table 4.

Table 4.
STRS scores for paraprofessionals vs. teachers of the same autistic student

	Educator			
	Paraprofessionals (n = 22)			Teachers (n = 22)
	M (SD, percentile)	*Cohen's d [95% CI lower, upper]*	*t*	*M* (SD, percentile)
Total Relationship Quality	102.6 (13.1, 23rd)	13.2 [-.47, .36]	.26	103.3 (12.6, 23rd)
Conflict	26.8 (9.5, 73rd)	10.5 [-.47, .36]	.26	27.4 (9.5, 73rd)
Closeness	39.0 (7.1, 20th)	7.2 [-.28, .55]	-.67	37.9 (7.3, 18th)
Dependency	11.6 (3.6, 70th)	3.8 [.13, 1.0]	-2.77*	9.3 (3.1, 35th)

*Note. * p ≤ 0.05; ** p ≤ .01; *** p ≤ 0.001; Percentiles are based on normative data provided by the STRS Manual (Pianta, 2001).*

Discussion

Conclusion

These findings are exploratory and contribute to the limited literature on paraprofessionals and their relationship with autistic students. We found that paraprofessionals have overall similar relationships to the students as teachers, however paraprofessionals rate their relationships as more dependent. Additionally, paraprofessionals have less education and less years of experience than teachers; but both groups are prominently female. Students who receive paraprofessional support overall have lower IQ, less internalizing behavior problems, and less social skills than students without paraprofessional support. They also demonstrated increased autistic traits. Interestingly, both groups of students have similar rates of externalizing behavior. Although the study had a relatively small sample size, these findings are notable as they are among the first to examine the paraprofessional student relationship.

Research Question 1

Paraprofessionals are supposed to work under the supervision of licensed personnel, rather than in isolation (ESSA, 2015). The sample of paraprofessionals in this study did have some training similar to that of the teachers, with three-quarters of the paraprofessionals having at least a bachelor's degree and nearly all of the teachers having at least a bachelor's degree. Most of the teachers did have master's degree, whereas only a quarter of the paraprofessionals did so. Paraprofessionals also had significantly fewer years of experience in the profession.

As stated earlier, the data for years of experience failed the test of homogeneity of variance, indicating that paraprofessionals and teachers to not have equal variance. According to the literature, paraprofessionals have high burnout, leading to most only working two to three years (Giangreco, Suter, & Doyle, 2010). Often times paraprofessionals leave the job to pursue other careers in education (e.g., teachers) or leave the profession entirely. Whereas teachers, after attending higher education, will stay in the professional longer.

Research Question 2

In terms of students who require paraprofessional support, schools have different processes to determine the need for a paraprofessional. There is no federal standard to determine which students may receive paraprofessional support, a student may qualify for paraprofessional support for several reasons (e.g., to provide behavior supports, academic support, and/or assistance with social skills; Giangreco, Suter, & Doyle, 2010). Here, those students with and without a paraprofessional were rated similarly in terms of their externalizing behavior, despite the suggestion in the literature that paraprofessionals tend to support students who have more externalizing behavior (Allen, 2016). These results suggest that, with paraprofessional support, the student's externalizing behavior may be lessened. Parents of students who did not have paraprofessional support rated their child as having significantly more internalizing behavior. This finding also suggests that paraprofessionals may offer emotional support for student to lessen these internalizing behaviors. It is also possible that perhaps the students who "act-in" are not supported to the same extent as those who "act-out."

Students with paraprofessional support had significantly lower IQs than those without. This may suggest that assistance with academics is a significant driver for paraprofessional support. This is troubling when considering that paraprofessionals are not trained to modify or adapt curriculum to the varied abilities of their students. In fact, in California, the educational codes specifically states that paraprofessionals are not to assign grades. Though many of the paraprofessionals had undergraduate degrees, most teachers held a master's degree. Though master's degrees are not required to be a teacher, such advanced degrees and/or teacher education programs provide educators with training related to pedagogy and instructing students. Paraprofessionals, who are likely not to have such training, should not be expected to support students who may need modifications and/or adaptations to the curriculum in order to be in the general education setting. Without formal training a paraprofessional may have to rely on the guidance from teachers or other licensed personnel; however, research has indicated that in many cases teachers do not feel comfortable or prepared to train paraprofessionals in such ways. Without direction or the tools to implement an evidence-based practice or strategy, paraprofessionals may have to rely on their own intuition and/or knowledge of a subject to support the students they work with. This leads to inconsistent implementation of support to students and can at times lead to unexpected consequences for the autistic student.

