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Online, But Live and Interactive Social Skills Intervention for Adolescents with
Autism Spectrum Disorders

Molly Anne Rosenbaum

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Master of Science

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ABSTRACT

Online, But Live and Interactive Social Skills Intervention for Adolescents with Autism Spectrum Disorders

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Master of Science

Autism Spectrum Disorder (ASD) is a developmental disorder characterized primarily by social skills deficits that can impair the individual's ability to develop and maintain meaningful relationships. Research has shown that social skills training provides lasting improvement in social interactions. However, many factors can hinder the availability of intervention groups outside of major metropolitan areas. Individual online social skills interventions have been shown to translate to increases in everyday social skills, and while further investigation is required, current literature suggests that there is great potential for live, interactive online social skills groups to provide similar benefits to in-person intervention groups. Thus, online groups may be one solution to the barriers to accessing available resources. This study sought to explore the feasibility of conducting a live, interactive online social skills group by comparing two groups using the same curriculum; one in-person group that met in a lab on a local college campus, and one piloted online group that met through Zoom, a video conference platform, each for 14 weeks. Each group also participated in person in social activities on campus to gather preliminary generalization data. The online intervention was acceptable to therapists and participants, and a group of therapists who implemented both delivery models reported some advantages and disadvantages of an online format for social skills, expressing a preference for in-person delivery model when possible, but acceptability of online delivery where in-person groups are not available. The online model showed somewhat lower levels of participation, but slightly higher attendance rates than the in-person model. Understanding both the advantages and disadvantages to online social skills, clinicians can utilize the method the best fits their needs.

Keywords: autism, autism intervention, social skills, communication learning, PEERS® curriculum, telehealth

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From the deepest part of my heart, I would like to thank my family. My sweet husband, Ben, thank you for your love and support, and for keeping me smiling through graduate school. I would also like to thank my daughter, Presley. Thank you for tagging along with me on this adventure. I would also like to thank my sisters, Megan and Katie, for your faith and love. Mom and Dad, thank you for your constant encouragement, advice, and willingness to help. Finally, I would like to thank my Heavenly Father for the many miracles, for teaching me faith, for granting strength, and for answering prayers and guiding me in life.

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DESCRIPTION OF THESIS STRUCTURE AND CONTENT

This thesis, *Online, But Live and Interactive Social Skills Intervention for Adolescents with Autism Spectrum Disorders*, is written in a hybrid format. This hybrid format combines traditional thesis requirements and journal publication layouts. The thesis report is presented as a journal article and conforms to the length and style requirements for submitting research reports to clinical psychology and autism specific journals. The additional support for the findings includes a literature review, which appears in Appendix A. Two reference sections are included. The first applies to the journal-ready article and the second contains references for the extended literature review. Appendices B-N contain (in order): Background Survey, Parent Permission (in-person group), Parent Permission (online group), Child Assent (in-person group), Child Assent (online group), Youth Assent (in-person group), Youth Assent (online group), Video Release Form, Social Skills Rules Handout, Social Skills ZOOM Tutorial, TARF Questions (parent), TARF Questions (adolescent in-person), and TARF Questions (adolescent online).

Background

Addressing core social communication deficits of autism is a universally recommended intervention strategy (Goin-Kochel, Myers, & Mackintosh, 2007); however, group social skills interventions have not been universally available, particularly in rural or otherwise underserved areas (Azano & Tackett, 2017). These challenges, including a lack of geographic access to services in underserved areas (Kiani, Tyrer, Hodgson, Berkin, & Bhaumik, 2013) and a lack of trained specialists and lack of educational and vocational resources in underserved areas (Azano & Tackett, 2017) can result in long delays as well as additional travel costs for families as they try to obtain services from trained specialists in specialty centers (Bearss et al., 2018).

There are a number of established group social skills interventions available in research literature (National Autism Center, 2015) including the Program for the Education and Enrichment of Relational Skills (PEERS®; Laugeson & Frankel, 2010), which has been validated at multiple research sites and has shown to be effective at increasing quality of friendship and hosted get-togethers for teens with autism (e.g., Laugeson, Frankel, Mogil, & Dillon, 2009; Mandelberg et al., 2014; McVey et al., 2017; Schohl et al., 2014). PEERS® is a 14-week evidence-based intervention that focuses on helping adolescents with ASD learn how to make and keep friends and manage peer conflict and rejection (Laugeson et al., 2009), resulting in significant social gains for both males and females with ASD (McVey et al., 2017). PEERS® has not yet been studied in a live, interactive, online format, however.

With increasing availability of Internet access, delivery of telehealth and online services for autism are also increasing and may be a time-limited and cost-effective means to close the gap between service demand and availability in rural and underserved areas (Bearss et al., 2018). While using an electronic format for social skills instruction has been available in static, pre-

recorded lesson (learning module) formats, it has not yet been studied in a live, interactive format using a manualized curriculum for in-person group intervention. The purpose of this study is to explore feasible methods for adapting an evidence-based, in-person curriculum to an online, live and interactive format. Once developed, pilot data regarding online and in-person delivery of the PEERS® social skills curriculum will be compared in terms of ease, generalization effects, barriers, acceptability, and participation rates generated during sessions. The following are the proposed research questions for the current study:

1. Is the online delivery experience of social skills instruction acceptable to participants?
2. What are the positive aspects of the online delivery of social skills intervention?
3. What are the challenges of the online delivery of social skills intervention?
4. What do preliminary data show for the difference in social communication for the online delivery of social skills intervention when compared to the traditional in-person delivery of social skills?

Methods

Approval

All methods for the study were approved by the Institutional Review Board (IRB) of the university. The online videoconferencing platform account used in this study is compliant with the Health Insurance Portability and Accountability Act of 2004 and thus protects the privacy and rights of participants. This is accomplished through encryption of electronic signals, no automatic storage on cloud servers, and a business agreement between Zoom US and Brigham Young University (BYU).

Recruitment

Announcements and emails were sent to families who had previously contacted BYU about social skills groups for adolescents with autism, past attendees at professional development workshops for autism, autism resource organizations, and related professional organization list serves. Announcements were also placed via BYUAutismConnect (www.autism.byu.edu). Interested families contacted BYU by e-mail and received an e-mail describing the study with audio/video release, consent, and assent forms attached. Families were encouraged to ask questions by phone or e-mail prior to signing enrollment forms. Families who chose to contact BYU initially by phone were sent the e-mail during the phone call and were allowed to ask questions about the study prior to making a decision. Interested families were asked to register with BYUAutismConnect to answer demographic and medical history questions, and send a reply e-mail giving researchers permission to extract data from BYUAutismConnect for use in the study. Consent and assent forms were returned either in person, by e-mail, or hard copy by mail. Video Release Forms were also completed. Once consent/assent was obtained, families began to receive information about study schedules. When families signed up, they were offered a spot in either the in-person or online group according to the group that was recruiting at the time of contact. There were six families that opted not to participate in the online program and instead decided to wait for an opening in the in-person group. The lack of random assignment of groups may engender some selection bias, but the majority of families enrolled in the next available group, regardless of delivery model.

Participants and Settings

This study was designed to determine the viability of using a live online delivery model to teach social skills to various participants with ASD who, because of distance or other barriers, are unable to attend in-person social skills training. Criteria for participant inclusion was verification of ASD symptoms via measures including the Autism Diagnostic Observation Schedule, Second Edition (Lord et al., 2012) and parent report measures, including the Social Communications Questionnaire (Rutter, Bailey, & Lord, 2003), Social Responsiveness Scales, Second Edition (Constantino, 2012), and Autism Social Skills Profile (Bellini & Hopf, 2007). Other criteria for inclusion were for participants to have age-appropriate language skills and adequate cognitive levels to benefit from the curriculum (per UCLA PEERS® manualized intervention requirements), measured using standardized cognitive assessments (see Methods section). Participants consisted of males and females, ages 12-17.

There were two groups in this study, an in-person group and an online group. The in-person group met each week on the Provo Campus of Brigham Young University (BYU). Sessions took place in the Child and Family Studies Lab, a set of multi-purpose rooms co-located within the BYU Child and Family Studies Lab. The in-person group met in a small classroom with two long tables and individual chairs. Therapists were all present in the room, using whiteboards and bulletin boards for session materials (e.g., lesson-specific rules and Jeopardy game board pieces from the PEERS® Manual).

The online group met in a virtual environment for regular sessions using the videoconferencing platform, Zoom (Yuan, 2011). Although many therapists joined the online group individually, the two therapists leading the online group each week were physically in the same location, sharing a single laptop, to facilitate role plays as part of their session.

Generalization probes for both in-person and online groups took place in various campus locations — in person for both groups — according to the scheduled activity (e.g., bowling, museums, fast food, indoor games, outdoor games). All in-person sessions, including on-campus activities, included at least a 4:10 ratio of adults to adolescents, with some sessions having 6:10 ratios. Adult to adolescent ratios in the online group were more concentrated, typically 1:1 to provide more interaction and ensure safety in online breakout room sessions. Data from these probes are beyond the scope of this study and will be reported separately.

The two groups in this study were well-matched for IQ and age range (Table 1). The in-person group having 11 participants and the online group having 7 participants. The full sample included 18 participants, though 1 adolescent in each of the two groups discontinued participation before the midpoint of the manualized intervention portion of the study, both citing homework pressure as the reason for discontinuing. Of the participants who remained in the study for its entire duration (n=16), each group included at least one female with ASD (two in the in-person group and one in the online group). Additionally, the in-person group included a typically developing sibling (female, age 12) and the online group included a prior graduate of the in-person group (male, age 14) as typical/experienced peers. To protect the confidentiality of the female participants, male pronouns will be used in all results and discussions.

Participants in the in-person group lived within Utah County (about a 20-mile radius from BYU). Participants in the online group also lived in Utah County with one exception, who lived in Salt Lake County about 37 miles from BYU Provo campus.

Therapists participating in both groups also provided data regarding their perceptions of the two methods of service delivery. Therapists must have actively participated in both in-person and online delivery methods providing lesson content and regularly interacting with

Table 1

Participant Characteristics

	Male:Female	Age, m (SD) [range]	FSIQ, m (SD) [range]	Verbal IQ, m (SD) [range]	Hispanic Ethnicity
In- Person Group	8:2	13.3 (1) [12-15]	97.1 (17.5) [65-122]	98.4 (22.9) [70-127]	3
Online Group	5:1	13.7 (0.9) [12-15]	100.2 (18.7) [61-118]	93.8 (16) [78-116]	1

adolescent participants. The focus group consisted of two males and two females, all graduate students in School Psychology, all white. The four therapists who participated in the focus group were active therapists in both in-person and online groups. There were four other student therapists invited to the focus group who did not respond (one male, three female, three undergraduate students, one graduate student). Those who didn't respond were not in primary therapist roles in both groups, but were nevertheless invited to participate.

Social Skills Program

The intervention used in the study was the UCLA PEERS® manualized curriculum (Laugeson & Frankel, 2010), including topics as seen in Table 2, with one traditional implementation (clinic-based, in-person group) and one novel implementation using live, online interactive delivery.

Table 2

PEERS® Curriculum (Schedule of Discussion Topics)

Week	Lesson Title
1	Introduction and Conversational Skills I – Trading Information
2	Conversational Skills II – Two-Way Conversation
3	Conversational Skills III – Electronic Communication
4	Choosing Appropriate Friends
5	Appropriate Use of Humor
6	Peer Entry I – Entering a Conversation
7	Peer Entry II – Exiting a Conversation
8	Get Togethers
9	Good Sportsmanship
10	Rejection I – Teasing and Embarrassing Feedback
11	Rejection II – Bullying and Bad Reputations
12	Handling Disagreements
13	Rumors and Gossip
14	Graduation and Termination

The traditional on-site, in-person teen group required families to travel to BYU weekly for 14 weeks for teen sessions with simultaneous parent groups. Adolescents are given direct instruction weekly via a social skills lesson by therapists in one room, while parents are meeting with additional therapists in a separate room to review the weekly lesson to support generalization of social skills learned. Sessions lasted one hour (parent and teen sessions running simultaneously), with extra time at the end of sessions to reunite parents and teens, review homework, and “shop for prizes” to spend points that have been earned for participation during the session.

The novel setting used an online videoconferencing platform, with adaptations for prizes (e.g., Amazon e-gift cards). Parent groups (part of the UCLA PEERS® curriculum) for the online group were held immediately following the teen session, also online and lasting one hour. School Psychology graduate students and some advanced undergraduate psychology students were therapists for both settings, trained and supervised by Terisa Gabrielsen, licensed psychologist.

The UCLA PEERS® curriculum has longstanding empirical support and is widely used in the United States (Laugeson, Gantman, Kapp, Orenski, & Ellingsen, 2015). Some required elements of the PEERS® curriculum needed to be adapted to the online setting. Table 3 shows a comparison of core PEERS® elements and how they were delivered for the in-person group and the online group.

Technological Compatibility – Online Group

An appointment was made with each family in the online group to ensure that their Internet and computer capabilities were adequate for the use of Zoom. Each family needed to have high-speed Internet access, a device with a camera, and a microphone (e.g., computer,

Table 3

PEERS® Elements Comparison

	In-Person Group	Online Group
Lesson Delivery	Posters with discussion and role plays	Screen shared PowerPoints with discussion and role plays
Token Economy	Points on a whiteboard for participation – points can be exchanged for various items in a prize box	Points recorded on the white board that were visible to participants (as one of the participant screens), points were determining factor for value on an Amazon gift card
Homework	Given each week (e.g., phone call, get together, joining a group)	
Sharing Items	Shown to the group in the room	Shown over the webcam to the group
Role Play Exercise	Partnering off while staying in main classroom, therapists monitoring and facilitating	Divided and sent to various “breakout rooms” electronically with partners and a therapist for small group discussions
Jeopardy	Paper-based poster game	Screen shared interactive PowerPoint from online template <i>Jeopardy</i> (Alesbrook, 2016).
Indoor Games	Card and board games brought to the classroom	Various online adaptations of popular games (e.g., Apples to Apples™, Balderdash™, HeadBanz™) played in breakout rooms, plus in-person card and board games during the on campus meetings at the end of the intervention.
Outdoor Games	Played during the last few sessions at regular location	Played during on-campus meetings at the end of the intervention.
Parent Sessions	Parent sessions held simultaneously in a different room with a therapist	Parent sessions held online immediately <i>following</i> the session with adolescents with a therapist

laptop, tablet, or smartphone). A Zoom tutorial PowerPoint was created by therapists and sent by email in advance, and each of the functions of Zoom that would be used during sessions were tested for both parents and teens during this individual preparatory session. Necessary functions included the following: (a) starting video and audio, as well as how to control the mute button; (b) entering a name for your screen; (c) going to a breakout room; (d) changing to “Gallery View” to see everyone at once; (e) “pinning” the video of the therapists while they were delivering the lesson content (e.g., to see the PowerPoint full screen; and (f) using the Chat feature. Both parents and adolescents participated in these individual preparatory sessions. Rules for online etiquette were also reviewed in this introductory session. Participation in the in-person group required only email communication skills on the part of the parents in terms of technology.

