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Implementing Gameplay Skills to Increase Eye Contact and Communication for Students with Emotional Behavioral Disorder and Comorbid Disabilities

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IMPLEMENTING GAMEPLAY SKILLS TO INCREASE EYE CONTACT AND COMMUNICATION FOR STUDENTS WITH EMOTIONAL AND BEHAVIORAL DISORDER AND COMORBID DISABILITIES

by

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ABSTRACT

This study was conducted to examine the effectiveness of gameplay activities using a structured social skills program to increase both eye contact responses and the number of verbal responses during peer relationships for students with comorbid disabilities in a clinical setting. This SEL intervention was modified for children with comorbid autism spectrum disorder (ASD) and emotional and behavioral disorder (EBD). A single-subject, multiple-baseline, across-participants design was used. Participants included adolescents (n = 6) with comorbid disabilities, predominantly ASD and EBD, their board-certified behavior analysts (BCBA), and six behavior technicians. The researcher established and maintained face-to-face reciprocal peer social engagements (communication) and direct eye gaze (contact) with participants in dyad groups. Each session included a 60-minute video of peer social interactions. Direct observations, differential reinforcement of other behaviors (DRO), and pre- and post-Social Skills Improvement System-Rating Scales (SSIS-RS) were examined. Evidence of SEL intervention effectiveness was measured by percentage of nonoverlapping data points (PND). Social validity was measured using the multiple-rater SSIS-RS and intervention fidelity checklists evaluating the Sanford Harmony intervention. Results from data and visual analysis revealed all participants significantly increased their direct eye contact, verbal reciprocity, and social engagements after implementing the Harmony program. In addition, a PND value of 100% was calculated for each dependent variable indicating the Harmony program was a highly effective intervention increasing eye contact, verbal reciprocity, and social engagements for students with EBD and comorbid disabilities .

To my mother, Ruth Wills;

my husband, Briven Jackson;

and our two children, Christina and Elijah.

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After an intensive journey of three years, today is the day: writing this note of thanks is the finishing touch on my dissertation. It has been a period of intense learning for me, not only in the research area, but also on a personal level. Writing this dissertation has had a huge impact on my life. I would like to reflect on the people who have supported and helped me so much throughout this journey.

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CHAPTER 1
THE PROBLEM AND ITS CLARIFYING COMPONENTS

Introduction

Wiley and Siperstein (2015) defined social competence as the ability to establish positive relationships and to maintain those relationships using a variety of social tasks (e.g., asking to join a game or expressing disagreement without being disagreeable). Similarly, researchers have defined emotional competence as having the knowledge to modify emotions to particular settings and populations. The growing response to the need for increased social and emotional competence of children has promoted social and emotional learning (SEL) programs in schools (Wiley & Siperstein, 2015). For 20 years, SEL programs have used a range of research-based methods to improve five main components of SEL: (a) self-awareness, (b) self-management, (c) social awareness, (d) relationship skills, and (e) responsible decision making (Elias et al., 1997; Osher et al., 2016).

A growing body of literature has been focused on improving the social outcomes for children with autism spectrum disorder (ASD) and emotional and behavioral disorder (EBD) (Bradley, Doolittle, & Bartolotta, 2008). Many schools help students succeed by supporting their SEL through a culture of inclusiveness that promotes their physical and psychological well-being (Osher et al., 2016). In 2002, the No Child Left Behind Act (NCLB) referred to students' social and emotional well-being in school as the "missing link" in accountability-driven practices and policies (Hamedani & Darling-Hammond, 2015). At the time of this study, under the Every Student Succeeds Act (ESSA, 2015), states had developed new accountability policies for building a positive school climate and culture, particularly measuring and promoting social and

emotional learning. These new policies have increased students' academic achievement, health, and other positive long-term outcomes (Pellegrino & Hilton, 2012).

Background

Children with autism spectrum disorder (ASD) represent one student group in need of support with social emotional learning, exhibiting deficits in pro-social skills such as engaging in conversation and responding to social problem solving skills (DiGennaro-Reed, Hyman, & Hirst, 2011). Two particular characteristics of children with ASD are reciprocal social-communicative deficits (responding to and returning eye contact) and social behavioral challenges (interpersonal social emotional communication) (Kanner, 1968; Tonge, Dissanayake, & Brereton, 1994).

Direct eye contact is considered the most important platform for social interaction and communication (Csibra, 2006). Thus, eye contact processing has been regarded as a "model system" for studying social interaction and communication among children with ASD (Senju & Johnson, 2009). Senju and Johnson defined direct eye contact as an emotional response that triggers one's eyes to become captured by another person's eyes.

Definition of Autism Spectrum Disorders

Autism is a biological disorder of the central nervous system (CNS) of unknown cause (Tonge et al., 1994). According to the Individuals with Disabilities Education Act (IDEA) autism spectrum disorders (ASD) is defined as follows:

> (i) Autism means a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age 3, that adversely affects a child's educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences. The term does not apply if a child's educational performance is adversely

affected primarily because the child has an emotional disturbance, as defined in paragraph (b)(4) of this section.

(ii) A child who manifests the characteristics of "autism" after age 3 could be diagnosed as having "autism" if the criteria in paragraph (c)(1)(i) of this section are satisfied. (IDEA, 2004, 34 CFR Section 300 and 300.8 (c)(1)(i-ii, Office of Special Education and Rehabilitative Services (ED), 2006)

The Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-V; 2013), uses a multi-axial system of classification to define ASD:

A. Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history (examples are illustrative, not exhaustive, see text):

    1. Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.

    2. Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication.

    3. Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.

B. Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following, currently or by history (examples are illustrative, not exhaustive; see text):

    1. Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases).

    2. Insistence on sameness, inflexible adherence to routines, or ritualized patterns or verbal nonverbal behavior (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat food every day).

3. Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interest).

4. Hyper- or hypo-reactivity to sensory input or unusual interests in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).

C. Symptoms must be present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities or may be masked by learned strategies in later life).

D. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

E. These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay. Intellectual disability and autism spectrum disorder frequently co-occur; to make comorbid diagnoses of autism spectrum disorder and intellectual disability, social communication should be below that expected for general developmental level (American Psychiatric Association, 2013, 299.00, F84.0).

By definition, students with ASD are deficient in social-emotional areas and communication skills. Students with emotional and behavioral disorders comprise another student group lacking in areas of social emotional development.

Definition of Emotional and Behavioral Disorders

An emotional and behavioral disorder is characterized by an inability to establish or maintain prosocial interpersonal relationships with peers and teachers. The Individuals with Disabilities Education Act (IDEA) defined emotional disturbance (ED) as follows:

> …a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance:
>
> a) An inability to learn that cannot be explained by intellectual, sensory, or health factors.
> b) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.

c) Inappropriate types of behavior or feelings under normal circumstances.
d) A general pervasive mood of unhappiness or depression.
e) A tendency to develop physical symptoms or fears associated with personal or school problems. (IDEA, 2004, Section 300.8 (c)(4)(i)(ii), Office of Special Education and Rehabilitative Services (ED), 2006)

As defined by IDEA, ED includes schizophrenia but does not apply to children who are socially maladjusted unless it is determined that they have an ED under paragraph (c)(4)(i) of this section. *The Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* (DSM-V), uses an age-related diagnostic classification system to define serious emotional disturbance (SED) as social (pragmatic) communication disorder.

At the time of the current study, the most current definition of emotional disturbance (ED) as a federal special education categorized disability was quickly approaching 50 years old. Bower (1982) proposed the description criteria of ED would have limited modifications. Since enactment of the Education of All Handicapped Children Act of 1975, children have been identified for special education services under the classification, serious emotional disturbance (SED).

Subsequently, with the reauthorization of IDEA in 1997, serious emotional disturbance remained a disability category; however, reauthorization ensured that this disability would be "hereinafter referred to as emotional disturbance (ED)" (Section 602(3)(A)(i). Much controversy and criticism have evolved regarding the definition of ED (Mattison, 2014; Walker, Ramsey, & Gresham, 2004). Therefore, many special educators have adopted the de facto classification of emotional and behavioral disorders (EBD) as defined by Forness and Knitzer (1992). To add more confusion to an already highly criticized definition, the DSM-V classified EBD as a psychiatric disorder, exhibiting a range of internalizing and externalizing behavioral disorders

(Mattison, 2014). Although IDEA has included schizophrenia in its classification of ED, it has not mentioned DSM psychiatric disorders (Mattison, 2014).

The Field of ASD and Comorbid EBD

According to the *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition*, (DSM-V), autism spectrum disorder (ASD) is grouped into three categories: impairments in social interaction; impairments in verbal and nonverbal communication; and restricted repetitive behavior of activities and interests (American Psychiatric Association, Johnson, & Carter, 2011). In addition to these grouped categories, students with an ASD often exhibit characteristics associated with EBD (Magyar & Pandolfi, 2012).

Prevalence estimates for students with ASD and comorbid EBD are reported to be high in early childhood and adolescents (Magyar & Pandolfi, 2012). Characteristics of students with ASD and comorbid EBD include (a) internalizing behaviors such as anxiety, depression and attention deficit; and (b) externalizing behaviors such as hyperactivity, impulsivity, aggression, and tantrums (Gjevik, Eldevik, Fjæran-Granum, & Sponheim, 2011). Students with ASD often exhibit cognitive and neurocognitive impairments that adversely affect their self-awareness and ability to express appropriate emotions and behaviors (i.e., functional impairment) and to rationalize conflict resolution and self-regulation skills (Gjevik et al., 2011; Magyar & Pandolfi, 2012) which is also a symptom of students with EBD.

Characteristics of Students with ASD and Comorbid EBD

Many teachers struggle with student behavior, particularly considering that recent prevalence estimates indicate that 5.9% of school-age students have moderate to severe EBD

(Forness et al., 2012; Office of Special Education and Rehabilitative Services (ED) & New Editions Consulting, 2016). Students with EBD are often characterized by disruptive noncompliant social behaviors, have poor attendance, higher school drop-out rates and grade retention rates than any other disability category (Lane, 2007).

DiGennaro-Reed, Hyman, and Hirst (2011) have identified children with autism in three core impairment areas including social interaction, behavior, and communication. Characteristics may include unusual fixation, inability to focus, disruptive externalizing behavior, internalizing behaviors, unusual communication habits, and the inability to engage in social interactions.

According to Lane et al. (2012), students with externalizing behaviors are directed toward peers and adults. These behaviors include verbal aggression, physical aggression (e.g., punching, swinging at or hitting another person), temper tantrums, coercive tactics (e.g., arguing), destructive acts, and other types of noncompliant behaviors (Lane et al., 2012). In contrast, students with internalizing behaviors are directed "inward" or within oneself (Lane et al., 2012). These behaviors include worrying, shyness, depression, apathy, anxiety, social withdrawal & low self-esteem (Lane et al., 2012).

Students with internalizing behaviors often go unnoticed by teachers, and they often receive less support and services than students exhibiting externalizing behaviors (Lane et al., 2012). However, this prevalence of internalizing behaviors can be as serious as externalizing behaviors because of the long-term adult outcomes such as depression, anxiety disorders, and suicidal thoughts and actions (Kessler, Berglund, Demler, Jin, & Walters, 2005; Lane et al., 2012).

The estimates of overall prevalence of EBD have indicated that girls are more likely to exhibit internalizing behaviors, indicating a long-term diagnosis of depression (Costello, Erkanli, & Angold, 2006), and students typically classified with EBD have ranged between 12 and 17 years of age (Costello et al., 2006). This delay in identification has been due in part to the lack of early intervention and prevention in schools by both teachers and parents (Lane et al., 2012). Emotional disturbance (ED) often has a negative connotation.

Eligibility and Prevalence of Students with ASD and EBD

In special education, prevalence is determined by the total number of individuals with a specific disability in a given population at a given time (Centers for Disease Control and Prevention [CDC]). Prevalence is calculated as a percentage of the population exhibiting a specific exceptionality. The prevalence rate of autism in 2014 was 1 in 68 students in the United States (CDC, 2014).

The most recent data examined in the 38th Annual Report to Congress (2016) were submitted directly by all U.S. states to ED Facts Data Warehouse (EDW) through the Education Data Exchange Network (EDEN). Based on this examination, the EDEN developed a resource to combine the kindergarten through Grade 12 education program information about states, districts, and schools.

The U.S. Department of Education's (USDOE). 38th Annual Report (2016) on the Individuals with Disabilities Education Act (IDEA) identified the percentage of students between the ages of 6 and 21 years of age served under IDEA, Part B, by disability category. Table 1 reflects that approximately 5.9% of all students having a classification in special

education have been categorized as having emotional disturbances, and 8.6% of the entire school-age population has been identified as having autism.

Table 1

Top Six Disabilities Identified

Category of Disability	Percentage of Students
Specific Learning Disability (SLD)	39.2%
Speech & Language Impairment (S & L)	17.6%
Other Health Impairments (OHI)	14.4%
Autism (ASD)	8.6%
Intellectual Disability (ID)	7.0%
Emotional Disturbance (ED)	5.9%

Source. U.S. Department of Education's 38th Annual Report to Congress on the Individuals with Disabilities Education Act (IDEA). Retrieved from http://www2.ed.gov/about/reports/annual/osep/index.html

As reported in the 38th Annual Report (2016), the categories (a) SLD; (b) S & L (c) OHI; (d) ASD; (e) ID; & (f) ED were referred to as "high incidence" disabilities. In 2016, it was estimated that students ages 6 through 21 served under IDEA, Part B, Native American, African American, and Pacific Islander had risk ratios above 1 (1.7, 1.4, and 1.6, respectively). These data, shown in Table 2, indicate that the students in these categories were more likely to be served under Part B than were children ages 6 through 21 in all other racial/ethnic groups combined (Office of Special Education and Rehabilitative Services [ED] & New Editions Consulting, 2016).

Table 2

Risk Ratio for Students ages 6 through 21 served under IDEA, Part B, Within Racial/Ethnic Groups by Disability Category

Disability	American Indian	Asian	African American	Latino	Pacific Islander	White	Two or more races
SLD	1.96	0.31	1.51	1.31	1.88	0.73	0.76
S & L	1.40	0.69	1.02	1.08	1.09	0.99	0.90
OHI	1.39	0.28	1.38	0.63	1.38	1.28	0.97
ASD	0.94	1.11	0.99	0.79	1.32	1.16	0.97
ID	1.58	0.50	2.22	0.94	1.64	0.70	0.71
ED	1.68	0.18	2.08	0.61	1.30	0.96	1.19

Source. U.S. Department of Education's 38th Annual Report to Congress on the Individuals with Disabilities Education Act (IDEA). Retrieved from http://www2.ed.gov/about/reports/annual/osep/index.html. SLD = Specific Learning disability, S&L = Speech and Language Impairment, OHI = Other Health Impairment, ASD = Autism, ID = Intellectual Disability, ED = Emotional Disturbance.

As shown in Table 2, African American students with ED were 2.08 times more likely to be served under IDEA, Part B, and 2.22 times more likely with intellectual disabilities (ID), than student's served in the same categories in all other racial/ethnic groups combined. According to the data, the risk ratio for African American students was more significant than the risk ratio for the students in all other racial/ethnic groups combined for every disability category except autism (0.99), deaf-blindness (0.76), and orthopedic impairments (0.86) according to the Office of Special Education and Rehabilitative Services [ED] & New Editions Consulting, 2016).

The Field of Social and Emotional Learning (SEL)

The theory of social and emotional learning (SEL) has been studied extensively in recent years. According to Weissberg, Durlak, Domitrovich, and Gullotta (2015),

> SEL is the process through which children and adults acquire and effectively apply the knowledge, attitudes, and skills necessary to understand and manage emotions, set and

> achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions. (p. 6)

In *Promoting Social and Emotional Learning: Guidelines for Educators*, Elias et al., (1997) put forth the fundamental goals of SEL as follows: to (a) increase academic achievement, (b) decrease the incidence of problem behaviors, and (c) improve the quality of the relationships surrounding each child. Five interrelated sets of cognitive, affective, and behavioral competencies define SEL:

- Self-Awareness – The ability to recognize one's own emotions and values, to accurately assess weaknesses and strengths, and to possess a well-grounded sense of self-efficacy and optimism
- Responsible Decision Making – The ability to regulate emotions, thoughts, and behaviors in diverse situations, including the ability to manage stress, control impulses, and set and achieve goals
- Self-Management – The ability to adopt the perspective of those with different backgrounds, understanding social and cultural norms, and recognizing available resources and supports
- Relationships Skills – The ability to establish positive relationships with different kinds of people, communicating clearly, listening actively, cooperative, resisting inappropriate peer pressure, negotiating conflict, and seeking help when necessary
- Social Awareness – The capacity to make choices based on realistic evaluations of consequences, well-being, ethics, safety, and social norms (Elias et al., 1997, p.30; Osher et al., 2016, p. 646)

In their meta-analysis review, Durlak, Weissberg, Dymnicki, Taylor and Schellinger (2011) identified these core competencies indicating that students engaged in SEL programs and interventions improved their social and emotional skills with an impact on the five interrelated sets of cognitive, affective, and behavioral competencies. Figure 1 presents a conceptual framework of (a) five interrelated domains; (b) short and long-term student outcomes; (c) schoolwide strategies to enhance SEL with schools and families; and (d) district, state, and federal policies for SEL implication.

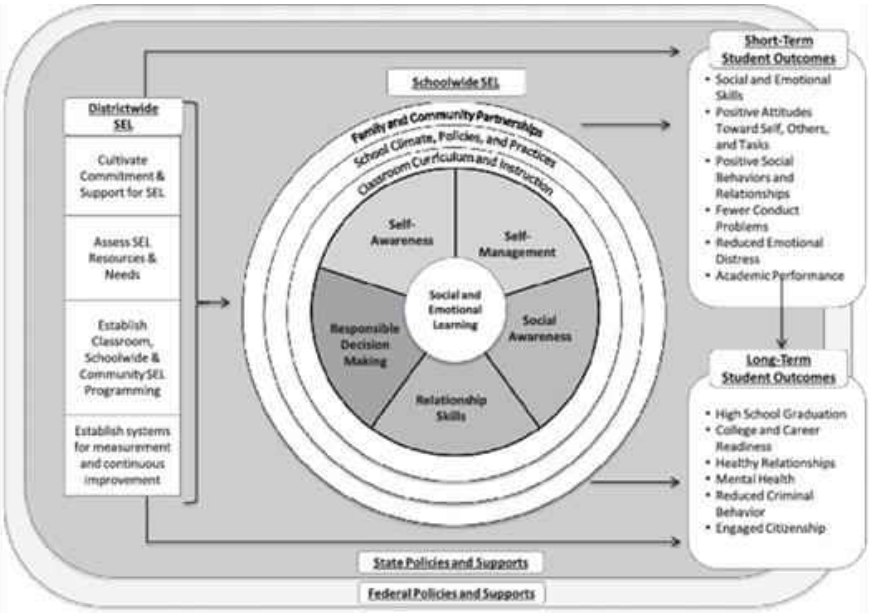


Figure 1. A Conceptual Model of Systemic Social and Emotional Learning (SEL) in an Educational Setting

Source. Handbook of Social and Emotional Learning: Research and Practice. (Weissberg et al., 2015, p. 7)

Note. Highlights are (a) five interrelated domains of cognitive, affective, and behavioral competencies that provide a foundation to navigate school and life successfully; (b) short- and long-term behavioral outcomes; (c) coordinated classroom, school, family, and community strategies to implement SEL; and (4) district, state, and federal policies supporting SEL.

Current Practice of Social and Emotional Learning (SEL)

Over the past 20 years, SEL programs and intervention have evolved (Weissberg et al., 2015). According to CASEL (2015), SEL is implemented in schools in many different ways: as a structured curriculum with lessons devoted to specific times and locations within the school day, as a schoolwide positive behavior intervention system (SW-PBIS) whereby SEL principles are embedded into the school culture, and through after-school and out-of-school assignments involving service learning and community involvement opportunities (Osher et al., 2016).

Researchers from the Center on Great Teachers and Leaders indicated 10 instructional strategies for teachers to use that promote SEL (Dusenbury et al., 2015). These current practices include (a) student-centered-discipline, (b) teacher language, (c) responsibility and choice, (d) warmth and support, (e) cooperative learning, (f) classroom discussions, (g) self-reflection and self-assessment, (h) balanced instruction, (i) academic press and expectations, and (j) competence building (Yoder, 2014). Figure 2 displays the relationship between teacher sel skills and the SEL teaching practices.

