The Effects of Brief, Localized, Intensive, Social Skills (BLISS) Training on Social Outcomes for Students with Autism Spectrum Disorder in Inclusive School Settings: Form and Function

Christian V. Sabey
Utah State University

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THE EFFECTS OF BRIEF, LOCALIZED, INTENSIVE, SOCIAL SKILLS (BLISS) TRAINING ON SOCIAL OUTCOMES FOR STUDENTS WITH AUTISM SPECTRUM DISORDER IN INCLUSIVE SCHOOL SETTINGS:

FORM AND FUNCTION

by

Christian V. Sabey

A dissertation submitted in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

Disability Disciplines

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2015
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ABSTRACT

The Effects of Brief, Localized, Intensive, Social Skills (BLISS) Training on Social Outcomes for Students with Autism Spectrum Disorder in Inclusive School Settings: Form and Function

by

Christian V. Sabey, Doctorate of Philosophy

Utah State University, 2015

Major Professor: Dr. Scott Ross
Department: Special Education and Rehabilitation

The number of students with autism spectrum disorder is on the rise and more of these students are being served in general education settings. As a result, more school personnel need to be prepared to support students with autism spectrum disorder. Most students with autism spectrum disorder require social supports to function effectively in a general education setting. Previous research indicates that there is a need for efficient social skills interventions implemented by existing school personnel. This study examined the effect of a brief, localized, intensive, social skills training intervention on the social interactions of students with autism spectrum disorder in an inclusive school setting. The results indicate that this intervention produced meaningful increases in participants’ appropriate social vocalizations and social engagement. We discuss the implications of these results for current practice and future research.

(123 pages)
The Effects of Brief, Localized, Intensive, Social Skills (BLISS) Training on Social Outcomes for Students with Autism Spectrum Disorder in Inclusive School Settings: Form and Function

by

Christian V. Sabey

This study examined the impact of a framework for implementing social skills training, entitled BLISS, on the social vocalizations of students with autism spectrum disorder.

The number of students with autism spectrum disorder is on the rise and many of these students are being served predominantly in general education settings. However, there is a serious lack of social skills training interventions that have been effectively integrated into the typical school setting, including the use of typically available school personnel as interventionists. The developers of the BLISS approach take a step closer to the ideal by integrating brief social skills instruction into typical daily school activities and by promoting the use of typically available school personnel as interventionists.

The results of this study indicate that BLISS effectively increased the frequency of positive social vocalizations and social engagement for the participants. Additionally, while the number of interactions increased the number of negative peer responses did not increase. This was accomplished while typical school personnel delivered a meaningful
portion of the intervention. However, the BLISS approach did not result in generalization of the skills to novel settings, nor did it improve the subjective well-being of the participants. The BLISS approach holds great promise as an effective and efficient framework for addressing the social needs of the growing student population with autism.
ACKNOWLEDGMENTS

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I am grateful to my committee members, Drs. Ben Ligunagris/Kraft, Tim Slocum, Tom Higbee, and Donna Gilbertson for their input, guidance, and support throughout this process.

A special thanks to the administrators, teachers, interventionists, and participants who made this study possible. Their willingness, dedication, and enthusiasm made this project fun and interesting. I am grateful to the data collectors who put in several hours in the rain, snow, and heat to document the improvements in the lives of students with autism spectrum disorder (ASD).

Finally and most emphatically, thanks to my wife, Erin, for her unending support and encouragement over the last 4 years. I am grateful for her willingness to experience this doctoral program with me, all while having 2¾ children along the way. She has been my greatest support through the good, the bad, and the ugly.

Christian Sabey
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CHAPTER I
INTRODUCTION

A defining characteristic of autism spectrum disorder (ASD) is deficits in social functioning, including difficulty with social-emotional reciprocity, nonverbal communication, and establishing and maintaining relationships. Other symptoms may vary across individuals, including restricted interests or routines, repetitive behaviors, and sensory behaviors, but social communication difficulties are always present in those with ASD (American Psychiatric Association [APA], 2013). Although it is unknown exactly how many individuals have been diagnosed with ASD, the most recent estimates from the Center for Disease Control and Prevention indicate that approximately 1 in 68 children in the U.S. has been identified with ASD, making it one of the most frequently diagnosed developmental disorders (Baio, 2014). Many individuals diagnosed with ASD do not experience comorbid intellectual disability and are often referred to as having high-functioning ASD (HFASD; Böckler, Timmermans, Sebanz, Vogeley, & Schilbach, 2014; Kohl et al., 2014; Poon et al., 2014). Chakrabarti and Fombonne (2001) estimated that this subset of individuals with HFASD make up approximately half of all ASD diagnoses. When these individuals reach school age the school system is tasked with providing them with a free and appropriate public education (FAPE; Sumbera, Pazey, & Lashley, 2014).

Many students with ASD are served, at least in part, in a general education setting among typically developing peers. This is increasingly true in light of recent efforts to promote inclusive education (Loiacono & Valenti, 2010; Ravet, 2011; J. M. Sansosti &
Sansosti, 2012), and legislation requiring the least restrictive environment for students (Individuals with Disabilities Education Improvement act [IDEA] of 2004; P.L. 107-110, Section 1001). In 2011, the U.S. Department of Education reported that 95% of students with disabilities received services in a general education classroom. Elsewhere, it is reported that the number of students with ASD being served in inclusive settings is increasing (Koegel, Kuriakose, Singh, & Koegel, 2012; Owen-DeSchryver, Carr, Cale, & Blakeley-Smith, 2008). Given that many students with ASD are capable of completing grade-level academic work, it makes sense that they would be served in the general education setting along with typically developing peers. Furthermore, general education often represents the least restrictive environment.

Although the general education setting may seem like a good fit for certain students with ASD, Gena (2006) pointed out that many of these students do not benefit socially or academically from a general education setting without supplementary supports. Inclusive education that does not directly address the social needs of students with ASD may result in suppressed academic improvement and increased problem behavior. So, although educating students with ASD in inclusive settings is mandated, inclusion alone may not provide the supports necessary for a student to fully access the curriculum in the same manner as their typically developing peers (Gutierrez, Hale, Gossens-Archuleta, & Sobrino-Sanchez, 2007; Hunt & Goetz, 1997; Kohler, Strain, & Shearer, 1996).

One common way to support students with ASD across settings is through social skills training (SST). SST includes a variety of interventions that are designed to increase
appropriate social behavior (e.g., video modeling, peer modeling, self-monitoring, direct instruction, etc.). There are a number of recent meta-analyses and systematic reviews on the effects SST for students with ASD (Bellini, Peters, Benner, & Hopf, 2007; Camargo et al., 2014; McMahon, Lerner, & Britton, 2013; Wang, Parrila, & Cui, 2012). These meta-analyses and systematic reviews highlight a few important points regarding the existing body of research on SST for students with ASD. First, the data that are collected and the methods of analysis vary, so depending on how the research is analyzed, there are mixed reports on how effective social skills interventions are for individuals with ASD (e.g., Reichow & Volkmar, 2010; Roth, Gillis, & DiGennaro Reed, 2014). Second, the applicability of much of the research to authentic contexts remains largely undetermined. Much of the research is conducted in clinical settings under analog conditions that may not closely resemble naturally occurring social situations (e.g., Koning, Magill-Evans, Volden, & Dick, 2013; Mathews, Erkfritz-Gay, Knight, Lancaster, & Kupzyk, 2013; Radley et al., 2014; Schohl et al., 2014). There is a need for more research in authentic contexts to determine how well social skills training works for students in settings where the skills are needed. As with the ASD SST research literature generally, there are mixed reports on how effective school-based social skills training is for students with ASD in schools (Bellini et al., 2007; Camargo et al., 2014). Third, the broad spectrum of theoretically different approaches to social skills training make it difficult to determine which approach has the greatest potential to produce positive outcomes for individuals with ASD (e.g., Bellini & Akullian, 2007; Fujino, 2013; Kokina & Kern, 2010; Southall & Gast, 2011).
Finally, Elliott, Racine, and Busse (1995) indicated that social skills are “Socially acceptable learned behaviors that enable a person to interact with others in ways that elicit positive responses and assist in avoiding negative responses” (p. 1009). This definition indicates that social skills ought to be defined by their function. In other words, social skills ought to be defined as behaviors that produce positive responses and reduce negative responses from others. However, existing research has overwhelmingly defined social skills by what they look like, rather than by their functional effect. For example, in many social skills intervention studies researchers measure social initiations emitted by participants, but do not consider how peers respond to those initiations (e.g., Kamps et al., 1992; Licciardello, Harchik, & Luiselli, 2008). This may be particularly problematic for students with ASD, who commonly misread social situations. Their attempts to employ learned social skills may result in negative responses from peers. Because these students often misinterpret social situations, it is also important to understand how their perception of their own social lives changes in relation to changes in their behavior. Specifically, it is important to understand if increases in prosocial behavior are related to improved perceptions of life satisfaction, loneliness, and friendships. In light of these shortcomings, a review of studies of SST in naturalistic contexts within schools is warranted to identify gaps in the literature and promising intervention components.
CHAPTER II

REVIEW OF LITERATURE

The purpose of this literature review is to synthesize and analyze existing research on social skills improvement interventions for individuals with ASD in inclusive school settings. The objectives of this review are as follows.

1. Describe the current state of research addressing social skills interventions for individuals with ASD in inclusive school settings,

2. Discuss the issues, strengths, and weaknesses of these interventions,

3. Determine what studies, if any, have assessed the functional outcomes of social skills training interventions (e.g., increased positive peer responding, decreased negative peer responding, improved social status, etc.).

4. Determine gaps exist within the literature that may be addresses by a brief, localized, intensive, social skills (BLISS) approach.

Research Procedures

This review of literature was conducted to evaluate the extant research on teaching social skills to students with ASD within typical school settings (i.e., in the presence of typically developing peers). Studies were identified through an electronic search of peer-reviewed journals across three databases via EBSCOhost including to identify relevant studies. Databases searched included, Academic Search Premier, Education Resources Information Center (ERIC), and Psych INFO to identify relevant studies. The following Boolean search string was used to identify studies: (aut* OR
asperger* OR high functioning autism OR ASD OR PDD) AND (train* OR teach* OR interve* OR program* OR curricu* OR therapy OR instruct*) AND (social* OR emotion* OR behavior*). The initial search yielded 2,541 results. Consequently, the search was limited to studies that included school age (i.e., 6-12 yrs) participants, which yielded 473 articles published from 1977 to 2014. Additionally, a meta-analysis (Camargo et al., 2014) was identified that addressed teaching reciprocal social skills to students with ASD in inclusive school settings. This meta-analysis reviewed 30 articles, all of which were screened for inclusion in this review, bringing the total number of articles considered for this review to 503.

**Inclusion and Exclusion Criteria**

In order to be included in this review, articles needed to meet several criteria. First, articles were included if authors described a study in which an independent variable was actively manipulated and a dependent variable was measured to determine the effect. Demonstration studies, comparison studies without a control group, program descriptions, assessment studies, measurement validation studies, reviews, and meta-analyses were all excluded. Second, articles were included if authors administered the social skills intervention to a simple majority of participants who had some form of autism spectrum disorder identified as ASD, Asperger’s syndrome, or pervasive developmental disorder-not otherwise specified. Third, at least one of the dependent measures identified in the article needed to address direct behavioral outcomes including reciprocal social interactions. Examples of reciprocal interactions include joining a game,
inviting others to join a game, introducing oneself, taking turns, and other interactions that result in a back-and-forth exchange of verbal or nonverbal behavior. Articles were excluded that included only rating scales, surveys, measures of passive social skills (e.g., emotional recognition, social awareness, etc.), or other measures that did not directly assess some dimension of behavior (e.g., frequency, duration, latency, etc.). Forth, the settings in which outcome data were collected needed to include typically developing peers to demonstrate the effect of the intervention on interactions with typically developing peers. Finally, included studies took place in inclusive school settings. An inclusive school setting is defined as a setting in which all students may participate regardless of classification, and in which nonspecial education school personnel are present (e.g., inclusive classrooms, playgrounds, cafeterias). Studies conducted in self-contained schools or classes, clinical settings, or in programs before or after school hours were excluded. The overwhelming majority of exclusions occurred because the studies occurred in a clinical or other noninclusive school setting (e.g., Baio, 2014), with the second most frequent reason for exclusion occurring because the intervention did not address reciprocal social skills (e.g., Feng, Lo, Tsai, & Cartledge, 2008). When the inclusion and exclusion criteria were applied, 22 studies remained, ranging from 1992 to 2014.

**Definition of Terms**

*Reciprocal social skills* refers to vocal or nonvocal behaviors that typically produce a response from another person. For example, asking a question of another
person typically results in receiving a response and passing another person a ball typically results in having the ball passed back. In contrast, there are some social skills that do not typically produce responses from others. For example, identifying emotions based on facial expressions may be a useful social skill, but it does not occasion responding from others. Similarly, self-monitoring may be important in terms of managing the occurrence and nonoccurrence of social behaviors, but it does not elicit responses from peers.

*Positive effect* refers to a notable positive change in level, trend, variability, overlap, or consistency of the data, or some combination of the five, in a therapeutic direction at or near the introduction or removal of the independent variable on three separate occasions (Kratochwill & Levin, 2014). For group studies this means a statistically significant result at $p < .05$ on measures of the primary dependent variable.

*No effect* refers to studies in which the researchers fail to clearly demonstrate an effect. For single subject studies, this would include fewer than three demonstrations of an effect at three separate points in time. For group studies this means statistically insignificant results at $p > .05$.

**General Findings**

Appendix A contains a table that includes a summary of the characteristics of the primary studies that were included in this review. Only direct behavioral outcomes are reported in the table, so measures of social knowledge, rating scales, and other indirect measures are excluded. Additionally, the table in Appendix B summarizes the frequency
of the various dimensions that were coded for consideration in this review.

**Gender**

Not surprisingly, the majority of participants in the studies included in this review were male ($n = 114$, 88%). This finding is consistent with the ratio of males and females diagnosed with ASD, which ranges from 3.6:1 to 5.1:1 in recent prevalence studies (Baio, 2014), suggesting that the current literature is reflective of the actual population.

**Age**

Of the 69 participants reported in the single subject studies, 75% were between the ages of 5 and 9 years, while only 25% of participants were 10 years old or older. In the one large group study, the 60 participants were between the ages of 6 and 11 years old with a mean age of 8.14 yrs. The breakout of participants per age was not reported.

**Interventions**

In 17 of the 22 studies reviewed (77%), researchers demonstrated a positive effect. A number of interventions were represented, many of which included a variety of mechanisms for modifying behavior. One of the most frequently represented approaches is characterized as social skills training alone ($n = 5$, 26%, Banda & Hart, 2010; Gonzalez-Lopez & Kamps, 1997; Kamps et al., 1992; Shabani et al., 2002; Yang, Huang, Schaller, Wang, & Tsai, 2003). These interventions include didactic instruction along with modeling and feedback, in which specific skills were taught using a pre-developed curriculum or program (e.g., Kamps et al., 1992). Of the five “social skills training alone” interventions, three teams of researchers demonstrated a positive effect (Gonzalez-Lopez
& Kamps, 1997; Kamps et al., 1992; Shabani et al., 2002), while the remaining two research teams failed to demonstrate a positive effect (Banda & Hart, 2010; Yang et al., 2003).

