February 2016

An Evaluation of the Effectiveness of a Social Skills Application for Children who are Homeless

Emily Baton

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An Evaluation of the Effectiveness of a Social Skills Application for Children who are Homeless

by

Emily Baton

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts in Applied Behavior Analysis Department of Child and Family Studies College of Behavioral and Community Sciences University of South Florida

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Date of Approval:
March 8, 2016

Keywords: Applied Behavior Analysis, iPad, Behavioral Skills Training

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Abstract

Researchers have found children who are homeless are twice as likely to develop learning disabilities when compared with non-homeless children and three times as likely to develop emotional and behavioral problems (Bessuk et al., 2014). Additionally, homeless children are more likely to have deficits in regards to social skills (DiBiase & Waddell, 1995; National Child Traumatic Stress Network Homelessness and Extreme Poverty Working Group, 2005), however no known research has specifically explored increasing social skill deficits among homeless children. The purpose of the current research was to a) extend the research on using technology to teach social skills to homeless children and b) examine the efficacy of using the Let’s Be Social application (Everyday Speech, 2015) to teach social skills with the addition of Behavioral Skills Training (BST) if needed. The results of this study showed that participants demonstrated substantial increases in all three social skills after the BST intervention. With the exception of one participant, Sandy, whose baseline levels for one behavior (sharing) met criteria for the skill and did not need further intervention.
Chapter 1:  
Introduction  

According to The Annual Homeless Assessment Report to Congress in 2014, children who are under the age of 18 years old make up 25 percent of individuals who are homeless (Henry et al., 2014). The U.S. Department of Health and Human Services defines homelessness as:  

an individual who lacks housing (without regard to whether the individual is a member of a family), including an individual whose primary residence during the night is a supervised public or private facility (e.g., shelters) that provides temporary living accommodations, and an individual who is a resident in transitional housing ("Public Health Service Act, 42 U.S.C., 254b, § 330(h)(5)(A)," 1996).  

Homelessness can affect an individual’s possessions, sense of community and security, and routine. For children who are homeless, it can effect their social and cognitive development (National Child Traumatic Stress Network Homelessness and Extreme Poverty Working Group, 2005).  

DiBiase and Waddell (1995) found that homeless preschoolers were more likely than their typically developing peers to perceive themselves as behind in academic, social, and physical development. The growing body of research around children who are homeless suggests that without a primary residence, children have a higher chance for physical, social, emotional, and cognitive development delays or related issues (Bassuk, DeCandia, Beach, & Berman, 2014; Buckner, 2008; DiBiase & Waddell, 1995; Koblinsky, Gordon, & Anderson, 2000). Researcher’s
have also found children who are homeless are three times as likely to develop emotional and behavioral problems (Bassuk et al., 2014). According to the National Child Traumatic Stress Network (NCTSN), “homeless children have twice the rate of learning disabilities and three times the rate of emotional and behavioral problems of non-homeless children” (National Child Traumatic Stress Network Homelessness and Extreme Poverty Working Group, 2005, p. 2).

Social skills is one area in which children who are homeless often show a deficit (DiBiase & Waddell, 1995; National Child Traumatic Stress Network Homelessness and Extreme Poverty Working Group, 2005). Elliott and Gresham (1993) defined social skills as acquisition behaviors that allow individuals to engage in behaviors that are socially acceptable and achieve a response from another individual that could be reinforcing and assist in avoiding responses that may be punishing. Many children build their social interaction repertoire by engaging with their environment and through various schedules of reinforcement (Elliott & Gresham, 1993; Elliott, Malecki, & Demaray, 2001). However, some children lack social competency or the ability to build bonds with peers, engage in social skills, or influence peers and direct activities (Hubbard & Coie, 1994). One reason for this may be the child’s environment may not promote the development of pro-social skills. Elliott and Gresham (1993) suggest a deficit in social skills can be due to insufficient practice, lack of knowledge, absence of cues within the social environment, lack of reinforcement for performing the skills, or outside variables affecting the child’s performance of social skills, such as homelessness. Although the exact cause of social skills deficits may not be known, there is research indicating children with these deficits typically face several maladjusted outcomes in regards to their social, academic, and physical development (Elliott & Gresham, 1993; Elliott et al., 2001; Matson, Matson, & Rivet, 2007).
One solution to improving children’s social skills repertoires is through social skills training. Several methods have been evaluated for teaching social skills. First, peer directed approaches require a peer with intact social skills to be involved with the training of an individual with social skill deficits on targeted social behaviors (Elliott & Gresham, 1993; Matson et al., 2007). Research has demonstrated peer directed methods are effective at teaching social skills to children with autism (Banda, Hart, & Liu-Gitz, 2010; Hemphill & Littlefield, 2001; Kamps et al., 1992; Laushey & Heflin, 2000). These studies used a variety of methods for having peers teach social skills including direct instruction, behavioral skills training, and social cognitive approaches (i.e. verbal self-instruction, performance evaluation, and self-reinforcement) (Banda et al., 2010; Hemphill & Littlefield, 2001; Kamps et al., 1992; Laushey & Heflin, 2000). Kamps et al. (1992) evaluated the use of a social skills group in an integrated first grade classroom with the use of a 21 item social skills rating scale. On average, the three participants showed an increase in their social interactions, which maintained at the two follow up probes (Kamps et al., 1992). Laushey and Heflin (2000) expanded on this research by examining a peer buddy approach by using older peers as buddies to improve social skills of kindergarten children. Two participants, ages five year old, were taught to stay with, play with, and talk to their buddy while learning to ask for items, take turns, and look toward someone talking. The results suggest the buddy system may be effective at evoking social skills among the targeted population.

