

## Research Article

# Implementation of the Program for the Evaluation and Enrichment of Relational Skills Social Skills Intervention in a University-Based Communication Sciences and Disorders Clinic

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**Purpose:** This article reviews an evidence-based treatment, the Program for the Evaluation and Enrichment of Relational Skills (PEERS®; Laugeson & Frankel, 2010), and describes its implementation and success in a university-based communication sciences and disorders (CSD) clinic. It is intended to serve as a guide for speech-language pathologists, especially those who are university based, who wish to implement a similar program. PEERS is an evidence-based, parent-assisted group intervention targeting friendship-related social skills for adolescents. We describe the program and briefly review research demonstrating its effectiveness. **Method:** We ran a pilot implementation of a slightly modified version of this program in a university-based speech clinic

over 14 sessions. We enrolled a total of 18 college-bound adolescents with social communication difficulties across four semesters.

**Results:** Our data show significant improvements in social skills knowledge and friendship closeness over the treatment period.

**Conclusions:** Our findings indicate that there is preliminary evidence that PEERS, with our minor modifications, can be effective in university-based CSD clinics. We discuss the benefits of implementing PEERS programs in university-based CSD clinics and provide guidance that may be useful to speech-language pathologists who are interested in doing so.

Lower rates of friendships are reported for adolescents and adults with autism spectrum disorder (ASD; Orsmond et al., 2004) and for adults with histories of other pragmatic language impairments (Whitehouse et al., 2009). The Program for the Education and Enrichment of Relational Skills (PEERS®) curriculum was developed to address some of the friendship-related needs of adolescents with autism and other developmental disabilities (Laugeson & Frankel, 2010). Perhaps due to its roots in psychology, it may not be as well known in the speech-language pathology field as other social skills or social

cognition frameworks such as social thinking methodologies (Crooke et al., 2016) or Social Stories (Gray, 1998).

PEERS<sup>1</sup> is a fully manualized curriculum based on evidence that “brief didactic instruction, role-playing, modeling, behavioral rehearsal, coaching with performance feedback, and weekly socialization assignments with consistent homework” (Laugeson et al., 2009, p. 597, referring to the work by Gresham et al., 2001) are effective methods for teaching social skills to adolescents with ASD. It is an

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<sup>1</sup>Although there are several PEERS curricula (i.e., the adolescent program discussed here, the school-based program [Laugeson, 2014], and the young adult program [Laugeson, 2017]), we use the term here to refer exclusively to the PEERS for adolescents curriculum.

## Disclosures

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adolescent-appropriate adaptation of the Children's Friendship Training program (Frankel & Myatt, 2003), which resulted in findings that parental involvement in social interventions for children can improve outcomes. The topics included in PEERS are an age-appropriate set based on the ones used in Children's Friendship Training (Frankel & Myatt, 2003).

Internet-based video modeling vignettes (Laugeson & Frankel, 2020) are available for many of the topics covered in the PEERS curriculum. These include conversational skills, such as avoiding hogging conversations, and methods for starting conversations and entering and exiting group conversations, exchanging contact information to support electronic communication, appropriately using humor and paying attention to how others respond to your humor, good sportsmanship, beginning and ending get-togethers, handling arguments and disagreements, handling teasing, and handling rumors and gossip. We recommend that those who are interested in learning more about the topics covered see Laugeson and Frankel (2020), which can be freely accessed online, for more information. (Please note that the section on dating etiquette is designed to accompany the young adult version of the program; dating is not addressed in the adolescent program.)

In its original format, PEERS is designed to be implemented in separate, simultaneous, 90-min sessions held for adolescents and their parents, over the course of 14 weeks. For the first 75 min, intervention is provided to adolescents in one room with at least one provider and to parents in another room with at least one other provider. Then, the parent and adolescent groups are brought together for a "reunification" during the last 15 min to ensure that adolescents and their parents are all aware of homework assignments and have matching expectations. Adolescent programming involves didactic instruction, modeling, and behavioral rehearsal with feedback.

Parent lessons cover the same topics as the adolescent ones, with a focus on how parents can support their children's improvements in situations outside therapy. The program materials acknowledge that many adolescents who participate in the program may have missed the opportunity to become friends with other adolescents who they interact with on a daily basis; participants may already be rejected by peers or have a reputation for being withdrawn in their school and in other activities they already participate in (Laugeson & Frankel, 2010). Therefore, there is an emphasis on joining new activities to find new sources of friends. In addition, as PEERS is intended for adolescents who do not already have reciprocal friendships, the focus is on making new friends, rather than on maintaining or strengthening relationships within already-established friendships (Laugeson & Frankel, 2010).

Peer-reviewed published research produced by program developers at the University of California–Los Angeles has found that PEERS participants show greater improvements in knowledge of friendship-related social rules and greater increases in frequency of social get-togethers than adolescents in delayed-treatment control groups (Laugeson et al.,

2012, 2009). Importantly, greater positive outcomes in PEERS intervention groups than in control groups have also been shown by multiple, non–University of California–Los Angeles-affiliated research groups in the United States (e.g., Lordo et al., 2017; Schohl et al., 2014), and there are also successful international replications (e.g., Marchica & D'Amico, 2016; Shum et al., 2019).

