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A Survey of the Experiences of Paraprofessionals With Roles, Training, and Communication When Working With Students With Autism

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Abstract

Paraprofessionals are critical members of instructional teams for students with autism; however, little is known about their job preparation and professional development needs. This study addressed the gap in the literature by surveying 325 paraprofessionals in public school settings in the United States and Guam who reported working with students with autism. Data were gathered on paraprofessionals' (a) roles and responsibilities, (b) applied knowledge from different types of professional development, (c) perceived barriers to professional development, and (d) types and timing of communication with their supervising teachers. The results of this study have direct implications for individuals interested in developing a model of professional development that will meet the unique needs of paraprofessionals who work with students with autism.

Keywords

paraprofessional, special education, autism spectrum disorder, professional development, survey

Paraprofessionals play a vital role in the instruction of students with disabilities, with more special education paraprofessionals employed in preschool through high school settings than special education teachers (U.S. Department of Education, 2019). Paraprofessionals, also termed *paraeducators* or *teaching assistants*, are defined as employees who provide instructional support, assist with classroom management, participate in parental involvement activities, and instruct students under the supervision of a teacher (U.S. Department of Education, 2019, p. 37). Given the importance of paraprofessionals in the education of students with disabilities, adequate preparation and training are critical for students to achieve the best outcomes (Brock & Carter, 2013). Although the Individuals with Disabilities Education Improvement Act (IDEA, 2004) mandates that paraprofessionals be appropriately trained and supervised, the requirements for appropriate training vary by state and are often unclear (Hall & Odom, 2019).

The *41st Annual Report to Congress on the Implementation of the IDEA* (U.S. Department of Education, 2019) illustrates the lack of consensus on appropriate training for paraprofessionals, with the term "qualified" including both paraprofessionals meeting their states' standards for qualification and *all* paraprofessionals in states where there were no state certification or licensure requirement for employment at the time of the report. A small number of states have taken steps to ensure their paraprofessionals are adequately prepared for their roles (e.g., Colorado, Virginia); however, there are lingering concerns over the preparation that paraprofessionals receive. For example, a large-scale, multi-site research study conducted in 26 schools across six states found that a common concern among teachers, parents, and administrators was paraprofessionals' lack of training to work with students with disabilities (Giangreco et al., 2011).

The lack of agreement across state policies regarding how paraprofessionals should be prepared and what ongoing training is required is concerning given that special education paraprofessionals now outnumber certified special education teachers (435,817 vs. 341,695; U.S. Department of Education, 2019; most recent data available). Research indicates that paraprofessionals often provide a significant amount of instruction to students with disabilities (Fisher &

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Pleasants, 2012; Jones et al., 2012), many times without the oversight of special education teachers (Giangreco & Broer, 2005). Having paraprofessionals deliver instruction to students without adequate training is problematic and has led to paraprofessionals sometimes giving incorrect feedback, spending a large proportion of time on low-level skills, failing to keep students engaged, and implementing curricula with a low level of fidelity (Jones et al., 2012). Large caseloads of students, insufficient preparation of special education teachers themselves, and a lack of training for teachers on how to adequately supervise paraprofessionals can lead to paraprofessionals performing roles and responsibilities that are outside of their scope of duties and not aligned with IDEA (2004).

When paraprofessionals work with students with autism, these issues are often compounded. Working effectively with students with autism requires knowledge of evidence-based practices specific to this population (Hume et al., 2021); knowledge that most paraprofessionals do not possess (Morin et al., 2021). In addition, students with autism often exhibit high levels of challenging behavior (Busby et al., 2012), making it difficult for some educators to effectively meet their instructional needs (White et al., 2012). Given that the most recent prevalence rate for autism in children is 1 in 54 (Maenner et al., 2020) and data suggest that more than 50 million children and youth attend public schools (McFarland et al., 2017), it is highly likely that many paraprofessionals are working directly with these students, making it even more important for paraprofessionals to receive effective professional development (PD) related to working with this population.

Given the widespread lack of preparation and the complexities of working with students with autism, PD is needed for paraprofessionals serving students with autism to be more successful in their roles. Fortunately, research has demonstrated that (a) paraprofessionals are able to improve their knowledge and skills when they receive PD (e.g., Layden et al., 2018) and (b) this improvement has a subsequent positive impact on student outcomes (Brock & Carter, 2013). However, most of the research to date on training for paraprofessionals involves PD that is delivered by researchers (Walker & Smith, 2015). This model of PD is neither sustainable nor scalable. Instead, PD should be ongoing, delivered in authentic settings, and implemented by classroom teachers (Walker & Smith, 2015). When designing such a model of PD, it is important to know the current state of practice for paraprofessionals related to roles and responsibilities, current PD opportunities, barriers to PD, and availability for PD.