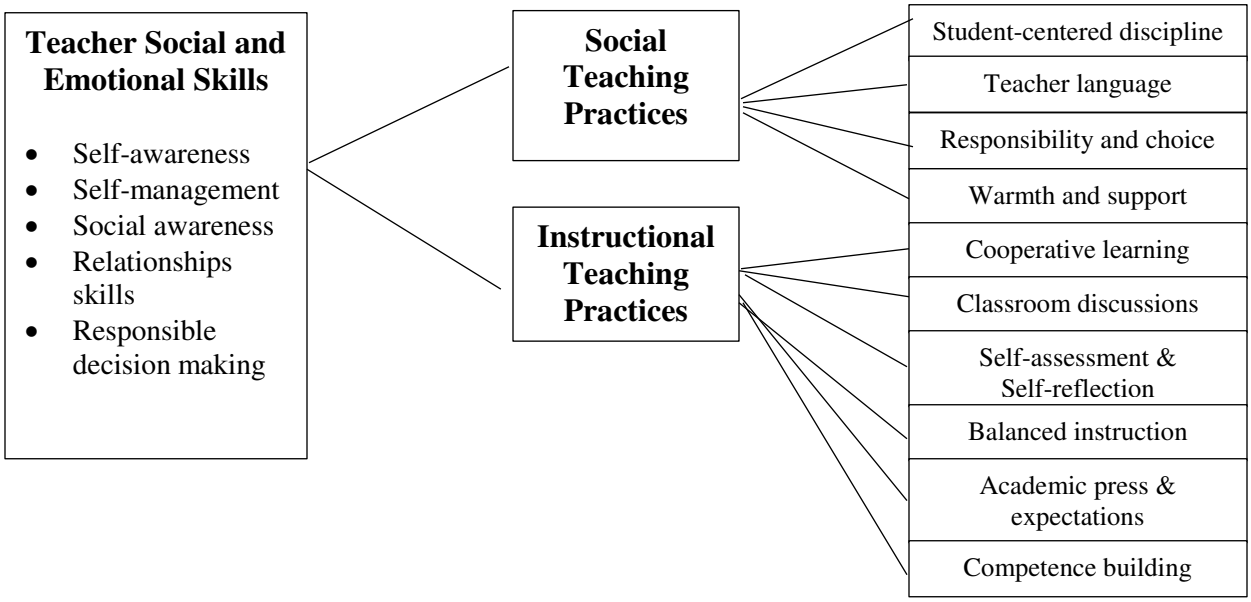


Figure 2. Relationship Between Teacher Social and Emotional Learning (SEL) Skills and SEL Teaching Practices

Source. Adapted from *Self-assessing Social and Emotional Instruction and Competencies: A Tool for Teachers* by N. Yoder, 2014. Retrieved from http://www.eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED553369

Practical Significance of Research

Concerns about the social behavior of students with social skills deficits, including students with disabilities, have led to major changes in U.S. federal education policies. Table 3 lists federal policies by Congress and the Department of Education on teacher preparation and accountability regulations in ESSA that play a key role in social and emotional learning.

Table 3

Social and Emotional Learning (SEL) in Every Student Succeeds Act (ESSA)

Regulation	Definition
Title IV, specific recommendations for "activities to support safe and healthy students	• Fostering "safe, healthy, supportive, and drug free environments that support student academic achievement," • Helping to prevent bullying and harassment, improving "instructional practices for developing relationship-building skills, such as effective communication," • Providing "mentoring and school counseling to all students," • Implementation of schoolwide positive behavioral interventions and supports
Inclusion of "specialized instructional support personnel" in developing state and district school improvement plans	• Identifying and supporting students most at risk of school failure • Addressing school climate and school safety • Supporting the mental and behavioral health of students
The School Improvement Program (SIG)	• ESSA replaces the requirements of the former No Child Left Behind law and allows more leeway to states and school districts in creating their school improvement plans, which can include social and emotional growth as part of a school's improvement strategies
A new evidence-based research and innovation program called Education Innovation and Research	• Funding stream to support the development and scale up of evidence-based practices that encourage innovations in policy and practice

Source. The Council of Chief State School Officers (CCSSO) and the Aspen Institute 2016 framework showing states how to use ESSA to improve equity in opportunities and outcomes. Addressing students' SEL was one of the eight recommended priorities. Retrieved from https://casel.org/federal-policy-and-legislation/

Scholarly Significance of Research

The Institute for Education Science's What Works Clearinghouse (WWC) has indicated three studies as having moderate to strong empirical evidence to build and foster social and emotional learning (Ferentino, 1992; Guglielmo & Tryon, 2001; LeBlanc & Matson, 1995). All three of these studies meet standards without reservations. Together, they included 135 children with disabilities in early education settings in the United States (What Works Clearinghouse, 2013). Table 4 shows a summary of the researcher's reported findings.

Table 4

Reported Findings for Social-emotional Development and Behavior Domain

Researcher	Findings
Ferentino (1991)	• 12 preschool special education classrooms received the SST program "My Friends and Me" curriculum • The results assessed for socio-emotional development and behavior domains were significant; cognition outcomes were not significant • According to WWC criteria, this study shows a statistically significant positive effect for social-emotional development and behavior
Guglielmo and Tryon (2001)	• Nine integrated preschool classrooms received SST using "Taking Part: Introducing Social Skills to Children" program and reinforcement of behavior training "sharing" and "being in a group" • According to WWC criteria, this study shows a statistically significant positive effect for social-emotional development and behavior
LeBlanc and Matson (1995)	• The study examined six special education preschool classrooms on the frequency of "appropriate" and inappropriate" social behaviors assessed through direct observation of children during structured play. • The findings for social-emotional development outcomes indicted indeterminate effects for this WWC report

Source. Institute of Education Sciences (IES) What Works Clearinghouse (WWC) Summary of Evidence for Social Skills Training Retrieved from https://ies.ed.gov/ncee/wwc/Intervention/763

Statement of the Problem

Direct eye contact and peer social interactions are essential behaviors that allow students to respond to social cues and have social and emotional competence. Without such behaviors, students may endure unfavorable, long-term academic and behavior outcomes (Carbone, O'Brien, Sweeney-Kerwin, & Albert, 2013). Teaching these discrete skills has proven challenging for practitioners working with students with ASD and EBD (Rollins, 2016).

Purpose of the Study

The purpose of this study was to examine the effectiveness of gameplay activities using a structured social skills program to increase both eye contact responses and the number of verbal responses during peer relationships for students with ASD and comorbid EBD in a clinical setting.

Research Questions

This study was guided by the following five research questions:

1. To what extent does the implementation of gameplay activities using a structured social skills program increase the frequency of eye contact for peers with comorbid disabilities, predominantly ASD and EBD, in a small group setting, as measured using partial-interval recording?
2. To what extent does the implementation of gameplay activities using a structured social skills program increase the number of verbally reciprocated responses during structured conversation for students with comorbid disabilities, predominantly ASD and EBD, as measured using partial interval recording in a small group setting?

3. To what extent does the implementation of gameplay activities using a structured social skills program increase the number of social engagements during structured conversation for students with comorbid disabilities, predominantly ASD and EBD, as measured using partial interval recording in a small group setting?
4. To what extent will increased eye contact with peers and the number of words per response during structured conversation be maintained in a one-to-one setting for students with comorbid disabilities, predominantly ASD and EBD, as measured using partial-interval recording?
5. What are the perceptions of students, parents, and behavior analysts regarding the implementation of gameplay skills increasing eye contact and communication for students with comorbid disabilities, predominantly ASD and EBD, as measured using the Social Skills Improvement System -Rating Scale (SSIS-RS)?

Methodology

This study used a multiple baseline across participants design. Four target behaviors were selected for six participants in the same setting. The multiple baseline across participants was used to investigate the effects of introducing gaming activities to teach children with comorbid disabilities and EBD to increase their eye contact, verbal reciprocity, social interactions, and nonverbal turn-taking skills.

In this design, participants began dyad baseline sessions (A) followed by two treatment phases (B) and (C) ending with a maintenance phase (D). Treatment Phase B consisted of teaching participants to use activities in the Communication Unit of the Sanford Harmony program. The Communication Unit allowed students to participate in observational and

experiential exercises to increase their eye contact and verbal reciprocity. Treatment Phase C consisted of teaching participants to use activities in the Peer Relationships Unit of the Sanford Harmony program. The Peer Relationships Unit promoted positive social interactions and nonverbal turn-taking in a dyad peer setting. Through their participation in the paired group activities, participants learned to increase their word count in conversation dialogue with their peers. The Maintenance Phase D indicated whether each participant demonstrated the acquired skills over time with reinforcement below the level to which the social skills were taught during the intervention.

During baseline and following the treatment phase, participants, parents, and behavior analysts completed the Social Skills Improvement System-Rating Scale (SSIS-RS) to further examine how the results of implementing the Sanford Harmony program contributed to increasing eye contact and communication skills for adolescents with ASD and comorbid EBD. According to Gresham, Cook, Crews, and Kern (2004); Kazdin (1977), and Wolf (1978), the SSIS-RS can be used to determine (a) the social significance of the goals of the Sanford Harmony program, (b) the social acceptability of the Sanford Harmony program procedures, and (c) the social importance of the effects of using the Sanford Harmony program to increase social skills

Definition of Terms

Acquisition Deficits. Unfamiliar or unknown social skills in a student's repertoire.

Autism spectrum disorder (ASD). A biological disorder of the central nervous system (CNS) of unknown cause (Tonge et al., 1994). According to the Individuals with Disabilities Education Act (IDEA) autism spectrum disorders (ASD) is defined as follows:

(i) Autism means a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age 3, that adversely affects a child's educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences. The term does not apply if a child's educational performance is adversely affected primarily because the child has an emotional disturbance, as defined in paragraph (b)(4) of this section.
(ii) A child who manifests the characteristics of "autism" after age 3 could be diagnosed as having "autism" if the criteria in paragraph (c)(1)(i) of this section are satisfied (Sec 300.8 (c)(1)(i)(ii).

Emotional and behavioral disorder (EBD). A disorder characterized by an inability to establish or maintain prosocial interpersonal relationships with peers and teachers. The Individuals with Disabilities Education Act (IDEA) defines emotional disturbance (ED) as follows:

> …a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance:
>
> a) An inability to learn that cannot be explained by intellectual, sensory, or health factors.
> b) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.
> c) Inappropriate types of behavior or feelings under normal circumstances.
> d) A general pervasive mood of unhappiness or depression.
> e) A tendency to develop physical symptoms or fears associated with personal or school problems (Sec 300.8 (c)(4)(i)(ii).

Emotional competence. Having the knowledge to modify emotions to particular settings and populations.

Performance deficits. Known social skills that students do not perform fluently.

Social and Emotional Learning (SEL).

> the process through which children and adults acquire and effectively apply the knowledge, attitudes, and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive

relationships, and make responsible decisions. (Collaborative for Academic, Social and Emotional Learning (CASEL) Retrieved from https://casel.org/what-is-sel/

Relationship Skills. The ability to establish positive relationships with different kinds of people, communicating clearly, listening actively, cooperative, resisting inappropriate peer pressure, negotiating conflict, and seeking help when necessary.

Responsible decision making. The ability to regulate emotions, thoughts, and behaviors in diverse situations, including the ability to manage stress, control impulses, and set and achieve goals.

Sanford Harmony Program. A program designed to promote SEL and cognitive skills students need to improve peer interactions and develop social competence. Sanford Harmony created two methods of instruction to teach positive peer relationships for inclusive classroom settings: (a) Meet Up, which incorporates relationship-building activities that allow students to learn and practice key SEL and social-cognitive skills; (b) Buddy Up, integrates everyday practices that provide students with continual opportunities for peer interactions and participation in dialogue and decision-making about the classroom environment and current issues. (Retrieved from https://sanfordharmony.org/why-harmony/)

Self-awareness. The ability to recognize one's own emotions and values, to accurately assess weaknesses and strengths, and to possess a well-grounded sense of self-efficacy and optimism.

Self-management. The ability to adopt the perspective of those with different backgrounds, understanding social and cultural norms, and recognizing available resources and supports.

Social awareness. The capacity to make choices based on realistic evaluations of consequences, well-being, ethics, safety, and social norms.

Social competence. The ability to establish positive relationships and to maintain those relationships using a variety of social tasks (e.g., asking to join a game or expressing disagreement without being disagreeable).

CHAPTER 2
REVIEW OF LITERATURE

Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder. Children with ASD exhibit significant deficits in social skills (DiGennaro-Reed et al., 2011). Emotional and behavioral disorder is a mental health disorder. Characteristics of EBD include externalized behaviors (e.g., aggression) and internalized behaviors (e.g., depression). Both of the disorders may contribute to long-term social deficiencies (Clinton, 2016).

The challenges of educating children with emotional and behavioral disorders (EBD) have been documented throughout U.S. history (Berkowitz & Rothman, 1967; Brill, 1939; Howe, 1829; Kauffman & Landrum, 2006; Kornberg, 1955; Lewis, 2016; Rush, 1812; Winzer, 1993; Yell, Rogers, & Rogers, 1998) . Gresham and Elliott (2014) have suggested that children with EBD present significant challenges for schools, teachers, parents, and peers. Children with EBD exhibit a range of difficulties including internalizing (e.g., depression, anxiety, social withdrawal) and externalizing (e.g., acting out, non-compliance, aggression) problems (Kern et al., 2015). These difficulties can lead to more challenging outcomes, both short- and long-term.

Children with ASD also exhibit a range of behaviors that may interfere with education and positive interactions, including social impairments such as inadequate eye contact and deficits in socialization (Jeffries, Crosland, & Miltenberger, 2016; Laushey & Heflin, 2000). Thus, social skills training is an essential component of intervention for children with autism. Though there exists a plethora of research on both ASD and EBD individually, there is limited published research on ASD in conjunction with comorbid EBD (Clinton, 2016). This gap in

research identifying the comorbidity of ASD and EBD in children "results in unreliable, invalid diagnostic practices, as well as ineffective instructional programming" (Clinton, 2016, p. 38).

Statement of the Problem

To close this knowledge gap, educators need instructional programs and interventions to improve deficits in social communication and behavior patterns. Eye contact and communication with peers are essential behaviors that allow students to respond to social cues and have social and emotional competence. Without such behaviors, students may endure unfavorable, long-term academic and behavior outcomes (Carbone et al., 2013). Teaching these discrete skills has proven challenging for practitioners working with students with ASD and EBD (Rollins, 2016). Thus, evidence-based practices associated with academic, functional, and social skill development for students with ASD and comorbid EBD should be implemented by educators with extensive training.

Search Strategy and Inclusion Criteria

The Educational Resource Information Center (ERIC) databases (EBSCO), Web of Science, PSYCInfo, and ProQuest Education Journals were searched. Sets of key words with Boolean "AND" logic including: autism/autism spectrum disorder/ASD "AND" emotional disturbance/emotional and behavioral disorder/EBD "AND" gameplay/peer-related interventions "AND" eye contact/eye gaze "AND" communications/peer-relationships. Studies were included if they were (a) published in a peer-reviewed journal, (b) original work of author, and (c) published between 2007 and 2017. This date range was selected to ensure the review of current literature; however, seminal research studies prior to 2007 were also included in the search.

Interventions Increasing Social-Communicative Behaviors

The simultaneous existence of two or more distinct medical disorders in the same person was termed "comorbidity" by Alvan Feinstein (1970). Emotional and behavior disorder (EBD) in children with ASD have limited research on their occurrence. Comorbid comparisons are considered important when examining factors associated with EBD, ASD, and children with language impairments (Charman, Ricketts, Dockrell, Lindsay, & Palikara, 2015). Students with ASD and comorbid EBD often exhibit language impairments (Park, Yelland, Taffe, & Gray, 2012a), challenging behaviors (Herring et al., 2006), and inadequate adaptive behavior skills (Venter, Lord, & Schopler, 1992). Social impairments (i.e., poor communication skills) are often associated with behavior challenges (Matson & Rivet, 2008).

Social-communicative behavioral interventions examine whether improved communication skills decrease challenging behaviors in students with ASD and comorbid EBD (Park, Yelland, Taffe, & Gray, 2012b. Table 5 shows current research interventions increasing social-communicative behaviors, focusing on the populations, interventions, comparisons, and the outcomes of current research studies.

Table 5

Interventions Increasing Social-communicative Behaviors

Researchers	Population	Intervention	Comparison	Outcome
Charman et al., 2015	Children, aged 5-10-years old with Language impairment (LI) and ASD	Strengths and Difficulties Questionnaire (SDQ)	Compared levels of EBD in children with LI and children with ASD	Few associations found between EBD and children with LI and ASD
Georgiades et al. (2011)	Preschool children with EBD & ASD	Correlations between the component scores and children's intellectual abilities	Compared features of EBD with children with ASD	Found EBD characteristics as part of characteristics of children with ASD
Park et al., (2012a)	Children, aged 3-5-years old with ASD, DD, & children non-disabled	Vineland Adaptive Behavior Scales and the Developmental Behavior Checklist.	Compared EBD & communication skills in children with ASD, DD, & children nondisabled	Found communication skills linked to functional and behavioral outcomes in autism than structural language skills

Charman et al. (2015) suggested that a heightened rate of emotional and behavioral problems has been found in many children with language impairments (LI) and ASD; and that previous studies had shown high levels of EBD in samples of children with communication disorders (CD) and children with ASD. In a cross-disorder comparative analysis, comorbidity was found to be associated with children with EBD, CD, and children with ASD (Charman et al.). These researchers also explored whether similar, or different, preventative or intervention

strategies would be required to ameliorate the effects of behavioral challenges. Researchers examined this phenomenon due to a lack of research supporting the comparison of these disability groups. Charman et al. measured teacher-reported emotional and behavioral problems using the European Strengths and Difficulties Questionnaire (SDQ). The SDQ had been used successfully in studies in the United Kingdom (UK) to index EBD in children. The sample included five to 13-year-old children with language impairments (N = 62) and children with ASD (N = 42) in special education classrooms. Participants were recruited from 74 mainstream primary and secondary schools in southeast England. Researchers investigated the level of EBD in a regular school with children with LI and children with ASD.

Results of both sample groups showed increased levels of emotional, conduct, and hyperactivity problems. The participants with LI and ASD exhibited peer problems (which were higher in the ASD group) and deficits in prosocial behaviors (which were higher in the LI group). Findings confirmed previous research that there are high levels of EBD in children with LI and children with ASD (Charman et al., 2015; Leyfer et al., 2006; Lindsay & Dockrell, 2012; Simonoff et al., 2008). However, data indicated that children with ASD with language deficiencies showed higher problem behaviors (Charman et al., 2015). Based on the findings, Charman et al. concluded that children with LI and children with ASD exhibited characteristics of EBD. To decrease the levels of emotional and behavior challenges, Charman et al. concluded that ongoing progress monitoring and early intervention may benefit the children.

Georgiades et al. (2011) examined the phenotypic comorbidity of EBD and ASD in preschool children. Specifically, the researchers identified the associations of core diagnostic ASD features and EBD characteristics in 335 preschool children in a Canadian longitudinal

study for 39.8 months. Data were analyzed from various behavior scales: (a) Autism Diagnosis Interview-Revised; (b) Child Behavior Checklist; (c) Repetitive Behavior Scale-Revised; (d) Vineland Adaptive Behavior Scales, Second Edition; (e) Merrill-Palmer-Revised Scales of Development; (f) Preschool Language Scale, 4th Edition; and (g) Parenting Stress Index-Short Form. The study's results indicated that the ASD phenotype in all participants was modeled by two components: Component I – Emotional Behavioral Repetitive Problems (EBRP), and Component II – Social Communication Deficits (SCD). Data analysis revealed the EBRP component was not significantly correlated with the participants' intellectual, adaptive functions or language skills (Georgiades et al., 2011). However, the SCD component was adversely related to intellectual, adaptive functioning and language skills (Georgiades et al., 2011).

The findings of this study suggested that diagnosis in preschool children with ASD should avoid using EBD as a comorbid symptom. Nevertheless, Georgiades and others have reported difficulty in determining whether EBD is a valid comorbid identification of the ASD phenotype. In summary, the researchers demonstrated the phenotypic overlap between EBD characteristics in children with ASD. Also, this study added to previous findings, indicating the need for assessing EBD features in children with ASD (Georgiades et al., 2011; Koegel & Koegel, 2006).

Park et al. (2012a) investigated the correlation between language skills, adaptive behavior, and characteristics of EBD in preschool children (n = 27) with ASD. These researchers analyzed comparison groups of children with developmental delay without ASD, children with ASD, and children without disabilities. Participants' cognitive skills were measured using two rating scales: the Vineland Adaptive Behavior Scales and the Developmental Behavior Checklist,

analyzing receptive and expressive communication skills. For participants with ASD, receptive and expressive communication skills correlated positively with adaptive behavior (i.e., daily living and social skills). No correlation was found with EBD characteristics (i.e., challenging behavior or anxiety). For participants with developmental delay without ASD and children with no disabilities, no correlation was found between receptive and expressive communication skills or adaptive behavior (Park et al., 2012a).