Another frequently reported intervention approach involved social skills training plus supplemental supports. In five studies researchers used social skills training, as described previously, plus some other support in the intervention phase (Banda, Hart, & Liu-Gitz, 2010; Kasari, Rotheram-Fuller, Locke, & Gulsrud, 2012; Licciardello et al., 2008; Loftin, Odom, & Lantz, 2008; Morrison, Kamps, Garcia, & Parker, 2001). These additional supports are distinguished from social skills training alone because they are present beyond any training phase of the intervention. Additional supports include prompting (Banda et al., 2010), prompting and rewards (Licciardello et al., 2008), self-monitoring and peer training (Loftin et al., 2008), self-monitoring and peer monitoring (Morrison et al., 2001), and peer mediation (Kasari et al., 2012). Of the five studies that employed social skills training plus additional supports, four research teams demonstrated a positive effect (Kasari et al., 2012; Licciardello et al., 2008; Loftin et al., 2008; Morrison et al., 2001). Only Banda et al. (2010) failed to demonstrate a positive effect.

In four of the articles reviewed authors reported on the Social Stories™ intervention (Gray & Attwood, 2010). This intervention includes stories illustrating appropriate or prosocial behavior that students read as a model of how they should act under similar circumstances. Of these four studies, researchers in three studies demonstrated a positive effect (Delano & Snell, 2006; Reichow & Saborne, 2009;

Another type of intervention that researchers tested involved video-based interventions, including video modeling and video-based feedback to improve students’ social skills (Boudreau & Harvey, 2013; Deitchman, Reeve, Reeve, & Progar, 2010). In one study, Boudreau and Harvey used video modeling and prompted students to make correct responses while recording, and then edited out the prompts so that the student was left to see only successful executions of the target skills. However, Boudreau and Harvey failed to demonstrate a positive effect. In a second study, Deitchman et al. showed a student a video of himself interacting during the previous day and provided feedback and rewards or correction for appropriate and inappropriate social initiations. Deitchman et al. successfully demonstrated a positive effect that was maintained for at least two sessions and generalized to different classrooms.

Two interventions used peer networking to improve social outcomes for students with ASD (Kamps, Potucek, Lopez, Kravits, & Kemmerer, 1997; Mason et al., 2014). These interventions involved teaching the target students new skills and then training peers to respond appropriately when the target behaviors were emitted. The theory behind this intervention is that if students with ASD experience appropriate responses from peers when they emit the target skill, those skills will be reinforced by appropriate peer responses. In one study, Kamps et al. used peer networks along with scripts, reinforcement, and feedback to improve social outcomes. Kamps et al. demonstrated a positive effect of the intervention. In the other study, Mason et al. used peer networks in
conjunction with priming, a reinforcement card, and a group contingency to affect social outcomes. Mason et al. also demonstrated a positive effect.

In the final four studies, researchers examined script training including the SODA (Stop, Observe, Deliberate, and Act) approach, creating concept mastery routines, and employing a high-p low-p request sequence (Bock, 2007; Jung, Sainato, & Davis, 2008; Laushey, Heflin, Shippen, Alberto, & Fredrick, 2009; Thiemann & Goldstein, 2004). These interventions employed many of the techniques discussed previously combined with some unique features, such as scripts, concept maps, and request sequences, to distinguish them from other approaches. Researchers who implemented the concept mastery routine, high-p low-p, SODA, and script training interventions all demonstrated positive effects.

**Intervention Components**

The interventions were comprised of various components designed to modify behavior (e.g., prompting, praise, etc.). An analysis of these components may help to identify what behavioral technologies are most useful in designing SST interventions (for a complete list of intervention components see Table B1). The most frequently occurring component across interventions was in vivo modeling, or having a live person who is proficient at a given skill demonstrate the steps to performing that skill. Forty-five percent ($n = 10$) of the studies reviewed included in-vivo modeling (Banda & Hart, 2010; Banda et al., 2010; Gonzalez-Lopez & Kamps, 1997; Jung et al., 2008; Licciardello et al., 2008; Loftin et al., 2008; Morrison et al., 2001; Sansosti & Powell-Smith, 2008; Shabani et al., 2002; Yang et al., 2003). Researchers demonstrated a positive effect in half ($n = 5$)
of these studies. Similarly, 45% of the studies included praise, rewards, or reinforcement as components of the intervention (Deitchman et al., 2010; Gonzalez-Lopez & Kamps, 1997; Jung et al., 2008; Kamps et al., Licciardello et al., 2008; Loftin et al., 2008; Mason et al., 2014; Shabani et al., 2002; Thiemann & Goldstein, 2004). In 80% ($n = 8$) of these studies, researchers demonstrated positive effects.

**Interventionists**

The administrator of a SST intervention can impact the effectiveness, feasibility, and sustained implementation. Interventions that require outside personnel may take longer to deploy, cost more in terms of time and resources, and be less durable than interventions that can be administered by school personnel. In 50% of the reviewed studies ($n = 11$; Banda & Hart, 2010; Banda et al., 2010; Boudreau & Harvey, 2013; Deitchman et al., 2010; Delano & Snell, 2006; Jung et al., 2008; Kasari et al., 2012; Laushey et al., 2009; Loftin et al., 2008; Mason et al., 2014; Morrison et al., 2001), researchers served as the primary interventionists. In eight of the studies (36%; Bock, 2007; Hanley-Hochdorfer et al., 2010; Kamps et al., 1992, 1997; Reichow & Sabornie, 2009; Shabani et al., 2002; Thiemann & Goldstein, 2004; Yang et al., 2003), the interventionist was either a combination of the researcher and school personnel, or was not reported. In two studies, the teacher served as the sole or primary interventionist (9%; Gonzalez-Lopez & Kamps, 1997; Sansosti & Powell-Smith, 2008) and in two studies a classroom assistant served as the interventionist (9%; Licciardello et al., 2008; Sansosti & Powell-Smith, 2008).
**Dependent Variables**

For the purposes of this review, only dependent variables that directly measured observable behavior were considered. These variables were fairly consistent across studies. In 77% of studies, researchers \((n = 17, \text{Banda} \& \text{Hart}, 2010; \text{Banda et al.}, 2010; \text{Boudreau} \& \text{Harvey}, 2013; \text{Deitchman et al.}, 2010; \text{Delano} \& \text{Snell}, 2006; \text{Hanley-Hochdorfer et al.}, 2010; \text{Jung et al.}, 2008; \text{Kamps et al.}, 1992, 1997; \text{Laushey et al.}, 2009; \text{Licciardello et al.}, 2008; \text{Loftin et al.}, 2008; \text{Morrison et al.}, 2001; \text{Sansosti} \& \text{Powell-Smith}, 2008; \text{Shabani et al.}, 2002; \text{Thiemann} \& \text{Goldstein}, 2004; \text{Yang et al.}, 2003) measured social initiations as the primary dependent variable. Definitions of initiation included vocal and nonvocal behaviors that precipitated or would typically precipitate a response from another person. For example, Banda et al. defined initiation as, “verbal peer-to-peer interactions consisting of a question asked of or a comment made toward another student to begin a conversation.”

In 55% of studies researchers \((n=12, \text{Banda} \& \text{Hart}, 2010; \text{Banda et al.}, 2010; \text{Delano} \& \text{Snell}, 2006; \text{Hanley-Hochdorfer et al.}, 2010; \text{Jung et al.}, 2008; \text{Kamps et al.}, 1992, 1997; \text{Laushey et al.}, 2009; \text{Licciardello et al.}, 2008; \text{Sansosti} \& \text{Powell-Smith}, 2008; \text{Shabani et al.}, 2002; \text{Thiemann} \& \text{Goldstein}, 2004) measured social responses emitted by the participant in response to peers. Definitions of responses included continuing a social interaction that was initiated by someone else. For example, Licciardello et al. defined social responses as “any verbal or physical behavior by a participant that immediately followed an initiation from a peer” (p. 29).

Though the exact definitions vary from one study to the next, in each of these
studies researchers measured participant initiation of a social interaction and response to a social interaction. In many of the studies researchers measured these two behaviors together (n=13, 60%; Banda & Hart, 2010; Banda et al., 2010; Delano & Snell, 2006; Hanley-Hochdorfer et al., 2010; Jung et al., 2008; Kamps et al., 1992, 1997; Laushey et al., 2009; Licciardello et al., 2008; Loftin et al., 2008; Sansosti & Powell-Smith, 2008; Shabani et al., 2002; Thiemann & Goldstein, 2004). Other behaviors measured included prosocial behavior (n=6, 27%, Bock, 2007; Delano & Snell, 2006; Gonzalez-Lopez & Kamps, 1997; Kasari et al., 2012; Reichow & Sabornie, 2009; Yang et al., 2003) problem behavior (n=4, 18%; Delano & Snell, 2006; Gonzalez-Lopez & Kamps, 1997; Jung et al., 2008; Loftin et al., 2008), communicative acts (n=3, 14%; Mason et al., 2014; Morrison et al., 2001; Reichow & Sabornie, 2009), and sharing (n=2, 9%; Banda & Hart, 2010; Yang et al., 2003).

**Maintenance**

Maintenance of effects was measured in 14 of the studies (63%; Bock, 2007; Boudreau & Harvey, 2013; Deitchman et al., 2010; Delano & Snell, 2006; Hanley-Hochdorfer et al., 2010; Jung et al., 2008; Kamps et al., 1992, 1997; Kasari et al., 2012; Laushey et al., 2009; Loftin et al., 2008; Morrison et al., 2001; Sansosti & Powell-Smith, 2008; Shabani et al., 2002; Thiemann & Goldstein, 2004). In 57% of these studies (n = 8), researchers demonstrated positive effects over time in that the behavior remained at treatment levels after the intervention was removed (Bock, 2007; Deitchman et al., 2010; Delano & Snell, 2006; Kamps et al., 1992; Kasari et al., 2012; Laushey et al., 2009; Sansosti & Powell-Smith, 2008). In 36% of these studies (n = 5), researchers failed to
demonstrate a maintenance effect (Boudreaux & Harvey, 2013; Delano & Snell, 2006; Jung et al., 2008; Loftin et al., 2008; Morrison et al., 2001; Shabani et al., 2002; Thiemann & Goldstein, 2004). That is to say the intervention effects did not maintain over time across all relevant dimensions.

**Generalization**

Researchers measured generalization in fewer studies than they measured maintenance. In only 18% \((n = 4)\) of studies, researchers reported on the generalization of intervention effects to conditions different from those in the intervention condition (e.g., with different people, in different places, etc.; Deitchman et al., 2010; Delano & Snell, 2006; Laushey et al., 2009; Sansosti & Powell-Smith, 2008). Of the researchers that measured generalization, 50% \((n = 2)\) produced positive effects (Deitchman et al., 2010; Laushey et al., 2009). In the remaining two studies, researchers demonstrated mixed generalization effects (Delano & Snell, 2006; Sansosti & Powell-Smith, 2008), suggesting that skills were generalized under some conditions but not all.

**Summary**

Overall, in 16 (70%) of the studies reviewed, researchers demonstrated a strong relationship between the intervention and improvement in social behavior, indicating a mounting body of research supporting SST for students with ASD in the schools. However, there is little consensus regarding exactly which approach to SST is most effective. More research is needed to clearly establish the most promising approach for this population.
Another important finding of this review involves the personnel used to implement social skills interventions. In the majority of studies, the intervention was carried out by researchers, either alone or in conjunction with teachers and other school personnel. This suggests a gap in understanding how social skills training works when implemented by existing school personnel. Identifying interventions that can be successfully implemented and maintained by existing school personnel could have serious implications for the sustained success of interventions for students with ASD.

Several components were consistently present among interventions that produced positive effects for students with ASD in school settings. These components include modeling, reinforcement, involvement of typically developing peers, and prompting. Including these components might increase the likelihood that an intervention will produce successful outcomes.

The most conclusive finding from this review is that all studies looked at social skills as a topographical phenomenon. Specifically, students were judged to have improved in their social skills based on the occurrence of certain forms of behavior. However, given Gresham and Elliott's (1990) definition of social skills, a focus on topography alone cannot identify if a skill is social or not. By their definition, a skill must produce increased positive responses and decreased negative responses in order to be considered a social skill. There is a need for studies of social skills interventions to measure the functional effect of such training to determine if it produces the kind of responses that are consistent with a social skillset that generates naturally occurring reinforcement.
Finally, the existing research has not adequately established the maintenance and generalizability of social skills acquired through intervention. More convincing demonstrations are needed to establish the sustainability and generalizability of intervention effects.

These findings along with those of previous reviews offer some helpful suggestions to consider when designing SST. First, Bellini et al. (2007) suggested that SST should be individualized and address specific skill deficits, rather than trying to fit student needs into an existing curriculum. Second, Gresham, Sugai, and Horner (2001) suggested that for students with ASD, training in contrived or analog situations may compromise the student’s ability to use learned skills in applicable settings. To solve this problem, skills should be taught in applied contexts. Finally, Camargo et al. (2014) recommended that behaviorally based SST should include modeling, prompting, and reinforcement.

The BLISS Approach

One promising approach to social skills training in schools, is entitled “BLISS” (Brief, Localized, Intensive, Social Skills). BLISS is a flexible framework for delivering social skill training in a way that is feasible for typical school personnel and is built on the foundation of an effective teaching cycle (Lignugaris/Kraft & Harris, 2014) including a learning set, presentation of new material, guided practice, and independent practice. Rather than a program or intervention, the BLISS approach is a framework for identifying social deficits and developing effective instruction to address those deficits.
Within the BLISS framework, an interventionist may select a variety of discrete procedures (e.g., prompting, video modeling, etc.) in order to promote prosocial skills. Ross and Sabey (2014) developed the BLISS framework in an effort to improve upon existing social skills training approaches through the delivery of short, individualized lessons in the setting where the target skill is needed. The approach consists of four steps: (a) assessment, (b) lesson development, (c) lesson delivery, and (d) progress monitoring and reinforcement. The BLISS approach is flexible in a few important ways. First, the assessment is not limited to a specific tool and can include those resources that are available in a given school, including direct observations, checklists, interviews, or nominations. Second, the lesson development is not limited to existing lessons plans within a curriculum, which means that it can accommodate any social skill that a student may need to learn. The specifics of the skills can be customized to address the student’s age, experience, and context. Third, a variety of specific interventions (e.g., prompting, modeling, fading, etc.) can be employed during the lesson delivery to ensure the success of the student. Finally, the progress monitoring and reinforcement can be adjusted and integrated into existing systems (e.g., school-wide reinforcement system, Check-in Check-out). The BLISS approach is effective with students exhibiting significant social skill deficits as demonstrated in one published study in which the researchers used a variation of the BLISS approach to improve the social behavior of typically developing students at risk for problem behavior (Ross & Sabey, 2014). BLISS effectively increased positive engagement and decreased negative engagement for these students. However, the approach has not been validated for students with ASD. Sabey and Ross conducted two
pilot studies of BLISS with students with ASD, which produced promising results on parent, teacher, and playground supervisor reports of positive social behavior.