In addition, research has shown promising maintenance of positive outcomes for PEERS. Mandelberg et al. (2014) found that, at 1–5 years posttreatment, frequency of participants' get-togethers, per parent and participant report, was maintained from posttreatment profiles. In fact, some social skills, including social awareness and information processing, reciprocal communication, and social anxiety/avoidance were significantly better at follow-up than at posttreatment (Mandelberg et al., 2014). Finally, performance on a participant-completed measure assessing social skills knowledge decreased from posttreatment but remained significantly higher than pretreatment levels (Mandelberg et al., 2014).

Furthermore, there is one study of changes in participants' interactions with unfamiliar age-level peers, measured by direct observational rating scales. Dolan et al. (2016) video-recorded adolescents with ASD interacting with same-gender adolescent confederates before and after participation in PEERS. Improvements in vocal expressiveness were noted, with a trend toward improvement in overall quality of rapport (Dolan et al., 2016).

While the majority of PEERS intervention evidence is based on an outpatient clinic model, there is also an empirically supported school-based version of the program. One treatment study was carried out in a school, with an alternative social skills program used as a control condition (Laugeson et al., 2014). In the school-based intervention, parent education was completed via psychoeducational handouts. This program demonstrated benefits similar to those seen in the clinic, including increased social skills per teacher report, increased knowledge of social rules and skills, increased frequency of get-togethers, and decreased parent-reported adolescent social anxiety (Laugeson et al., 2014).

Most prior published reports describe implementation of the PEERS curriculum by psychologists. Our review of published articles on PEERS implementation in the United States (Chang et al., 2014; Corona et al., 2019; Dolan et al., 2016; Gardner et al., 2015; Laugeson et al., 2012, 2009; Laugeson & Park, 2014; Lordo et al., 2017; Matthews et al., 2018; McVey et al., 2017; Schiltz et al., 2018; Schohl et al., 2014; Van Hecke et al., 2015) revealed no prior peer-reviewed reports of PEERS trials in communication sciences and disorders (CSD) departments. In addition, no articles identified the providers as either speech-language pathologists (SLPs) or graduate students in speech-language pathology; most providers are described as psychologists or graduate students in psychology (e.g., Gardner et al., 2015; Laugeson et al., 2012, 2009; Schohl et al., 2014).

In summary, PEERS is an evidence-based social skills therapy program with positive outcomes across a broad

number of sites. However, adoption of PEERS by SLPs is limited, in part, by lack of documentation of outcomes when provided by SLPs. Moreover, university training programs in CSD may be ideal sites for PEERS administration, since they can provide dual benefits—both effective treatment of clients with social language needs as well as broader education of SLP students in training. Thus, given the absence of prior reports showing successful adaptation of PEERS to a CSD context, we sought to examine the effectiveness of a modified PEERS program in a university-based CSD clinic.

## Method

Retrospective data analysis was approved by the University of Maryland Institutional Review Board. Because extensive information about the PEERS curriculum is available elsewhere (e.g., Laugeson & Frankel, 2010), we will focus on how we adapted this program for implementation in a university clinic.

### Participants

Eighteen adolescents participated in this pilot project (16 male, two female; ages 14–19 years). Of these, 14 were formally diagnosed with ASD; the others had profiles including social pragmatic difficulties. Per the recommendation of Laugeson and Frankel (2010), a minimum enrollment criterion was that all teens expressed a desire to make friends. Furthermore, all had at least one parent who was able to attend weekly sessions. Our PEERS group is part of broader transition-to-adulthood programming in the department's clinic focused on young adults with social or executive functioning difficulties who are college students or college bound. Because our program is situated within this larger framework, an additional criterion specific to our program is that teens were considered by their parents to be college bound, with the goal of attending a 2- or 4-year program. As noted earlier, participants were not required to have a diagnosis of ASD but were required to have a self-assessed need to improve social communication skills.

### Program Schedule and Supervision

Traditionally, parent and adolescent PEERS sessions occur simultaneously for 14 sessions. In our adaptation, during each university semester, for the first lesson only, adolescents and parents had their sessions on separate days to allow the supervisors to run them and model for the undergraduate, CSD major communication coaches. The communication coaches observed through a two-way mirror for the initial parent lesson and participated in the role-play vignettes for the initial adolescent lesson. For Lessons 2 through 14, undergraduate communication coaches were a part of both the parent and adolescent sessions. More information about the role of the communication coaches will be provided in the following section.

Due to the orientation training sessions that we provided and required for the communication coaches at the beginning of the semester and semester-length constraints, two lessons per week were held for 3–4 weeks. For the remainder of the semester, there was one lesson per week.

### Undergraduate Communication Coaches

The semester prior to the implementation of each PEERS session, junior and senior CSD majors were recruited, selected from a competitive pool of applicants, and registered for three credit hours. These students became the communication coaches. At the beginning of each semester, the selected communication coaches attended approximately 10 hr of mandatory orientation training with the supervisors and attended weekly staff meetings thereafter. The training before the first session covered (a) general clinic policies, (b) specific logistics for the PEERS program, (c) communication coaches' roles and responsibilities, (d) how communication coaches' performance would be evaluated, (e) behavior management for both parent and adolescent sessions, and (f) a detailed discussion, guided by the PEERS manual, of the content of the first two parent and adolescent lessons.