One incidental finding during the technology practice sessions was that although Zoom functions are available regardless of device (laptop, iPad, smartphone, etc.), the navigation tools on screens are different enough on iPads or smartphones (e.g., ability to rename their screen presence once the meeting had started) that participants weren’t able to navigate as easily as those on a laptop.

Measures

Autism symptom verification. Autism symptoms, including cognitive abilities were verified for participants in both groups. Participants in both groups visited campus outside of their regular group meeting times to complete assessment visits. These included the Autism Diagnostic Observation Schedule, Second Edition (Lord et al., 2012) by research reliable clinicians, and a standardized cognitive assessment, e.g., Wechsler Intelligence Scale for Children, Fifth Edition (Wechsler, 2014), Stanford-Binet Intelligence Scales, Fifth Edition (Roid,

2003), Wechsler Non-Verbal Scale of Ability (Wechsler & Naglieri, 2006) or Differential Ability Scales, Second Edition (Elliott, 2007). The Social Communication Questionnaire (Lifetime form; Rutter, Bailey, & Lord, 2003), a parent report measure of autism symptoms around ages 4-5 or ever, was also used to verify autism diagnosis. These scales were all administered by trained research personnel. There was also a demographic survey that was filled out by each participant's parents that documents age of diagnosis, educational classification, etc.

Participation. Participation rates were of interest in the study to determine if the mode of delivery changed the way participants interacted within the intervention sessions. Attendance and participation rates (e.g., points tallied for participation) were analyzed. Any appearance during an online call would be counted as an adolescent "attending" the session. Data were gathered through video recordings (both in-person and online) to verify the records kept for each session. These findings are very preliminary, and will be analyzed in more detail in a subsequent study.

Feasibility outcome measures. The scales used in this study as pre- and post-intervention measures include the following: the Social Communication Questionnaire (SCQ; Current form; Rutter, Bailey, & Lord, 2003), the Social Responsiveness Scales (SRS; 2nd Edition; Constantino, 2012), and the Autism Social Skills Profile (ASSP; Bellini & Hopf, 2007). Each of these scales were used to monitor any changes in social skills. All are parent report measures of social behavior. The SRS-2 and ASSP have subscales available, but the psychometric properties of the subscales have not yet been established well enough for research purposes (Rutter, Bailey, & Lord, 2003; Bellini & Hopf, 2007). Total scores and raw scores were used in this first look at any changes. At the completion of each 14-week group sessions, the Treatment Acceptability Rating Form-Revised (TARF; Reimers, Wacker, & Cooper, 1991) was

sent out to participants (both parents and adolescents) via email to measure perceptions about social validity. A focus group, including therapists who participated in both in-person and online groups, was also held to collect negative and positive feedback about the delivery of each group given their experience with both. This focus group was asked to rate the acceptability of social skills online groups and their general impressions of how they felt the group went.

Design

This feasibility study was designed using mixed methods to analyze comparisons between a pilot of the novel online delivery method and the traditional in-person delivery, evaluating the acceptability of the delivery methods, the positive and negative aspects of online delivery, and gathering preliminary data regarding differences in social function and generalization effects between the traditional in-person group and this new method of online delivery. Comparisons were made between the two groups using qualitative and quantitative data. Sample sizes were small, but pilot data are informative for subsequent implementation of study sessions and groups.

Online teleconferencing platform. The online group participated in weekly sessions using the video conferencing program, Zoom. The Zoom platform facilitated observational data collection because each participant's video and audio signals could easily be recorded within the Zoom program. These recordings were securely uploaded to a university shared drive account with firewall protections. This allowed for data collection for a subsequent study, but also allowed us to post parent session recordings (at their request) to a password-protected cloud storage file for parents who missed a session. Adolescent sessions were not posted for participants who missed, however. During sessions, the sharing of PowerPoints and videos (screen sharing) was also possible on Zoom and this was done directly to the participant's

personal computer screen. Utilizing the Zoom platform also allowed for video examples of social behaviors to be used (without a projector, as would be necessary in the in-person group) and shared to the participants, in addition to live role plays by therapists.

Breakout sessions. The small group behavioral rehearsals written in the PEERS® curriculum were accomplished on Zoom by using the “breakout room” feature. The Zoom meeting host was able to choose individuals to go to breakout rooms with each other in groups of two or three, varying the composition of the breakout practice sessions each time. The host could select and vary which participants went to a room, thus helping adolescents develop social flexibility and reach outside their comfort zone. According to the PEERS® curriculum, female participants should be in groups with other females whenever possible. Because we had only one female in the online group, she was paired with adult female therapists. An adult (university student therapist) was also allocated to each breakout room to monitor safety; however, adults also facilitated conversation as they would in the in-person behavioral rehearsal groups. Groups were timed and the host ended the breakout with a 60-second warning after 3-10 minutes of breakout (variable according to the task given within the group). Participants could return to the main group before the one-minute warning, any time after the warning, or they could be automatically returned at the end of the 60 seconds.

Parent sessions. Parents participated in the parent sessions included in the PEERS® curriculum online as well. Logistics in terms of equipment and bandwidth prohibited a simultaneous parent group meeting, so parents joined the Zoom meeting as soon as the adolescent group finished (e.g., the adolescent left the screen to tell parents it was time for the parent session). We asked parents to make sure they used earphones (which were not required for adolescent participation) or participated in a part of the house that prohibited the adolescent

from eavesdropping on the parent sessions. This was done to maximize confidentiality of disclosures and questions asked by parents within the session. Parents could see and hear each other at all times, as screen shares were rarely used in the parent session. Parents sometimes raised their hands to respond and pose questions to the group, but they were also able to judge an appropriate gap in conversation and initiate a comment without being called on.

Generalization probes. Because of the inherent differences between the two intervention delivery environments, the only aspect of the participants' experiences that was directly comparable across conditions was the generalization probe phase conducted on campus once the 14-session intervention was completed for each group. These probes consisted of the groups meeting on campus to tour a museum, go bowling, eat fast food in the student center, play indoor games with party food, and play outdoor games with each other and family members. The adult therapists accompanied the participants on these outings, acting as "typical peers" and to monitor safety. This gave all online participants an opportunity to meet in real life. Data from these probes will be reported separately.

Behavior management systems. A token economy was used in both delivery models that allowed for points to be earned for participation, attendance, and doing homework. For the in-person group, participants could see the points they were earning by looking at the large white board in the room (one therapist was assigned to tally points each week). The online group could also view their points as they were tallied, but the tally board was one of many screens visible in "Gallery View" on Zoom (thus much smaller and less noticeable). These point tallies could be exchanged for small items of interest in a "prize box" for the in-person group, or Amazon gift cards. Response costs were *not* incorporated into the behavior management system.

Analysis

Feasibility. Quantitative data regarding attendance (parent and teen), attrition, and participation rates were analyzed using descriptive statistical methods. Descriptive statistics from the participants (both parents and adolescents) through the TARF were used to document acceptability. TARF questions are detailed in the Results section. Qualitative data from a therapist focus group were analyzed to determine positive aspects as well as challenges associated with online delivery of social skills. These data were analyzed using Consensual Qualitative Research (CQR) methodology with another research assistant to provide consensus on themes in the discussion.

Comparison data. A comparison of pre-/post-intervention social skills and communication data (obtained through the SRS, SCQ and ASSP) were completed to identify if utilizing an online delivery of social skills is comparable to using an in-person, traditional design. Descriptive statistical methods (e.g., means, and standard deviations) were used.

Results

This study sought to explore if adapting the PEERS® social skills curriculum would be feasible in an online, live and interactive format. Four research questions were considered to determine overall feasibility and acceptability when comparing an in-person and online modality for delivering a social skills curriculum.

Acceptability of the Online Delivery of Social Skills

A TARF survey was emailed to all participants (both parents and adolescents in both groups) after the concluding session of the PEERS® program. Of those contacted, 6 (37.5%) parents and 3 (18.75%) adolescents responded. No participants in the in-person group completed the TARF survey; however, opinions of the those in the online group who participated were

more helpful to determine overall feasibility of an online intervention. Participants responded to questions using a 7-point Likert scale where a score of 1 indicates “not at all,” a score of 4 indicates “neutral,” and a score of 7 indicates “very much” (2= “a little,” 3= “some,” 5= “a lot,” 6= “quite a lot.”)

Overall, when parents were asked, “How acceptable do you find the strategies for teaching social skills in your child’s group?” the mean score was 5.83, which was comparable to the adolescents’ answer to a similar question, “How much do you like the way they teach social skills in your group?” with a mean of 5.33. These scores indicate that parents and adolescents feel the online social skills was “a lot” to “quite a lot” acceptable. Of the parents, 83% (5 out of 6) responded that they found the online platform “a lot” or “quite a lot” acceptable.

Parents were asked, “To what extent do you think there might be disadvantages to attending the social skills group [online]?” To this question, the mean response was 1.17 with 83% (5 out of 6) parents reporting “not at all.” When asked the adolescents a similar question about the amount of disadvantages for coming to social skills, 100% (3 out of 3) responded “a little.” These adolescents also responded unanimously that it bothers them “a little” to join the group. However, when the adolescents were asked, “How easy is it for your family to join the social skills group?” the mean of responses was 5.33 (“a lot”).

Participants were asked how willing they would be to recommend the social skills group to others. Parent responses had a mean of 6.67 with 100% (6 out of 6) parents responded “quite a lot” or “very much.” Adolescent responses had a mean of 4.87, with two responding “a lot” and one responding “neutral” to their recommendation level. Adolescents were asked, “How much of a difference does the social skills group make in your life?” in which the mean response

was a 5 indicating “a lot.” Table 4 summarizes comparison questions between parents and adolescents in the TARF survey.

Table 4

TARF Survey Parent/Adolescent Comparison

Mean scores	Parents	Adolescents'
“How acceptable do you find the strategies for teaching social skills in your [child’s] group?”	5.83	5.33
“To what extent do you think there might be disadvantages to attending the social skills group online?”	1.17	2
“How willing would you be to recommend the social skills group to others?”	6.67	4.87

Note. Scores based on a 7-point Likert scale where 1 indicates “not at all,” and 4 indicates “neutral,” and a score of 7 indicates “very much” (2= “a little,” 3= “some,” 5= “a lot,” 6= “quite a lot.”).

Therapist impressions. Therapists who participated in both in-person and online social skills groups were contacted to attend a focus group to discuss their overall impressions of the online delivery of social skills. Of those contacted (8), four responded to participate. These four therapists were the main, “active” therapists in both the in-person and online groups, teaching the lessons and managing the sessions (as opposed to more passive roles such as tallying points or writing notes). These therapists were asked, “Given the choice, would you rather facilitate an online or an in-person social skills group?” While all the therapists noted the positive aspects that can come through the online delivery of social skills, all reported they would feel most comfortable teaching an in-person social skills group. However, the majority felt that the online delivery would be acceptable and beneficial if an in-person group wasn’t an option. These

therapists agreed that the online social skills group was a safe forum that was appropriate for teaching social skills, so long as limitations are recognized.

Participation. Quantitative data regarding attendance, attrition, and participation rates were also analyzed to measure the feasibility of the online delivery of social skills. Looking at both the in-person and online groups, there was one individual in each group who discontinued participation before the midpoint of the manualized intervention portion of the study. Both of these individuals stated academic pressure (i.e., homework) as their reason for discontinuing. Both were high school students. The average attendance rate for the in-person group was 84.38% with a standard deviation of 15.1%. The average attendance rate for the online group appears higher at 91.03% with a standard deviation of 12.32%. There were two days during the in-person group that two families were unable to attend due to weather conditions.

In looking at the participation rates of the in-person group and the online group during social skills instruction, there was a significant difference in the number of participation points awarded ($\alpha=0.03$) to the different groups. The in-person participant earned an average of 8.7 points per session ($SD=5.18$) while in the online group, a participant earned an average of 5.23 points per session ($SD=3.19$). In looking at the total number of points earned at the conclusion of all the social skills lessons, each participant in the in-person group averaged a total of 87.8 points ($SD=31.1$, where in the online group, participants only averaged a total of 49.2 ($SD=27.2$).

Positive Aspects of the Online Delivery of Social Skills Intervention

Qualitative data from a therapist focus group were analyzed to determine the overall positive aspects of the online delivery of social skills. These data were analyzed using Consensual Qualitative Research (CQR) methodology to identify themes in the discussion. In looking at the therapist focus group, two main themes were identified to encompass the positive

aspects of the online delivery of social skills. These themes include the ability to reach more people and the ability to better manage behavior.

Reach more people. During the focus group, therapists discussed one of the biggest benefits of an online delivery of social skills is the ability to reach more people. With the accessibility of the Internet, participants can virtually attend an online social skills group from anywhere. This can help those individuals in rural settings who may not be able to attend an in-person group due to distance, cost, etc. However, more often than not, the therapists in the focus group talked less about reaching more individuals geographically, and more about reaching a different demographic group that either couldn't or wouldn't attend an in-person group.

Therapists commented that these adolescents are probably more comfortable in online settings and thus it may feel like a safer forum to learn new skills. One therapist stated that, "participation in an online group can act as a bridge to in-person interactions." The therapists in the focus group talked about the online group feeling less demanding for social interactions and a place a comfort. Another therapist commented that by utilizing an online delivery of social skills group we can "reach them [the adolescents] in a place they are comfortable and speak a language that is theirs."

When asked if they felt the participants made similar progress to the in-person group, therapists made comments about the groups being inherently too different to compare. The therapists had hoped that the online participants benefited as much from their teaching, but also recognized that the online participants may have had more severe needs coming into the group. For example, one participant in the online group was previous dismissed from a community social skills group for being too disruptive. The online delivery of social skills was a great alternative for this particular individual who was not able to attend an in-person group

successfully. Therapists mentioned another participant who had so much social anxiety, the participant had previously refused to attend an in-person group; however, the safer environment of attending online made it possible for this participant to learn some social skills.