First, when designing PD, it is important to know what responsibilities paraprofessionals currently have to teach content that is relevant to their role. Although a small number of studies provide information on the roles and responsibilities of paraprofessionals, research on this topic is limited and questions still remain. For example, three studies conducted surveys of paraprofessionals or other school personnel to determine what roles and responsibilities paraprofessionals have in the classroom (Fisher & Pleasants, 2012; Giangreco & Broer, 2005; Jones et al., 2012). The results of these studies are consistent in the types of roles in which paraprofessionals engage (e.g., instructional support, managing behavior, supervising students, etc.). There are, however, discrepancies across studies in the percentage of time that paraprofessionals are reported to engage in these activities. Because the samples in the prior studies were drawn either from a single district or state, it is still unknown how frequently paraprofessionals across the United States engage in different roles and responsibilities.

It is also important to consider which types of PD result in applied knowledge for paraprofessionals. There are many different approaches to engaging in PD in education, including workshops, conferences, degree programs, peer observation, professional networks, research, coaching, online learning modules, and professional literature (Broad & Evans, 2006; Snell et al., 2019). Research on PD aligned with adult learning principles suggests that learner-centered models of PD that are sustained over longer periods of time include practice opportunities in authentic contexts, and incorporating peer coaching is most effective for effecting change (McLeskey, 2011). Similarly, the use of video analysis, or the viewing of one's own video for the purpose of improvement, also has demonstrated efficacy for improving a variety of instructional and behavioral skills (Morin et al., 2019); however, most of the research on effective PD focuses on improvement of teachers' skills (e.g., McLeskey, 2011), and less is known about which approaches result in paraprofessionals applying knowledge about effective instructional techniques with their students with disabilities. Furthermore, although there is support for sustained models of PD (Bertuccio et al., 2019), these models are often not implemented with paraprofessionals (Sobeck & Robertson, 2019). As such, additional information on the specific approaches that paraprofessionals find useful would help when designing a model of PD that is relevant to this population.

Knowing the barriers that prevent paraprofessionals from engaging in training is also essential to PD developers. Having information on whether paraprofessionals perceive a lack of prerequisites, funding, employer support, time, resources, availability of training, and interest as reasons for not engaging in training will help PD providers design a model of PD that is feasible and likely to be used by paraprofessionals. Although there has been some speculation about possible barriers (Barrio & Hollingshead, 2017; Chopra et al., 2013), no study to date has directly investigated the barriers to PD as reported by paraprofessionals. Failing to consider and plan for these barriers prior to delivering PD is likely to lead to low participation (Barrio & Hollingshead, 2017; Chopra et al., 2013).

Finally, information on timing or when teachers and paraprofessionals communicate is important to determine the most feasible time to deliver the PD. Although prior research has established that communication between teachers and paraprofessionals is crucial for effective practice (Docherty, 2014), information on when that communication occurs has not been previously explored. Knowing when communication occurs (e.g., during school, before or after school, on workdays) is valuable for developers of PD. With this information, developers can plan the model around times that are already established as preferred, particularly when designing a model of PD that involves the teacher as the facilitator (Walker & Smith, 2015).

The purpose of this study was to gather information that could serve as the foundation for the development of a PD program aligned with adult learning principles for paraprofessionals working with students with autism. Specific research questions addressed as follows:

Research Question 1 (RQ1): What are the roles and responsibilities of paraprofessionals working with students with autism in school settings?

Research Question 2 (RQ2): What types of PD result in applied knowledge for paraprofessionals who work with students with autism?

Research Question 3 (RQ3): What are the barriers to PD?

Research Question 4 (RQ4): When do paraprofessionals and teachers of students with autism communicate?

Secondary research questions explored whether paraprofessionals' responses to these questions differed by setting (i.e., general education or special education) or grade level (i.e., preschool/elementary or middle/secondary).

Method

The research team designed a survey to answer the research questions and gather contextual information to inform the development of a feasible and accessible PD model for paraprofessionals serving students with autism. The survey questions were developed based on professional experience and a review of paraprofessional literature. Three questions (Q5, Q8, and Q9) were adapted from a previous survey, the Teacher and Learning International Survey (TALIS; Organisation for Economic Co-operation and Development, 2013); other questions were created to gather specific data related to online learning or information unique to the paraprofessional role. The questions were reviewed by multiple team members with experience working with paraprofessionals, special education teachers, and students with autism in public school settings to ensure the content validity of the questions. In addition, the research team conducted an internal consistency analysis on the survey items (Items 5–9, see survey questions in online supplemental appendix S1) to ensure the reliability of the measure. Cronbach alphas ranged from .64 to .97 (mean $\alpha = .84$).