Findings suggested that interventions and programs designed to improve receptive and expressive communication skills of children with ASD would similarly increase adaptive behavior (i.e., daily living and social skills) and decrease challenging behaviors (Park et al., 2012a). The researchers concluded their study, expressing the need to expand on previous research (Paul & Fahim, 2014) and to continue to conduct current research on functional communication skills for children with ASD, thereby, improving the functional receptive and expressive communication outcomes for children with ASD (Park et al., 2012a).

Behavioral Interventions Increasing Eye Contact

During early childhood development, eye contact, eye gaze behavior or eye-to-face gaze (Carbone et al., 2013; Mirenda, Donnellan, & Yoder, 1983) have been designated significant social functions even before vocalization for infants and toddlers occurs (Carbone et al., 2013; Stern, 1985). Also in early childhood development, eye contact exemplifies social communicative interactions (Carbone et al., 2013; Lee, Eskritt, Symons, & Muir, 1998; Tiegerman-Farber & Primavera, 1984). As children develop with age, eye contact correlates to dyadic facial recognition of others and is stimulated by language acquisition (Arnold, Semple,

Beale, & Fletcher-Flinn, 2000; Carbone et al., 2013; Mirenda et al., 1983; Podrouzek & Furrow, 1988).

Early indicators of ASD include noticeable deficits in social-communicative behaviors such as social isolation, lack of pointing and sharing gestures, inadequate eye contact, the inability to respond to one's own name (Maestro et al., 2005), and the lack of social, emotional, and facial reciprocity (Lord et al., 2000). Failure to demonstrate these social prompts present significant aversive behavioral and educational outcomes for children with ASD (Carbone et al., 2013). Previous researchers have analyzed poor eye contact associated with deficiencies in pragmatic skill development and instructional comprehension (Carbone et al., 2013; Kleinke, 1986; Lovaas, 1977).

Direct eye contact with an individual, termed mutual gaze, is considered a significant component of interpersonal response (Nuske, Vivanti, & Dissanayake, 2015). "Dynamic facial cues, such as gaze direction and facial expression, are integrated with body gestures and prosody to allow humans and other higher primates to interpret the attentional focus and internal state of others during social interactions" (Graham, 2016, p. 553). The results of previous studies indicated direct eye contact affects perception, cognition and attention (Senju & Johnson, 2009). Also, direct eye contact holds the attention of others and makes it harder for both individuals to disengage from one another (Senju, Hasegawa, & Tojo, 2005).

Increasing eye contact for children with ASD involves teaching them to follow others' lines of sight, allowing them to recognize and interpret communication cues (Leekam, López, & Moore, 2000). Acquiring the ability to follow one's line of sight improves joint attention behavior (Leekam & Hunnisett, 1998). Although children with ASD have difficulty interpreting

social cues (Robins, Dautenhahn, Boekhorst, & Billard, 2005), presenting them with interventions to target nonverbal social cues and recognize facial expressions are important therapeutic targets (Clark, Winkielman, & McIntosh, 2008; Yun, Choi, Park, Bong, & Yoo, 2017). Table 6 lists current research interventions increasing eye contact or eye gaze.

Table 6

Behavioral Interventions Increasing Eye Contact

Researchers	Population	Intervention	Comparison	Outcome
Carbone et al., (2013)	Male 3-year old with ASD	Discrete Trial Training (DDT)	Not applicable	Increased eye contact while teaching social skills
Chevallier, Huguet, Happé, George, & Conty (2013)	Male adolescents with & without ASD	*Stroop-Eyes"* paradigm	Children with ASD and children without ASD	Stroop increased with social distracters with children nondisabled
Davies, Sigman, Sepeta, Bookheimer, & Dapretto (2011)	Children with & without ASD	Functional magnetic resonance imaging (FMRI)	Children with ASD and children without ASD	Both groups increased direct and averted eye gaze
Jeffries et al., (2016)	Boys with ASD	*Look in My Eyes Steam Train iPad* app & differential reinforcement	Not applicable	The iPad app did not increase eye contact; differential reinforcement effective
Lee et al., (1998)	Preschoolers nondisabled	Five experiments of eye gaze for mind reading	Children 2-year old, 3-year old & 4-year old	2-year olds use eye gaze only to infer
Nuske et al., (2015)	Preschoolers with & without ASD	Eye-tracking video technology	Preschoolers with & without ASD	Preschoolers with ASD can respond to mutual gaze
Rollins, (2016)	Birth-toddlers with & without ASD	Pathways to Early Autism Intervention	Birth- toddlers with and without ASD	Social engagement increased in typical children

Researchers	Population	Intervention	Comparison	Outcome
Russo-Ponsaran, Evans-Smith, Johnson, Russo, & McKown, (2016)	Adolescents with & without ASD	Facial emotion tool (MiX Humintell)	Adolescents with & without ASD	Improved self-expression of facial emotion
Senju, Kikuchi, Hasegawa, Tojo, & Osanai, (2008)	Children with & without ASD	Two experiments examined eye stimuli & gaze	Children with & without ASD	Children with ASD indicate difficulty detecting direct eye gaze
Yun et al., (2017)	Children with ASD	Robot system-behavioral intervention	Control group-human facilitated behavioral intervention	Both groups increased eye contact and facial emotion recognition

Carbone et al. (2013) evaluated a teaching procedure derived from an analysis of the motivational and discriminative variables to increase eye contact for a three-year old boy with ASD in a behavioral clinic. A specific criterion for duration of eye contact was not established in order to encourage a naturalistic environmental teaching procedure. A correct response was defined as a one-word vocal mand that preceded an eye contact response. The dependent variable was the percentage of mands with eye contact in three-hour sessions using an AB experimental design (Carbone et al., 2013). Extinction and differential reinforcement conditions were implemented during mand training. Results showed the mean percentage of mands related to eye contact during the extinction and differential reinforcement sessions was above 90%. Findings

indicated that the intervention may be effective in increasing eye contact for many children with autism. Findings also extended the literature on the topic of teaching social pragmatic skills to increase eye contact responses through extinction for reinforced mands already in a child's repertoire(Carbone et al., 2013; Grow, Kelley, Roane, & Shillingsburg, 2008; Harding, Wacker, Berg, Rick, & Lee, 2004; Lerman & Iwata, 1996; Morgan & Lee, 1996).. In sum, the researchers found this extension to previous literature to be an important aspect of teaching social pragmatic skills to children with ASD (Carbone et al., 2013).

Chevallier, Huguet, Happé, George, and Conty (2013) investigated social attention deficits in adolescents with ASD (n = 24) and a control group (n = 24), aged 10-16-years old, using an adapted Stroop task. Two levels of social attention were observed using the "Stroop interference effect": "(1) the overall attention to social (i.e., eyes) and nonsocial categories (i.e., flowers, and (2) the relative attention to opened eyes with direct gaze and closed eyes" (Chevallier et al., 2013, p. 1644). Data were analyzed using a mixed three-way ANOVA with type of string (incongruent, neutral), distracter type (opened eyes, closed eyes, and flowers), and participant group (ASD) control group (Chevallier et al., 2013). Results showed that the Stroop interference effect increased with social versus nonsocial distracters in the control group. The opposite pattern occurred in children with ASD. Within social stimuli, the direct gaze showed no difference between the groups. Findings suggested that the Stroop interference effect was stronger under naturally occurring eye contact than under closed eyes. Also, no significant difference was found between the ASD and control groups (Chevallier et al., 2013). In summary, the researchers extended validity to previous research (Conty, Gimmig, Belletier, George, & Huguet, 2010), stating there was a stronger Stroop interference effect under naturally occurring

eye contact than with closed eyes (Chevallier et al., 2013). In addition, the authors found that strong social stimuli (i.e., eye contact) remained an important social skill for children with ASD.

Davies, Sigman, Sepeta, Bookheimer, and Dapretto (2011) evaluated the eye gaze of adolescents, ages 8-17, with ASD (n = 16) and adolescents without disabilities (n = 16). The behavioral and functional magnetic resonance imaging (FMRI) eye tracking system was used to illustrate students' emotional expressions as either direct or averted eye gaze. Photographs of emotionally expressive faces (i.e., anger, fear, happiness, and neutral) assessed visual fixation at the eye level as participants wore specially designed googles (Davies et al., 2011). Data analysis for comparison evaluation was conducted using within and between group random effects analyses using one and two sample *t*-tests (Davies et al., 2011). Results for the within-group effect for participants with ASD indicated they viewed negative expressions in the same way as did the participants without disabilities, with direct gazes. The between-group effects showed greater activity in brain responses for participants without disabilities than did the participants with ASD for direct versus averted eye gaze (Davies et al., 2011). The findings of the study suggested eye gaze in signaling communication modifies processing of the emotional significance of direct gaze in children with ASD (Davies et al., 2011). The findings corresponded with previous data addressing decreased frontal brain activity, indicating that deficits in social comprehension may lead to decreased eye tracking and direct gaze in children with ASD (Davies et al., 2011; Just, Cherkassky, Keller, Kana, & Minshew, 2007; Just, Cherkassky, Keller, & Minshew, 2004). In sum, the researchers reported the importance of examining eye gaze sensitivity in children with ASD as appropriate social cues that strengthen the overall development of this population.

Jeffries et al. (2016) assessed the effectiveness of the *Look in My Eyes Steam Train* tablet application and differential reinforcement to increase eye contact in three boys (three to five years old) with autism in a behavioral clinic. A nonconcurrent multiple baseline design across participants was used to test the effects of the tablet application and differential reinforcement on increasing eye contact. Differential reinforcement consisted of 10-minute training sessions (range, five to 15 trials) in a therapy room and a playroom.

Results showed the tablet application did not increase eye contact for any of the participants. However, differential reinforcement increased eye contact substantially for all three children across all assessment conditions (Jeffries et al., 2016). Possible limitations of this evaluation were due to the number of trials during the differential reinforcement condition. Also, the trials to respond to the application were not equal; differential reinforcement was not assessed in the absence of prior training with the tablet; and the iPad application reinforced match-to-sample responses and not actual eye contact (Jeffries et al., 2016).

In a seminal study, Lee et al. (1998) analyzed data from five experiments that studied children's (two- to six-year-olds) use of triadic eye gaze information for "mind reading." The experimental procedures tested children's ability to determine the direction of a person's eye gaze in a picture format (Lee et al., 1998). Probing questions included a "Want, Where, and a What" question condition. Experiment 1 examined children's (n = 94) performance on randomly assigned pictures of a boy named Larry and answered questions about the direction of his eye gaze. Statistical analysis of Experiment 1 indicated the participating three-year-olds performed better on the What and Where questions than the Want questions. Experiment 2 studied children (n = 157) and asked the same questions about Larry's eye gaze in pictures. However, Experiment

2 included contextual background information about Larry in the pictures. Statistical analysis showed three-year-old children failed to answer the Want questions; however, the four-year-olds successfully inferred Larry's desires in the pictures. The purpose of Experiment 3 was to examine participants identifying the direction of a nonverbal cue (pointing, head direction, or eye-gaze) and to infer a picture of Mary's desires from this cue (Lee et al., 1998). Statistical analysis indicated three-year-olds used nonverbal directional cues to infer another's desires while observing eye-gaze. However, the three-year-olds failed the Want questions for eye-gaze cues.

Experiment 4 observed two- and three-year-old children watch a television program in which a clown, "Giggles," performed various nonverbal cues (pointing, head direction, and eye gaze). The children participated in three conditions:

> All Cues condition (pointing, head, and eyes all directed at the same object), a Head and Eyes condition (head and eyes directed at the same object without pointing), and an Eyes Only condition (eyes fixation at an object with head facing the children and no pointing). (Lee et al., 1998, p. 532)

Statistical analysis indicated the three-year-olds more frequently chose to use the pointing cue and eye gaze over the head direction for inferring another's desires. Experiment 5 studied two- and three-year-olds (n = 12) with a similar video presentation as Experiment 4 but with six eyes only trials without feedback and three additional eyes only trials with feedback. Analysis showed three-year-olds were able to use eye gaze cues alone to infer another's desire (Lee et al., 1998). Overall, the researchers concluded that their findings supported previous research predictions that early development of "mind-reading" begins around three years of age (Baron-Cohen, 1994; Kang Lee et al., 1998; Wellman, 1990). They also suggested that although children can infer another's desire through the use of eye gaze, they also rely on nonverbal directional cues such as

pointing and head direction for desire inference (Baron-Cohen, 1994; Kang Lee et al., 1998; Wellman, 1990).

Nuske et al. (2015) tested the "gaze aversion hypothesis" that stated "people with ASD avoid mutual gaze because they experience it as hyper-arousing" (p. 3433). A total of 44 preschoolers (23 with ASD and 21 typically-developing) two to five years of age used a Tobii 120 binocular eye tracker and Tobii Studio software eye-tracking technology to measure visual attention and emotional arousal (i.e., pupil dilation). To test the hypothesis, two repeated measures ANOVAs and two Pearson correlation analyses were performed.

Results showed no evidence of aversion to mutual gaze in emotional arousal in preschool mixed-ability children with ASD (Nuske et al., 2015). Also, there was no evidence of physiological dysregulation in response to mutual gaze; and no evidence in pupil dilation. Findings indicated there was no correlation between children with ASD and hyper-arousal in response to mutual gaze as suggested in the gaze aversion hypothesis (Nuske et al., 2015). Possible limitations of the study were that the control group and ASD group were not matched based on cognition abilities; the sample size was small; and the study was lacking in measuring internalizing symptoms (Nuske et al., 2015).

Rollins (2016) examined the three phases of cognitive development: Phase 1, Sharing emotions; Phase 2, Sharing perceptions and pursuing goals; and Phase 3, Sharing attention and intention. These phases were then analyzed with typical children, ages ranging from birth to two years, for the interrelationships among early cognition, communicative intention, and word-learning strategies (Rollins, 2016). A comparative analysis was conducted with children with ASD to evaluate how this population can learn words and phrases but exhibit deficiencies with

social language (Rollins, 2016). A clinical case with one participant diagnosed with ASD was examined for this study. Baseline phases consisted of monitoring the participant's linguistic social approach. The social intervention phases were implemented using the *Pathways to Early Autism Intervention* (Texas Department of Assistive and Rehabilitative Services, 2012). Behavioral measures were coded for (a) social engagement, (b) verbal reciprocity, and (c) communicative intention using 10-minute recordings of the participants' and the clinician's interactions.

After data analysis, the authors found a positive slope for social engagement and verbal reciprocity, and eye-tracking increased from 11.4% to 41.4% (Rollins, 2016). The findings of the study indicated that the participants' increased social engagement, verbal reciprocity, and communicative intentions were "commensurate with the developmental trajectory of social communication in typical children" (Rollins, 2016, p. 213). In summary, the researchers suggested evidence-based practices grounded in a comprehensive theoretical framework receptive to the child's social-cognitive abilities should be the only method of investigation used with young children with ASD (Rollins, 2016).

Russo-Ponsaran, Evans-Smith, Johnson, Russo, and McKown (2016) investigated the MiX program as an intervention to improve the facial emotion recognition and expression for children and adolescents with ASD. The researchers also evaluated different measures of generalization including facial recognition and expression in the training program, during assessments, and in self-expression, as measured by children, parents, and teachers (Russo-Ponsaran et al., 2016). Participants (n = 25) were diagnosed with ASD, were verbal, exhibited deficits in facial emotion recognition, and were between eight and 15 years old. The study

included two comparable child-based measures: an active intervention group (AI) and a waitlist control group (WLC). Outcome measures consisted of direct assessment of facial emotion recognition, self-expression, generalization as measured with child-based emotion awareness, and third-party report of emotion awareness and social functioning (Russo-Ponsaran et al., 2016).

Statistical analyses were conducted to assess performance on outcome measures and to confirm group differences between outcome variables. After data analysis, the researchers found, using direct assessment outcome measures, that the AI group performed significantly better than the WLC group after training. Self-expression showed greater improvements for the AI group than the WLC group. Finally, the generalization for emotion awareness indicated a significant improvement for the AI group after training. Generalization for third party report of emotion awareness and social functioning indicated no statistical difference between the AI group or the WLC group. Findings demonstrated that "coach-assisted computerized facial emotion recognition and imitation training programs" (p. 33) may be optimal in improving self-expression, emotion awareness, and social functioning for children and adolescents with ASD (Russo-Ponsaran et al., 2016). The researchers also found that programs such as the MiX intervention may lead to more social relationships and fewer mental health issues for children with ASD (Russo-Ponsaran et al., 2016).

Senju, Kikuchi, Hasegawa, Tojo, and Osanai (2008) used a visual search paradigm in two experiments to examine eye stimuli and gaze in children with autism (n = 14) compared to children without disabilities (n = 27; Experiment 1). Experiment 2 implemented the experimental design and procedures with children with autism (n = 22) and children without disabilities (n =

30). Both experiments were conducted on PCs using Cedrus SuperLab Pro software. The experiment targeted four focus points: eye direction of target face, eye orientation, number of presented faces, and presence of the target (Senju et al., 2008). Experiment 1 investigated whether children with ASD exhibited the "stare-in-the-crowd" effect when real images of photo-modulated eye gaze were used as stimuli. Experiment 2 investigated the front-view of faces to determine whether full facial context would impede the "stare-in-the-crowd" effect in children with ASD (Senju et al., 2008). In Experiment 1, results showed both children with ASD and children without ASD images with direct eye gaze were detected faster than images with averted gaze (Senju et al., 2008). In Experiment 2, statistical analysis indicated both children with ASD and children without ASD detected eye gaze more efficiently than averted gaze, while observing the context of front-view faces (Senju et al., 2008). The findings of the study suggested "Children with autism have difficulty in integrating head and eye direction to detect direct gaze when the two cues conflict, which impedes the manifestation of the "stare-in -the-crowd" effect for laterally oriented faces" (Senju et al., 2008, p. 135). The authors further suggested that because direct eye gaze was present in both experimental groups, strategic rather than perceptual differences were more effective to process facial context on direct eye gaze, most notably for children with ASD (Senju et al., 2008).

Yun, Choi, Park, Bong, and Yoo (2017) designed a robot intervention system to increase eye contact and facial emotion recognition for children with comorbid ASD and EBD and a cohort group of four- to seven-year-old children (n = 15). Benefits of using a robotic intervention system included (a) well-designed instructional methods, (b) curricula, (c) friendly appearance, (d) special education programs, and (e) evidence-based practices (Yun et al., 2017). The robot

intervention system used the discrete trial teaching (DTT) protocol and applied the three-term contingency of the antecedent stimulus (Sa), acceptable response (Ra), and consequent stimulus (Sc), supported through a positive reinforcement approach (Yun et al., 2017). The interactions consisted of four modules: training element query, recognition for human activity, coping-mode selection, and follow-up action. The objective of this study was to measure the results from parent questionnaires, the Autism Diagnostic Observation Schedule (ADOS), and the frequency of eye contact as measured using partial interval recording (Yun et al., 2017). To recognize the human activity, three techniques were used: eye contact detector, object detector and tracker, and human classifier. Lastly, a social skills training program measured the facial emotion recognition tasks (Yun et al., 2017).

Results showed significant increases in both groups for play and significant decreases for aggressive behavioral and emotional symptoms. The frequency of eye contact across treatment sessions increased significantly for both groups compared to baseline. Additionally, the facial emotion recognition measures increased for both groups compared to baseline. The findings of the study indicated the robot system, and human-facilitated behavioral intervention had similar significant effects on eye contact and facial emotion recognition, suggesting that robots are useful mediators of social skills training for children with ASD (Yun et al., 2017). In sum, the researchers' findings were similar to those of previous robot studies, indicating significant increases in eye contact, motor imitation, and speech expression implementing robotic intervention systems (Bird, Leighton, Press, & Heyes, 2007; Kim et al., 2013; Yun et al., 2017).

Gameplay Skills/Activities Increasing Social-Interaction Skills

Autism is defined as a neurodevelopmental disorder that inhibits brain development and causes deficits in social and communication skills (Cankaya & Kuzu, 2010; Corbett, Qualls, eValencia, Fecteau, & Swain, 2014). Children with autism spectrum disorder (ASD) and comorbid emotional and behavioral disorder (EBD) may experience adverse consequences in their social interactions and peer relationships across the lifespan (Bock, 2007; Lynn, Carroll, Houghton, & Cobham, 2013). Children's peer relationships provide a social identity that confirms a child's developing self-image (Breeman et al., 2015; Gifford-Smith & Brownell, 2003). Social interactions and peer relationships can support one another (Breeman et al., 2015; De laet et al., 2014).

