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"I Feel like I'm Changing My Culture": Social Validity of the PEERS Program for Culturally and Linguistically Diverse Families

A Dissertation submitted in partial satisfaction
of the requirements for the degree of

Doctor of Philosophy

in

Education

by

Ann Marie Martin

December 2020

Dissertation Committee:
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ABSTRACT OF THE DISSERTATION

"I Feel like I'm Changing My Culture":
Social Validity of the PEERS Program for Culturally and Linguistically Diverse Families

by

Ann Marie Martin

Doctor of Philosophy, Graduate Program in Education
University of California, Riverside, December 2020
Dr. Jan Blacher, Co-Chairperson
Dr. Katherine Stavropoulos, Co-Chairperson

This dissertation explored the effectiveness of a well-researched social skills intervention for adolescents with autism spectrum disorder for ethnically and linguistically diverse families. The UCLA PEERS program (Laugeson et al., 2009; 2012) has largely been studied using predominately White and affluent populations; thus, the study explored whether families who completed the program had any recommendations for adaptations to improve their experience, as well as recommendations for making the program more culturally sensitive. The study utilized a sample of 13 adolescents with ASD and their families who completed the 16-week PEERS program in two separate, non-randomized groups (group 1 n=7, group 2 n=6) with program content delivered bilingually. The aim of the study was to determine if (a) adolescents who received PEERS achieved gains in social skills (SSIS; Gresham & Elliot, 2008), improvements in social impairments (SRS-2; Constantino & Gruber, 2012), demonstrated self-reported PEERS-specific knowledge

(TASSK; Laugeson & Frankel, unpublished), and maintained gains over a four-month follow up period, (b) understand if parents and adolescents found the PEERS program to be socially valid and useful and (c) identify any cultural adaptations to aide in the cultural validation of the program for Latinx families. Results of three repeated measures ANOVAs found significant changes from pre-to-post intervention on the study's three outcome measures (SSIS, SRS-2, and TASSK), results from post-to-follow up (four months after the end of the program) were non-significant, indicating that skills gained from the program were maintained post-intervention. Parents and adolescents endorsed feeling satisfied with the intervention content and bilingual groups; they also endorsed recommending it to others. Although the intervention was largely accepted in its current format, a few suggestions were put forth on how to adapt the program to be more sensitive to traditional Latinx parenting practices. Findings provide support for non-traditional forms of program delivery as a way to increase diversity in intervention research.

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CHAPTER 1

Literature Review

Autism Spectrum Disorder (ASD) and Social Skill Deficits

Autism and closely related Asperger syndrome first made medical headlines in the 1940's with Kanner's (1943) paper on infantile autism and Asperger's (1944) account of autistic psychopathology, although Asperger's impact wasn't felt in the U.S. until decades later when his work was translated into English (Wing, 1981; Frith, 1991). Since then, remarkable advancements have been made in the definition and treatment of ASD and Asperger syndrome, and the two disorders now reside under the umbrella term of Autism Spectrum Disorder (ASD) in the DSM 5 (APA, 2013). ASD, a behaviorally defined disorder, is characterized by persistent deficits in the areas of social communication and restricted and repetitive behaviors (APA, 2013). Individuals with ASD demonstrate impairment in social-emotional reciprocity, nonverbal communication, and have difficulty understanding and maintaining friendships and other social relationships (Scherr et al., 2019); some individuals with autism also demonstrate additional deficits in cognitive functioning and verbal communication abilities (Rapin & Dunn, 2003).

Although the fundamental cause of autism remains unknown, researchers are making headway in producing evidence to support biological markers influenced by

environmental factors (Scherr et al., 2019). However, the plethora of suspected genes and environmental triggers factor into the heterogeneity of ASD and the variability in symptom presentation, complicating the process of identifying a precise cause (Scherr et al., 2019). This leads to the famous quote by Dr. Stephen Shore, "If you've met one child with autism, you've met one child with autism." Although autism is typically diagnosed in early childhood, the core deficits (social communication deficits and restricted and repetitive behaviors) are found to last throughout the life course (Seltzer et al., 2004). The behaviors also occur on a continuum ranging from mild to severe, which presents a challenge to practitioners who seek to understand how the variability of symptoms impacts future outcomes and prognosis associated with a diagnosis of ASD (Anderson et al., 2014).

There are several different approaches to treating ASD-related symptoms, many of which are rooted in applied behavior analysis (ABA; Flynn & Healy, 2012). Based on the principles of research by Skinner (1938) and refined into an intensive treatment program by Lovaas (1987), ABA is typically provided in a 1-1 delivery model where treatment (initially) focuses on reducing atypical behaviors and increasing appropriate skills by delivering simple instructions quickly followed by a reward or consequence depending on the child's response (Roane et al., 2016). Programs based upon principles of ABA have demonstrated positive results in the literature; however, the target of this research has been skill acquisition in younger children (Roane et al., 2016). Thus, when it comes working with older children and adolescents, there is no agreed upon approach for

delivering effective interventions, especially those that target social skills in particular (Flynn & Healy, 2012).

This presents a significant problem for the field, considering that longitudinal research has found that despite some improvements in overall functioning during adolescence and young adulthood, social skill deficits persist regardless of ASD severity (Seltzer et al., 2004). For example, while adults with ASD may improve in reducing overall social withdrawal, they still struggle with understanding appropriate boundaries and nuanced social-communication (Sperry & Mesibov, 2005).

Social skills, defined by Matson and Wilkins (2007) as "discrete, observable responses that are essential for a child to adapt to and cope with his/her environment" (p. 30), are the essential building blocks for creating positive interactions with others, forming friendships, and inferring the thoughts, interests, and feelings of others. According to White, Keonig, and Scahill (2007) individuals with ASD face direct and indirect consequences stemming from impairments in social reciprocity. In addition, Bauminger and Kasari (2000) found that youth with ASD often reported a desire for social interaction with peers, but also reported higher levels of poor social support and loneliness in comparison to typical developing (TD) youth. This is in contrast to popular opinion that youth with ASD are disinterested in making meaningful friendships.

In order to target social skill deficits in individuals with ASD, practitioners must find reliable measurement tools for social skills. Psychometric assessments for social skills include both role play assessments and Likert scales, although there has been a decreasing trend in the utilization of role play assessments (Matson & Wilkins, 2007).

Behavioral rating scales such as the *Social Responsiveness Scale (SRS;* Constantino et al., 2005), have been found to aide in the identification of social skill targets for interventions and evaluating treatment effectiveness (Matson & Wilkins, 2007), with most of these assessments completed by and adult who knows the child/teen well, e.g., parent/caregiver/teacher. Having reliable methods of assessing social skills is necessary in order to establish an individual's baseline (i.e., initial levels) as the reference point for skill acquisition and maintenance over time, but it can also serve as a predictor for other consequences that arise from a lack of social skills. For example, social skills deficits as Deficits in social skills can lead to many other difficulties in the school setting. For example, while measured by the *Social Skills Rating System* (SSRS) predicted problem behaviors in school-aged children with ASD (Macintosh & Dissanayake, 2006).

Deficits in social skills can lead to many other difficulties in the school setting. For example, while mainstreaming is a popular option for "higher functioning" youth with ASD (i.e., cognitive abilities in the typically developing range), those youth are at increased risk for peer rejection and social isolation when integrated with typically developing youth (Humphrey & Symes, 2011; Zeedyk et al., 2014). In addition to poor peer relationships, mainstreamed children with ASD are also at risk for developing lower quality relationships with teachers, especially when behavior problems are factored into the student-teacher dynamic (Caplan et al., 2016; Emam & Farrell, 2009). Since children with ASD are consistently reported to have higher levels of problem behaviors and lower levels of social skills in comparison to typical-developing peers (Blacher et al., 2014; Lauderdale-Littin et al., 2013; Macintosh & Dissanayake, 2006) they continue to

demonstrate risk-factors that impact the development of positive relationships with teachers and classroom peers.

Beyond relationships, impairments in social skills also contribute to academic and occupational underachievement (Howlin et al., 2004). For example, in a study by Estes, Rivera, Bryan, Cali, and Dawson (2010), higher-functioning children with ASD demonstrated significant discrepancies between their estimated academic achievement (based on intellectual ability) and their observed academic achievement. The study used a sample of 9-year-old children with ASD, and found that academic achievement was higher for those who demonstrated improved social skills by age 6. This suggests that social abilities may contribute to academic achievement over time. Although social abilities can contribute to academic achievement, research has also shown that children with ASD with higher social skills may also be more aware of their own social deficits and are at a higher risk for depression and anxiety (Estes et al., 2007). These studies highlight the complex relationship between social skills and other domains of functioning in children with ASD.

Persistent deficits in social skills in school-aged children may also lead to deficits in occupational outcomes later on. For example, during a follow-up study of average IQ youth with ASD, researchers found that although a few (4 out of 16) youth demonstrated favorable occupational-social outcomes, the majority of youth in the study demonstrated low occupational achievement and persistent social impairments (Szatmari et al., 1989). Difficulties with social-pragmatics can also impact job interview performance, which often leads to a lower likelihood of securing competitive employment (Morgan et al.,

2014). However, research by Morgan et al. (2014) using the interview skills curriculum (a 12-week manualized interview) showed that brief, low-intensity treatment can improve job-interview skills. The intervention was tested on a sample of 13 (total N=28) young adults (18-36 years) and focused on increasing the social-pragmatic skills necessary for successful job interviews. By increasing their ability to secure employment, targeted treatments have the ability to positively influence long-term outcomes for adults with ASD.

Occupational and social participation are helpful indicators of an individual's quality of life and overall functioning. This is evidenced by data from the National Longitudinal Transition Study 2 (NLTS-2) which followed over 11,000 youth with disabilities (e.g., ASD, intellectual disability, learning disability) as they transitioned into adulthood, and found that youth with ASD were significantly more likely to never see friends or get invited to social gatherings, thus demonstrating higher rates of social isolation (Orsmond et al., 2013). These results highlight the impact that social skill deficits have over the life course of an individual with ASD and why it is so crucial to target skills during adolescence when social demands increase.

Social Skills Interventions for Adolescents with ASD

Given the nature and pervasiveness of social skills deficits in youth with ASD, many different types of interventions have been developed to ameliorate these impairments and improve social reciprocity (White et al., 2007). Some interventions are rooted in theory. For example, having theory of mind can be considered a "first-order belief attribution" (Wimmer & Perner, 1983). Theory of mind is commonly tested using

simple puppet play scenarios (Baron-Cohen, 1989) in a test of social cognition or "false beliefs." False belief tasks are used to evaluate an individual's conceptual perspective-taking skills and contribute to the theory of mind framework or the ability to attribute mental states to oneself and others and predict how others will act in situations (Baron-Cohen et al., 1985). Although existing research has documented theory of mind deficits in individuals with ASD, researchers can use traditional false belief tasks as a reference point for developing more sensitive tasks that increase our understanding of social skills in individuals with ASD (Rutherford et al., 2002).

One such intervention was instituted by Ozonoff and Miller (1995), who found positive results in improving performance on false belief tasks; however, their results were limited to the tasks themselves and skills did not generalize to real-world situations. For example, in the Sally Anne doll task (a common false-belief task), Sally will hide Anne's ball while Anne is out of view. When Anne returns, children are asked to identify where Anne will search first for her ball (where Anne last left it). Typical-developing children (TD) usually identify the correct answer around the age of 4; in Baron-Cohen et al.'s study (1985) children with Down Syndrome (DS) also answered the question correctly. However, children with ASD consistently failed the Sally Anne task (e.g., identify where the ball was moved) past the typical age of awareness in TD and DS children, indicating deficiencies in perspective-taking and an inability to understand mental states. Generally speaking, these studies provide information on how children with ASD develop the social cognitive skills necessary to maintain appropriate social interactions.