One therapist made a comment that “[an online social skills group] seems to be helpful for those kids that have more needs and have no other options.” The theme or idea of reaching more people through an online delivery of social skills seemed to be a strong benefit that therapists agreed on unanimously. The online delivery of social skills can be particularly appropriate for individuals with a different level of skills that either can’t or won’t attend a social skills group to learn new skills unless an online delivery is an option. An online, live, interactive setting for adolescents to learn social skills seems to be a great alternative for those individuals who have no other options.

Behavior management. In a classroom environment, as is seen during an in-person social skills group, adolescents often tend to sit next to those peers they feel the most comfortable with. Since behavioral rehearsals were sometimes assigned to participants sitting near each other, and some may choose their seating according to a preference for another participant, there may be less variability in conversations when the adolescents are asked to practice skills with those around them. During the focus group, the therapists commented how they were able to better control these “breakout” groups by strategically selecting participants to engage with one another in the break-out rooms. This management helped increase the variety of conversations and interactions which may have led to better development in flexibility of social skills.

In addition to the management of social behaviors in the online environment, therapists also reported an overall ease of managing disruptive behaviors. More ability to reduce the

impact of excessive, inappropriate behaviors potentially led to more effective teaching and lessons. For example, therapists mentioned the ability to mute participants, turn off video for participants if necessary due to inappropriate behavior, and electronically removing participants entirely from the group if needed. No participants were removed from the group, and although muting was incorporated frequently for participants not observing turn-taking rules, turning the camera off was never done. Having an online environment for teaching allows for the control of these behaviors that wouldn't typically be controllable in an in-person setting.

One online participant appeared in the online group one week without wearing a shirt. This is one example of how given an online setting, the therapists could control some behaviors by turning off the video of the participant to not be a distraction for others. However, one could argue that these behaviors are occurring with more frequency given an online setting (i.e., someone may feel more comfortable to take off their shirt at home rather than in a classroom environment, not realizing that the online environment is more public than he may feel in his bedroom). This idea that observable behaviors, on the whole, may also be *less* controllable given an online environment was a common theme around the challenges of the online delivery of social skills. This theme will be further discussed in the following section.

Challenges of the Online Delivery of Social Skills Intervention

Qualitative data from the therapist focus group was also analyzed to determine the challenges associated with online delivery of social skills. Consensual Qualitative Research (CQR) methodology was used to identify themes within the discussion. After analyzing the focus group discussions, three main themes were identified as the core challenges of the online delivery of social skills intervention. These themes included behavior management, less connection and the teaching element being more difficult.

Behavior management. While there were many behaviors that were potentially more manageable in the online environment (e.g., ability to mute talkouts), there were also many behaviors that weren't as manageable. For example, participants in the online group had the liberty to log-off and leave a session at any time. Adolescents in the in-person group, however, were typically brought to campus by parents and would have to stay through the duration of the lesson. Being remotely connected to the social skills group from home gave adolescents more freedom to come and go throughout a session as they pleased. Therapists commented that attention (if not attendance) felt like less of a priority for those participants in the online group when compared to the in-person group. This may be because participants did not have as much of a sense of being observed or being in public.

Being connected online from home could potentially lead to more technical difficulties and distractions. Therapists mentioned that utilizing an online platform could potentially increase technical issues; however, within the online group, the only technical problem was that laptops would occasionally run out of battery power mid-session. In these instances, participants would plug in and rejoin the session shortly thereafter each time. For distractions, therapists mentioned how it wouldn't be uncommon to see pets join the session on occasion. These distractions may have led participants to be more focused on other things rather than paying attention to the social skills lesson. In one case, the ability of a pet to be held during the session was also an advantage, as the pet became a "shared item," prompting conversation. It may be difficult to pay strict attention to a 2-D environment on a screen when there is a 3-D home environment happening in the surrounding area.

In looking at the parent sessions, therapists commented how parents sometimes couldn't find a quiet place to engage in the conversation or in one instance a parent attended sessions

while walking around their house trying to avoid the distraction of their adolescent. Therapists were surprised at the minimal evidence of technical difficulties. With the exception of a few bad connections, sessions had good video and sound. Again, the only big technical difficulty was that the online group ran into was laptop batteries dying mid-way through the session. In every instance, participants logged back on after connecting to power. There was one participant with many difficulties managing an external camera connected to a computer who ultimately left the group for academic reasons (homework, as was mentioned previously).

Less personal connection. Many of the therapists echoed the same thought during the focus group that connections are harder to form online. In comparing their experiences for teaching the in-person group to the online group, all therapists felt more connection and cohesion within the in-person group (both for the adolescents and the parents). Therapists shared their opinions on which group they would prefer teaching if given the choice and they unanimously agreed that while there are many benefits to teaching online, the connection they felt in person persuaded them to choose to teach in person as their preference.

Therapists discussed their perceptions about why this connection was different for both groups. They commented that during the in-person group, participants and parents could engage in side conversations, sharing of ideas, chatting before/after the session, as well as knowing one another's students (or parents), all of which could potentially lead to a strong feeling of cohesion. There is also a lack of real face-to-face connection online, where non-verbal feedback (body language, distance, etc.) is more difficult to read. When participants met in person for the on-campus activities, they invariably commented that people (other members of the group) look different in real life. Therapists also shared that they felt parents may have found the ability to share/bond during the online group was more difficult than it was for those in the in-person

group. Environmental factors proved to be important for parents in the in-person group, as their openness and cohesion as a group improved dramatically with a change to a smaller, more intimate setting (Rosenbaum, 2018).

Teaching aspect is more difficult. There are many differences that can arise through different formats of teaching (via in-person and online). Therapists discussed during their focus group that teaching social skills through an online format was more challenging than was teaching social skills in-person. This is especially interesting to note, because for each of the therapists, they first taught in-person groups (thus learning strategies and practicing) before teaching online (where teaching skills are more advanced due to practice).

Therapists' perceptions of teaching in both delivery models included the added difficulty for facilitating conversation between students (or parents) online, as well as getting the interpersonal affect. Therapists felt that it was easier for adolescents to "fall between the cracks" and not participate given the online setting whereas in the in-person group it felt easier to implement rules and encourage all adolescents to participate similarly. Therapists also reported that it "seemed to take more people to run the online group," making teaching an online social skills group less effective for teacher to student ratios. Therapists personally preferred teaching in person due to the ability to more naturally model social skills as well as reinforce behaviors more immediately and effectively.

Differences in Social Communication Between Online and Traditional In-Person Delivery

Data from the pilot groups allowed a preliminary comparison of the changes in social skills (as reported by parents through pre/post intervention questionnaires). These data were used to help compare differences in the in-person and online social skills groups. Several parents

did not complete one of the pre- or post-intervention questionnaires, so an element of selection bias may exist, and those scores will not be analyzed with the current data.

In looking at the Autism Social Skills Profile (Bellini & Hopf, 2007) questionnaire data, parents rated their adolescent's overall social functioning both before the social skills group began and after the group ended (for both in-person and online delivery groups). From the online group, 6 parents completed both pre-/post-intervention questionnaires on the ASSP and a total of 7 parents from the in-person group completed both pre-/post-intervention ASSP questionnaires. Data from these groups are summarized in Table 5. The measure looks at repertoire of social skills within an individual, thus a higher score indicates a larger repertoire. It is expected the scores on the ASSP should increase after a social skills group.

Table 5

Pre/Post Autism Social Skills Profile Data

	N	Pre-ASSP, m (SD) [range]	Post-ASSP, m (SD) [range]	Difference in ASSP (increase in skills)
In-Person Group	7	84.43 (14.95) [60-103]	102.14 (10.22) [84-118]	17.71
Online Group	6	92.67 (9.79) [79-108]	112.17 (19.37) [86-144]	19.5

Note. ASSP= Autism Social Skills Profile

Total ASSP scores indicate the overall level of social functioning in individuals with ASD. A higher total score indicates more social skills. A study by Bellini & Hopf (2007) analyzed the psychometrics of the ASSP and found a mean score of 106 within an ASD population.

The in-person group had an average score of 84.43 on the ASSP before starting the intervention and an average score of 102.14 after intervention, whereas the online group had an average score of 92.67 prior to beginning the group and an average score of 112.17 on the ASSP

at the conclusion of the group. It appears that both groups increased similarly in scores on the ASSP over time.

Differences in social communication scores for participants in the online delivery of social skills were also measured by using the pre- and post-intervention data from the Social Responsiveness Scales (2nd Edition; Constantino, 2012), as completed by parents before and after social skills intervention. The SRS-2 provides measures of social communication impairment as well as repetitive/restricted behaviors that may be related to autism spectrum disorders, with lower scores indicating *fewer* social impairments. Because the PEERS® curriculum focuses on social skills of making and keeping friends and does not have explicit teaching for areas of restricted behaviors, the total social communication/interaction index (SCI) was analyzed rather than the total score from the SRS-2, which includes areas of repetitive/restricted behaviors. Both pre- and post-intervention SRS-2 scores were received from 10 in-person parents and 3 online parents. Data from these groups are summarized in Table 6.

Table 6

Pre/Post Social Responsiveness Scales, Second Edition Data

	N	Pre-SCI, m (SD) [range]	Post-SCI, m (SD) [range]	Difference in SRS Scores
In-Person Group	10	90.4 (23.81) [62-130]	81.8 (16.09) [53-105]	-8.6
Online Group	3	83 (23.73) [66-102]	60 (30.41) [25-80]	-23

Note. SCI= Social Communication Index

Total SCI scores are reported using raw scores, which can range from 0 – above 125. Higher scores indicate *more* social impairments.

The in-person group had an average SCI score of 90.4 on the SRS-2 measure before starting social skills and an average SCI score of 81.8 after intervention, whereas the online group had an average SCI score of 83 prior to beginning the group and an average SCI score of 60 on the SRS-2 measure at the conclusion of the group. It appears that by parent report, both groups decreased in SCI measures of impairment over time.

A final look at the difference in social communication for the online delivery of social skills was measured by using the pre- and post-intervention data from the Social Communication Questionnaire Current form (Rutter, Bailey, & Lord, 2003). The SCQ questionnaire was completed by parents before and after social skills intervention to measure their adolescent's social communication development. A score of 15 or above indicates the possibility of the individual having significant social communication difficulties. The more elevated the score, the more significant the social communication difficulties. Pre- and post-intervention SCQ measures were received from 10 in-person parents and 4 online parents. Data from these groups are summarized in Table 7.

The in-person group had an average score of 16.7 on the SCQ before starting social skills and an average score of 14.7 after intervention, whereas the online group had an average score of 17.25 prior to beginning the group and an average score of 14.25 on the SCQ at the conclusion of the group. Both groups appeared to decrease over time. It is interesting to note, however, that the average scores for each group were above the cutoff for concern (sufficient autism symptoms to warrant a comprehensive evaluation for autism) before the intervention, and the average score of both groups after the intervention was slightly below the cutoff of 15.

Table 7

Pre/Post Social Communication Questionnaire Data

	N	Pre-SCQ, m (SD) [range]	Post-SCQ, m (SD) [range]	Difference in SCQ
In-Person Group	10	16.7 (4.83) [10-25]	14.7 (5.81) [6-27]	-2
Online Group	4	17.25 (8.96) [7-27]	14.25 (7.27) [7-21]	-3

Note. SCQ= Social Communication Questionnaire

A score of 15 or above indicates the possibility of the individual having significant social communication difficulties.

Discussion

This study found that utilizing a live, interactive online delivery model to teach group social skills is comparable to teaching social skills in an in-person setting in many ways. Not only are the acquisition of social skills similar between these two groups, but parents and adolescents found the online delivery experience to be acceptable. Although therapists prefer an in-person setting, many can see the benefits of holding a social skills group online. There are unique advantages, as well as some disadvantages, for teaching social skills through an online delivery. The following section will highlight some of those aspects. Overall, this pilot study found that adapting the PEERS® social skills curriculum from an in-person setting to an online, live format is feasible and acceptable.

Feasibility

Both adolescents and their parents reported that the online format was easy to use. An online modality offers relative safety and comfort for some participants, making it easier to join.

The convenience of “logging on,” rather than driving to a group, may have resulted in increased attendance rates. The online social skills group had a non-significant, slightly higher attendance rates (91%) than the in-person group (84%). The in-person group was held during winter months, so some effects on participation may have been weather related.

Acceptability

The teenagers participating in the online group were asked, “How much of a difference does the social skills group make in your life?” Every adolescent that answered this question responded with the maximum point value, indicating “a lot.” Whether or not social skills were actually gained by participating in the online group, participants felt that what they were learning was making a difference in their lives. All participants (parents and adolescents) responded that they would be willing (or neutral) to recommend online social skills to others. Therapists also felt that the online delivery of social skills was acceptable and beneficial for the adolescents who participated.

Advantages

Teaching social skills in an online delivery modality presents many advantages that cannot be achieved through an in-person format. Online social skills has the potential to reach more people, as participants can access the Internet from anywhere. Participants shared that the online program was easy to access (5.33 or “a lot” on a 1-7 Likert scale) from the comfort of their own home, and participants could attend more conveniently. With online social skills, therapists have the potential to reach individuals in underserved area that do not have access to any other curriculum (Azano & Tackett, 2017). In addition to that, the results of this pilot study indicate that online social skills may increase access in ways other than geographical isolation.

Therapists commented that an online social skills group has the potential to reach individuals who either wouldn't or couldn't attend an in-person group.

Attendance rates from the in-person group (84.4%) and the online group (91%) indicate that participants may have an easier time attending from their own home. The in-person group was held during winter months, and there were at least two occasions where two families couldn't attend due to weather conditions. Had these two families been able to access the social skills group remotely (via online), the attendance rate would have been less different. Thus, one advantage for an online setting is the ability to attend despite weather conditions or other transportation challenges.

Therapists found that behavioral management seemed easier in an online setting with video and audio controls. This way of managing challenging behaviors is one of the unique advantages to an online setting. Therapists could mute participants if they were being repetitively disruptive and impeding the other participants from learning, whereas in person, one of the adults would typically bring the disruptive or disrespectful participant out into the hall, taking them out of the room and return with them when the disruption was over. One participant in the online session had to be muted frequently, because he wouldn't pay attention to others and often talked over them. This individual became frustrated as Zoom would announce "you have been muted." Therapists worked with him (via the chat box and parent notes) to remember rules of the group (raise your hand to talk). His hand-raising improved over the course of the session, thus this behavioral management proved to be an advantage to an online social skills group.