**Purpose Statement and Research Questions**

In light of the existing gaps in the ASD SST research literature and the promising outcomes of the initial BLISS studies, the purpose of this study was to assess the effect of BLISS on the social skills of students with ASD in inclusive school settings. A secondary purpose of this study was to consider the functional effects of BLISS on students with ASD. Specifically, we wanted to determine what responses typically developing peers emit in response to individuals with ASD who attempt to interact socially.

Given the need for more definitive answers about effective social skills training for students with ASD in inclusive school settings, the BLISS approach may offer useful solutions to some of the lingering problems among existing SST approaches. Additionally, measuring the functional effect of social skills training will give researchers greater confidence in the effect and usefulness of their interventions. In an effort to accomplish these purposes, the present study addresses the following questions:

**Primary Research Question**

The primary research questions for this study was “To what extent does the BLISS social skills training intervention increase the frequency of social vocalizations among students with ASD in the inclusive playground setting?”
Secondary Research Questions

1. To what extent does the BLISS social skills training intervention increase the amount of social engagement that students with ASD engage in in the inclusive playground setting?

2. To what extent does the BLISS social skills training intervention increase the probability of positive peer responding in social vocalizations with students with ASD in the inclusive playground setting?

3. To what extent does the BLISS social skills training intervention improve general social functioning among students with ASD as measured by the Social Skills Improvement System?

4. To what extent does the BLISS social skills training intervention improve the subjective perceptions of life satisfaction, loneliness, and friendship for students with ASD?
CHAPTER III

METHOD

Participants

Four elementary school students with autism spectrum disorder (ASD) participated in this study (see Table 1). Each participant had a special education classification of Autism. Additionally, participants were in grades 2-5 and participated in the general education setting at least 50% of the time, including attending lunch and recess with typically developing peers. Participants had verbal communication skills approximately commensurate with their same-grade peers as indicated by teacher perception.

Cami spent nearly all of her time in the general education class with only short periods of pull-out services for speech. Consequently, she had very little contact with other students receiving special education services. Juan spent a good portion of his time (not exceeding 50%) in the resource room with a cohort of other students receiving

Table 1

Participant Information

<table>
<thead>
<tr>
<th>Participant</th>
<th>Sex</th>
<th>Grade</th>
<th>Race/ethnicity</th>
<th>SPED services received</th>
<th>SSIS social skills scale percentile rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cami</td>
<td>Female</td>
<td>2</td>
<td>Caucasian</td>
<td>Speech</td>
<td>1</td>
</tr>
<tr>
<td>Juan</td>
<td>Male</td>
<td>3</td>
<td>Latino</td>
<td>Reading, math</td>
<td>11</td>
</tr>
<tr>
<td>Doug</td>
<td>Male</td>
<td>3</td>
<td>Caucasian</td>
<td>Reading</td>
<td>8</td>
</tr>
<tr>
<td>Elli</td>
<td>Female</td>
<td>5</td>
<td>Caucasian</td>
<td>Speech, reading</td>
<td>5</td>
</tr>
</tbody>
</table>

Note. SPED = Special education, SSIS = Social Skills Improvement System. All names are pseudonyms.
services for reading and math. Some of these students were in his general education class as well. So, Juan spent much of his time with other students who received special education services. Doug spent more than 75% of his time in the general education class and received reading support in the resource room in the same reading group as Juan. Elli spent nearly all her time in the general education class, but received some pull-out services for speech and reading.

**Participant Recruitment**

Participants were recruited by contacting local special education directors, principals, special education teachers, and other personnel who work with students with special education classifications. Students who were identified as potential participants, teachers of potential participants were asked to complete the SSIS (Gresham & Elliott, 2008) rating scales and the teacher rating of the student’s behavior had to be at or below the 25\textsuperscript{th} percentile in order to be included. Then potential participants were observed to determine that they were in fact socially isolated compared to their typically developing peers. These observations consisted of collecting data on the frequency of social vocalizations of the target student as well as that of typically developing peers. Potential participants had to interact 25\% less than typically developing peers in order to be considered socially isolated and qualify for the study. These criteria for inclusion were designed to ensure that participants had meaningful room to improve their social skills.

**Interventionists**

This study included four nonresearcher interventionists who implemented the
BLISS framework. The interventionists were all Caucasian females between the ages of 19 and 49. They included one speech pathologist, one resource teacher, one media specialist, and one computer specialist. The interventionists had between 4 and 18 years of experience working in schools. One interventionist had an Associate’s degree, two had Bachelor’s degrees, and one had a Master’s degree. Two of the interventionists had completed course work related to working with students with disabilities; however, none of the interventionists had any focused training on working with students with ASD. They were all people who were typically available at the time of day in which the intervention needed to occur.

**Interventionist Recruitment**

Because the interventionists were existing school personnel, they were recruited after potential participants were identified based on who was available in the school to deliver the intervention. Potential interventionists were informed of the details of the study, including the components of intervention, their anticipated responsibilities, and the time commitment required to administer the intervention. Additional information was shared with the interventionists regarding the potential benefits of the study and any related risks. Individuals who agreed to participate in the study were asked to sign an informed consent and a declaration of commitment to administer the intervention as prescribed by the researcher.

**Setting**

The study was conducted in three elementary schools across two rural school
districts in Utah. The first district serves approximately 16,000 students who were largely demographically homogeneous. The largest demographic group was White, representing 89% of the students, with Latino representing the largest minority group at 8%. Approximately 13% of elementary school students in the district received special education services. Two of the participating schools were in this district. One school served approximately 630 students in grades k-5. Approximately one third of the students received free or reduced lunch, 11% of students were served in special education, and 84% of students were Caucasian. The second participating school in this district served approximately 360 students in grades k-5, of whom, nearly half received free or reduced lunch, 15% received special education services, and 86% were Caucasian. The second district served just fewer than 6,000 students and consisted of a slightly more diverse student body, with 69% of students identified as White and 24% identified as Latino. Additionally, 56% of students were eligible for free or reduced lunch, and 14% of students were served in special education. The one participating school in this district served approximately 660 students in grades k-5. Of the students in this school, 67% received free or reduced lunch, 16% were served in special education, and 55% were Caucasian.

The intervention was conducted in two settings within each school. The first was a classroom, office, or hallway where the interventionists could deliver social skills instruction without distraction. The second setting was the school playground, which was the target environment for the social skills training. The playground included an asphalt area for playing basketball or foursquare, a jungle gym area, and a large grassy area.
During lunch recess, as many as 100 students across three grades were typically on the playground at the same time as the participants. Additionally, there were between two and five playground supervisors and, on occasion, one or two parent volunteers.

Data collection was conducted on the playground. In this setting interactions were not structured and the participants were free to interact with any individuals present on the playground or no one at all. The setting also included at least one data collector who was in close proximity to the participant throughout the data collection period (i.e., 10 minutes per session). The cafeteria served as a generalization setting and was similar to the playground in that students, adults, and a data collector were present. Additionally, students were free to sit anywhere at their assigned class table or, for two participants, at any table at all. Students were free to talk with any student at their table and could choose to sit next to anyone.

**Dependent Variables**

Data were collected on five dependent variables: appropriate social vocalizations, peer responses, social engagement, general social skills functioning, and self-reports of satisfaction with social life (i.e., life satisfaction, loneliness, and friendships).

**Appropriate Social Vocalizations**

Appropriate social vocalizations were defined as physically orienting toward typically developing peer(s) (e.g., face, eyes, or torso pointed toward peer) and emitting a positive vocalization (e.g., “hi,” “pass me the ball,” calling the person’s name), inviting the peer to participate in an activity, a conversation, or a reciprocal salutation. Nonvocal
behaviors and vocal behaviors that discourage positive peer responding, (e.g., “give me that ball back,” name calling, “get out of the way,” “stop doing that”) were not counted as appropriate social vocalizations. Social vocalizations were measured using a frequency count during each 10-minute observation.

**Peer Responses**

Peer responses to social vocalizations included positive peer responses, negative peer responses, and no peer responses. *Positive peer responses* were defined as positive vocal or nonvocal behaviors in response to a social interaction produced by a participant (e.g., “Sure, let’s play,” passing the participant the ball, looking at the object indicated by the participant). *Negative peer responses* were defined as any vocal or nonvocal response that is physically aggressive (e.g., hitting, kicking, pushing etc.), verbally aggressive (e.g., “shut up,” “you’re an idiot,” etc.), or relationally aggressive (e.g., “no way,” “go away,” running away, etc.), including active refusal to engage with the participant (e.g., “No thanks,” “Not today,” “I don’t want to play that game”). Finally, *no peer response* was defined the absence of a positive or negative peer response. This was a passive category because data collectors did not record anything if a *no peer response* occurred. We left *no peer response* as a passive category because our pilot studies indicated that data collectors struggled to accurately collect data on all the variables of interest. Having a passive category reduced the burden. *Positive* and *negative* peer responses were measured using a conditional partial-interval recording system. The interval began when a participant began a social vocalization and ended 5 sec after the vocalization ended.

Peer responses were not mutually exclusive. Peer responses to an appropriate
social vocalization may have been positive, negative, no response, or any combination of the three. For example, a participant could approach a group of peers to initiate a social interaction and receive all three responses from different peers within the same group or the same peer, so long as the responses occurred within 5 sec of the appropriate social vocalization.

**Social Engagement**

Social engagement was defined as the moments in which the participant is appropriately engaged in a social activity. Appropriately engaged means oriented toward the activity, following the rules, and not engaged in stereotypical behavior or problem behavior. These data were collected simultaneously with appropriate social vocalizations and peer responses using a 30 sec momentary time sampling procedure, where data collectors observed the participant every 30 seconds and recorded whether or not the participant was socially engaged.

**General Social Functioning**

The participants’ general social functioning was measured using the SSIS (Gresham & Elliott, 2008), which was completed by the participants’ teachers prior to intervention and post intervention. The SSIS Rating Scales are used to measure social skills, competing problem behaviors, and academic competence. The SSIS was normed on a nationwide sample of 4,700 children ages 3 to 18. Test-retest alpha coefficients for the SSIS range from .82 to .87. Interrater reliability alpha coefficients for the same forms range from .55 to .62. The internal consistency reliability alpha coefficients range from
.83 to .97. The SSIS has good convergent validity with other widely accepted scales such as the Behavior Assessment System for Children Second Edition (BASC-2, Reynolds & Kamphaus, 2004), with correlation coefficients between .48 and .95, the Vineland-II (Sparrow, Cicchetti, & Balla, 2005), with correlation coefficient of .48 for Social Skills and Socialization subscales, and the Walker-McConnell (Walker & McConnell, 1995), with correlation coefficients between .71 and .76. Additionally, the SSIS has good discriminative validity for students with ASD (see Gresham & Elliott, 2008, for detailed description of reliability and validity).

**Life Satisfaction**

Participants’ life satisfaction was measured using the Multidimensional Students’ Life Satisfaction Scale (MSLSS; Huebner, 2001). The MSLSS is a self-report rating scale that was normed on students in grades 3-5. This scale is used to assess five dimensions of life satisfaction including family, friends, school, living environment, and self. The MSLSS was administered once during baseline, and once again at the end of the intervention phase. The internal consistency and test-retest reliability coefficients range from .70 to .90. The convergent and discriminate validity was established across a variety of other measures (see Huebner, 2001). However, the MSLSS was not normed on students with ASD.

**Loneliness**

Participants’ loneliness was measured using the Loneliness Rating Scale (Asher, Hymel, & Renshaw, 1984). The Loneliness Rating Scale is a 24-item self-report
questionnaire. Respondents rate items on a 5-point Likert-type scale from not true at all (1), to always true (5). Sixteen of the items address the construct of loneliness. An additional eight items that ask questions regarding general interests (e.g., “I watch TV a lot”) are interspersed among the construct items. These items are designed as fillers to help respondents feel more at ease as they report on a potentially challenging aspect of their lives. A loneliness score is calculated based on the 16 items and can range from 16 to 80, with higher scores representing greater loneliness.

The Loneliness Rating Scale was shown to be psychometrically adequate for students from grades kindergarten up to middle school and for typically developing children as well as children with disabilities, including ASD (Bauminger & Kasari, 2000). The measure is internally consistent with a Cronbach’s $\alpha$ of .90 and internally reliable with a split-half correlation between forms of .83, a Spearman-Brown reliability coefficient of .91 and a Guttmann split-half reliability coefficient of .91. As with the MSLSS, the Loneliness Rating Scale was not normed on students with ASD.

**Friendship**

Participants’ experience of friendship was measured using the Friendship Qualities Scale (Bukowski, Hoza, & Boivin, 1994). The Friendship Qualities Scale is a 23-item self-report questionnaire. Respondents were asked to identify their best friend and then rate each question on a 5-point scale from 1 (not true at all) to 5 (very true) as it relates to the relationship with the best friend. The Friendship Qualities Scale includes five subscales; play, conflict, help, security, and closeness. Some of the items are reverse scored so that a higher score reflects a stronger friendship. The Cronbach’s $\alpha$ coefficients
for internal consistency are between .71 and .86 for all subscales. This measure has been used with students in both general and special education, including students with ASD (Bauminger & Kasari, 2000). No normative data are available for the Friendship Qualities Scale.

**Data Collection**

All direct observation data for this study were collected using the Behavioral Observation Tool (BOT) by Simonton Software (see Appendix C) on smartphones. The BOT system is capable of collecting frequency, duration, interval, and latency data. Each data point is time stamped so that it can be temporally compared to other data points. Behavioral Observation Tool runs on an Android platform. Each direct observation was 10 minutes long. Additionally, peer composite data were collected on typically developing peers to provide socially valid comparisons. These data were collected by selecting from a convenience of same sex, same grade peers on the playground and collecting direct observation data for two minutes, then moving to another peer and continuing this process until the 10-minute observation was completed. Switching students every 2 minutes allowed the data collectors to gather a more representative sample of behavior from typically developing peers. Data on all other measures (i.e., SSIS, Student Life Satisfaction Scale, Loneliness Rating Scale, and Friendship Qualities Scale) were collected using a paper and pencil format. Questionnaires were read to individuals that had difficulty reading the text.
Data Collectors

The data collectors for this study consisted of nine undergraduate students enrolled at Utah State University. Undergraduates were recruited via emails to department heads throughout the College of Education and Human Services that were then circulated among students within the respective departments. The data collectors included seven females and two males. Two of the data collectors were majoring in marriage, family and human development, two were majoring in psychology, and five were majoring in communication disorders. Training for data collectors began by having them memorize the definitions of the dependent variables. The next training step was to have data collectors practice taking data in the playground setting described previously. Practice consisted of collecting data on target students along with one of the researchers. After each data collection session the researcher and data collector compared data and resolved any discrepancies. Each data collector was required to achieve at least 85% agreement with the researcher or a reliable data collector across two observations before beginning to collect study data. Agreement was calculated by dividing agreements by the total of agreements plus disagreements and multiplying by 100. Practice data collection sessions took place on the playgrounds with study participants present in an effort to minimize any participant reactivity. The data collectors did not interact with participants or other students on the playground except in one situation. Elli initially exhibited reactivity to the data collectors in the form of running away and hiding. Data collectors addressed this by introducing themselves to Elli and explaining that they would be watching her during recess. They explained to her that she needed to ignore them and just
do what she would normally do during recess. After this, she no longer ran away from or hid from the data collectors.