In a review of 14 social skill intervention studies, White et al (2007) found that generalization of social skills is a challenge faced by many social skills interventions for youth with ASD, and many parent-report measures post-intervention continue to report no significant improvements in social competency. When analyzing the individual components of what makes a social skill intervention program successful, Gresham, Sugai, and Horner (2001) noted that targeting specific deficits in acquisition, performance, and fluency of social skills were key, but also that the interventions used needed to be directly linked to the individual's social skills deficits.

Social Stories

One popular method for delivering social skills training to children and adolescents with ASD is by using "social stories," which illustrate and describe a social situation using pictures depicting relevant social cues and appropriate responses. These can be individualized to the social deficits of each participant (Gray & Garand, 1993; Swaggart et al., 1995). Social stories typically include three types of sentences: (1) descriptive, (2) perspective, and (3) directive sentences (Gray & Garand, 1993). Descriptive sentences are used to explain the scenario that is being demonstrated in the social story; perspective sentences give voice to the character's thoughts, feelings and beliefs; and directive sentences are those that are intended to guide the actions of the student with ASD in an effort to shape their behaviors (Gray & Garand, 1993).

Quirmbach et al. (2009) tested the effectiveness of social stories to increase appropriate game play skills in children (aged 7-14) with ASD through a randomized control group design. Results showed that standard (1:3-5) and directive sentences in

story formats were equally effective in teaching and maintaining targeted game playing skills in children with IQ's in the "typical range" (i.e., not comorbidly diagnosed with an intellectual disability) as compared to a control story which was unrelated to social skills (Quirmbach et al., 2009). The findings from the study indicate that children and adolescents with ASD perform best when provided direct instructional methods of social skills interventions. Although the empirical foundation for the effectiveness of social stories is limited, published research has demonstrated positive effects on the reduction of maladaptive behaviors and the increase of social competence in children and youth with ASD. With more research, social stories may be considered an evidence-based approach for this population (Sansosti et al., 2004).

Peer-Mediated Interventions

Another method that has been used to train social skills involves a small group format in school or clinic settings. For example, the clinic-based SCORE skills strategy program by Webb et al. (2004) focused on five key social skills (share ideas, compliment others, offer help or encouragement, recommend changes nicely, and exercise self-control) that adolescents need to cooperate with others. Skills were broken down and taught using role plays and games over the course of 10 weeks. Results from the program were positive and all participants (n=10) showed an increase in social skills performance post treatment (Webb et al., 2004). In addition, parents reported feeling satisfied with the program, as measured by a parent satisfaction questionnaire (M=5.4); 100% of 10 parents felt that other adolescents could benefit from the program. A peer-mediated intervention in a naturalistic context was developed by Hughes et al. (2013), who trained three general

education high school students to develop (and track) social interaction goals with a classroom peer with autism. Results showed that each peer-ASD partner dyad reached a level of social interaction within normative range across intervention settings (e.g., Art class, PE). Additionally, during post-intervention interviews with supervising general education teachers, all teachers reported satisfaction with the intervention and endorsed positive effects observed between participants and partners throughout the course of the teaching trials (Hughes et al., 2013). This study highlighted the value of fostering positive social interactions with same-aged peers as a way to learn and practice social skills.

Small Group Social Skill Interventions (GSSI)

Another common format for delivering social skills training is through small group interventions that focus on a predetermined set of social skills necessary for creating positive peer relationships (Gates et al., 2017). Group-based social skill interventions (GSSIs) are the most widely used approach to improve social skills in adolescents with ASD (Gates et al., 2017). One such example is the Social Tools and Rules for Teens (START) program (Ko et al., 2019; Vernon et al., 2018), a 20-week program (90-min weekly) for adolescents with ASD and their parents based on a manualized curriculum of various targeted social skills (e.g., showing interest, expressing empathy, complimenting others). Vernon et al's (2018) implementation of the START program included 40 adolescents between the ages of 12 and 17 (M =13.25) and their parents, using a randomized control trial design methodology. Assessment measures included the Social Skills Improvement System-Rating Scales (SSIS; Gresham & Elliott, 2008), the Social Responsiveness Scale (SRS-2; Constantino & Gruber, 2012), and a

project developed measure for social motivation and competency. In addition, parents and teens provided ratings on a 2-question measure (10-pt Likert scale) on their enjoyment of the program and the extent to which social skills improved during the course of the intervention in order to ascertain program acceptability. Results from the program showed significant changes in pre-to-post outcome measures (e.g., increased social skills on SSIS and decreased social reciprocity deficits on SRS-2) and high ratings of enjoyment for parents (8.14 out of 10, SD=0.97) and teens (8.41 out of 10, SD=1.83) after the group ended (Vernon et al., 2018). Other GSSIs have published similarly positive results, such as the well-researched Program for the Education and Enrichment of Relational Skills (PEERS; Laugeson et al., 2012) developed at UCLA.

The UCLA PEERS Program: An Evidence-Based Model

The UCLA PEERS program is a 14-16-week intensive social skills intervention that is either parent-assisted (Laugeson et al., 2012) or delivered in the school setting (Laugeson, 2014). The program is made up of didactic lessons using the Socratic method in the teen group, simultaneous lessons in the parent group, and weekly homework assignments (Laugeson & Frankel, 2010). Parent groups discuss results from the homework assignments and troubleshoot any problems that occurred while their children/youth were completing the assignment. Homework compliance is an important component of the program and strongly enforced; in some cases, repeated failures to complete assignments may be grounds for dismissal from the group (Schohl et al., 2014). Social skills sessions focus on the following topics: Trading information, conversation skills (two-way conversations, electronic communication), choosing appropriate friends,

appropriate use of humor, entering/exiting a conversation, get-togethers, good sportsmanship, rejection (teasing and embarrassing feedback, bullying and bad reputations), handling disagreements, and handling rumors and gossip (Laugeson & Frankel, 2010). A revision of the program added the following skills to the curriculum: changing reputations, handling physical and cyber bullying, and minimizing rumors and gossip (Laugeson, 2014).

The PEERS program has been heavily researched and is well represented in the social skills intervention literature (Laugeson et al., 2012, Laugeson et al., 2014; Laugeson et al., 2015). Currently, the program has been culturally validated and manualized in four languages (Korean, Japanese, Cantonese, and Dutch) and continues to be tested and applied clinically in ongoing projects around the world (Rabin et al., 2018). Randomized control trials of the program have consistently reported significant improvements in overall social skills, frequency of social engagement, and reduced autism-related deficits in social responsiveness (Laugeson et al., 2012; 2015; Schohl, 2014. These outcomes were measured through the use of a variety of standardized measures of social responsiveness and social skills (e.g., the Social Responsiveness Scale; Constantino, 2005) the Social Skills Rating System (SSRS; Gresham & Elliott, 1990), and the Empathy Quotient (EQ; Baron-Cohen & Wheelwright, 2004). There are also two program-specific measures: 1) Test of Young Adult Social Skills Knowledge (TYASSK; Laugeson & Frankel, 2010) that directly measures the social skills concepts taught in the program to assess content retention; 2) Quality of Socialization Questionnaire (QSQ; Laugeson & Frankel, 2010) that measures the frequency of hosted

and invited get-togethers over the last month, and the amount of conflict that occurred during the get-togethers.

The UCLA PEERS program has been replicated at other sites with similar positive findings post-intervention (Schohl et al., 2014). In comparison to a waitlist group, Schohl's (2014) treatment group significantly increased knowledge of concepts taught in the group, indicating that the intervention is successful in teaching the targeted social skills. In addition, parents reported an increase in hosted get-togethers and a decrease in core ASD-related problems, problem behaviors, and social anxiety.

Although the PEERS program has been highly effective in improving social competence in their participants, the literature supports Magana et al.'s (2016) findings that most studies report low numbers of Hispanic/Latinx[1] participants. For example, Laugeson, Frankel, Mogil, and Dillon (2009) had six Hispanic/Latinx participants from a sample size of 33 teens in their initial study of the PEERS intervention. Subsequent efficacy trials of the PEERS program have reported similar demographics (Laugeson et al., 2014). Schohl et al's (2014) replication study had zero participants that identified as Hispanic/Latinx out of a sample size of 58 adolescents. service history, including when the child was diagnosed with ASD and what subsequent services These findings highlight the necessity for more Latinx representation in social skills intervention research.

Possible Factors that may Affect Program Outcome

There are likely other factors, even those not measured, that may affect the generalization or effectiveness of the PEERS and other social skills programs. One is the

[1] The preferred term for the proposal is Latinx, however the term tied to the original studies will be preserved

child's/family's service history, including when the child was diagnosed with ASD and what subsequent services were received. Another is the family cultural context and all that goes along with that (e.g., acculturation, awareness of ASD and related services).

Lack of Service Access

One goal of the present study is to understand more about the impact of the PEERS program in a community that is largely Latinx, socioeconomically disadvantaged, and with Spanish-speaking parents. Importantly, the population of interest does not have consistent access to evidence-based programs like PEERS including knowledge of the merits of the PEERS program. Indeed, provision of all services to this population, not just social skills interventions, lags behind service delivery to White children (Magana et al., 2013).

Ample literature suggests that Latinx children fall behind in rates of early identification and diagnoses of ASD (Magana et al., 2013), which could signal that the delivery of services will be delayed or nonexistent. Magana et al. (2013) found that Latinx children were diagnosed on average, almost one year later than White children. In addition to delay in diagnosis, the children in the study also received fewer specialty services and had higher unmet service needs, like respite care and recreational programs (Magana et al., 2013). Latinx parents have cited barriers to diagnosis such limited access to ASD knowledge, stigma in the Latinx community related to mental health and disabilities, and poor relationships with medical providers (Zuckerman et al., 2014).

Finally, considered another indirect effect of sociocultural and environmental factors, is the underreporting of ASD related symptoms by Latinx mothers (Blacher et al.,

2014) and the normalization of many of their child's early behavioral symptoms (Zuckerman et al., 2014). These factors can also lead to delays in diagnosis. As a result of the significant role that the Latinx culture plays in the lives of families seeking an ASD diagnosis and related services, professionals and educators are taking steps to understand and employ teaching strategies that embrace the Latinx culture (Bernal & Rodriguez, 2009). For example, according to Bernal and Rodriguez (2009), service professionals should emphasize the importance of preserving the family's native language to foster communication and promote well-being when providing interventions.

In addition to differential rates in the identification of ASD among under-represented groups, service inequities have been documented as well (Blacher et al., 2019). When it comes to specialty services for ASD, behavioral intervention, occupational therapy, and social skills training are common treatment options to ameliorate core symptoms and reduce problem behaviors (Magana et al., 2016). To understand the roles that ethnicity and culture play on access to specialty services, Magana and colleagues (2016) compared access to behavioral and occupational therapy, social skills training, and sensory integration therapy between 120 Latinx and 1063 White families and found that Latinx children received fewer overall services, including those children with greater symptom severity.

