Original Research Article

PEERS® for School-Based Professionals via Zoom as a Pre-Employment Transition Service

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Abstract

Previous research has shown that conversational language predicts vocational independence and friendship development. This study investigated the efficacy of the Program for the Education and Enrichment of Relational Skills (PEERS®) for School-Based Professionals delivered via Zoom as a pre-employment transition service on the social competence of teens and young adults with autism spectrum disorder (ASD). The program was administered weekly by vocational rehabilitation counselors via telehealth. A Quasi-experimental pilot design using pre/post-test analysis was used because all students in the vocational rehabilitation case management telehealth group indicated a desire to participate in the PEERS® training, leaving none available to form a comparison group. Results indicate a decrease in the severity of ASD symptomatology regarding social communication and an increase in conversational skills associated with vocational independence. They were invited to and hosted more get-togethers with peers who shared their interests, a measure of future collegiality. Implications for individuals on the autism spectrum and employment transition service providers are discussed.

Keywords

autism, transition, pre-ETS, workplace readiness, interpersonal skills

Introduction

A defining feature of autism spectrum disorder (ASD) is having a unique neurological profile that includes challenges with interpersonal skills and social communication (American Psychiatric Association, 2013). As children become teens, the social environment intensifies through puberty, and more complex social norms are established. While these differences can lead to social rejection and isolation, it's important to recognize that many individuals on the autism spectrum possess strengths in other areas, such as attention to detail and honesty.

Friendships Predict Job Success

Conversational language predicts vocational independence and friendship development (Friedman et al., 2019). Social communication challenges can profoundly impact individuals' mental health, interactions with peers in the classroom and with parents, independent community living, and employment outcomes (Simpson & McGinnis-Smith, 2018). For example, only 33.6% of young adults in a nationally representative sample who had received special education services through the ASD category had paid employment at the time of the interview (Roux et al., 2014) compared to 54% of young adults in the general population at a comparable time (Taylor et al., 2022). In fact, in 2014, the Workforce Innovation and Opportunity Act (WIOA) established competitive integrated employment as the goal of vocational services provided to teens and young adults with disabilities. WIOA thus created a policy for Pre-Employment Transition Services (Pre-ETS) to ensure that state vocational rehabilitation (VR) agencies focused sufficient resources on transition-age youth (Taylor et al., 2022).

Many of the skills involved with making friends cross over to seeking employment. For example, the extant research on developing friendships reflects that asking and responding to open-ended questions about common interests and staying on topic in conversations are essential for making friends (Laugeson, 2013). These skills are equally valuable during job

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interviews, conversations with colleagues, and fitting in a workplace culture.

Social Skills Groups in Schools

Social skills groups are one evidence-based intervention that can help mitigate these challenges and set teens up for greater success in their chosen vocation or postsecondary education (Ellingsen et al., 2017; Hume et al., 2021). Specifically, the UCLA PEERS® curriculum has been successfully implemented in clinical and school-based settings (Laugeson et al., 2014; Wyman & Claro, 2020). However, the focus of these interventions has been on group-based face-to-face settings, which can be problematic to implement in rural areas of the United States. Test and colleagues indicate that transportation to and from such groups can be challenging for families and a barrier to accessing transition services in rural communities (Test & Fowler, 2018). In addition, training teachers on how to implement social skills curricula such as PEERS® is uncommon in teacher preparation programs, and the professional development training can be costly (i.e., $500 per teacher according to https://www.semel.ucla.edu/peers/peers%C2%AE-school-based-certified-trainings).

Although many teens may have interpersonal skills goals on their individual education and transition plans (IEPs and ITPs), very few school-based professionals (i.e., special educators, paraprofessionals, speech and language pathologists, school psychologists) have the time or the capacity to deliver the intensive social skills instruction that is needed for meaningful outcomes. Furthermore, schools often use non-evidence-based social skills instruction, which is associated with increases in anxiety and no improvement in social skills, particularly for students on the autism spectrum (Laugeson et al., 2012; Wyman & Claro, 2020).

Challenges in Rural States

As the nation's most rural state, Maine struggles to provide face-to-face social skills group interventions due to the need for families and educational professionals to travel long distances for services and professional development. Only a limited number of highly trained professionals, such as board-certified behavior analysts (BCBAs) (Bureau, 2012) in northern Maine. Currently, there are approximately 500 transition-age youth with ASD who are clients of the state of Maine Division of Vocational Rehabilitation, and it is this group that will need such social skills instruction as part of pre-employment transition service (Maine Division of Vocational Rehabilitation, WIOA State Plan for PY 2020–2023, p.o State's Strategies).

