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Predicting treatment success in social skills training for adolescents with autism spectrum disorders: The UCLA Program for the Education and Enrichment of Relational Skills

Ya-Chih Chang[1], Elizabeth A Laugeson[1], Alexander Gantman[1], Ruth Ellingsen[1], Fred Frankel[1] and Ashley R Dillon[2]

Abstract

This study seeks to examine the predictors of positive social skills outcomes from the University of California, Los Angeles Program for the Education and Enrichment of Relational Skills, an evidence-based parent-assisted social skills program for high-functioning middle school and high school adolescents with autism spectrum disorders. The results revealed that adolescents with higher parent-reported baseline social skills and lower self-reported perceived social functioning demonstrated greater improvement in social skills following the intervention.

Keywords

adolescents, autism spectrum disorders, friendship, predictors, Program for the Education and Enrichment of Relational Skills, social skills

One of the hallmark features common to autism spectrum disorders (ASD) is impaired social functioning. Social deficits often become apparent in early childhood and generally continue to be a struggle for children with ASD as they approach adolescence. One prominent area of difficulty for youths with ASD is conversational skills. Studies have found that children with ASD often lack the understanding of the reciprocal nature of communication. These children tend to convey more information than is necessary and may perseverate on particular topics of interest (Ghaziuddin and Gerstein, 1996). They may also have difficulty joining and understanding social situations (Meyer et al., 2006). Consequently, this awkward communication style and poor ability to read social cues are likely to have a negative impact on social interactions and relationships with peers. Moreover, difficulties with developing and maintaining interpersonal relationships often persist into adulthood (Eaves and Ho, 2008; Orsmond et al., 2004).

Despite their social deficits, adolescents with ASD do appear to have some awareness of their social limitations (Knott et al., 2006; Koning and Magill-Evans, 2001). For example, lower self-perceived social skills have been reported in the area of social engagement, including peer entry and initiating conversations (Knott et al., 2006; Koning and Magill-Evans, 2001). One consequence of awareness of social limitations may be that adolescents with ASD become frustrated by their social deficits, which may lead to less participation and engagement in social activities (Eaves and Ho, 2008). Thus, effective social skills interventions are essential for promoting and enhancing the well-being of adolescents with ASD.

Although some studies have found social skills interventions to be effective for adolescents with autism (see White et al., 2007, for review), little is known about the factors that predict treatment success. Higher language and cognitive skills have been identified as predictors of treatment success in younger children with ASD (Sherer and Schreibman, 2005), but no study to date has examined the predictors of treatment success for adolescents with ASD. This study seeks to examine predictors of

[1]University of California, USA
[2]Pacific Graduate School of Psychology, USA

Corresponding author:
Ya-Chih Chang, Semel Institute for Neuroscience and Human Behavior, University of California, Los Angeles, 300 Medical Plaza, Suite 1273, Los Angeles, CA 90095, USA.
Email: yjchang@mednet.ucla.edu

positive social skills outcomes from the UCLA Program for the Education and Enrichment of Relational Skills (PEERS), a parent-assisted evidence-based social skills intervention for high-functioning adolescents with ASD (Laugeson and Frankel, 2010).

Methods

Participants

The sample included 60 adolescents (49 males and 11 females), ranging from 12 to 17 years of age (M = 14.70 years, standard deviation (SD) = 1.29 years), who participated in previous intervention studies examining the efficacy of the UCLA PEERS between 2008 and 2011. All participants had a previous diagnosis of autistic disorder, Asperger's disorder, or pervasive developmental disorder–not otherwise specified (PDD-NOS). Diagnoses were given by outside agencies not affiliated with the research team. The sample was ethnically heterogeneous, comprising Caucasians (48%), Hispanics (17%), Asian Americans (10%), African Americans (7%), and other ethnic groups (18%). Approximately one-half of the participants were in a regular mainstream school setting, and the other half received special educational services. These adolescents' verbal IQ ranged from 51 to 126 (M = 93.67, SD = 18.89).