Survey Content

The survey, administered through Qualtrics (Qualtrics, 2017), consisted of 24 questions organized into four sections (see online supplemental appendix S1). The first section consisted of four survey eligibility questions related to whether the respondent was currently working as a paraprofessional, teacher's assistant/aide, or an instructional assistant (Q1), whether the respondent was currently working with learners with autism (Q2), the age range of learners with autism with which the respondent was working (Q3), and the setting in which the respondent was working (Q4).

The second section consisted of questions about the frequency with which respondents engaged in various roles and responsibilities within the classroom (e.g., grading work, providing academic instruction, data collection; Q5), the amount of time respondents spend in various settings (Q6), and the frequency and mode of communication between the paraprofessional and supervising teacher (Q7). The third section included questions related to the types of PD opportunities that respondents engaged in (Q8), the barriers to PD (Q9), and respondents' demographics (Qs10–16). When feasible, text-based responses for the "other" categories were recoded. For example, when asked what setting they worked in, multiple respondents chose "other" and then typed some form of "both general education and special education." As such, the research team created a new category based on these responses (i.e., "both"). The fourth section consisted of an additional eight questions that were related to specific features of a larger PD study and did not inform the research questions; thus, they are not reported in the "Results" section. One sub-question was also specific to the PD study and excluded from analyses (see online supplemental appendix S1, Question 8; application of information from online learning modules); however, the descriptive results are reported in the participant section to provide information about the respondents.

Participants

Potential participants were individuals who had registered as users of the Autism Focused Intervention Resources & Modules (AFIRM, 2015) and elected for AFIRM staff to contact them in the future. The research team sent surveys to 1,988 individuals with unique, valid email addresses who identified in their AFIRM user profile as working (a) as paraprofessionals, teacher's assistants/aides, or instructional assistants, (b) in public school settings, (c) in the United States or U.S. Territories, and (d) with students with autism. Surveys were not included if they had missing data

about the background questions. Recipients received up to three email reminders over a 12-day period resulting in 572 respondents (29%). After applying our inclusion criteria (see the following), the final data set consisted of 325 respondents (16% of the survey recipients).

Of the respondents, 92% (n = 299) were female, 6% (n = 21) were male, and 2% (n = 5) preferred not to disclose their gender. Regarding race and ethnicity, 62% (n = 199) of respondents were White/Caucasian, 15% (n = 48) were Hispanic/Latin American, 7% (n = 21) were Black/African American, 3% (n = 9) were Asian, 2% (n = 5) were American Indian/Alaskan Native, and 1% (n = 3) were Native Hawaiian/Pacific Islander. A total of 8% (n = 27) preferred not to disclose their race/ethnicity and 3% (n = 11) selected "Other" for race/ethnicity. Respondents reported the following levels of education: 19% (n = 60) had a high-school diploma or General Education Development (GED); 45% (n = 144) had an associate's degree, technical training, or partial college; 31% (n = 99) had a bachelor's degree; and 6% (n = 19) had a master's, doctorate, or other professional degree. Regarding number of years working as a paraprofessional, 15% (n = 50) had 0 to 2 years of experience, 26% (n = 84) had 3 to 5 years of experience, 21% (n = 68) had 6 to 10 years of experience, and 37% (n = 121) had 11 or more years of experience. Most respondents reported working with students with autism in a special education classroom (59%; n = 193), but they also worked in general education classrooms (34%; n = 109), or a combination of the two (7%; n = 23). Respondents worked with students with autism from a variety of age categories: 15% (n = 48) worked in preschool (ages 3–5 years); 45% (n = 145) worked in elementary (ages 6–11 years); 17% (n = 56) worked in middle school (ages 12–14 years); and 23% (n = 76) worked in high school (ages 15–22 years). Regarding urbanicity, respondents worked in suburban areas (45%; n = 145), rural areas (30%; n = 95), and urban areas (25%; n = 80). Respondents reported working in the following U.S. Territories and U.S. Census Bureau Regions: 45% (n = 145) worked in the West, 20% (n = 66) in the Midwest, 20% (n = 64) in the South, 15% (n = 48) in the Northeast, and <1% (n = 2) in Guam. Finally, 88% of respondents (n = 204) reported applying knowledge from online learning modules in their role as a paraprofessional.