Weekly staff meetings involved a discussion of what worked well in the previous session and any unanticipated behaviors or other challenges from the previous session, how these challenges were handled, and how they might be handled differently in the future. Also, because the supervisors and communication coaches are split between the parent and adolescent sessions, meetings provided an opportunity for an exchange of relevant information about what happened in the two sessions. Each week (for Lessons 2 through 14), one undergraduate coach was assigned to the parent training session with one of the supervisors, whereas the other four were assigned to the adolescent session with the other supervisor. Of the four coaches in the adolescent session, two were coleading the session; one was keeping points awarded for participation, which was done in accordance with manualized instructions; and the fourth assisted and interacted in supportive roles as needed.

The coaches and supervisors were rotated through the parent and adolescent sessions. The coach who would be in the parent session was tasked with (a) creating and reviewing an outline of key information in the manual, assigning themselves or the supervisor to lead each part of the session, and (b) participating in the parent session by leading some sections and supporting the supervisor for the sections the supervisor was leading.

The two coaches who were assigned to lead the adolescent session were responsible for (a) creating and reviewing an outline of key information in the manual, assigning one of themselves to lead each part of the session, and (b) participating in the adolescent session by coleading, as assigned in that week's outline. The supervisor was present in the adolescent session as needed, generally observing through a two-way mirror as the communication coaches became more independent. This approach was intended to

allow the coaches (closer in age to the clients) to establish rapport with the adolescent participants and provide culturally relevant information. The undergraduate coaches were encouraged to draw on their relatively recent high school experiences and answer questions about college to help establish rapport with the adolescent participants.

### ***Additional Parent Training Topics***

PEERS is designed for groups of seven to 10 adolescents and their parents. Our groups ranged in size from three to six adolescents. Because of our relatively smaller group size, less time was needed for homework review, and we were able to add in additional parent training. The second author developed several additional parent training lessons based on clinical experience working with adolescents and young adults with autism and social communication difficulties and discussed these topics with parents in addition to the published parent curriculum. Topics included transition testing, executive function, theory of mind, and disclosure/self-advocacy.

During this training time, PEERS parents were taught about updating their adolescents' neuropsychological testing to include assessment of cognitive skills such as executive functioning and theory of mind. The second author discussed the role of these findings in deciding where additional supports would be needed and what next steps might be. She also provided education about the role of testing in establishing supports for students when they enter college settings. Regarding executive function, the second author summarized recent research findings on the role of higher order cognitive processes executive functioning skills such as planning, cognitive flexibility, task initiation, working memory, concept formation, and social cognition (Cai & Richdale, 2016; Williams et al., 2014; Zimmerman et al., 2016) on the transition to college.

In addition, parents were introduced to the concept of theory of mind to help them gain a deeper understanding of deficits in perspective taking and emotion recognition that impact some individuals with autism (Stewart et al., 2019). Likewise, parents were taught how important theory of mind skills can be in helping their adolescent self-advocate, and they were provided with examples of how self-advocacy may occur. For instance, the second author discussed the role of theory of mind in taking another person's perspective, reading their emotions, and understanding the tone of a conversation within self-advocacy situations. Various evidence-based interventions (Odom et al., 2004; Paynter & Peterson, 2013) and teaching strategies, such as the use of thought bubbles, video-based learning, and peer modeling, were discussed.

### ***Summary of Minor Modifications***

When referring to the minor modifications of the PEERS curriculum, we refer to the following. First, as noted, scheduling modifications were made that involved holding two sessions per week during several weeks of the

semester and holding the initial parent and adolescent sessions on separate days so that the supervisors could model for the undergraduate communication coaches. Second, as described above, additional evidence-based parent training topics were included in the parent sessions. In addition, although this is not a modification of the curriculum, we also held the program in a CSD clinic with CSD majors involved as communication coaches, which is a difference compared to previous PEERS intervention studies (e.g., Laugeson et al., 2009).

### ***Assessment Measures***

A retrospective analysis of pre- and postintervention forms was used to assess effectiveness of the program across a number of construct areas, such as social skills knowledge, friendship quality, social anxiety, and empathy. These questionnaires were completed by adolescents and parents at the beginning and end of the semester, generally in the weeks before the first and last sessions. All questionnaires described below were completed by the adolescents themselves, except the Adolescent Empathy Quotient (Adolescent EQ; Auyeung et al., 2012), which was completed by parents.

#### **Test of Adolescent Social Skills Knowledge**

This questionnaire assesses knowledge of topics covered in the PEERS curriculum, such as what an adolescent should do when trying to change a bad reputation or when someone is gossiping about them behind their back (Laugeson & Frankel, 2010). It consists of 26 questions having binary choices, scored as 0 or 1. Scores reported reflect accuracy, with a potential range of 0–26.

#### **Friendship Qualities Scale**

For this questionnaire, teens are first asked to think of their specific "best friend" (Bukowski et al., 1994). They are then asked to rate their agreement with a series of 23 Likert-scale statements about the friendship with this best friend, with responses ranging from 1 (*not at all true*) to 5 (*really true*). Scores for subscales reflecting companionship, conflict, helpfulness, security, and closeness within this best friendship were computed. Subscale scores reflect the mean rating for items assigned to that subscale. Higher scores reflect higher quality friendships on the Companionship, Helpfulness, Security, and Closeness subscales, with the reverse true for the Conflict subscale.