**Interobserver Agreement**

Interobserver agreement (IOA) for direct observation dependent variables was collected on an average of 34% (range 23% to 44%) of sessions. Data on IOA were collected during an average of 32% of sessions during baseline and an average of 37% of sessions during intervention. Overall, IOA data were collected on 34% of sessions (see Table 2).

**Social Vocalization Interobserver Agreement**

IOA for the social interaction data was determined by comparing the time stamp associated with each recording of the behavior. Whenever one data collector recorded the occurrence of a behavior the other data collector had to record the behavior within a 5 second window to be considered an agreement. If the second data collector did not record the behavior within the 5-second window then it was counted as a disagreement. IOA

<table>
<thead>
<tr>
<th>Table 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Percentage of Sessions with IOA Data Collected</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participant</th>
<th>Baseline observations (%)</th>
<th>Treatment phase observations (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cami</td>
<td>29</td>
<td>31</td>
</tr>
<tr>
<td>Juan</td>
<td>41</td>
<td>31</td>
</tr>
<tr>
<td>Doug</td>
<td>33</td>
<td>44</td>
</tr>
<tr>
<td>Elli</td>
<td>23</td>
<td>40</td>
</tr>
</tbody>
</table>
was calculated by dividing agreements by the total of agreements plus disagreements and multiplying by 100. IOA was 91% for appropriate social vocalizations (range 30% to 100%, $SD = 16$).

**Peer Response Interobserver Agreement**

IOA for the positive, negative, and no peer response data were collected by identifying every instance of agreement on the occurrence of an appropriate social vocalization and then comparing the positive, negative, and no peer response recordings. For each response recording there was the possibility of between one and three agreements or disagreements. Any time both data collectors recorded the same peer response (i.e., positive, negative, or no) an agreement was counted. Any time data collectors recorded different responses or one data collector recorded a response that the other data collector did not record, a disagreement was be counted. IOA was calculated by dividing the number of peer response agreements by the total number of agreements plus disagreements, multiplied by 100. The mean IOA for peer responses was 74% (range 0% to 100%, $SD=36$).

**Social Engagement Interobserver Agreement**

For the social engagement data, IOA was determined by comparing intervals in which both data collectors agreed on the occurrence or nonoccurrence of the behavior. Intervals in which the data collectors recorded the same behavior were counted as agreements and intervals in which the data collectors recorded different behavior were
counted as disagreements. IOA was calculated by dividing the number of agreements by the number of agreements plus disagreements. The mean IOA for social engagement was 92% (range 50% to 100%, $SD = 11$).

**Independent Variable**

In this study, we examined the effect of the BLISS approach, which followed a four-step process and included several critical features that were designed to improve upon previous social skills training efforts. The four steps were assessment, lesson planning, lesson delivery, and reinforcement/progress monitoring. The critical features that were woven into these steps included: (a) an effective teaching cycle (i.e., learning set, new material, guided practice, and independent practice (Lignugaris/Kraft & Harris, 2014), (b) daily lessons lasting approximately 15 minutes, (c) instruction occurring in the setting that were relevant to the skill (e.g., play skills taught on the playground), (d) individualized lessons, and (e) progress monitoring.

**Assessment**

The assessment for this intervention consisted of two components. As mentioned previously, preliminary observations were conducted to determine that the target student was socially isolated. The purpose of these observations was to ensure that the student would benefit from social skills instruction aimed at increasing social interaction. A second component of the assessment was the SSIS. The teachers of participating students completed this assessment (e.g., general education, special education, physical education etc.). This assessment provided a picture of student strengths and deficits that the student
had and was used to guide the lesson-planning phase. Additionally, the SSIS provided information on which skills were most important to the teachers, which helped the interventionist prioritize the sequence in which the skills were taught. At the end of the assessment phase, the interventionist created a prioritized list of skills based on teacher ratings of skills. Skills were prioritized based to a rating of never or sometimes on the in conjunction with a rating of critical or important on the SSIS, as well as the teacher or interventionist judgment of which skill, if improved, had the greatest impact on the quality of the student’s social interactions.

**Lesson Planning**

Once specific skills were identified and prioritized, the interventionist created a lesson plan for each skill that the student needed to learn. To complete the lesson plan, the interventionist filled out the Lesson Planning Template (see Appendix D). The lesson plans were built around an effective teaching cycle, which included a learning set, new material, guided practice, and independent practice. The interventionist first planned the learning set including one or more of the following: a review of previous material that the student needs more work on, a check to ensure that previously mastered skills have been retained, and a check to ensure that the student has the necessary prerequisite skills for upcoming new material. The learning set always included following up on the previous day’s goal for social interactions. Each proposed activity was recorded on the Lesson Planning Template.

To prepare the new material, the interventionist identified the highest priority skill from the skills list that had yet to be taught and task analyzed that skill. To task analyze
the skill, the interventionist broke the skill down into concrete age-appropriate steps. The number of steps and the amount of detail in each step was designed to match the target student’s specific needs and abilities. The task-analyzed steps for the skill were recorded in the New Material section of the Lesson Planning Template. In addition to task analyzing the skill, the interventionist prepared to demonstrate examples and nonexamples of the particular skill.

The next step in planning the lesson was preparing guided practice opportunities. In the guided practice opportunities, the interventionist had the student practice the skill enough time to achieve three consecutive demonstrations with 100% accuracy, starting with highly structured and contrived scenarios and moving to less structured and more authentic scenarios. For example, initially the interventionist had the student role-play a given skill in an office or classroom free from distractions with the interventionist as the interlocutor. Once the student achieved mastery criterion (three demonstrations at 100% accuracy), the interventionist and the student moved into a more authentic setting. This involved moving to the location where the student needed to demonstrate the skill, and included the people who were relevant to the skill in the role plays. Additionally, the interventionist began guided practice with frequent detailed feedback and slowly removed the feedback as the student’s fluency improved. It was important that the student have several opportunities to emit the target behavior during guided practice. As part of the guided practice section of the lesson plan, the interventionist established specific criteria for determining when a student moved from guided practice to independent practice. For example, the interventionist may establish three demonstrations of the skill,
in the relevant setting with 100% accuracy as the criterion for moving into independent practice. These criteria were recorded on the Lesson Planning Template.

With the criteria for advancement to independent practice established, the interventionist then prepared a goal or assignment for the independent practice section of the lesson plan. This involved requiring the student to emit the target skill without the support of the teacher. The interventionist established a goal and recorded it on the Lesson Planning Template. Following up on this goal became part of the learning set for the following lesson, so once it was recorded on the current lesson plan, it was also transferred to the learning set section of the next Lesson Planning Template.

**Lesson Delivery**

With a lesson plan prepared, the interventionist was ready to deliver the lesson. To deliver the lesson, the interventionist got the student from the cafeteria approximately 5 minutes before the beginning of lunch recess. The interventionist and the student went to a predetermined classroom or office where the interventionist completed the learning set, new material, and the beginning of the guided practice sections of the lesson. This part of the lesson lasted for 5-7 minutes.

Once the student met the criteria for moving to the relevant context (100% correct skill performance on three consecutive trials), the interventionist and student moved out to the playground where lunch recess was beginning. In this context, the interventionist began by role playing the skill with the student. Then, the participating student and/or the interventionist invited other students to join in on the role plays to allow for practice of the skill with as many different peers as possible. The interventionist gradually faded the
amount of feedback that the target student received until the target student demonstrated the skill successfully with no feedback and met the criteria for moving to independent practice. This part of the lesson lasted for 7-9 minutes.

Finally, the interventionist told the student to practice the skill without the support or presence of the interventionist. The interventionist gave the target student a goal for the rest of the day, indicating how many times the student should use the skill during the remainder of recess. This goal was a minimum for the student to reach, but the interventionist encouraged the student to use the skill many more times, as situations required. This part of the lesson lasted for 1-2 minutes. In total, the lesson delivery took no more than 15 minutes per day. Lessons were delivered daily until the student had mastered all of the skills on the prioritized list.

**Reinforcement and Progress Monitoring**

Students with ASD are often not motivated to engage in social vocalizations even when they can successfully demonstrate the required social skill. Therefore, a reinforcement and progress-monitoring component was included in the intervention. The data collector observed the student during lunch recess and recorded the number of appropriate social vocalizations emitted by the student. The data collector then reported that number to the interventionist who graphed the results and showed them to the target student during the subsequent social skills lesson. The interventionist and the participant then set a goal to either increase or maintain the number of social vocalizations based on the participant’s performance from the previous day. When participants met the goal, they got access to items or activities from a reinforcement menu along with a preferred
peer (who did not have a special education classification). The data collector also reported any negative social behavior (e.g., fighting, arguing, making fun of others, etc.), which resulted in the participant not gaining access to the reinforcers.

**Interventionist Training**

Prior to delivering the intervention, each interventionist was trained on how to administer the intervention. The training consisted of a 30-minute training session, which included a detailed description of the components of the intervention and didactic instruction in administering the intervention. The training covered these topics: (a) assessing social skills deficits, (b) identifying specific skills, (c) task-analyzing skills, (d) lesson plan development, and (e) delivering the lesson (Table 3 indicates the timing and sequence of each lesson). Additionally, the researcher and interventionists worked together on developing lesson plans and delivering the first few sessions of the intervention. Based on teacher responses on the SSIS, the interventionists and researcher

<table>
<thead>
<tr>
<th>Participant</th>
<th>Social skills lesson</th>
<th>Session initiated</th>
<th>Number of sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cami</td>
<td>1</td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td>Juan</td>
<td>1</td>
<td>31</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>40</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>51</td>
<td>8</td>
</tr>
<tr>
<td>Doug</td>
<td>1</td>
<td>55</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>48</td>
<td>6</td>
</tr>
<tr>
<td>Elli</td>
<td>1</td>
<td>53</td>
<td>5</td>
</tr>
</tbody>
</table>
developed lesson plans around three skills (a) starting a conversation (indicated by the number 1 shown later in Figure 1), (b) joining a game that is in progress (indicated by the number 2 shown later in Figure 1), and (c) asking others to join a game (indicated by the number 3 shown later in Figure 1). These skills were selected because they were common deficits that all participants shared and were closely related to the primary dependent variable. Additionally, selecting the same skills increased the comparability of the intervention across participants. Although the same skills were selected for all participants, the individual lesson plans were not necessarily identical. The interventionist for Cami, a student in second grade, identified different steps for starting a conversation than the interventionist for Elli, a fifth grade student. Conversely, the interventionist for Doug and Juan (both third grade students in the same school) was the same person and so she elected to use the same lesson plan for both students.

**Experimental Design**

A multiple baseline design across participants (Cooper, Heron, & Heward, 2007) was used to evaluate the effects of the BLISS social skills intervention on participant behavior. A multiple-baseline design was selected because the intervention focuses on skill acquisition, which is not likely to be reversible. A multiple baseline across participants was selected as opposed to a multiple baseline across behaviors or settings because pilot study data suggest that the intervention may influence social skills broadly, making it difficult to isolate the effect to specific behaviors or settings.

Participant 1, Cami, demonstrated a low and stable pattern of appropriate social
vocalizations in baseline, so she was the first to receive the intervention. Participant 2, Juan, had the second most stable baseline for appropriate social vocalizations, so he was selected as the next participant to receive the intervention followed by participant 3, Doug. Importantly, Doug and Juan were students at the same school. When the intervention phase began with Doug, Juan had already completed lesson 1. Therefore, in order to allow for instruction with both students simultaneously, instruction for Doug began with lesson 2 (joining a game). Finally, after the intervention had demonstrated an effect with Cami, Doug, and Juan, participant 4 (Elli) received the intervention.

**Procedures**

**Baseline Phase**

The researcher conducted preliminary observations of potential participants to ensure that they met the inclusion criteria of engaging in 25% fewer appropriate social vocalizations than their typically developing peers. Additionally, the teachers of potential participants completed the SSIS to ensure that they met the requirement of being at or below the 25\textsuperscript{th} percentile on the Social Skills Scale. One potential participant, a fifth-grade female, was rated too high to be included in the study (42\textsuperscript{nd} percentile). Another potential participant, a fifth-grade male, began the study but broke his leg before he entered the intervention phase. Consequently, he withdrew from the study. The four students who met all of the inclusion criteria completed the Multidimensional Students’ Life Satisfaction Scale, Loneliness Rating Scale, and Friendship Qualities Scale and data collectors observed them on the playground daily for 10 minutes each during lunch.
recess. Additionally, data collectors recorded data on peers as a composite during lunch recess. Peer composite students were selected from a convenience sample of students that were present on the playground at the time of the observation. Data collectors picked one student who was the same sex and approximately the same age as the participant and observed that student for 2 minutes. The data collector then selected another student to observe for 2 minutes and repeated the process until the data collector observed five different students. Data were collected concurrently on all four participants. During this phase, participants were not participating in other social skills interventions other than what was offered on a class wide basis.

**Intervention Phase**

After the lesson plans were fully developed, the researcher administered the first few intervention sessions with the interventionists present; this allowed the researcher to model the intervention and then gradually turn the intervention over to the interventionist while continuing to provide feedback. When the interventionist delivered the intervention with 100% fidelity, the researcher no longer participated in the intervention with the exception of when there were scheduling conflicts that did not allow the interventionist to deliver the intervention. None of the interventionists required more than five sessions with the researcher to achieve 100% fidelity of implementation. Overall, the interventionists delivered 51% of intervention sessions and the researcher delivered the remaining sessions. The researcher only delivered the intervention during training or when an interventionist could not be present due to illness or a scheduling conflict. One interventionist was assigned to work half-time in two schools and frequently had time
conflicts between the schools, which made it necessary for the researcher to deliver more intervention sessions than was planned.

Two additional intervention components were implemented with Cami. First, additional support was provided in the guided practice phase. Second, an additional prompting procedure was introduced. The additional support during guided practice consisted of having Cami practice the skill under very simple conditions and then gradually increasing the complexity until they resembled a naturally occurring social interaction. The interventionist provided these supports in the following sequence. First, Cami interacted with a student, selected by the interventionist, who was stationary and facing Cami from arm’s length away. Second, Cami took one step toward a stationary student, selected by the interventionist, who was facing her. Third, she took two steps toward a stationary student, selected by the interventionist, who was facing her. Fourth, Cami took three steps toward a stationary student, selected by the interventionist, who was facing her. Fifth, Cami approached a stationary student selected by the interventionist, who was facing away from her. Sixth, Cami approached students she selected who were stationary. Finally, she approached students she selected who were not stationary.

The prompting procedure was similar to that used by Hartzell, Gann, Liaupsin, and Clem (in press), in which the researchers prompted the participant to interact on a fixed interval schedule that was faded over time. The prompting consisted of the interventionist approaching Cami and encouraging her to interact with another student. The interventionist wore a MotivAider® (electronic prompting device) that was set to
vibrate every two minutes. This meant that Cami received four prompts from the interventionist during in a 10-minute observation. The prompts were faded when Cami met her goal for approximately three days in a row. The prompts were gradually faded from 2 minutes to 5 minutes, so that Cami received only one prompt during the 10-minute interval. If Cami emitted an appropriate social vocalization before the interval had expired, then the interventionist did not provide a prompt until the next interval.