Research Question 3

This leads to the main finding of this study - when looking at the same autistic student, paraprofessionals and teachers reported similar levels of overall relationship

quality, conflict, and closeness. Paraprofessionals reported elevated levels of dependency compared to teachers. Across all domains, both teachers' and paraprofessionals' relationships were of lower quality than what would be expected from normative data (Pianta, 2001). A reasonable concern about the use of paraprofessionals, those working one-on-one with students, is that they can cause unexpected problems including over-dependence, stigmatization, interference with social interactions, and lower quality instruction (Giangreco & Boer, 2005). Paraprofessionals, who may not receive specific training related to implementing academic support, may feel a direct responsibility related to the child's academics – especially if the student is in a general education classroom but receiving modified curriculum. These findings support that notion. Paraprofessionals view the autistic students they work with as more dependent on them than the teachers. This is particularly troubling because that perception of the paraprofessional can become a self-fulfilling prophecy, with the aide assuming the student to be dependent and therefore unwittingly encouraging the over-dependence. This cycle can lead to learned helplessness and overreliance on support personnel amongst autistic students (Giangreco et al., 1997; Giangreco et al., 2013; Kurth et al., 2019).

It is promising to note that both the paraprofessionals and the teachers had similar levels of closeness. Giangreco and Boer (2005) had suggested that the presence of paraprofessionals in the classroom may encourage teachers to have less interaction with those autistic students and therefore be less likely to build a close relationship. These findings, though limited in scope, suggest otherwise.

Limitations

As stated previously, these results are limited due to the relatively small sample size and should be considered exploratory. Additionally, this study was secondary analysis as a part of a larger study, therefore the exclusionary criteria and recruitment may have influenced the sample in the study. As stated earlier, the

Future Directions

This paper is among the first to look into the relationship between autistic students and the paraprofessionals who work with them. The findings suggest that, overall, paraprofessionals' relationships with their autistic students are similar to the teachers' relationships, although paraprofessionals report more dependency of autistic students on them. In this study, autistic students with paraprofessional support had lower IQs than those without, suggesting that paraprofessionals may be responsible for the instruction of autistic students in general education classrooms. Increased training for paraprofessionals is long overdue, but training specific to instructional strategies may be prudent. This training can also include education in autism, neurodiversity, and testimony of autistic individuals. By providing paraprofessionals the 'bigger picture,' and discussing the long-term potential for these autistic students, paraprofessionals may be more likely to encourage independence for autistic students. In addition, utilizing a teacher-as-coach training model, whereby general education teachers provide on-going support for paraprofessionals, may be one expedient way to provide instructional training for paraprofessionals.

References

Achenbach, T. M., & Rescorla, L. A. (2000). Manual for the ASEBA preschool forms & profiles. Burlington, VT: U. Vermont, Research Center for Children, Youth, & Families.

Baker, J. A. (2006). Contributions of teacher–child relationships to positive school adjustment during elementary school. Journal of School Psychology, 44(3), 211–229. https://doi.org/10.1016/j.jsp.2006.02.002

Bertuccio, R. F., Runion, M. C., Culler, E. D., Moeller, J. D., & Hall, C. M. (2019). A comparison of autism-specific training outcomes for teachers and paraeducators. *Teacher Education and Special Education*, *42*(4), 338–354. https://doi.org/10.1177/0888406419839771

Biggs, E. E., Gilson, C. B., & Carter, E. W. (2019). "Developing that balance": Preparing and supporting special education teachers to work with paraprofessionals. *Teacher Education and Special Education*, *42*(2), 117–131. https://doi.org/10.1177/0888406418765611

Blacher, J., Howell, E., Lauderdale-Littin, S., DiGennaro Reed, F. D., & Laugeson, E. A. (2014). Autism spectrum disorder and the student teacher relationship: A comparison study with peers with intellectual disability and typical development. *Research in Autism Spectrum Disorders*, *8*(3), 324–333. https://doi.org/10.1016/j.rasd.2013.12.008

Boomer, L. W. (1994). The utilization of paraprofessionals in programs for students with autism. *Focus on Autistic Behavior*, *9*(2), 1–9. https://doi.org/10.1177/108835769400900201

Bowman, G. W. (1970). *Analysis of Demonstration Programs for Training Paraprofessionals in Education* [Conference presentation]. Annual Meeting, AERA, Minneapolis, MN, United States.

Breton, W. (2010). Special education paraprofessionals: Perceptions of preservice preparation, supervision, and ongoing developmental training. *International Journal of Special Education*, *25*(1), 34–45.