#### **Social Interaction Anxiety Scale**

This questionnaire uses a 5-point Likert scale to assess social anxiety (Mattick & Clarke, 1998). On this measure, adolescents are asked to rate how much they feel that each of 20 statements related to social anxiety is true for them, with responses ranging from 0 (*not at all*) to 4 (*extremely*). Topics include worry about social situations and ease in meeting new people and making friends. Total scores were computed, with the potential to range from 0 to 80,

with two items being reverse scored. Higher scores indicate higher social anxiety.

### Adolescent EQ

This is a parent report measure on which parents rate their agreement with a series of 40 statements related to their child's ability to attribute mental states to others and the adolescent's appropriate responses to others' mental states (Auyeung et al., 2012). Topics include their child's ability to judge whether a verbal statement is rude or predict how someone will feel in a certain situation. Responses are scored 0, 1, or 2, with higher scores relating to higher empathy; possible total scores range from 0 to 80.

### Results

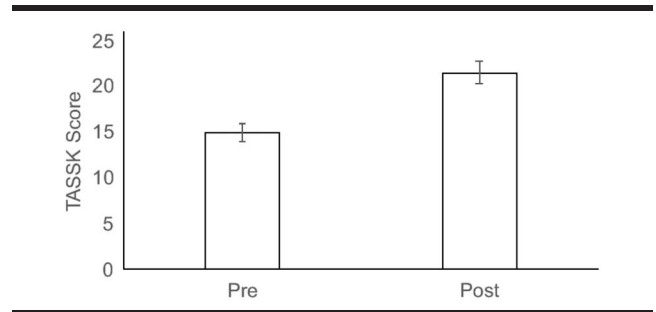
For each assessment measure, there were 12–17 sets of complete questionnaires. Pairwise deletion resulted in inclusion, on a given measure, of only participants who completed both pre- and posttreatment versions of that questionnaire. Missing data were due to incomplete or missing forms. There was one source of systematic missing data: Three adolescents did not complete the FQS (Bukowski et al., 1994) preintervention because it asks about a best friend, and the adolescents reported not having a best friend. Two of these participants did complete the forms at the end of the semester, and one did not.

Pre- and postintervention scores were compared on all of the measures using Wilcoxon signed-ranks tests due to the ordinal nature of the data. These analyses were conducted using IBM SPSS Statistics 24.

Rank biserial correlation,  $r$ , as defined by Kerby (2014), was used as an indicator of effect size, as this has been recommended as an easily understood measure. It is equal to the proportion of individuals with favorable changes minus the proportion of individuals with unfavorable changes. An  $r$  of 1 would indicate that all participants had favorable changes, whereas an  $r$  of 0 would indicate that half of the participants had favorable and half had unfavorable changes and an  $r$  of  $-1$  would reflect all participants having unfavorable changes. For all measures except the FQS Conflict and the Social Interaction Anxiety Scale (Mattick & Clarke, 1998), favorable changes were those in which scores increased from pre- to posttreatment.

Test of Adolescent Social Skills Knowledge (Laugeson & Frankel, 2010) scores, computed with the 12 complete matched pre- and postintervention pairs available for this measure, were significantly higher post- than pre-intervention,  $z = -2.849$ ,  $p = .004$ ,  $r = .750$  (see Figure 1). FQS Security scores, computed with the 12 complete matched pre- and postintervention pairs available for this measure, were significantly higher post- than preintervention,  $z = -2.287$ ,  $p = .022$ ,  $r = .500$ . FQS Closeness scores, computed with the 12 complete matched pre- and postintervention pairs available for this measure, were significantly higher post- than pre-intervention,  $z = -2.809$ ,  $p = .005$ ,  $r = .750$  (see Figure 2). Finally, Adolescent EQ scores, computed with the 17 complete

**Figure 1.** Pre- and posttreatment Test of Adolescent Social Skills Knowledge (TASSK; Laugeson & Frankel, 2010) scores. Error bars represent standard error of the mean.  $N = 12$ .



matched pre- and postintervention pairs available for this measure, were significantly higher post- than pre-intervention,  $z = -1.995$ ,  $p = .046$ ,  $r = .588$  (see Figure 3). All other comparisons showed change in the desired direction but did not reach significance. See Figure 4 for visualization of nonsignificant decrease in Social Interaction Anxiety Scale score.

Because this was a pilot study, an alpha level of .05 was initially used. When correcting for the eight comparisons and using a Bonferroni-adjusted alpha level of .006, changes on the Test of Adolescent Social Skills Knowledge and FQS Closeness remain significant. Improvements on the Adolescent EQ and FQS Security were not statistically significant at the adjusted alpha level, and these improvements should be interpreted with caution (see Table 1).