No significant difference was found between responders and non-responders to the survey by U.S. region, $\chi^2(4, N = 1{,}854) = 8.70$, $p > .07$, or age range taught, $\chi^2(4, N = 1{,}854) = 5.31$, $p > .26$; therefore, we were confident that our results represented the larger recipient pool, despite the modest response rate.

Data Analysis

We conducted descriptive analyses on paraprofessionals' responses to each survey question. Responses to yes/no questions are reported using frequency counts and percentages of total responses, and responses to multiple-choice questions are reported using frequency counts, percentages of total response, means, and standard deviations. We used t tests for multiple-choice items and chi-square tests for yes/no answer choices to determine whether there were differences in paraprofessionals' survey responses by grade level and setting. The team made a priori decisions to create two categorical variables for both grade level and setting data for these analyses. We combined responses for respondents who indicated they worked in a preschool or elementary setting and for those who indicated they worked in a middle or high school setting based on similarities in structure for preschool/elementary classrooms (e.g., single teacher, core class of peers) and middle/high school classrooms (e.g., multiple teachers, rotating classes). In addition, we combined responses for respondents who indicated they worked in a self-contained or separate setting with respondents who indicated they worked in a resource or cross-categorical setting to create a new variable (i.e., special education), which we compared to respondents who indicated they worked in general education. For the setting variable, the decision to combine resource and cross-categorical settings was based on the types of students in the settings (e.g., all students with individualized education programs [IEPs] versus inclusive) and the roles and responsibilities of the paraprofessionals working in those settings. For example, paraprofessionals in resource/cross-categorical settings are generally in the same room as their supervising teacher; whereas, in general education classrooms paraprofessionals are more likely to be working with general education teachers rather than their supervising teacher. Any missing data were excluded from the analyses, and the Bonferroni–Holm correction was used to address the increased potential for Type 1 errors from multiple statistical comparisons (Holm, 1979).

Results

Roles and Responsibilities

Respondents first indicated the frequency in which they engaged in various tasks (i.e., never, 1 time per week, 2 times per week, 3 times per week, 4 times per week, or every day). See online supplemental appendix S3 for a list of the tasks and the number of respondents reporting participation in these tasks. During a typical work week and on a daily basis, most paraprofessionals indicated that they provided the following to students with autism: (a) support or supervision related to behavior (89%), (b) support in instructional settings (80%), (c) supervision for non-instructional times (80%), (d) academic instruction (74%), and (e) self-help instruction (68%). In addition, most paraprofessionals indicated that they communicated with their supervising teacher (89%) and collected data (64%) on a daily

basis. There was more variability in the amount of time spent on tasks such as planning and preparing lessons (i.e., 33% reported never planning/preparing lessons, 27% reported doing it on a daily basis), grading student work (53% never, 24% daily), performing administrative tasks (22% never, 44% daily), and communicating with students' family members (45% never, 29% daily). Finally, some of the paraprofessionals surveyed indicated that they had "other" duties, such as collaborating with other members of students' support teams, participating in staff meetings, and working on social skills with students. See online supplemental appendix S2 for a full list of their responses.

When examining differences by setting and grade, paraprofessionals working in special education settings reported spending significantly more time planning and preparing for student lessons, $t(300) = 3.19$, $p = <.01$, $d = 0.39$, and providing self-help instruction, $t(298) = 6.19$, $p = <.01$, $d = 0.72$, than paraprofessionals working in general education (see Table 1). In addition, paraprofessionals working with younger students (i.e., preschool or elementary school) provided significantly more self-help instruction to students with autism, $t(321) = -3.88$, $p = <.01$, $d = .43$, compared to paraprofessionals working with older students (i.e., middle or high school). Finally, paraprofessionals working with younger students reported significantly more time spent on data collection, $t(320) = -2.88$, $p = <.01$, $d = 0.32$, and communicating with students' family members, $t(320) = -2.58$, $p = <.01$, $d = 0.30$, than did paraprofessionals working with older students.

Paraprofessionals also indicated how many hours per day (i.e., never, <1 hr, 1–2 hr, 3–4 hr, or 5+ hr) they spent working in the following settings: (a) individual students, (b) small groups of students, and (c) large groups of students. Most paraprofessionals spent at least some time working with individual students (96%; $n = 308$) or small groups (92%; $n = 293$), although a large percentage also reported working with large groups (66%; $n = 208$). The amount of small-group instruction was significantly higher for paraprofessionals providing instruction in special education than those in general education settings, $t(294) = 2.05$, $p = <.05$, $d = 0.25$, and in middle and high school as compared to preschool or elementary settings, $t(316) = 2.44$, $p = <.05$, $d = 0.28$.