ASD Knowledge

Knowledge about ASD has been identified by several researchers as a significant contributing factor to the disparity in rates of ASD diagnosis among Latino and White children (Colbert et al., 2016; Zuckerman et al., 2014). Notably, this disparity is most

prominent in states with the highest Hispanic populations (e.g., California, Texas, New Mexico) and in children with primarily social impairments as opposed to those with classical presentations of ASD that demonstrate prominent restricted and repetitive behaviors (Overton et al., 2007). Knowledge about ASD is also influenced by a variety of cross-cultural factors such as acculturation, SES, social supports, religion, spiritual attachments to diagnoses (e.g., "my child is a gift from God," which is different than organized religion/belonging to a religious community). Thus, increasing knowledge about ASD can potentially be a difficult problem to solve and one that requires far more effort than simple dissemination of information to Hispanic communities (Colbert et al., 2016). Colbert et al. (2016) divided the effect of sociocultural and environmental factors into two levels of barriers to quality care for Hispanic populations: the direct effects of SES on quality health care and availability of services, and the indirect effect on ASD awareness and overall knowledge.

Acculturation

Several studies indicated that acculturation is an important factor affecting rates of ASD diagnoses. According to Abraido-Lanza, Echeverria, & Florez (2016), acculturation is defined as "the process by which individuals adapt to a new living environment and potentially adopt the norms, values, and practices of their new host society." Acculturation, typically measured through length of stay and language proficiency questionnaires, has been observed to impact rates of health care access and utilization (Lebrun, 2012). Research has found that acculturation and ASD knowledge are significantly and positively correlated (i.e., higher levels of acculturation indicate higher

levels of knowledge); thus, acculturation may play a strong role in access to quality care (Colbert et al., 2016). In addition, Voelkel, LeCroy, Williams, and Holschuh (2013) surveyed a sample of Hispanics (n=169) in the Southwest using the Autism Awareness Survey and found that Latinos who were less acculturated were less likely to have met someone with ASD, read about it, or to have understood the presentation and life contexts course of ASD, indicating that acculturation plays a heavy role in Latinx community experiences. These findings give credence to the importance of factoring in levels of acculturation when conducting research with Latinx participants.

The Role of Social Validity in Social Skills Interventions

It is particularly important when working with cultural and linguistically diverse families to include measures of social validity. Social validity can be measured through different contexts and provides researchers a glimpse into the utility of their program from the view of participants and the larger social framework. First introduced by Wolf (1978), social validity was conceptualized as addressing three distinct issues: (1) Goals: Are the specific behavioral goals really what society wants? (2) Acceptability: Do the ends justify the means? In essence, do the participants, caregivers and other consumers consider the treatment procedures acceptable? and (3) Satisfaction: Are the consumers satisfied with the results, including any unpredicted ones? (p. 207).

Expanding on the conceptualization of Wolf (1978), Horner et al. (2005) developed four indicators of program quality to comprise social validity: (1) The social importance of the dependent variable; (2) The magnitude of change in the dependent variable; (3) The practicality and cost of implementation; (4) The generalizability, as

determined by implementation over extended time periods, by typical intervention agents (e.g., teachers, parents, practitioners) in typical physical and social contexts. Thus, the value of a program inherently lies in the value that the participants and society place on the final product. Social validity is intricately tied to program effectiveness, because if the participants do not find the intervention to be valid, they are less likely to put in the effort necessary to generate maximum treatment benefits, lowering the treatment adherence and overall effectiveness (Bellini et al., 2007).

According to Fox and McEvoy (1993), traditional methods of assessing social validity in social skills interventions include subjective and objective components. Most frequently used, subjective measures ask participants or relevant practitioners (e.g., teachers, therapists) to complete rating scales pertaining to target skills, outcome behaviors, or the intervention itself in order to calculate the satisfaction of the program. There is some available information regarding social validity in articles describing social skills interventions. For example, in a review of the social validity of interventions for ASD by Callahan et al (2017), 46% (13 out of 28) of the articles on social skills interventions reported social validity, with the most common variable being consumer satisfaction with results. However, they noted a significant lack of reported results in all articles reviewed.

A recent study by Sabey, Ross, and Goodman (2020) assessed the functional impact of a behavioral skills training program for students with ASD. The study measured the acceptability of the intervention in both participants (Children's Usage Rating Profile) and interventionists (Usage Rating Profile) and found positive results with

both participants (85% acceptability) and interventionists (96% acceptability), indicating the program as a socially valid intervention (Sabey et al., 2020).

Social Validity from a Latinx Lens

Acculturation can also play a role in service provider preferences. Gamst et al. (2002) found that among Mexican American clients of mental health services (n=204), ethnic and language matching (between client and therapist) was important for Spanish dominant speakers and resulted in fewer premature terminations and improved participant experience. Spanish dominant speakers also preferred treatment in bilingual (English-Spanish), while English dominant speakers in the study indicated no preference on the language of services and also demonstrated ambivalence towards the culture of the therapist (Gamst et al., 2002). This was an important consideration when designing the present study, primarily to appeal to the sample being recruited (bilingual Latinx demographic) but also as a buffer for hypothesized attrition, such as those seen in the Gamst et al. (2002) study.

Lau (2006) also emphasized the importance of social validity when adapting evidence-based treatments (EBTs; e.g., the PEERS program) for culturally and linguistically diverse (CLD) participants in order to both recruit and successfully involve them in an intervention. Since social validity can be influenced by cultural views and the practical logistics of personal circumstances, such as transportation, medical insurance, education, or employment, attention to these differences is crucial to the viability of the study (Barrera & Castro, 2006). Viability relies on several factors, for CLD families in particular, frequent monitoring and evaluation of engagement (i.e., periodic check-ins,

data on session attendance) is recommended in order to reduce treatment dropout. (Lau, 2006). Finally, although from a conceptual standpoint treatment outcome (or effectiveness) can be separated from participant engagement and satisfaction, outcomes are influenced and dependent on the characteristics of the participants and their unique clinical problems (Lau, 2006).

The Current Study

Overall, it is evident that several limitations persist in the literature on social skills interventions for adolescents with ASD. Most notably, is the relative lack of evidence-based interventions that include ethnically diverse samples and materials that have been culturally validated. In addition to culturally sensitive materials, it is crucial to evaluate whether ethnically diverse participants in the sample find the program to be useful and relevant to their concerns regarding their adolescent's social deficits. Finally, it is important to examine teen perceptions regarding the social validity of the program, as teen perceptions of program satisfaction are typically brief (Vernon et al., 2018) and quantitative in nature (Sabey et al., 2020), suggesting a need for in-depth qualitative analyses to determine the appropriateness of programs. These three issues – ethnically diverse participants, social validity, teen perceptions – are the focus of this proposed study. These topics will be examined in the context of the PEERS social skills intervention group for youth with ASD.

The current study aims to address the following research questions:

(1) Do adolescents receiving PEERS achieve gains in social skills (SSIS), improvements in social impairments (SRS-2), and demonstrate self-reported PEERS-

specific knowledge (TASSK)? *We expected adolescents to demonstrate an increase in social skills (SSIS), a decrease in social impairments (SRS-2) and an increase in self-reported PEERS-specific knowledge (TASSK) after receiving the PEERS intervention.*

(1a) Are gains maintained over a four-month follow up period? *We expected adolescents to maintain skills gained through the PEERS intervention at the time of their follow-up appointment.*

(2) Do both parents and adolescents find the PEERS program to be valid and useful? *We expected that both adolescents and parents report positive program satisfaction and social validity (e.g., program usefulness, socially meaningful benefits of behavior change).*

(3) Were any cultural adaptations necessary*? (No hypotheses were set forth for this question.)*

(3a) Were adaptations influenced by language, income, or level of acculturation?

CHAPTER 2

Methods

Procedures

Approval for the gathering of data for research purposes was granted from the university's Institutional Review Board (HS 17-136). Participants were recruited from the community through focus groups and presentations, advertising in local school districts, community centers, and booths at events hosted by special needs service providers. In addition to in-person recruitment, digital flyers and information were disseminated using

email lists of families and practitioners interested in research opportunities, social media posts, and paper flyers that were mailed to service providers and posted around the university. When parents contacted the research team, they spoke to staff via telephone, and completed a brief intake form that determined initial eligibility for the study.

Time 1- Intake

Adolescents who met initial criteria for the study were brought into an autism center located on the university campus for two separate intake appointments. During the first appointment, (labeled time 1 in Table 1a), parents and adolescents received written and verbal information about research procedures and were provided informed consent prior to conducting the eligibility screening. The *Autism Diagnostic Observation Schedule, Second Edition* (ADOS-2; Lord et al., 2012) was administered to determine whether the child met diagnostic criteria for autism or to confirm a pre-existing diagnosis of autism spectrum disorder from an outside provider. In addition, two subscales from the *Wechsler Abbreviated Scales of Intelligence, Second Edition (WASI-II;* Wechsler, 2011) was administered to rule out co-occurring intellectual disability (ID). A co-morbid diagnosis of ID was considered an exclusionary criterion due to findings in the literature that the PEERS curriculum advances too quickly for adolescents with an IQ lower than 70. Parents were kept in a separate waiting room and filled out a demographic form and behavioral questionnaires while their adolescents were participating in the screening battery.

Assessments were conducted by doctoral students from school psychology and special education programs who were extensively trained in the use of the ADOS and IQ

measures. Supervision of the assessments was provided by the licensed clinical psychologist and principal investigator of the project.

During the time 1 appointment, adolescents also participated in a brief mental health status interview with a graduate student to determine appropriateness of fit for the group. If adolescents were determined to be a good candidate for the study (i.e. average cognitive functioning, autism diagnosis, and motivated to participate), a second intake appointment was scheduled where the teen would participate in an EEG and complete behavioral questionnaires.

PEERS Intervention

The proposed study used the most recent manualized version of the PEERS social skills intervention (Laugeson, 2014). Both teen and parent groups were led by PEERS-certified group leaders at the University of California, Riverside. Participants met for 90 minutes once a week for 16-weeks and received targeted training on the following key social skills: having conversations, electronic communication, choosing appropriate friends, humor, joining/exiting conversations, good sportsmanship, get-togethers, handling arguments, changing reputations, handling teasing and gossip, and handling physical and cyber bullying. Session material was delivered in a Socratic teaching style and included homework review, new content, live practice (teen group only), and then final review and explanation of the homework. Parents and their teens were given personalized "checkouts" where teens identified when they planned to do their homework activities (e.g., schedule a phone-call to a peer not in the group) and group leaders problem-solved any issues with the teens' progress (e.g., lack of homework completion

due to no source of friends). The teen group was delivered exclusively in English while parent group lessons were delivered in English and Spanish simultaneously by the trained bilingual graduate student group leader with assistance from a bilingual research assistant to translate parent comments for the monolingual Spanish-speaking parents.

A total of two intervention groups were run for the current study (see Table 1a for the study's timeline). Recruitment for group 1 began during the Fall of 2018 and their time 1 appointments were completed by the end of December 2018. The PEERS intervention for group 1 ran from February of 2019 through June of 2019. Due to recruitment constraints, we were unable to employ a randomized control trial (RCT) design. Thus, after the intervention was completed, a second group was immediately recruited and completed their intake appointments (e.g., ADOS, cognitive assessment, behavioral measures) in June of 2019. This intake was referred to as time 0.

Prior to receiving the PEERS intervention, group 2 adolescents participated in a four-month waiting period (summer of 2019) in order to control for maturation effects (e.g., increase in social skills due to the passage of time and maturity). Group 2 participants returned to the clinic at the end of the four-month waiting period and repeated parent and teen behavioral measures (eligibility measures such as the ADOS were not repeated) prior to beginning the intervention. This appointment is labeled as time 1 in Table 1a.