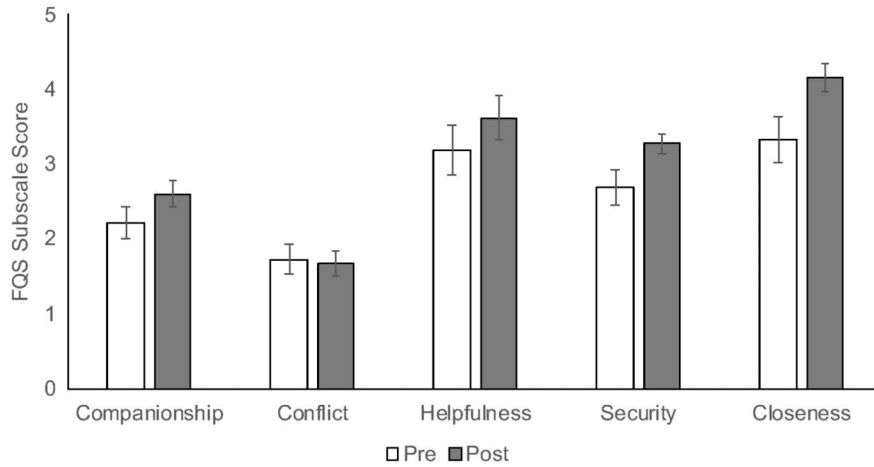
In summary, two of eight outcome measures showed robust statistical improvement after a 14-session program in this pilot study. Furthermore, measures demonstrated numeric improvements in social skills, anxiety levels, and empathy. Taken together, findings suggest that this pilot adaptation of the PEERS adolescent curriculum to a university-based CSD clinical environment achieved results comparable to those reported for trials in which the program was administered by psychologists and in psychology clinic settings.

### Discussion

Pilot results showed robust improvements in social skills knowledge and in the closeness dimension of participants' relationships within their closest friendship. Regarding this change in closeness, please note that participants listed whomever they considered to be their "best friend" at the time and were not required to consider their relationship with the same person pre- and postintervention. Therefore, this robust change in closeness (and numeric changes in other friendship dimensions) should be interpreted as changes in the quality of the participant's closest relationship but not necessarily pre- and postintervention rating of the same relationship.

In addition, all measures showed numeric changes in the expected directions, with participant-reported social

**Figure 2.** Pre- and posttreatment Friendship Qualities Scale (FQS; Bukowski et al., 1994) subscale scores. Error bars represent standard error of the mean.  $N = 12$ .



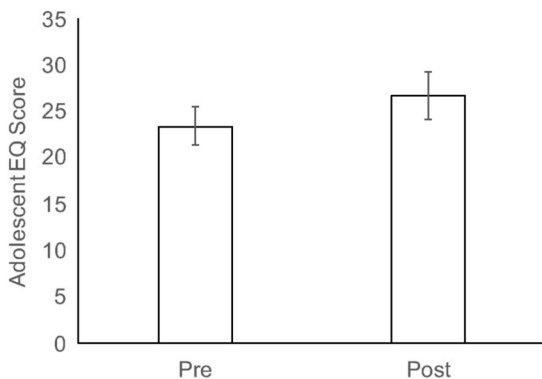
anxiety decreasing and parent-reported empathy increasing. Whereas closeness was the only friendship dimension that showed statistically significant change, security, helpfulness, and companionship increased and conflict decreased. Changes in friendship security and parent-reported empathy did not meet a stringently adjusted alpha level but did reach significance at the .05 level. Such results reflect positive changes for participants during the intervention period of only 14 sessions. A positive change not captured by the statistical comparisons is that two of the three participants who did not complete the FQS at pretreatment because they did not have a best friend were able to report a best friend's name and complete the questionnaire at posttreatment.

Although the focus of this article is implementation in a university CSD clinic, we also hope that SLPs working in other settings will find it helpful. We do not advocate PEERS as a blanket approach to remediation of all social communication needs, and we recognize the importance

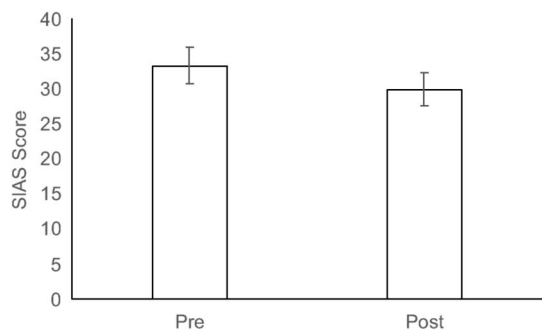
of individualized therapy tailored to the social cognitive profile of a particular client. Having acknowledged this, PEERS has a robust evidence base supporting its inclusion as part of an intervention for adolescent clients with autism or other disabilities that are characterized by social difficulties. In particular, PEERS aids with improving the social communication skills needed for making friends and maintaining these friendships.

Our findings suggest that PEERS can be effectively implemented in a university CSD clinic. However, some modifications to the published curriculum may be necessary or advisable. The most obvious of these is minor scheduling modifications made to adapt to a semester schedule, whereby two lessons were scheduled in 1 week for 3–4 weeks. This adjustment generally worked well, as communication coaches were required to set this time aside, and parent and adolescent attendance was not a problem. However, one limitation is that it became more challenging for parent–adolescent pairs to complete homework assignments between two sessions held in the same week.