At the end of the intervention phase, each participant completed the same questionnaire measures that they completed during baseline. Additionally, teachers completed the SSIS for each participant. Time constraints (i.e., the end of the school year) made it impossible to collect maintenance data, so the durability of the intervention effect was not assessed.

Generalization

Periodically, during the baseline and intervention phases, generalization data were collected on participant behavior during lunch in the cafeteria. The cafeteria served as a generalization setting for measuring the effect of the intervention in a setting similar to, but slightly different from the training setting. Like the playground observations, these were 10 minutes long and followed similar data collection procedures. No intervention was provided in the cafeteria.

Implementation Fidelity

Implementation fidelity data were collected on 50% of treatment sessions across the participants and interventionists (range 22% to 80%). Fidelity data were collected
using an implementation checklist that addressed the critical components of the social skills instruction (see Appendix E). The critical components included: following up on the previous day’s goal, showing the participant the previous day’s performance graph with the appropriate consequence (i.e., access to reinforces or not), describing the skill for the current lesson, practicing the skill at least three times, providing feedback, and giving the participant a goal to work on during recess. A percentage score was calculated for each fidelity observation by dividing the number of components completed by the total number of components multiplied by 100. Across participants and interventionists, the fidelity of implementation was 96% (range 80% to 100%).

**Social Validity**

To assess the social validity of the intervention, responses from participants and interventionists were solicited and assessed at the conclusion of the study. First, the participants completed the Children’s Usage Rating Profile (CURP; Briesch & Chafouleas, 2009a) to determine how acceptable the procedures were and the extent to which they enjoyed the intervention. The CURP assesses three facets of a child’s acceptance of an intervention: personal desirability, understanding, and feasibility. *Personal Desirability* refers to the extent to which the child wants to participate in the intervention. *Understanding* refers to the extent to which the child comprehends what the intervention is, why it is needed, and feels confident about participating. *Feasibility* refers to the extent to which the child feels like the intervention is intrusive or burdensome (Briesch & Chafouleas, 2009b)
Second, the interventionists completed the Usage Rating Profile–Intervention (URP-I; Chafouleas, Briesch, & Riley-Tillman, 2011) to determine the ease of implementation of the intervention, the extent to which they found the procedures acceptable, and the extent to which they perceived a meaningful change in the behavior of the participants. The URP-I assesses six factors related to interventionists’ acceptance of and willingness to use an intervention. These factors include (a) acceptability, (b) understanding, (c) feasibility, (d) family-school collaboration, (e) system climate, and (f) system support. Acceptability refers to the fairness, appropriateness, and unobtrusiveness of the intervention. Understanding refers to how well the interventionists comprehend the components of the intervention and how it is implemented. Feasibility refers to the extent to which the intervention is practical and affordable. Family-school collaboration refers to the extent to which the family and school must collaborate in order for the intervention to function properly. System climate refers to the comparability of the intervention with the existing school environment. Last, system support refers to the extent to which interventionists required outside support to implement the intervention (Briesch, Chafouleas, Neugebauer, & Riley-Tillman, 2013; Chafouleas, Riley-Tillman, Briesch, & Chanese, 2008).
CHAPTER IV

RESULTS

The purpose of this study was to evaluate the effect of the BLISS approach to social skills training on the social behavior of students with ASD in an inclusive setting. Each of the research questions is addressed in detail including a description of the visual analysis of the graphical data in accordance with the recommendations of (Kratochwill & Levin, 2014). Additionally, other quantitative (e.g., Tau effect size estimations) and qualitative data are presented to address relevant questions.

Frequency of Social Vocalizations

The frequency of social vocalizations emitted by the four participants is presented in Figure 1. On average, the participants emitted 4.61 (range 0 to 25) appropriate social vocalizations in a 10-minute observation period during baseline, compared to 22.30 (range 8 to 39) for the composite of typically developing peers in the same period. During intervention phases, that average increased to 18.39 (range 0 to 36) for an average change of 13.78 or an increase of 1.38 vocalizations per minute, compared to 19.32 (range 11 to 29) for the peer composite of typically developing peers in the same period. Additionally, the percentage of sessions in which participants’ vocalizations fell within or above the 95% confidence interval range of the peer composite during baseline was 5.75%. This number increased to 53% during intervention, indicating that in approximately one-half of sessions, participants were interacting at roughly the same frequency as their typically developing peers. This change represents an average increase of 47.25 percentage points.
Figure 1. Frequency of appropriate social vocalizations.
and a Tau effect size estimate of 0.87, suggesting a large effect (Kamps et al., 2014).

**Cami Baseline**

The first panel in Figure 1 shows the frequency of Cami’s social vocalizations in baseline and treatment. In the baseline condition, Cami emitted zero appropriate social vocalizations across seven observations and one generalization probe in the cafeteria. On the first day of data collection, Cami was observed picking up a broken spoon and moving back and forth between a puddle and a tree scooping up water and pouring it on the tree. During this observation, she neither talked to nor made eye contact with any other students. All other baseline observations followed a similar pattern with slight variations in the activities that Cami engaged in, including making piles with the wood chips, walking around the playground equipment, and sitting on the sidewalk.

**Cami Treatment**

In the initial BLISS phase the frequency of Cami’s appropriate social vocalization increased to an average of 1.14 per 10-minutes observation (range 0 to 2). In the BLISS + prompting 2min phase Cami’s, vocalizations increased steadily and then became somewhat variable before stabilizing during the last four sessions. During this phase she achieved an average of six vocalizations per observation (range 0 to 13) and on two occasions her frequency of vocalizations reached the same level as the 95% confidence interval of her peers (i.e., 11.54 to 19.74). In the BLISS + prompt 3-minute phase, Cami’s vocalizations increased slightly and reached an average of nine per observation (range 8 to 11). In the fifth phase, all prompting was removed and only the BLISS intervention
was left in place, which resulted in a decrease to two vocalizations. After this phase, Cami approached the interventionist and said, “I like it better when you help me.” So, the prompting was reintroduced. Phase six consisted of BLISS + prompting 4 minutes, which produced an increase of vocalizations to an average of 15.5 (range 14 to 17), with both data points in the middle of the peer composite band. The final phase of intervention included BLISS + prompt every 5 minutes, which resulted in variable but relatively high frequency of social interactions, with an average of 13.75 vocalizations (range 8 to 23). A comparison of baseline to treatment phase for Cami produced a Tau effect size estimation of 0.91. Additionally, across treatment phases Cami averaged 18% of sessions at or above the 95% confidence interval for the peer composite interactions.

In the first four intervention phases Cami was observed emitting mostly one-word vocalizations such as “hi,” “good,” or “yes.” However, beginning in the fifth phase of intervention (i.e., BLISS + prompt 4min), Cami began to emit multiple-word vocalizations and engaged in reciprocal conversations.

**Juan Baseline**

The second panel in Figure 1 shows the frequency of Juan’s social vocalizations in baseline and treatment phases. During baseline, Juan’s behavior produced a relatively stable and low trajectory with an average of 1.72 (range 0 to 12) social vocalizations per observation. On two generalization probes in the cafeteria Juan engaged in zero and two appropriate social vocalizations respectively. During recess Juan was observed wandering around the playground, swinging, or sitting on a bench alone as well as playing with other students from his special education class.
**Juan Treatment**

In the BLISS phase Juan’s social vocalizations increased and became more variable with an average of 20.24 (range 2 to 35) for a change of 18.52. The Tau effect size estimate for this change was 0.91. In 54% of treatment sessions, the frequency of Juan’s social vocalizations reached or exceeded that of the 95% confidence interval for the peer composite (i.e., 19.38 to 25.56). In the generalization setting, Juan’s behavior remained low with the exception of one outlier (i.e., session 39, 12 appropriate social vocalizations).

**Doug Baseline**

The third panel of the Figure 1 shows the frequency of Doug’s social vocalizations in baseline and treatment. In the baseline condition, Doug’s behavior was highly variable and on two occasions (5%) reached the level of the 95% confidence interval for the peer composite (i.e., 21.35 to 26.19). The average number of appropriate social vocalizations for Doug in baseline was 7.49 (range 0 to 25), with relatively low frequency in the generalization setting. During baseline observations Doug was observed standing on the periphery of ongoing activities waiting to secure a ball or other piece of equipment, sitting reading books, guarding the ball containers from would be disorganizers, or securing his place as first in line long before the bell rang to signal the end of recess. On a few occasions, Doug was invited to play games with or referee games for his typically developing peers. On these occasions he emitted many more appropriate social vocalizations than usual.
**Doug Treatment**

During the BLISS intervention phase, Doug’s appropriate social vocalizations increased to an average of 22.56 (range 14 to 36), for an increase of 15.07, and remained variable. The Tau effect size estimate for this change was 1.07. For Doug, 40% of sessions in the BLISS condition reached or exceeded the frequency of 95% confidence interval for the peer composite. During the intervention phase, Doug frequently played basketball with other students rather than simply watching them. The interventionist noted that he was often very enthusiastic about the assignment to practice his new social skill with his peers. Generalization probes showed that Doug’s behavior remained low in the cafeteria throughout the BLISS phase.

**Elli Baseline**

The fourth panel on Figure 1 shows the frequency of social vocalizations for Elli in baseline and treatment phases. During baseline, the frequency of Elli’s appropriate social vocalizations was variable but relatively low and averaged 9.21 (range 0 to 21) per observation with 18% of sessions reaching the level of the 95% confidence interval for the peer composite (i.e., 17.29 to 25.10). In the generalization setting Elli’s appropriate social vocalizations remained low and steady. During recess Elli was observed wandering around the playground, talking with adults, or occasionally joining a large group game (e.g., tag).

**Elli Treatment**

When BLISS was introduced, Elli’s appropriate social vocalizations increased
markedly and remained high, though variable, throughout intervention. Her appropriate social vocalizations averaged 24 (range 19 to 32) in the intervention phase indicating an increase of 14.79 and a Tau effect size estimate of 0.50. Although, her performance produced the smallest Tau effect size, she was the highest performer pre intervention and so she had the least room to improve compared to her peers. In 100% of intervention sessions, the frequency of Elli’s appropriate social vocalizations reached or exceeded that of the peer composite. As with the other participants, Elli’s behavior showed no meaningful improvement in the generalization setting.

**Social Engagement**

The percentage of intervals in which participants were socially engaged is presented in Figure 2. The average social engagement during baseline across participants was 22.34%. During the intervention phases, the average engagement increased to 66.5%, indicating a 44.15 percentage point change from baseline to intervention. Additionally, during baseline the average percentage of data points at or above the 95% confidence interval for the peer composite was 7.75%. During the intervention phase that percentage increased to 42.5% for a 34.75 percentage point increase.

Across the seven baseline observations, Cami was engaged for a total of one interval 30 sec or 0.007% of the time. During the initial BLISS phase she made very small gains and was engaged for two intervals across six observations or 0.017%. In the next phase, when prompting was introduced, Cami’s engagement increased quickly and then decreased to stabilize at a low but increased level. In this phase she was engaged for
Figure 2. Percent of intervals engaged.
an average of 22.19% (range 0% to 90%) intervals across 16 observations. In the remaining phases, her level of engagement remained roughly similar such that in the end her percentage of engagement across intervention phases was 17.68% and 7% of data points were within or beyond the range of the 95% confidence interval for the peer composite (i.e., 58.28% to 73.54%).

In baseline, Juan was engaged for a mean of 10.28% of intervals (range 0% to 70%), the percentage of data points within or beyond the range of the 95% confidence interval (i.e., 89.68% to 99.48%) for the peer composite was 0%. During treatment, Juan’s average engagement increased to 72.31% intervals (range 0% to 100%) for a change of 62.03 percentage points.

During baseline, Doug was engaged, on average, for 29.88% of intervals (range 0% to 100%) and the percentage of data points within or beyond the range of the 95% confidence interval (i.e., 86.56% to 97.44%) for the peer composite was 5%. During treatment, Doug’s engagement increased to an average of 81% of intervals for an increase of 51.12 percentage points and 50% of data points were within or beyond the 95% confidence interval. Finally, in baseline Elli was engaged for an average of 49.07% of intervals and 21% of data points were within or beyond the 95% confidence interval (i.e., 85.79% to 98.09%) for the peer composite. In treatment, Elli was engaged for an average of 95% of intervals and her data points were within or beyond the 95% confidence interval for the peer composite.
Generalization

Figures 1 and 2 showed the frequency of appropriate social vocalizations and percent of intervals in which participants were engaged in the cafeteria during lunch, which served as the generalization setting. None of the participants’ appropriate social vocalizations or percent engagement increased appreciably as a result of the intervention. All participants’ behavior was low during baseline and remained low during intervention, suggesting that BLISS had no effect on the dependent variables in contexts outside of the playground.

Probability of Positive Peer Responding

Table 4 summarizes the probability of positive peer responding to social vocalizations emitted by the four participants. Across participants, the probability of a positive peer response increased from 0.35 in baseline to 0.41 in intervention for a small change of 0.06. The probability of a negative peer response decreased from 0.028 to 0.0065 for a small change of -0.022. The probability of no response from peers increased from 0.42 to 0.55 for a change of 0.13. For two of the participants (Doug and Juan), the probability of a positive peer response actually decreased during intervention (-0.13 and -0.27, respectively). For three of the participants (Doug, Emma, Juan), the probability of a negative response decreased during intervention (-0.03, -0.03, -0.02, respectively) though the decrease was negligible for all three. For only one participant (Elli), the probability of no peer response decreased during intervention. Because Cami did not emit any appropriate social vocalizations during baseline, the probability of receiving any type
Table 4

Probabilities of Positive, Negative, and No Response from Peers

<table>
<thead>
<tr>
<th>Participant</th>
<th>Positive</th>
<th></th>
<th></th>
<th>Negative</th>
<th></th>
<th></th>
<th>No response</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Intervention</td>
<td>Change</td>
<td>Baseline</td>
<td>Intervention</td>
<td>Change</td>
<td>Baseline</td>
<td>Intervention</td>
<td>Change</td>
</tr>
<tr>
<td>Cami</td>
<td>0</td>
<td>0.59</td>
<td>0.59</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.45</td>
</tr>
<tr>
<td>Juan</td>
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<td>0.10</td>
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<tr>
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<td>0.04</td>
<td>0.03</td>
<td>0</td>
<td>-0.03</td>
<td>0.5</td>
<td>0.29</td>
<td>-0.21</td>
</tr>
</tbody>
</table>

of response from peers was zero. Consequently, any changes from baseline to intervention cannot be interpreted as an effect of the intervention because it is unknown how peers would have responded to her social vocalizations during baseline.