Functional independence skills are important components of social skills interventions for children with ASD (Cankaya & Kuzu, 2010). Functional skills include reciprocal social interactions, social-emotional competence, conversation skills, the use of non-verbal cues, and age-appropriate play behavior (Corbett et al., 2014). Children with ASD often have difficulty understanding other's feelings and the concept of "theory of mind" (Corbett et al., 2014). This deficiency heightens stress and anxiety in many children and adolescents with ASD (Corbett et al., 2014).

Role-playing and similar gameplay activities afford children with ASD the opportunity to improve their empathy and peer relationship skills (Dudzinska, Szymona, Pacian, & Kulik, 2015). According to Vygotsky (1962), learning is a social activity. Researchers have suggested playing games to improve the physical, cognitive, linguistic, emotional and social development in children with autism (Cankaya & Kuzu, 2010). Behavioral role-play scenarios with dyadic

interactions have been found to be successful interventions increasing the social competence of children and adolescence with ASD (Englund, Levy, Hyson, & Sroufe, 2000). Table 7 shows research interventions increasing social-interactions of peers engaged in gameplay activities.

Table 7

Gameplay Skills/Activities Increasing Social-interaction Skills

Researchers	Population	Intervention	Comparison	Outcome
Bock (2007)	Males aged 9-10-years old with Asperger syndrome	Social–behavioral learning strategy intervention (SODA)	Not applicable	Increased cooperative learning activities
Breeman et al., (2015)	Males, aged 5-13 years old with ASD, ADHD & EBD	The *Good Behavior Game* intervention	Teacher-child relationships and Peer relationships	No effect on teacher-child or peer relationships
Corbett et al. (2014)	Children, aged 7-18 years old with ASD	The *Sense Theatre* intervention	Children with ASD and children nondisabled	Improvement in facial recognition and theory of mind skills
Englund et al. (2000)	Children, aged 4-10 years old, nondisabled	Behavioral Rating Scales & concurrent validity measures	Rating scales and concurrent validity measures	Behavioral assessment a measure of competence
Friedrich et al. (2014)	Children with ASD	Brain computer game & Neurofeedback and biofeedback	Not applicable	Enhanced cognitive, emotional/behavioral functions
Laushey & Hefli (2000)	Males, aged 5-years old with ASD	Peer-buddy approach	Not applicable	Social interactions increased
Lee, Chou, & Feng, (2017)	Males, aged 6-years old with ASD	Art program intervention	Not applicable	Improvement in social communication
Lynn et al. (2013)	Children aged 8-12-years old with EBD and other disorders	*Emotional Intensity Scale for Children & Nominations for Peer Interactions Scale*	Emotional regulation and peer relationships of children with EBD and comorbidities	No effects were found for emotional regulation or peer relationships
Ratto, Turner-Brown, Rupp,	Young adults with ASD	The *Contextual Assessment of Social Skills* (CASS)	Adults with ASD & adults without ASD	No change in conversational skills for adults with ASD

Researchers	Population	Intervention	Comparison	Outcome
Mesibov, & Penn, (2011)				
Solomon, Zimmerman, Van Egeren, Huber, & Mahoney, (2014)	Children with ASD	The *Play and Language for Autistic Youngsters* (PLAY) Project Home Consultation model	Compared PLAY with usual community service	PLAY children improved in diagnostic categories. PLAY caregivers' stress did not increase

Bock (2007) investigated the effect of SODA training on the abilities of four children with ASD to participate in cooperative learning activities, play organized sport games, and visit with their peers during lunch. When using SODA, children learn to stop (S), observe (O), deliberate (D), and act (A). This two-step intervention incorporates (S, O, and D) into self-talk questions or statements to guide conversations. The final step (A) assists children in developing dialogue while participating in social activities (Bock, 2007). Participants included nine- and 10-year-old male students (n =4) diagnosed with ASD. Participants received social skills training through the Theory of Mind mind-reading intervention model designed by (Howlin, Baron-Cohen, Hadwin, & Howlin, 1999). A multiple baseline-across settings design was used to analyze SODA across three dependent variables: cooperative learning activities, recess, and lunch (Bock, 2007).

After data analysis, the researcher found increases in the percentages of time the participants spent in cooperative learning activities, playing organized sport games during recess, and visiting with peers during lunch with SODA implementation. The findings of the study suggested the results provided evidence that SODA training may lead to improved social-behavioral problem solving by children with ASD. In addition, the researchers suggested that the

participants learned how to understand the mental states of other persons during cooperative learning activities derived from the Theory of Mind mind-reading intervention model (Howlin et al., 1999). In summary, the authors expressed that "SODA may teach children with ASD who have learned how to understand the mental states of others the metacognitive process, or learning strategies, needed to facilitate their social communication and social problem solving" (Bock, 2007, p. 95).

Breeman et al. (2015) examined developmental links between positive and negative aspects of teacher-child and peer relationships and disobedience in a clinical setting of boys with psychiatric disorders. The objectives included determining (a) the nature of the developmental links between boys' disobedience and their classroom relationships, (b) whether developmental links between teacher-child and peer relationships indirectly impacted boys' disobedience, (c) whether the developmental links between boys' disobedience and classroom relationships differed as a function of boys' age, and (d) whether negative aspects of social relationships with teachers and peers affected these boys' behavioral development more than positive aspects (Breeman et al., 2015). Participants included teachers (n = 70) and boys (n = 340), mean age 10 years old, clinically diagnosed with psychiatric disabilities (i.e., ASD, ADHD, or EBD).

After data analysis using the Fitted in Mplus 6.12 (FIML) software, the researchers found no consistent impact of the teacher-child relationship on boys' behavioral development as an additive impact of conflict. Findings suggested that teachers were the classroom authorities who helped shape the peer interactional processes (Farmer et al., 2011), but that teachers' impact on peer relationships was less influential than the impact of children's disobedience (Breeman et al., 2015). Also, age was not reported as important for the relationships among peer relationships.

The authors suggested that for children with various psychiatric disabilities, developmental level had a greater impact on their social and behavioral functioning than age (Breeman et al., 2015). In addition, the authors suggested boys with psychiatric disabilities of similar age may differ socially and emotionally, thereby masking age effects (Breeman et al., 2015). The researchers indicated that teacher-child conflict had a greater impact on boys' disobedience than teacher-child closeness. In conclusion, the authors suggested stressors may induce negative emotions that may interfere with classroom participation and a child's peer relationships (Breeman et al., 2015).

Corbett et al. (2014) examined the strengths of the approaches relevant to theatre-based social engagement treatment. Three key components were analyzed for advancing, maintaining, and generalizing social interaction abilities in children and youth with ASD, which included (a) peer mediation, (b) active learning, and (c) implementation in supportive, natural contexts (Corbett et al., 2014). The study introduced SENSE Theatre, an innovative intervention, that combined trained peers who facilitate a performance-based theatrical approach delivered in a supportive, community-based environment (Corbett et al., 2014). The study included adolescent participants (n = 16) aged 8 to 17 years old who were observed within the treatment phase and participants (n = 12) who were observed in the research phase. The treatment was delivered over two weeks for 3½ hours per day in a summer camp. The dependent variables measured included neuropsychological, biological, and behavioral variables.

After data analysis using a pre-test, post-test design and paired samples t-tests, social perception in the form of memory for faces and memory for faces delay showed significant change post testing. Social functioning showed improvement on total social responsiveness and

social cognition. These results supported the findings that the SENSE Theatre intervention produced improvement in core areas of functioning for children with ASD. Also, increases in adaptive skills were reported for functional academics and self-direction that suggested the treatment had a positive impact beyond the targeted social communication skills. The researchers found the participants with ASD showed moderate improvement in face identification and theory of mind skills post intervention. In addition, participants demonstrated a reduction in stress and cortisol levels over time. The authors' findings suggested changes in social perception and adaptation to the social environment (Corbett et al., 2014).

Seminal research by Englund et al. (2000) developed a valid observational measure of adolescent social competence in the peer group. The researchers determined an important criterion was to evaluate the appropriateness for assessing social competence of adolescents to function effectively in the peer group. Participants (n = 40) contributed to a 10-year longitudinal study at a four-week long summer camp. The participants began the study as preschoolers and were approximately 15 years old after the study. Dependent measures included: peer competence in adolescence, peer competence in middle school, peer competence in preschool, mother-child relationships, Wechsler Intelligence Scale for Children, Revised (Wisc-R), and socioeconomic status of parents.

After data analysis, the researchers found that the rating of social competence in the revealed differences task was significantly correlated with the concurrent positive peer nominations, supporting the validity of the social competence rating. In addition, the "involvement scale" was the only rating scale that was not significantly correlated with positive nominations by peers. The authors explained this finding by stating "that an adolescent could be

involved in the revealed differences task and not be accepted by his or her peers" (Englund et al., 2000, p. 1057). In conclusion, the authors noted that despite the strong continuity between measures across time in the study, there was an indication that the rating scale of social competence was more complex in adolescence than in earlier childhood (Englund et al., 2000).

Friedrich et al. (2014) implemented an innovative game that included social interactions and provided neural- and body-based feedback that corresponded directly to the underlying significance of the trained signals reinforced behaviors. Neurofeedback interventions have reduced symptoms in children with ASD by self-regulation of brain rhythms (Friedrich et al., 2014). Play is considered an ideal factor to engage children and help develop their motor skills, communication, problem solving, and social skills (Friedrich et al., 2014).

Data were analyzed to respond to three questions: (a) Is playing a social game without modulating physiological activity able to enhance appropriate social interactions? (b) Is a single-person game rather antisocial than promoting social behavior? and (c) Can the learned behavior be transferred from the gaming situations to the real world? After data analysis, the researchers found that playing a cooperative computer game was shown to reinforce social interactions and appropriate social communicative behavior in children with ASD. The researchers also determined that game-like interactions and roleplay with the reinforcement of points and rewards improved the learning experience of children with ASD (Friedrich et al., 2014).

Influential researchers Laushey and Hefli, (2000) used a reversal ABAB design in their study. The purpose of the study was to evaluate if a peer buddy approach in which two male kindergarten students with pervasive developmental disorders were trained to interact in dyads would increase their social interactions. Four dependent variables included (a) asking for an

object and responding according to the answer given, (b) appropriately getting the attention of another, (c) waiting for his turn, and (d) looking at or in the direction of another person who was speaking to him (Laushey & Heflin, 2000).

After data analysis, the authors' results showed the peer buddy approach significantly increased the participants' appropriate social interactions. Generalization was also maintained on the dependent variables. The researchers' findings indicated that the peer buddy approach resulted in higher percentages of positive social interactions than in close proximity to their typical peers. These findings also suggested that training and support structures resulted in increased percentages of social interactions among children with autism and their typical peers (Laushey & Heflin, 2000).

Lee, Chou, and Feng (2017) designed a behavioral art program to increase social communication for children (n = 2) with ASD and attention deficit hyperactivity disorder (ADHD). Both participants were six years old and exhibited peer social interaction deficits and disruptive behavior. The behavioral art program implemented applied behavior analysis (ABA) through creative art lessons embedded with social skills instruction (Lee et al., 2017). The intervention phases included: baseline, intervention, and generalization. The researchers' results indicated the participants' social interactions with each other increased along with engagement in play activities, expression of emotions, and intrapersonal skills (Lee et al., 2017). The authors also found that the participants learned to use their artwork as a means of communication based on effective instructional social skills strategies.

Lynn et al. (2013) conducted a comparison analysis on three social skills components: (a) differences in emotion regulation, (b) differences in peer social interactions, and (c) relationships

between emotional intensity and peer social interactions among children with and without ASD who had been diagnosed with emotional behavioral disorder (EBD). The research was conducted in eight elementary schools. Participants (n = 61) were formally diagnosed with either attention deficit hyperactivity disorder (ADHD), autism spectrum disorder (ASD), emotional behavioral disorder (EBD), and/or oppositional defiant disorder (ODD). The two dependent measurements used were the Emotional Intensity Scale for Children (Braaten & Rosén, 2000) and the Nominations for Peer Interactions Scale (Coie & Dodge, 1988). The researchers' multivariate analysis of variance (MANOVA) tests indicated no significant differences in peer social interactions according to the correlation of children with EBD and children with EBD and other comorbid developmental disorders (Lynn et al., 2013). The findings of Lynn et al. (2013) suggested that the "addition of a comorbid developmental disorder does not further adversely affect the day-to-day peer interactions of the child with EBD" (p. 305). In sum, the authors expressed that although they did not find children with EBD exhibiting greater behavioral difficulties than children without EBD, they had been able to demonstrate that children with EBD establish negative peer social interactions (Lynn et al, 2013). In conclusion, Lynn et al. (2013) specified the need for evidence-based programs for children with EBD to increase social skills among peer social interactions.

Ratto, Turner-Brown, Rupp, Mesibov, and Penn (2011) evaluated a peer-enacted role-play measure of conversational skills that calculated correlations of changes in role-play behavior with theory of mind to establish validity between performance measures. Participants (n = 40) were adolescents and adults with ASD between the ages of 16 and 22 years. The dependent measures for screening the participants included the (a) Wechsler Abbreviated Scales of

Intelligence (Wechsler, 1955) for cognitive ability measures; (b) the Awareness of Social Inference Test (McDonald, Flanagan, Rollins, & Kinch, 2003) to measure theory of mind; (c) the Social Responsiveness Scale (Constantino & Todd, 2003) to measure parents' reports of autism severity; and (d) the Contextual Assessment of Social Skills (CASS). The researchers' results showed an increase in performance with asking questions, topic changes involvement, and conversation skills for all participants (Ratto et al., 2011). Based on the results, Ratto et al. found "the CASS did effectively discriminate between the two groups and detects differences in behavior by social context" (p. 1284). The researchers also found the psychometric properties, role-play behaviors, theory of mind, and performance served as valid and reliable measures of peer social interaction deficiencies in adolescents and adults with ASD (Ratto et al., 2011). In sum, Ratto et al. found the CASS to have the potential of an evidence-based valid instrument to measure social skill and social behaviors in individuals with ASD.

Solomon, Zimmerman, Van Egeren, Huber, and Mahoney (2014) evaluated the effectiveness of the Play and Language for Autistic Youngsters (PLAY) Project Home Consultation model. The PLAY Project Home Consultation model was designed to improve parent-child relationships, child development, and autism-related diagnostic category/symptoms in children with ASD as compared to general community service. Participants (n = 128) were children diagnosed with ASD aged two to five years old, observed in two 1-year cohorts. Procedural measures for the PLAY model included consultation with parents for 12 months to increase parent-child relationships. The general community service procedure included speech and language therapy, occupational therapy, and social skills instructional services (Solomon et al., 2014). The researchers' findings emerged from a pre- and post-intervention design. After

intent-to-treat (ITT) data analysis, the authors' results showed significant treatment effects for parent-child behavioral interactions based on the Maternal and Child Behavior Rating Scales. Significant improvement was also indicated in diagnostic categories/symptoms and functional development in children with ASD. However, child language and developmental scores did not differ over time using either the PLAY model group or the community service group (Solomon et al., 2014). The researchers' findings suggested the PLAY Project Home Consultation model improved parent-child relationships and decreased parents' stress factors (Solomon et al., 2014). The findings also specified that the PLAY intervention model offered parents and children with ASD affordable and therapeutic treatments to increase social and emotional social interactions.

Statement of the Problem

Direct eye contact and peer social interactions are essential behaviors that allow students to respond to social cues and have social and emotional competence. Without such behaviors, students may endure unfavorably long-term academic and behavior outcomes (Carbone et al., 2013). Teaching these discrete skills has proven challenging for practitioners working with students with ASD and EBD (Rollins, 2016).

Conceptual Framework

Researchers (Gresham, 2015; Gresham, Mai Bao Van, & Cook, 2006; Wiley & Siperstein, 2015) have developed two conceptual models that can be used as social and emotional learning (SEL) interventions for students with disabilities: (a) acquisition deficits and performance deficits in social-emotional functioning, and (b) the competing problem behavior model and replacement behavior training in social skills training. Gresham (1982) defined

acquisition deficits to be unfamiliar or unknown social skills in a student's repertoire. Gresham (2015), suggested that students exhibiting acquisition deficits would "benefit most from skill-building interventions (e.g., modeling coaching, and performance feedback") pp. 102-103).

Gresham (1982) defined performance deficits as known social skills that students do not perform sufficiently or fluently. Students with performance deficits require antecedent interventions to prompt appropriate use of social skills (e.g., precorrection, and peer-mediation strategies (Gresham, 2015; Wiley & Siperstein, 2015). For appropriate implementation of SEL interventions, these distinctions are required to apply correct, explicit, and direct instructional techniques such as practicing the skill and providing feedback on the performance of that new skill for acquisition deficits. Students with performance deficits would require interventions including praise, contracts, and activity rewards (Gresham, 2015; Wiley & Siperstein, 2015).

Another conceptual model considered for SEL intervention was the competing problem behavior dimension (Gresham & Elliott, 1990). According to Gresham (2006), "Competing problem behaviors effectively compete with, interfere with, or 'block' either the acquisition or the performance of a given social skill" (p. 364). Characteristics of competing problem behaviors include externalizing behaviors such as aggression or coercive conduct and internalizing behavior corresponding to depression or anxiety (Achenbach & McConaughy, 1997).

When assessing competing problem behavioral social skills it is wise, according to Maag (2006), to teach students specific replacement behavior training (RBT). Within this SEL intervention, students develop similar types and levels of reinforcement (Maag, 2005, 2006). In other words, RBT identifies a prosocial behavior that exhibits behavioral functions similar to those of the inappropriate behavior (Gresham, 2006). For example,

> A student engages in disruptive behavior in a classroom and a functional behavioral assessment determines that the function of that behavior is social attention from peers and the teacher. A RBT approach would identify a prosocial behavioral alternative such as work completion and paying attention to the teacher that would result in peer and teacher social attention [thus, serving the same function]. (Gresham, 2006, p. 364)

Successful implementation of SEL interventions requires adherence to these conceptual models. It also includes evaluation of past and current SEL research to improve the social competency of students with and at risk for EBD comorbid with autism (Wiley & Siperstein, 2015).

A New Perspective on the Literature

The Sanford Harmony Social and Emotional Learning Program was designed to promote SEL and cognitive skills students need to improve peer interactions and develop social competence. Sanford Harmony created two methods of instruction to teach positive peer relationships for inclusive classroom setting: (a) "Meet Up" incorporates relationship-building activities that allow students to learn and practice key SEL and social-cognitive skills, and (b) "Buddy Up" integrates everyday practices that provide students with continual opportunities for peer interactions and participation in dialogue and decision-making about the classroom environment and current issues (Sanford Harmony, 2016). Appendix A contains a detailed summary of both the Meet Up and Buddy Up multi-layered approaches.

The Sanford Harmony Program uses the 2013 CASEL Guide: Effective Social and Emotional Learning Programs (Preschool and Elementary School Edition) as the conceptual framework for evaluating effectiveness and guiding objectives. The CASEL framework identifies five interdisciplinary sets of cognitive, affective, and behavioral skills: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. There is additional information that summarizes each of the five CASEL skills with correspondence to

Common Core State Standards and specific Harmony objectives for grade levels K-6 (Sanford Harmony, 2016)

The Sanford Harmony curriculum consists of an Instructional Lesson Plan Book for each grade (i.e., pre-kindergarten through Grade 6), four volumes of lessons, pictures, posters, games, and additional materials. Over the course of five interactive units, students participate in engaging activities designed to enhance their social and emotional learning. Table 3 provides an overview of the Sanford Harmony Program's five-unit program for Grades 5 and 6 (adolescents).

Table 8

Sanford Harmony's Five-unit Program: An Overview

Unit	Lesson Topic	Description
Unit 1	Diversity and Inclusion	• Activities promote a community environment in the classroom • Students are taught to recognize and appreciate one another's similarities and differences. • Students formulate a classroom identity by developing a classroom name and motto
Unit 2	Critical Thinking	• Provides opportunities for students to develop empathy and reduce stereotyped thinking. • Through participation in structured activities, students learn perspective-taking and critical thinking skills.
Unit 3	Communication	• Students participate in observational and experiential activities to increase their understanding of healthy and unhealthy communication patterns. • Students are provided with opportunities to practice effective ways in engaging with others.
Unit 4	Problem-Solving	• Promote constructive approaches to resolving conflict. • Students are introduced to various conflict styles and the benefits and costs associated with each style. • Students learn conflict resolution steps that facilitate successful interpersonal problem-solving and healthy relationship patterns.
Unit 5	Peer Relationships	• Teaches students the requisite social skills for engaging in positive peer interactions and to provide students with opportunities to rehearse these skills. • Through participation in dyadic and small group activities, students learn qualities important to friendship, negative consequences associated with bullying, and how to provide peers with support.

