

Abstract Title Page

Title: Teaching Social Skills: An Effective Online Program

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Abstract Body

Background / Context:

Description of prior research and its intellectual context.

Educators, policymakers, and the general public agree that social skills should be taught to children (Bushaw & Lopez, 2013; Camilli, Vargas, Ryan, & Barnett, 2010; Dusenbury, Zadrizil, Mary, & Weissberg, 2011; HR 1875, 2013; Meier, DiPerna, & Oster, 2006; National Research Council, 2012). This support may be a reflection of the growing recognition that social skills are critical to both academic and life success (French & Conrad, 2001; Hawkins, Catalano, & Miller, 1992; Kupersmidt & DeRosier, 2004; Solberg, Olweus, & Endresen, 2007) and that with training, these skills can improve significantly (DeRosier, 2004; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Zins, Weissberg, Wang, & Walberg, 2004). Social skills training is traditionally delivered in person, and logistical barriers such as the need for trained administrators, cost, and time and travel requirements limit the reach of traditionally-delivered programs (Mueser & Bellack, 2007) and many children who could benefit from social skills training do not receive it.

In an effort to bridge this gap between evidence-based social skills training and populations in need, we have developed an Intelligent Social Tutoring System (ISTS) that fosters learning through adaptive interaction between the student and the program. As the student interacts with the program, the software responds by presenting the most appropriate content, much the same way a human tutor would.

ISTSs offer an innovative way to advance social skills training, address barriers to program delivery, and reach children who may not receive traditional social skills programs. By presenting simulated situations analogous to those encountered in real life, engaging ISTSs allow children to learn and practice social skills in preparation for real world execution.

Purpose / Objective / Research Question / Focus of Study:

Description of the focus of the research.

The purpose of Study 1 was to determine whether children with social skills deficits would find a prototype of the intervention likeable and usable, and whether children who interact with the prototype show reduced psychosocial distress and greater behavioral and emotional strength compared to children who do not interact with the program. The purpose of Study 2 was to replicate and extend the findings of Study 1 to the fully developed program and demonstrate its efficacy on a broader set of academic and social skills outcomes.

Setting:

Description of the research location.

In both studies, the intervention was delivered completely online. Children interacted with all aspects of the program at home via our secure project webpage.

Population / Participants / Subjects:

Description of the participants in the study: who, how many, key features, or characteristics.

Study 1 included 36 participants and Study 2 included 144 participants. Participant characteristics for each study are shown in Table 1. (Please insert Table 1 here).

Intervention / Program / Practice:

Description of the intervention, program, or practice, including details of administration and duration.

To develop the interactive program, *Adventures aboard the S.S. GRIN*, we translated the evidence-based *Social Skills Group Intervention (SSGRIN)* curriculum into a game-like instructional program by designing in-game tasks that required children to apply specific social skills in order to solve each social problem encountered. Developed at 3C Institute and currently used with thousands of children across the United States and abroad, the in-person *SSGRIN* has been repeatedly tested resulting in a strong empirical base for its effectiveness (DeRosier, 2004; DeRosier & Gilliom, 2007; DeRosier & Marcus, 2005). To create the *Adventures aboard the S.S. GRIN*, an interdisciplinary team of psychologists, artists, and computer programmers collaborated to transform the original curriculum into a game-like computer program to actively engage children in social problem solving tasks through interactive software technology that reflects best practices for children's educational interactive software (Garris, Ahlers, & Driskell, 2002; Mathan, & Koedinger, 2002; Roussou, 2005). We used an integrative approach that incorporated research-supported social skills training strategies (e.g., behavioral, cognitive, and emotional social skills) into instruction to help children think through a given social situation, consider various approaches, and evaluate the success of a chosen option toward reaching a social goal. Study 1 included four episodes focused on respect, setting and working toward goals, impulse control/responsibility, and communication. Study 2 included those episodes as well as new episodes that covered perspective taking, social initiation, cooperation/compromise, and emotion regulation, as well as a review episode. The level of social problem difficulty increased both within and across the episodes. The software monitored children's progress in real time and responded with appropriate content, feedback, and pedagogical assistance based on player actions. We incorporated proven training strategies of scaffolding, coaching and reinforcement, and practice opportunities into the program. At appropriate times, individualized feedback was provided, and when gameplay indicated that a skill was not satisfactorily demonstrated the child was provided structured guidance and continued practice opportunities. Achievements were provided for outstanding performance. All text-based dialog was accompanied by audio voiceover.