Therapist directed approaches have also been utilized for teaching social skills and require an adult, such as a teacher or a paraprofessional, to be the therapist. (Bornstein, Bellack, & Hersen, 1977; Matson et al., 2007). Bornstein et al. (1977) evaluated a social skills package for three elementary school children who were identified as being shy and unassertive. The study
was conducted within a video studio and incorporated the use of direct instruction, role-play situations, modeling, and feedback, as well as role-play scenarios between the participant and adult assistants. The researcher provided the training and the assistants were only involved within the role-play scenarios as other individual to interact with. During baseline, participants’ use of three social behaviors, eye contact, loudness of voice, and requests for new behaviors, were rated using a Likert scale for. The participants were also rated by two additional research assistants, blinded to the purpose of the study, on another Likert scale on overall assertiveness. The results of the study showed an increase across all skills for the four participants but should be interpreted with caution due to the lack of data from direct observations.

The most common method used for teaching social skills across both peer and therapist directed studies is Behavioral Skills Training (BST). BST includes four major components: instruction, modeling, rehearsal, and feedback. The approach has been shown to be effective for a variety of skill acquisition behaviors (Himle & Miltenberger, 2004; Himle, Miltenberger, Flessner, & Gatheridge, 2004; Houvouras & Harvey, 2014; Johnson et al., 2005). Specifically, Stewart, Carr, and LeBlanc (2007) used BST to improve the social skills of a 10-year old child with Asperger’s disorder. The child’s mother and sister were trained on the social skills package. Once they met mastery criteria, they began implementing the BST intervention to improve the targeted social skill resulting in an improvement of social skills for the participant (Stewart et al., 2007).

Recent advances in technology have resulted in an increasing number of video and online programs for teaching social skills, including those that are applications for hand-held devices such as tablets (e.g., iPad) and smart phones. Technological approaches have been used to teach a wide range of behaviors including communication, academic, employment, transitioning skills,
and social skills (Beaumont & Sofronoff, 2008; Escobedo et al., 2012; Kagohara et al., 2013).

Escobedo et al. (2012) examined a mobile assistive tool to support children with autism to practice using social skills in real-life situations (MOSOCO). The program provided reinforcement such as a token system for individuals to earn tokens for appropriate social skills as well as self-report forms, social skill prompts, and an interactive visual schedule. Three students, aged 8-11 years old, and their same age peers were included in the study. The results showed an increase in appropriate social skills usage when the MOSOCO program used via tablet was provided to the children during in group interactions and one-on-one interaction with peers when compared to the no usage.

While research is lacking in the area of teaching social skills through the use of tablets, there is extensive literature showing the effectiveness of using computer programs to teach social skills. However, while the overall outcomes are positive there are inconsistencies in the level of improvement across the research (Beaumont & Sofronoff, 2008; Bernard-Opitz, Sriram, & Nakhoda-Sapuan, 2001; Otero, Schatz, Merrill, & Bellini, 2015; Ramdoss et al., 2012; Simpson, Langone, & Ayres, 2004). Also, much of the research was conducted with children with autism. For instance, Bernard-Opitz et al. (2001) examined the use of eight social problem scenarios modeled after the “I can Problem-solve” computer program to analyze four target skills. The participants for the study included eight children diagnosed with autism and eight typically developing peers with preschool. The results showed a variable increase across all participants, with higher improvements for the typically developing peers. Simpson et al. (2004) examined the use of computer-based instruction (via Hyperstudio) with video models to teach social skills to four elementary children diagnosis with autism. Although all children engaged in the social skills during baseline, results show a variable increase. Another study (Beaumont and Sofronoff, 2008)
examined a multi-component computer program titled “The Junior Detective Program” to teach social skills to children diagnosed with Asperger’s Disorder. The seven week long program included small group time, engaging in the computer program (i.e. watching videos or answering questions), or role-plays. All participants improved on the post intervention questionnaire completed by participants’ parents. Parents also reported their children continued to use the skills at the 6-week and 5-month follow-up (Beaumont & Sofronoff, 2008). However, one limitation to this study was that there was no collection of direct observation data of the participants performing the skills.