Brock, M. E., & Anderson, E. J. (2021). Training paraprofessionals who work with students with intellectual and developmental disabilities: What does the research say? *Psychology in the Schools*, *58*(4), 702–722. https://doi.org/10.1002/pits.22386

Brock, M. E., & Carter, E. W. (2013). A systematic review of paraprofessional-delivered educational practices to improve outcomes for students with intellectual and

developmental disabilities. *Research and Practice for Persons with Severe Disabilities*, *38*(4), 211–221. https://doi.org/10.1177/154079691303800401

Brock, M. E., & Carter, E. W. (2016). Efficacy of teachers training paraprofessionals to implement peer support arrangements. *Exceptional Children*, *82*(3), 354–371.

Brown, J. A., & McIntosh, K. (2012). Training, inclusion, and behaviour: effect on student–teacher and student–sea relationships for students with autism spectrum disorders. *Exceptionality Education International*, *22*(2), Article 2. https://doi.org/10.5206/eei.v22i2.7699

Brown, T. S., & Stanton-Chapman, T. L. (2017). Experiences of paraprofessionals in US preschool special education and general education classrooms. *Journal of Research in Special Educational Needs*, *17*(1), 18–30. https://doi.org/10.1111/1471-3802.12095

California Education Code § 45330 (2005).

Carroll, D. (2001). Considering paraeducator training, roles, and responsibilities. *Teaching Exceptional Children*, *34*(2), 60–64. https://doi.org/10.1177/004005990103400209

Carter, E., O'Rourke, L., Sisco, L. G., & Pelsue, D. (2009). Knowledge, responsibilities, and training needs of paraprofessionals in elementary and secondary schools. *Remedial and Special Education*, *30*(6), 344–359.

Chopra, R. V., & French, N. K. (2004). Paraeducator relationships with parents of students with significant disabilities. *Remedial and Special Education*, *25*(4), 240–251. https://doi.org/10.1177/07419325040250040701

Chung, Y.-C., & Douglas, K. H. (2022). The exploration of a low-intensity paraprofessional-delivered peer training in inclusive high school classrooms. *Focus on Autism and Other Developmental Disabilities*, 10883576221137906. https://doi.org/10.1177/10883576221137906

Center for Disease Control and Prevention (2023). *2023 Community Report on Autism.* U.S. Department of Health & Human Services. https://www.cdc.gov/ncbddd/autism/addm-community-report/index.html

Claughton, A., Weuffen, S., Robertson, D., & Nice, K. (2023). Parent–teachers: Experiences of supporting our children with dis/ability in schools. In S. Weuffen, J. Burke, M. Plunkett, A. Goriss-Hunter, & S. Emmett (Eds.), *Inclusion, Equity, Diversity, and Social Justice in Education: A Critical Exploration of the Sustainable Development Goals* (pp. 139–151). Springer Nature. https://doi.org/10.1007/978-981-19-5008-7_10

Colorado Revised Statutes § 23-1-121.7 (2021).

Coogle, C. G., Walker, V. L., Ottley, J., Allan, D., & Irwin, D. (2022). Paraprofessionals' perceived skills and needs in supporting students with autism spectrum disorder. *Focus on Autism and Other Developmental Disabilities*, *37*(4), 227–238. https://doi.org/10.1177/10883576211073699

Crosby, J.W. (2011). Test Review: F. M. Gresham & S. N. Elliott Social Skills Improvement System Rating Scales. Minneapolis, MN: NCS Pearson, 2008. *Journal of Psychoeducational Assessment*. *29*(3), 292-296. https://doi.org/10.1177/0734282910385806

Dennis, L., Eldridge, J., Hammons, N. C., Robbins, A., & Wade, T. (2023). The effects of practice-based coaching on paraprofessional implementation of shared book reading strategies. *Preventing school failure: Alternative Education for Children and Youth*, *0*(0), 1–11. https://doi.org/10.1080/1045988X.2022.2161458

Doumen, S., Koomen, H. M. Y., Buyse, E., Wouters, S., & Verschueren, K. (2012). Teacher and observer views on student–teacher relationships: Convergence across kindergarten and relations with student engagement. *Journal of School Psychology*, *50*(1), 61–76. https://doi.org/10.1016/j.jsp.2011.08.004

Douglas, S. N., Chapin, S. E., & Nolan, J. F. (2016). Special education teachers' experiences supporting and supervising paraeducators: Implications for special and general education settings. *Teacher Education and Special Education*, *39*(1), 60–74. https://doi.org/10.1177/0888406415616443

Douglas, S. N., Uitto, D. J., Reinfelds, C. L., & D'Agostino, S. (2019). A systematic review of paraprofessional training materials. *The Journal of Special Education*, *52*(4), 195–207. https://doi.org/10.1177/0022466918771707

Etscheidt, S. (2005). Paraprofessional services for students with disabilities: A legal analysis of issues. *Research and Practice for Persons with Severe Disabilities*, *30*(2), 60–80.