Research Design:

Description of the research design.

Program delivery and all assessment was conducted via our secure project website. We conducted two studies to test the potential promise of this innovative computerized method for social skills training. In Study 1, we examined the impact of participation in the first half of the program. The program in Study 1 consisted of four instructional episodes; children completed 38 rooms (i.e., discrete visual spaces), interacted with 42 unique characters, and completed 14 social problem-solving scenarios over approximately 90 minutes of gameplay. In Study 2, we expanded the investigation to the full nine episodes of the program, which approximately doubled the rooms, characters, social problem-solving scenarios, and gameplay time. Our research questions were: (1) would children with social skills deficits find the program likeable and useable? and (2)

would interaction with the program be associated with improvement in psychosocial, emotional, and behavioral outcomes?

Data Collection and Analysis:

Description of the methods for collecting and analyzing data.

Following interaction with the program, children provided feedback on their experience. Item summaries are shown in Table 2. For usability, children answered three questions related to program mechanics and their understanding of the program. To assess the degree to which children enjoyed their interactions with the program, they answered seven questions about the likeability of the program. (Please insert Table 2 here).

In addition, to measure the effect of the program on psychosocial, emotional, and behavioral outcomes, children completed the Youth Outcomes Questionnaire, Second Addition (YOQ-2.01; Burlingame et al., 2005) and the Behavioral and Emotional Rating Scale, Second Edition (BERS-2; Epstein, 2004).

Findings / Results:

Description of the main findings with specific details.

Study 1 results are presented here. Study 2 data collection will be completed in December 2014; we will present Study 2 findings at the conference. Study 2 will include the measures from Study 1, as well as measures of academic and school functioning and social skills knowledge.

Usability and Likeability. We first examined whether children with social skills deficits would find the program likeable and usable. These characteristics were important to establish because the program's value as a social skills tutorial would be greatly reduced if children are not able and willing to use it independently. The results are shown in Table 2.

All usability item means were greater than 4.0 on a 5-point Likert-type scale, indicating the program was understandable and usable to children. Children understood the program in terms of gameplay mechanics, the characters' speech, and how to select actions and responses, indicating that gameplay was compatible with transmission of social skills instruction.

Likeability item means were also all greater than 4.0 on a 5-point Likert-type scale, indicating high enjoyment of the program. Children gave high ratings for the game and characters, and indicated a desire for replay and for more games like this.

Psychosocial Distress. We examined whether interaction with the program was associated with reduced psychosocial distress by examining change scores for the treatment and control groups, and by conducting an ANCOVA. Change scores, shown in Table 3, highlighted the practical significance of our findings. We calculated the number of children within each treatment group who had significant changes in scores (as provided in the Y-OQ 2.01 manual) across each subscale and for the total Y-OQ 2.01 psychosocial distress index. "Significant change" is a reliable change index used to determine whether the change exhibited by an individual is

clinically significant; individual's scores must change by a minimum amount based on analysis of norm data by the measure's developer to be considered significantly different from pretest to post-test. Compared to the control group, children in the treatment group had significant improvement across each subscale and on the overall index score. (Please insert Table 3 here).

We also conducted a one-way ANCOVA, with treatment condition as the independent variable and Y-OQ 2.01 pretest score as the covariate. We found that children in the treatment group evidenced significantly lower psychosocial distress at post-test ($M=23.32$, $SD=18.79$) than children in the control group ($M=48.71$, $SD=42.16$), when controlling for psychosocial distress at pre-test, $F(1, 34) = 4.13$, $p = .05$.