Applied Knowledge From PD

To gain a better understanding of the types of PD opportunities paraprofessionals engage in, paraprofessionals indicated if they applied knowledge from a variety of formats of PD (see Table 2). The majority of paraprofessionals surveyed indicated they applied knowledge from PD received during (a) courses and workshops (89%), (b) independently reading professional literature (74%), (c) education conferences (68%), and (d) mentorship, coaching, and/or observation from peers (58%). Less frequently, paraprofessionals reported that they engaged in individual or collaborative research on a topic of interest, applied knowledge from a degree program, participated in a professional network, and observed at other schools.

When analyzing differences in participants' responses by setting and grade level for questions related to how paraprofessionals apply knowledge from training, the only significant difference found was with independently reading professional literature. Paraprofessionals working in general education settings were more likely to engage in this activity than paraprofessionals working in special education settings, $\chi^2(1, N = 163) = 6.62$, $p < .01$, $d = 0.35$.

Barriers to PD

Paraprofessionals selected barriers to PD that applied to them (see Table 2). According to the paraprofessionals surveyed, the largest barriers to completing PD were lack of time (55%) and lack of appropriate training offered (44%). Additional barriers to PD, as reported by paraprofessionals, were lack of (a) money (34%), (b) employer support (24%), and (c) resources (23%). Only 2% of paraprofessionals reported they did not seek PD due to lack of interest. Several paraprofessionals elaborated on these barriers in an open-ended question (see supplementary appendix S2). When examining participant responses by work setting, there were negligible differences for most barriers to PD reported (see Table 2).

Communication With Supervising Teacher

Paraprofessionals responded to questions about which times during the day they communicated with their supervising teacher and which forms of communication they typically used (see Table 3). Paraprofessionals frequently reported that they communicated with their supervising teachers about students with autism during downtime in the classroom (87%), before or after school (84%), during teacher workdays (75%), and during planning periods (71%). It was less common for paraprofessionals to communicate with supervising teachers during lunch (60%) or school breaks (57%); however, the majority of paraprofessionals still reported some communication during these times. Supervising teachers and paraprofessionals communicate by a variety of means throughout a typical workweek, with email (75%) and text (74%) being the most common forms of communication. Classroom notes (67%) and phone calls (56%), although slightly less common, were still reported by more than half of the paraprofessionals surveyed.

Regarding communication with their supervising teacher, pre-K and elementary paraprofessionals reported that they were significantly more likely to communicate on teacher workdays, $\chi^2(1, N = 195) = 9.07$, $p < .01$,

Table 1. Results of Unpaired *t* Tests for Differences Between Grade Levels and Settings for Roles and Responsibilities.

	PreK–elementary		Middle–high school		Grade-level differences			Special education		General education		Settings differences		
Survey questions and response options[a]	*M*	*SD*	*M*	*SD*	*df*	*t* test	*d*	*M*	*SD*	*M*	*SD*	*df*	*t* test	*d*
In a typical work week, how often do you participate in the following tasks in your role as a paraprofessional?[b]														
Planning/preparation of lessons	2.17	2.05	1.78	1.99	322	−1.69	.19	2.30	2.08	1.53	1.89	300	3.19**	.39
Grading work	1.68	2.14	1.60	2.04	321	−0.34	.04	2.84	2.15	1.37	2.00	298	1.88	.11
Academic instruction	4.15	1.67	4.00	1.79	317	−0.75	.08	2.23	1.56	3.83	1.96	295	1.80	.22
Self-help instruction	4.05	1.80	3.18	2.24	321	−3.88**	.43	4.16	1.73	2.70	2.30	298	6.19**	.72
Support in instructional settings	4.27	1.55	4.42	1.42	323	0.88	.10	4.21	1.58	4.51	1.35	298	−1.70	.21
Support/supervision related to behavior	4.73	.99	4.66	1.00	320	−.059	.07	4.67	1.05	4.69	.98	297	−0.20	.02
Administrative tasks	3.14	2.07	2.55	2.14	322	−2.44	.28	3.06	2.04	2.65	2.21	298	1.63	.19
Supervision for non-instructional times	4.38	1.50	2.78	.16	320	−1.42	.16	4.41	1.46	3.96	1.91	297	2.27	.27
Data collection	4.01	1.72	3.40	2.01	320	−2.88**	.32	3.93	1.77	3.55	2.00	295	1.72	.20
Communications w/ family members	2.14	2.22	1.51	2.01	320	−2.58**	.30	1.95	2.13	1.85	2.20	297	.37	.04
Communications w/ supervising teacher	4.73	.88	4.76	.81	322	0.34	.04	4.76	.86	4.72	.83	297	.35	.05
On a typical workday, how often do you instruct students in the following settings?[c]														
Individual student	2.49	1.21	2.66	1.24	318	1.20	.14	2.64	1.21	2.45	1.28	295	1.24	.15
Small group	2.05	1.17	2.38	1.17	316	2.44*	.28	2.28	1.17	1.99	1.17	294	2.05*	.25
Large group	1.28	1.29	1.57	1.41	311	1.83	.21	1.42	1.37	1.41	1.30	289	.09	.01