Table 5 summarizes the average number of positive, negative, and no peer responses per observation, which presents a slightly different picture of peer responses. For all participants, the average number of positive peer responses per observation increased during intervention with changes ranging from 1.49 to 8.76. The average change across participants was an increase of four positive peer responses per observation. Doug and Elli experienced a slight decrease in the average number of negative peer responses, while Juan experienced a slight increase, and Cami experienced no change. The average change for negative peer responses was -0.03 per observation. All participants experienced an increase in the average number of no peer responses per observation with changes ranging from 2.4 to 15.08. The average change across participants for no peer responses was 8.08.
Table 5

*Average Number of Peer Responses Per Observation*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Positive</th>
<th></th>
<th>Negative</th>
<th></th>
<th>No response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Intervention</td>
<td>Change</td>
<td>Baseline</td>
<td>Intervention</td>
</tr>
<tr>
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<td>0</td>
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<td>Doug</td>
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<td>13.5</td>
<td>8.76</td>
<td>0.29</td>
<td>0</td>
</tr>
</tbody>
</table>

**General Social Functioning**

Table 6 presents the general social functioning of participants as measured by the SSIS. Across all participants the changes on the Social Skills Scale of the SSIS was negligible with all participants ratings ending up below the 20th percentile on the posttest measure. Additionally, changes on the Autism Spectrum Scale were negligible for all participants with all participants in the Above Average category on this scale.

**Subjective Perceptions of Social Life**

**Multidimensional Student Life Satisfaction Scale**

Table 7 contains a summary of the participants’ responses to the Multidimensional Students’ Life Satisfaction Scale pre and post intervention. This questionnaire is scored on a 6-point Likert-type scale. All participants scored above the mean of the normative sample reported in Huebner (1994) at pre- and posttest. The average change in scores pre-post was -0.14 (0.22 standard deviations), indicating that on
Table 6

Social Skills Improvement System Pre, Post, and Change Scores

<table>
<thead>
<tr>
<th>Participant</th>
<th>Pre</th>
<th>Post</th>
<th>Change</th>
<th>Pre</th>
<th>Post</th>
<th>Change</th>
<th>Pre</th>
<th>Post</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cami</td>
<td>63</td>
<td>74</td>
<td>11</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>25</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Juan</td>
<td>75</td>
<td>78</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>3</td>
<td>21</td>
<td>19</td>
<td>-2</td>
</tr>
<tr>
<td>Doug</td>
<td>78</td>
<td>79</td>
<td>1</td>
<td>8</td>
<td>8</td>
<td>0</td>
<td>34</td>
<td>35</td>
<td>1</td>
</tr>
<tr>
<td>Elli</td>
<td>81</td>
<td>85</td>
<td>4</td>
<td>11</td>
<td>17</td>
<td>6</td>
<td>21</td>
<td>22</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 7

Multidimensional Students’ Life Satisfaction Scale Mean and Change Scores

<table>
<thead>
<tr>
<th>Participant</th>
<th>Pretest Mean</th>
<th>Pretest %</th>
<th>Posttest Mean</th>
<th>Posttest %</th>
<th>Points</th>
<th>Percentage points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cami</td>
<td>5.18</td>
<td>86</td>
<td>5.83</td>
<td>97</td>
<td>0.65</td>
<td>11</td>
</tr>
<tr>
<td>Juan</td>
<td>5.39</td>
<td>90</td>
<td>4.07</td>
<td>68</td>
<td>-1.31</td>
<td>-22</td>
</tr>
<tr>
<td>Doug</td>
<td>4.42</td>
<td>74</td>
<td>5.34</td>
<td>89</td>
<td>0.91</td>
<td>15</td>
</tr>
<tr>
<td>Elli</td>
<td>5.06</td>
<td>84</td>
<td>4.27</td>
<td>71</td>
<td>-0.80</td>
<td>-13</td>
</tr>
</tbody>
</table>

average, participants’ report of their life satisfaction decreased by approximately one tenth of a point. Cami’s and Doug’s responses indicated a small positive change (0.65 and 0.91, or 1.07 and 1.49 standard deviations respectively) while Elli and Juan’s responses indicated a small negative change (-0.80 and -1.31 or 1.31 and 2.15 standard deviations, respectively).
Loneliness Rating Scale

Table 8 summarizes the participants’ responses to the Loneliness Rating Scale. This scale contains 16 questions that are scored on a 5-point Likert-type scale. At pretest, participants scored above the mean of the normative sample reported in Asher et al. (1984), indicating that they were less lonely than the mean. At posttest Doug, Elli, and Juan scored above the mean and their scores increased by 0.08, 0.34, and 1.02 standard deviations, respectively. Cami’s posttest score decreased by 1.27 standard deviations and was right at the mean of the normative sample. The average change for participants from preintervention to postintervention was 0.06 points (range 0.75 to -0.80).

Friendship Qualities Scale

Table 9 includes a summary of the participants’ responses to the Friendship Qualities Scale. This scale includes 23 items that are scored on a 5-point Likert-type scale with higher scores representing better friendship. The average change score across participants was 0.40 (range -0.21 to 0.74). Again, three of the participants (Cami, Doug,)

Table 8

Loneliness Rating Scale Mean and Change Scores

<table>
<thead>
<tr>
<th>Participant</th>
<th>Pretest</th>
<th></th>
<th></th>
<th>Change</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>%</td>
<td>Mean</td>
<td>%</td>
<td>Points</td>
<td>Percentage points</td>
</tr>
<tr>
<td>Cami</td>
<td>2.94</td>
<td>59</td>
<td>2.13</td>
<td>40</td>
<td>-0.80</td>
<td>-19</td>
</tr>
<tr>
<td>Juan</td>
<td>2.68</td>
<td>54</td>
<td>3.43</td>
<td>69</td>
<td>0.75</td>
<td>15</td>
</tr>
<tr>
<td>Doug</td>
<td>2.44</td>
<td>49</td>
<td>2.5</td>
<td>50</td>
<td>0.06</td>
<td>1</td>
</tr>
<tr>
<td>Elli</td>
<td>2.62</td>
<td>53</td>
<td>2.88</td>
<td>58</td>
<td>0.25</td>
<td>5</td>
</tr>
</tbody>
</table>
Table 9

**Friendship Qualities Scale Mean and Change Scores**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Pretest Mean</th>
<th>%</th>
<th>Posttest Mean</th>
<th>%</th>
<th>Points</th>
<th>Percentage points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cami</td>
<td>3.35</td>
<td>67</td>
<td>3.74</td>
<td>75</td>
<td>0.39</td>
<td>8</td>
</tr>
<tr>
<td>Juan</td>
<td>3.91</td>
<td>78</td>
<td>3.96</td>
<td>79</td>
<td>0.04</td>
<td>1</td>
</tr>
<tr>
<td>Doug</td>
<td>3.35</td>
<td>67</td>
<td>3.70</td>
<td>74</td>
<td>0.35</td>
<td>7</td>
</tr>
<tr>
<td>Elli</td>
<td>4.04</td>
<td>81</td>
<td>4.69</td>
<td>94</td>
<td>0.65</td>
<td>13</td>
</tr>
</tbody>
</table>

Elli) reported increased scores post-intervention, and one participant reported a decreased score (Juan).

**Social Validity**

**Children’s Usage Rating Profile**

The CURP-Actual measures the acceptability of an intervention to the recipient of the treatment across three dimensions, (a) personal desirability, (b) feasibility, and (c) understanding. It is scored on a 4-point Likert-type scale with higher scores indicating greater acceptability. The average CURP rating for this intervention was 3.51 (range 3.21 to 3.78) out of a possible 4. Expressed as a percentage, this score represents an 88% acceptability rating of the BLISS intervention. The highest ranked dimension was personal desirability with an average score of 3.79 (95%, range 3.67 to 3.83). The next highest ranked dimension was understanding with an average score of 3.75 (94%, range 3.67 to 4) and the lowest ranked dimension was feasibility with a score of 2.98 (75%, range 2.29 to 3.5).
Usage Rating Profile

The URP-Intervention measures the acceptability of an intervention to the interventionist across six dimensions, namely (a) acceptability, (b) understanding, (c) home school collaboration, (d) feasibility, (e) system climate, and (f) system support. It is scored on a 6-point Likert-type scale with a higher score representing greater acceptance. Because we wanted to ensure the feasibility of this intervention by developing a procedure that did not require significant outside support, and consistent with the URP developer’s recommendations, two categories were reverse scored (i.e., home school collaboration and system support) because they represented the need for outside support. The average score on acceptability was 5.47 (91%, range 4.78 to 6), for understanding was 5.08 (85%, range 4 to 6), for home school collaboration was 3.08 (51%, range 1.33 to 5.33), for feasibility was 5.21 (87%, range 4.67 to 5.5), for system climate was 5.45 (91%, range 5 to 6), and for system support was 2.5 (42%, range 2 to 3). The two dimensions that were reverse scored (i.e., home school collaboration and system support) were lowest rated dimensions while acceptability and system climate were the highest rated. The average rating across all dimensions was 4.47 (74%). Without the two reverse scored dimensions, the acceptability rating became 5.34 (89%).

Anecdotal Indicators

In addition to the social validity questionnaires that the participants and interventionists completed, there were reports from interventionists and teachers indicating how they perceived the effect of the intervention. Cami’s teachers reported that over the course of the intervention she became more likely to answer questions in class
when called on, more likely to read out loud, and more likely to talk with adults throughout the school. Cami’s teacher also reported that she performed better on a reading assessment because the volume of her voice improved and was scored as one of the dimensions that were assessed. Cami’s parents requested that she continue to receive the intervention in the following year.

Juan’s teacher reported that he enjoyed coming to school more during the intervention phase. She explained that prior to the intervention Juan missed a number of days of school and was in danger of needing intervention for attendance issues. However, when the intervention began, Juan did not miss any days of school, which she attributed to his excitement to participate in the intervention. Finally, all participants were observed engaging with a broader range of peer and engaging in a broader range of social activities during intervention.
CHAPTER V
DISCUSSION

Social skills deficits are a defining characteristic of individuals with ASD (APA, 2013). Without treatment, these deficits persist into adolescence and adulthood and become more distressing and impairing as individuals with ASD move into increasingly complex social environments such as middle school, high school, college, or employment (Tantam, 2003). Consequently, it is important to treat the social deficits of children with ASD early in order to avoid the impending stress of poor social skills. Moreover, schools typically provide the most appropriate context for treatment. Many children with ASD experience typical academic development and so they are included in the general education setting. However, their social deficits often compromise their ability to fully benefit academically and socially from the general education setting (Gutierrez et al., 2007; Hunt & Goetz, 1997; Kohler et al., 1996). So, early and effective in-school intervention is important for the success of students with ASD.

The primary purpose of this study was to evaluate the effects of the BLISS approach on social vocalizations among students with ASD in an inclusive setting by measuring the frequency of appropriate social vocalizations and the percent of social engagement. A secondary purpose of this study was to measure the functional effects of the BLISS intervention on a student’s life, more specifically on how peers responded to the participants, on general social functioning, and on measures of life satisfaction, loneliness and friendship.

We found that the BLISS approach improved the behavior of all participants in
terms of appropriate social vocalizations and social engagement. The participants’ behavior demonstrated marked improvements in level and/or trend during treatment. During baseline, appropriate social vocalization and engagement were stable for two participants and variable for two others, but none of the participants’ behavior demonstrated an increasing trend. As BLISS was introduced, participants’ behavior improved by demonstrating in increasing trend for Cami and Juan and an increased level change for Doug and Elli. These improvements occurred without an increase in negative peer response. However, BLISS did not result in substantially improved positive peer responses, life satisfaction, loneliness, or friendship.

The results of this study confirm the finding in the existing literature that social skills training plus supplemental supports can effectively improve the social behavior of individuals with ASD (Banda et al., 2010; Kasari et al., 2012; Licciardello et al., 2008; Loftin et al., 2008; Morrison et al., 2001). Additionally, consistent with previous research, in this study we strengthened the case for modeling (Banda & Hart, 2010; Banda et al., 2010; Gonzalez-Lopez & Kamps, 1997; Jung et al., 2008; Licciardello et al., 2008; Loftin et al., 2008; Morrison et al., 2001; F. J. Sansosti & Powell-Smith, 2008; Shabani et al., 2002; Yang et al., 2003), and reinforcement (Deitchman et al., 2010; Gonzalez-Lopez & Kamps, 1997; Jung et al., 2008; Kamps et al., 1997; Licciardello et al., 2008; Loftin et al., 2008; Mason et al., 2014; Shabani et al., 2002; Thiemann & Goldstein, 2004), as critical components of SST.
Dependent Variables

Social Interactions

A visual analysis of the graphs representing appropriate social vocalizations based on changes in level, trend, variability, and latency (Kratochwill & Levin, 2014) indicate that all participants’ behavior improved markedly with intervention. Both Cami and Juan went from stable low baselines to increasing trends in treatment until both reached a level commensurate with typically developing peers for a few sessions. Doug and Elli went from highly variable lower baselines to variable higher levels of behavior during treatment phases, with both increasing the percentage of data points to a level commensurate with the 95% confidence interval for peer composite data. Across participants, there were four demonstrations of an effect and zero noneffects, suggesting that there was a functional relationship between the implementation of BLISS and the increase in appropriate social vocalizations.

One participant (Cami) did require an additional intervention component (i.e., prompting) that the other three participants did not require. However, the ability to easily provide additional supports without compromising the core of the intervention or overwhelming the interventionists may be seen as an indication of the flexibility of the BLISS approach. Such flexibility may be useful for applying the BLISS approach to different students with varying levels of functioning or different profiles of strengths and deficits.

Additionally, Cami did not advance beyond the first social skills lesson (i.e., starting a conversation) because her behavior never got to a point where prompting could
be faded completely. However, her behavior continued to improve while the prompting was being faded, indicating that she was becoming less and less dependent on the prompting and more sensitive to contingencies that either occurred naturally or were part of the core BLISS components. The trajectory of the data suggests that in time, the prompting could have been faded completely and a second lesson introduced. While one can only speculate as to how Cami’s behavior would change in relation to a second lesson, it is possible if not likely, that a second lesson would not require the same level of prompting. Cami’s behavior also stands as reminder that ASD is a spectrum disorder and that each student will respond differently to intervention, but that the right intensity and duration of intervention can produce a positive effect.

The variability of responding across participants stands out as a salient feature of participant data, either in baseline, treatment, or both. This variability is indicative of the degree of control that an approach such as BLISS can exert on behavior in a largely uncontrolled environment such as a school playground. For example, there are some data points for Doug in the intervention phase that are particularly low. On at least one of those days, it started to rain and Doug’s aversion to getting wet overcame his motivation to pursue his appropriate social vocalization goal. Consequently, Doug ran for cover and spent the rest of his recess hiding from the rain rather than interacting with his peers. This is just one instance that illustrates the variety of factors that influenced participants’ behavior throughout the intervention phases. Notwithstanding all of the other influences acting on the participants’ behavior, BLISS still produced positive gains on appropriate social vocalizations for all participants such that, during some observations, their
behavior was commensurate with that of typically developing peers.