Social Skills and Workplace Readiness

There is a legal mandate to support teens with social skills deficits. Under the Workforce Innovation and Opportunity Act of 2014 (Bird et al., 2014). The focus on attaining meaningful employment in competitive integrated employment settings for individuals with disabilities was tied to requirements to state Vocational Rehabilitation (VR) agencies that they set aside 15% of their federal grant dollars to spend on a new set of services to students with disabilities that would promote early preparation for and exposure to employment. Designed to be delivered in group settings and in collaboration with schools, this new set of "Pre-Employment Transition Services" must be made available much earlier to students (beginning at age 14) and without the requirement that recipients be VR clients. Instead, students who receive special education services or have a 504 Plan can participate in Pre-Employment Transition Services (Pre-ETS) as "potentially eligible," thus eliminating the barrier of application and eligibility determination. These pre-ETS include (a) Job Exploration Counseling, (b) Job Exploration Counseling, (c) Work-Based Learning Experiences, (d) Counseling on Postsecondary Education Opportunities, and (e) Workplace Readiness Training.

Conversational language predicts vocational independence and friendship development (Friedman et al., 2019). Social communication challenges can profoundly impact individuals' mental health, peer interactions, and employment outcomes (Simpson & McGinnis-Smith, 2018). For example, only 33.6% of young adults with ASD had paid employment compared to 54% of young adults in the general population (Roux et al., 2014). The Workforce Innovation and Opportunity Act (WIOA) created a policy for pre-employment transition services (Pre-ETS) to ensure that state vocational rehabilitation (VR) agencies focus on transition-age youth (Taylor et al., 2022).

The new pre-ETS category of Workplace *readiness training to develop social skills and independent living recognizes* the demonstrated correlation between social skill proficiency and future success in employment (Office of the Federal Register, National Archives and Records Administration, 2014; Webb et al., 2008). The importance of social skills in employer hiring decisions is the subject of the US Department of Labor's Office of Disability Employment Policy-issued fact sheet "Soft Skills: The Competitive Edge (Office of Disability Employment Policy, n.d.). Traditionally, these skills have been either taught "on the job" by job coaches or by high school special education teachers. However, Scarborough and Gilbride (2006) demonstrated that vocational rehabilitation case managers and counselors can also play a critical role. High school and vocational rehabilitation case managers and counselors share similar education, goals, and values, and they bring complementary skills and knowledge to their work with students. More importantly, Flower et al. (2019) reported that autistic employees mentioned that issues, such as difficulty focusing and being fatigued by challenges with social interaction, were barriers to their personal employment success.

While employers may be looking for strong communication and teamwork skills, this may be a particular challenge for youth and young adults on the autism spectrum (Office of Disability Employment Policy, n.d.). Lee and Carter (2012) found that having strong social-related work skills was "critical to the success of youth with High Functioning Autism Spectrum Disorders in finding, maintaining and advancing within a job" (p. 994). Gilson and Carter's research (2016) reinforced the important role of social skills for teens with ASD as they prepare for employment, noting the transferability of social skills compared to other learned vocational skills.

The COVID-19 pandemic (2020–2023) and the resulting need for social distancing in school and work environments accelerated the adoption of telehealth tools. The use of telehealth and web conferencing tools has the potential to solve the challenges rural states, such as Maine, face in implementing social skills groups that are required under our current legal framework. However, limited research exists exploring either the social skill outcomes for teens who receive this intervention via telehealth (Estabillo et al., 2022) or as part of transition services supported by a state Vocational Rehabilitation agency.

PEERS® curricula, developed at the University of California, Los Angeles (UCLA), encourage reflection on participants' interests, personality, and strengths to inform career choice. Recent research indicates that many of the skills taught within the PEERS® for School-Based Professionals align closely with job-related interpersonal skills (Moody et al., 2022). Thus, the goal of this pilot study was to evaluate the effectiveness of an evidence-based social skills intervention (PEERS® for School-Based Professionals) for teens and adults with an ASD diagnosis between the ages of 14-year to 19-year via telehealth as part of pre-employment transition services provided by the Maine Department of Labor, Division of Vocational Rehabilitation.