**Figure 3.** Pre- and posttreatment Adolescent Empathy Quotient (Adolescent EQ; Auyeung et al., 2012) scores. Error bars represent standard error of the mean.  $N = 17$ .



**Figure 4.** Pre- and posttreatment Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) scores. Error bars represent standard error of the mean.  $N = 13$ .



**Table 1.** Pre- and postintervention scores on all measures.

Measure	N	Pre	Post	z	p	r
		M (SD)	M (SD)			
TASSK	12	15.00 (3.16)	21.54 (4.24)	-2.849	.004	.750
FQS Companionship	12	2.21 (0.74)	2.60 (0.62)	-1.604	.109	.250
FQS Conflict	12	1.73 (0.68)	1.67 (0.57)	-0.256	.798	.083
FQS Helpfulness	12	3.18 (1.14)	3.62 (1.05)	-1.521	.128	.250
FQS Security	12	2.69 (0.79)	3.27 (0.45)	-2.287	.022	.500
FQS Closeness	12	3.33 (1.05)	4.15 (0.64)	-2.809	.005	.750
SIAS	13	33.38 (9.12)	29.96 (8.66)	-1.923	.054	.615
Adolescent EQ	17	23.47 (8.46)	26.71 (10.43)	-1.995	.046	.588

*Note.* The effect size measure,  $r$ , was computed as defined by Kerby (2014). It equals the proportion of participants with favorable outcomes minus the proportion with unfavorable outcomes. For all measures except the FQS Conflict and SIAS, favorable outcomes were those in which scores increased from pre- to posttreatment. TASSK = Test of Adolescent Social Skills Knowledge; FQS = Friendship Qualities Scale; SIAS = Social Interaction Anxiety Scale; EQ = Empathy Quotient.

We believe that university-based, CSD-housed versions of the PEERS adolescent program can aid with meeting a community need; students with ASD who are approaching the transition to adulthood are underserved compared to students with other types of disabilities (Taylor & Henninger, 2015). University clinics may be particularly well suited to providing these types of services at a cost-effective rate, the most commonly reported barrier to treatment (Taylor & Henninger, 2015).

Additionally, PEERS can provide a unique training opportunity that, in our experience, has worked well for undergraduates in CSD to allow them earlier participation in therapy activities. The thoroughly manualized program does not require students to plan individualized lessons. It does, however, provide opportunities for clinical growth in other areas, including establishing rapport with clients, effective communication with clients, flexibility in response to clients' needs, and professional behavior.

Further studies additionally could assess whether attending a PEERS group in a university setting increases the comfort of adolescents who have social communication needs in making plans to attend college. Although our retrospective design did not allow us to measure changes in attitudes toward college, we hypothesize that prior experience with being on a college campus may aid some adolescents in the transition to college.

Perhaps unsurprisingly, as prior research has generally come from psychologists or psychology departments, it has focused on social skills improvements in the context of psychosocial outcomes. Additional research making use of CSD department pragmatic language expertise could look at more nuanced outcomes in the context of overall communicative competence, analyzing gains beyond simple changes in scores on assessment measures, and work to determine how the topics covered, as well as methods for delivering intervention on these topics, are related to theoretical models of social behavior. This type of work may provide insights about elements or principles from the program that SLPs could incorporate into their practice where use of the full PEERS curriculum is inappropriate or impractical. Future

studies of CSD department implementation of PEERS could also look at the changes in the clinical skills of undergraduate communication coaches, as well as their interest in future clinical work with the underserved population of transition-age individuals with ASDs.

Regarding limitations, our retrospective design did not allow for inclusion of a no-treatment or treatment-as-usual control group, and future studies in CSD departments should involve comparison groups. Also due to the retrospective design, we were not able to formally assess treatment fidelity. In addition, questionnaire-based surveys are limited in the extent to which they can provide information about real-world function. To address this, we suggest that future research include more detailed assessment of behavioral outcomes.

In summary, PEERS has shown good evidence for improving social skills knowledge and behavior, in traditional psychology clinic contexts (e.g., Laugeson et al., 2009). This report suggests it may be deployed with minimum modification to the university-based CSD clinic.

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## References

- Auyeung, B., Allison, C., Wheelwright, S., & Baron-Cohen, S. (2012). Brief report: Development of the adolescent empathy and systemizing quotients. *Journal of Autism and Developmental Disorders*, *42*(10), 2225–2235. <https://doi.org/10.1007/s10803-012-1454-7>
- Bukowski, W. M., Hoza, B., & Boivin, M. (1994). Measuring friendship quality during pre- and early adolescence: The development and psychometric properties of the Friendship