Therapists also had more ability to micromanage conversations utilizing breakout rooms. Instead of participants only conversing with those they feel comfortable, therapists could encourage variability by assigning adolescents to different breakout rooms. This "forced"

participants to reach outside their comfort zone and develop more flexibility. This social flexibility can be a useful skill in the real world while navigating everyday social situations. Another participant in the online group had severe social anxiety. He had previously refused to attend an in-person group because of these anxious feelings. He reluctantly agreed to participate in online social skills, although would frequently log off early (sometimes after 10 minutes) when beginning to feel anxious. Therapists worked with him one-on-one (or rather “two-on-two” as he wanted to have his dog and the therapist’s dog participate as well), during the week to build up endurance and familiarity with the online setting. Eventually he was able to attend an entire online session.

An online setting for social skills can be advantageous as it helps those who won’t attend in-person feel more comfortable. There was another socially anxious participant who was in the in-person group. His attendance was 58% because it was very difficult for his mom to get him to come. The one difference between this individual and the individual in the online group with social anxiety is that if he came to the in-person group, he had to stay. During the first several weeks, his mom had to sit with him in the adolescent’s social skill room to keep him calm. Mom commented that leaving the house was always a big deal. This particular individual may have benefitted from an online setting because of its relative comfort. It is also possible that this participant may have benefitted more from the few times he attended and engaged with others than he would have participating solely online, but since he was only in the in-person group, we have no way of verifying that possible effect at this time.

Disadvantages

While any appearance during the social skills session in either group was calculated as “attended,” therapists noted that one online participant tended to log off early and/or join late

which was noticed less in the in-person group, with the exception of transportation problems. Despite the apparent higher attendance rates, and the ease of joining remotely from home, it appeared that in the online setting, attendance was less of an “appointment” priority to participants. Researchers speculate that unlike an appointment to be somewhere, joining online is casual and participants began to treat sessions as less formal. It is also possible that participants had more autonomy in joining the online group, as their parents did not drive them there at the appointed time, as in the in-person group. It is unknown how much parents were monitoring their teen’s punctuality, endurance, and attention online.

An online modality may prove to be a disadvantage as adolescents can more easily “hide behind their computer.” The relative safety and security of being at home while participating led to more distractions and less connection. Therapists commented that informal, side conversations were harder to facilitate, which made getting to know participants difficult. Simultaneous conversations were also impossible in the online environment and common in the in-person environment. One could argue that the purpose of a social skills group is to practice social interactions, which can be difficult give an online setting. Being in front of a screen, rather than in front of a person, required less participation and interaction. Spontaneous conversations were more stilted when the online rules included raising your hand to be called on to talk (i.e., they became 3-way conversations, with the therapist granting permission to talk).

Therapists commented that the lack of connection they felt to the online group was a big factor in deciding which group they would rather administer. Personal connections were difficult to find, as there was maybe less perceived opportunity for before session/after session chit-chat with therapists to parents or adolescents. This also made it difficult for the parents to get to know other parents’ adolescents, which made supporting one another in the parent group more

challenging. Without knowing/meeting the other adolescents, parents were often just hearing a story about a name in the online group. It is also possible that the lack of in-person indoor game playing in the online group impacted connections as well. Playing online games can be more difficult to get to know others than playing them in-person.

Along with the lack of connection adding to the difficulty of teaching online social skills, therapists commented that the online group seemed less efficient to run. The online group was much smaller, than the in-person group. During the pilot session, more therapists than usual were included in the group each week to add to the group size in hopes of facilitating more conversation, but this may have been a barrier instead. While it was helpful to include an adult therapist in each breakout room (with 2-3 participants), the presence of adults in the main session may have limited conversation between participants, as therapists typically reported more participation in breakout rooms. Adult therapists were also needed to record breakout sessions for data collection. These factors may have increased the overall facilitator to student ratios in the online group at any given time. Instead of the typical four therapists running each in-person group (two facilitators, one to tally points, and one to take therapy notes (these last two were training to become facilitators), there were typically five to six therapists *in* the online group. For the in-person group, the two additional facilitators were *in the parent session* at the same time. The actual number of therapists, then, was more similar than not (about six). The in-person group's ability to run the parent group at the same time may have affected the perception of the number of therapists. The training and research needs for therapists may not be as important in community groups, so fewer therapists may be able to successfully run either type of group. Instead of two facilitators, one is more practical, for example, with the second facilitator filling roles of point tallying and taking notes.

Participation rates of the in-person and the online group differed significantly, with the in-person group generating more participants points per session (8.7, SD=5.18), on average, than the online group (5.23, SD=3.19). The total number of participation points at the conclusion of the sessions was also significantly lower for the each online participant (m=49.2) than each in-person participant (m=87.8). While differences in total points may be due to different therapists awarding points, all therapists were trained on when to award points (completion of homework, answering questions, etc.) The difference in points may be due to the logistics of the online environment (only one person could talk at a time), and it may have been easier to not participate online. Another possibility is that tallying points in an online environment may be more challenging than seeing the group as a whole in a classroom-type setting. The value of the points as reinforcement may also have been impacted by the reduced visibility of the tally board online and the immediacy of reward was delayed as Amazon gift cards were only sent every 3-4 weeks, as opposed to the weekly ability to “shop” in the prize box in the in-person group.

Limitations

The nature of the online group was less appealing for some families, more appealing for others. This introduced an element of selection bias, as some families chose to wait rather than participate in online groups. The total sample size for the online social skills group was small, but extension of recruitment was abandoned in favor of providing services in a timely manner. Because initial recruitment asked parents just to report that their teens had age appropriate language and cognitive abilities, and because of small sample sizes, there was also great variance in ability levels across the spectrum in both groups. Although both in-person and online groups had IQ outliers, they ultimately were evenly matched.

Small sample sizes are also related to the first trial of the online service delivery model. Although the in-person group service delivery model is well-accepted and has been run successfully for several years, the uncertainties of the online service delivery model seemed easier to deal with given the smaller online group size. Further study is underway on a large online group to better compare results. All quantitative results are thus very preliminary.

When collecting data from parent participants, no parents from the in-person group completed the TARF survey and no adolescents from the in-person group completed the survey. While this may seem to be a limitation, this study sought to assess the feasibility of an online social skills group, thus responses from those in the online group were the data most relevant to answer research questions regarding feasibility and acceptability. Preference was not among the research questions in this study.

Directions for Future Research

This study sought to explore the feasibility of an online social skills group and discuss methodology. Preliminary data from this study shows that an online social skills setting is comparable to an in-person setting. More replication studies should be conducted to help strengthen data. Further studies would add diversity and a range of experiences to this pilot study. One suggestion is a hybrid study where the same group would experience both an in-person and online social skills group. These participants could then give feedback on their experience with both. Another suggestion is to research participant satisfaction related to distance from campus, where meeting in person would not be feasible and measuring if satisfaction is similar.

Future studies should remember the disadvantages/limitations that come through utilizing an online platform for teaching social skills. The current pilot study found many tips and tricks

to make a future group run more smoothly. These findings are likely to prove useful in further studies, allowing for more fine-tuned analyses of differences between models and subsequent differences in outcomes for participants.

Implications for Practice

Oftentimes, social skills interventions aren't available in rural or otherwise underserved areas (Azano & Tackett, 2017). This study has found that individuals who virtually participate in real time online may have similar gains in social skills to those participating in person. Overall within this limited sample size, there is little difference in the amount of social skills gained (according to parent report) for participants in online or in-person groups, which is an encouraging outcome regarding delivery models. Regardless of whether an adolescent participated in the PEERS® group online or in person, parents reported some social gains. Utilizing online services for social skills may help “close the gap” in need and availability in underserved areas (Bearss et al., 2018).

There may be a few disadvantages to the online delivery of social skills; however, adolescents appear to not only enjoy the online environment but are improving their social skills as well. Parents and adolescents have reported general satisfaction with this method, and therapists have positive feedback for the online delivery of social skills. The online delivery of social skills intervention is a feasible way to provide access to treatment for adolescents in rural or otherwise underserved areas. Therapists and clinicians in areas with relatively more resources can utilize this method in their future practice to help increase core communication deficits that are often seen in individuals with autism in underserved populations. It is important to distinguish acceptability from preferability, however. Wherever possible, in-person social skills intervention are likely to be preferred by parents and therapists.

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APPENDIX A

Review of Literature

Autism Spectrum Disorder (ASD) a neurological developmental disability that is characterized by impairments in several areas of development, including mild to severe deficits in social communication skills that can lead to socially isolating behaviors (American Psychiatric Association, 2013; Bellini, Benner, & Peters-Myszak, 2009; Johnson, Myers, & Council on Children with Disabilities, 2007). The presence of these social interaction deficits was the primary reason that Kanner (1943) used the term “autism” to characterize a group of 11 children who demonstrated these social interaction and communication impairments. Since then, social deficits have continued as a prominent diagnostic characteristic for ASD (American Psychiatric Association, 2013) and some have even claimed that social impairments are the most critical element in the definition of this disorder (Scattone, 2007). A comprehensive look at current research showed that all definitions of ASD include an emphasis on the social skills deficits, as well as idiosyncratic behaviors (Nikopoulos & Nikopoulou-Smyrni, 2008). There is strong evidence to suggest that these social impairments are lifelong for those individuals diagnosed with ASD (APA, 2013; Howlin, Mawhood, & Rutter, 2000).

The Autism and Developmental Disabilities Monitoring Network (ADDM) and Centers for Disease Control and Prevention (CDC) estimate the current prevalence rates for ASD in the United States to be approximately 1 in 59 children (Baio, 2018). The current prevalence rate is almost double the rate 12 years ago (1 in 110 children in 2006; Christensen et al., 2016), and the need for social skills interventions for children and adolescents with ASD is also growing. Parents may rely heavily on continued support through community groups, school resources and perhaps medication and diet for maintenance and treatment of symptoms and behaviors for their

adolescent/adult with autism. There seems to be sufficient academic and basic behavioral supports available for individuals with autism; however, supports for complex social emotional issues are more difficult to access (Ahlers, Gabrielsen, Lewis, Brady, & Litchford, 2017).

These supports become even more scarce or limited once a child enters adolescence, because early intervention centers and other treatment options (or insurance coverage for treatment) generally become unavailable after an individual with autism reaches a certain age. Significant reduction in the number of formal services available to families of individuals with autism in high school and following the transition out of high school and into early adulthood have been documented (Shattuck, Wagner, Narendorf, Sterzing, & Hensley, 2011). Social skills training programs have proven to be effective in treatment and maintenance of progress, but their existence may be limited, perhaps because adolescent services may be beyond the current capacity of schools and clinics to provide them. Unfortunately, an ASD diagnosis includes lifelong symptoms in social limitations that do not stop when an individual reaches adolescence.

This also becomes a problem, because there are many adolescents with autism typical language and cognitive abilities who are keenly aware of interaction difficulties with their peers as the time comes when “fitting in” is of utmost importance. Many of these individuals will find themselves isolated, rejected or even bullied at school (Laugeson, Frankel, Mogil, & Dillon, 2009). This is often due to their impaired ability to utilize and recognize nonverbal cues including facial expressions such as eye and eyebrow movements, other gestures, and verbal nuances like inflection, jokes, and sarcasm (Bellini et al., 2009). One way these adolescents with autism can receive support to learn these skills is through social support/social skills groups. It is important to teach these social skills because the key building blocks for social relationships (i.e.,

communication, social understanding, and emotional responsiveness) are impaired in individuals with autism (Orsmond, Seltzer, Greenberg, & Krauss, 2006).

Social skill deficits often hinder adolescents with ASD from showing empathy and engaging in regular conversation, causing a social barrier that impedes their ability to create and maintain social relationships which can become a great frustration to the adolescent (Bellini et al., 2009). Only 27% of children with Autism Spectrum Disorders (ASD) in their sample had a best friend in comparison to 41% of children with developmental disabilities having a best friend (Laugeson et al., 2009). This constant struggle with social interactions has led psychologists to develop social skills training programs which have been subsequently researched and implemented. Those who participate in social skills programs are able to successfully reduce anxiety induced mannerisms and increase social awareness and interaction not only during treatment, but also maintaining their progress over time (Laugeson et al., 2012).

Beyond current research's confirmation of the benefits of social skills interventions, Bellini et al. (2009) suggests that increased frequency of intervention could improve effectiveness of the treatment even further but currently, it may be difficult for schools and clinics to provide adequate access to groups that meet even once a week. Given the scientific data supporting these types of social interventions, researchers should be able to focus on further improvements such as this, but are still confronted with the initial issue of inadequate access to the bare essentials. In order to provide children with autism with these beneficial treatments, researchers and therapists need a way to overcome the numerous barriers that hinder access to intervention groups including distance, funding, and compliance with the Health Insurance Portability and Accountability Act (United States, 2004)

PEERS® Curriculum

Intervention for individuals with autism often involves teaching social skills as well as coping skills. One of the manualized social skills programs that is readily available, with consistent evidence is the Program for the Education and Enrichment of Relational Skills (PEERS®; Laugeson & Frankel, 2010). While there are a number of social skills interventions that may be efficacious, PEERS® has been well-validated by multiple sites (e.g., Laugeson et al. 2009; McVey et al., 2017; Schohl et al. 2014; Yoo et al., 2014) and has been one of the only young adult interventions that is as efficacious for females with ASD as it is for males (McVey et al., 2017). PEERS® is a 14-week evidence-based intervention that focuses on helping adolescents with ASD learn how to make and keep friends and manage peer conflict and rejection (Laugeson, Gantman, Kapp, Orenski, & Ellingsen, 2015).

The PEERS® program has also been shown to be effective long-term for teens (i.e., those with age appropriate cognitive and language functioning), specifically with autism (Mandelberg et al., 2014). One of the more integral features that may lead to the success of the PEERS® program is parent involvement in parallel weekly sessions and homework assignments. Parents play a key role in the PEERS® model as they provide the opportunity to generalize skills learned in the group to the real world outside of the group. Parents learn a common vocabulary during sessions to help their teen with the goals for that week.