**Social Engagement**

A visual analysis of the data representing social engagement indicate that all participants improved during intervention and each participant achieved a level of engagement commensurate with that of typically developing peers during at least three sessions, and for some participants, many more. In baseline, Cami’s data were low and stable. In intervention, her engagement increased to be higher, though variable, and did not return to baseline levels for more than one session throughout intervention, indicating that Cami was more socially engaged during intervention. During baseline Juan’s engagement was low and relatively stable. In intervention, Juan’s engagement demonstrated a marked level change that, though variable, demonstrated that he too was more socially engaged during intervention. Both Doug and Elli had highly variable baseline data, however in intervention they both demonstrated a level change and decrease in variability indicating improved social engagement for both participants. A visual analysis of the data indicates that there were four demonstrations of an effect and zero noneffects, suggesting a functional relationship between the BLISS approach and increased social engagement. Elli was the only participant that was consistently engaged at a level commensurate with typically developing peers as indicated by peer composite data.

**Peer Response Probabilities**

The probability of a positive peer response following an appropriate social
vocalization markedly improved for Cami, but in light of the absence of baseline vocalizations, it is unclear if this represents an actual improvement in the quality of her social interactions. However, the fact that her social vocalizations increased throughout the intervention provides some suggestion that positive peer responses may have been reinforcing Cami’s behavior, though this was not directly assessed.

For both Doug and Juan the probability of a positive peer response decreased slightly. This outcome may be attributable to a generalization issue. Both Doug and Juan were observed engaging in a broader range of activities and with a broader range of peers during intervention. Given the uniqueness of each social situation, it could be that their newly acquired social skills were effective with certain peers or in certain activities (e.g., Four Square with classmates) but were less effective with other peers or in other activities (e.g., basketball with unfamiliar students). Additionally, Juan emitted so few appropriate social vocalizations during baseline that he had very little opportunity to experience peer responses. When he began to emit more appropriate social vocalizations, there were several more opportunities to receive positive, negative, and no peer responses. So, Juan may have required more time to become fluent in the newly acquired social skills. It is important to note that the average number of positive peer responses per observation for Doug and Juan increased during intervention, meaning that they were experiencing more positive peer attention, which, if reinforcing, would produce more social interaction in the future. One final possible explanation of this decrease could be an issue of measurement. The IOA for peer responses was 74%, which is below recommended levels of agreement (Cooper et al., 2007; Kazdin, 2010). An anecdotal look at the data suggest
that the cause of this level of agreement was likely due to data collectors simply missing the occurrence of the relevant peer responses. So, the decrease could have been an artifact of decreased recording of occurrences.

The change in the probability of negative responses from peers was so small as to be practically insignificant. This finding is encouraging in light of the fact that peers had several more opportunities to respond negatively to the participants’ social interactions, but proportionally, peers responded slightly less negatively. This finding is important because it suggests that interacting more with peers did not result in more negative outcomes. Finally, the probability of receiving no response from peers increased for Cami, Doug, and Juan, but decreased for Elli. Once again the change of probability for Cami cannot be interpreted as an improvement because there was nothing in baseline to improve upon. For Doug and Juan the changes were small and likely the result of simply having more opportunities for peers to not respond. However, for Elli, the probability of no response decreased indicating that peers were more attentive to her appropriate social vocalizations during intervention. The effect was small but represents an improvement in the functional outcome of her social interactions. These results ought to be interpreted with caution because the data collectors were not required to record anything when a no-response occurred. As mentioned previously, the IOA data suggest that the data collectors may not have been attending to peer responses as closely as was required.

The average number of the different types of peer responses provides a better understanding of the effect of BLISS. All participants experienced more positive peer responses during intervention and three of the four experienced either a decrease or no
change in the number of negative peer responses. For the one participant who experienced an increase in negative peer responses (Juan), the change was so small as to have no practical significance. If we assume that positive peer responses are reinforcing and negative peer responses are punishing, then these results could be viewed as a meaningful improvement in the social skills of the participants, consistent with Gresham and Elliott's (1990) definition of social skills (i.e., socially acceptable learned behaviors that enable a person to interact with others in ways that elicit positive responses and assist in avoiding negative responses).

The number of no peer response also increased for each participant, but an anecdotal look at peer composite data suggests that an appropriate social vocalization is often followed by no detectable change in peer behavior as a result of the vocalization. So, this result was not uncommon for typically developing peers and does not seem to have a punishing effect on appropriate social vocalizations.

**General Social Functioning**

The SSIS was administered pre and post intervention. Cami demonstrated the biggest change in her pretest to posttest standard scores and given that she was the lowest functioning at pretest, she had the most room to improve. Although this represents a marked improvement, Cami’s posttest score remained more than one and a half standard deviations below the mean indicating that her general social functioning was still low. All other participants’ standard score ratings changed very little. On the Autism Scale of the SSIS, the participants’ scores did not meaningfully change. The lack of meaningful changes on this broad measure of social functioning is likely attributable to
the length of the intervention, limited number of skills that were taught, the skills that were taught targeted the playground specifically, and the lack of a strong generalization effect to other environments (i.e., cafeteria). In order to have a broader impact it would likely be necessary to teach more skills across a larger variety of contexts within the school throughout the year.

**Subjective Perceptions of Social Life**

Three measures were used to assess participants’ subjective perceptions of their social lives: the Multidimensional Students’ Life Satisfaction Scale, the Loneliness Rating Scale, and the Friendship Qualities Scale. On the Multidimensional Students’ Life Satisfaction Scale all participants reported satisfaction above the mean at both pretest and posttest. This finding is surprising because one would expect that the challenges related to ASD would result in lower life satisfaction. The discrepancy between what we might expect regarding the perceptions that individuals with ASD have about their lives and how they actually perceive their lives may be an important issue to explore. It may be that the participants’ self-perceptions are not affected by the challenges of having ASD, or that they inflated their report of satisfaction. It may be an artifact of the sample on which the measure was normed or simply an idiosyncrasy of these particular participants’ responses.

In terms of changes in scores, Cami and Doug’s ratings of life satisfaction increased while Juan and Elli’s ratings decreased. It is difficult to interpret the practical significance of these changes because the normative sample did not include individuals with ASD. Additionally, this measure is only distally related to the primary target
outcome of the intervention.

On the Loneliness Rating Scale, all participants’ scored above the mean of the normative sample. This finding is particularly puzzling in light of the fact that participants were selected specifically because they were more socially isolated than their typically developing peers. Again, this finding gives rise to questions about how individuals with ASD experience their social isolation and whether or not they see it as something negative or not.

In terms of changes in scores, Doug and Elli reported small but positive changes. Juan reported a larger positive change and Cami reported a large negative change. As with the MSLSS, this measure has not been normed on individuals with ASD and, while more closely related to the primary outcomes of this study, any increase in appropriate social vocalizations on the playground may not have a substantial impact on an individual’s general sense of loneliness.

All of the participants’ responses to on Friendship Qualities Scale resulted in only small positive changes. In the absence of any normative data, it is difficult to interpret these results. Although given the small size of the changes, it is difficult to assert that a meaningful change occurred in the friendships of the participants (as measured by the Friendship Qualities Scale), because of the BLISS intervention.

**Interventionists**

Our finding that typically available school personnel could implement BLISS with support from the researcher, builds on the existing demonstrations of typical school
personnel as interventionists (Bock, 2007; Gonzalez-Lopez & Kamps, 1997; Kamps et al., 1992; Licciardello et al., 2008; Sansosti & Powell-Smith, 2008; Thiemann & Goldstein, 2004), and strengthens the case for moving the responsibility of implementing SST interventions into the hands of school personnel. In this study the school personnel were able to deliver lesson plans with fidelity, though they required substantial support in selecting the skills to be taught and developing the lesson plans. Additionally, they required some minor support to make modifications to the daily lessons in order to sustain participants’ progress. So, this study did not demonstrate that typical school personnel can implement BLISS without outside support. In spite of the support that was required to have typical school personnel implement the framework, the advantages of school based interventionists are obvious, including making intervention more readily available, less expensive, and potentially more consistent with existing efforts.

Social Validity

The participants each completed the CURP, which measured their perception of the social validity of the intervention on three dimensions, (a) personal desirability, (b) feasibility, and (c) understandability. Over all participants highly endorsed the BLISS approach to social skills training. The most highly endorsed dimension was the Personal Desirability, indicating that participants liked participating in the intervention. The dimension rated the lowest was feasibility, suggesting that participants may have had some relative reservations about the time, effort, and time away from other activities that was required to participate in BLISS. Participants’ responses on the CURP suggest that
their experience participating in BLISS was positive. While further data collection on this topic would be useful, we can say that there are promising indications that BLISS is a socially valid intervention for elementary school students with ASD.

The interventionists each completed the URP, which assessed the social validity of the BLISS intervention on six dimensions: (a) acceptability, (b) understanding, (c) home school collaboration, (d) feasibility, (e) system climate, and (f) system support. Overall interventionists moderately endorsed the BLISS approach. This finding may actually underrepresent their endorsement of BLISS because the two dimensions that were not highly endorsed were home school collaboration and system support, which were reverse scored. So, it is possible that interventionists intended higher scores to indicate greater endorsement across dimensions. When the two lowest dimensions are removed, interventionists highly endorsed BLISS. Given the overall rating of BLISS, it may be considered as a moderately socially valid intervention for typically available school personnel to implement in schools.

Beyond questionnaires indicating the social validity of BLISS, it is important to reiterate certain features of the intervention that support its feasibility. First, four nonresearcher interventionists were used to complete more than half of the intervention sessions and all of them were typically available school personnel with little or no formal training on working with students with ASD. Second, each interventionist fulfilled a different professional responsibility suggesting that a variety of personnel can successfully implement the intervention. Third, the intervention was conducted across three different schools meaning that in three different settings, staff were able to free up
15 min of time to implement the intervention. These factors, paired with the participants’ and interventionists’ endorsement of the intervention make a strong case for the feasibility of implementing the BLISS intervention in a variety of schools.

**Limitations and Future Research**

There are some limitations to this study, many of which can be addressed by further research. First, due to time constraints, we were unable to collect maintenance data. Therefore, the durability of the intervention remains unknown. To address this deficit, future research should include a maintenance phase. Additionally, it would be valuable to implement a systematic fading strategy for removing the various components of the intervention in a way that shifts the control of the desired behavior from the intervention to the naturally occurring environment. Future research may facilitate this fading by requiring individuals to self-monitor their behavior and requiring better and better performance to access the contrived reinforcers.

Another limitation of the current study was its limited scope. Only one setting within the school (i.e., the playground) was targeted by the intervention, but the utility of the intervention may be broader than what is represented in this study. It remains to be seen if the BLISS strategy can be successfully applied in other settings with in the school such as the classroom, cafeteria, or the library. Additionally, the skills taught in this study were all related to interacting with peers, but improving social skills for interacting with adults can be equally important and BLISS may offer a promising approach to such improvement. Researchers will need to identify situations beyond the playground where
students with ASD demonstrated social deficits and then follow the BLISS strategy in those contexts. Implementing BLISS in other contexts may have the additional benefit of addressing the issue of generalization. Training additional exemplars may allow the skill to generalize to novel contexts.

A third limitation was the low IOA scores for the peer response dependent variable. Consequently, we cannot draw strong conclusions about the functional effect of BLISS on peer responding. Researchers may wish to address this limitation in the future by refining the measurement of peer responses and improving the training of data collectors such that they can reliably identify and record the different types of peer responses. This may be accomplished by making the peer responses the primary dependent variable of a study so that data collectors focus more on the peers. Additionally, data collectors may be trained to a higher standard regarding peer responses. For example, data collectors could be required to achieve 90% agreement with a reliable observer before collecting data for a study.

Another limitation is related to the nature of intervention packages. The BLISS approach employs a variety of discrete components each of which may exert a unique influence on the behavior of the participants. It is unclear from this study which components are critical, and which components effect the greatest change. Additional research may conduct a component analysis to determine if approach could be effectively implemented with fewer components, thus saving resources for schools.

Finally, interventionists delivered just over half of the intervention sessions while a researcher delivered the remaining sessions either in conjunction with an
interventionists or alone. It is not clear what the outcome would have been if the interventionists had delivered all of the interventions sessions. In a future study researchers may wish to have the interventionists deliver all of the intervention sessions. This could be accomplished by providing additional practice opportunities for the interventionists during the initial training and requiring them to accurately demonstrate the components of BLISS prior to intervening with students.

Some important issues that the results of this study bring up are related to the question of peer interactions and reinforcement. One question is whether or not students with ASD are reinforced by positive peer responding or can be conditioned to be reinforced such that artificial contingencies can be removed. If so, what ratio, if any, matters most in terms of reinforcing the social behavior of students with ASD? For example, is the ratio of appropriate social vocalizations to positive peer responses an important factor in changing the social behavior of students with ASD or is the ratio of positive to negative peer responses more important? An additional question is whether these ratios even matter.

**Implications for Practice**

The number of students with ASD in the U.S. is on the rise (Baio, 2014) and many of them are being served in a general education setting. In order for these students to fully benefit from their education they will need effective social supports. More and more teachers are going to need efficient and effective strategies to improve the social skills of individuals with ASD and BLISS may be a useful option to meet this need.
Additionally, there has been a growing emphasis on schools using a multi-tiered systems of support framework for efficiently and effectively addressing the academic and social needs of students (Harlacher, Sakelaris, & Kattelman, 2014; Sugai & Horner, 2009). A variation of BLISS has demonstrated effects as an extension of the very popular Tier 2 intervention, Check-in Check-out (Ross & Sabey, 2014). BLISS may be another component intervention that can be used within a multi-tiered systems of support framework to effectively serve all students. Given the flexibility of the BLISS approach it could serve as a Tier 2 or Tier 3 intervention, with slight modifications, depending on the needs of students and available resources.

**Summary and Conclusion**

The number of students with ASD in the schools is increasing. These students need social skill support if they are going to succeed in school, fully benefit from their education, and be prepared for transition to adulthood. Teachers need interventions that they can implement with minimal resources that do not detract from other teaching responsibilities. Although there are several social skills interventions available few of them have been demonstrated to be effective in schools with students with ASD in inclusive settings. Additionally, many interventions are either too demanding for teachers to be able to effectively implement or not intensive enough to produce meaningful changes in the lives of the students with ASD. In light of these needs, we developed the BLISS approach to social skills training.