Every Student Succeeds Act, 20 U.S.C. § 6301 (2015). https://www.congress.gov/bill/114th-congress/senate-bill/1177

Feldman, E. K., & Matos, R. (2013). Training paraprofessionals to facilitate social interactions between children with autism and their typically developing peers. *Journal of Positive Behavior Interventions*, *15*(3), 169–179.

Fisher, M., & Pleasants, S. L. (2012). Roles, responsibilities, and concerns of paraeducators: Findings from a statewide survey. *Remedial and Special Education*, *33*(5), 287–297. https://doi.org/10.1177/0741932510397762

Fisher, T. L., Sindelar, P. T., Kramer, D., & Bettini, E. (2022). Are paraprofessionals being hired to replace special educators? A study of paraprofessional employment. *Exceptional Children*, *88*(3), 302–315. https://doi.org/10.1177/00144029211062595

Garwood, J. D., Van Loan, C. L., & Werts, M. G. (2018). Mindset of paraprofessionals serving students with emotional and behavioral disorders. *Intervention in school and clinic*, *53*(4), 206–211. https://doi.org/10.1177/1053451217712958

Gresham, F., & Elliott, S. N. (2008). *Social skills improvement system (SSIS): Rating scales*. Pearson Inc.

Gessler Werts, M., Harris, S., Young Tillery, C., & Roark, R. (2004). What parents tell us about paraeducators. *Remedial and Special Education*, *25*(4), 232–239. https://doi.org/10.1177/07419325040250040601

Giangreco, M. F. (2003). Working with paraprofessionals. *Educational Leadership*, *61*(2), 50–54.

Giangreco, M. F., & Broer, S. M. (2005). Questionable utilization of paraprofessionals in inclusive schools: Are we addressing symptoms or causes? *Focus on Autism and Other Developmental Disabilities*, *20*(1), 10–26. https://doi.org/10.1177/10883576050200010201

Giangreco, M. F., & Broer, S. M. (2007). School-based screening to determine overreliance on paraprofessionals. *Focus on Autism and Other Developmental Disabilities*, *22*(3), 149–158. https://doi.org/10.1177/10883576070220030201

Giangreco, M. F., Broer, S. M., & Edelman, S. W. (2002). "That was then, this is now!" Paraprofessional supports for students with disabilities in general education classrooms. *Exceptionality*, *10*(1), 47–64. https://doi.org/10.1207/S15327035EX1001_4

Giangreco, M. F., Edelman, S. W., Broer, S. M., & Doyle, M. B. (2001). Paraprofessional support of students with disabilities: Literature from the past decade. *Exceptional Children*, *68*(1), 45–63.

Giangreco, M. F., Edelman, S. W., Luiselli, T. E., & MacFarland, S. Z. (1997). Helping or hovering? Effects of instructional assistant proximity on students with disabilities. *Exceptional Children*, *64*(1), 7–18.

Giangreco, M. F., Suter, J. C., & Doyle, M. B. (2007). Recent research on paraprofessionals in inclusion-oriented schools. *Journal of Educational and Psychological Consultation*.

Giangreco, M. F., Suter, J. C., & Doyle, M. B. (2010). Paraprofessionals in inclusive schools: A review of recent research. *Journal of Educational and Psychological Consultation*, *20*(1), 41–57. https://doi.org/10.1080/10474410903535356

Giangreco, M. F., Suter, J. C., & Hurley, S. M. (2013). Revisiting personnel utilization in inclusion-oriented schools. *The Journal of Special Education*, *47*(2), 121–132. https://doi.org/10.1177/0022466911419015

Gotham, K., Risi, S., Pickles, A., & Lord, C. (2007). The Autism Diagnostic Observation Schedule: Revised Algorithms for Improved Diagnostic Validity. *Journal of Autism and Developmental Disorders*, *37*(4), 613–627. https://doi.org/10.1007/s10803-006-0280-1

Gottfried, M. A., & Ozuna, C. S. (2023). Has access to paraprofessionals changed? A cross-decade, cross-cohort analysis. *Journal of Disability Policy Studies*, 10442073221150612. https://doi.org/10.1177/10442073221150611