As the popularity and use of computer-based programs and apps for tablets and smart-phones is growing, research is needed to determine the effectiveness of these programs. One application that has not been studied but is readily available for purchase on for tablets is titled *Let’s Be Social* (Everyday Speech, 2015). The application costs $19.99 on the iTunes store. Based on the numerous reviews found on the program website and the iTunes page, it has been used by speech language pathologists, parents, and teachers who have reported the program successful in teaching social skills to children. The average review is four out of five stars within the Apple store. The purpose of the current research is to extend the research on teaching social skills by using *Let’s Be Social* to teach skills to children who are homeless, currently living in a temporary housing program and are reported to have social skills deficits. The study seeks to answer the following questions:

1. To what extent will the use of the *Let’s Be Social* tablet application be effective in teaching social skills to children who are homeless?
2. If the tablet application is not effective, to what extent will the addition of Behavior Skills Training be effective in teaching social skills to children who are homeless?
Chapter 2:

Methods

Participants & Setting

Eight children from a not-for-profit profit housing assistance program in a metropolitan area were recruited for this study. The housing assistance program provided a variety of services to homeless families including different forms of housing assistance, counseling, childcare, food assistance, and vocational assistance. Inclusion criteria for child participants included the following: a) being verbal (defined as the ability to speak in full sentences (4-5 words) and respond to questions); b) having the fine motor skills to manipulate a tablet (e.g. press buttons on the screen); c) being between the ages of 5 and 12; d) having parental consent to participate e) having a teacher or parent verbally report deficits with social skills; f) exclusion of severe problem behavior; (g) living on-site in temporary housing and (h) attending the on-site after school program. Exclusionary criteria for student participants included children over the age of 12 years old and the presence of severe problem behavior (e.g., noncompliance, aggression).

To recruit participants, a flyer was publicly posted on the after school programs door for parents of the after school program. After parents contacted the researcher, a meeting was scheduled to explain the study in detail. At the conclusion, they were asked to sign an informed consent form. Once the informed consent form was signed the researcher set a time to start collecting baseline data with the participant. Participants were also observed before baseline, to assess their verbal ability. Observations were conducted during free play to observe whether the participants were using complete sentences (4-5 words).
The recruitment effort resulted in a final sample of three students. Zoey was a Hispanic, seven-year-old girl. She is an only child and lives with her mother. She attended a public school and was in second grade. Sandy was a black, non-Hispanic, six-year-old girl. She attended a public school and was in first grade. She has three siblings, however she is the youngest. Her mother has primary care of her, however she does visit her father. Kaylee was a Caucasian, six-year-old girl. She is an only child and lives with her mother. She attended a public school and was in first grade. None of the participants had any diagnosed disabilities.

The study was conducted within the housing assistance program after school child care. The after-school program served, on average, 40 children per day. Children in the program attended public school and were typical developing, although some children had diagnoses such as Attention Deficit Hyperactivity Disorder, Oppositional Defiant Disorder, or had social delays. All sessions were conducted within a classroom located within the afterschool program building. The children had previous exposure to the classrooms that were used for the study. In-situ assessments were conducted within the main room of the afterschool program.

**Materials**

The materials included an Apple iPad © that was used to operate the social skills application. The application *Let’s Be Social* (Everyday Speech, 2015) was purchased from the iTunes store to be utilized for the application intervention phase (an example of the application is included in appendix A & B).

**Target Behaviors and Data Collection**

The targeted social skills to be taught included *greeting an adult, appropriately giving compliments, and turn taking*. Each of these skills were task analyzed for data collection (See appendix C-E). *Greeting an adult* consisted of the following five steps: a) making eye contact; b)
introductory statement (e.g., “Hi My name is Sally); c) ask other individual their name (i.e., What’s your name?); d) wait for other individual to answer; and e) provide follow-up statement (e.g., Where did you get that shirt? or want to play with me?). Appropriately giving compliments consisted of the following five steps: a) looking at object or area being described; b) making eye contact; c) pleasant statement (e.g., I like that shirt!, Nice hair cut, or Cool toy!); d) wait for other individual to respond; and e) provide follow up statement (e.g., Where did you get that toy?, Thank you, I just got my hair cut yesterday!). Turn taking consisted of the following four steps: a) staying at the table; b) plays other person’s way for one turn (quietly allows other to play their way and all items remain on table); c) helps other individual play their way; and d) plays during their turn.

Data were collected for each social skill through the use of the task analysis. For each step in the task analysis the participant was marked as either completing the step correctly (i.e., “yes”) or not completing the step correctly (i.e., “no“) (See appendix C-E). Data were also collected on the number of questions participants answered correctly within the iPad application and how long it took for the participant to complete the iPad application lesson and questions.