Time 2-Post

On the last day of the PEERS intervention (week 16), teens and parents filled out the same behavioral measures they had filled out during time 1, as well as an additional

social validity questionnaire for parents about their satisfaction with the intervention. Teens participated in a graduation celebration and parents signed up for their time 2 clinic visit.

During the clinic visit (on average 1 week after the last day of the intervention), parents and adolescents participated in separate semi-structured interviews regarding their experience in the study and any suggestions they might have for program improvements. Parent interviews lasted around 20-30 minutes and teen interviews were about 5-10 minutes in duration. IRB approval was obtained to audio-record interviews

Time 3-Follow Up

Four months after their respective time 2 appointments, participants from both groups returned to the clinic for a follow up appointment. At this time, parents and adolescents completed the same behavioral questionnaires as previous appointments. Parents participated in another semi-structured interview (about 30 minutes) regarding long term effects from the intervention and their satisfaction. Teens also participated in a semi-structured interview regarding their experience and whether they would recommend the program to other teens (about 10 minutes). This was the final appointment for families in the study.

Participants

Study participants were 13 children (11 years to 17 years, $M = 13.2$, $SD = 2.0$) and their parents (6 mothers, 2 fathers, and 5 mother-father pairs) who were recruited for the PEERS social skills intervention and completed all 16 weeks of the program. Data

were collected from adolescents and families over the course of 3 (group 1) or 4 (group 2) clinic appointments. Sample characteristics can be found in Table 1b.

Group 1 contained seven adolescents (*M* age = 13.3 *SD* = 2.0), six males and one female. Ethnicity included two White and five Latinx (one of these was biracial, Latinx and African-American) participants. Four of the five Latinx parents indicated some level of Spanish language comprehension on the Bidimensional Acculturation Scale (BAS; Marin & Gamba, 1996), suggesting that they were predominately bilingual. There was only one completely Spanish-speaking parent. All youth were predominately English-speaking. Three families reported annual household income less than $50,000, while the other four participants reported an annual household income over $50,000.

Group 2 contained six adolescents (*M* age = 13.0 *SD* = 1.9) four males, two females, and their parents. The ethnicity of the second group included two White and four Latinx families. Four families were English-speaking and two participants identified their primary language as Spanish. Of the four families who spoke English, none had Spanish language comprehension. All youth were English-speaking. With regard to income for the group 2, one family reported an annual household income of less than $50,000, while the other five reported an annual household income over $50,000 (Median = $50,000-75,000; range was less than $15,000 to over $100,000).

Measures

The measures for the present study were taken from a larger battery of measures administered at different time points throughout the project. Measures designated as Time 1 were administered during the intake appointments prior to the start of the intervention,

where qualification for the present study was determined (i.e., did the teens have autism, were they motivated to participate). Measures designated as Time 2 were administered on the last day of the group (week 16; for behavioral measures), or at their clinic visit one week after the group ended (for the in-person interviews), and measures designated as Time 3 were administered four months after the completion of the group during their follow up appointment. A professional translator was hired to translate parent measures and parent hand-outs provided during the intervention. Materials were not back-translated but were cross-checked for accuracy by the graduate student undertaking this project. Measures and interview protocols are located in the Appendix. A summary of the measures and domains assessed is located in Table 1c.

Parent Measures

PEERS Demographic Form. During time 1 for group 1 and time 0 for group 2, parents completed a demographic form with information about family characteristics and acculturation determinants (e.g., family members living in home, parent place of birth, how many years living in the US), teen descriptors (e.g., place of diagnosis, additional co-occurring diagnoses) and socio-economic status (e.g., family income, parent level of education). For the purposes of the current study, the following variables will be used to describe the sample: (1) income, (2) language spoken, and (3) ethnicity.

Bidimensional Acculturation Scale. The Bidimensional Acculturation Scale (BAS; Marin & Gamba, 1996) contains 24 questions that measure acculturation across 3 domains: general language use, language proficiency, and language use in media, using a 4-point Likert scale (1=not well at all, 4=very well). Parents completed the language proficiency

subscale (12 questions) at each time point (time 1, 2, and 3; and time 0 for group 2). Example items include: How well do you speak Spanish; How well do you read in English; How well do you understand television programs in Spanish? Higher scores on the BAS indicate greater language proficiency. Internal consistency for the language subscales was reported as .90 for Hispanics and .96 for non-Hispanics (Marin & Gamba, 1996). Since language use and acculturation are highly related, language preferences (proficiency and preference) are often used as a proxy for acculturation in research (Lebrun, 2012).

For the present study it was important to determine language preference during intake for group format presentation (i.e., which language to provide materials and instruction in) and overall language proficiency of English and Spanish in order to assess participant level of acculturation. Although acculturation tends to change over the span of generations and very little in the short range (Gamst et al., 2002), the BAS was administered at each subsequent time point as a precaution to rule out possible changes in language proficiency and acculturation across the span of the study. This was most relevant to parents with emerging English language abilities.

Social Responsiveness Scale-Second Edition. The Social Responsiveness Scale-Second Edition (SRS-2; Constantino & Gruber, 2012) is a widely used 65-item parent report measure that captures the presence and severity of social impairments related to autism spectrum disorder (Bruni, 2014). There are four rating forms across three age ranges. Parents in the study completed the SRS-2 (school age form) at every time point to assess teen's social functioning.

Based on the preceding 6 months, each item is rated on a 4-point scale: 1 (not true), 2 (sometimes true), 3 (often true), or 4 (almost always true). Example items include: Behaves in ways that seem strange or bizarre; Avoids eye contact or has unusual eye contact; Avoids starting social interactions with peers or adults; and Has a sense of humor, understands jokes. The SRS-2 provides a total score and five treatment subscales: social communication, social awareness, social cognition, social motivation, and restricted and repetitive behaviors. A total T-score of 76 or above indicates deficiencies in social responsiveness that are clinically significant and strongly associated with a diagnosis of ASD. A total T-score between 66 and 75 are ranked as moderate, while scores of 60 to 65 fall in the mild range. A T-score below 59 indicates that the individual presents with few social difficulties. Reporting T-scores using the standard error of measurement is recommended due to the variability in calculating a specific score (Bruni, 2014). The SRS-2 total score is considered one of the most reliable measure of social impairments (Bruni, 2014), with an alpha coefficient of .95 (Constantino & Gruber, 2012), therefore the present study utilized the total score from each time point data collected.

Social Skills Improvement System Rating Scales. The Social Skills Improvement System (SSIS; Gresham & Elliot, 2008) is a 79-item parent report measure designed to assist in screening students (ages 8 to 18) who are suspected of having significant social deficits. Parents completed the SSIS at every time point in the study. Based on the preceding two months, parents are asked to select among four options how often each item occurs: (n) never, (s) seldom, (o) often, or (a) almost always. Example items include: Joins activities

that have already started; Takes turns in conversations; Stays calms when disagreeing with others; Says bad things about self; and Acts lonely.

The SSIS yields scores in three standard domains: Social Skills, Problem Behaviors, and Academic Competency. The social skills domain includes subscales in communication, cooperation, assertion, responsibility, empathy, engagement, and self-control. The problem behaviors scale measures behaviors that interfere with the acquisition or performance of socially appropriate behaviors, and includes the following subscales: externalizing, internalizing, hyperactivity/inattention, autism spectrum, and bullying. The manual reports high median alpha values (>.90) for the three domains, and Crosby (2011) endorses the use of the domain standard scores for use in linking assessment results to interventions. For the purpose of the current study, only the social skills domain was used.

Intervention Rating Profile. A modified version of the Intervention Rating Profile (IRP15; Witt & Elliott, 1985) was used to identify whether parents found the intervention appropriate for their child's behavior problem and if they would recommend it to other parents and practitioners. Parents completed the measure at time 2 (week 16). The measure contains 15 questions on a 5-point Likert scale (1=Strongly Disagree, 5=Strongly Agree) and was designed to aid in the selection of classroom interventions. Example items include: This was an acceptable intervention for my teen's problem behavior; I would be willing to continue this intervention at home; This intervention would be appropriate for a variety of teens; and Most parents would find this intervention suitable for the behavior problem. Responses on the form are converted into numeric

values and a total score is calculated by summing all items. Higher total scores are indicative of greater levels of intervention acceptability. A moderate level of acceptability requires a total score of at least 52.5, and the internal consistency of the measure was reported as 0.98 (Lane et al., 2009; Carter & Wheeler, 2019). The present study substituted language in the measure from "teacher" to "parent." The measure was translated to Spanish by a professional translator with experience in the field of special education and cross-checked for accuracy by the graduate student undertaking the research project.

Previous research has found the IRP-15 and adaptations of it (i.e., specifically for elementary or middle school interventions) to be a one-factor instrument that explains a significant amount of variance. For example, in Lane et al.'s (2009) study the measure accounted for 70% of the variance when assessing the social validity of school-wide behavior support plans in elementary, middle and high schools (617 teachers completed the measure), demonstrating the measure's strength and utility in social validity research.

Other Measures of Social Validity. In addition to written measures, social validity was assessed using an interview adapted from the Gresham and Lopez (1996) framework for determining validity from post-intervention interviews. All parents participated in semi-structured interviews at time 2 and time 3.

The time 2 interview was largely focused on creating a space where parents could share the best and most difficult aspects of the program and provide suggestions for how the program could be improved. In order to determine cultural adaptations necessary for program success, parents were asked the following questions: (1) What could we have

done differently or better; (2) What did you think about the lesson being delivered in both English and Spanish; (3) Did the group feel inclusive; and (4) Did the program impact your child rearing practices, and if so how, *or* Did the program impact the way you interact with ____? Both statement variations of the last question were provided and parents were allowed to respond to whichever variation the parent identified with more (e.g., some parents had a strong cultural tie to traditional child rearing expectations, whereas some parents had none).

During the time 3 interview, parents were asked four open-ended questions regarding the social validity of the PEERS program: (1) Are you satisfied with the outcomes of this intervention; (2) Would you recommend this intervention to other parents; why or why not; (3) Describe how well you think the intervention worked; and (4) What behavior changes did you observe, did these changes make a difference in other settings. Question four also included an additional opportunity for parents to provide final suggestions on program improvements after a reflection period of four months (e.g., What aspects of this intervention would you change before recommending this intervention to other parents).

Teen Measures

Test of Adolescent Social Skills Knowledge-Revised. The Test of Adolescent Social Skills Knowledge-Revised (TASSK-R)) is a 30-item criterion-referenced measure that was adopted from the UCLA PEERS study (Laugeson & Frankel, unpublished) and designed to test adolescents' knowledge about the specific social skills included in the PEERS curriculum. The measure was completed by the adolescents at time 1, 2, and 3 (and time

0 for group 2) and uses sentences from the didactic lessons with two possible answers. Example items include: The goal of a conversation is to…; When you are FIRST getting to know someone, it is important to be…; If you try to join a conversation and the people exclude you…; and, when starting an individual conversation… Scores range from 0 to 30, with higher scores indicating more knowledge of adolescent social skills that are PEERS-specific. The TASSK-R is based upon the original TASSK (Laugeson et al., 2009) which was shown to be sensitive to treatment effects (alpha = 0.56), the TASSK-R has also been tested in the literature (Laugeson et al., 2012) with success.