Güleç Aslan, Y. (2022). Experiences of Turkish paraprofessionals who support students with autism spectrum disorder. *Journal of Education*, 00220574221130952. https://doi.org/10.1177/00220574221130952

Hall, L. J., Grundon, G. S., Pope, C., & Romero, A. B. (2010). Training paraprofessionals to use behavioral strategies when educating learners with autism spectrum disorders across environments. *Behavioral Interventions*, *25*(1), 37–51. https://doi.org/10.1002/bin.294

Hart, M. J., McQuillin, S. D., Iachini, A., Weist, M. D., Hills, K. J., & Cooper, D. K. (2023). Expanding school-based motivational interviewing through delivery by paraprofessional providers: A preliminary scoping review. *School Mental Health*. https://doi.org/10.1007/s12310-023-09580-3

Hoff, A. M., A series of trainings for paraprofessionals: instructional strategies for supporting students with autism spectrum disorder" (2008). *Capstone Projects and Master's Theses*. 452. https://digitalcommons.csumb.edu/caps_thes/452

Howley, C., Howley, A., & Telfer, D. (2017). Special education paraprofessionals in district context. *Mid-Western Educational Researcher*, *29*(2).

Huber, H. B., & Carter, E. W. (2023). Impact and individualization of peer support arrangements for high school students with autism using structural analysis. *Inclusion*, *11*(1), 1–22. https://doi.org/10.1352/2326-6988-11.1.1

Hume, K., Loftin, R., & Lantz, J. (2009). Increasing independence in autism spectrum disorders: A review of three focused interventions. *Journal of Autism and*

Developmental Disorders, *39*(9), 1329–1338. https://doi.org/10.1007/s10803-009-0751-2

Hurwitz, S., & Yirmiya, N. (2014). Autism Diagnostic Observation Schedule (ADOS) and its uses in research and practice. In V. B. Patel, V. R. Preedy, & C. R. Martin (Eds.). *Comprehensive Guide to Autism* (pp. 345-353). New York, NY: Springer. https://doi.org/10.1007/978-1-4614-4788-7_16

Iadarola, S., Hetherington, S., Clinton, C., Dean, M., Reisinger, E., Huynh, L., Locke, J., Conn, K., Heinert, S., Kataoka, S., Harwood, R., Smith, T., Mandell, D. S., & Kasari, C. (2015). Services for children with autism spectrum disorder in three, large urban school districts: Perspectives of parents and educators. *Autism*, *19*(6), 694–703. https://doi.org/10.1177/1362361314548078

Individuals With Disabilities Education Act, 20 U.S.C. § 1400 (2004). https://sites.ed.gov/idea/regs/b/b/300.156

Johnson, L., & Faunce, R. W. (1973). Teacher aides: A developing role. *The Elementary School Journal*, *74*(3), 136–144.

Jones, C. R., Ratcliff, N. J., Sheehan, H., & Hunt, G. H. (2012). An analysis of teachers' and paraeducators' roles and responsibilities with implications for professional development. *Early Childhood Education Journal*, *40*(1), 19–24. https://doi.org/10.1007/s10643-011-0487-4

Kansas Statutes § 72-3609 (2021).

Katsiyannis, A., Hodge, J., & Lanford, A. (2000). Paraeducators: Legal and practice considerations. *Remedial and Special Education*, *21*(5), 297–304. https://doi.org/10.1177/074193250002100506

Knowles, C. L., D'Agostino, S. R., Kunze, M. G., Uitto, D. J., & Douglas, S. N. (2022). A systematic review of asynchronous online learning opportunities for paraeducators. *The Journal of Special Education*, *56*(3), 168–178. https://doi.org/10.1177/00224669221085306

Köpfer, A., & Tan, R. (2023). The paradox of special support and separation. In E. J. Done & H. Knowler (Eds.), *International perspectives on exclusionary pressures in education: How inclusion becomes exclusion* (pp. 279–294). Springer International Publishing. https://doi.org/10.1007/978-3-031-14113-3_15

Kurth, J. A., Ruppar, A. L., McQueston, J. A., McCabe, K. M., Johnston, R., & Toews, S. G. (2019). Types of supplementary aids and services for students with significant support needs. *The Journal of Special Education*, *52*(4), 208–218. https://doi.org/10.1177/0022466918791156

Kurth, J., & Mastergeorge, A. M. (2012). Impact of setting and instructional context for adolescents with autism. *The Journal of Special Education*, *46*(1), 36–48. https://doi.org/10.1177/0022466910366480