**Interobserver Agreement**

Interobserver agreement (IOA) data were collected during both baseline and intervention phases. A second observer used a task analysis to collect IOA data on the targeted social skills observed. An agreement was defined as both observers recording the same mark for each trial (i.e., both marking yes on the task analyses for the occurrence of a skill). A disagreement was defined as one observer marking yes and the other observer marking no. After the conclusion of each session, IOA was calculated using exact agreement. Exact agreement was calculated by
dividing the number of agreements by the number of steps in the task analysis and multiplying by 100.

In regards to Zoey, IOA was collected for 55% of sessions and was 100% agreement. IOA was collected for Sandy for 61% of sessions and was 98.70% agreement. Finally IOA was collected for Kaylee for 50% of sessions and was 99.29% agreement.

**Treatment Integrity**

A second observer was utilized to collect treatment integrity (TI) data on the researcher during the use of the iPad application and the BST training sessions (See appendix H & I). An agreement was defined as both observers recording the same mark for each trial (i.e. both marking yes on the task analyses for the occurrence of a skill). A disagreement was defined as one observer marking yes and the other observer marking no. After the conclusion of each session, TI was calculated using exact agreement. Exact agreement was calculated by dividing the number of agreements by the number of steps in the task analysis and multiplied by 100. Across both the iPad application and BST training sessions, TI data were collected between 42% and 100% of sessions for each participant. Data indicate 100% TI across all participants and sessions.

In regards to Zoey, TI was collected for 42% of ipad sessions and 100% for BST sessions. For Inara, TI was collected for 71% of ipad sessions and 100% for BST sessions. Finally for Kaylee, TI was collected for 59% of ipad sessions and 50% for BST sessions. Overall, TI was a 100% across all sessions for all participants

**Social Validity**

After both intervention phases, social validity data were collected by having child participants answer three questions (using a 1-5 point Likert scale) about their opinions of the
study and if they found the study helpful at improving social skills (See appendix F). A teacher at the after school program, not associated with the study, administered the questionnaire. If participants were able to read they were handed the questionnaire and the Likert scale was explained to them. If they were unable to read, the teacher read the questions to the child and explained the Likert scale. The participants’ teachers at the after school program were also provided a social validity questionnaire with five questions to complete (using a 1-5 point Likert scale). Questions addressed their opinion of the interventions and if they noticed changes in the participants’ social skills (See appendix G).

**Experimental Design**

A concurrent multiple baseline across behaviors design was used to evaluate the effects of the iPad application on increasing social skills.

**Procedures**

**Baseline.** During baseline, the research assistants (RA’s) presented opportunities for participants to perform the targeted social skills via in-situ assessments (ISAs). Before the RA’s conducted assessments, they were provided with training sessions on how to collect data and respond within the ISAs. The children in the after-school program were a to having new individuals enter the after school program due to different or new volunteers coming into the program on a daily basis; therefore having new RA’s enter the program for assessments was not unusual. ISAs were conducted to assess the targeted social skills and occurred within the main room of the afterschool program. During the ISA for **greeting** behavior the lead researcher walked over with an RA the participant had never met, stated: “This is a new volunteer” and waited 10 s for the participant to respond. If the participant did not respond, the RA and the researcher walked away. If the participant said a negative statement, the researcher and RA
ignored the statement and walked away. If the participant asked an unrelated question, the researcher would briefly answer the question and walk away with the RA. If the participant responded according to the checklist, the RA would respond by telling the participant his/her name (e.g., “My name is Sally.”).

During the appropriately giving compliments target behavior, the RA approached the participant and made a statement (e.g., “I got a new hair cut!” “Look at this new toy!”), or “I got a new shirt.”). The RA waited 10 s and if the participant did not respond, the RA walked away. If the participant said a negative statement, the researcher ignored the statement and walked away. If the participant asked an unrelated question, the researcher briefly answered the question then walked away. If the participant responded according to the checklist, the RA engaged in a scripted response (e.g., Thank you or I just got it!).

During the sharing skill situation, the RA walked over to the participant and stated, “It’s time to play with legos (or blocks, cars, puzzles, etc.)”. The RA played with participants for 5 min and followed any directions given by the participant on how to build. After 5 min, the RA provided a statement about changing what they were building (e.g., I want to build a house now or I want to build the house using only yellow blocks). If the participant followed the RA description on what to build, the RA would wait 2 min. and then ask the participant how he/she would like to build. If the participant refused to play the RA’s way (by saying “no” or other statements of refusal, or threw objects, yelled, or left the table) the RA ended the ISA and told the participant it was time to play another activity. The RA would play another activity with the participant for several minutes to ensure the participant was calm before sending him or her back to the after school program. If the participant stayed at the table but did not play the RA’s way
(i.e., throwing objects or yelling), the RA continued to play their way for 2 min. After 2 min, the RA asked the participant how they would like to build.