Other Measures of Social Validity. In addition to the behavioral measure, social validity for adolescents was assessed using interview questions adapted from the Gresham and Lopez (1996) framework. Interviews occurred during time 2 and time 3 appointments.

During the time 2 interview, adolescents were asked the following three questions regarding social validity: (1a) What part of the program did you find the most helpful? (2a) What part of the program did you like the least? (3a) What suggestions do you have to improve the program? Subsequent open-ended questions were added to encourage elaboration based on teen responses (i.e., if the participant gave single word answers). During the time 3 interview, adolescents were asked the following: (1b) Are you satisfied that you completed the program? Why or why not? (2b) Would you recommend the program to other teens? Why or why not? Teens were also given the opportunity to discuss their personal and academic experiences since the end of the program (e.g., if they made any new friends, joined social groups or clubs) with responses to this question

providing meaningful quotes to highlight the effectiveness of the intervention on their personal life.

Data Reduction Procedures

Responses to the quantitative measures (e.g., Intervention Rating Profile-15 (IRP-15), SSIS, TAASK, SRS-2, BAS, and demographic form) were scored, checked, and entered into the statistical program SPSS by two research assistants on separate data sheets and then merged and verified for accuracy by a graduate student involved in the research project.

Data Analytic Plan

A mixed methods approach was used to analyze the data collected and address the study's three research questions. For the purposes of the analyses, participants from both groups were combined into one sample (N=13). This method was selected due to the small sample sizes in the individual groups (N=7, 6) rendering the power too low to conduct between groups analyses. In addition, since the research design was not a true RCT and both groups were comprised from the same population (e.g., adolescents with ASD), combining the groups into one sample provided a greater opportunity to test the hypotheses for research question one for the study's three outcome measures.

Prior to combining data from both groups, a paired samples T-test was run on group 2's three outcome measures (SRS, SSIS, TASSK) to control for maturation effects. For example, the total T-score on the SRS from time 1 was compared to the T-score from time 0 using a paired samples T-test to rule out any significant differences. Since none were observed (what was hypothesized to occur), the present study utilized only time 1,

2, and 3 total T-scores from group 2 and combined them with the time 1, 2, and 3 total T-scores from group 1.

Research Question 1

The first research question evaluated the effectiveness of the PEERs intervention. The approach to analysis involved two steps: (1) a power analysis; and (2) a repeated measures MANOVA with a Bonferroni post hoc test.

Step 1: Power Analysis

Power analyses are utilized for two important reasons: (1) to determine group size prior to running a research study, and (2) to determine whether the findings indicate meaningful differences. This power analysis was not run prior to recruiting for the present study but it can provide important insight as to whether the current study's sample size (N=13) had enough power to detect significant differences in the proposed analyses (step 2).

Olejnik (1984) stresses the importance of determining the necessary sample size when planning a research study in order to adequately test a hypothesis. When calculating an a-priori power analysis, there are four factors to consider that affect sample size: (1) statistical criteria of significance, (2) level of statistical power, (3) the research design and methods, (4) and the desired effect size. The first consideration to make during a power analysis is the statistical criteria of significance, or the probability that a Type I (false positive) error will be made. Although the statistical criteria of significance can vary depending on the study (e.g., a human health-related study may opt for a stricter .01 criterion), Olejnik (1984) asserts that most hypotheses in education are tested at a .05

level of significance. Thus, the current study utilized the social science standard of .05 significance.

The second factor, level of statistical power, impacts the researcher's probability of making a Type II (false negative) error. If a study's level of power is too low, a relationship between variables (e.g., program participation and amount of social skill deficit) may not be observed, even if the study was effective. Olejnik (1984) describes acceptable levels of statistical power ranging between .70 and .90, where an increase in statistical power would require an increase in the sample size needed. For the current study, a .90 level of power was selected in order to obtain an estimate of the maximum sample size needed to observe statistical effects. The third consideration for a power analysis is the data analytic plan (quantitative vs. qualitative), how many independent variables the investigator plans to test, and how many times the participants will be tested. According to Olejnik (1984), more independent variables require a larger sample size, however the number of times a participant is tested may lower the sample size required. Therefore, it is important to calculate the power analysis (for the quantitative piece), as a repeated measures ANOVA design with three (pre-post-follow up) time points.

Finally, in regards to effect size, a researcher must make an informed estimate of the study's expected effect size when conducting a power analysis. This is directly affected by the population that will be sampled and how large a mean difference is anticipated (e.g., larger differences in population means will require a smaller sample size). One way to estimate an effect size for a power analysis computation is by analyzing

the literature in the field in which the researcher plans to publish (Olejnik, 1984). For the current study, three PEERS research articles (Laugeson et al., 2012; 2015, & Schohl, 2014) were selected to provide a basis for the estimated effect size. It is important to note that the three studies reported large effects (d=0.66-1.38), and thus the calculated minimal sample size was predicted to be on the lower end.

The power analysis for a repeated measures ANOVA within effects was computed on G*Power using the following fixed factors: (1) .05 statistical criteria of significance; (2) .90 level of power; (3) number of groups as one; and (4) number of measurements as three. With the following fixed factors, the effect size f(V) was set to 0.53 and the sample size necessary to meet the study requirements was estimated to be 47. The equations for the model are (Faul et al., 2007): $n=\frac{2\sigma^2}{\delta^2}(z_{1-\alpha}+z_{1-\beta})^2$ and $f=\sqrt{\eta}\,2/(1-\eta\,2)$. This sample size was not reached.

Step 2: Repeated Measures ANOVA

In order to preserve the relationship between participants and their multiple data points, three repeated measures ANOVAs were used to analyze the study's total sample (N=13) and on the study's three outcome variables: (1) change in social skills on the *Social Skills Improvement System* (SSIS); (2) change in social impairments on the *Social Responsiveness Scale-Second Edition* (SRS-2); and (3) change in self-reported knowledge of PEERS-specific social skills on the *Test of Adolescent Social Skills Knowledge* (TASSK), from the three different measurement time points (time 1, 2, and 3). We anticipated observing significant changes on the outcome measures between time 1 and 2 and stability (no significant changes) between time 2 and 3 points based on the

research conducted on the PEERS social skills intervention demonstrating consistently positive results on the same measures (Laugeson et al., 2012; 2015; Schohl et al., 2014). A Bonferroni post hoc test was also run, in addition to the repeated measures ANOVAs in order to correct for the increased probability of a significant result (Type 1 error) when running multiple tests.

Qualitative Analyses Overview

Interviews with adolescents and parents at times 2 and 3 were audio recorded and transcribed by trained bilingual research assistants; the transcripts were verified for accuracy.

Thematic Analyses

Transcriptions for adolescents and parents were analyzed using thematic analysis according to the procedures outlined by Aronson's (1995) framework for ethnographic interview processing. Thematic analysis focused on identifying themes and patterns from thoughts, feelings, and behaviors gathered during various formats of interviews (e.g., semi-structured, open-ended). These were derived from direct quotations or paraphrasing common ideas expressed by participants. Prior to analyzing the data (transcribed interviews), a list of themes and patterns were developed by the research team according to hypotheses described earlier and specific codes assigned to overall themes and then catalogued further into sub-themes. Taylor and Bogdan (1984) describe themes as units derived from patterns in "conversation topics, vocabulary, recurring activities, meanings, feelings, or folk sayings and proverbs" (p. 131). As such, themes successfully bring together fragments that otherwise would not have meaning if viewed separately.

According to Aronson (1995), subthemes emerge after a comprehensive review of the information has occurred, with a special focus on the additional questions the interviewer posed to participants. For example, if the participant begins to share a personal story in relation to a prepared interview question, follow up questions to facilitate expansion of the story were identified as subthemes. Finally, once themes and subthemes have been coded, theme statements were formulated based on the literature to develop a cohesive story line that addresses the research questions.

Reliability

Guided by the literature, a set of themes/subthemes and their respective codes were developed by the research team and input into Microsoft Excel for research questions 2 and 3. Special attention was placed on the reliability of the data through establishing intercoder reliability. Coding the interviews and achieving intercoder reliability and agreement was informed by the procedures outlined by Campbell, Quincy, Osserman, and Pedersen (2013). Intercoder reliability is a complex concept that goes beyond percent of agreement, and requires a methodical plan to reduce coding errors and meet an acceptable level of intercoder reliability (typically 80%) or intercoder agreement. Intercoder reliability is described by Campbell et al. (2013), and requires two or more coders to select the same code for the same unit of text while operating separately. In cases where one coder may possess more knowledge than the others about the interview topics (e.g., when one coder is the investigator and the other is an assistant) it is important to monitor intercoder agreement discussions and make sure that the less

knowledgeable coder is not simply deferring to the other due to professional status or hierarchy (Campbell et al., 2013).

The coding research team were comprised of two research assistants and overseen by the PhD student undertaking this dissertation project (the investigator). Prior to coding, the research assistants were trained on analyzing interview transcriptions, determining codes for themes, and picking important direct quotes to develop the thematic statements. The research assistants individually coded interviews, beginning with adolescent interviews (which are shorter and less complex in nature) and then submitted codes to the lead graduate student who compared the data for reliability across codes. If any discrepancies were found, the graduate student met with the two research assistants to discuss the discrepancies and come to an agreement. We aimed to lower possible power imbalance issues related to intercoder agreement discussions by having two undergraduate research assistants primarily coding the interviews and a graduate student acting as moderator of the meeting. Hodson (1999) recommends assessing intercoder reliability on a sample of at least 10% of the documents analyzed; however due to the small sample size (total N=13), all transcriptions were assessed for intercoder reliability (or agreement) to produce the most reliable results.

Research Question 2

The second research question determined whether parents and adolescents who participated in the PEERS intervention, found it to be valid and useful. Analyses for this question were divided into parent and adolescent experiences.

Social Validity – Parents. The mean and standard deviation of the participant's IRP-15 total score were calculated and compared to the literature (e.g., moderate level of acceptability requires a total score of at least 52.5) to determine the average level of program acceptability from the parental perception. We hypothesized that parents who completed all 16 weeks of the intervention would endorse at least moderate levels (>52.5) of intervention acceptability on the IRP-15. This score provides a numerical foundation for the qualitative analyses to be grounded upon.

During the time 3 interview, parents were asked four open-ended questions regarding the validity (Are you satisfied with the outcomes of this intervention; Would you recommend this intervention to other parents, why or why not?) and the utility (Describe how well you think the intervention worked; What behavior changes did you observe and did these changes make a difference in other settings) of the PEERS intervention. For the present study, satisfaction was analyzed as a component of social validity, per Wolf's (1978) framework. Based on the extensive literature that supports positive results from the intervention, we anticipated most parents endorsing satisfaction with their adolescent's behavior changes, as well as social gains from the program. Due to cultural variability in the group, families of different backgrounds may value behavior changes in some environments over others. Thus, using thematic analyses, we identified and categorized parental values (e.g., changes in school, home, community settings) and how these influenced a parent's satisfaction with the program. For example, if a parent noticed meaningful changes in an adolescent's behavior at home but not at school, this could lower their satisfaction if they placed a higher importance on school-based

improvements. Understanding what is socially important to parents and to what degree, rather than broad overall satisfaction, allows practitioners to make informed improvements to program content.