- Qualities Scale. *Journal of Social and Personal Relationships*, 11(3), 471–484. <https://doi.org/10.1177/0265407594113011>
- Cai, R. Y., & Richdale, A. L.** (2016). Educational experiences and needs of higher education students with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 46, 31–41. <https://doi.org/10.1007/s10803-015-2535-1>
- Chang, Y.-C., Laugeson, E. A., Gantman, A., Ellingsen, R., Frankel, F., & Dillon, A. R.** (2014). Predicting treatment success in social skills training for adolescents with autism spectrum disorders: The UCLA Program for the Education and Enrichment of Relational Skills. *Autism*, 18(4), 467–470. <https://doi.org/10.1177/1362361313478995>
- Corona, L. L., Janicki, C., Milgramm, A., & Christodulu, K. V.** (2019). Brief report: Reductions in parenting stress in the context of PEERS—A social skills intervention for adolescents with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 49(12), 5073–5077. <https://doi.org/10.1007/s10803-019-04201-y>
- Crooke, P. J., Winner, M. G., & Olswang, L. B.** (2016). Thinking socially: Teaching social knowledge to foster social behavioral change. *Topics in Language Disorders*, 36(3), 284–298. <https://doi.org/10.1097/TLD.0000000000000094>
- Dolan, B. K., Van Hecke, A. V., Carson, A. M., Karst, J. S., Stevens, S., Schohl, K. A., Schohl, K. A., Potts, S., Kahne, J., Linneman, N., Remmel, R., & Hummel, E.** (2016). Brief report: Assessment of intervention effects on in vivo peer interactions in adolescents with autism spectrum disorder (ASD). *Journal of Autism and Developmental Disorders*, 46(6), 2251–2259. <https://doi.org/10.1007/s10803-016-2738-0>
- Frankel, F., & Myatt, R.** (2003). *Children's friendship training*. Brunner-Routledge.
- Gardner, D. M., Gerdes, A. C., & Weinberger, K.** (2015). Examination of a parent-assisted, friendship-building program for adolescents with ADHD. *Journal of Attention Disorders*, 23(4), 363–373. <https://doi.org/10.1177/1087054715588188>
- Gray, C. A.** (1998). Social stories and comic strip conversations with students with Asperger syndrome and high-functioning autism. In E. Schopler, G. B. Mesibov, & L. J. Kunce (Eds.), *Asperger syndrome or high-functioning autism? Current issues in autism* (pp. 167–198). Springer. [https://doi.org/10.1007/978-1-4615-5369-4\\_9](https://doi.org/10.1007/978-1-4615-5369-4_9)
- Gresham, F. M., Sugai, G., & Horner, R. H.** (2001). Interpreting outcomes of social skills training for students with high incidence disabilities. *Exceptional Children*, 67(3), 331–345.
- Kerby, D. S.** (2014). The simple difference formula: An approach to teaching nonparametric correlation. *Comprehensive Psychology*, 3, 1. <https://doi.org/10.2466/11.IT.3.1>
- Laugeson, E. A., & Frankel, F.** (2020). *Role play videos*. <https://www.semel.ucla.edu/peers/resources/role-play-videos>
- Laugeson, E. A.** (2014). *The PEERS® curriculum for school-based professionals: Social skills training for adolescents with autism spectrum disorder*. Routledge. <https://doi.org/10.4324/9780203102374>
- Laugeson, E. A.** (2017). *PEERS® for young adults: Social skills training for adults with autism spectrum disorder and other social challenges*. Routledge. <https://doi.org/10.4324/9781315297057>
- Laugeson, E. A., Ellingsen, R., Sanderson, J., Tucci, L., & Bates, S.** (2014). The ABC's of teaching social skills to adolescents with autism spectrum disorder in the classroom: The UCLA PEERS® program. *Journal of Autism and Developmental Disorders*, 44(9), 2244–2256. <https://doi.org/10.1007/s10803-014-2108-8>
- Laugeson, E. A., & Frankel, F.** (2010). *Social skills for teenagers with developmental and autism spectrum disorders: The PEERS treatment manual*. Routledge. <https://doi.org/10.4324/9780203867686>
- Laugeson, E. A., Frankel, F., Gantman, A., Dillon, A. R., & Mogil, C.** (2012). Evidence-based social skills training for adolescents with autism spectrum disorders: The UCLA PEERS program. *Journal of Autism and Developmental Disorders*, 42(6), 1025–1036. <https://doi.org/10.1007/s10803-011-1339-1>
- Laugeson, E. A., Frankel, F., Mogil, C., & Dillon, A. R.** (2009). Parent-assisted social skills training to improve friendships in teens with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 39(4), 596–606. <https://doi.org/10.1007/s10803-008-0664-5>
- Laugeson, E. A., & Park, M. N.** (2014). Using a CBT approach to teach social skills to adolescents with autism spectrum disorder and other social challenges: The PEERS® method. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 32(1), 84–97. <https://doi.org/10.1007/s10942-014-0181-8>
- Lordo, D. N., Bertolin, M., Sudikoff, E. L., Keith, C., Braddock, B., & Kaufman, D. A. S.** (2017). Parents perceive improvements in socio-emotional functioning in adolescents with ASD following social skills treatment. *Journal of Autism and Developmental Disorders*, 47(1), 203–214. <https://doi.org/10.1007/s10803-016-2969-0>
- Mandelberg, J., Laugeson, E. A., Cunningham, T. D., Ellingsen, R., Bates, S., & Frankel, F.** (2014). Long-term treatment outcomes for parent-assisted social skills training for adolescents with autism spectrum disorders: The UCLA PEERS program. *Journal of Mental Health Research in Intellectual Disabilities*, 7(1), 45–73. <https://doi.org/10.1080/19315864.2012.730600>
- Marchica, L., & D'Amico, M.** (2016). Examining the efficacy of an adapted version of the UCLA PEERS® program with Canadian adolescents. *Journal of Education & Social Policy*, 3(4), 54–65.
- Matthews, N. L., Orr, B. C., Warriner, K., DeCarlo, M., Sorensen, M., Laffin, J., & Smith, C. J.** (2018). Exploring the effectiveness of a peer-mediated model of the PEERS curriculum: A pilot randomized control trial. *Journal of Autism and Developmental Disorders*, 48(7), 2458–2475. <https://doi.org/10.1007/s10803-018-3504-2>
- Mattick, R. P., & Clarke, J. C.** (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy*, 36(4), 455–470. [https://doi.org/10.1016/s0005-7967\(97\)10031-6](https://doi.org/10.1016/s0005-7967(97)10031-6)
- McVey, A. J., Schiltz, H., Haendel, A., Dolan, B. K., Willar, K. S., Pleiss, S., Karst, J. S., Carson, A. M., Caiozzo, C., Vogt, E., & Van Hecke, A. V.** (2017). Brief report: Does gender matter in intervention for ASD? Examining the impact of the PEERS® social skills intervention on social behavior among females with ASD. *Journal of Autism and Developmental Disorders*, 47(7), 2282–2289. <https://doi.org/10.1007/s10803-017-3121-5>
- Odom, S. L., Brantlinger, E., Gersten, R., Horner, R. D., Thompson, B., & Harris, K.** (2004). *Quality indicators for research in special education and guidelines for evidence-based practices: Executive summary*. Council for Exceptional Children Division for Research.
- Orsmond, G. I., Krauss, M. W., & Seltzer, M. M.** (2004). Peer relationships and social and recreational activities among adolescents and adults with autism. *Journal of Autism and Developmental Disorders*, 34(3), 245–256. <https://doi.org/10.1023/B:JADD.0000029547.96610.df>
- Paynter, J., & Peterson, C. C.** (2013). Further evidence of benefits of thought-bubble training for theory of mind development in children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, 7(2), 344–348. <https://doi.org/10.1016/j.rasd.2012.10.001>