The PEERS® program includes three key features:

1. The instruction is provided in a protected, small group format. This instruction includes evidence-based strategies for teaching social skills to adolescents with ASD. These strategies include didactic instruction, role-playing, modeling, behavioral

- rehearsal, coaching with performance feedback, and weekly socialization assignments with consistent homework review.
2. Parents are also involved in the PEERS® program by participating in their own simultaneous sessions. Most social skills interventions do not include this unique element. However, research indicates that parents can have a significant impact in the program as they support their adolescent's development of appropriate social networks and friendships, both through direct instruction and supervision (Laugeson et al., 2009).
 3. The content of the PEERS® program focuses on teaching rules of social etiquette. This is done through concrete rules and steps. Adolescents with ASD are given instruction in these rules, while their parents are given information about how to supervise the implementation of newly learned skills. These social etiquette rules include conversational skills, peer conversation entry and exit skills, expanding and developing friendship networks, handling teasing, bullying, and arguments with peers, practicing good sportsmanship and good host behavior during get-togethers with friends, and changing bad reputations (Laugeson et al., 2009).

Adolescents completing the PEERS® program have been shown to have improved significantly in overall social skills, frequency of social engagement, social skills knowledge, and significantly reduced ASD symptoms related to social responsiveness (Laugeson et al., 2009). These gains have been shown to be maintained at follow-up assessments (Laugeson et al., 2015). Teenagers that have completed at least one PEERS® program have also been shown to have better quality of friendship and a significant increase in the frequency of hosted get-togethers (Laugeson et al., 2009).

Females with ASD

Males are four times more likely to be diagnosed with ASD than females (Baio, 2018); however, recent research has begun to turn its attention to the presentation of ASD in females (Hull et al., 2017; Lai, Lombardo, Auyeung, Chakrabarti & Baron-Cohen, 2015; McVey et al., 2017). This discrepancy in diagnosis has been speculated to be found due to differencing symptom presentations among females and males with ASD, such as higher levels of internalizing symptoms, less self-injury, and fewer repetitive behaviors (Lai et al., 2015). Additionally, females with ASD tend to exhibit less challenging behavior at home or in schools, and thus are not often referred for psychological assessment (Bargiela, Steward, & Mandy, 2016). Females with ASD may be better able to “camouflage” their behaviors, perhaps due to different gender socialization, which causes their diagnosis to be missed by professionals altogether (McVey et al., 2017).

While the diagnosis of ASD for females may be frequently missed, their need for social skills intervention is still present. Females with ASD may be more prone to difficulties in friendship development due to challenges in understanding nuances of social interaction, such as relational aggression (McVey et al., 2017). These adolescent females with ASD may be more inclined to withdraw from interaction, due to negative experiences with peers and a fear of further social rejection and failure (Bargiela et al., 2016). Current findings indicate that, despite the differences in social presentation in females with ASD, females show just as much social improvement after completing a PEERS® program (McVey et al., 2017). Females with ASD may demonstrate more positive social behaviors prior to intervention; however, they are still showing significant gains from participation in these groups and therefore should not be excluded or overlooked from these services (McVey et al., 2017). In fact, research clearly

supports the need for social skills interventions for all individuals with ASD; however access to these intervention groups can be severely limited (Bearss et al., 2018).

Autism in Underserved Areas

One of the most critical steps in working with individuals with ASD is early identification and intervention. Because of limited access to professionals, rural areas are more likely to incur later identification and diagnosis of ASD when compared to urban areas (Mandell, Novak, & Zubritsky, 2005). On average, over 30% of the schools in the United States are in underserved areas (Johnson, Showalter, Klein, & Lester, 2014). This indicates that a significant number of individuals with ASD in underserved areas are already at a disadvantage because of this “late start.” Unfortunately that isn’t the only barrier to receiving services. Many families in these underserved areas are also experiencing extreme poverty (Pennington et al., 2013), and these lower income levels may intensify challenges associated with disabilities (Mandell et al., 2005). While some studies suggest urban areas may have higher instances of individuals with ASD, they also recognize that the individuals in these underserved areas have higher instances of behaviors associated with ASD (Azano & Tackett, 2017).

Teachers, families, and students living with ASD in rural or otherwise underserved areas are faced with many difficulties, including the lack of educational and vocational resources (Azano & Tackett, 2017). Families living in these underserved areas may also lack geographic access to services (Kiani, Tyrer, Hodgson, Berkin, & Bhaumik, 2013). In addition, due to geographic isolation, community members may hold narrow, intolerant perceptions toward students who are different, or who have disabilities. This bias further impedes the flow of outside resources from state agencies, and again can hinder the connection between special education teachers and parents of children with ASD in underserved areas (Azano & Tackett,

2017). Social skills training programs have proven to be effective in treatment and maintenance of progress, but resources are severely limited and not universally available, especially in rural or underserved areas (Laugeson et al., 2012; Reich, 2017). One of the biggest barriers to implementation of empirically supported social skills intervention is the lack of trained specialists, especially in underserved areas, which results in long delays and additional travel costs for families to obtain services from centers (Bearss et al., 2018).

A simple Google search for “autism social skills groups” in a large state in the western United States with both rural and metropolitan areas revealed only five groups available in clinical settings throughout the state. These few groups that are available are concentrated within a sixty mile radius of the suburban area of the study. Any public school could provide a group, but information for such a group would not usually be made available through a general Google search. Thus, based on information readily available, in a state that is over 80,000 square miles, only about 60 miles are covered with this type of autism service. This means that many people would have to travel extreme distances for treatment and many others would not be able to receive this kind of treatment at all. Each of the groups found through Google only takes approximately 12 adolescents each time they run, and they each run once or twice a year meaning that combined, the groups can take a total of 60 children each year. Given that there are approximately 13,550 children in the state who could be identified with ASD, there is clearly not adequate availability of treatment groups and services available (Christensen et al., 2016)

Online Services

Approximately 95% of teens are online now and much of this screen time is spent engaged in social networking activities (Lehenbauer, Kothgassner, Kryspin-Exner, & Stetina, 2013). Given this overwhelming statistic, it could be expected that treatment and intervention

tools would be offered online as well as in person. A sample of online tools for social skills development currently available shows them to be presented in the format of an online prosocial game where the participants could chat and exchange gifts through an avatar. A study regarding a prosocial online game for children with ASD evaluated the effectiveness of the game compared to a live in-person group (Chung, Han, Shin, & Renshaw, 2016). After a six week evaluation, the participants treated with the online game showed no significant difference from the in-person treatment group (Chung et al., 2016). Perhaps adolescents feel “safer” conversing and learning online, because other studies involving online resources for social skills have shown increases in social skills as well as decreases in social fears, and have established a strong connection between online and offline prosocial behaviors (Lehenbauer et al., 2013; Reich, 2017).

Despite the general lack of published research on the subject of online resources, this emerging avenue of research seems to give a strong indication that there are substantial benefits to be discovered through the use of online materials. Undoubtedly, by taking advantage of the tendency of children with autism to better follow visual instructions (Tissot & Evans, 2003), the use of videotapes (video modeling) could become one promising means for their social training. This possibility may be accelerated by recent advances in video and computer technology such as virtual environments (Nikopoulos & Nikopoulou-Smyrni, 2008).

While there are a lot of online resources available, the use of telehealth for skill-building may also be considered. Another study found that parent-mediated Early Start Denver Model treatment has also been evaluated using two-way video conferencing in the parents’ homes (P-ESDM; Vismara et al., 2013). These studies support the promise of telehealth as an effective treatment modality for core symptoms and co-occurring challenging behaviors in individuals with ASD (Bearss et al., 2018). Since treatment delivery costs, scarcity of trained professionals

and home-to-clinic travel time are among the main barriers to accessing specialist autism services, particularly in underserved areas (Murphy & Ruble, 2017), telehealth can play a key role in providing timely and competent support to a larger number of families than those who can access traditional services. (Salomone & Arduino, 2017).

Telehealth Services

Telehealth (also known as “telepractice” or “telemedicine”) uses communication technologies (e.g., computer-based videoconferencing and the Internet) that allow specialists to consult or deliver services in real-time over a geographical distance (Dudding, 2009). Increasing the availability of empirically-supported, time-limited and cost-effective interventions for children with ASD through the use of telehealth may be a way to close the gap between service demand and availability in underserved areas (Bearss et al, 2018). The application of these technologies to deliver health services across a range of conditions is growing at a rapid pace, with services increasingly migrating from hospitals and satellite clinics to the home and mobile devices (Dorsey & Topol, 2016).

The main barrier to accessing telehealth lies, by definition, in lack of access to the intervention due to a lack of Internet access, which was reported by approximately 16% of families in some areas of the world (Salomone & Arduino, 2017). There are some families who either can't access these online resources, or are skeptical of the effectiveness of utilizing telehealth services; however it may be these families “worse” Internet skills that lead them to reporting lower levels of satisfaction with online services and being less likely to enroll (Azano & Tackett, 2017). That being said, even families in urban areas (closer to resources) are willing to enroll in online telehealth programs (Salomone & Arduino, 2017). This may indicate that different factors, other than cost and burden of transport, may play a role in parental interest in

telehealth. A possible explanatory factor may be that by utilizing telehealth, there are reductions in hidden costs of services (childcare, time or work, etc.) which would apply to all families (Salomone & Arduino, 2017).

Despite these developments, the use of telehealth specifically for the assessment and treatment of adolescents with ASD is underdeveloped (Bearss et al., 2018). A 2010 review of the use of telehealth in the assessment and treatment of individuals with ASD identified only eight peer-reviewed papers, largely single subject designs (Boisvert, Lang, Andrianopoulos, & Bocardin, 2010). More recently, researchers provided functional communication training (FCT) via telehealth and showed that it is acceptable to parents and promising for reducing behavior problems in children with ASD (Lindgren et al., 2016). However, despite this there is still no currently existing live social skills groups conducted through online means that we have been able to discover in the literature. Dr. Laugeson confirmed that she is not aware of any PEERS® groups in a live, interactive online service delivery model (personal communication, May, 2018).

Purpose of the Study

Research has demonstrated the significant benefits of social skills training for children and adolescents with autism. Yet, many of those seeking this kind of intervention are unable to utilize them due to great distances or lack of room in the groups. It may be difficult for community clinics and schools to provide access to treatment if barriers exist related to inadequate funding, inability to cover a wide enough range, or non-compliance with patient confidentiality and security regulations. Given the benefits of social skills training, it should be a priority to make sure that there are adequate resources for those who seek it out. In order to find a solution, this study seeks to determine whether or not a live, online social skills group based on the PEERS® curriculum is a feasible option that can provide similar benefits to an in-person

group following the same curriculum. This study will function as a feasibility study as it investigates the usage of online platforms, the accessibility it can provide and the ability to remain compliant with the Health Insurance Portability and Accountability Act (HIPAA) throughout the process. Preliminary data regarding effectiveness and social validity will also be analyzed to further characterize feasibility and acceptability.

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skills training program for teens with ASD. *Autism Research*, 7(1), 145-161. doi:
10.1002/aur.135

APPENDIX B

Background Survey

Thank you for taking the time to complete this questionnaire. The information that you share will help us match you or your family to appropriate research studies. This information will be entered in a research database. Please answer all questions to the best of your ability, using any documentation you have to help you remember information when needed. Information provided to us is confidential and no personal information will be shared with any participating researchers without your prior consent. Thank you!

Form completed by:

Mother Father Other Legal Guardian

Section I: Participant**Race and Ethnicity (check all that apply):**

White/Caucasian American Indian
 Black/African American Hispanic
 Asian Other (specify):

Primary Language spoke in the home:

English Spanish Other (specify):

Is the participant:

a single birth triplet- fraternal
 twin- fraternal triplet- identical
 twin- identical Other (specify):

Does the participant have siblings?

No
 Yes- Name of Siblings: _____

Section II: Parent/Guardian**MOM****You are the (check all that apply):**

Legal Guardian
 Birth Parent
 Adoptive Parent
 Foster Parent

DAD**You are the (check all that apply):**

Legal Guardian
 Birth Parent
 Adoptive Parent
 Foster Parent

Parent/Guardian Age (in years): _____ Parent/Guardian Age (in years): _____

- Anxiety Depression
 Learning Disorder Obsessive Compulsive Disorder
 Attention Deficit Disorder (with or without hyperactivity)
 None of the above

Has the participant ever been diagnosed with Developmental Delay?

- No Yes (specify level: _____)

Has the participant ever been diagnosed with Intellectual Disability or Mental Retardation?

- No Yes (specify level: _____)

Please indicate the participant's overall language level:

- Does not speak Uses single words Speak in sentences

Has the participant ever had a speech/language disorder or delay?

- Yes No

Does the participant have any first degree blood relatives (for example, full siblings, biological parent, offspring) or second degree blood relatives (half-sibling, grandparent, aunt/uncle, niece/nephew) who have an Autism Spectrum Disorder?

- No Yes (please specify relationship to participant):

Please answer the following questions about the birth history of the participant, to the best of your memory:

At how many weeks was the participant born?

About how much did the participant weigh at birth (pounds & ounces)?

What were the participants APGAR scores? (1st score)

What were the participants APGAR scores? (2nd score) -

Did the participant require any of the following immediately after birth?

- Oxygen
 Hospitalization or intensive care (if yes, for how many days?): _____

If the participant was adopted, was he/she adopted at or before 3 months of age?

- Yes No
 Does not apply (participant not adopted)

School or Educational Placement: Compared to his or her typically developing same-aged peers, in most subjects, the participant is academically:

- At or above grade level
 1-2 years or grades behind
 3 or more years or grades behind
 Does not apply (has not yet started or has completed school)

Does the participant currently have a visual disorder that cannot be corrected by glasses?

- No Yes (specify): _____

Does the participant currently have a hearing disorder that cannot be correct by hearing aids?

- No Yes (specify): _____

Does your child currently receive special education services?

- No Yes

If yes, which of the following categories for educational classification is listed on your child's IEP?

- Autism
 Deaf/Blindness
 Developmental Delay
 Emotional Disturbance
 Hearing Impairment/Deafness
 Intellectual Disability
 Multiple Disabilities
 Orthopedic Impairment
 Other Health Impairment
 Specific Learning Disability
 Speech/Language Impairment
 Traumatic Brain Injury
 Visual Impairment

Does your child receive free or reduced lunch at school?

- No Yes

APPENDIX C

Parent Permission (in-person group)

Parental Permission for a Minor-BYU Social Skills Group

Introduction

My name is Terisa Gabrielsen. I am a professor from Brigham Young University. I am conducting a research study about ways to deliver social skills group interventions. I am inviting your child to take part in the research because (he/she) is an adolescent with autism spectrum disorder or similar developmental disorder.