With regards to whether parents would recommend the program to other parents, a frequency tally of the percent of parents who recommended would be reported alongside a table of commons reasons why they would or would not recommend the program. We anticipated that most parents would recommend the program to other parents, because those who finished the program would likely be highly motivated and invested in the intervention. Thus, the data might be skewed towards a positive endorsement. Explanations from parents who recommended the program may improve recruiting efforts for practitioners who plan to run the PEERS intervention. For example, recruitment flyers could be adapted to incorporate information from parents who completed the program. This may perhaps improve participant buy-in when considering enrolling in such an intensive social skills intervention for adolescents with ASD.

Social Validity – Adolescents. Responses to the time 2 interview questions were analyzed using content analysis and frequency tables were generated grouping the answers adolescents provided under broad domains (e.g., most helpful aspect was program content, checkout, or role plays). We anticipated that teens would provide a range of responses regarding the most (and least) helpful portions of the intervention, so a frequency table would best characterize these data and provide a clear picture on what motivated adolescents to engage in the intervention.

Responses to questions during the time 3 interview were analyzed using a thematic approach to content analyses to generate two types of data. The first included domain-based frequency tables. Since individuals with ASD often have difficulty expressing their emotions in socially appropriate ways (Hubbard & Trauner, 2007), identifying the undertones of their responses may be of utility to service practitioners seeking to work with this population.

Research Question 3

The third research question identified whether parents and adolescents recommended any adaptations to the intervention. No hypotheses were set forth for this research question as it is exploratory in nature. Analyses were divided into parent and adolescent recommendations.

Adaptations – Parents. Given the small, exploratory nature of the current study, we anticipated parents providing specific feedback regarding the language presentation of the group and whether the program content influenced the way they interact with their adolescents (either positively or negatively). This feedback was analyzed using thematic analyses that are grounded in the literature on cultural adaptations in interventions (Bernal, 2006). We hypothesized differences in experiences based on ethnicity and familial acculturation (e.g., first generation, second generation, immigrant). Barrera and Castro's (2006) framework for the cultural adaptation of interventions puts forth the following sequence: (1) information gathering, (2), preliminary adaptation design, (3) preliminary adaptation tests, and (4) adaptation refinement. The information gathered

from this research question has the potential to satisfy step 1 of the framework and provide a foundation for adaptations to the program design.

Adaptations – Teens. There is one question during the time 2 interview pertaining to this research question (What suggestions do you have to improve the program?). We anticipated that teens would give short responses that will be best analyzed in frequencies and presented in a table format. This is an underexplored area in the literature and warrants investigation.

Results

Part I: Program Effect

Prior to running analyses on the combined sample (n = 13), preliminary tests were conducted in order to determine: a) if the two non-random treatment groups (n =6, n = 7) were statistically equivalent on measures of social skills (SRS-2 and SSIS) and knowledge about PEERS content (TASSK), and b) to make sure that any program-related results were not solely attributable to time alone (e.g., maturity). To address part a) (above), independent samples T-tests were run using time 1 data from group 1 and group 2 (prior to beginning the PEERS intervention). There were no significant differences ($p>.05$) between the two groups on our measures of interest prior to the start of the intervention. To address b), a paired samples T-test was run for group 2 only, using time 0 and time 1 on social skills and knowledge about PEERS to rule out possible maturation effects prior to beginning the intervention. Results of the T-tests were nonsignificant ($p>.05$) such that group 2 did not differ on our measures of interest between times 0 and

1, indicating no effect of beginning the intervention four months later than group 1. These results suggest that changes from pre to post intervention cannot be solely attributed to maturation. Thus, analyses reported below utilized all participants' (n = 13) time 1 data at "pre" intervention. When checking assumptions and searching for outliers, it was discovered that one participant received scores that were two standard deviations above the mean on the SSIS and below the mean on the SRS-2 (no significant difference observed on the TASSK). Due to the small sample size and the heterogeneity in the presentation of autism, analyses were run twice: once with all 13 participants and without the participant identified as an outlier.

Three 1 (Group) x 3 (time) repeated measures ANOVAs were run (one ANOVA for each of the three outcome measures) using the latest edition of SPSS. Results from the ANOVA's on the entire sample (n=13) revealed a significant effect of time for the TASSK ($F(1, 12)=112.07$, $p<.001$), SRS-2 ($F(1, 12)=5.15$, $p=.04$), and the SSIS ($F(1,12)=16.68$, $p=.002$) such that scores increased on the TASSK (indicating more PEERS related knowledge over time), decreased on the SRS-2 (indicating fewer social impairments over time), and increased on the SSIS (indicating improved social skills over time). Follow-up pairwise comparisons revealed significant differences between time 1 and time 2 on the TASSK ($p<.001$), the SSIS ($p=.007$), and approaching significance on the SRS-2 ($p=.07$). Non-significant differences were observed between time 2 and time 3 for the TASSK, SRS-2 and the SSIS ($p>.05$). This indicates that there were significant gains from pre-post and these gains were maintained over a four-month follow up period.

Repeating the ANOVAs without the outlier (n=12) revealed effects in the same direction (e.g., a statistically significant effect of time), across all three outcome measures.

Part II: Social Validity

To guide analysis of the social validity of the intervention, Wolf's (1978) social validity framework was utilized: goals, acceptability, and satisfaction. When available, adolescent findings are reported first, followed by results from parents.

Goals

Parent Perspective of Goals. In an effort to determine the social significance of targeted skills for their adolescents, parents were asked to describe any behavioral changes they observed and across what settings had they observed them. They were also allowed to consider reports of behavior changes from others (i.e., from their adolescent, teacher/group leader, or other individual). At the time of follow up, nearly all parents (n=12) had observed behavioral changes in their teens, whereas one parent reported no change in behavior. Most parents reported changes across several different settings, indicating some generalization of social gains. The most common settings in which parents reported changes were: after-school activities or social clubs (n=3), school events or classes (n=3), and virtual/digital spaces such as zoom or video chatting (n=8). One parent expressed that the adolescent, "*ran for um spirit commissioner…and this is only his second year at the school but he did it and he won. He was very surprised and …I think that that had an impact on him um you know because he had to get other kids to*

vote for him." Results are summarized in table 1d as a tally—note that parents were able to select more than 1 setting.

At time 3 parents were asked to describe how well the program worked for their adolescent. When analyzing parent responses, effectiveness was defined based on the extent of adolescent gains that parents reported and whether any barriers were identified that impeded social skill progress. Although barriers varied among the sample, the significance of the barrier and its impact on teen social gains was taken into consideration when analyzing parent responses. Results are summarized in table 1e.

Over half the sample (n=7) described significant improvements at time 3 and did not identify any barriers. One parent explained that the program did not work for her child, citing difficulties handling the program intensity as well as resistance from the teen. Aside from one parent who said the program did not work or produce any change (see above) , the remaining sample (n=5) had varying levels of effectiveness and social improvements but all parents described at least one barrier to progress. Although most barriers were internally focused (e.g., adolescent maturity, "shyness," or emotional problems), one parent mentioned external factors (i.e., extensive quarantine period from COVID-19 pandemic) that limited the adolescent's ability to practice the learned social skills. Barriers are summarized in the table 1f.

Program Acceptability

Adolescent Results. Overall program acceptability was determined by measures of program usefulness to determine whether "the ends" justified the level of investment

required to complete the 16-week program. During the time 2 interview, adolescents were provided the opportunity to comment on the most (and least) helpful aspects of the program. Results were initially divided into domains based on the different components of the program (e.g., program content, homework, role plays) but several subthemes emerged during the analyses. In order to facilitate cross-comparisons, the themes were ranked as most and least helpful. Results are summarized in the table 1g. Note that adolescents were allowed to provide multiple answers (most vs. least helpful); however, most teens identified one program feature for each question.

Responses from adolescents varied widely but provided insight into their experience and what was meaningful to them. Although five adolescents identified the content as the most helpful aspect of the intervention, a few (three) adolescents also identified content as the least helpful. In those cases, it was a particular lesson (most commonly the lesson on changing one's reputation) that the teens found unhelpful or liked the least, " '*cause I like the way I am*," as explained by one adolescent in the program. It was important to distinguish between two domains, content and content language, as a few adolescents in the program thought the material was helpful, but specifically focused on the repetition of certain words or phrases (e.g., "the role-play") or being informed about the "wrong" way to handle social situations as being upsetting.

Another analysis of note was the theme of group dynamic as the most helpful aspect of the program (n=3). This theme came up several times during different portions of the interview as a whole. As one adolescent described it this way: "…*the presence of*

people allow me to just really get in depth into it and then allow me to at least stay happy and not be all lonely and distant. Another summarized their experience with the following:

> "*I would recommend the sheer aspect of not only having something to do on every single Thursday, but also uhh being able to join a group discussion and have people genuinely listening to you…I liked the people that were in the program…because they know what it's like to be in each other's position of not really knowing how to build relationships like from scratch"*

For many of the teens in program, the group dynamic outweighed the logistical challenges of having to meet for 16 weeks and be given "homework assignments" as part of the program. Even though some described the program as placing them outside of their comfort zone (e.g., inviting peers to their home for "get-togethers"), all adolescents (n=13) affirmed that they would recommend the program to other teens as it was largely more helpful than not from their experience.

Parent Findings. Parent responses to interview questions about program features were less varied than those of their adolescents and many identified more than one feature. Almost all parents (n=11) found the content to be the most helpful aspect and one parent went on to specify that "*the fact that it gave him language with the script would probably be the best part for him."* Another parent-identified benefit was the use of program "buzz words" (specific repetitive use of key words) that allowed her to reroute her teen when he needed a cue in social situations, e.g., to use the appropriate "script" or social

cue. Similar to adolescents in the group, many parents commented on the group dynamic and the budding friendships between the group members as one of the "best aspects of the program."

With regards to the least helpful features of the intervention, parent responses focused on the homework assignments (n=9) and the logistics (n=5) involved in completing a 16-week intervention. Common logistical difficulties included commuting to the group, competing activities/family engagements, and the time commitment needed to attend the meetings and complete the homework assignments. In addition, many parents cited the homework assignments as being the most difficult aspect of the program, due to the amount of homework assigned and for some parents, cultural differences in traditional parenting practices that made some of the homework assignments anxiety-provoking. Get-togethers with non-family peers were particularly stressful for some. Results are presented in the table 1h. Similar to the interview with their adolescents, parents were allowed to identify more than one program feature for each question (most and least helpful), and while many parents identified more than helpful feature, only one parent identified more than one least helpful component (in-group phone call and out-group phone call).

Program Satisfaction

Adolescent Results. All teens in the program expressed satisfaction in completing the intervention. When invited to share more about their satisfaction, adolescents gave a variety of answers that were analyzed by content and undertones for better understanding

of their experience. Themes for satisfaction included the knowledge gained through the program (n=6) and the friendships that ensued (n=3), as one excited teen shared, "*cause now I get to make some friends…and I've made some so far!"* Despite all teens acknowledging satisfaction in completing the program, the levels of satisfaction varied significantly. A few teens felt either neutral (n=3) or were generally satisfied with their experience in the program (n=2), but four adolescents shared some reservations or improvements for the program. For example, one teen "*just wanted it to be over*," at a certain point due to feeling overwhelmed, while another teen shared disappointment, "*I still feel like I need to work on a few things, like keeping a conversation going and not just doing a blatant pause…because I don't know what to say next… and that's usually the main thing I struggle with."* Some thought the program should be longer and include more practice opportunities. The remaining four adolescents were extremely satisfied and shared messages of hope for their future social accomplishments as a result of the program.