Lane, K. L. (2021). Commentary on the current status and future directions for training and supporting paraprofessionals: Opportunities for practice and research. *Psychology in the Schools*, *58*(4), 764–768. https://doi.org/10.1002/pits.22503

Leifler, E., Carpelan, G., Zakrevska, A., Bölte, S., & Jonsson, U. (2021). Does the learning environment 'make the grade'? A systematic review of accommodations for children on the autism spectrum in mainstream school. *Scandinavian Journal of Occupational Therapy*, *28*(8), 582–597. https://doi.org/10.1080/11038128.2020.1832145

Lekwa, A. J., & Reddy, L. A. (2021). Current status and future directions in assessment of paraprofessional practices. *Psychology in the Schools*, *58*(4), 648–668. https://doi.org/10.1002/pits.22480

Lerman, D. C., Luck, K. M., Smothermon, S., Zey, B. A., Custer, T., & Smith, L. D. (2020). Training of paraprofessionals by their classroom teachers: A descriptive evaluation of pyramidal training outcomes. *Journal of Behavioral Education*, *29*(4), 675–698. https://doi.org/10.1007/s10864-019-09341-w

Liston, A. G., Nevin, A., & Malian, I. (2009). What do paraeducators in inclusive classrooms say about their work? Analysis of national survey data and follow-up interviews in California. *TEACHING Exceptional Children Plus, 5(5)*

LoBello, S. G. (1991). A short form of the Wechsler Preschool and Primary Scale of Intelligence-revised. *Journal of School Psychology, 29*, 229–236. https://doi.org/10.1016/0022-4405(91)90004-B.

Lord, C., Risi, S., Lambrecht, L., Cook, Jr, E. H., Leventhal, B. L., DiLavore, P. C., Pickles, A., & Rutter, M. (2000). The Autism Diagnostic Observation Schedule–Generic: A standard measure of social and communication deficits associated with the spectrum of autism. *Journal of Autism and Developmental Disorders, 30*, 205–223. https://doi.org/10.1023/A:1005592401947

Losh, A., Tipton, L. A., Eisenhower, A., & Blacher, J. (2019). Parenting behaviors as predictive of early student–teacher relationships in ASD. *Journal of Autism and Developmental Disorders*, *49*(9), 3582–3591. https://doi.org/10.1007/s10803-019-04065-2

Maenner, M. J., Shaw, K. A., Bakian, A. V., Bilder, D. A., Durkin, M. S., Esler, A., … Cogswell, M. E. (2021). Prevalence and Characteristics of Autism Spectrum Disorder Among Children Aged 8 Years - Autism and Developmental Disabilities

Monitoring Network, 11 Sites, United States, 2018. In *MMWR Surveillance Summaries (Vol. 70)*. https://doi.org/10.15585/mmwr.ss7011a1

Mark, J. L. (1975). *Training and utilization of paraprofessionals: A study of the nation's public school systems enrolling 5,000 or more pupils.* [University of Massachusetts Amherst]. https://doi.org/10.7275/JARG-BN36

Marks, S. U., Schrader, C., & Levine, M. (1999). Paraeducator experiences in inclusive settings: helping, hovering, or holding their own? *Exceptional Children*, *65*(3), 315–328. https://doi.org/10.1177/001440299906500303

Mason, R. A., Gunersel, A. B., Irvin, D. W., Wills, H. P., Gregori, E., An, Z. G., & Ingram, P. B. (2021). From the frontlines: Perceptions of paraprofessionals' roles and responsibilities. *Teacher Education and Special Education*, *44*(2), 97–116. https://doi.org/10.1177/0888406419896627

Mason, R. A., Lory, C., Gregori, E., Gerow, S., Rispoli, M. J., David, M., Kim, S. Y., & Wang, D. (2022). Evidence-based practice in inclusive settings for students with autism: A best-evidence synthesis. *Review Journal of Autism and Developmental Disorders*. https://doi.org/10.1007/s40489-022-00352-4

Mason, R. A., Schnitz, A. G., Wills, H. P., Rosenbloom, R., Kamps, D. M., & Bast, D. (2017). Impact of a teacher-as-coach model: Improving paraprofessionals fidelity of implementation of discrete trial training for students with moderate-to-severe developmental disabilities. *Journal of Autism and Developmental Disorders*, *47*(6), 1696–1707. https://doi.org/10.1007/s10803-017-3086-4

Massafra, A., Gershwin, T., & Gosselin, K. (2020). Policy, preparation, and practice. . . oh my! Current policy regarding the paraprofessional role and preparation for working with students with disabilities. *Journal of Disability Policy Studies*, *31*(3), 164–172. https://doi.org/10.1177/1044207320920004

Matheny, K., & Oslin, Y. (1970). *Utilization of paraprofessionals in education and the helping professions: A review of the literature.* [Conference presentation]. Annual Meeting, AERA, Minneapolis, MN, United States.