Behavioral and Emotional Strength. We followed the same statistical procedures as for the Y-OQ 2.01, first examining change scores and then conducting an ANCOVA. As shown in Table 4, more children in the treatment group than in the control group showed improvement across each BERS-2 subscale and on the overall index, indicating improved behavioral and emotional strength associated with program interaction. (Please insert Table 4 here).

The one-way ANCOVA, with treatment condition as the independent variable and BERS-2 pretest score as the covariate, showed that children in the treatment group showed significantly higher levels of behavioral and emotional strength at post-test ($M=93.21$, $SD=13.41$) than children in the control group ($M=86.94$, $SD=19.61$), when controlling for psychosocial distress at pre-test, $F(1, 34) = 5.35$, $p < .05$.

Conclusions:

Description of conclusions, recommendations, and limitations based on findings.

The results of Study 1 show strong support for using an online social skills training to improve emotional, behavioral, and psychosocial outcomes for children with social skills deficits. We expect the findings of Study 2, available by the conference date, to support and expand these findings.

By integrating developmental theory, research, computer science, gaming theory, and appealing graphics, we created an engaging and effective interactive social tutoring system for social skills training. This methodology has the potential to overcome many of the barriers of traditional methods and can deliver services much more broadly than existing methodologies. Online programs can be made available to any individual or organization (e.g., schools, mental health providers, community/youth groups) and can be used in any setting with a computer. This widespread availability means that online social skills training programs can close the gap between proven interventions and their use by those most in need, which has important implications for fostering optimal development for children at risk for poor social, emotional, and academic outcomes.

Appendices

Not included in page count.

Appendix A. References

References are to be in APA version 6 format.

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Appendix B. Tables and Figures

Not included in page count.

Table 1. Participant Characteristics

	Study 1 (n=36)	Study 2 (n=144)
Age		
% 7/8 years	37	36
% 9/10 years	30	46
% 11/12 years	33	15
Sex		
% female	27	42
% male	73	58
Race		
% white	63	46
% non-white	37	54
BASC-2 scores		
Withdrawal: % Average/At Risk/Clinical	23/25/52	12/35/53
Aggression: % Average/At Risk/Clinical	42/41/17	47/33/20

Table 2. Descriptive Statistics for Usability and Likeability Ratings

	<i>M</i>	<i>SD</i>
Usability		
Understood characters' speech	4.45	.23
Understood how to move and talk	4.47	.21
Understood what Avatar should do next	4.18	.13
Likeability		
Liked program overall	4.39	.18
Thought program was fun to play	4.46	.15
Liked characters	4.40	.09
Liked art and graphics	4.47	.07
Would like to play more programs like this	4.40	.14
Friends would like to play this program	4.12	.14
Would like to play this program again	4.05	.11

Table 3. Percentage of Participants Demonstrating Significant Changes on the Y-OQ 2.01.

Y-OQ 2.01 subscale	Treatment Group	Control Group
Interpersonal distress		
Improved	42%	35%
Deteriorated	0%	0%
Somatization		
Improved	11%	6%
Deteriorated	0%	0%
Interpersonal relations		
Improved	21%	12%
Deteriorated	11%	0%
Social problems		
Improved	0%	0%
Deteriorated	0%	0%
Behavioral dysfunction		
Improved	29%	12%
Deteriorated	0%	0%
Critical items		
Improved	26%	24%
Deteriorated	0%	6%
Y-OQ 2.01 Total Score		
Improved	68%	52%
Deteriorated	0%	0%

Table 4. Percentage of Participants Demonstrating Significant Changes on BERS-2.

BERS-2 subscale	Treatment Group	Control Group
Interpersonal distress		
Improved	26%	24%
Deteriorated	0%	12%
Family involvement		
Improved	16%	12%
Deteriorated	0%	12%
Intrapersonal strength		
Improved	26%	0%
Deteriorated	0%	0%
School functioning		
Improved	26%	12%
Deteriorated	26%	18%
Affective strength		
Improved	42%	12%
Deteriorated	0%	6%
Total strength index		
Improved	16%	12%
Deteriorated	0%	18%