Note. d = Cohen's d.

[a]Response options are abbreviated for space considerations; for exact wording of the question and response options, please see supplementary appendix S1. [b]0 = never, 1 = 1 time per week, 2 = 2 times per week, 3 = 3 times per week, 4 = 4 times per week, 5 = daily. [c]0 = never, 1 = less than 1 hr, 2 = 1 to 2 hr, 3 = 3 to 4 hr, 4 = more than 5 hr.

*Significant at the .05 level. **Significant at the .01 level.

Table 2. Descriptive and Statistical Analyses for the Types of Professional Development That Paraprofessionals Engage in and the Perceived Barriers to Engaging in Professional Development.

	Overall		PreK–elementary		Middle–high		Grade differences		Special education		General education		Setting differences	
Survey questions & response options[a]	%	*N*	%	*n*	%	*n*	χ^2	*d*	%	*n*	%	*n*	χ^2	*d*
Types of Professional Development Paraprofessionals Engage In														
Courses/workshops	89	217	89	130	88	87	.08	.04	90	125	88	79	.12	.06
Education conferences	68	166	69	99	67	67	.14	.05	66	93	70	62	.41	.08
Degree program	32	81	34	50	30	31	.19	.06	34	51	34	29	.00	.00
Observation visits to other schools	20	52	23	35	16	17	1.87	.17	18	27	25	22	1.55	.16
Participation in a network	26	63	26	37	25	26	.01	.01	26	38	26	23	.01	.01
Individual or collaborative research	48	118	51	73	45	45	.86	.12	44	64	57	48	3.42	.25
Being mentored by peers	58	140	58	81	57	59	.06	.03	53	77	65	54	2.90	.23
Independently reading professional literature	74	172	73	101	76	71	.39	.08	69	95	85	68	6.62**	.35
Barriers to Professional Development														
Prerequisites	13	43	15	29	11	14	1.36	.13	11	21	17	19	2.60	.19
Money	34	112	38	74	29	38	3.17	.20	31	60	38	41	1.32	.13
Employer support	24	78	25	48	23	30	.19	.05	25	48	22	24	.31	.06
Time	55	180	52	101	60	79	1.79	.15	58	111	53	58	.52	.08
Resources	23	74	26	50	18	24	2.66	.18	21	40	28	30	1.81	.16
Appropriate training	44	143	47	91	39	52	1.91	.15	45	86	46	50	.05	.03
Interest	2	8	3	5	2	3	.03	.02	3	5	2	2	.18	.05

Note. Degrees of freedom for all analyses = 1; *d* = Cohen's *d*.

[a]Response options are abbreviated for space considerations; for exact wording of the question and response options, please see supplementary appendix S1. Data displayed indicate the number and percentage of "Yes" responses for subsample; for Question 2, $n = 325$ for grade level, $n = 302$ for setting.

**Significant at the .01 level.

Table 3. Descriptive and Statistical Analyses for How and When Paraprofessionals and Supervising Teachers Communicate.

Survey questions & response options[a]	Overall		PreK–elementary		Middle–high		Grade differences		Special education		General education		Setting differences	
	%	*N*	%	*n*	%	*n*	χ^2	*d*	%	*n*	%	*n*	χ^2	*d*
When Paraprofessionals and Supervising Teachers Communicate														
Teacher workdays	75	195	82	124	66	71	9.07**	.38	77	116	73	66	.37	.08
Before/after school	84	202	88	126	78	76	4.13*	.26	83	117	87	72	.57	.10
During school: Planning	71	173	73	105	69	68	.65	.10	75	106	67	56	1.55	.17
During school: Break	57	140	58	85	56	55	.12	.04	58	81	59	51	.01	.01
During school: Lunch	60	146	62	91	57	55	.66	.07	61	86	64	54	.31	.07
During school: Downtime	87	206	87	124	86	82	.05	.03	88	120	86	73	.14	.05
How Paraprofessionals and Supervising Teachers Communicate														
Text	74	181	75	111	71	70	.39	.08	75	110	70	59	.71	.11
Email	75	183	72	105	80	78	2.26	.19	70	99	82	70	4.46*	.28
Phone	56	136	59	87	51	49	1.78	.17	57	80	56	49	.02	.02
Notes	67	153	70	93	63	60	1.15	.14	65	86	68	56	.22	.06