The PEERS® (Program for the Education and Enrichment of Relational Skills) curriculum is an evidence-based social skills intervention initially developed for adolescents with autism spectrum disorder (ASD). It has been successfully implemented in clinical and school-based settings to improve social interactions and reduce social anxiety among participants (Laugeson et al., 2014; Wyman & Claro, 2020). However, the application of this curriculum in a telehealth format, especially within a vocational rehabilitative context, remains underexplored, presenting a significant gap in the literature. This study aims to contribute to this area by evaluating the effectiveness of PEERS® when delivered via telehealth as part of Pre-ETS services.

This study focuses on supporting teens and young adults with autism spectrum disorder (ASD) in developing social competence as part of pre-employment transition services. Recognizing the diverse experiences of autistic individuals, the language in this manuscript adopts an identity-first perspective, reflecting the preference of many in the Autistic community. In response to concerns raised by the Autistic community about certain social skills interventions, this study highlights PEERS' strengths-based approach, which focuses on empowering participants by building on their interests and strengths rather than emphasizing deficits. Social skills interventions like PEERS® have raised concerns within the Autistic community, particularly regarding their focus on conforming to neurotypical social norms. This study attempts to address these concerns by emphasizing participant interests, personality, and strengths as relevant for career and employment, ensuring the intervention is responsive to the needs of the Autistic community. This pilot study will serve as a small-scale test of the methods and procedures for a future larger-scale study. For quantitative analysis, a one-group pretest-posttest quasi-experimental design was used (Shadish et al., 2002).

Specifically, the research questions for this pilot study were:

1. What is the effect of delivering the PEERS® curriculum for school-based professionals via telehealth as a pre-employment transition service on the social skills knowledge of teens with an ASD diagnosis?
2. What is the effect of delivery of the PEERS® for school-based professionals' curriculum via telehealth as a pre-employment transition service on the number of invited get-togethers hosted by or attended by teens with an ASD diagnosis?
3. What is the effect of delivery of the PEERS® for school-based professionals' curriculum via telehealth as a pre-employment transition service on the autism symptomology of teens with an ASD diagnosis?

Methods

Participant Recruitment

This study was conducted following the ethical standards of the Committee on Human Experimentation and after obtaining IRB approval at the University of Maine (#2020-08-16). Ten students were recruited to participate in the 14-week PEERS® for School-Based Professionals curriculum delivered via web conferencing (telehealth).

To enhance accessibility, Zoom's built-in features, such as live captions, chat functions, and session recordings, were utilized. These features enabled participants to engage with the material more effectively during sessions. Recorded sessions were provided to participants as review tools to practice social skills outside the scheduled meeting times. These recordings were encrypted and made available via a password-protected link, accessible for one week after each session.

Phone screening. Eligible participants were (a) DVR clients – determined eligible or "potentially eligible," (b) who were between the ages of 14 to 24-year-old, (c) had an ASD diagnosis as part of their educational record, and (d) were

interested in improving their interpersonal skills. Additional inclusion criteria included: (a) they were fluent in English, (b) they were willing to have a parent complete the SRS-2 measure, (c) they were willing to participate in at least 13 of the 16 sessions, (d) they were willing to have their web-conference sessions recorded, (e) they had reliable internet and access to a device with built-in audio and video camera with which to participate in the web-conferencing sessions. DVR clients who fit the inclusion criteria were invited to participate in a phone screening call with the second author. During this phone screening, they talked with the participant and their parent to review inclusion criteria and determine the teen's willingness to participate in the study. Also, during this conversation, the second author asked about potential participants' history of conversational skills, behavioral problems, and social problems.

Participant Characteristics

Participants were recruited from those participating in the state's Division of Vocational Rehabilitation (DVR). All had an ASD diagnosis, challenges with social skills and making friends, and were willing to participate in the intervention. There were five female, and nine male participants aged 15–23 years. Twelve identified as white, one as Asian, and one as Latino. Pretest SRS-2 measures indicated that their ASD symptomology ranged from mild to severe across all subtests.

All participants provided assent or consent in addition to parental/guardian consent, depending on their age or legal status. They were clients of the Division of Vocational Rehabilitation (DVR), and they were recruited based on their eligibility and interest in improving interpersonal skills. Participants self-reported their demographics, and gender identity options were inclusive to reflect the varied identities within the Autistic population. Participants were encouraged to review the recorded sessions to reinforce their understanding of critical concepts and to practice the skills demonstrated during the live sessions. These recordings were particularly useful for those needing additional time to process the information or to practice conversational skills at their own pace.