Source. Sanford Harmony(2016). Retrieved from https://www.sanfordharmony.org/teaching-materials-strategies/

Theoretical Framework

In 1994, social and emotional learning was introduced to schools as a framework that addressed the social needs of students through school-wide collaborative programs promoting healthy and ethical lifestyles (Weissberg, Resnik, & Payton, 2003). Theoretical frameworks have been applied to SEL to facilitate understanding and to develop a RULER design for school-wide implementation (Brackett, Elbertson, & Rivers, 2015). Under the RULER design, with effective training, children can **R**ecognize, **U**nderstand, **L**abel, **E**xpress, and **R**egulate (RULER) their emotions (Brackett, Rivers, Reyes, & Salovey, 2012). The RULER approach is a theoretically-based component of SEL that is grounded in emotional intelligence theory and research-based practices in emotional development and emotional competence (Brackett et al., 2012). The RULER approach follows the research-based practices of the Collaborative for Academic, Social, and Emotional Learning (2018). The CASEL guidelines include merging SEL standards designed by Elias and Weissberg (1990) into academic areas, differentiated instruction, teacher and parent training, and data-driven implementation.

Theory of Mind

Individuals with autism spectrum disorders (ASD) often show significant deficits in social and emotional learning and theory of mind [ToM] (Mazza et al., 2017). In addition, many children with ASD exhibit social cognition impairments (Mazza et al., 2014, 2017). Social cognition includes cognitive tools to process the social multiplicities emerging from early childhood and extending throughout the development of ToM (Astington & Jenkins, 1999; Mazza et al., 2017).

The development of social competencies is a progressive process that begins after birth and is confirmed by the age of five (Happé & Frith, 2014; Mazza et al., 2017). Newborns can sense mutual affection and toddlers develop social reciprocity, emotion and eye gaze processing (Happé & Frith, 2014; Mazza et al., 2017). By the age of two years, children exhibit social awareness and cognition. They engage in pretend play and can distinguish between good and bad feelings (Astington & Jenkins, 1999).

Baron-Cohen, Leslie, and Frith (2007) explained children three to four years of age develop theory of mind which is the ability to understand the mental state of others. In the next years of life, children four to five years of age begin to act and think about the world (Astington & Jenkins, 1999). Finally by age five, Eisenberg and Miller (1987) suggested that children's social behavior involves the process of role-taking (i.e., ToM ability) that motivates behavior.

Seminal researchers have suggested ToM as an important function in developmental social behavior (Batson, 1987; Hoffman, 1985; Krebs & Sturrup, 1982). Current researchers have analyzed ToM to have two fundamental components of social behavior: cognitive and affective. Whereas the cognitive principal functions as a person's mental state (i.e., intrapersonal feeling of others) the affective principle of empathy acts on people's emotions (Franco et al., 2014; Mazza et al., 2014, 2017; Pino et al., 2016).

Social Learning Theory

In his social learning theory, Bandura postulated that prosocial interactions such as observing and modeling the behaviors, attitudes, and emotional reactions of others influence the acquisition of new behaviors (Bandura, Adams, & Beyer, 1977). Bandura (1977) stated

> Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action. (p. 22)

Researchers Catalano et al. (2003) examined the school-based preventive program Raising Healthy Children (RHC). The RHC based the program on social learning theory and focused on reducing antisocial behaviors while improving prosocial behaviors through modeling, supervised feedback, and support. The researchers hypothesized four principals according to social learning theory: (a) activities and interactions with peers, (b) the degree of involvement with peers, (c) the skills needed for successful interactions with peers, and (d) reinforcement from the interactions. Based on findings from the RHC program, Catalano et al. (2003) conceptualized that consistent social interactions yield a social bond between the child and the socializing unit.

Behavioral Learning Theory

According to social learning theory, behavioral changes occur because of cognitive mechanisms (Bandura et al., 1977). Behaviorism is a learning theory that focuses on objectively observable behaviors. Essentially, behavior is defined as learning the acquisition of a new behavior based on the physical environment (Bandura, 1986). For example, children are apt to adopt a new behavior when the behavior's outcome carries high values (Brackett et al., 2015). However, if a child lacks social confidence in acquiring the new behavior, the practice of a behavioral change is reduced (Brackett et al., 2015).

Purpose of the Study

The purpose of this study was to examine the effectiveness of gameplay activities using a structured social skills program to increase both eye contact responses and the number of verbal responses during peer relationships for students with comorbid disabilities, predominantly ASD and EBD, in a clinical setting.

Research Questions

This study was guided by the following five research questions:

1. To what extent does the implementation of gameplay activities using a structured social skills program increase the frequency of eye contact for peers with comorbid disabilities, predominantly ASD and EBD, in a small group setting as measured using partial-interval recording?
2. To what extent does the implementation of gameplay activities using a structured social skills program increase the number of verbally reciprocated responses during structured conversation for students with comorbid disabilities, predominantly ASD and EBD, as measured using partial interval recording in a small group setting?
3. To what extent does the implementation of gameplay activities using a structured social skills program increase the number of social engagements during structured conversation for students with comorbid disabilities, predominantly ASD and EBD, as measured using partial interval recording in a small group setting?
4. To what extent will increased eye contact with peers and the number of words per response during structured conversation be maintained in a one-to-one setting, for

students with comorbid disabilities, predominantly ASD abd EBD, as measured using partial-interval recording?

5. What are the perceptions of students, parents, and behavior analysts regarding the implementation of gameplay skills increasing eye contact and communication for students with comorbid disabilities, predominantly ASD and EBD, as measured using the Social Skills Improvement System - Rating Scale (SSIS-RS)?

CHAPTER 3
METHODOLOGY

Introduction

This chapter contains an explanation of the methods and procedures used to conduct the study. Also included are descriptions of the participants and setting and the intervention procedures. Prior to beginning the study, the research was approved by the University of Central Florida's institutional review board (Appendix B). Informed consent was obtained from parents or guardians prior to the participation of each student in the study (Appendix C).

Statement of the Problem

Eye contact and communication with peers are essential behaviors that allow students to respond to social cues and have social and emotional competence. Without such behaviors, students may endure unfavorable, long-term academic and behavior outcomes (Carbone et al., 2013). Teaching these discrete skills has proven challenging for practitioners working with students with ASD and EBD (Rollins, 2016).

Research Questions

This study was guided by the following five questions:

1. To what extent does the implementation of gameplay activities using a structured social skills program increase the frequency of eye contact for peers with comorbid disabilities, predominantly ASD and EBD, in a small group setting as measured using partial-interval recording?
2. To what extent does the implementation of gameplay activities using a structured social skills program increase the number of verbally reciprocated

responses during structured conversation for students with comorbid disabilities, predominantly ASD and EBD, as measured using partial interval recording in a small group setting?

3. To what extent does the implementation of gameplay activities using a structured social skills program increase the number of social engagements during structured conversation for students with comorbid disabilities, predominantly ASD and EBD, as measured using partial interval recording in a small group setting?
4. To what extent will increased eye contact with peers and the number of words per response during structured conversation be maintained in a one-to-one setting, as measured using partial-interval recording?
5. What are the perceptions of students, parents, and behavior analysts regarding the implementation of gameplay skills increasing eye contact and communication for students with comorbid disabilities, predominantly ASD and EBD, as measured using the Social Skills Improvement System -Rating Scale (SSIS-RS)?

Experimental Design

A multiple-baseline across participants design was used. This multiple-baseline single-case intervention research design demonstrates criteria that meet design standards with reservations for evidence-based educational practices (Kratochwill et al., 2013). Baseline and intervention sessions were conducted in a behavior center. The child-child dyads received both baseline and treatment conditions which were digitally recorded to capture social interactions.

Dependent Variables

Each two-minute partial interval was coded using a timer and recorded demonstrating (a) eye contact, (b) verbal reciprocity, and (c) social engagement. An eye contact response was coded for naturalistic environment teaching (NET); therefore, a criterion for the duration of eye contact was not determined. Eye contact responses of any duration were totaled during the two-minute-partial interval. This dependent variable measured the percentage of correct direct eye contact accompanied by verbal responses during a one-hour session.

Verbal reciprocity was coded as spoken interactions identifying functional receptive response or behavior. Verbal behavior was categorized into verbal operants which included six classification terms: (a) mand – asking for something, (b) tact – labeling something in the environment, (c) intraverbal – giving a response (e.g., talking or signing) based on something someone said, (d) listener responding – following directions to do something, (e) mimetic/motor imitation – copying what someone else has done, and (f) echoic – repeating what someone else has said. This dependent variable was measured as the percentage of correct verbal responses during the two-minute-partial interval recording for a one-hour session.

Social engagement was coded as any relationship between the child-child dyad not requiring a verbal exchange of responses. Social engagements were defined as conversations that included verbal and nonverbal social cooperation of peer relationships and working together in a group completing tasks. The children engaged in discussions, dialog, chat, and life experiences that warranted nonverbal social cues. These cues verify joint attention and other social interactions. This dependent variable was measured as the percentage of correct social

engagements accompanied by nonverbal social cues. Table 9 presents the Sanford Harmony Units linked to each of the three target skills and their operational definitions.

Table 9

Relationship Between Sanford Harmony Unit, Target Skills and Operational Definitions

Sanford Harmony Unit	Target Skill	Operational Definition
Unit 3 – Communication Unit 5 – Peer Relationships	Eye Contact	Eye contact was captured simultaneously with verbal reciprocity. Eye contact was coded when one child looked directly into his or her peer's eyes during a verbal reciprocal response or mand
Unit 3 – Communication Unit 5 – Peer Relationships	Verbal Reciprocity	Verbal reciprocity was coded when a child elicited a vocal response or asked a question to his/her peer and the peer gave a reciprocal response with direct eye contact
Unit 3 – Communication Unit 5 – Peer Relationships	Social Engagement	Social engagements were coded when the peers engaged in verbal dialogue that did not require an immediate reciprocal response or eye contact (e.g., conversating with his/her peer using nonverbal social cues)

Independent Variable

According to Sanford Harmony, the program promotes learning communities and healthy relationships among peers. The categories of Meet Up and Buddy Up teach collaboration among students and peers and students and teachers. Both methods provide for practice of important

social and emotional competencies, such as positive communication, collaboration, and problem-solving connected to real-world situations.

The Communication Unit focused on experiential exercises to increase students' understanding of healthy and unhealthy communication patterns. Students learned to identify their own communication styles and were provided with opportunities to practice effective ways of engaging with others.

The Peer Relationships Unit promoted positive interactions and relationships between students and their peers. Through their participation in paired dyad group activities, students learned about qualities important to friendships, negative consequences associated with bullying, and how to provide their peers with support. In addition, students were engaged in lessons, activities, and games to understand commonalities and respect differences among their peers.

Selection Procedures

The six participants were between 10 and 15 years of age and all had been diagnosed with the comorbidities of ASD and EBD except one, who had behavioral issues, comorbid EBD, and cerebral palsy. The multiple gating screening model and the Systematic Screening for Behavior Disorder (SSBD) presented in Figure 3, derived from Walker et al. (1990) was used as the assessment procedure for identification of behavior for each participant.

Based on the illustration in Figure 3, the three interrelated assessment stages of the SSBD consists of three interrelated assessment stages with behavior analyst identification as the primary information source in screening in Stage 1. Stage 2 indicates critical events, and direct behavioral observations are the primary source in Stage 3 (Walker et al., 1990). For this study, the lead board certified behavior analyst (BCBA) selected students based on operational

definitions of competing problem behaviors exhibited by students with comorbidities of ASD, EBD (as determined by the BCBA), and attention deficit hyperactivity disorder (ADHD). Based on specific behaviors, the student with cerebral palsy and EBD was also recommended for inclusion in the study.

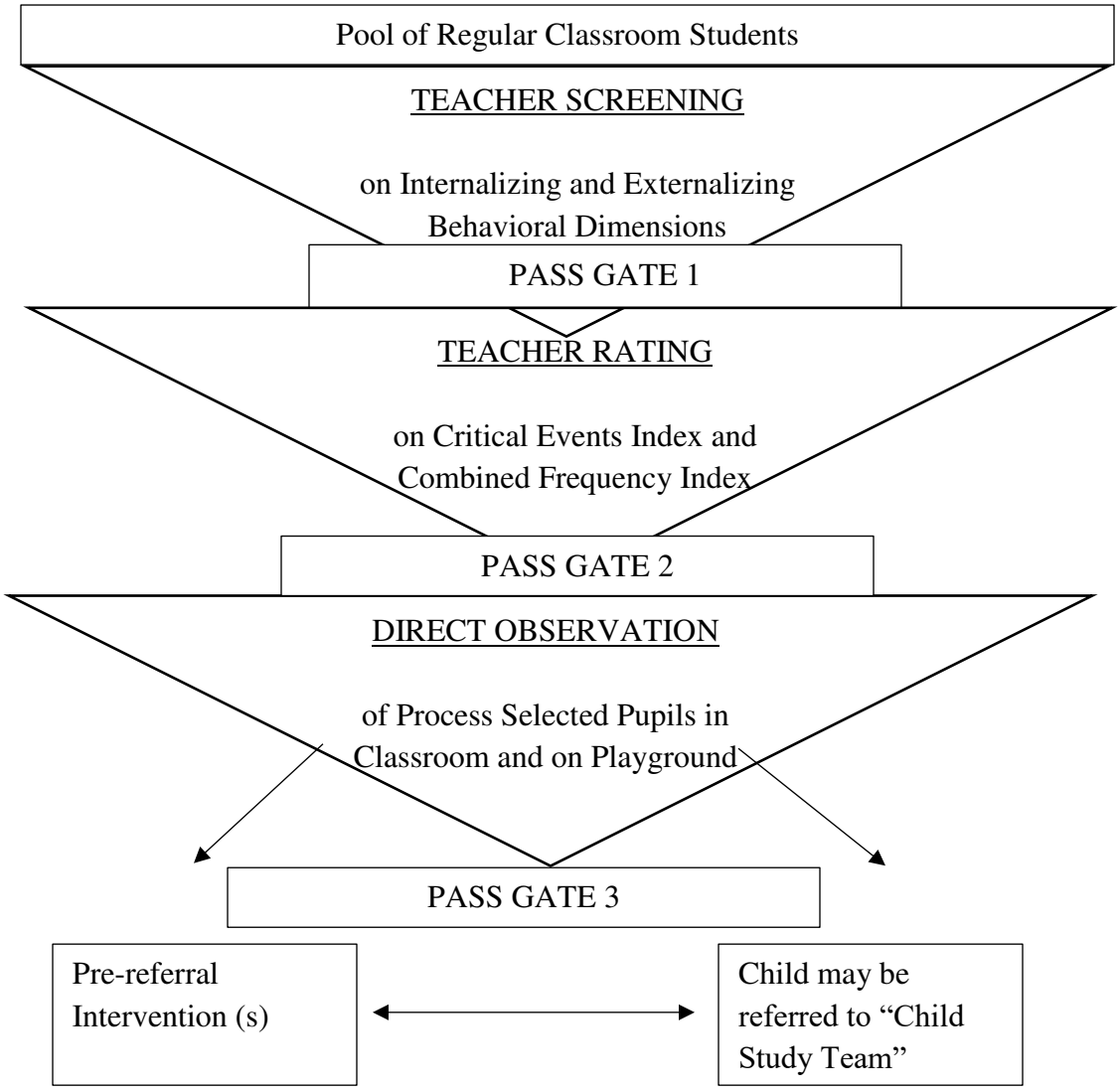


Figure 3. Multiple Gating Assessment Procedure for Identificaton of Behavior

Source. Adapted from "Multiple Gating Assessment Procedure for Identification of Behavior Disordered Pupils," by Walker, Severson, & Stiller, 1988, Remedial & Special Education, p. 10.

Gresham et al. (2006) used a specific definition: "Some kids may say mean or nasty things to hurt others' feelings. They may show signs of hyperactivity, impulsivity, inattention, defiance, and/or noncompliance toward others in class or at recess" (p. 365).

Following Stage 2 of the SSBD, the students' behavior analyst completed a standardized measure of social skills, problem behaviors, and academic competence: the Social Skills Improvement System-Rating Scale [SSIS-RS] (Gresham & Elliott, 2008). Selection criteria included students exhibiting significantly low rates of social skills and academic competence, and high rates of problem behaviors (95% confidence interval range of 40-85) on the SSIS-RS scale. Finally, in Stage 3, participants exhibiting operationally defined acquisition and performance deficits through direct observations were selected. Table 10 presents the operational definitions of ineffective social skills and competing problem behaviors.

Table 10

Ineffective Social Skills and Competing Problem Behaviors

Ineffective Social Skills	Competing Problem Behaviors
Temper in conflict situations with adults	Interrupts conversation of others
Does not transition well from one class activity to another	Disturbs ongoing activities
Inattentive to instruction	Argues with peers
Works alone, does not join in activities	Talks back to adults when corrected
Engages in peer conflict	Has temper tantrums
Needs prompting to engage in peer conversations	Acts impulsively
Joins ongoing activity of group only when instructed	Easily distracted
Introduces him/herself only when told to do so	

Source. Adapted from social skills and competing problem behaviors exhibited by participants based on specified operational definition procedures by Gresham et al., 2006, p. 366.

Participants and Setting

Participants included six adolescents from a full-service applied behavior analysis (ABA) practice and approved early behavioral intervention organization in central Florida. Eligibility to receive services at the center required a physician's referral for ABA services. The six adolescents in the study were already receiving services at the center three hours a day, three days per week. For this study, participants were scheduled to receive eight hours of social skills training over four weeks (two hours per week). The intervention schedule included baseline, treatment, and maintenance data. The ABA behavioral center did not have a school-wide positive behavior intervention support (SW-PBIS) curriculum in place for its clients.

The behavior clinic provides applied behavior analysis as a preventive measure and is an approved early intervention provider. Each behavior therapist employed by the clinic was certified by the Board Analyst Certification Board. Services regularly provided included behavior analysis, verbal behavior training, continuing education services, social skills programs, and vocational training for teens and adults. Funding for services were, for the most part, obtained through Title 19 and Title 21 Medicaid. The Medicaid state plan is for individuals prescribed by a physician to receive ABA Therapy. Florida's Agency for Health Care Administration (AHCA) is required to receive services.

Participants were four boys (Latino) and two girls (Caucasian). Five of the participants had the diagnosis of ASD; one had cerebral palsy. All six were diagnosed with EBD. Eligibility criteria for each child included (a) aged between 10 and 15 years old, (b) clinical diagnosis of a disability under IDEA other than E/BD, and (c) comorbid diagnosis of emotional and behavioral disorders.

Participant 1 was a 14-year-old female diagnosed with severe ASD and comorbid epilepsy and behavioral disorder. With respect to social skills, this student needed full prompting to carry on conversations with peers and adults. Due to the severity of this participant's autism and epilepsy, the behavioral clinic was her daily educational setting (i.e., Monday through Friday, 8:30 am to 2:30 pm). She required a full-time nurse who drove her to school, stayed with her in school, drove her to other medical sessions (i.e., physical therapy and neurology), and drove her home every day. The nurse assisted Participant 1 with medical emergencies, assisted her with personal hygiene and was the guardian liaison while Participant 1 was in her daily care.

Participant 2 was a 10-year-old male diagnosed with mild ASD and comorbid attention deficit hyperactivity disorder (ADHD), bipolar depression, conduct disorder (CD), and nightmare disorder. Participant 2 was clinically classified as exhibiting a lack of age-appropriate social interaction skills with peers. He attended a specialized elementary school for three days per week that required him to receive two full-day sessions of behavioral intervention at the behavior clinic. Participant 2 attended the clinic regularly on Wednesdays and Thursdays from 9 am to 2 pm every week.

Participant 3 was a 12-year-old female diagnosed with severe ASD and comorbid emotional disorder characterized with moderate depression and anxiety. Participant 3 was clinically classified as exhibiting social skills three to four years below her age range. She attended an inclusive school Monday through Friday. After school, she initially attended the behavior clinic on each Wednesday and Thursday from 2:30 pm to 5:30 pm. However, due to severe deficiencies with life skills, Participant 3 was assessed to receive in-home services to

learn age-appropriate life skills at home. Therefore, Participant 3 attended the behavior clinic after school on Wednesdays only, after school from 2:30 pm to 5:30 pm.

Participant 4 was an 11-year-old male diagnosed with mild cerebral palsy Level 3-Spasticity Hemiparesis with comorbid ADHD, and seizures. Participant 4 was clinically classified as exhibiting social skills one to two years below his age range. He was considered withdrawn, needing prompts to interact with peers. Participant 4 walked with the assistance of one right-arm Lofstrand crutch to aid his mobility and support his legs and weight. He attended an inclusive elementary school regularly and the behavior clinic after school on Wednesdays and Fridays from 2:30 pm to 6:00 pm. Participant 4 experienced excessive absences due to medical evaluations and procedures to surgically straighten his legs.