Note. Degrees of freedom for all analyses = 1; Data displayed indicate the number and percentage of "yes" responses for subsample; *d* = Cohen's *d*.

[a]Response options are abbreviated for space considerations; for exact wording of the question and response options, please see supplementary appendix S1.

*Significant at the .05 level. **Significant at the .01 level.

$d = 0.38$, and before or after school, $\chi^2(1, N = 202) = 4.13$, $p < .05$, $d = 0.26$, than middle and high school level paraprofessionals. Paraprofessionals in general education were significantly more likely to use email to communicate with their supervising teacher than those in special education, $\chi^2(1, N = 169) = 4.46$, $p < .05$, $d = 0.28$.

Discussion

This study captures the immense variability of paraprofessionals' roles and responsibilities and illustrates their need for quality PD. The results corroborate related research that indicates paraprofessionals provide academic instruction to students with autism (Fisher & Pleasants, 2012; Jones et al., 2012) and add to the body of literature on this topic by reporting on the frequency in which paraprofessionals engage in this activity. Given that prior research has reported academic instruction provided by paraprofessionals is often not supervised by a certified teacher (Giangreco & Broer, 2005), the finding that paraprofessionals provide academic instruction an average of 4 to 5 days per week is concerning as it is likely that they are not receiving adequate supervision. The myriad of other roles paraprofessionals reported adds to the literature demonstrating how critically involved paraprofessionals are in the daily instruction of students with autism. Considering the variety of roles reported, as well as the unique learning needs of students with autism, quality PD specific to students with autism is crucial for paraprofessionals' success in fulfilling their roles and positively impacting student outcomes.

Despite the importance of PD in enhancing paraprofessionals' skills, many paraprofessionals reported a lack of time and appropriate training opportunities as barriers to receiving additional knowledge and skills. This finding is aligned with prior research that found time was a barrier to engaging in PD by paraprofessionals (Sobeck & Robertson, 2019). A lack of appropriate training opportunities offered to paraprofessionals is also problematic as it indicates that content delivered in workshops and seminars may not be relevant to their specific roles with students. This finding is further supported by paraprofessionals' comments to open-ended questions (see online supplemental appendix S2). For instance, students with the most intensive behavioral and self-care needs are the ones most likely to need paraprofessional support; however, content on how to best meet these needs are generally not covered in seminars focused on supporting students in inclusive settings. Despite these challenges, it is encouraging that less than 2% of paraprofessionals surveyed indicated a lack of interest as a barrier to receiving additional training. These results support similar findings in a related study that indicate paraprofessionals do have a desire to improve their skills (Morin et al., 2021). Given the pivotal role of paraprofessionals in the lives of students with autism, there is a need to overcome these barriers if paraprofessionals are to engage in meaningful PD that improves their work with their students.

Survey responses surrounding communication with supervising teachers revealed that paraprofessional–teacher teams engaged in a communication during various points in the school day using a variety of methods. However, teacher workdays, before or after school, downtime during the school day, and planning periods were the most frequently cited times among all respondents. This information is important to consider when developing a PD model and indicates that training delivered by supervising teachers may be most effective if planned during these times. The different forms of communication used by paraprofessional–teacher teams reveal the creative methods that teams use when competing responsibilities preclude more formal, in-person meetings and is an important consideration when exploring alternative modes of delivering information to paraprofessionals.

Implications for Practice

Taken together, these results have important implications for developing a model of PD that is broadly relevant for paraprofessionals who work with students with autism. First, given the finding that a large percentage of paraprofessionals who work with students with autism indicated a lack of appropriate training offered as a barrier to engaging in PD, PD content should be tailored to the unique needs of paraprofessionals working with this population. In addition, the finding of statistically significant differences between roles of paraprofessionals working in different grade levels and settings indicate that PD content should also consider these variables.