**Social Skills Application.** After baseline data were collected, each participant was given a basic instructional session on how to use the iPad. Although some participants were familiar with an iPad, the standardized instructional session ensured all participants could use the iPad. The social skills application training sessions were conducted in a room with no other children present. The researcher opened the social skills lesson on the iPad, passed the iPad to the participant and stated: “Please complete the lesson”. The participant had the option to press a button to have the story read aloud or they could read the story to themselves. The participant only had access to the social skills application during training. The application displayed a short story about using the target social skill. The participants had the option to press a button to have the questions and answers read aloud. After the story, the participants were asked five multiple-choice questions through the application. If the participant chose the correct response, a green check mark appeared with the message “That’s right!” If the participants chose an incorrect response, a red X would appear with the message “Incorrect”. After the questions were completed the participants were presented with the message “Good work!” and stars appeared on the screen for the number of questions the participant got correct. The participants were required to answer all of the questions correct to move to the post training in-situ phase. Once the questions were answered, if the participants had any incorrect they would need to listen to or read the story again and answer the questions once more until they answered all questions correct. Once the participant answered all of the questions correctly, the participants were allowed to play a game of their choice on the iPad for 5 min. Then the researcher took the iPad
and escorted the participants back to the after school program. Each participant completed the application individually.

**Post application assessments.** Once the participants completed the training session for each targeted social skill, the first ISA was conducted within 24 hours. Additional ISAs were conducted as needed over the course of several weeks. The ISAs were conducted in the same manner as baseline in the main room of the after school program. There were a minimum of three assessments conducted after the social skills application. After each assessment another social skills training session referred to as a booster session occurred if the participants were not at 100%. The booster session was conducted the same way as the initial training. During the booster session, the participant was presented with the iPad application open to the social skill being targeted, asked to complete the lesson and then allowed 5 mins on the iPad application to play a game of there once all questions were answered correctly.

**Application plus BST.** The application plus BST sessions were conducted in a private room within the after school program with no other children present. The sessions started with the researcher providing instructions on the target social skill and reviewing the lesson within the iPad application. Then the participants answered the five questions within the application. If the participants answered a question wrong, they were required to read the story again then answer the questions again. After the researcher provided instructions, the researcher modeled the correct steps for the target social skill based on the task analyses. During the modeling phase, the researcher asked the participants to play the role of the adult allowing the researcher to model the correct steps for the target social skill. The researcher engaged in all steps of the task analysis in front of the participants.
After the researcher modeled the steps for the target social skill, the participants were then presented with a scenario and asked to act out how s/he would respond (role-play). The participant acted as the participant and the researcher acted as the adult. The researcher immediately praised the participants after the role-play if they engaged in any of the steps for the target social skill. Incorrect or missing steps from the task analyses were followed with corrective feedback immediately after the role-plays. If the participant failed to engage in any of the steps of the target social skill within three seconds, the participant received corrective feedback. Rehearsal and feedback continued until the participant had the opportunity to engage in the target social skill five times to 100% accuracy. The participants received specific verbal praise when completing the steps to the skill correctly and after the training the participant received 5 min on the iPad to play a game of their choice.

**Post BST assessment.** Once the participant completed the BST training, an ISA was conducted within 24 hours. Additional ISAs were conducted as needed or until the participant completed all steps correctly for three consecutive assessments. The ISAs were conducted in the same manner as baseline. After each assessment another social skills training session (i.e., a booster session) occurred if the participants did not engage in 100% of the steps. The booster session was conducted in the same manner as the initial training. During the booster session, the participant reviewed the target social skill on the iPad application. Then the researcher provided instruction on the skill and modeling. Next, the participant was asked to role-play the target skill and the researcher provided praise and feedback. After this step was completed, the participant was allowed 5 mins of free play on the iPad.
**Follow up.** Follow up ISAs were conducted approximately two weeks after each participant had completed the post BST assessment phase to determine if the social skills had maintained. Follow-up assessments were conducted in the same manner as baseline.
Chapter 3:

Results

During the iPad phase, all participants showed variable results across all three of the skills. After the introduction of the BST component, the participants demonstrated an increase in all three social skills, with the exception of Sandy who stayed in baseline for sharing due to already meeting criteria for the skill. All participants reached 100% (correctly completed all steps of the task analysis) for all three skills after the addition of BST.