The BLISS approach allows teachers to address the specific social skills needs of
students in a format that is easy to implement, efficient, and does not require excessive amounts of time or training. In this study the BLISS approach effectively increased the appropriate social vocalizations and social engagement of four elementary school students with ASD who were served predominantly in the general education setting. Both participants and interventionists endorsed the social validity of this intervention, increasing the support for BLISS. However, as with so many other SST interventions, the BLISS approach needs to be modified and refined in order to effectively promote the generalization of newly acquired social skills to untrained environments.
REFERENCES


APPENDICES
Appendix A

Summary of Coded Study Characteristics
## Table A1

### Summary of Coded Study Characteristics

<table>
<thead>
<tr>
<th>Reference</th>
<th>Participants</th>
<th>IV</th>
<th>Components</th>
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<th>Design</th>
<th>Effect</th>
<th>M</th>
<th>G</th>
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<tr>
<td>Banda &amp; Hart, 2010</td>
<td>2 females, 8 yrs</td>
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<td>Modeling and role-play with typically developing peers</td>
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<td>Banda et al., 2010</td>
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<td>Social skills training and prompting</td>
<td>Modeling, prompting, and praise with typically developing peers</td>
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<td>Bock, 2007</td>
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<td>SODA (Stop, Observe, Deliberate, Act)</td>
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<td>Boudreau &amp; Harvey, 2013</td>
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<td>Deitchman et al., 2010</td>
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<td>Video feedback</td>
<td>Watch video of self while receiving feedback and reinforcers</td>
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<td>Gonzalez-Lopez &amp; Kamps, 1997</td>
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<td>Social skills training</td>
<td>Describe, model, feedback, reinforce</td>
<td>Teacher</td>
<td>Social interaction with typical peers, use of social skills, disruptive behaviors</td>
<td>ABCAC</td>
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<td>Hasley-Hochdorfer et al., 2010</td>
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<th>Effect</th>
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<td>Kasari et al., 2012</td>
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<td>Laushey et al., 2009</td>
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<td>Concept Mastery Routines</td>
<td>Researcher</td>
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<td>Licciardello et al., 2008</td>
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<td>Loflin et al., 2008</td>
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<td>Mason et al., 2014</td>
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<th>DV</th>
<th>Design</th>
<th>Effect</th>
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<tr>
<td>Morrison et al., 2001</td>
<td>3 male, 1 female, 10 to 13 yrs</td>
<td>Social skills training, self-monitoring, peer monitoring</td>
<td>Describing, modeling, self-monitoring, peer monitoring</td>
<td>Researcher</td>
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<td>Multiple baseline across participants and skills</td>
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<td>Reichow &amp; Sabornie, 2009</td>
<td>1 male, 11 yrs</td>
<td>Social stories</td>
<td>Picked up daily schedule, read social story</td>
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<td>Verbal greetings to adults and peers</td>
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<tr>
<td>F. J. Sansosti and Powell-Smith, 2008</td>
<td>3 male, 6 to 10 yrs</td>
<td>Social stories and video modeling</td>
<td>Social stories, video modeling, modeling, prompting</td>
<td>Teacher, Paraprofessional</td>
<td>Social initiations and responses</td>
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<td>Shabani et al., 2002</td>
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<td>Peer training, visual script training, prompting, and reinforcement</td>
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<td>Yang et al., 2003</td>
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<td>Direct instruction, modeling, role-play, visual cues, rehearsal, and reinforcement</td>
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*Note.* IV = Independent variable; DV = Dependent variable; + = positive effect; - = no effect; 0 = not reported; M = Maintenance; G = Generalization
Appendix B

Frequency of Study Characteristics
Table B1

*Frequency of Study Characteristics*

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<thead>
<tr>
<th>Characteristic</th>
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<td>a. Social skills training alone</td>
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<td>b. Social skills training plus other supports (e.g., prompting, peer monitoring, self-monitoring)</td>
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<td>d. Video based interventions (modeling and feedback)</td>
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<td>e. Peer network intervention</td>
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<td>f. Script training</td>
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<td>g. SODA</td>
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<td>5</td>
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<td>h. Concept mastery routines</td>
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Appendix C

Behavior Observation Tool Screen Shot
Behavior Observation Tool Screen Shot
Appendix D

Social Skills Lesson Planning Template
Social Skills Lesson Planning Template

**Learning Set (1-3 min):**

1. Follow-up on yesterday’s goal/assignment.

Yesterday’s goal/assignment as: _____________________________________________

2. Show student graph with yesterday’s performance and deliver appropriate consequence (i.e., reinforcer or not).

3. Check the activities that you will do in the learning set:

   - Review a previous skill that is not mastered.
     List skill: ______________________________________________________________

   - Check on a previously mastered skill to make sure the student can still do it
     List skill: ______________________________________________________________
     (If the skill is not mastered, plan to review it for the next lesson)

   - Check to make sure the student has the prerequisite skills for today’s lesson
     List skills: ______________________________________________________________
     (If the student doesn’t have the prerequisite skills, then stop at teach those skills first)

**New Material (2-3 min):**

1. What is the highest priority skill for the student to work on?

New skill: ______________________________________________________________

2. What is the objective or purpose of this skill? (What is the student going to gain by learning this skill?)

3. List the steps of this skill
   (You may include as many or as few steps as needed. Remember to think like the kids):
   
   1. ______________________________________________________________
   2. ______________________________________________________________
   3. ______________________________________________________________
   4. ______________________________________________________________
   5. ______________________________________________________________
4. Demonstrate the skill at least 3 times

Examples

1. ____________________________________________
2. ____________________________________________
3. ____________________________________________

Nonexamples

1. ____________________________________________
2. ____________________________________________
3. ____________________________________________
4. ____________________________________________

**Guided practice** (5 min):

1. Have the student practice the skill with you **multiple** times and give feedback/prompting as needed until the student can perform the skill **three times** with 100% of steps correct.
   
   Check 100% correct attempts [ ] [ ] [ ] (Move to playground)

2. Have the student practice the skill with a **variety of different** peers (at least 3) and give feedback/prompting as needed.
   
   Check 100% correct attempts [ ] [ ] [ ] (Move to next step)

5. Have the student practice the skill with others without prompting at least 3 times.

   Check 100% correct attempts [ ] [ ] [ ] (Move to independent practice)

**Independent practice** (2 min):

1. Give the student an assignment to practice the skill at least _____ times during recess.

**Notes:**
Appendix E

Implementation Fidelity Checklist
Implementation Fidelity Checklist

Name of participant: ____________________________________ Date: _____________

Name of interventionist: ___________________________________________________

Skill being taught: ________________________________________________________

1. Followed up on yesterday’s goal □ Yes □ No

2. Showed student yesterday’s performance graph □ Yes □ No

3. Appropriate consequence (i.e., access to reinforcer or not) □ Yes □ No

3. Steps of skill described □ Yes □ No

4. Steps of skill modeled at least 3 times □ Yes □ No

5. Student practiced skill with teacher at least 3 times □ Yes □ No

6. Student practiced with others (students, adults, etc.) at least 3 times □ Yes □ No

7. Student demonstrated skill without support (i.e., no prompting) in relevant setting (at least 3 times) □ Yes □ No

8. Feedback (affirmative and/or corrective) provided to student as necessary □ Yes □ No

9. Student completed 3 successful demonstrations of the skill before getting an assignment for the day □ Yes □ No

10. Student given a specific goal/practice assignment to work on before the next lesson □ Yes □ No

Number of steps in lesson plan completed ______

Number of steps possible for lesson ______

Percent of steps completed ______ (Divide # completed by # possible)
CURRICULUM VITAE

CHRISTIAN V. SABEY

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Logan, UT 84322
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(801) 580-7399 (cell)
(435) 797-3572 (fax)
christian.sabey@aggiemail.usu.edu

Education

2015 Ph.D. Disability Disciplines
    Minor: Applied Behavior Analysis
Utah State University, Logan, UT
    Dissertation: The Effects of Brief, Localized, Intensive, Social Skills
    (BLISS) Training on Social Outcomes for Students With Autism
    Spectrum Disorder in Inclusive, School Settings: Form and Function
    Chair: Scott Ross Ph.D.

2011 M.S. School Psychology
University of Utah, Salt Lake City, UT
    Thesis: The Social Validity of School-Wide Positive Behavior Supports in
    Utah Schools: A Student Perspective
    Chair: Daniel Olympia, Ph.D.

2002 B.A. Philosophy
    Minor: Geography
Brigham Young University, Provo, UT

Licenses and Specialized Certifications

Licensed Utah Educator (School Psychologist), Level 1
Board Certified Behavior Analyst (BCBA, February 2015)
Behavior Analyst (State of Utah)

Classroom Teaching Experience

- Responsible for the educational programing and behavior assessment and intervention for one student with ASD as well as providing one-on-one behavior analytic services and instruction to a variety of students with ASD.

2013  Instructor, ASSERT Preschool, U.S.U, Logan, UT
- Responsible for one-on-one and small group discrete trial and naturalistic training four students with ASD as well as implementing behavior interventions.

**University Teaching Experience**

2014  SPED 6770 – Coaching and Systems Change, Team teaching with Dr. Scott Ross, Utah State University, Logan, UT

2013  SPED 5040 – Foundations of Effective Assessment and Instruction (On-campus and distance section), Team teaching with Dr. Ben Lignugaris/Kraft and Darci Peterson, Utah State University, Logan, UT

2012  EDPS 607 – Bilingual Assessment, Guest lecturer, Brigham Young University, Provo, UT

2006  EDPS 6050 – Lifespan Development: Child and Adolescent, Sole Instructor, University of Utah, Salt Lake City, UT

**Behavior Intervention Experience**

2009-2011  Behavior Intervention Specialist, Salt Lake City School District (SLCSD), Salt Lake City, UT
- Provided behavior intervention support to approximately 20 schools across the district including support related to, functional behavior assessment, positive behavior support, behavior interventions, data collection and management, staff training, and IEP compliance.

2003-2005  Dean of Students, Lincoln Elementary School, SLCSD, Salt Lake City, UT
- Responsible for behavior management across the school including chairing the School-wide Positive Behavior Support Team.

2003  Paraprofessional in Behavior Support Classrooms, Granite School District, Salt Lake City, UT
- Supported licensed teachers in delivering instruction and implementing behavior support plans.
School Psychology Experience
2011 Therapist, Outback Therapeutic Expeditions, Lehi, UT
- Provided individualized intensive psychotherapy to adolescents and their families.

2008-2009 School Psychology Intern, Granite School District, Salt Lake City, UT
- Provided psychoeducational services to two elementary schools and one middle school.

2006-2008 School Based Mental Health Grant Assistant, Utah State Office of Education, Salt Lake City, UT
- Supported schools and mental health agencies across the state to integrate mental services into schools.

2007-2008 School Psychology Field Practicum, SLCS&D Salt Lake City, UT and Jordan High School, Jordan School District, West Jordan, UT
- Delivered psychoeducational services under the direction of licensed school psychologists.

2005-2006 Assistant Clinic Director, University of Utah Psychoeducational Clinic, Salt Lake City, UT
- Supported all administrative activities of the clinic.

Leadership Experience
- Responsible for managing the case of one student including, coordinating services across three instructors, home visits, school visits, educational programming, and behavior assessment and intervention.

2009 Student Network Chair Person and Ex-Officio Board Member, Association for Positive Behavior Support
- Represented university students in board meetings and coordinated student related activities at the annual conference.

2007 Utah Association of School Psychologists (UASP) Student Representative for University of Utah
- Represented student perspective at all UASP meetings.

2004 Summer School Director, Lincoln Elementary School, SLCS&D, Salt Lake City, UT
- Coordinated all aspects of summer school for approximately 50
students including, preparing the budget, collaborating with 5 licensed teachers to coordinate instruction, managing student behavior, and scheduling all aspects of summer school.

**Supervision Experience**

2011-2014  Practicum Supervisor, Utah State University, Logan, UT  
- Conducted weekly observations and coaching for five practicum students in Direct Instruction reading practicums

2014  Case manager, ASSERT Preschool, Logan, UT  
- Supervise and coach three instructors on delivering instruction to students with ASD

2012  Student Teaching Supervisor, Utah State University, Logan UT  
- Conducted regular observations and provided feedback and coaching for one student teacher in Special Education

**Related Experience**

2009-2011  Utah Mentor Teacher Academy, Attendee, Utah Personnel Development Center, Salt Lake City, UT  
- Received regular training in a variety of evidence-based educational practices

2011  Grant Writing Institute, Attendee, Utah State University, Logan, UT  
- Received intensive training on grant preparation, writing, and submission.

2012  Student Teaching Supervisor, Utah State University, Logan, UT  
- Supervised and coached student during student teaching experience

2008-2009 High Incidence Emotional/Behavioral Disorders Grant, Training School Psychologists to be Experts in Evidence Based Practices for Tertiary Students with Serious Emotional Disturbance/Behavior Disorders, U.S. Office of Education 84.325K, H325K080308, University of Utah, Salt Lake City, UT  
- Received training on evidence-based practice for students with emotional and behavioral problems

2008  Field Staff, Outback Therapeutic Expeditions, Lehi, UT  
- Supported wilderness therapy experience for adolescents in treatment.
2003  Community Education Group Leader, Lincoln Elementary School SLCSD, Salt Lake City, UT
   • Supervised all afterschool program activities for K-2 students.

2000  Teaching Assistant (Philosophy 101) Brigham Young University, Provo, UT
   • Supported all course related activities including grading, lecturing, and assisting students.

1999-2002  Italian Instructor, Missionary Training Center, Brigham Young University, Provo, UT
   • Delivered instruction in effective principles and practices in missionary service as well as Italian Language instruction.

Awards and Honors

2006  Utah Association of School Psychologists (UASP) Student of the Year
2005  Grayson and Seth Jenson Memorial Scholarship, University of Utah
2005  Dee Foundation Teaching Assistantship, University of Utah

Grant Activity

Autism and Social Skills Instruction: Form vs. Function, UPDC (2013) (funded, $1,000). Role: Principal Investigator

Developing Instructional Fluency in Delivering Direct Instruction Reading programs, UPDC (2012) (funded, $1,000). Role: Principal Investigator


Editorial and Journal Activities

Spring 2013  Guest reviewer, *Education and Treatment of Children*
Fall 2013  Guest reviewer, *Journal of Positive Behavior Interventions*

Publications


Ross, S. W., & *Sabey C. V.* (2014) Check-in Check-out + Social Skill: Enhancing the Effects of Check-in Check-out for students with social skills deficits. *Remedial and Special Education*. 


Sabey, C. V., Ross, S. W., Charlton, C.T., Pyle, D. (under review) Using practice-based evidence to evaluate the effects of Check-in Check-out plus social skills.

Ross, S. W., Lund, E. M., & Sabey, C. V. (under review) A behavioral definition of bullying. *Journal of School Violence*

**National Presentations**


Ross, S. W., Charlton, C., Sabey, C. V. (2013) *Modification of CICO: a Tier II Adaptation of Social Skills Instruction*. Presentation at the Association of Behavior Analysis International Annual Conference, Minneapolis, MI.

Ross, S. W., Charlton, C., Sabey, C. V. (2013) *A Novel Approach to CICO and Social Skills Instruction*. Presentation at the Association of Positive Behavior Support Annual Conference, San Diego, CA.


Regional Presentations


Sabey, C. V. (2013) *A Pragmatic Approach to Functional Behavior Assessment and Behavior Intervention Planning: An Evidence Based Practice perspective*. Presentation at the Utah Association of School Psychologists Annual Conference, Salt Lake City, UT.

Ross, S. W., Charlton, C., Sabey, C. V. (2013) *A Novel Approach to CICO and Social Skills Instruction*. Presentation at the Utah Multi-Tiered Systems of Support Annual Conference, Layton, UT.


Professional Affiliations

American Psychological Association (Division 16: School Psychology)
Association for Applied Behavior Analysis International
Association of Positive Behavior Supports
Council for Exceptional Children (Council for Children with Behavior Disorders)
National Association of School Psychology
Utah Association of Applied Behavior Analysis
Utah Association of School Psychology
Utah Psychological Association