Facilitators

During the 16 weeks, each group of teens met weekly for a 90-minute PEERS® for School-Based Professionals telehealth session with a facilitator. Vocational Rehabilitation counselors from the DVR facilitated sessions. All group facilitators attended the PEERS® for School-Based Professionals Telehealth certification training conducted by Dr Elizabeth Laugeson and Dr Shannon Bates through the UCLA PEERS® Clinic (https://www.semel.ucla.edu/peers/peers%C2%AE-teleconference-trainings).

Identifying transition vocational rehabilitation (VR) counselors to participate in the training was key to the effort's launch and success. Criteria for selection included a proven record of successful direct service and engagement with transition-age youth, advanced study in the field of rehabilitation counseling, strong interpersonal skills, and a willingness to participate in a new and innovative effort. The two primary facilitators for the PEERS® for School-Based Professionals telehealth sessions, both males, met these criteria and brought an enthusiasm for lifelong learning. One – a master's level rehabilitation counselor who - while still early in his career, served several years as a transition VR counselor before a recent promotion to supervisor – and the other a mid-career level professional who, in addition to transition VR counselor experience, also brought experience working with individuals who were blind or visually impaired. The latter also was recently promoted to VR consultant. Four additional VR counselors have been recruited and will be trained later this year., thus continuing to build capacity across the agency.

Setting

All intervention sessions took place during Zoom meetings once a week for 90 minutes. Sessions were video recorded, and participants were emailed a password-protected link to review the sessions. Participants were provided with an overview of how to turn on the closed captioning feature on zoom. They were also asked to respond by either unmuting themselves of typing in the chat/back channel. These videos were encrypted and unable to be downloaded; the link to access them expired one week after it was sent. The inclusion criteria for the study involved participants' willingness to have video sessions recorded and shared with other participants for video-modeling review purposes. Video modeling for participants involved recording the didactic instruction of social skills during each session, which were able to be reviewed by participants later if they chose.

Independent Variable

The independent variable in this study was the delivery of the PEERS® curriculum via telehealth, facilitated by vocational rehabilitation counselors. The curriculum was adapted for online implementation, with modifications made to ensure that the content remained accessible and engaging for participants. For example, sessions included the use of captions, chat features, and other accessibility tools to accommodate various needs. The intervention was structured as weekly 90-minute sessions over 14 weeks, with each session including didactic instruction, role-playing activities, and homework assignments.

The vocational rehabilitation counselors who facilitated the sessions adapted the PEERS curriculum to suit a remote delivery model. This included incorporating video demonstrations and role-playing activities that could be effectively conducted over Zoom. The use of breakout rooms allowed for smaller group discussions and individualized feedback, ensuring participants received the same level of personalized attention as in an in-person setting.

To ensure fidelity to the PEERS curriculum, all facilitators completed a standardized training and certification process provided by the PEERS® Clinic at UCLA. Session adherence was monitored through weekly supervision meetings, during which counselors reviewed session recordings to ensure the curriculum was delivered as intended.

Dependent Measures

To examine the efficacy of the PEERS® for School-Based Professionals via Telehealth intervention, pretest and posttest measures of the participants' skills were taken in the following areas: (a) Knowledge of appropriate social etiquette in various social contexts (e.g., starting conversations, building friendships, and handling conflicts), (b) Socialization frequency and (c) Social functioning and severity of ASD symptoms (according to parent reports). Based on prior research in outpatient (e.g., Laugeson et al., 2009, 2012) and school-based settings (Laugeson et al., 2014) the teen participants were hypothesized to demonstrate significant post-intervention improvements across the three measures used to examine their social skills knowledge, social functioning, and socialization frequency.

TASSK

The Test of Adolescent Social Skills Knowledge (TASSK; Frankel et al., 2010) was developed to assess knowledge of ecologically valid social skills taught during the PEERS® for School-Based Professionals telehealth intervention. This is a 30-item measure that assesses knowledge of PEERS® concepts via questions such as, "The most important part of having a conversation is to (a) Trade information or (b) Make sure the other person is laughing and smiling" (Gantman et al., 2012). The psychometric properties of the YA version of this measure have not been examined (Chicago McVey et al., 2017). This measure is a multiple-choice assessment given to participants to complete before and after the intervention. Participants were assigned an anonymous alphanumeric number to pair their pre- and post-TASSK measures.