Intervention

The UCLA PEERS is a manualized parent-assisted social skills intervention that consists of 90-min sessions delivered once a week over the course of 14 weeks. Parents and adolescents attend separate concurrent sessions focused on helping the adolescents make and keep friends. Sessions include how to have a two-way conversation with peers, peer entry strategies, and how to plan successful get-togethers (see Laugeson and Frankel, 2010 for details)

Measures

Social Skills Rating System. The Social Skills Rating System (SSRS) is a 52-item parent questionnaire assessing social skills and problem behaviors (Gresham and Elliott, 1990). The social skills scale comprises four subscales: cooperation, assertion, responsibility, and self-control. Higher scores on the Social Skills Scale reflect better social functioning, whereas lower scores on the Problem Behaviors Scale suggest better behavioral functioning. Coefficient alphas were 0.90 for the Social Skills Scale and 0.81 for the Problems Behavior Scale.

Piers–Harris Self-Concept Scale, Second Edition. The Piers–Harris Self-Concept Scale, Second Edition (Piers–Harris-2) is a 60-item self-report questionnaire that assesses adolescents' perceptions about the way they feel about themselves (Piers et al., 2002). Higher scores reflect more favorable self-concept. The Piers–Harris-2 has been shown to have adequate reliability and validity. Only the Popularity subscale was used in the study to measure adolescents' social functioning. The Popularity subscale included items that measured self-perceived popularity, ability to make friends, and inclusion in activities and games.

Vineland Adaptive Behavior Scales–Second Edition, Survey Form. Adaptive functioning was assessed using the Vineland Adaptive Behavior Scales–Second Edition, Survey Form (Vineland-II), a measure of adaptive behavior skills needed for everyday living (Sparrow et al., 2005). The Vineland-II assesses the domains of communication, daily living skills, and socialization. Reliability coefficients for the domain scores are in the upper 0.80s to low 0.90s. Only the Communication subscale was used in the study.

Kaufman Brief Intelligence Test–Second Edition. Intellectual functioning was assessed using the Kaufman Brief Intelligence Test–Second Edition (KBIT-2), a brief screening tool used to measure cognitive functioning (Kaufman and Kaufman, 2004). The KBIT-2 has been demonstrated to have good convergent validity with a number of intelligence tests, including the Wechsler Intelligence Scale for Children–Fourth Edition (WISC-IV; Wechsler, 2003) and is comparable to the WISC-IV in terms of its reliability and validity (Kaufman and Kaufman, 2004).

Results

This study examined predictors associated with increases in social skills outcome following the PEERS intervention. An a priori power analysis was conducted using G*Power 3.1. At a .05 significance level with 60 participants, there was 95% power to run multiple regressions with five predictors. Social skills outcomes were measured using parent-rated SSRS. Baseline parent and adolescent self-reported social functioning predicted adolescents' social skills scores postintervention. Multiple regressions were used to examine the predictors of positive social skills outcomes (see Table 1). The regressions revealed that both baseline social functioning by parent-report (SSRS Social Skills Scale) and adolescent self-report (Piers–Harris Popularity subscale) were significant in explaining the variance in social skills after treatment, $F(5, 41) = 13.87$, $p \leq .001$. Approximately 63% of variance in social skills scores after treatment was accounted for by baseline parent-report of social skills and adolescents' self-perceived social functioning. Baseline Age, IQ, and Vineland-II Communication subscale scores were also examined but were all nonsignificant in predicting positive social skills outcomes ($p > .05$).

Multiple regressions were used to further examine the four subscales of the parent-report SSRS Social Skills Scale in predicting positive social skills outcomes (see Table 2).

Table 1. Multiple linear regression analysis for predicting improvement in social skills on the SSRS.

Variables (pretreatment)	B	β
SSRS Social Skills subscale (baseline)	.895	.739**
Piers–Harris Popularity subscale	−.849	−.233*
Vineland-II Communication subscale	.139	.126
Age	−.363	−.040
Kaufman Brief Intelligence Test	−.097	−.169

SSRS: Social Skills Rating System.
*$p \leq .05$; **$p \leq .001$.

Table 2. Multiple linear regression analysis for predicting improvement in social skills on the SSRS subscales.

Variables (pretreatment)	B	β
SSRS Cooperation subscale (baseline)	.188	.053
SSRS Assertion subscale (baseline)	.596	.178
SSRS Responsibility subscale (baseline)	1.678	.456**
SSRS Self-Control subscale (baseline)	1.433	.418**

SSRS: Social Skills Rating System.
*$p < .05$; **$p < .01$.

The regressions revealed that SSRS subscales for Responsibility and Self-Control were significant in explaining the variance in social skills after treatment, $F(4, 42) = 16.04$, $p \leq .001$. Approximately 60% of variance in social skills after treatment was accounted for by the two subscales. SSRS subscales of Cooperation and Assertion were nonsignificant in predicting positive social skills outcome.