Targeting areas that are relevant to paraprofessionals and aligned with guidance from professional organizations ensures that they will receive the most benefit from the training. In our sample, paraprofessionals supported students with autism in multiple learning environments, including in general and special education settings, as well as non-instructional periods; thus, content must cover the broad scope of learning needs and behavioral characteristics of students with autism across these settings to be broadly relevant to paraprofessionals rather than focusing on only one setting or characteristic. The examples used in training for paraprofessionals should be in real-world instructional contexts, with students who exhibit a wide range of abilities that reflect the diversity of students with autism that paraprofessionals may experience. Furthermore, the content of PD programs should be aligned with guidance by professional organizations on the preparation of paraprofessionals (see Council for Exceptional Children, 2015). By including relatable examples based on best practices, PD providers increase the likelihood that paraprofessionals will apply what they learn when working with their students.

Second, PD needs to be flexibly scheduled during times paraprofessionals indicated as feasible and be considerate of the time constraints experienced by many paraprofessionals. More than half of the paraprofessionals surveyed in this study indicated time was a barrier to receiving PD. These findings corroborate previous research that also found time to be a significant barrier to receiving PD for paraprofessionals (Frantz et al., 2020; Sobeck & Robertson, 2019). Given these findings, asynchronous online learning modules may be especially desirable as they can be completed at a time that is convenient for the paraprofessional. In addition, prior research suggests that both paraprofessionals and their supervising teachers value online modules as a method of delivery for PD (Frantz et al., 2020). Ideally, content would be delivered in short, concise modules that can easily be paused and re-started given that paraprofessionals may only have short amounts of time to dedicate to PD in the work day.

Finally, prior research has indicated that the most sustainable model of PD involves supervising teachers delivering training to paraprofessionals (Walker & Smith, 2015). The results of this study support this model. For example, 89% of surveyed paraprofessionals reported communicating with their supervising teacher daily, although communication was not operationally defined in this study and could be interpreted differently by paraprofessionals given their unique experiences and the contexts in which they work. The frequency with which paraprofessionals communicate with their supervising teachers indicates that there are many opportunities throughout the day for supervising teachers to provide constructive feedback and on-the-job coaching, a model of PD supported by research aligned with adult learning principles (McLeskey, 2011) and preferred by both paraprofessionals and supervising teachers (Frantz et al., 2020). That said, teachers and paraprofessionals are already over-burdened; thus, it will be important to work closely with school districts to consider options that would provide more time for this necessary training and collaboration (e.g., paraprofessionals working beyond hours of instruction, coordinating release of before/after school duties for teachers and paraprofessionals).

Limitations and Future Directions

Several limitations exist for this study. First, the sample was drawn from an existing registry of online AFIRM module users. Because these paraprofessionals had already accessed evidence-based practice modules for students with autism and voluntarily responded to this survey, it is likely that (a) they are highly motivated to receive PD and/or (b) have strong opinions about PD that prompted them to respond to the survey. Due to this sampling, survey responses may or may not reflect the PD experiences of all paraprofessionals. Second, less than a third of the paraprofessionals who initially received the survey link completed the survey. Although it is possible that the low response rate introduced bias into the results, analyses between responders and non-responders revealed no significant differences for region of the United States or age range of students taught. Third, no operational definitions or additional explanations of the terms used in the survey (e.g., clinical/community based, etc.) were provided beyond what is delineated in supplementary appendix S1, so it is possible that some terms were not well understood.

Fourth, there was no way to account for instances where paraprofessionals worked in multiple settings. Although we did have an open-ended response option where respondents could add additional settings in which they worked, we acknowledge that not having a response option specific to multiple settings is a limitation. Fifth, the paraprofessionals in this study had a wide range of experience, with most paraprofessionals having six or more years of experience. As such, it is possible that paraprofessionals' experience level impacted their response. To better understand how years of experience impacts roles and responsibilities and training needs, future research should explore the correlation between these variables.

Conclusion

Based on this survey, creation of quality PD materials for paraprofessionals is essential to fulfilling their wide variety of roles and responsibilities, as well as for meeting the unique learning needs of students with autism. Given the findings that time is a major barrier to engaging in PD for a majority of paraprofessionals and that supervising teachers and paraprofessionals engage in frequent communication throughout the day, flexibly scheduled online learning platforms with on-going supervision from a supervising teacher may be the most sustainable model for training paraprofessionals who work with students with autism. Incorporating information learned from this study increases the likelihood that the PD model is feasible and acceptable to paraprofessionals to meet the needs of students with autism in school-based settings.

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Supplemental Material

Supplemental material is available on the *Focus on Autism and Other Developmental Disabilities* webpage with the online version of the article.

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