Participant 5 was a 15-year-old male diagnosed with mild ASD and comorbid ADHD, familial tremor, and a learning disability. Based on clinical analysis, Participant 4 lacked proper social awareness, etiquette and skills to interact with his peers. He attended high school and was an active participant in many school sports teams. Due to his diagnosis of familial tremor (i.e., hands rapidly shaking), he was often teased and bullied in school. Participant 5 exhibited excessive behavioral issues at home. Initially, he received services after school at the behavior clinic for three days per week. However, after evaluation and reports from his mother, his sessions were changed to receive services in-home, after school two days per week, and receive behavior therapy in the clinic on Fridays only.

Participant 6 was a 14-year-old male, diagnosed with mild ASD and comorbid ADHD and specific developmental disorder of motor function. A clinical analysis determined that this student lacked empathy skills and had difficulty tolerating peers. After evaluation by the

researcher, this participant exhibited social skills that exceeded the selection criteria for this study. Participant 6 showed adequate direct eye contact with peers and adults, and he scored well above 100% for both verbal reciprocity and social engagements while the Social Skills Improvement System -Rating Scale was administered. Therefore, Participant 6 was excluded from the study. To maintain the intervention structure of the child-child dyad. Participant 4 was paired with Participants 3 and 5. Table 11 displays demographic information for each of the six participants. Results of the pre-assessment are also presented in Table 11.

Table 11

Participant Information and Demographics

Characteristic	Participants 1	2	3	4	5	6[a]
Student age	14	10	12	11	15	14
Gender	Female	Male	Female	Male	Male	Male
Ethnicity	Caucasian	Latino	Caucasian	Latino	Latino	Latino
Clinical diagnosis	Severe ASD	Mild ASD	Severe ASD	Mild Cerebral Palsy	Mild ASD	Mild ASD
Comorbidity	Epilepsy Behavior Disorder	AHDH Bipolar Disorder Conduct Disorder Nightmare Disorder	Mood Disorder "Anxiety"	Spasticity Hemiparesis ADHD Epilepsy	ADHD Familial Tremor Learning Disability	ADHD Developmental disorder of motor function
AFLS protocol(s) administered	Community participation skills School skills	Home skills	Basic living skills	Independent living skills Home skills	N/A	X
FAST functional assessment administered	X	X	X	X	N/A	Behavioral function Essentials for living
SSIS-RS: Social skills Percentile rank	<1 Well-below average	23rd Average	1st Well-below average	43rd Average	98th Above average	N/A
SSIS-RS: Problem behaviors Percentile rank	>99 Well-above average	98th Well-above average	96th Well-above average	78th Average	51st Average	N/A
SSIS-RS: Academic competence Percentile rank	<1 Well-below average	9th Below average	109th Average	47th Average	35th Average	N/A

[a]Participant 6 was excluded from the study.

Background Measures

The Assessment of Functional Living Skills [AFLS] (Partington & Mueller, 2012) and the Functional Assessment Screening Tool [FAST] (Larue, 2006) were administered prior to the intervention. The AFLS is a criterion-referenced assessment created as an extension of the Assessment of Basic Language Learning Skills [ABLLS] (Partington, 2006). The AFLS is a combination of an assessment and a skills-tracking system developed into a curriculum guide to evaluate children with ASD development of essential living skills for achieving independence.

The AFLS program protocol calls for the assessment of (a) basic living skills, (b) school skills, (c) home skills, (d) community participation skills, (e) independent living skills, and (f) vocational skills. Each assessment protocol was used as a stand-alone assessment. Though each protocol has a set of different modules, each was connected by goals for improving students' independence for living.

The FAST is a suite of assessment progress monitoring tools designed to help educators screen, monitor progress, and analyze reading skills of students. Each question in this assessment is individually tailored to evaluate each student. Results identify likely behavioral functions, clarify ambiguous functions, and diagnose other relevant factors in the individual's repertoire.

Intervention Procedures

Six behavior technicians participated in the study. Two held master's degrees in applied behavior analysis (ABA), and two were working towards their master's degrees in ABA. All six behavior technicians had earned bachelor's degrees in either psychology, communication disorders, or social work. Although only one interventionist was a board certified assistant behavior analyst (BCaBA), the other five technicians were lead registered behavior technicians.

All of the behavior technicians had over 12 months experience with their clients and between one and four years of experience in ABA services to children and adolescents with ASD.

The researcher was a registered behavior technician (RBT) with over 12 months of experience. She held an earned bachelor's degree in childhood special education, master's degree in applied behavior analysis (ABA) and early childhood special education and was completing this study to partially fulfill degree requirements for her Ph. D. The researcher led the study and the intervention, and the behavior technicians contributed to ABA methods and inter-observer agreement.

Baseline Procedures

Baseline data were collected until a stable trend of target behavior was observed, recording a minimum of five data points for baseline and three data points for the intervention phase. Baseline sessions were recorded during two-minute interval recording, lasting 30 minutes. Behavior technicians were instructed to facilitate the engagement of their students in child-child dyad social play. The child-child dyads engaged in age-appropriate social games (i.e., UNO, Guess Who, and children's version of Monopoly). The RBT made no contributions or suggestions to social interactions of the students during the baseline activity sessions. Behavior technicians completed the teacher form of the Social Skills Improvement System-Rating Scale (SSIS-RS) as a pre-assessment of their students' social skills, problems behaviors, and academic competence. The repeated baseline data allowed the researcher to discount potential threats to internal validity of the design. The Baseline schedule was as follows: Dyad Group 1 – six sessions, Dyad Group 2 – six sessions, and Dyad Group 3 – four sessions.

Treatment Procedures

At the end of baseline, the RBT provided the parents with letters introducing them to Sanford Harmony. Specifically, the letters outlined Unit 3 Communication and Unit 5 Peer Relationships. The RBT presented each unit in sequence, starting with Unit 3, moving successively into Unit 5. Parent Communication Unit and Peer Relationship letters (Appendix D) were produced in both English and Spanish. After baseline sessions, parents were also given the parent form of the Social Skills Improvement System – Rating Scale (SSIS-RS). Parents provided information about their child's behavior at home and in the community. In addition, students were give the student form of the SSIS-RS for self-ratings and self-evaluation. Together, the behavior technician (teacher), parent, and student SSIS-RS forms were used as pre- and post-surveys for social validity at the end of the study. The SSIS-RS form is contained in Appendix E.

The participants received social skill training based on the Sanford Harmony program in one-hour sessions, twice a week. The researcher (RBT) followed the daily curriculum guide for Sanford Harmony as outlined in Table 12 and in Appendix A, Meet-up and Buddy-up Activities. The intervention took place in the behavior clinic's "teen room" every day for four weeks. The teen room was a large open room, designed to accommodate five to six adolescents at a time and their behavior technician. The teen room was equipped with three tables and chairs, a sofa, a television on the wall, and an accessible attached kitchenette.

Table 12

Sanford Harmony Program Activities

Unit	Activity – Lesson
Unit 3 – Communication	Activity 1 – Students learn communication roadblocks and strategies. Activity 2 – Students learn practice these strategies with their partner. Activity 3 – Students identify communication responses in the environment. Activity 4 – Students practice in a cooperative learning group activity.
Unit 5 – Peer Relationships	Activity 1 – Students develop an awareness of qualities in a friend. Activity 2 – Students discuss & compare important friendship qualities. Activity 3 – Students practice engaging in specific behaviors during a competition. Activity 4 – Through role-play exercises, students identify & practice strategies for responding to bullying behavior.

Social skills acquisition and performance deficits were remediated through modeling, coaching, and behavioral rehearsal as described by Gresham et al. (2006). The five participants received eight hours of social and emotional learning (SEL) using the Sanford Harmony program. The participants worked in their designated child-child dyads and received the training of gameplay intervention during the entire study. Participants 1 and 2 were a dyad pair. Participants 3 and 4 and Participants 4 and 5 were also dyad pairs.

Direct observations were used to assess students' response rates for reducing competing problem behaviors and improving social skills, based on the curriculum materials from the Sanford Harmony program. Unit 3 included educational materials that decreased students' ineffective communication behaviors. The last unit of the Sanford Harmony program, Unit 5 –

Peer Relationships, provided students with opportunities to practice strategies to develop and maintain positive peer relationships. Observations were conducted daily in the behavioral clinic. Participants were observed in two-minute intervals totaling 60 minutes per session. Data collection was recorded using the partial-interval recording method.

Differential Reinforcement of Other Behavior (DRO) Procedures

Differential reinforcement of other behaviors (DRO) is a behavioral approach that ends the reinforcement of a competing problem behavior and starting the reinforcement (verbal praise) with other appropriate behaviors (Gresham et al., 2006). According to Cooper, Heron, and Heward (1987), DRO is the delivery of reinforcement immediately following the act of an appropriate behavior in the absence of the target behavior, (Appendix F).

The DRO procedure for the participants included four steps: (a) identifying the reinforcer for competing problem behavior (e.g., attention), (b) identifying the reinforcer for appropriate behavior (e.g., verbal praise), (c) specifying the DRO time interval (i.e., DRO-2 minutes), and (d) extinguishing the reinforcer for competing problem behavior and initiating a reinforcer for operationally defined appropriate social behavior (Gresham et al., 2006).

The RBT used a momentary DRO-2-minute reinforcement schedule (i.e., verbal praise was given after two minutes elapsed when competing problem behavior did not occur at the end of each interval). The decision to use this procedure was based on the RBT's and the other behavior technician's prior knowledge of implementing the DRO techniques. Daily monitoring and feedback were conducted for fidelity of treatment and students' progress reports (Gresham et al., 2006).

Social and Emotional Learning Procedures

Replicating the procedures of Gresham et al. (2006), the RBT remediated the students' acquisition and performance deficits using four instructional variables: direct instruction (i.e., verbal instruction consisting of concrete social skills training [SST]); modeled instruction (i.e., visual learning), rehearsal (i.e., practice of SST), feedback and reinforcement (i.e., presenting positive or negative reinforcement).

Data Analysis

Several methods of data analysis were used for evaluation. All direct observational data were graphed for visual analysis of eye contact, verbal reciprocity, and social engagement. Three criteria were used for evaluation (a) immediacy of the data change post intervention, (b) trend of data across the intervention phases, and (c) minimal score overlap of the intervention data points (Kazdin, 2016). The minimal data overlap indicated stronger intervention effects (Kazdin, 2016). In addition, the SSIS-RS computerized software (Gresham & Elliott, 2008) was used to examine behavioral changes in order to determine the intervention's effectiveness in improving social skills based on the perceptions of behavior technicians, parents, and students.

Minimal score overlap was assessed using percentage of non-overlapping data points (PNDs), quantifying the magnitude of each intervention phase (Olive & Smith, 2005; Scruggs & Mastropieri, 1998; Scruggs, Mastropieri, & Casto, 1987) The PND was calculated by counting the number of data points in each intervention phase that did not overlap with the data points in the baseline phase. The PND intervention effect scores were considered as follows: (a) over 90% highly effective, (b) between 70% and 90% effective, (c) between 50% and 70% questionable,

and (d) below 50% ineffective (Scruggs & Mastropieri, 1998). The mean baseline reduction measure was used to calculate the percentage of improvement (Olive & Smith, 2005).

Interobserver Agreement

Intervention sessions were video recorded for inter-observer agreement (IOA) measurements. The behavior technicians viewed approximately 30 minutes from every recorded session for each participant. The IOA records were compared to those of the researcher (RBT), and agreements among all observations were scored. Point-by-point IOA compared the behavior technician's data for each interval and matched it to the researcher's data for the same interval. Inter-observer agreement was calculated by adding the number of agreed intervals of both observers, dividing by the total number of intervals, and multiplying by 100. Interobserver agreement was evaluated for 20% of the observations sessions.

Fidelity of Treatment

Treatment fidelity was evaluated based on the researcher's adherence to the implementation plan (Gresham, 1989). Fuchs and Fuchs (1989) recommended the use of a component analysis checklist to conduct an intervention with trustworthiness. The board certified behavior analyst (BCBA), board certified assistant behavior analyst (BCaBA), and the registered behavior technicians (RBTs) checked off each component of using the Intervention Fidelity Checklist (Bateman, Lloyd, & Tankersley, 2015) implemented during each observation, (Appendix G). The intervention fidelity checklist was reviewed by the researcher for accuracy and trustworthiness.

Social Validity and Teacher Reflections

Social validity is a critical component to conceptualize in the area of social skills interventions for students with EBD and comorbid ASD (Gresham et al., 2004). Wolf (1978) suggested three levels that society would need to consider in validating how best practices are conducted:

1. The social significance of the goals. Are the specific behavioral goals really what society wants?
2. The social appropriateness of the procedures. Do the ends justify the means? That is, do the participants, caregivers and other consumers consider the treatment procedures acceptable?
3. The social importance of the effects. Are consumers satisfied with the results? All the results, including any unpredicted ones? (p. 207)

Behavior technician reflections were used to assess the implementation of the Sanford Harmony program, psychometric measures of the SSIS-RS, DRO and SEL implementation procedures through use of a questionnaire. The behavior technician's reflections were a fundamental part of the social validity component of an intervention for three practical reasons: (a) behavior technicians have pre-existing knowledge about the participants; (b) behavior technicians have opportunities to reduce possible external or internal conditions; and (c) the behavior technician's role and insights were considered in the study's design and implementation as well as the analysis of data, thereby contributing to practical issues in the classroom using research (Keegan, 2016). Appendix H contains the reflective questionnaire administered to all student participants for social validity purposes.

CHAPTER 4
RESULTS

Introduction

This chapter contains the results of the analysis of the data gathered in the study. The figures presented in this chapter provide a graphic representation of students' performance on the three dependent variables: (a) direct eye contact; (b) verbal reciprocity; and (c) social engagement.

For each participant, the percentage of correct responses during two-minute intervals (60-minute total duration) were recorded for each behavior (y -axis) and the number of sessions (x -axis) across four phases: (a) baseline; (b) Communication Unit 3-Intervention; (c) Peer Relationships Unit 5-Intervention, and (c) maintenance. The Communication Unit focused on increasing students' direct eye contact and verbal reciprocity, and the Peer Relationships Unit focused on increasing students' social engagement.

Each student's performance was calculated using the procedure of percentage of nonoverlapping data points (PND) for each intervention phase, counting the number of intervention data points that were lower than the lowest baseline data point, divided by the total number of intervention points, and multiplied by 100.

During the baseline phase, students exhibited target behaviors. Five participants engaged in the Sanford Harmony intervention phases. Participant 6 scored 100% for all four dependent variables during baseline. Therefore, Participant 6 was excluded from the study. Because Participants 5 and 6 were originally paired together as child-child dyads, Participant 5 had to be paired with Participant 4. This modification allowed Participant 4 (male, age 11 with cerebral palsy) to be paired with both Participant 3 (female, age 12 with severe ASD) and Participant 5

(male, age 16 with ASD and familial tremor). Therefore, Participant 4 received the same hours of intervention (i.e., 2-hours per week).

During the implemention phase, Participants 3 and 5 engaged in acute basic living skills challenges and problem behaviors at home, warranting immediate changes in their clinical setting. Participants 3 and 5 began receiving behavioral services in their homes two to three days per week. Consequently, this change allowed Participants 3 and 5 to receive only half of the Sanford Harmony intervention (i.e., one hour per week) in the clinic. Participants 1, 2, and 4 received the full duration of the intervention in the clinic (i.e., two hours per week). A total of three dyad groups were formed: Dyad Group 1 included Participants 1 and 2; Dyad Group 2 included Participants 3 and 4; and Dyad Group 3 included Participants 4 and 5. Due to the unforeseen individual student issues, the number of sessions of treatment varied among the dyads. Treatment days for each Dyad group were as follows: Group 1 had eight treatment sessions; Group 2 had four treatment sessions (minus one day of absence); and Group 3 had four treatment sessions.

Effects of Sanford Harmony Social Skills Training: Increasing Eye Contact

Direct eye contact was measured using direct observation to specifically teach naturalistic environmental training (NET). Two-minute interval recording was used to measure the frequency of direct eye contact combined with verbal responses elicited. The number of direct eye contact acts per two-minute intervals was calculated during 30-minute, 45-minute, and 60-minute sessions. The PND values were also used to evaluate Sanford Harmony's effectiveness for each participant. Figures 4 and 5 contain the direct eye contact performance for the participants.

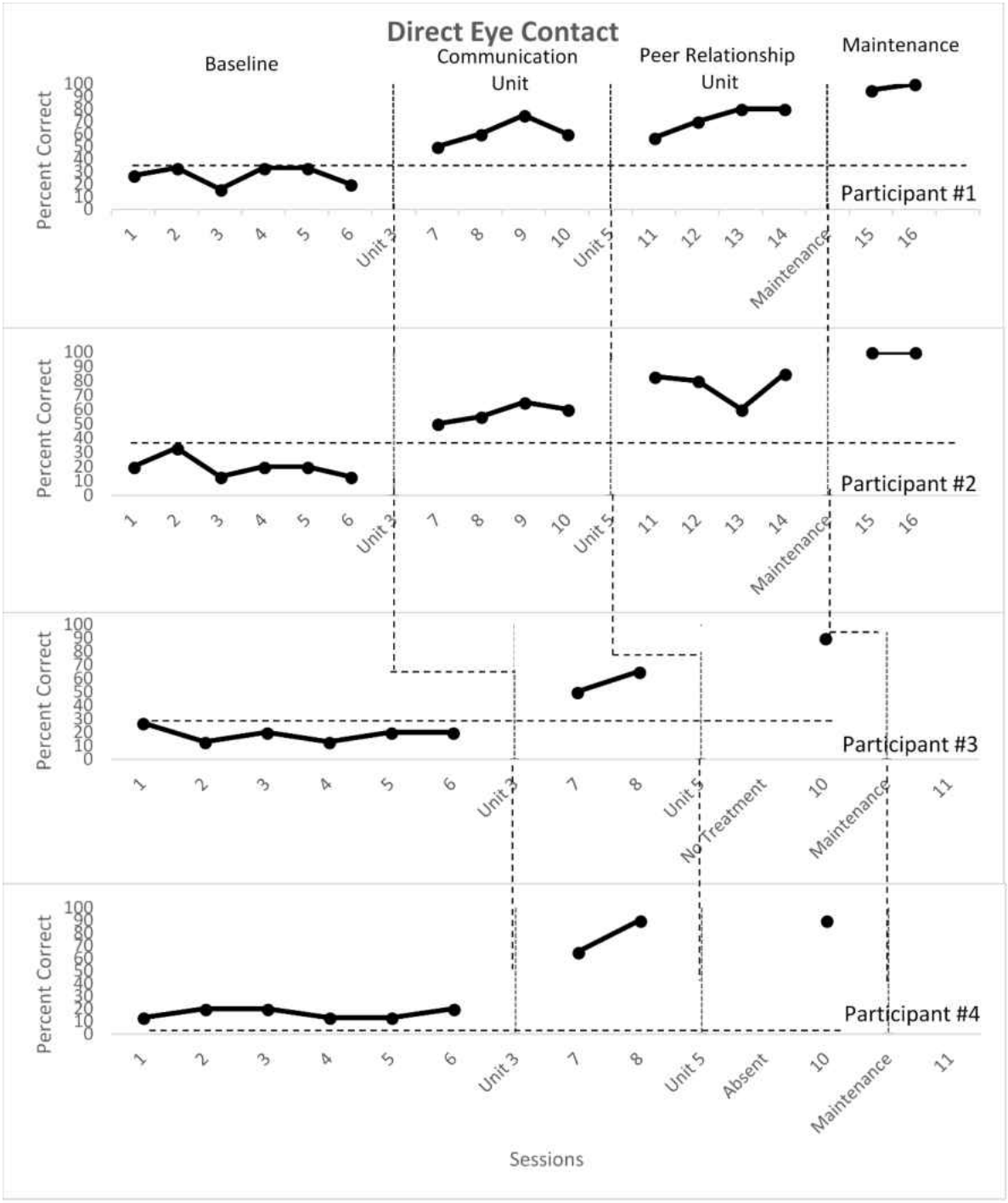


Figure 4. Dyad Groups 1 and 2: Performance on Direct Eye Contact.