SRS-2

The Social Responsiveness Scale-2 (SRS-2) is a quantitative measure used to characterize symptoms of autism spectrum disorder. Psychometric properties evaluated include reliability measures (internal consistency, test-retest reliability) and validity (structural, construct, content). The SRS-2 is a 65-item rating scale to evaluate the severity of participants' autism spectrum symptoms. Higher SRS-2 scores suggest a higher number of social deficits and autism spectrum-related symptoms. The SRS-2 is a widely used clinical measure of ASD symptomology and social competency. This measure is a Likert-style assessment given to participants' parent/guardian to complete both before and after the intervention. Participants were assigned an anonymous alphanumeric number to pair their pre- and post-SRS-2 measures.

QSQ

The QSQ is a 12-item self-report measure adapted from the Quality of Play Questionnaire for children with ASD (QPQ; Frankel & Mintz, 2011). The QSQ has been successfully used to assess the frequency of social engagement among adolescents with ASD (Laugeson et al., 2009, 2012) and young adults with ASD (Gantman et al., 2012). The QSQ assesses the participants' frequency of hosted and invited get-togethers over the previous month. It was administered to participants at pre and post-tests to assess intervention outcomes on social get-togethers. This measure assessed social inclusion versus exclusion, an important feature of collegiality and employment success (Bonaccio et al., 2020).

Data Analysis

Quasi-experiments are most likely conducted in field settings, such as schools or case management groups, where random assignment is impossible (Harris et al., 2006; Shadish et al., 2002). They are often conducted to evaluate the effectiveness of an intervention. In a pretest-posttest design, the dependent variable is measured once before and once after the treatment is implemented. This design lacks a comparison or control group; thus, threats to internal validity are possible. The design was used because all students in the vocational rehabilitation case management telehealth group indicated a desire to participate in the PEERS® training, leaving none available to form a comparison group.

Across the variables we used for the quantitative data analysis, the percentage of the missing data points was 3.33% (n = 6). The missing data pattern analysis indicated that the missing values were completely random (x^2 = 6.797, df = 6, p = .340). After implementing mean imputation procedures to fill in the missing values (Peugh & Enders, 2004), we conducted paired-sample t-tests for continuous variables such as TASSK and SRS-2 to compare mean differences between pretest and post-test. Before the tests, we examined the sampling distribution of the differences between the pretest and the post-test scores using the Shapiro-Wilk normality test. The results indicated that the assumption of the normality was satisfied for all variables (statistic = .931, df = 10, p = .200 for TASSK; statistic = .924, df = 10, p = .392 for SRS-2 Total T-score; statistic = .935, df = 10, p = .497 for SRS-2 SocCom T-score; statistic = .991, df = 10, p = .998 for SRS-2 SocCog T-score; statistic = .971, df = 10, p = .901 for SRS-2 SocAwa T-score; statistic = .939, df = 10, p = .539 for SRS-2 SocMot T-score; statistic = .956, df = 10, p = .743 for SRS-2 RRB T-Score). Hedges' g was estimated to evaluate the magnitude of the weighted effect size between pre-and post-test scores under nonrandom dependent sampling (Hedges, 1984). The effect sizes were interpreted as Cohen's criteria: less than 0.20

is little or no effect; 0.20 to 0.49 is small; 0.50 to 0.79 is moderate; more than 0.80 is a strong effect (Cohen, 1988; Lipsey & Wilson, 2001), for the nominal scales such as QSQ, Wilcoxon signed-rank tests were used as a nonparametric equivalent of the paired-samples *t* test. We also computed the effect size estimate, *r*, for the nonparametric test. All analyses were conducted using SPSS version 28.

Results

Social Skills Knowledge

The study aimed to explore the effect of the delivery of the PEERS® for school-based professionals' curriculum via telehealth as a pre-employment transition service on the social competence of teens with an ASD diagnosis. Paired pre and post-test results were obtained for 10 of the 14 participants. A paired-sample *t* test was used to compare the two means from the pretest and the posttest of TASSK. Table 1 displays statistical differences in participants' social skills knowledge before and after the intervention. A paired-sample *t* test revealed that TASSK scores were significantly higher after participation in the intervention (M = 0.763 SD = 0.142 ranging from 0.63 to 0.97) compared to before (M = 0.610 SD = 0.100 ranging from 0.47 to 0.73) $t = 3.371$ $df = 9$ $p = .008$ with a large effect size ($g = 0.974$). This indicates that the participants understood the ecologically valid social skills taught during the intervention better because of participation in the intervention.