Baseline data for the greeting skill showed that Zoey completed one out of the five steps within the task analysis (Figure 1). During the iPad intervention, Zoey engaged in two of five steps requiring BST to meet mastery. Variability was observed during the appropriate compliment skill baseline. Zoey complete two steps within the task analysis throughout the baseline phase. During the iPad intervention phase, Zoey continued to have variable responding with a decreasing trend. Once she received BST, Zoey immediately met mastery criteria but required one booster training session to maintain mastery. For sharing behavior, Zoey showed variable results within baseline. During the iPad phase, Zoey only completed 2 of the 5 required target behaviors. Similar to other target skills, she required BST to meet mastery.

Sandy only engaged in one step during baseline for greeting (Figure 2). Her responding remained the same as baseline throughout the iPad intervention. Once BST was initiated, responding increased and she engaged in all of the steps correctly. However, her second data point during the BST phase decreased below mastery criteria. She required one booster session and then continued to meet criteria. Sandy’s responding was variable during the baseline for
appropriate compliments. Correct responding decreased during the iPad phase in which she was only completed 2 out of the 5 steps. After receiving BST, she met mastery criteria and did not require booster sessions. Sandy’s responding during baseline for sharing was variable but high across the baseline phase. Due to this level of responding, Sandy did not receive intervention for sharing.

Kaylee only engaged in one step during baseline for greeting and continued to engage in only one step throughout the iPad phase (Figure 3). Kaylee quickly increased to completing all steps in the second session in the BST phase. Kaylee’s responding was similar across both baseline and iPad phases for appropriate compliments and only improved to completing all five steps after the introduction of BST. Kaylee’s responding was variable during both baseline and iPad phases for the sharing skill. Once receiving BST she completed all steps correctly and did not require booster training.

Social Validity

Two teachers completed the social validity assessment. Zoey’s teacher (Teacher 1) taught 2nd-3rd grade students in the after school program. Sandy and Kaylee had the same teacher (Teacher 2) who taught kindergarten – 1st grade students in the after school program. Table 1 depicts the results from the social validity questionnaire for both teachers. The results indicated that they felt the social skills chosen for this study were important. The lower scores from the social validity questionnaire were in regards to the effectiveness of the interventions. Both teachers rated the social skills being evaluated and the need to teach them to others very high. A staff member provided the social validity questionaries’ to two of the participants due to struggling to read the instructions. Table 2 depicts the results from the social validity
questionnaire for each participant. The results show that the participants rated the intervention highly, except for Kaylee who rated neutral to the intervention helping her talk to new people.
Figure 1. Displays percentage of steps correct in the task analysis for each social skill for Zoey.
Figure 2. Displays percentage of steps correct in the task analysis for each social skill for Sandy.
Figure 3. Displays percentage of steps correct in the task analysis for each social skill for Kaylee.
Table 1.

*Social Validity results for teachers.*

<table>
<thead>
<tr>
<th></th>
<th>Teacher One (Zoey)</th>
<th>Teacher Two (Sandy)</th>
<th>Teacher Two (Kaylee)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Overall, I feel this training has improved my student’s social skills.</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2. I feel it is important for my students to learn greeting skills</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>3. I feel it is important for my students to learn to give appropriate compliments to others.</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>4. I feel it is important for my students to learn to sharing skills.</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>5. I would recommend this training to other students who need help with social skill</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 2.

*Social Validity Results for participants.*

<table>
<thead>
<tr>
<th></th>
<th>Zoey</th>
<th>Sandy</th>
<th>Kaylee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel this training has helped me to get along with others better when playing games</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2. This training has helped me to talk to new people</td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>3. I think other kids would like this training</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>
Chapter 4:
Discussion

The purpose of this study was to extend the research on using technology to teach social skills to homeless children through the use of the *Let’s Be Social* application (Everyday Speech, 2015). All three students exhibited variable abilities to learn the three social skills with only the iPad application. Each required the addition of BST in order to learn all of the steps in the task analysis. All participants reached mastery of the steps through the use of BST for all three of the skills, except Sandy who stayed in baseline for sharing.

Participants varied in their acquisition of the skills with the use of the iPad app only. All participants needed booster training during the iPad phase. However, none of the participants reached stable mastery with the use of the iPad and instead required BST to meet mastery criteria. Zoey needed a single booster training for *appropriate compliment* during the BST condition then met mastery criteria. However, she did not need booster trainings for the other two skills. Sandy needed a single booster training for the *greeting* behavior during the BST condition then met mastery criteria. Finally, Kaylee needed a single booster training for *greeting* during the BST condition then met mastery criteria. Booster sessions were used in both the iPad and BST phases to attempt to have the participants reach mastery criteria under each phase.

In regards to the social skills application phase, variable results were obtained across participants. For a few participants, the data collected during this phase was lower than baseline levels. While there is no clear explanation, it is an interesting item to note.
The results of this study align with those found in the literature that BST is an effective method to teach social skills (Stewart et al., 2007). The Stewart et al. (2007) study was limited to one participant with Asperger's disorder. However, this is the first study to be done with the homeless youth population and BST. This study also expands on the notion that homeless youth struggle with deficits in social skills and acquiring the skills (DiBiase & Waddell, 1995; National Child Traumatic Stress Network Homelessness and Extreme Poverty Working Group, 2005).