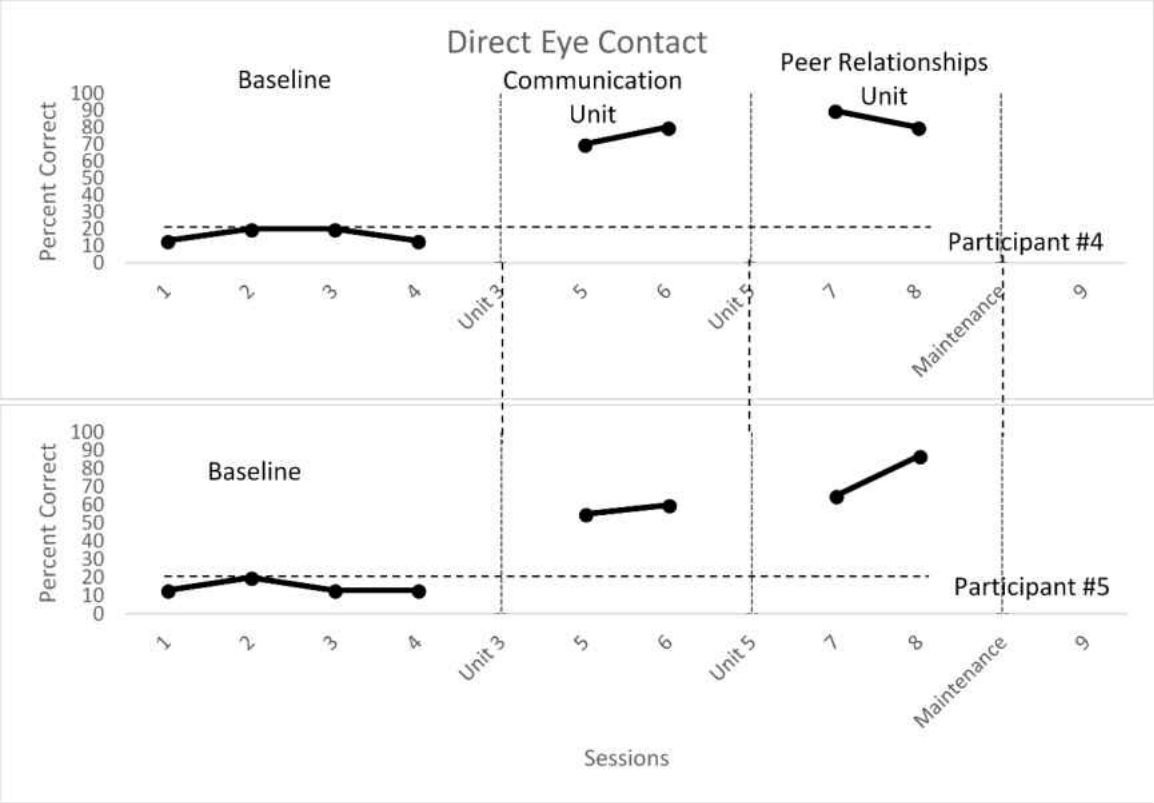


Figure 5. Dyad Group 3: Performance on Direct Eye Contact

Participant 1 (Dyad Group 1)

The social skills training based on the Sanford Harmony program appeared to be effective in increasing direct eye contact (Figure 4). During the baseline phase, Participant 1 demonstrated an average of 25% direct eye contact (range = 16-33). During the Communication Unit of Sanford Harmony, her direct eye contact increased daily to an average of 45% (range 50-75; PND = 100%). The Peer Relationships Unit showed a gradual increase in direct eye contact with a mean elicited eye contact and response of 72% (range = 57-80) indicating the social skills intervention was highly effective at increasing direct eye contact (PND = 100%).

For most of the sessions, Participant 1 wore medically prescribed anti-seizure sunglasses during the day. The sunglasses reduced the problems caused by light-induced seizures. During the implementation phase, Participant 1 endured a severe seizure during week three of the treatment sessions. The seizure occurred a day immediately following treatment session nine. According to visual analysis of the research data, on treatment session day 10 she exhibited a decrease in her direct eye contact. It is unknown whether the physical issues associated with her vision and the seizure impacted her eye contact on day 10.

As the intervention sessions continued, Participant 1 gradually increased her response to the treatment. Participant 1 showed great motivation and excitement when she saw the researcher setting up for the treatment sessions. Although days after the seizure left Participant 1 slightly lethargic, she still expressed moods of happiness and contentment. She appeared most excited when using a specific element of the intervention, pressing the Staples Easy button that echoed "That was easy", when she successfully engaged in appropriate social skills and behavior. During the follow-up (maintenance phase), two observations were conducted, (sessions 14 and 15). Participant 1 appeared to maintain the increased levels of direct eye contact with an average of 100% elicited eye contact and response acts. The maintenance phase did not include reinforcement praise or ABA methods. Participant 1 did not wear the anti-seizure sunglasses. She engaged in direct eye contact 100% of the time while playing the game "Guess Who" with Participant 2 in her assigned dyad pair.

Participant 2 (Dyad Group 1)

During the baseline phase, the mean occurrence of direct eye contact with response acts was relatively low with an average of 20% (range = 13-33). During the Communication Unit

intervention phase, eye contact with response acts increased slowly; however, the Peer Relationships Unit yielded more immediate increases in eye contact. Overall, the Communication Unit phase had a mean of 58% and a range of 50-65; and the Peer Relationships Unit phase had a mean of 77% and a range of 60-85. A PND value of 100% was calculated for both intervention unit phases, indicating it was very successful in increasing direct eye contact with responses for Participant 2.

During baseline, Participant 2 exhibited frequent episodes of noncompliant behaviors with his behavior technician, (e.g., complaining about completing his homework, wanting to eat lunch before the scheduled lunch time, and asking for breaks more often than usual). Some days his behavior technician gave him a consequence that would not allow him to engage in the researcher's social skills intervention program until he complied with requests and appropriate behavior. During the intervention sessions with the researcher, Participant 2 showed great enthusiasm in learning social skills while playing the games and activities through the Sanford Harmony program. He showed his dyad partner visual techniques by raising his hands to his eyes, pointing back and forth to her eyes to keep her visually engaged. During the maintenance, follow-up phase, Participant 2 continued this visual prompting technique with Participant 1 without reinforcement or other ABA methods from his behavior technician. Participant 2 showed great response to tapping the Staples Easy button stating, "That was easy" when he engaged in the learned social skills and age-appropriate behavior.

Participant 3 (Dyad Group 2)

During baseline, Participant 3 exhibited deficient eye contact (mean of 19%; range = 13-20). When Sanford Harmony was implemented, her direct eye contact with responses increased

58% (range 65-90) in the Communication Unit; however, it almost doubled in the Peer Relationships Unit to 90%. A PND of 100% indicated that Sanford Harmony was highly effective for Participant 3. However, when the Peer Relationships Unit was implemented on session day nine, Participant 4 was absent. Therefore, Dyad Group 2 only received one-hour training for the Peer Relationships Unit. Also, maintenance measurement could not be conducted because Participant 4 was absent for an extended amount of time due to a surgical procedure to straighten his legs.

Participant 3 showed no emotion, either favorable or unfavorable, for the social skills training based on the Sanford Harmony program. The severity of her autism diagnosis appeared to lead to substantially limited social engagements. However, during selected Buddy-up activities, she did express laughter and expressions of happiness indicating contentment with the structured social skills program.

Participant 4 (Dyad Group 2)

As baseline data were gathered, Participant 4 showed a mean occurrence (17%) of direct eye contact with response acts and a range of 13-20. During the implementation of social skills training based on the Sanford Harmony, those acts increased steadily and immediately. Overall, the Communication Unit phase (mean 78%; range = 65-90) yielded continual increased results in the Peer Relationships phase (mean 90%, range 90). A PND value of 100% was calculated for both Sanford Harmony units. Upon follow-up, Participant 4 was absent for medical reasons; therefore, maintenance of these social skills could not be further evaluated.

Participant 4 had a brief seizure during session day two of the baseline phase. The seizure made Participant 4 fall off of his seat onto the floor. He was momentarily dazed and received

immediate assistance to his seat. He was given food and water and was monitored extensively following this episode. Visual analysis of the data indicated this session day had the lowest frequency of recorded eye contact. No other seizure episodes were observed in the behavior clinic for this participant. On session day nine, Participant 4 was absent because he endured a seizure at home after session day eight. The absent day allowed for suitable recovery of the medical condition. Participant 4 showed great excitement as he engaged in the Sanford Harmony gaming activities. He was often observed telling his dyad partner, Participant 3, to "look at me." He also showed exuberance in pressing the Staples Easy button saying, "That was easy" as he engaged in appropriate social skills and behaviors.

Participant 4 (Dyad Group 3)

During the baseline phase, the mean occurrence of direct eye contact with responses was observed with an average of 17% (range 13-20). During the Communication Unit, Participant 4 increased his direct eye contact 75% (range 70-80; PND = 100%). Similarly, in the Peer Relationships Unit, he increased his direct eye contact 85% (range 80-90; PND = 100%). Participant 4 was recruited for Dyad Groups 2 and 3. Therefore, follow-up measurement could not be evaluated due to medical absences at the end of the intervention phase.

Participant 4 was present for all four treatment sessions during Dyad Group 3. However, because the treatment sessions ended at the same time the school-year ended, he was scheduled for an operation to surgically straighten his legs due to the diagnosis of Cerebral Palsy. After the surgical recovery, Participant 4 returned to the behavior clinic weeks after the maintenance phase in a wheel chair with both his legs bound in casts from his toes to his thighs.

Participant 5 (Dyad Group 3)

During the baseline phase, Participant 5 exhibited the lowest average of direct eye contact acts (mean 15%; range = 13-20). When the Harmony program was introduced, his direct eye contact more than doubled. During the Communication Unit, he averaged 58% (range = 55-60) and within the Peer Relationships Unit he averaged 76% (range = 65-87) of increased direct eye contact and response acts. A PND of 100% indicated that the Harmony program was highly effective for Participant 5. Follow-up measurements could not be conducted due to absences.

Participant 5 was the oldest of all participants. He was enrolled in high school and had experienced bullying and excessive competing problem behaviors in school. At the start of the intervention phase, he showed discomfort working with the Harmony program because the intervention books and materials indicated for children in grades kindergarten to 6th grade. The researcher explained that only the social skills techniques would be used and that the curriculum, although outlined for younger students, has been modified to teach students of all ages. Participant 5 also showed concern for having the sessions recorded. He often asked the researcher who would view the recordings, and he was frequently observed starring into the camera of the recording device. The Staples Easy button did not engage Participant 5 as much as it did the younger participants. However, he did eventually show enthusiasm playing the games and activities. Visual analysis showed that by sessions three and four, his direct eye contact increased significantly.

Effects of Harmony Sanford Social Skills Training: Increasing Verbal Reciprocity

Verbal reciprocity was measured using differential reinforcement of other/replacement behaviors (DRO). This common type of antecedent-based intervention included the Sanford

Harmony curriculum program with modifications to its implementation. Such modifications included; (a) activity modifications, (b) instructional modifications, (c) material modifications, (d) visual timers, (e) visual schedules, (f) visual cues, (g) pacing of instruction, (h) providing choices, and (i) social stories. Figures 6 and 7 present graphic representations of participants' performance on verbal reciprocity. The activities and games from the Sanford Harmony curriculum guided this structured implementation process and are described in Appendix A. The strategy of the DRO was two-fold: to decrease problem behaviors and to increase appropriate replacement behaviors. Verbal reciprocity was taught using a didactic teaching method (i.e., modeling, role play) and reinforcement (i.e., praise and award certificates).

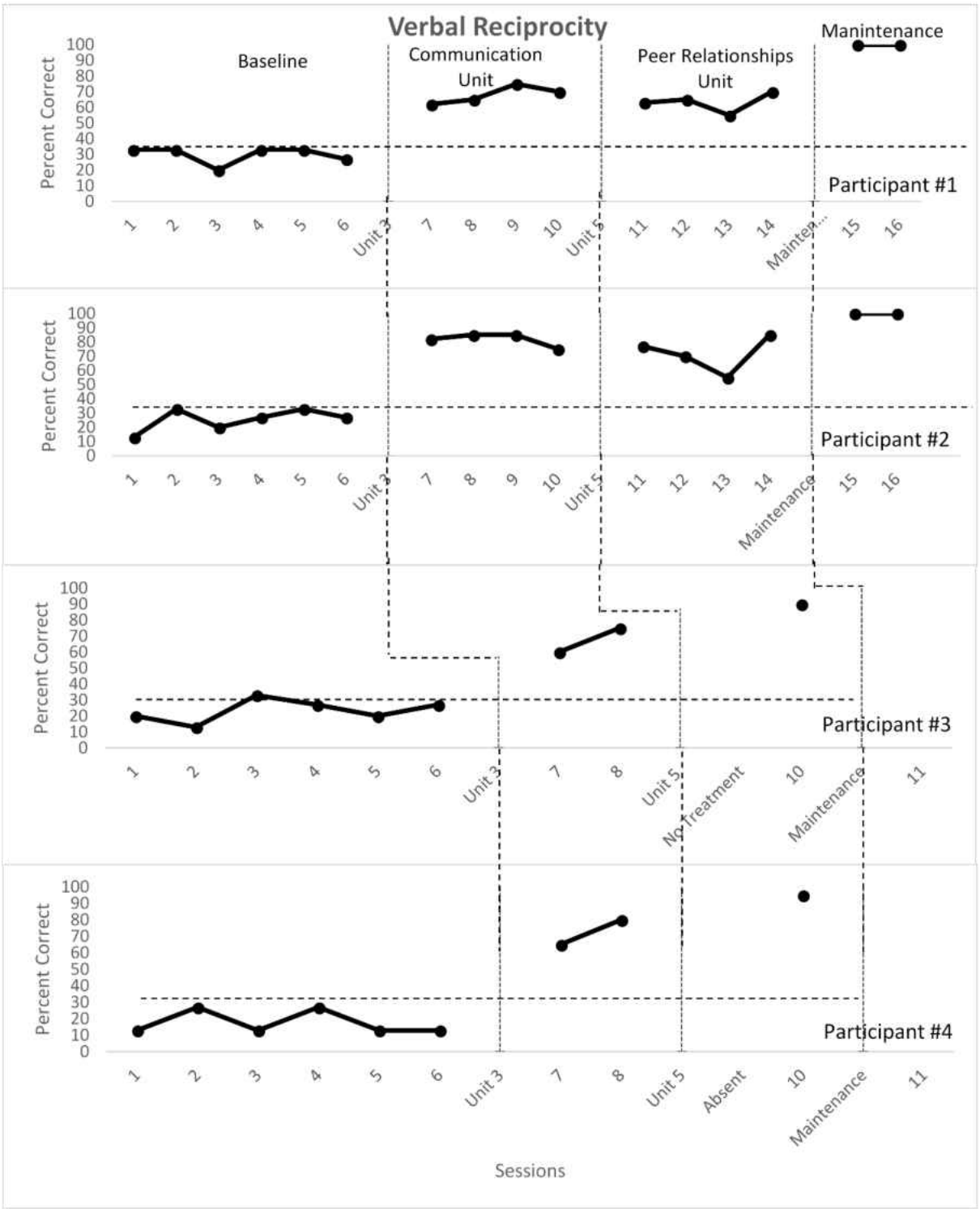


Figure 6. Dyad Groups 1 and 2: Performance on Verbal Reciprocity

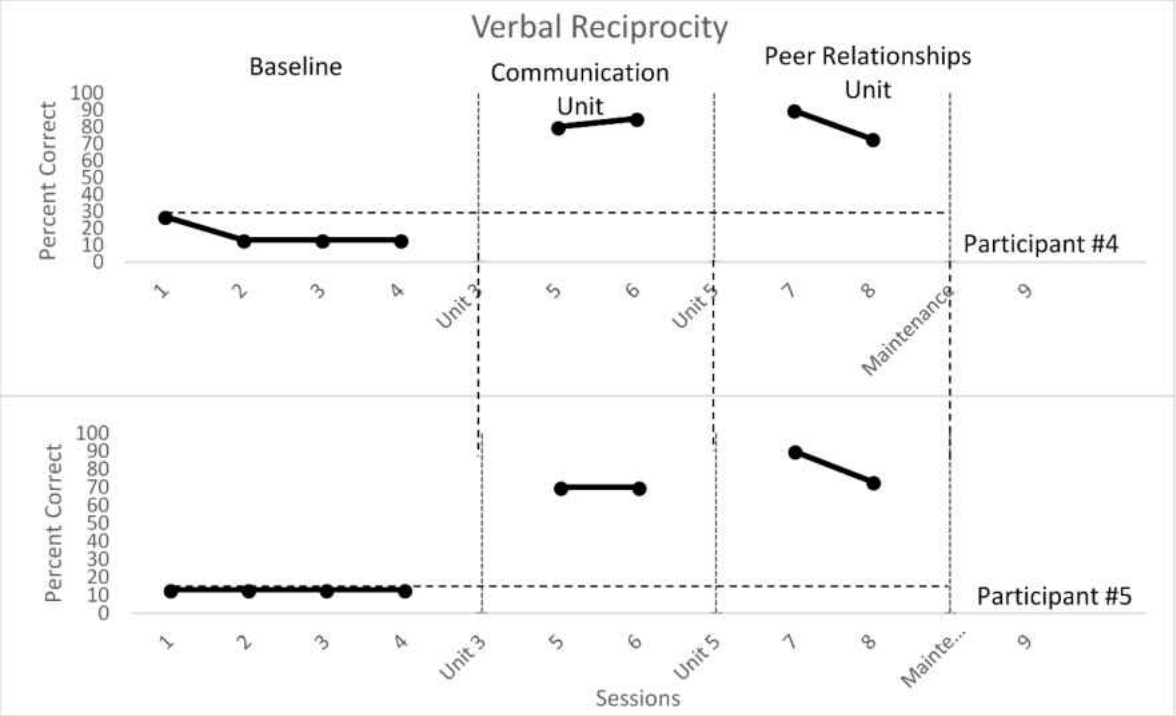


Figure 7. Dyad Group 3: Performance on Verbal Reciprocity

Participant 1 (Dyad Group 1)

During the baseline phase, the percentage of correct verbal reciprocity expressive language for Participant 1was the highest among all other participants (mean = 30%; range = 20-33). Using the social skills based on the Harmony program, her average doubled with instruction of both social skills units. During the Communication Unit, Participant 1 averaged 68%, (range = 62-75). Within the Peer Relationships Unit, she averaged 63% (range = 55-70). A PND value of 100% indicated the intervention program was effective for increasing Participant 1's verbal reciprocity.

Participant 1 exhibited the highest baseline recorded data (mean = 30) for verbal reciprocity of all participants. Although her verbal reciprocity increased, she showed the lowest means (68 and 63) for both units. Prior to the baseline phase, the behavior analyst of Participant 1 identified inappropriate (i.e., interrupting and ignoring) talking and excessive (i.e., talking to peers when they are at great distances away from Participant 1 and asking the same questions over again) communication to peers and adults as her target behavior. The analyst encouraged the use of the Harmony program's Communication Unit skills and continued practicing the skills learned such as communication bloopers (i.e., interrupting others while they are speaking) and boosters (i.e., listening to others using direct eye contact).

Participant 2 (Dyad Group 1)

During baseline observation periods, Participant 2 had the second highest average of expressive verbal reciprocity language (mean = 26%; range = 20-33). After introducing the Harmony curriculum, his average more than doubled; Communication Unit (mean = 82%; range = 75-85; PND at 100%), and the Peer Relationships Unit (mean = 72%; range 70-85; PND at 100%). Overall, both Participants 1 and 2 in Dyad Group 1 maintained the social skills learned with a stable measurement of 100% during the follow-up phase.

Prior to baseline, when Participant 2's parent filled out the pre-SSIS-RS form, she expressed concern that Participant 2 engaged in too frequent conversations with strangers. His behavior analyst identified the Harmony program as a social skills program that reinforced him to ask appropriate questions pertaining to a current activity or lesson and not to engage in personal questions and conversations with strangers or peers. The researcher adapted the Harmony program to include this training for Participant 2. During the Peer Relationships Unit,

Participant 2 appeared to learn age-appropriate verbal reciprocity from the Harmony program activities and direct instruction of peers engaging in specific behavior during peer relationships.

Participant 3 (Dyad Group 2)

Starting at baseline, Participant 3 averaged 23% of verbal reciprocity language (range = 13-27). After implementation of both Harmony curricula units, she also doubled her expressive language skills demonstrating a mean of 68% (range = 60-75; PND at 100%) for the Communication Unit and a mean of 90% (range = 60-75; PND at 100%) for the Peer Relationships Unit.

Through direct observation and evaluation, the researcher concluded that Participant 3 acquired the skills of verbal reciprocity, but she exhibited deficiencies in performing these skills without prompting and reinforcement. Visual analysis showed her frequency of verbal reciprocity increased significantly over her baseline recorded data. Unfortunately, because her dyad buddy was absent immediately following the treatment phase, follow-up of this increased behavior could not be measured.