Parent Results. The Intervention Rating Profile (IRP-15; Witt & Elliot, 1985) provides a measure of overall satisfaction and program acceptability. Parents in the study rated the intervention highly *(M*= 67.5, *SD*=4.6), indicating that they were satisfied with intervention procedures as compared to published standards (a total score of 52.5 equates to a moderate level of acceptability). When queried individually during the time 3 interviews, all parents expressed satisfaction with the intervention. Additional explanations as to why they were satisfied included seeing their adolescent's social gains (n=4), such as the ability to self-advocate and organize social outings with friends. The

knowledge provided by the program (n=2), was also mentioned as captured by the following statement from a parent, "*We had dialogue that we otherwise wouldn't of had with the homework."*

Part III Adaptations

Due to the exploratory nature of some of the features of program implementation (e.g., parent group content delivered bilingually) and the novelty of participant demographics (e.g., primarily Latinx, inclusion of monolingual Spanish-speakers) the present study sought to gather information to improve future iterations of the program for ethnically and linguistically diverse populations.

Adolescent Adaptations. Although the focus of the third research question is about cultural adaptations and factors that influence parent suggestions (e.g., language, income, or level of acculturation) data on program adaptations were also collected from the adolescents at both post-time points in an effort to better understand their perceptions of the PEERS program. At time 2, over half of the participants (n=7) had no recommendations for program changes or adaptations. The remaining teens provided recommendations that were categorized into program-specific (content and homework) and not program-specific (logistics). With regards to program-specific changes, one adolescent suggested that the curriculum include a lesson on relationships and dating (this particular lesson is part of the curriculum in PEERS for young adults but is not included in the traditional PEERS curriculum for teens). Interestingly, one teen suggested that homework be made mandatory (i.e., program dismissal for frequent incompletions) as a

way to improve the productivity of the sessions and allow the teens to benefit from each other's experiences to a greater degree. While a prerequisite to participate in the program is that the teen be motivated to participate (e.g., teens must agree to participate and if a teen does not want to participate but a parent does, the teen is unable to be in the program), it is possible that the teens themselves can sense varying levels of commitment in the group. Three adolescents indicated a preference of more stringent enforcement of homework and participation. Results are summarized in table 1i.

Parent Adaptations. After identifying whether they would or would not recommend the PEERS intervention to others, parents were provided the opportunity to reflect on any changes they would enact prior to recommending. All parents in the sample responded that they would recommend the program to others, but only three parents would recommend it as is; the remaining ten families had suggestions for overall changes. Although many of the suggestions were minor (e.g., schedule outdoor activities to coincide with daylight savings so teens don't play in the dark), one important theme arose. Some parents requested limiting social interactions to group members of this intervention, rather than encouraging social interactions youth or teens outside of the family. Several parents felt that the difficulty between the phone-call homework assignment and the request to have the adolescent arrange a get-together (inviting friends over to one's home) was too drastic, and particularly difficult for teens without established friendships outside of the group. These parents reported that their teen felt pressured to invite other teens they didn't know well to their home to complete the assignment. One parent suggested creating another homework assignment in between the

phone calls such as having a get-together with other teens in the program outside of group sessions, similar to the assigned in-group phone calls.

This theme carried over into questions about the impact of the program on traditional cultural child-rearing practices, where some families indicated that the program had a definite impact on how they were expected to raise their children the way they (the parents) were raised. One parent in particular described her multigenerational experience:

> *I think the get-togethers was kind of hard because culturally and up to this point you know, we hadn't really had anyone new come into our home and I think that me being brought up that way you know it's hard for me to change even though I was born here…and my mom also, I had to talk to her as well. It's okay we're not used to it but again you know we're from a different era, maybe things are changing and exposure. I think that is the main thing that I've learned from PEERS is you know that we have to expose them, integrate him in the community. Yeah, and I didn't even realize it, I didn't realize that I was limiting him by you know, not being open to that."*

This parent concluded by explaining that despite the challenges of changing her approach to parenting during the program, by the end of the program she was able to adapt and extended this new approach to interacting across all of her other children.

Initial hypotheses of primary language (a proxy for level of acculturation) predicting the impact on child-rearing practices (i.e., lower levels of acculturation having

greater impact) were not supported, as two of the three monolingual Spanish-speaking families identified either no impact on culture or only a slight impact. One mother explained that she has tried to adopt an "American" style of parenting since she immigrated to the country as a way of assimilating to the culture. The families who reported the greatest impact to their child-rearing practices were either first -or- second generation parents in the study. Similar to primary language, income and parental education did not seem to affect parent experiences in the program. However, it may have impacted the ability to complete the program, as three of the four participants who dropped the program made less than $35,000 annually and reported either a high school diploma (n=1) or some college (n=2) for parental education. This is in contrast to the demographics of the final (reported) sample, where the median income was between $50-75,000 and only two participants made less than $35,000.

Although half of the sample who did not complete the program (n=2) were monolingual Spanish-speaking, the three monolingual Spanish-speaking families who completed the program were satisfied with the bilingual administration. Two of the Spanish-speaking participants would have preferred to participate in a monolingual group only, but the remaining participant enjoyed being included in the program and expressed hope that future iterations of the intervention continue to include Spanish-speaking participants (with a translator) so that they do not miss out on the content. Aside from one parent who expressed that the content was hard to follow at times, the rest of the English-speaking participants (n=9) were satisfied with the bilingual administration. Two of the White families suggested that there should be more time spent on providing Spanish

translation for the benefit of the Spanish-speaking parents. Even with slight differences in opinion about language delivery, all families who completed the study said that their group felt inclusive; several enjoyed the experience of interacting with families of different ethnic and language backgrounds. This was highlighted by one parent: "*I think it's great…diversity is always great,"* and another who said, *"I think it's good for the parents uh because we're exposed to more than just our little bubble,"* suggesting that having ethnically and linguistically diverse groups can be an added benefit to nontraditional forms of program delivery.

Discussion

The aim of this pilot study was to determine if the PEERS program is effective in a small sample (n=13) of ethnically and linguistically diverse participants, and whether participants found the intervention to be socially valid and useful. In addition, the study sought to identify whether any adaptations to the curriculum or content delivery were recommended by parents and adolescents to improve their experience in the program.

In line with previous studies analyzing the effectiveness of the PEERS program (e.g., Laugeson et al., 2009; 2012), results from the repeated measures ANOVAs showed significant changes in social skills, autism-related social deficits, and PEERS specific knowledge across the three time points of the intervention, providing support for the study's first hypothesis of program effectiveness. Although findings are modest due to sample size limitations (i.e., the study did not meet power requirements), these results still reached statistical significance, and provide an important contribution to the

literature regarding the PEERS program's effectiveness in predominately Latinx samples who are bilingual or monolingual Spanish-speakers, a demographic that has been historically underrepresented in intervention research (Ratto et al., 2017; Schohl et al., 2014).

The second objective of this study was to analyze the social validity of the PEERS program within the framework created by Wolf (1978) and expanded by Horner et al (2005), through interview questions administered at two time points after the culmination of the intervention. The study's second hypothesis was supported by reports from both parents and adolescents who found the intervention to be helpful and fit for their needs. Most parents also reported observing direct effects from the program in their teen's social skills growth (e.g., more self-advocacy, initiating conversations, taking an interest in others) and all parents expressed satisfaction in the program regardless of the level of effect, indicating that despite variations in individual program outcomes not observed in mean group comparisons, parents continue to find the program content to be an important resource.

In addition to content and knowledge acquired from the program, a recurring theme in parent and teen responses across various questions was the value in the overall experience and group dynamics. Well documented in the literature is the understanding that children with autism often lack positive peer relationships, and the increased social demands beginning in adolescence magnify the social deficits and isolation that teens with autism experience despite age and abilities (Locke et al., 2010). In the present study,

several adolescent participants expressed similar perspectives, citing the ability to connect with others who were in a similar situation socially valuable (e.g., lack of meaningful relationships/friendships); this provided a foundation for group members to begin friendships after the end of the program. Thus, despite common assumptions that adolescents with ASD are socially withdrawn and do not want friendships, many of them do desire having a social network (Sedgewick et al., 2018) and show concern about their reputation (Cage et al., 2016). Being a teen on the spectrum can be an isolating experience and exposure to other individuals in a similar position can prove to be a rewarding experience.

The study's third objective was to understand if participants had any recommendations for cultural adaptations to improve their experience in the program. Although no formal hypotheses were set forth, studies suggested several demographic variables (acculturation, income, and parental education) that should be explored as possible variables related to cultural adaptations (Gamst et al., 2002; Barrera & Castro, 2006). However, these demographic variables did not seem to influence participant experiences in the present study. Instead, it was observed that families who identified as first -or- second generation Latinx parents reported a greater impact on traditional cultural parenting practices. The parents were concerned about the implications of inviting non-familial adolescents into the home for get-togethers (a term used in PEERS to represent the gathering of adolescents for socializing), which is a homework requirement of the program. Although traditional delivery of the PEERS program (Laugeson et al., 2009) does not recommend get-togethers with other group members (to

reduce the possible formation of "cliques") several parents mentioned adapting the homework criteria to allow for pre-arranged get-togethers with group members or get-togethers with family members. In addition, it may be important to spend more time during group sessions emphasizing public gatherings as acceptable, rather than focusing on proper host techniques for Latinx families.

Due to financial restraints and difficulty in recruiting eligible participants for the groups, it was not feasible to run two monolingual groups (one English and one in Spanish), therefore participants of both primary languages were combined into one group and content was delivered bilingually and additional supports (e.g., personal translators) were provided as needed. Parents endorsed satisfaction in this non-traditional program delivery which suggests that fully bilingual groups can likely be effective. Thus, even in predominately White areas, researchers should strive to include Latinx families even if they don't speak English. By waiting to recruit exclusively Spanish-speaking groups, monolingual Latinx families miss out on participating in interventions and researchers miss out on increasing the diversity of their samples. This point is summed best by one participant who shared the following, "*I think the thing that binds us together is much stronger than the language differences."*

Limitations and Considerations

There are a few limitations to the study that are important to note. One limitation relates to the lack of a randomized control trial (RCT) design. Although RCT's are the preferred delivery method for establishing treatment effects, the randomization of

participants to treatment groups in the current study was not feasible. In addition to difficulty recruiting eligible participants, the current study faced high rates of attrition in both groups, with the second group losing half of its sample by the end of the program. Future studies may wish to understand the predictive role of factors that influence participant attrition by conducting focus groups or interviews with participants who drop, as well as analyzing participant demographic variables, preferably with a larger sample size. Moreover, focus groups with Latinx only participants may reveal additional insight into the variability of experiences within Latinx populations (e.g., cultural values that differ based on country of family origin; Umana-Taylor & Bamaca, 2004). More research is needed on factors that impact program completion and that may inform adaptations to increase the practicality, generalizability, and inclusivity of the program.

Conclusion

This study sought to explore whether the PEERS program was effective on the sample. Given that the current study's participant demographics are more diverse than reported in previous studies (e.g., lower SES, predominately Latinx, Spanish-speaking parents), these results provide valuable information for expanding the program to include more diverse samples. In addition, this study sought to describe Latinx experiences in an intensive social skills program. In addition to feedback from parents about which program attributes were feasible (or not), teens also shared their perspective on their experience in the program and indicated their level of satisfaction, including what, if any, changes to the program would have increased their satisfaction. Thematic analyses of the social validity interviews revealed that White families enjoyed having Spanish-speaking

families because it expanded their own perspectives. This provides support for bilingual group formats (with translation supports) as a way to increase intervention research diversity and provide an opportunity where parents are exposed to other perspectives and cultures. Additionally, the concept of "hosted get-togethers" is not as culturally adaptable as previously thought. It is important to consider alternative for Latinx families such as assigning get-togethers between group members or allowing get-togethers with family members for adolescents without established friendships outside of group members.