Discussion

The purpose of this study was to examine adolescent characteristics that predicted improved social skills after participating in the UCLA PEERS. Results revealed that adolescents who had higher baseline parent-reported social skills and lower self-perceived social functioning demonstrated greater improvement in social skills following the intervention.

This study suggests that PEERS may be more efficacious for adolescents who have some fundamental social skills prior to the intervention and who are also aware of their social deficits. In order to practice newly learned skills taught in PEERS, adolescents need to have a minimal degree of social skills to successfully complete weekly socialization assignments. Participation in the PEERS may then refine some of the existing social skills for these individuals. Past research suggests that high-functioning adolescents with ASD are capable of conversations but often share too much personal information or engage in topics that are uninteresting to their audience, which results in alienation from their peers (Ghaziuddin and Gerstein, 1996). By fine-tuning these common conversational errors, it is possible that the PEERS will help modulate some of these behaviors. In addition, by teaching adolescents some of the rules of conversational etiquette such as avoiding being a "conversation hog" or an "interviewer," the adolescents may be able to better maintain conversations and be more successful in social situations.

Further examination of the Social Skills subscales on the SSRS suggested that adolescents who came in with higher parent-reported responsibility and self-control prior to treatment had better treatment outcomes. This suggests that teens who, at baseline, demonstrate greater respect for and willingness to communicate with authority figures, and are also better able to self-regulate during conflicts are more likely to benefit from treatment. It may be that those who have lower responsibility and self-control at baseline have more difficulty interacting and participating in a group treatment setting. It is important that teens in the PEERS intervention interact appropriately with other group members and if a teen is being disrespectful or noncompromising, it is likely that they will not gain the full benefit of the social skills intervention.

The PEERS intervention was also found to be more efficacious in improving social skills for adolescents who had lower self-perceived social functioning at the beginning of the program. Adolescents who responded more favorably to the treatment were those who rated themselves to be less able to make friends and less popular at the start of the program. One possible explanation for this finding might be that adolescents who responded to treatment were more self-aware and acknowledging of their social weaknesses. Previous research suggests that adolescents with ASD do have some insight and self-awareness about their social deficits (Knott et al., 2006; Koning and Magill-Evans,

2001). If adolescents are more aware of their social deficits, they may be more motivated and committed to learning new skills to improve their social interactions with their peers. Bauminger and Kasari (2000) found that children and adolescents with ASD are generally interested in developing social relationships with their peers, but typically lack the skills to do so. Conversely, if adolescents with ASD do not think they have social difficulties, they may be less motivated to make the changes necessary for improvement in social skills. Thus, having some fundamental social skills in combination with a desire to improve one's social skills appears to be a winning combination for improvement following the PEERS intervention.

Although this study presents interesting insight into those who may benefit from social skills instruction, several limitations exist and should be acknowledged. First, due to the small sample size, limited predictors were analyzed in this study. Second, due to a lack of response from teachers, only the parent version of the SSRS was used to measure social functioning; lack of independent third-party observations limits the generalizability of the results. Future studies may want to incorporate more self-report measures, teacher measures, and school observations to capture multiple perspectives of the adolescents' social skills. Future studies may also seek to examine whether adolescents' social motivation, acceptance of social deficits, and treatment compliance affect treatment outcome.

This study focused on predictors of treatment success for adolescents with ASD. However, more research is still needed for this population, particularly for the adolescents who are "treatment resistant" and do not make progress in social skills interventions. There may be distinguishing behaviors and/or characteristics (e.g. cognitive and language delays, comorbid diagnoses) that may cause these adolescents to be "treatment resistant." For example, a high-functioning adolescent with autism who has a comorbid diagnosis of social anxiety disorder may not fully benefit from the social skills intervention because of his unwillingness to complete his socialization homework for the program. This adolescent may need cognitive behavioral therapy (CBT) to address his anxiety disorder before enrolling in the social skills program (e.g. Wood et al., 2009). This example shows one potential factor that may contribute to treatment resistance. Thus, more studies are needed to explore the variables that may hinder treatment success.

This study is one of the first investigations to identify predictors of treatment success for this understudied population. Results of this kind may assist clinicians in identifying youths likely to benefit from social skills treatment while also providing useful information toward the development of more targeted interventions for high-functioning adolescents with ASD.

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