In addition, this study contributes to the literature by providing IST instead of indirect data of the maintenance of the skill. Within the Himle and Miltenberger (2004) article, the authors call for the combination of BST and ISA when assessing skills. They state that this allows for the researcher to conduct a generalization training trial and obtain data on how the participant will behave. Specifically, there have been studies throughout the research, like Himle et al. (2004) and Houvouras and Harvey (2014) that assess the use of BST and ISA together to improve skill acquisition. However, neither of these studies assessed both BST and ISA for teaching social skills.

Participants highly rated the social validity of the intervention for all questions except for Kaylee who rated a three for “did this help her talk to new people”. Anecdotally, Teacher One said that while she was reading the social validity questions to Zoey, Zoey talked to her about the study and stated that she enjoyed it. Teacher One also reported that another staff member said that they had seen a change in Zoey over the last few weeks. A volunteer noticed that Zoey seemed more social and used more full sentences to express ideas to others.

A challenge during this study was participant attrition. Eight participants were originally recruited. The attrition for this study included four participants. The final participant number was
three individuals. Three participants were dropped due to their parents violating organizational rules and required to move out of the site. Another participant dropped out of the study due to relocation. Attrition will be a challenge when working with families that are homeless and do not have stable housing. The researcher over-recruited for this study in anticipation of a higher than average attrition rate. Another challenge to this study was that all three participants were inadvertently exposed to a Social Emotional intervention group run by a licensed mental health counselor. The intervention included instruction related to skills for sharing. This group occurred while all three participants were still in baseline. The Social Emotional group was in session for four weeks and was conducted in a group format for each class. It is not clear if this may, in part, be responsible for the variability in participant’s data for sharing.

In summary, this study is one of the few that evaluates the use of BST and an iPad application to teach social skills to participants who are homeless. The results showed that the use of the iPad application alone showed variable results. However, once BST was introduced target skills reached mastery criteria. Except the sharing skill with Sandy, which reached mastery criteria within baseline and did not need any form of intervention. Furthermore, follow-up probes showed the skills maintained to mastery criteria. Although the follow-up probes showed that the skills, overall, maintained, only one follow-up probe was conducted for each participant two weeks after the BST phase. Future studies should collect more follow up data points to evaluate the maintenance of the social skills being targeted.

Further research could also evaluate other types of applications that target teaching social skills and other behaviors. While the iPad application assessed in this study was not successful at increasing social skills to mastery levels, others may use different methods that could be effective or incorporate the training methods within BST. Perhaps future applications could
incorporate the features of BST and suggest ISA to test the generalization and maintenance of the skills being taught. Another feature that might increase results would be to incorporate video modeling or virtual reality into applications. This would potentially incorporate the modeling and role-play aspects within BST. Future research could also conduct additional follow-up probes and in-situ assessments across a wider range of settings that children encounter. Future research could also assess the generalization of skill not only through in-situ assessments but verbal questions as well. Might the application increase verbal behavior but not behavior in the in-situ assessments? Future research could also assess the potential over generalization qualities from the greeting skill with greeting strangers.
References


Appendices

Appendix A: *Let’s Be Social – Greeting Friends*

Greeting Friends

Tom is going to a new school. On his first day, he stands in front of his new class. He feels scared. The teacher says, “Tom is our new student”. She asks the class to greet Tom. The students say, “Hi Tom”. Tom waves at the class and introduces himself. Now Tom feels happy to join the class.
Appendix B: Let’s Be Social – Sharing

Breaking the Rules

Carlos is playing a board game with friends. Alex says he should go first. Carlos knows the rules of this game by heart. He knows that the youngest player goes first. But his friends say Alex should go first. Carlos starts to yell and says “That isn’t the rule!” He feels very angry. Sometimes people don’t follow all of the rules and it is okay. Carlos repeats to himself, “It will be okay.” He starts to feel better. Next time he will remember that sometimes people change the rules.
## Appendix C: Task Analysis for Greeting

<table>
<thead>
<tr>
<th>Steps</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>“We have a new volunteer”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child Makes eye contact</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introductory statement (e.g., “Hi, My name is Sally”)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ask other individual their name (e.g., What’s your name?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“My name is…”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wait for other individual to answer (and not engage in any problem behavior or other activity while waiting including asking additional questions prior to the person responding)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide follow up statement (e.g., Where did you get that shirt?, Nice to meet you, Want to play with me?)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Appendix D: Task Analysis for Appropriately Giving Compliments