Procedures

If you agree to let your child participate in this research study, the following will occur:

- You and your child will be asked to come to BYU once a week for 14-20 weeks for a social skills group. The group meets Mondays, 5:30 -7 in the Joseph F Smith Building (JFSB, Room 1086, inside the Child and Family Studies Lab) on campus. In the past, all families have typically been finished and on their way home long before 7 pm each week. Teens meet in one room and parents meet at the same time in another room. In the last few weeks, some activities will be held in various locations on campus other than the JFSB.
- Your child will be asked to complete some “homework” assignments each week that include calling others in the group on the phone, calling people outside the group on the phone, and inviting someone to a get together outside of the group. This requires us to share phone numbers among group members. Your child will receive points for doing the homework assignment, and can have your help, but will never be punished or embarrassed for not doing the homework.
- You and/or your child will be videotaped during group sessions and in activities on campus. You will have the opportunity to give your permission for how these videos will be used in a separate video release form. Videos will never be posted anywhere.
- You will be asked to bring your child to campus on two additional occasions for assessment of autism and cognitive abilities (IQ). The autism appointment takes about an hour. The IQ appointment can sometimes take 2 hours. These appointments will be made at your convenience.
- You will be asked to complete some questionnaires at the beginning and again at the end of the 14-20 weeks. Most parents are able to do this in less than an hour.
- When we participate in some of the activities toward the end of the 14-20 weeks, you may have to provide very small fees for some on-campus activities for your child (e.g., bowling, movies, museums, playing outside, shopping, fast food). We use these opportunities for handling money and paying admission as part of the social skills practice.

Risks

There are minimal risks involved in the study. As we participate in more activities towards the end of the

14-20 weeks, there will be everyday risks of age appropriate activities (e.g., bowling, movies, museums, playing outside, shopping, fast food, etc.). We ask BYU Risk Management to approve all activities on campus, and their staff examines the details of each activity to reduce risks and only approves activities with minimal risks.

Confidentiality

Your name or your child's name will never be connected to any presentation of the study at conferences, trainings meetings, or in publications. All identifying information will be removed from all records, with the possible exception of hearing your child's name on a video recording. If you do not give your permission for your child's video images to be shown outside of study personnel on a separate video release form, we will honor your wishes. All hard copy and electronic records will be stored in locked and/or password protected storage. I am the only person who will have access to the data at the end of the study. All data will be kept in these same locked and/or password protected storage for future research of any data not previously analyzed.

Benefits

Your child will benefit directly from participating in this study by receiving direct instruction and practice in age-appropriate social skills.

Compensation

There will be no compensation for participation in this project.

Questions about the Research

Please direct any further questions about the study to Terisa P Gabrielsen at 801-422-5055 or Terisa_gabrielsen@byu.edu.

Questions about your child's rights as a study participant or to submit comment or complaints about the study should be directed to the IRB Administrator, Brigham Young University, A-285 ASB, Provo, UT 84602. Call (801) 422-1461 or send emails to irb@byu.edu.

You have been given a copy of this consent form to keep.

Participation

Participation in this research study is voluntary. You are free to decline to have your child participate in this research study. You may withdraw your child's participation at any point.

Child's Name: _____

Parent Name: _____

Signature: _____

Date: _____

APPENDIX D

Parent Permission (online group)

Parental Permission for a Minor--Online Social Skills Group

Introduction

My name is Terisa Gabrielsen. I am a professor from Brigham Young University. I am conducting a research study about ways to deliver social skills group interventions. I am inviting your child to take part in the research because (he/she) is an adolescent with autism spectrum disorder or similar developmental disorder.

Procedures

If you agree to let your child participate in this research study, the following will occur:

- Your child will be asked to join a videoconference session once a week for 14-20 weeks for a social skills group. The group meets Mondays, 5:30 -6:30 online. You will be given a link to join the online sessions. You must have access to a computer with camera to participate in the session. Audio participation can be by microphone built into your computer or by phone.
- You will also be asked to join a one-hour videoconference session for parents once a week at a different time.
- You will be asked to bring your child to BYU's campus on two separate days to complete some testing (3 hours – autism and IQ testing) and to participate in group activities (3-4 hours each day) on campus such as bowling, movies, museums, playing outside, shopping, and fast food. If you cannot come to campus, we can arrange for research staff to visit your community and your home to complete testing and to observe your child engaging in similar activities with same age peers. You may have to provide very small fees for some on-campus activities for your child (e.g., bowling, movies, museums, playing outside, shopping, fast food). And possibly one “get-together” that is part of your child’s homework as part of the curriculum. We use these opportunities for handling money and paying admission as part of the social skills practice.
- Your child will be asked to complete some “homework” assignments each week that include calling others in the group on the phone, calling people outside the group on the phone, and inviting someone to a get together outside of the group. This requires us to share phone numbers among group members. Your child will receive points for doing the homework assignment, and can have your help, but will never be punished or embarrassed for not doing the homework.
- You and/or your child will be recorded during the online sessions and in activities on campus or in your community. You will have the opportunity to give your permission for how these videos will be used in a separate video release form. Videos will never be posted anywhere.
- You will be asked to complete some questionnaires at the beginning and again at the end of the 14-20 weeks. Most parents are able to do this in less than an hour.

- When we participate in some of the activities on campus or in your community, you may have to provide very small fees for admission (e.g., bowling, movies, museums, playing outside, shopping, fast food). We use these opportunities for handling money and paying admission as part of the social skills practice.

Risks

There are minimal risks involved in the study. As we participate in more activities towards the end of the 14-20 weeks, there will be everyday risks of age appropriate activities (e.g., bowling, movies, museums, playing outside, shopping, fast food, etc.). We ask BYU Risk Management to approve all activities on campus, and their staff examines the details of each activity to reduce risks and only approves activities with minimal risks.

Confidentiality

Your name or your child's name will never be connected to any presentation of the study at conferences, trainings meetings, or in publications. All identifying information will be removed from all records, with the possible exception of hearing your child's name on a video recording. If you do not give your permission for your child's video images to be shown outside of study personnel on a separate video release form, we will honor your wishes. All hard copy and electronic records will be stored in locked and/or password protected storage. I am the only person who will have access to the data at the end of the study. All data will be kept in these same locked and/or password protected storage for future research of any data not previously analyzed.

Benefits

Your child will benefit directly from participating in this study by receiving direct instruction and practice in age-appropriate social skills.

Compensation

There will be no compensation for participation in this project.

Questions about the Research

Please direct any further questions about the study to Terisa P Gabrielsen at 801-422-5055 or Terisa_gabrielsen@byu.edu.

Questions about your child's rights as a study participant or to submit comment or complaints about the study should be directed to the IRB Administrator, Brigham Young University, A-285 ASB, Provo, UT 84602. Call (801) 422-1461 or send emails to irb@byu.edu.

You have been given a copy of this consent form to keep.

Participation

Participation in this research study is voluntary. You are free to decline to have your child participate in this research study. You may withdraw your child's participation at any point.

Child's Name: _____

Parent Name: _____

Signature: _____

Date: _____

APPENDIX E

Child Assent (in-person group)

.....**Child Assent(7-14 years old) –BYU Social Skills Group**.....

What is this research about?

My name is Terisa Gabrielsen. I want to tell you about a research study I am doing. A research study is a special way to find the answers to questions. We are trying to learn more about teaching people about social skills. You are being asked to join the study because your parents thought you would like to learn about social skills.

If you decide you want to be in this study, this is what will happen.

1. Your parent will bring you to BYU once a week on Mondays at 5:30 to meet with other kids your age. We talk about social skills, play games, eat snacks, and you can earn points for prizes. Your parents are in another room talking about social skills too.
2. Your parent will bring to BYU two other times to do some more games and talking with one of the BYU students you meet in the group or with me. We will play games, talk, and maybe eat snacks. Your parents will be in another room waiting for you.
3. Sometimes when you come to BYU, we will go do something else, like bowling, play outdoor games, go to a movie, go shopping, go to a museum or get some fast food. We will do this together.
4. You might see a video camera recording the group each week. We have asked your parents to give us permission for that and we never post the videos anywhere.
5. You will have easy homework each week, like calling someone on the phone. Your parent can help you.

Can anything bad happen to me?

We don't think anything bad will happen to you.

Can anything good happen to me?

Most kids really like being in the group.

Do I have other choices?

You can choose not to be in this study.

Will anyone know I am in the study?

We won't tell anyone you took part in this study. When we are done with the study, we will write a report about what we learned. We won't use your name in the report.

What happens if I get hurt?

We don't think you will get hurt, but if you do, your parent is always closeby and can help you.

What if I do not want to do this?

You don't have to be in this study. It's up to you. If you say yes now, but change your mind later, that's okay too. All you have to do is tell us.

Before you say yes to be in this study; be sure to ask Terisa Gabrielsen to tell you more about anything that you don't understand.

If you want to be in this study, please sign and print your name.

Name (Printed): _____

Signature _____

Date: _____

APPENDIX F

Child Assent (online group)**Child Assent (7-14 years old) – Online Social Skills Group**
.....**What is this research about?**

My name is Terisa Gabrielsen. I want to tell you about a research study I am doing. A research study is a special way to find the answers to questions. We are trying to learn more about teaching people about social skills. You are being asked to join the study because your parents thought you would like to learn about social skills.

If you decide you want to be in this study, this is what will happen.

1. You will do a video call once a week on Mondays at 5:30 to meet with other kids your age. We talk about social skills, play games, and you can earn points for prizes. Your parents will do their own video call at a different time to talk about social skills.
2. We record the video calls, and we have asked your parents for permission to do that. We never post the videos anywhere.
3. Your parent will bring to BYU two other times to do some more games and talking with one of the BYU students you meet in the group or with me. We will play games, talk, and maybe eat snacks. Your parents will be able to wait for you at BYU. While you are at BYU, you can meet the other kids from the video call. We can go bowling, play outdoor games, go to a movie, go shopping, go to a museum or get some fast food. We will do this together.
4. You will have easy homework each week, like calling someone on the phone. Your parent can help you.

Can anything bad happen to me?

We don't think anything bad will happen to you.

Can anything good happen to me?

Most kids really like being in the group.

Do I have other choices?

You can choose not to be in this study.

Will anyone know I am in the study?

We won't tell anyone you took part in this study. When we are done with the study, we will write a report about what we learned. We won't use your name in the report.

What happens if I get hurt?

We don't think you will get hurt, but if you do, your parent is always close by and can help you.

What if I do not want to do this?

You don't have to be in this study. It's up to you. If you say yes now, but change your mind later, that's okay too. All you have to do is tell us.

Before you say yes to be in this study; be sure to ask Terisa Gabrielsen to tell you more about anything that you don't understand.

If you want to be in this study, please sign and print your name.

Name (Printed): _____

Signature _____

Date: _____

APPENDIX G

Youth Assent (in-person group)**Youth Assent (15-17 years old) – BYU SOCIAL SKILLS**
.....**What is this study about?**

My name is Terisa Gabrielsen. I am from Brigham Young University. I would like to invite you to take part in a research study. Your parent(s) know we are talking with you about the study. This form will tell you about the study to help you decide whether or not you want to be in it.

In this study, we want to learn about the best ways to teach groups of teenagers about social skills.

What am I being asked to do?

If you decide to be in the study, we will ask you to do the following:

1. Your parent will bring you to BYU once a week on Mondays at 5:30 to meet with other teenagers. We talk about social skills, play games, eat snacks, and you can earn points for prizes. Your parents are in another room in their own meeting.
2. Your parent will bring you to BYU two other times to meet with one of the BYU students you know from the group or with me. We will play games, talk, and maybe eat snacks. Your parents will be in another room waiting for you.
3. Sometimes when you come to BYU, we will go do something else, like bowling, play outdoor games, go to a movie, go shopping, go to a museum or get some fast food. We will do this together and your parents will give you the money you need for admission.
4. You might see a video camera recording the group each week. We have asked your parents to give us permission for that and we never post the videos anywhere.
5. You will have easy homework each week, like calling someone on the phone. You can earn points for doing the homework, and we will ask you about it each week, but we never embarrass people who haven't done the homework.

What are the benefits to me for taking part in the study?

Most teens who participate in the social skills group have fun, meet new people, and learn more about how to make friends.

Can anything bad happen if I am in this study?

We don't think anything bad will happen in the study. Sometimes you might not want to come, and sometimes other people in the group might be annoying, but can usually help everybody to get along okay.

Who will know that I am in the study?

We won't tell anybody that you are in this study and everything you tell us and do will be private. We do tell your parents how you did each week in the group, including the great things you did that day, because they don't watch the group, they have their own meeting. If you ever tell us that you want to hurt yourself, we will talk to you and your parents about that to make sure you are getting help. When we tell other people or write articles about what we learned in the study, we won't include your name or that of anyone else who took part in the study. We have asked your parents for permission to record our sessions, and asked them how they want those videos to be used, but we never post them anywhere or give them to anybody. We only use them for research and training.

Do I have to be in the study?

No, you don't. The choice is up to you. No one will get angry or upset if you don't want to do this. You can change your mind anytime if you decide you don't want to be in the study anymore.

What if I have questions?

If you have questions at any time, you can ask us and you can talk to your parents about the study. We will give you a copy of this form to keep. If you want to ask us questions about the study, contact Terisa Gabrielsen at 801-422-5055, Terisa_gabrielsen@byu.edu

Before you say yes to be in this study what questions do you have about the study?

If you want to be in this study, please sign and print your name.

Name (Printed): _____

Signature _____

Date: _____

APPENDIX H

Youth Assent (online group)

Youth Assent (15-17 years old) ONLINE SOCIAL SKILLS

What is this study about?

My name is Terisa Gabrielsen. I am from Brigham Young University. I would like to invite you to take part in a research study. Your parent(s) know we are talking with you about the study. This form will tell you about the study to help you decide whether or not you want to be in it.

In this study, we want to learn about the best ways to teach groups of teenagers about social skills.

What am I being asked to do?

If you decide to be in the study, we will ask you to do the following:

1. You will join a video call once a week on Mondays at 5:30 to meet with other teenagers. We talk about social skills, play games, and you can earn points for prizes. Your parents will do their own video call at another time.
2. Your parent will bring you to BYU two other times to meet with one of the BYU students you know from the group or with me. We will play games, talk, and maybe eat snacks. While you are at BYU, you will meet the teenagers from your video calls and do activities on campus, like bowling, play outdoor games, go to a movie, go shopping, go to a museum or get some fast food. We will do this together and your parents will give you the money you need for admission.
4. We record the video calls each week and you might see video cameras when you are doing activities on BYU's campus. We have asked your parents to give us permission for that and we never post the videos anywhere.
5. You will have easy homework each week, like calling someone on the phone. You can earn points for doing the homework, and we will ask you about it each week, but we never embarrass people who haven't done the homework.