- Schultz, H. K., McVey, A. J., Dolan, B. K., Willar, K. S., Pleiss, S., Karst, J. S., Carson, A. M., Caiozzo, C., Vogt, E. M., Yund, B. D., & Van Hecke, A. V. (2018). Changes in depressive symptoms among adolescents with ASD completing the PEERS® social skills intervention. *Journal of Autism and Developmental Disorders, 48*(3), 834–843. <https://doi.org/10.1007/s10803-017-3396-6>
- Schohl, K. A., Van Hecke, A. V., Carson, A. M., Dolan, B., Karst, J., & Stevens, S. (2014). A replication and extension of the PEERS intervention: Examining effects on social skills and social anxiety in adolescents with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 44*(3), 532–545. <https://doi.org/10.1007/s10803-013-1900-1>
- Shum, K. K.-M., Cho, W. K., Lam, L. M. O., Laugeson, E. A., Wong, W. S., & Law, L. S. K. (2019). Learning how to make friends for Chinese adolescents with autism spectrum disorder: A randomized controlled trial of the Hong Kong Chinese version of the PEERS® intervention. *Journal of Autism and Developmental Disorders, 49*(2), 527–541. <https://doi.org/10.1007/s10803-018-3728-1>
- Stewart, G. R., Wallace, G. L., Cottam, M., & Charlton, R. A. (2019). Theory of mind performance in younger and older adults with elevated autistic traits. *Autism Research, 13*(5), 751–762. Advance online publication. <https://doi.org/10.1002/aur.2206>
- Taylor, J. L., & Henninger, N. A. (2015). Frequency and correlates of service access among youth with autism transitioning to adulthood. *Journal of Autism and Developmental Disorders, 45*(1), 179–191. <https://doi.org/10.1007/s10803-014-2203-x>
- Van Hecke, A. V., Stevens, S., Carson, A. M., Karst, J. S., Dolan, B., Schohl, K., McKindles, R. J., Rempel, R., & Brockman, S. (2015). Measuring the plasticity of social approach: A randomized controlled trial of the effects of the PEERS intervention on EEG asymmetry in adolescents with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 45*(2), 316–335. <https://doi.org/10.1007/s10803-013-1883-y>
- Whitehouse, A. J. O., Watt, H. J., Line, E. A., & Bishop, D. V. M. (2009). Adult psychosocial outcomes of children with specific language impairment, pragmatic language impairment and autism. *International Journal of Language & Communication Disorders, 44*(4), 511–528. <https://doi.org/10.1080/13682820802708098>
- Williams, D. L., Mazefsky, C. A., Walker, J. D., Minshew, N. J., & Goldstein, G. (2014). Association between conceptual reasoning, problem solving, and adaptive ability in high-functioning autism. *Journal of Autism and Developmental Disorders, 44*, 2908–2920. <https://doi.org/10.1007/s10803-014-2190-y>
- Zimmerman, D. L., Ownsworth, T., O'Donovan, A., Roberts, J., & Gullo, M. J. (2016). Independence of hot and cold executive function deficits in high-functioning adults with autism spectrum disorder. *Frontiers in Human Neuroscience, 10*(24), 2–14. <https://doi.org/10.3389/fnhum.2016.00024>