Number of Invited Get-Togethers Hosted or Attended by Teens with ASD

The second research question asked if the intervention impacted the number of invited get-togethers hosted by or attended by teens with ASD. To answer this question, we utilized a Wilcoxon signed-rank test to examine whether there was a statistically significant change from the pretest to the posttest. Table 2 shows the results of the Wilcoxon signed-rank analysis. Results indicate that QSQ Host Get-Together scores were not significantly higher after participation in the intervention (M = 3.500 SD = 4.249 ranging from 0 to 12) compared to before (M = 2.300 SD = 3.683 ranging from 0 to 12) $T = 15$ $z = 0.949$ $p = .343$. Although the average number of get-togethers hosted by teens with ASD increased after the intervention, the increase was not statistically significant. For the QSQ Guest Get-Together scores, the Wilcoxon signed-rank test also resulted in a nonsignificant mean difference from the pretest (M = 1.700 SD = 1.829 ranging from 0 to 5) to the posttest (M = 2.300 SD = 3.683 ranging from 0 to 5) $T = 13.5$ $z = 1.656$ $p = .098$.

Autism Symptomatology

Table 1 provides statistical results for individual SRS-2 subscales. The results indicated no significant improvements after the intervention across SRS-2 rating scales except for the social communication subscale. The SRS-2 total T-scores did not significantly change from the pretest (M = 68.700 SD = 7.196 ranging from 57.0 to 83.0) to the posttest (M = 62.556 SD = 7.748 ranging from 51.0 to 71.0) $t = -2.058$ $df = 9$ $p = .069$. Different from other scales, the SRS-2 social communication T-scores significantly decreased after the intervention (M = 59.778 SD = 7.390 ranging from 48.0 to 71.0) compared to before (M = 68.000 SD = 8.042 ranging from 56.0 to 83.0) $t = -3.018$ $df = 9$ $p = .015$ with a large effect size (g = 0.872).

Table 1. Statistical Differences Between Pretest and Posttest in TASSK and SRS-2.

	Pretest		Posttest					
Measure	M	SD	M	SD	*t*	*df*	*p*	Effect Sizes (*g*)
TASSK	0.610	0.100	0.763	0.142	3.371	9	.008*	0.974 [0.239, 1.677]
SRS-2 total T-score	68.700	7.196	62.556	7.748	−2.058	9	.069	−0.595 [−1.210, 0.046]
SRS-2 SocCom. T-score	68.000	8.042	59.778	7.390	−3.018	9	.015*	−0.872 [−1.548, −0.165]
SRS-2 SocCog. T-score	67.200	8.766	60.889	9.445	−2.144	9	.061	−0.620 [−1.239, 0.027]
SRS-2 SocAwa. T-score	62.300	6.165	60.222	4.848	−0.855	9	.415	−0.247 [−0.818, 0.337]
SRS-2 SocMot. T-score	63.400	6.257	59.556	8.247	−1.092	9	.303	−0.316 [−0.892, 0.277]
RRB T-score	71.600	7.763	66.667	7.288	−1.531	9	.160	−0.442 [−1.033, 0.169]

Table 2. Nonparametric Statistical Differences Between Pretest and Posttest in QSQ.

	Pretest		Posttest					
Measure	M	SD	M	SD	*T*	*z*	*p*	Effect Sizes (*r*)
QSQ host GTG	2.300	3.683	3.500	4.249	15	0.949	.343	0.300
QSQ guest GTG	1.700	1.829	2.300	1.703	13.5	1.656	.098	0.523

Discussion

The purpose of this study was to evaluate the effectiveness of an evidence-based social skills intervention (PEERS® for School-Based Professionals via telehealth) for teens and adults with an ASD diagnosis between the ages of 14–19 years as part of pre-employment transition services provided by the Maine Department of Labor Division of Vocational Rehabilitation. The primary research question was: What is the effect of delivery of the PEERS® for school-based professionals' curriculum via telehealth on the social skills knowledge of teens with an Autism Level 1 diagnosis? Results indicate that those who participated in the intervention increased their social competence according to self-report measures. Due to the remote nature of participation, it is impossible to know if participants' social behavior changed in an observable way. Figure 1 illustrates that all but two participants increased their scores on the TASSK, indicating an increased understanding of the interpersonal skills demonstrated by socially accepted people.

Our second research question was: What is the effect of delivery of the PEERS® for school-based professionals' curriculum via telehealth on the number of invited get-togethers hosted by or attended by teens with an Autism Level 1 diagnosis? The results presented in Table 2 illustrate that the mean number of get-togethers participants hosted during the intervention increased from 2.3 in the month preceding the intervention to 3.5 get-togethers in the month preceding post-test collection. Although this is not a statistically significant increase in the rate of hosting get-togethers given that this research was conducted largely during a global pandemic, this is practically significant. These results indicate that, on average, participants hosted social gatherings about once a week at post-test. This finding also aligns with prior research on implementing PEERS® for school-based professionals' curricula in clinical and school settings (Laugeson et al., 2014; Wyman & Claro, 2020). It is encouraging to know that delivery of this intervention via web conferencing software can yield similar results. This is encouraging knowledge, as Lee and Carter (2012) indicated the importance of solid interpersonal skills for successful employment outcomes (Table 3).