What are the benefits to me for taking part in the study?

Most teens who participate in the social skills group have fun, meet new people, and learn more about how to make friends.

Can anything bad happen if I am in this study?

We don't think anything bad will happen in the study. Sometimes you might not want to join, and sometimes other people in the group might be annoying, but can usually help everybody to get along okay.

Who will know that I am in the study?

We won't tell anybody that you are in this study and everything you tell us and do will be private. We do tell your parents how you did each week in the group, including the great things you did that day, because they don't watch the group, they have their own meeting. If you ever tell us that you want to hurt yourself, we will talk to you and your parents about that to make sure you are getting help. When we tell other people or write articles about what we learned in the study, we won't include your name or that of anyone else who took part in the study. We have asked your parents for permission to record our

sessions, and asked them how they want those videos to be used, but we never post them anywhere or give them to anybody. We only use them for research and training.

Do I have to be in the study?

No, you don't. The choice is up to you. No one will get angry or upset if you don't want to do this. You can change your mind anytime if you decide you don't want to be in the study anymore.

What if I have questions?

If you have questions at any time, you can ask us and you can talk to your parents about the study. We will give you a copy of this form to keep. If you want to ask us questions about the study, contact Terisa Gabrielsen at 801-422-5055, Terisa_gabrielsen@byu.edu

Before you say yes to be in this study what questions do you have about the study?

If you want to be in this study, please sign and print your name.

Name (Printed): _____

Signature _____

Date: _____

APPENDIX I

Video Release Form

Video Release Form

As part of this project, I will be making video recordings of you and your child) during your participation in the research. Please indicate what uses of this video you are willing to permit, by initialing next to the uses you agree to and signing at the end. This choice is completely up to you. I will only use the video in the ways that you agree to. In any use of the video, you (or your child) will not be identified by name, but sometimes names can be heard on video, which is unavoidable.

- _____ Video can be studied by the research team for use in the research project.
 _____ Video can be used for scientific publications.
 _____ Video can be shown at scientific conferences or meetings.
 _____ Video can be shown in classrooms to college students.
 _____ Video can be shown in public presentations to non-scientific groups.

I have read the above descriptions and give my express written consent for the use of the video of **my child** as indicated by my initials above.

Name (Printed): _____ Signature _____ Date: _____

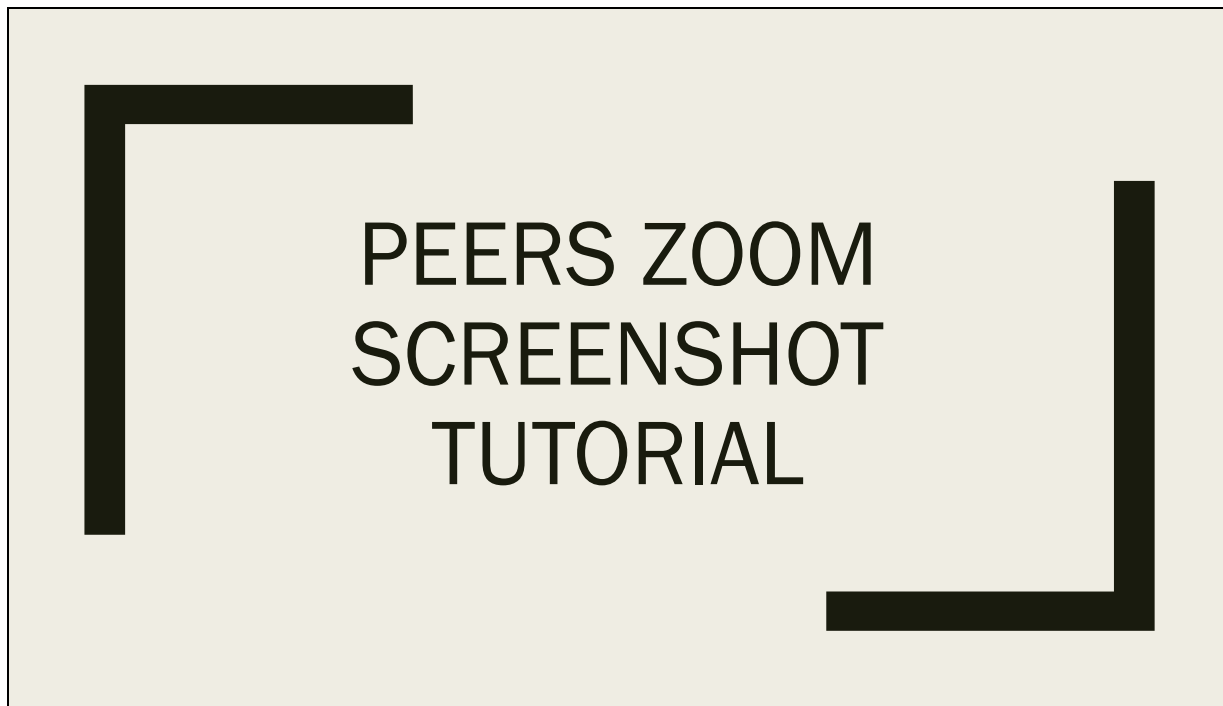
I have read the above descriptions and give my express written consent for the use of the video of **myself** _____ under the same conditions as above
 _____ under the same conditions as above with the following changes:

 Name (Printed): _____ Signature _____ Date: _____

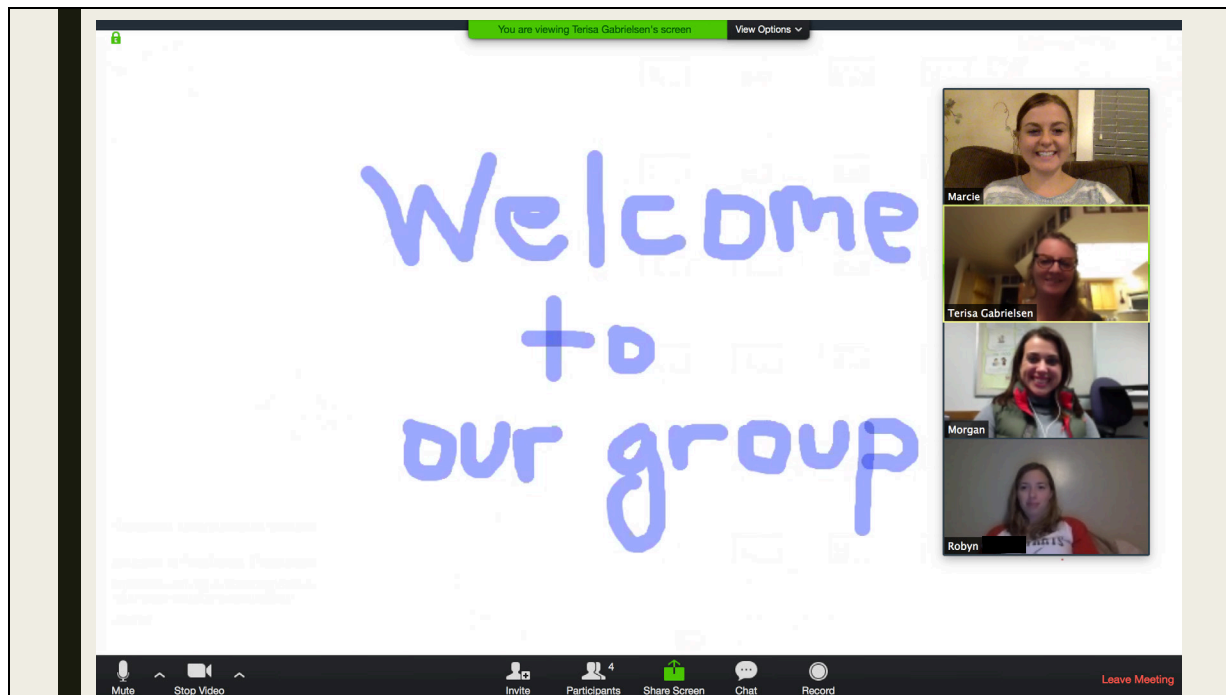
APPENDIX J

Social Skills ZOOM Tutorial

Slide 1



Slide 2



Slide 3

Gallery View 1: We will spend most of the session in gallery view. To Change your view to gallery view, click the “gallery view” icon.



Slide 4



Slide 5

To mute or unmute yourself, use the mute button in the bottom corner of your screen.



Slide 6

Step One Chat Box: If you want to use the chat box during a session (for example if you are having technical problems and want to ask for help, etc.) click on the "Chat" icon.



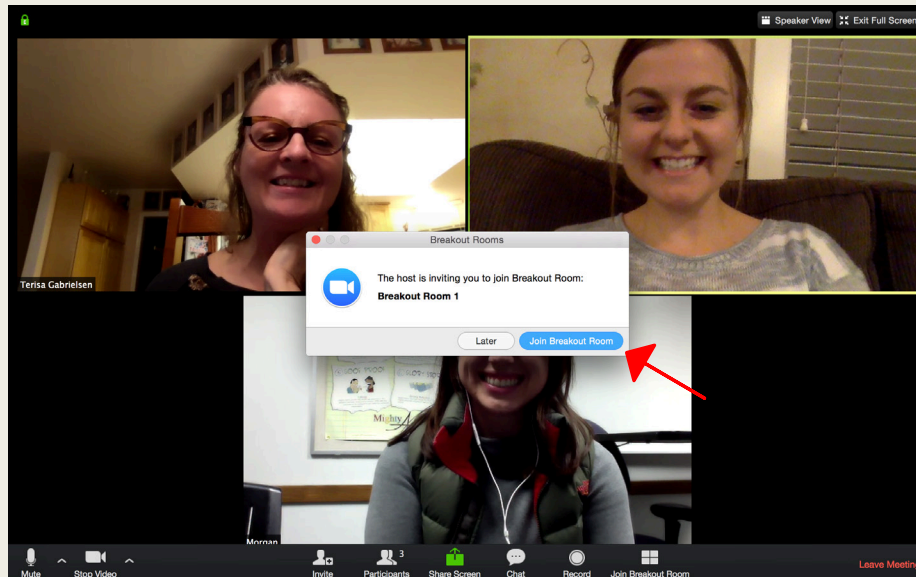
Slide 7

Chat box Step 2: Type your message.



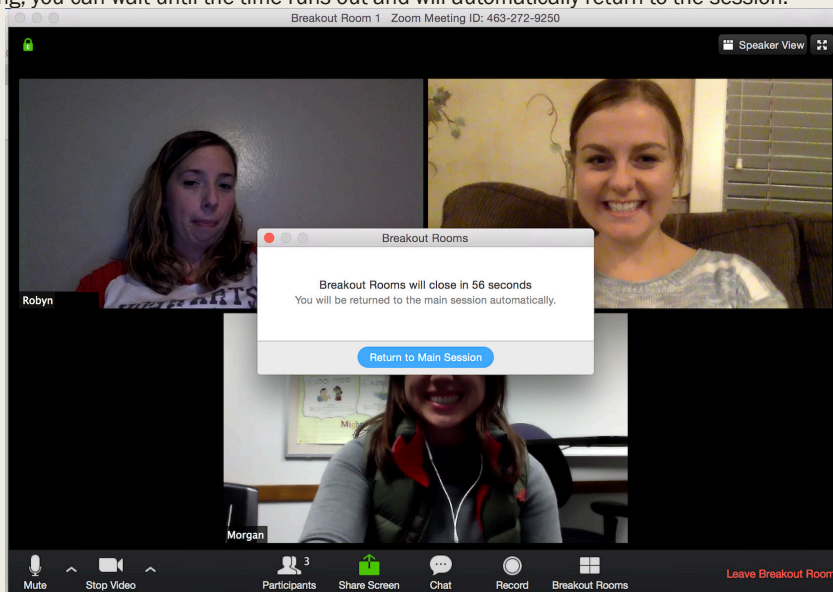
Slide 8

Breakout Room Step One: During the session we will have breakout rooms for small group discussions. When this icon pops up, chose the “Join breakout room” button.



Slide 9

Breakout Room Step 2: During breakout sessions, you will receive a warning message like this. If you have finished your conversation you can click the return to main session button. If you are still talking, you can wait until the time runs out and will automatically return to the session.



Slide 10

Pin Video 1: At times we will ask you to “Pin” The therapists video so their screen will be large for examples. To do this, select the top right corner of the therapist’s screen and select “Pin Video”



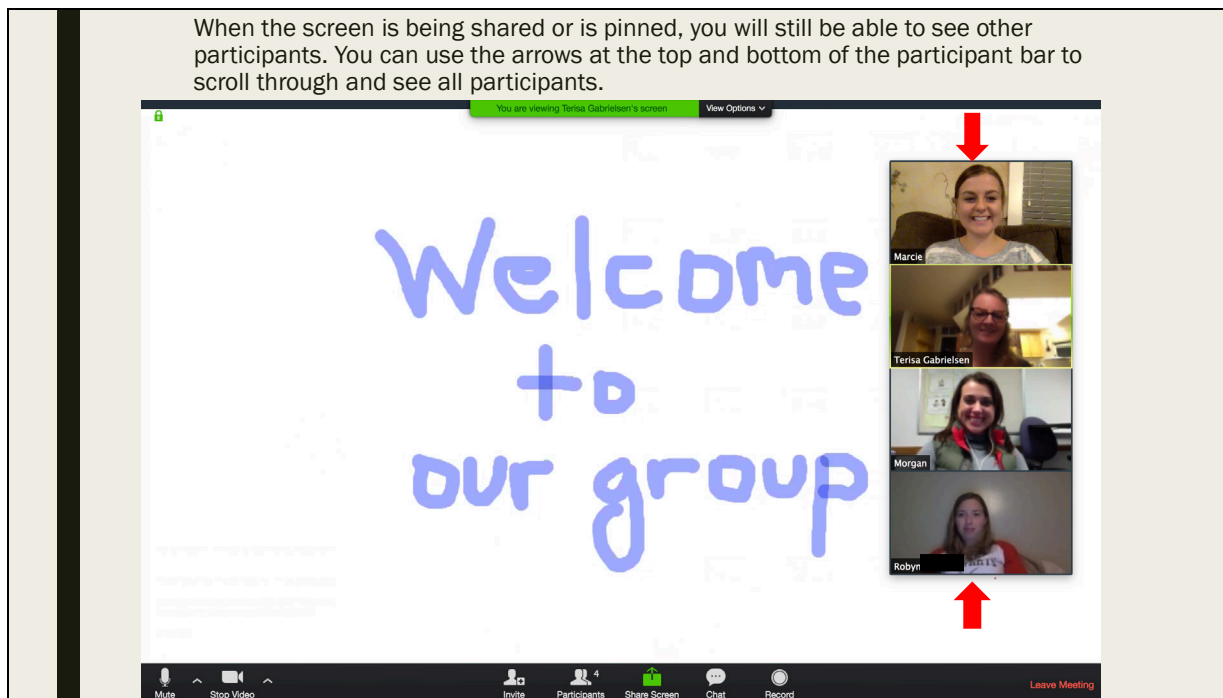
Slide 11

Pin Video 2: When you have Pinned the therapist's video it will look like this. Remember to press "Gallery View": to return to normal.