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Appendix: Tables and Measures

Table 1a

Timeline of Project, Divided into Blocks

Time Point	Dec-19	Feb-19	Jun-19	Oct-19	Nov-19	Feb-20	Jun-20
Group 1							
Time 1 – Intake and Pre-Intervention	X						
Begin Intervention		X					
Time 2 - Post Intervention			X				
Time 3 - Follow Up Appt					X		
Group 2							
Time 0 - Intake			X				
Time 1 – Pre-Intervention				X			
Begin Intervention				X			
Time 2 - Post Intervention						X	
Time 3 - Follow Up Appt							X

Table 1b

Descriptive Statistics for Sample Characteristics as Numbers

Demographic Variables	n=13
Age *M* (SD)	13.2 (2.0)
Grade (med)	8
Male	10
Latinx	8
IQ *M* (SD)	99.2 (15)
Income	
Less than $50,000	4
Primary language	
English	10
Spanish	3

Table 1c

Measures, Domain Assessed, and Time Point

Measure	Domain	Time 0 (Group 2 only)	Time 1	Time 2	Time 3
Parent Measures					
Demographic Form	Family Demographics/Culture	X	--	--	--
Bidimensional Acculturation Scale	Family Demographics/Culture	X	X	X	X
Social Skills Rating System	Teen Social Skills	X	X	X	X
Social Responsiveness Scale, Second Edition	Teen Social Skills	X	X	X	X
Intervention Rating Profile	Satisfaction/Social Validity	--	--	X	--
Parent Interview	Satisfaction/Social Validity	--	--	X	X
Teen Measures					
Test of Adolescent Social Skills Knowledge	Teen PEER Specific Social Skills	X	X	X	X
Teen Interview	Satisfaction/Social Validity	--	--	X	X

Table 1d

Behavior Changes and Settings

Settings	Tally
Behavior Change Observed	(12 parents reporting)
Settings identified:	
Home(s)	3
School	3
Social Group (outside school)	3
Community	3
Virtual/Digital	8
No Behavior Change	(N=1)

Table 1e

Parent Perceived Program Effectiveness

Themes	n=13
Program did not work	1
Program worked somewhat	4
Program worked well	1
Program worked extremely well	7

Table 1f

Parent Perceived Barriers to Progress

Themes	n=6
Program “too intense”	1
Lack of practice/quarantine	1
Adolescent personality	2
Mental health challenges	2

Table 1g

Adolescent Acceptability of Program Features Tally

Domain Variables	Most helpful	Least helpful
Content	5	3
Content language	0	2
In-Group activities	2	0
Role-plays	3	1
Program checkouts	0	0
Homework		
In-group phone call	0	2
Out-group phone call	0	1
Get-together	1	2
Logistics	1	3
Group dynamic	3	0
Unsure/none provided	0	3

Table 1h

Parent Acceptability of Program Features Tally

Domain Variables	Most helpful	Least helpful
Content	11	0
Content language	1	0
In-Group activities	2	0
Role-plays	1	0
Program checkouts	0	0
Homework		
In-group phone call	0	1
Out-group phone call	0	3
Get-together	0	5
Logistics	0	5
Group dynamic	5	0
Unsure/none provided	0	0

Table 1i

Adolescent Adaptations

Domain Variables	n=13
Program-specific	
Content	2
Homework	1
Not program-specific	
Logistics	3
None provided	7

Appendix: Measures

Parent Interviews

Parent Exit Interview Time 2 Participant ID: _____

English

1. What was the best part of coming to this program?
2. What was the most difficult part?
3. What could we have done differently or better?
4. What did you think about the lesson being delivered in both English and Spanish?
    a. Did the group feel inclusive?
5. Cultural Component:
    a. Based on your personal experience, did the program change the way you interact with _____?
    b. Did the program impact your child rearing practices and if so, how?

Spanish

Preguntas con final abierto para la primer entrevista de salida de PEERS

1. ¿Cuál fue la mejor parte de venir a este programa?
2. ¿Cuál fue la parte más difícil?
3. ¿Qué pudiéramos haber hecho diferente o mejor?
4. ¿Qué pensaste de que la lección fue presentada en inglés y español?

a. Sentiste que el grupo era inclusivo?

5. La Cultura:

    a. ¿Basado en su experiencia personal, el programa cambio como interactúas con _____?

    b. “ impactó el programa sus prácticas de criar a sus hijos y si es así, ¿cómo?

Parent Exit Interview Time 3 Participant ID:

_____

English

1. Describe how well you think the intervention worked
2. What behavior changes did you observe? Did these changes make a difference in other settings (e.g., restaurants, outside activities, etc)
3. Are you satisfied with the outcomes of this intervention?
4. Would you recommend this intervention to other parents? Why or why not? What aspects of this intervention would you change before recommending this intervention to other parents

Spanish

1. Describa qué tan bien cree que funcionó la intervención.
2. ¿Qué cambios de comportamiento observó? ¿Hicieron una diferencia estos cambios en otras situaciones (p.ej restaurantes, actividades afuera, etc.)?
3. ¿Está satisfecho(a) con los resultados de esta intervención?
4. ¿Recomendaría esta intervención a otros padres? ¿Por qué? o ¿por qué no? ¿Qué aspectos de esta intervención cambiaría antes de recomendar esta intervención a otros padres?

Teen Interviews

Teen Exit Interview Time 2 Participant ID: _____

1. What part of the program did you find most helpful?
2. What part of the program did you like the least?
3. What suggestions do you have to improve the program?

Teen Exit Interview Time 3 Participant ID: _____

1. Are you satisfied that you completed the program?
2. Would you recommend the program to other teens? Why or why not?

Screening Clinic - Bidimensional Acculturation Scale (BAS)

Linguistic Proficiency Subscale

ENGLISH

	Not well at all	Somewhat well	Well	Very well
How well do you speak English				
How well do you read in English?				
How well do you understand television programs in English?				
How well do you understand radio programs in English?				
How well do you write in English?				
How well do you understand music in English?				
How well do you speak Spanish?				
How well do you read in Spanish?				
How well do you understand television programs in Spanish?				
How well do you understand radio programs in Spanish?				
How well do you write in Spanish?				
How well do you understand music in Spanish?				

<u>Screening Clinic - Bidimensional Acculturation Scale (BAS)</u>
Linguistic Proficiency Subscale

SPANISH

	No muy bien	Un poco	Bien	Muy bien
Que tan bien habla usted inglés?				
Qué tan bien lee usted en inglés?				
Qué tan bien entiende usted los programas de television en inglés?				
Qué tan bien entiende usted los programas de radio en inglés?				
Qué tan bien escribe usted en inglés?				
Qué tan bien entiende usted música en inglés?				
Que tan bien habla usted español?				
Qué tan bien lee usted en español?				
Qué tan bien entiende usted los programas de television en español?				
Qué tan bien entiende usted los programas de radio en español?				
Qué tan bien escribe usted en español?				
Qué tan bien entiende usted música en español?				

Pre Post

Scored: _____
Verified: _____ ID#: _____ Entered: _____ Date: _____

Test of Adolescent Social Skills Knowledge
(TASSK)

Instructions:

The following items are about making and keeping friends. After you read each item, there will be a couple choices to choose from. Decide which choice is the best by bubbling in the best answer. Only choose one answer per item.

1. The most important part of having a conversation is to:
   - ◯ Trade information
   - ◯ Make sure the other person is laughing and smiling

2. The goal of a conversation is to:
   - ◯ Make the other person like you
   - ◯ Find common interests

3. One of the rules for having a two way conversation is to:
   - ◯ Be an interviewer
   - ◯ Don't be an interviewer

4. When you are FIRST getting to know someone, it is important to be:
   - ◯ Funny and silly
   - ◯ A little more serious at first

5. When you're calling a friend on the telephone, it is important to:
   - ◯ Tell them your first and last name and where you go to school
   - ◯ Have a cover story for calling

6. When you're calling a peer on the telephone:
   - ◯ Avoid cold calling
   - ◯ Let them do most of the talking

7. It's ALWAYS a good idea to try to make friends with someone who:
    - ◯ Is more popular than you
    - ◯ Likes the same things as you

8. It's a good idea to have a social group because:
    - ◯ You're more likely to be popular
    - ◯ It protects you from bullying

9. After you make a joke, it's a good idea to pay attention to:
    - ◯ Whether the other person is laughing
    - ◯ Your humor feedback

10. It is ALWAYS a good sign if someone laughs at your jokes:
    - ◯ True
    - ◯ False

11. When starting an individual conversation:
    - ◯ Wait for the person to notice you
    - ◯ Find a common interest

12. When you're trying to join a group conversation, the FIRST thing you should do is:
    - ◯ Watch and listen to observe the conversation
    - ◯ Make a comment about what they're saying

13. If you try to join a conversation and the people exclude you:
    - ◯ Give a cover story
    - ◯ Make sure they can hear you

14. If you try to join ten different conversations, on average how many times out of ten are you likely to be rejected:
    - ◯ 7 out of 10
    - ◯ 5 out of 10

15. Teens like to play sports with other teens who:
    - ◯ Score points and play well
    - ◯ Praise them

16. When people aren't playing by the rules:

◯ Nicely remind them what the rules are
◯ Don't referee them

17. When having a friend over for a get-together at your home:
    ◯ Tell your friend what you're going to do
    ◯ Have your friend choose the activity

18. If you're having a friend over for a get-together and someone else unexpectedly calls that you really like:
    ◯ Invite your other friend over
    ◯ Tell them that you're busy and will call them later
19. The FIRST thing you should do when you get into an argument with a friend is:
    ◯ Listen and keep your cool
    ◯ Explain your side

20. When a friend accuses you of doing something you didn't do:
    ◯ Say you're sorry that this happened
    ◯ Explain your side until they believe you

21. If you are trying to change your reputation at school, the FIRST thing you should do is:

    ◯ Join an extracurricular activity at school
    ◯ Lay low for a while

22. Which of the following is an important step for changing a reputation:

    ◯ Change your look
    ◯ Make sure that people get to know you better

23. If another kid teases you or calls you a name:
    ◯ Give a teasing comeback
    ◯ Tell an adult

24. When someone teases you, the best thing to do is:
    ◯ Ignore them and walk away
    ◯ Act like what they said didn't bother you

25. If someone keeps pushing you in the hallway as you pass their locker:
    - ◯ Gently push them back
    - ◯ Lay low when the bully is around

26. If someone is physically bullying you, the FIRST thing you should do is:
    - ◯ Get help from an adult
    - ◯ Avoid the bully

27. If someone is bullying you online, the FIRST thing you should do is:
    - ◯ Report the cyber bullying to the proper authorities
    - ◯ Have a friend stick up for you

28. If someone is cyber bullying you, it's a good idea to defend yourself and fight back:
    - ◯ True
    - ◯ False

29. If someone spreads a rumor about you that isn't true, you should:
    - ◯ Confront the person that started the rumor
    - ◯ Spread the rumor about yourself

30. If someone is gossiping behind your back, you should:
    - ◯ Let them know that the gossip hurts your feelings
    - ◯ Act amazed that anyone would believe the gossip