<table>
<thead>
<tr>
<th>Steps</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Look at my new …”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Looking at object or area being described</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Making eye contact</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pleasant statement (e.g., I like that shirt!, Nice hair cut, or Cool toy!)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Thank you”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wait for other individual to respond (and not engage in any problem behavior or other activity while waiting including asking additional questions prior to the person responding)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide follow up statement (e.g., Where did you get that toy? Thank you, I just got my hair cut yesterday!)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix E: Task Analysis for Sharing

<table>
<thead>
<tr>
<th>Steps</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>“It’s Time to play with Lego’s. What would you like to build?”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stay at table (for entire time)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“It’s now time to build…”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allows RA to play their way (quietly) and all items stay on the table</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helps the RA play their way</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“OK, now what would you like to build?”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plays their way during their turn (or continues to play RA’s way)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix F: Social Validity for Participants

Please read each statement and circle the corresponding number to indicate your opinion on the statement regarding the behavioral skills training study you participated in.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1. I feel this training has helped me to get along with others better when playing games
   
   1 2 3 4 5

2. This training has helped me to talk to new people
   
   1 2 3 4 5

3. I think other kids would like this training
   
   1 2 3 4 5
Appendix G: Social Validity for Teachers

Please read each statement and circle the corresponding number to indicate your opinion on the statement regarding the behavioral skills training study you participated in.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1. Overall, I feel this training has improved my student’s social skills.
   1  2  3  4  5

2. I feel it is important for my students to learn greeting skills.
   1  2  3  4  5

3. I feel it is important for my students to learn to give appropriate compliments to others.
   1  2  3  4  5

4. I feel it is important for my students to learn to sharing skills.
   1  2  3  4  5

5. I would recommend this training to other students who need help with social skills
   1  2  3  4  5
Appendix H: Treatment Integrity - Ipad

Observer: ___________________________ Person Observed: ___________________________
Date: ___________________________

Please mark ✓ if a step is completed correctly when conducting the iPad training. If a step is completed incorrectly, mark × next to that step. If a step is not necessary (i.e., the child did not need corrective feedback or multiple rehearsals), write N/A next to that step. Once all steps are completed, divide the number of yes scores by the total number of steps scored then multiply by 100.

<table>
<thead>
<tr>
<th>Step</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Instruction Provided during first session on how to use iPad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researcher open’s social skill application and open specific lesson being targeted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researcher put iPad in front of participant and states “Please complete the lesson”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participant answers at least one question incorrectly –</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research walks over and restarts the social skills lesson then prompts the child that they need to complete all questions correctly before allowed access for free play.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants answers all questions correctly –</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researcher allows 5 minutes of free play</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researcher ends session after 5 minutes of free play</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research walks child back to class activity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix I: Treatment Integrity- BST

Observer: ______________________   Person Observed: ______________________
Date: ______________________

Please mark ✓ if a step is completed correctly when conducting BST. If a step is completed incorrectly, mark ✗ next to that step. If a step is not necessary (i.e., the child did not need corrective feedback or multiple rehearsals), write N/A next to that step. Once all steps are completed, divide the number of yes scores by the total number of steps scored then multiply by 100.

<table>
<thead>
<tr>
<th>Task</th>
<th>Step Completed?</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduces the social skill being learning and provide the iPad application</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Describes the correct Social Skill behaviors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Models the behaviors for the child.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Uses role-play to allow child to practice correct behaviors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Provides descriptive praise for steps completed correctly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Provides corrective feedback for steps child needs to improve on, if needed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Repeats steps 4-6 until child engages in correct behaviors without any help.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix J: USF IRB Approval Letter

October 22, 2015

Emily Baton
ABA-Applied Behavior Analysis
13301 Bruce B Downs Blvd.
MHC 2113A
Tampa, FL 33612

RE: Expedited Approval for Initial Review
IRB#: Pro00023540
Title: An Evaluation of the Effectiveness of a Social Skills Application on Children who are Homeless

Study Approval Period: 10/21/2015 to 10/21/2016

Dear Ms. Baton:

On 10/21/2015, the Institutional Review Board (IRB) reviewed and APPROVED the above application and all documents contained within, including those outlined below.

Approved Item(s):
Protocol Document(s):
Study Protocol V.1 10/05/15

Consent/Assent Document(s)*:
Assent Form V1.pdf
Parental Informed Consent V1.pdf
Teacher Consent form V1.pdf
Student Verbal Assent Script V.2 (form is not stamped)

*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab. Please note, these consent/assent document(s) are only valid during the approval period indicated at the top of the form(s).
It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45 CFR 46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review category:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Study involves children and falls under 45 CFR 46.404: Research not involving more than minimal risk.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval via an amendment. Additionally, all unanticipated problems must be reported to the USF IRB within five (5) calendar days.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

[Signature]

John Schinka, Ph.D., Chairperson
USF Institutional Review Board