Slide 12

When the screen is being shared or is pinned, you will still be able to see other participants. You can use the arrows at the top and bottom of the participant bar to scroll through and see all participants.



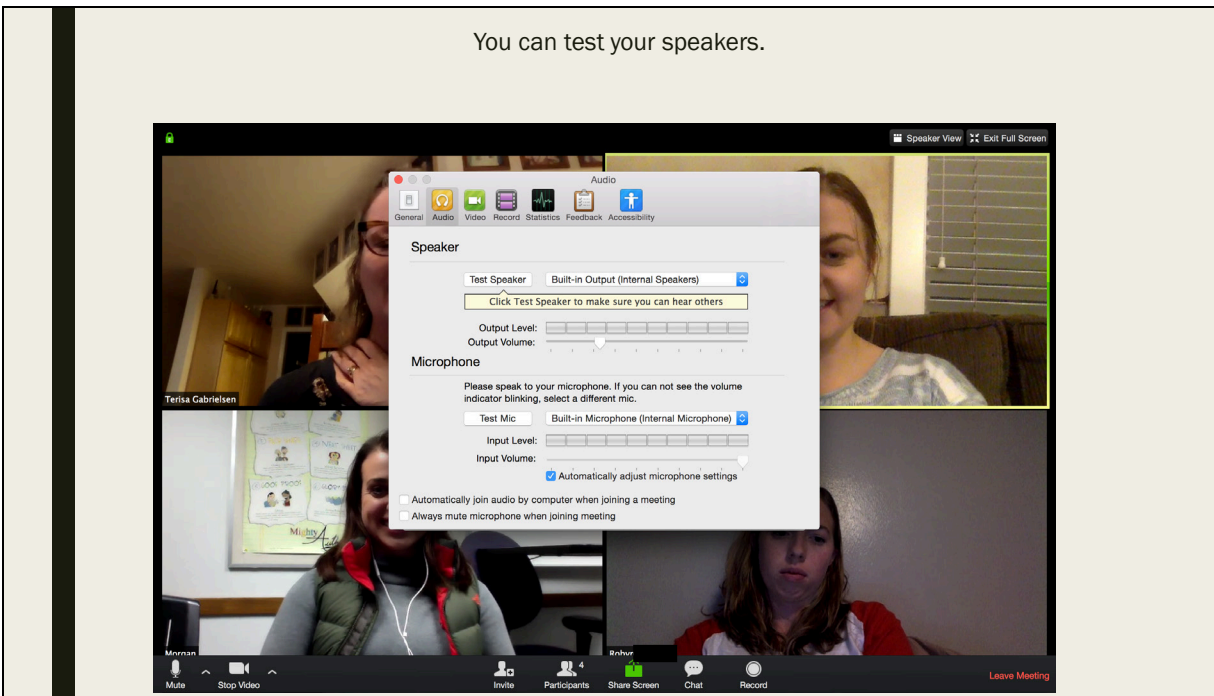
Slide 13

Troubleshooting Audio 1: If you have difficulty with your microphone click on the arrow next to the microphone icon.



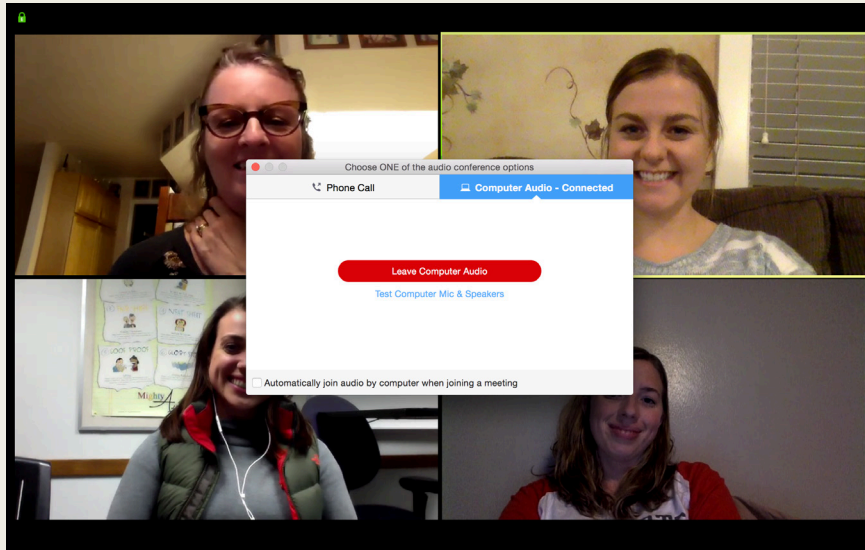
Slide 14

You can test your speakers.



Slide 15

You can choose computer audio, or to join separately by phone.



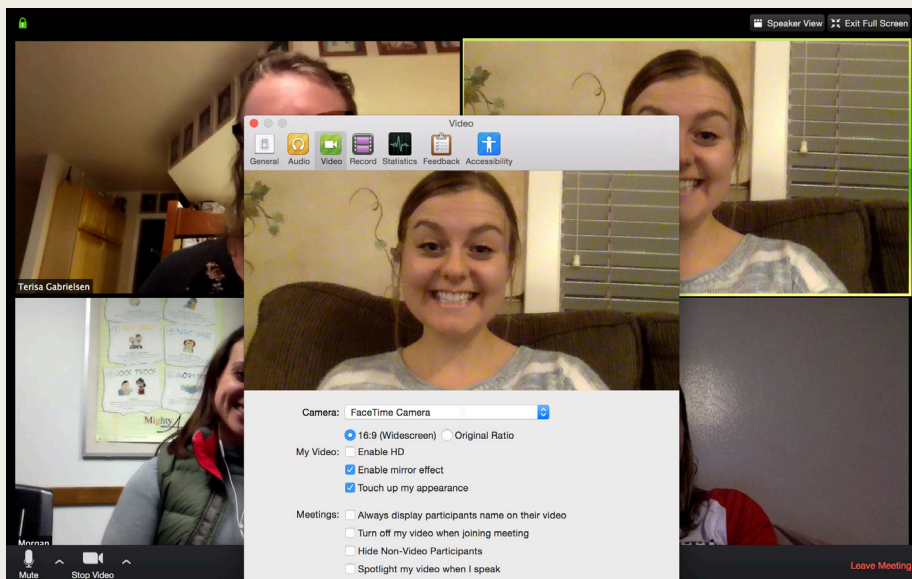
Slide 16

To troubleshoot Video, click the arrow next to the Video Icon.



Slide 17

From here you can test video and make adjustments.




Slide 18

To change the name that appears on your screen. Select “rename” in the top right corner of your screen. You will then be able to type your name.



Slide 19



We look forward to meeting you and
having you in our group!

APPENDIX K

Social Skills Rules Handout

Checklist for Joining an Online Social Skills Session

- Find a quiet place with good lighting
- Make sure computer is fully charged or plugged in
- Click on the Zoom link (see below)
- Unmute microphone to say hello, mute when not talking
- Click on Gallery View (upper right hand corner)

Rules for Participating in Online Social Skills Sessions

- Only therapists are allowed to share screens
- Raise your hand and wait to be called on to talk
- Unmute your mic when you are not talking (lower left hand corner), mute when not talking
- When therapists do a role play, right click on their video box to click on “pin video”
- Go back to Gallery View when the role play is over
- Try not talk over others during group conversations and breakout rooms
- Don't interfere with the slides
- Listen to others
- Be respectful
- Follow Directions

Troubleshooting

- If your camera doesn't automatically come on when you log in, click on "Start Video" at the bottom or try restarting your computer
- If you can't hear very well, try earbuds or headphones
- If no one can hear you talk, make sure your mic is unmuted
- If you can't see the slide that is shared, click on "view options" on the top, and click on "Fit to Window"
- If there is a lot of background noise, we will mute you. Unmute your microphone to talk

Here is the link to join the group, 5:30 on Mondays (6:30 for parents).

Terisa Gabrielsen is inviting you to a scheduled Zoom meeting.

Join from PC, Mac, Linux, iOS or Android: <https://zoom.us/j/4632729250>

Or iPhone one-tap :

US: +16699006833,,4632729250# or +14086380968,,4632729250#

Or Telephone :

Dial(for higher quality, dial a number based on your current location) :

US: +1 669 900 6833 or +1 408 638 0968 or +1 646 876 9923

Meeting ID: 463 272 9250

International numbers available:

https://zoom.us/join?m=GaSXRg1pDDB1QLtiCQV7NZTCn_

APPENDIX L

TARF Questions (parents)**Treatment Acceptability Rating Form- Revised (TARF-R) (Questions adapted for this study)**

All questions have Likert scale responses on a 7 point scale, ranging from Not at all (1), Neutral (4), to Very much (7).

All questions have responses on a 7 point scale, ranging from Not at all (1), Neutral (4), to Very much (7).
How clear is your understanding of the social skills intervention group?
How acceptable do you find the strategies for teaching social skills in your child's group?
How willing are you to help your child attend the group?
How willing are you to help child complete homework assignments for the group?
Given your student's social skills abilities, how reasonable do you find the social skills group to be?
How costly is it for you to attend the social skills group?
To what extent do you think there might be disadvantages to attending the social skills group?
How likely is this social skills group to make a permanent improvement in your child's behavior?
Given the amount of time invested in the social skills group and your own child's social skill problems, how reasonable do you find the time requirements to be?
Compared to other students in the group, how serious are your child's social skills problems?
How confident are you that the social skills group instruction will be effective?
How disruptive to your life is the social skills group?
How affordable do you find the social skills group to be?
How effective is the social skills group for your child?

All questions have responses on a 7 point scale, ranging from Not at all (1), Neutral (4), to Very much (7).
How much do you like the social skills group? How willing do you think others in the group are to help our child?
To what extent are there undesirable side effects to the social skills group?
How much discomfort do you think your child experienced while participating in the group?
How severe were your child's social skills deficits before attending the group?
How severe are your child's social skills deficits after attending the group?
How willing would you be to recommend the social skills group to others?
How will working on social skills with your child fit into your family routine?

APPENDIX M

TARF Questions (adolescent in-person)**Treatment Acceptability Rating Form- Revised (TARF-R) (Questions adapted for this study)**

All questions have Likert scale responses on a 7 point scale, ranging from Not at all (1), Neutral (4), to Very much (7).

1. How much do you understand in your social skills group?
2. How much do you like the way they teach social skills in your group?
3. How much do you like coming to the group?
4. How much of the homework in the group do you do each week?
5. How much do you think the social skills group is okay for you?
6. How many disadvantages are there to coming to the social skills group?
7. How much do you think the social skills group will help you for the rest of your life ?
8. How much do you think the time you spend in social skills is okay?
9. How many social skills problems do you think you have compared to others in the group?
10. How much do you think the social skills group will help you?
11. How much does the social skills group interfere with your life?
12. How much of a difference does the social skills group make in your life?
13. How much does it cost you to come to social skills?
14. How much do you like the social skills group?
15. How much do you think others in the group like to help you?
16. How much do you think there are any bad things about the group?
17. How much does it bother you to come to the group:
18. How many problems with social skills did you have before you started coming to the group?
19. How many problems with social skills did you have after you started coming to the group?
20. How many people would you recommend the social skills group to?
21. How easy is it for your family to come to the social skills group?

TARF-R questions from

Reimers, TM, & Wacker, DP (1988). Parents' ratings of the acceptability of behavior treatment recommendations made in an outpatient clinic: A preliminary analysis of the influence of treatment effectiveness. *Behavioral Disorders, 14*, 7-15.

APPENDIX N

TARF Questions (adolescent online)

Treatment Acceptability Rating Form- Revised (TARF-R) (Questions adapted for this study) Reimers, TM, & Wacker, DP (1988). Parents' ratings of the acceptability of behavior treatment recommendations made in an outpatient clinic: A preliminary analysis of the influence of treatment effectiveness. *Behavioral Disorders*, 14, 7-15.

All questions have responses on a 7 point scale, ranging from Not at all (1), Neutral (4), to Very much (7).							
Not at all = 1 A little = 2 Some = 3 Neutral = 4 A lot = 5 Quite a lot = 6 Very much/all=7							
How much do you understand in your social skills group?	1	2	3	4	5	6	7
How much do you like the way they teach social skills in your group?	1	2	3	4	5	6	7
How much do you like coming to the group?	1	2	3	4	5	6	7
How much of the homework in the group do you do each week?	1	2	3	4	5	6	7
How much do you think the social skills group is okay for you?	1	2	3	4	5	6	7
How many disadvantages are there to coming to the social skills group?	1	2	3	4	5	6	7
How much do you think the social skills group will help you for the rest of your life ?	1	2	3	4	5	6	7
How much do you think the time you spend in social skills is okay?	1	2	3	4	5	6	7
How many social skills problems do you think you have compared to others in the group?	1	2	3	4	5	6	7
How much do you think the social skills group will help you?	1	2	3	4	5	6	7
How much does the social skills group interfere with your life?	1	2	3	4	5	6	7
How much of a difference does the social skills group make in your life?	1	2	3	4	5	6	7
How much does it cost you to join social skills?	1	2	3	4	5	6	7
How much do you like the social skills group?	1	2	3	4	5	6	7
How much do you think others in the group like to help you?	1	2	3	4	5	6	7
How much do you think there are any bad things about the group?	1	2	3	4	5	6	7
How much does it bother you to join the group:	1	2	3	4	5	6	7
How many problems with social skills did you have before you started coming to the group?	1	2	3	4	5	6	7

How many problems with social skills did you have after you started coming to the group?	1	2	3	4	5	6	7
How many people would you recommend the social skills group to?	1	2	3	4	5	6	7
How easy is it for your family to join the social skills group?	1	2	3	4	5	6	7