Mazurik-Charles, R., & Stefanou, C. (2010). Using paraprofessionals to teach social skills to children with autism spectrum disorders. *Journal of Instructional Psychology*, *37*(2), 161–169.

McDermott, L., Cruz, R. A., & Feng, Z. (2023). A state-by-state document analysis of official guidance on paraprofessional allocation. *The Journal of Special Education*, 00224669231164392. https://doi.org/10.1177/00224669231164392

Montana Administrative Statutes and Rules § 10.55.715 (2017)

Morin, K. L., Nowell, S., Steinbrenner, J., Sam, A., Waters, V., & Odom, S. L. (2022). A survey of the experiences of paraprofessionals with roles, training, and communication when working with students with autism. *Focus on Autism and Other Developmental Disabilities*, *37*(2), 96–107. https://doi.org/10.1177/10883576211066897

Mrachko, A. A., & Kaczmarek, L. A. (2017). Examining paraprofessional interventions to increase social communication for young children with ASD. *Topics in Early Childhood Special Education*, *37*(1), 4–15.

Naar-King, S., Ellis, D. A., Frey, M. A., & Ondersma, M. L. (2003). *Assessing children's well-being: A handbook of measures*. Routledge.

No Child Left Behind Act of 2001, P.L. 107-110, 20 U.S.C. § 6319 (2002).

Novack, M. N., & Dixon, D. R. (2019). Predictors of burnout, job satisfaction, and turnover in behavior technicians working with individuals with autism spectrum disorder. *Review Journal of Autism and Developmental Disorders*, *6*(4), 413–421. https://doi.org/10.1007/s40489-019-00171-0

Olley, J. G., Devellis, R. F., Devellis, B. M., Wall, A. J., & Long, C. E. (1981). The Autism Attitude Scale for teachers. *Exceptional Children*, *47*(5), 371.

Passey, A. (2023). Professionalism in LIS: A blend of theory and practical application. *School of Information Student Research Journal*, *12*(2). https://doi.org/10.31979/2575-2499.120201

Pianta, R. (2001). Student–Teacher Relationship Scale–Short Form. Lutz, FL: Psychological Assessment Resources, Inc

Pickett, A. L., Likins, M., & Wallace, T. (2003). The employment and preparation of paraeducators, the state of the art. *National Resource Center for Paraprofessionals. http://www.nrcpara.org.*

Ratcliff, N. J., Jones, C. R., Vaden, S. R., Sheen, H., & Hunt, G. H. (2011). Paraprofessionals in early childhood classrooms: An examination of duties and expectations. *Early Years*, *31*(2), 163–179. https://doi.org/10.1080/09575146.2011.576333

Reddy, L. A. (2023). Advancing the science of coaching in education: An introduction to the special issue. *Journal of School Psychology*, *96*, 36–40. https://doi.org/10.1016/j.jsp.2022.10.003

Reddy, L. A., Alperin, A., & Glover, T. A. (2021). A critical review of the professional development literature for paraprofessionals supporting students with

externalizing behavior disorders. *Psychology in the Schools*, *58*(4), 742–763. https://doi.org/10.1002/pits.22381

Reddy, L. A., Lekwa, A. J., & Glover, T. A. (2021). Supporting paraprofessionals in schools: Current research and practice. *Psychology in the Schools*, *58*(4), 643–647. https://doi.org/10.1002/pits.22457

Rispoli, M., Neely, L., Lang, R., & Ganz, J. (2011). Training paraprofessionals to implement interventions for people autism spectrum disorders: A systematic review. *Developmental Neurorehabilitation*, *14*(6), 378–388. https://doi.org/10.3109/17518423.2011.620577

Roberts, J., & Simpson, K. (2016). A review of research into stakeholder perspectives on inclusion of students with autism in mainstream schools. *International Journal of Inclusive Education*, *20*(10), 1084–1096. https://doi.org/10.1080/13603116.2016.1145267

Robertson, K., Chamberlain, B., & Kasari, C. (2003). General education teachers' relationships with included students with autism. *Journal of Autism and Developmental Disorders*, *33*(2), 123–130.