Finally, our last research question was: What is the effect of delivery of the PEERS® for school-based professionals' curriculum via telehealth on the autism symptomology of participants with an Autism Level 1 diagnosis? We used the SRS-2 to evaluate autism symptomology. Higher SRS-2 scores suggest a higher number of social deficits and autism spectrum-related symptoms (Constantino & Gruber, 2012). Interestingly, the only SRS-2 subtest statistically significant at the post-test was social communication (i.e., reciprocal communication in social situations). This indicates that participants increased their ability to have reciprocal conversations because of the intervention. Interestingly, the only SRS-2 subtest statistically significant at the post-test was *social communication* (i.e., reciprocal communication in social situations). This indicates that participants increased their ability to have reciprocal conversations because of the intervention. Other subtests did not indicate significant changes at the posttest. This is not entirely surprising given that challenges in subtest areas of *social awareness, social cognition, social motivation, restrictive interests, and repetitive behavior* are defining features of an ASD diagnosis (American Psychiatric Association, 2013).

This research is situated within the dozens of existing studies that have been conducted examining the effectiveness of the UCLA PEERS curriculum in clinical and school-based settings. However, this study was among the first to explore

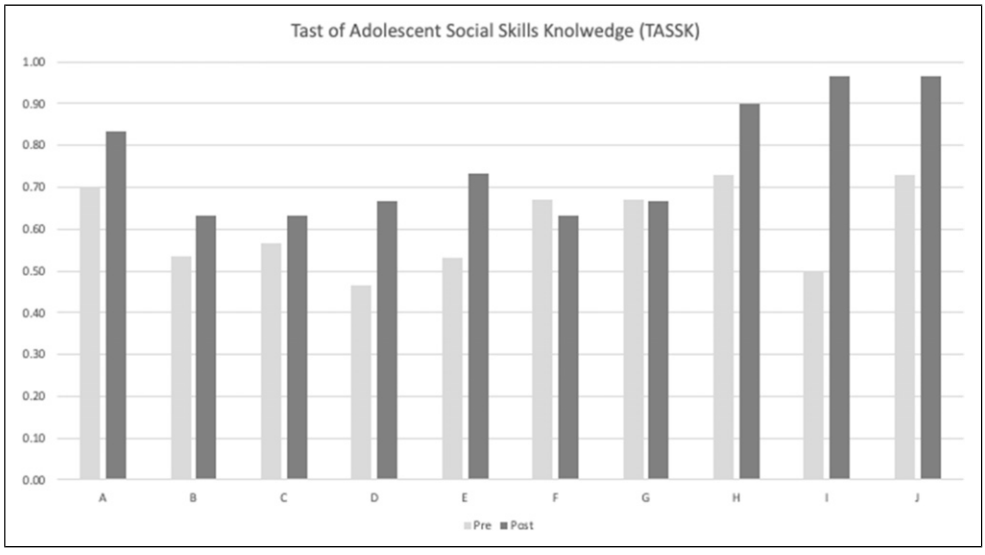

Figure 1. Pretest and posttest scores of TASSK for individual students.

Table 3. Overview of the PEERS ® Curriculum (Laugeson, 2013; Laugeson et al., 2014).

Week	Didactic Lesson
1	Introduction and trading information
2	Two-Way Conversations
3	Electronic communication
4	Choosing appropriate friends
5	Appropriate use of humor
6	Peer entry strategies
7	Peer exit strategies
8	Good Sportsmanship
9	Get-togethers
10	Handling Arguments
11	Changing Reputations
12	Handling Teasing and Embarrassing Feedback
13	Handling Physical Bullying
14	Handling Cyber Bullying
15	Minimizing Rumor and Gossip
16	Graduation

the use of the PEERS® for School-Based Professionals curriculum to deliver pre-employment transition skills training as a service offered by a state's Department of Labor- Division of Vocational Rehabilitation. As such, it adds more information on preparing students for employment and helping them develop the specific skills they need to succeed in workplace settings. As noted by Friedman and colleagues (2019), conversational language predicts vocational independence and friendship development (Friedman et al., 2019). As previously discussed, many of the skills involved with making friends cross over to seeking employment. For example, staying on topic in conversation, answering and asking open-ended questions, and knowing when and where to tell a joke (or not) are essential workplace interpersonal skills addressed in the PEERS® for School-Based Professionals curriculum.