Roorda, D. L., Koomen, H. M., Spilt, J. L., & Oort, F. J. (2011). The influence of affective teacher–student relationships on students' school engagement and achievement: A meta-analytic approach. *Review of Educational Research*, *81*(4), 493-529. https://doi.org/10.3102/0034654311421793

Rossetti, Z. S., & Goessling, D. P. (2010). Paraeducators' roles in facilitating friendships between secondary students with and without autism spectrum disorders or developmental disabilities. *Teaching Exceptional Children*, *42*(6), 64–70.

Sam, A. M., Steinbrenner, J. R., Odom, S. L., Nowell, S. W., Waters, V., Perkins, Y., White, M., Swaminathan, H., & Rogers, H. J. (2023). Promoting paraeducators' use of evidence-based practices for students with autism. *Exceptional Children*, *89*(3), 314–331. https://doi.org/10.1177/00144029221135572

Sattler, J. M. (2008). *Assessment of children: Cognitive foundations* (5th ed.). La Mesa, CA: Jerome M. Sattler, Publishing Inc.

Scheef, A. R., Hollingshead, A., Malone, K., Sherman, W. M., Seamans, A., Sabala, T., & Carson, J. (2022). Increasing the independence of students with disabilities in the classroom through indirect paraprofessional support. *TEACHING Exceptional Children*, 00400599221143457. https://doi.org/10.1177/00400599221143457

Scheuermann, B., Webber, J., Boutot, E. A., & Goodwin, M. (2003). Problems with personnel preparation in autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities*, *18*(3), 197–206.

Sec. 300.156 Personnel qualifications. (n.d.). *Individuals with Disabilities Education Act*. Retrieved January 16, 2023, from https://sites.ed.gov/idea/regs/b/b/300.156

Simpson, R. L., de Boer-Ott, S. R., & Smith-Myles, B. (2003). Inclusion of learners with autism spectrum disorders in general education settings. *Topics in Language Disorders*, *23*(2), 116.

Skaik, Y. (2015). The bread and butter of statistical analysis "t-test": Uses and misuses. *Pakistan Journal of Medical Sciences*, *31*(6), 1558–1559. https://doi.org/10.12669/pjms.316.8984

Sobeck, E. E., Douglas, S. N., Chopra, R., & Morano, S. (2021). Paraeducator supervision in pre-service teacher preparation programs: Results of a national survey. *Psychology in the Schools*, *58*(4), 669–685. https://doi.org/10.1002/pits.22383

Stunzi, R. (2023). *A Descriptive Case Study of Paraprofessional Perceptions of Preparedness to Support Students with Disabilities and Collaborate with Supervising Teachers* [Ed.D., Neumann University]. https://www.proquest.com/docview/2788370122/abstract/F3FD4138C36E40B6PQ/1

Texas Administrative Code § 89.1131 (2019)

U.S. Department of Education (2021). *2021 Annual Report to Congress on the Individuals with Disabilities Education Act (IDEA)*. https://sites.ed.gov/idea/files/43rd-arc-for-idea.pdf

Walker, V. L., Carpenter, M. E., Clausen, A., Ealer, K., & Lyon, K. J. (2021). Special educators as coaches to support paraprofessional implementation of functional communication training. *Journal of Positive Behavior Interventions*, *23*(3), 174–184.

Walker, V. L., Coogle, C. G., Lyon, K. J., & Turf, M. (2021). A meta-analytic review of paraprofessional-implemented interventions for students with autism spectrum disorder. *Psychology in the Schools*, *58*(4), 686–701. https://doi.org/10.1002/pits.22380

Wermer, L., Brock, M. E., & Seaman, R. L. (2018). Efficacy of a teacher training a paraprofessional to promote communication for a student with autism and complex communication needs. *Focus on Autism and Other Developmental Disabilities*, *33*(4), 217–226. https://doi.org/10.1177/1088357617736052

Wechsler, D. (2002). WPPSI-III administration and scoring manual. Psychological Corporation.

Young, B., Simpson, R. L., Myles, B. S., & Kamps, D. M. (1997). An examination of paraprofessional involvement in supporting inclusion of students with autism. *Focus on Autism and Other Developmental Disabilities*, *12*(1), 31–38. https://doi.org/10.1177/108835769701200104

Zarate, K., & Barcus, C. L. (2022). The treatment adherence of paraprofessional behavior training programs: A systematic literature review. *European Journal of Psychology of Education*. https://doi.org/10.1007/s10212-022-00646-5

Zobell, E., & Hwang, J. (2020). An examination of the current status of paraprofessionals through their lens: Role, training, and supervision. *Journal of Special Education Apprenticeship*, *9*(1).