Extant research on developing friendships reflects that asking and responding to open-ended questions about common interests and staying on topic in conversations are essential for making friends (Laugeson, 2013). These skills are equally valuable during job interviews, conversations with colleagues, and fitting in a workplace culture (Moody et al., 2022).

Providing PreETS in Rural Areas

As the nation's most rural state, Maine struggles to provide face-to-face social skills group interventions due to the need for families and educational professionals to travel long distances for services and professional development. For 16-week, each group of participants met weekly for a 90-minute PEERS® for school-based professionals' curriculum via Zoom session with two facilitators who were case managers from the Division of Vocational Rehabilitation (DVR). This study demonstrated that providing this training via Zoom improved the participants' understanding of ecologically valid social skills and the number of get-togethers they were invited to by their peers. These findings indicate that delivering the PEERS® for School-Based Professionals curriculum via a telehealth model as part of pre-employment transition services by a state's division of vocational rehabilitation can be helpful in participants' specific interpersonal skills. This is promising for rural transition service delivery within the pre-ETS category of Workplace *readiness training to develop social skills and independent living,* particularly (Office of the Federal Registr, National Archives and Records Administration, 2014; Webb et al., 2008).

While our study produced encouraging results for increasing ecologically valid social skills knowledge, much more remains to be done to further develop, evaluate, and implement this model to sustain this practice and investigate its ultimate effects on long-term employment outcomes for participants. As an example of social validity (although now formally measured), one of the participants noted that he was able to use his interest in electrical processes into a career as an electrical engineer. After he completed the PEERS® program, he enrolled in a community college, and then a 4-year electrical engineering degree program. This is considered a success, as during his intake interview, he had indicated that he was considering dropping out of high school. We will discuss further implications for future research and practice, but first, limitations.

Limitations

This study was conducted during the COVID pandemic, and there is no way of knowing specifically how the effects of this may or may not have confounded these participants' existing social skills challenges. However, anecdotally, at the participant screening, many parents indicated concerns about their teens' regression in social connection and interpersonal skills during the pandemic. As a result of the COVID-19 pandemic, many participants attended school remotely and participated in virtual job shadowing experiences via the internet. As a result, many indicated having "Zoom fatigue."

Furthermore, this study was implemented with a relatively small sample size. We had 28.6% of the participants (4 of 14) who did not complete the intervention procedure, and 3.33% of the data were missing. Considering the small number of data points, we went through the preliminary data analyses to examine the assumption of normality and the randomness of the missing values before the parametric statistical tests. Hedges's g addressed biased effect size estimates in small sample studies, especially concerning effect sizes (Brydges, 2019). However, underpowered studies should consider any potential inflation bias when interpreting the effect sizes (Goeta & Brydges, 2020). Future research should be conducted with a larger group of participants so more generalizations can be made. This study also did not compare its

effects to those of a control group, a method that would further strengthen the associations that might be made in future research. The TASSK measure only looked at knowledge, not participants' actual demonstrated behavior in generalized settings. There was also no follow-up to measure the maintenance of knowledge gains. Lastly, adherence to the PEERS for School Based Professionals manual (Laugeson, 2013) was monitored informally rather than formally, and this is also a potential limitation.

Implications for Research

More research, particularly randomized control trials, is warranted to investigate a more diverse group of participants across more diverse settings (i.e., urban, rural, and suburban). Likewise, further research that investigated the employment outcomes of participants would inform the use of this intervention as a pre-employment transition service. Although this was a pilot study, it does have implications for rural transition service delivery, given that the current study was conducted within WIOA mandates related to pre-ETS and service coordination. Future research should involve control groups and multiple state Divisions of Vocational Rehabilitation to determine if the results of this study can be replicated and expanded.

Conclusion and Implications for Practice

This study hints that transition rehabilitation and educational professionals may need more instruction in teaching ecologically valid social skills (EVSS) and opportunities and guidance in teaching them to clients and students. Both teacher education programs and rehabilitation science programs should include EVSS in their program learning objectives. Given the rapid growth in the number of students and young adults on the autism spectrum, support is needed for in-service teachers and current vocational rehabilitation counselors to promote EVSS in their clients and students.

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