Participant 4 (Dyad Group 2)

Participant 4 demonstrated a trend in increasing verbal reciprocity language. He participated in both Dyad Groups 2 and 3. In Dyad Group 2, starting at baseline, Participant 4 was observed verbally responding on average only 18% (range = 13-27) of the observation sessions; however, during the Communication Unit of the Harmony intervention, he rose to 73% (range = 65-80); and during the Peer Relationships Unit, he averaged 95%. As mentioned earlier, during his participation in Dyad Group 2, Participant 4 was absent during session training day

nine of the Peer Relationships Unit. Therefore, no range was calculated for Participants 3 and 4 during the Peer Relationships Unit. Also, due to absences, follow-up evaluations could not be evaluated.

During the baseline phase, Participant 4 demonstrated the second lowest average frequency of verbal reciprocity. Direct observation showed he needed frequent prompts to speak to his peers and to engage in reciprocal social turn-taking and engagement. His behavior technician repeatedly instructed him to socially engage with his peers by asking and responding to questions asked of him. Baseline data recorded that Participant 4 engaged in minimal response to his peers. During the intervention, Participant 4 showed great enthusiasm for learning social skills and often times did not want the intervention sessions to end. He was frequently recorded saying, “Let’s do some more.”

Participant 4 (Dyad Group 3)

Participant 4 was used in both Dyad Groups 2 and 3. Though paired with a different student in Dyad Group 3, he exhibited similar findings within the baseline and the intervention phases: Baseline (mean = 17%; range = 13-27), Communication Unit (mean = 83%; range = 80-85), and the Peer Relationships Unit (mean = 82%; range 73-90). A PND value calculated at 100% supported the effectiveness of the Sanford Harmony intervention program. Due to absences, follow-up could not be evaluated. Participant 4 showed the same excitement while engaged in the Harmony program in Dyad Group 3 as he did in Dyad Group 2.

Participant 5 (Dyad Group 3)

During the baseline phase, the percentage of correct verbal reciprocated expressive language for Participant 5 was the lowest of all other participants (mean = 13%; range = 13). After introducing the Communication and Peer Relationships Units, his averages increased significantly from baseline: For the Communication Unit (mean = 70%; range = 50-70); for the Peer Relationships Unit (mean = 82%; range = 73-90). A PND value of 100% indicated Sanford Harmony as a highly effective intervention program.

Participant 5 exhibited the highest frequency count of verbal reciprocity when he was engaged in conversation about friends in school, bullies in school, and competing problem behaviors at home. While engaged in the Harmony Meet-up activities, he showed minimal interest in the program. This apprehension could have been due to his limited comfort level with being recorded and working with a program designed for younger students. The Harmony program was adapted to be responsive to Participant 5's apprehension, social skills, and behavior problems in school and at home.

Adaptation included (a) redesigning the Harmony materials so that the curriculum teacher's guide and activities did not specify a grade level, (b) including more peer-peer conversations on the school community, and (c) and redesigning many of the Meet-up activities to relate to events that would happen in high school. Participants 4 and 5 adapted easily to this modification in Dyad 3 and were engaged in the lessons, videos, activities, and games.

Because Participant 5 was 15 years old and paired in a dyad group with a 10-year-old, he often conversed with the researcher. The researcher frequently reminded him that he was to

interact with his peer in his dyad group and that the social skills training would allow him to reciprocate the learned skills to his friends in school.

Effects of Sanford Harmony Social Skills Training: Increasing Social Engagements

Social engagements were measured using a combination of both direct observation and differential reinforcement of other/replacement behaviors (DRO). Frequency counts of both measurements were combined to evaluate the frequency of social engagements elicited during two-minute partial interval recording. This dependent variable indicated the percentage of time each participant was socially interacting or engaged with his or her dyadic partner. This included behaviors directed toward peers, (e.g., commenting, reciprocal questions, staying on topic, and initiating conversations). The researcher implemented tasks such as directly prompting the students as to what to say or instructing them to follow the same conversation pattern their dyadic peer was initiating. The Sanford Harmony curriculum guided students in their social engagements through games and activities. Figures 8 and 9 contain a graphic representation of students' social engagement performance.

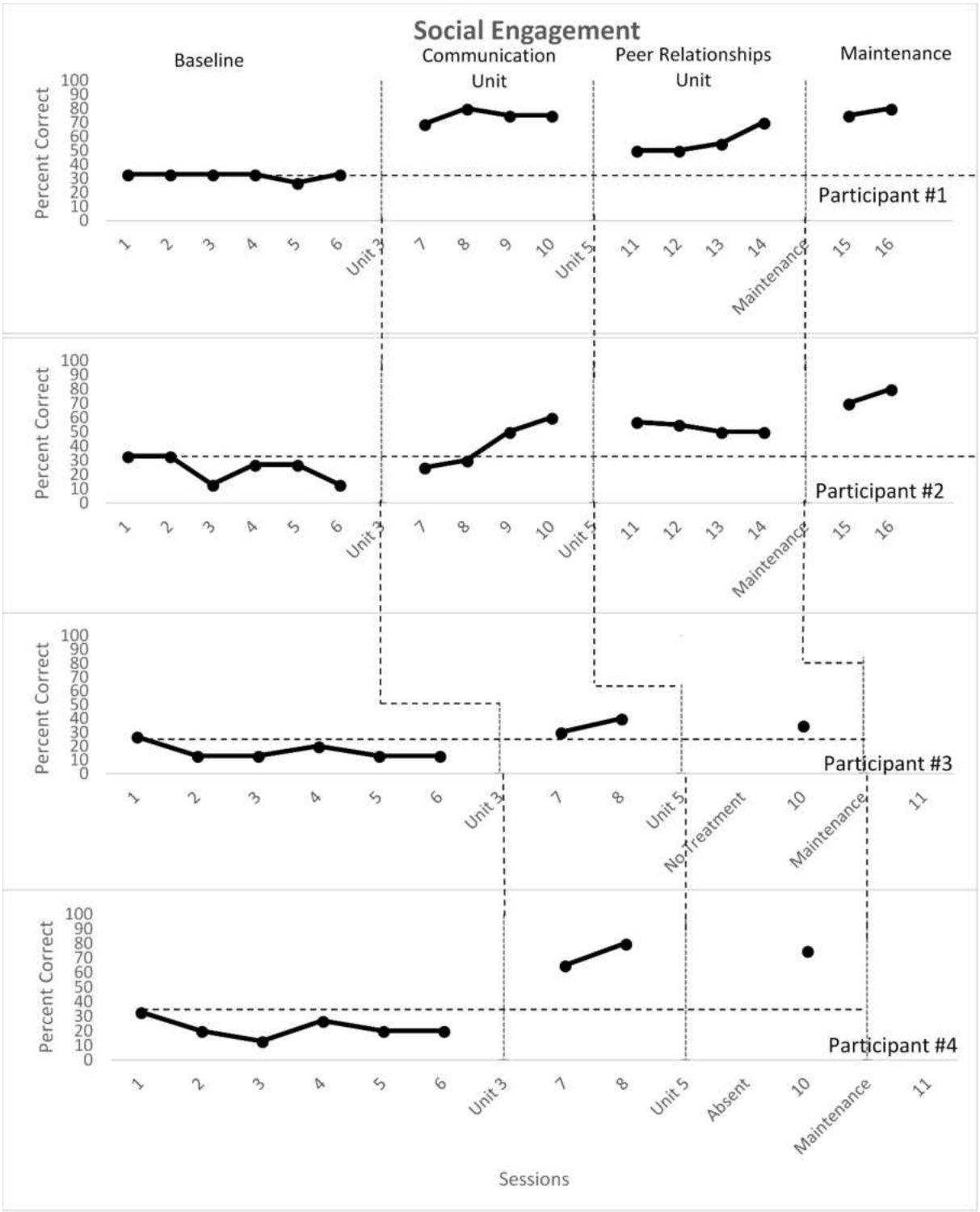


Figure 8. Dyad Groups 1 and 2: Performance on Social Engagement

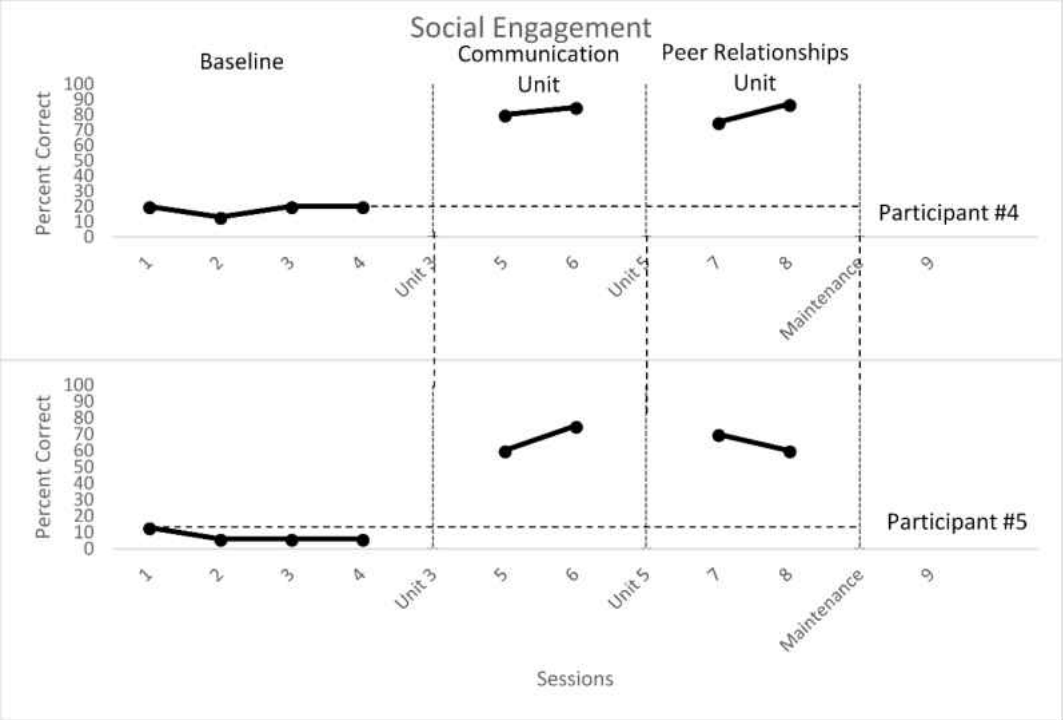


Figure 9. Dyad Group 3: Performance on Social Engagement

Participant 1 (Dyad Group 1)

During the baseline phase, the percentage of correct positive social engagements for Participant 1 again had the highest (mean = 32%; range 27-33) average. After introducing the Communication Unit, her average increased (mean = 75%; range 69-80); however, during the Peer Relationships Unit phase, her average social engagements decreased to 56% (range 50-70). A PND value of 100% remained constant, indicating that the Harmony intervention program was effective in increasing her positive social engagements. Follow-up evaluation indicated social skills were maintained at 100%.

Participant 1's average of correct positive social engagements decreased in session 11, possibly due to a severe seizure following session ten. During the initiation of the intervention phase and through direct observation, the researcher observed Participant 1 experiencing difficulty communicating in age-appropriate peer social engagement. When the Peer Relationships Unit was implemented, Participant 1 exhibited a significant increase in peer social engagements. She was recorded responding to her dyad pair, making socially significant comments, and addressing concerns related to the games and activities learned.

Participant 2 (Dyad Group 1)

During baseline observation periods, Participant 2 was second highest in his interactions with his dyadic peer, on average 24% (range = 27-33) of the time. With implementation of the Communication and Peer Relationships Units, his percentage doubled to the respective means of 41% (range = 25-60) and 53% (range = 50-57). A PND value was calculated at 50% for the Communication Unit, indicating the Harmony program had questionable intervention effects for Participant 2 regarding increasing his social engagement. However, a PND value of 100% was calculated for the Peer Relationships unit, indicating the Harmony intervention was effective for improving social engagement for this participant. Follow-up measurement indicated social engagement skills were maintained at 100% after the intervention phase.

Prior to the intervention, Participant 2 experienced emotional distress at home. His behavior technician and parent disclosed that he engaged in many disputes with family members. During the beginning of the treatment sessions, direct observations showed Participant 2 was socially nonresponding to his dyad pair, Participant 1. He communicated with limited comments and responded less frequently than his peer during unstructured conversations. Sessions seven

and eight indicated that his level of social engagement did not surpass his baseline data. However, by session nine, his social engagement continually increased into the maintenance phase.

Participant 3 (Dyad Group 2)

Participant 3 demonstrated a low yet steady increased number of positive social engagements. Starting at baseline, she was observed interacting on average only 17% (range = 13-27) of the observation sessions. During the Communication intervention unit, her social engagements increased to 35% (range = 30-40). The Peer Relationships intervention unit was evaluated at the same average 35% (range = 35). A PND value calculated at 100% for both units supported the effectiveness of the Sanford Harmony intervention program. Follow-up measures could not be evaluated for Dyad Groups 2 or 3 due to absenteeism after the intervention phase.

The researcher observed Participant 3 in challenging nonengaging social behaviors. Although she entered the behavior clinic and appropriately greeted everyone with "Hello," during the intervention sessions she often interrupted the sessions saying hello to clients and behavior technicians as they passed through the teen room. After saying hello, she would give no other response. Participant 3 was observed to be extremely quiet completing homework, working on a puzzle, or watching YouTube Kidz Bop videos. The researcher did find it interesting that Participant 3 needed limited prompts or reinforcement to be socially engaged with her dyad peer. In most sessions, after just hearing her name, Participant 3 would know what to say and when to say something socially significant to her peer during the social skills training phases. This evaluation confirmed that Participant 3 already had the acquisition skill in her repertoire but chose not to use it unless prompted. Therefore, the researcher modified the Harmony games and

activities to allow Participant 3 to use or perform these already learned skills more naturally such as simply calling her name to initiate peer-peer conversations and presenting her with a wealth of differential reinforcement of other behavior (i.e., verbal praise).

Participant 4 (Dyad Group 2)

During baseline observation periods, Participant 4 was socially engaged with peers on average 22% (range = 13-33) of the time. After the Communication Unit intervention was introduced, he averaged 37% (range = 65-80) of positive social engagements. During the Peer Relationships Unit intervention, he averaged 75% (range = 75) positive social engagements with his dyadic peer. A PND value calculated at 100% for both intervention units indicated the Harmony program was highly effective. Follow-up could not be measured due to absenteeism.

Participant 4 showed a great response to learning social skills through the Harmony program. At the beginning of the intervention phase, he exhibited a significant increase in social engagements. Visual analysis of his data indicated a consistent increase in social engagements. During baseline observation, Participant 4 had very limited social interactions with peers. His increase in social behavior was received with satisfaction from his behavior technician and the researcher.

Participant 4 (Dyad Group 3)

During the baseline phase, the mean occurrence of social engagements for Participant 4 averaged 18% (range = 13-20) of the time. During the first intervention phase, the Communication Unit, he more than doubled his social engagement interactions averaging 83% (range = 80-85); during the Peer Relationships Unit his mean was 81% and range was 75-87). A

PND value of 100% was calculated for both Harmony intervention phases indicating it was very successful in improving social engagement for Participant 4.

Participant 5 (Dyad Group 3)

For Participant 5, the Harmony intervention program appeared to be most effective in increasing social engagement. As shown in Figure 9, during the baseline phase, Participant 5 demonstrated the lowest average (8%; range = 6-13) of social engagement interactions. During the first week of the Harmony Communication intervention, he increased his average social skills to 68% (range = 60-75). Similarly, during the Peer Relationships Unit, he averaged 65% (range = 60-70) of social engagement interactions. A PND value of 100% was calculated for both intervention units, indicating the Harmony program was highly effective for Participant 5. Follow-up could not be measured due to excessive absenteeism from his dyad peer. Participant 5 attended all the intervention sessions and verbally expressed the benefits of talking about particular situations in school with a peer.

Treatment Fidelity

The researcher of this study implemented social skills training based on the Sanford Harmony intervention program. Board certified behavior analysts (BCBA), board certified assistant behavior analysts (BCaBA) and registered behavior technicians (RBT) observed the researcher and completed the Intervention Fidelity Checklist (Appendix C) and a Behavior Observation Form (Appendix F) based on the Sanford Harmony Teacher's Manual and applied behavior analysis (ABA). A low score of 60% indicated low treatment acceptability. A high score of 80% indicated intervention was completed with fidelity. Total scores averaged 97%

(range = 90-100), indicating relatively high intervention treatment fidelity; and 83% (range = 67-100), indicating DRO treatment fidelity.

Interobserver Agreement

Point-by-point IOA compared the behavior technician's data for each interval and matched it to the researcher's data for the same interval. Inter-observer agreement was calculated by adding the number of agreed intervals of both observers, dividing by the total number of intervals, and multiplying by 100. Behavior technicians and the researcher assessed 20% of the baseline data sessions and 20% of the intervention sessions at random.

For direct eye contact, inter-observer agreement averaged 93% (range = 90-100) for baseline sessions. An average of 95% (range = 95-100) was measured for Communication intervention sessions and the Peer Relationships intervention sessions (mean = 90%; range 88-99). Verbal reciprocity baseline IOA averaged 95% (range = 90-100); Communication Unit (mean = 97%; range 95-100) and Peer Relationships sessions (mean 98%; range 95-100). Social engagement baseline IOA averaged 91% (range = 83-95); Communication Unit (mean = 94%; range = 90-100) and the Peer Relationships sessions average of 99% (range 95-100). The overall calculated interobserver agreement measurement was 93% for direct eye contact, 97% for verbal reciprocity, and 95% for social engagement.

Social Validity

Two types of social validity were measured. First, the Social Skills Improvement System-Rating Scale (SSIS-RS), a multiple raters questionnaire, was used by behavior technicians, parents, and students to evaluate the social validity of the Sanford Harmony intervention

program. Using a four-point Likert-type scale (1 = never exhibits, 2 = seldom exhibits, 3 = often exhibits, and 4 = almost always exhibits), the frequency participants exhibited for each social skill and problem behavior before and after the Sanford Harmony intervention program was analyzed.

The second aspect of social validity was to evaluate whether the intervention achieved an important social goal, to improve social skills and decrease problem behaviors. Behavior technicians completed the Behavior Observation Form (Appendix F) and both students and behavior technicians completed the Social Validity Questionnaire (Appendix H).

Teacher-Reported SSIS-RS Findings

The SSIS-RS teacher form was completed by the behavior analyst or the behavior technician for the participating students. The behavior rater had at least six months of experience with the student. The SSIS-RS-Teacher form (Appendix E) was completed pre- and post-intervention. A 95% confidence interval was calculated around the standard score ranges of: well-below average = 40-70; below-average = 70-85; average = 85-115; above-average = 115-130; and well-above average = 130-160.

Table 13 shows the normative scoring based on the combined male and female norm samples. The percentile ranks indicated the percentage of individuals in the norm group who scored at or below a raw score. Percentiles range from 1 to 99, and a percentile rank of 50 equaled an average score as compared to students of comparable age.

According to the data shown in Table 13, Participants 1 and 5 showed extensive change. Participant 1's social skills improved from well-below average to below average. However, the

social skills of Participant 5 decreased from above average to below average, indicating a discrepancy within the visual analysis.

Table 13

Pre-and Post-SSIS-RS Teacher Findings

	Participants				
Descriptors	1	2	3	4	5
Pre: Social skills Percentile rank	<1 Well-below average	23rd Average	1st Well-below average	43rd Average	98th Above average
Post: Social skills Percentile rank	3rd Below average	21st Average	2nd Well-below average	55th Average	12th Below average
Pre: Problem behaviors Percentile rank	>99 Well-above average	98th Well-above average	96th Well-above average	78th Average	51st Average
Post: Problem behaviors Percentile rank	98 Well-above average	98th Well-above average	98th Well-above average	75th Average	81st Above average

Behavior Technician Questionnaire

Behavior analysts' and technicians' perceptions of the intervention program were very positive. They found implementing social and emotional learning for children with emotional behavioral disorders and other comorbid disabilities to be beneficial, and the Harmony program was easy to implement. The most positive feature of the Harmony program, according to the analysts and technicians, was increased peer social interactions and direct eye contact.

Constructive feedback was also provided. Three of the five behavior technicians suggested the duration of each unit session was too long. One technician indicated the Sanford

Harmony program should be divided into shorter intervals. Another technician reported the intervention would have more profound effects if implemented throughout the year or incorporated into the student behavior intervention plan (BIP).

Parent-Reported SSIS Findings

To assess social validity of the effectiveness of the Sanford Harmony program, parents (blind to the intervention) used the SSIS-RS Parent Form (Appendix E) to rate their child's social skills and problem behaviors pre- and post- intervention phase. Table 14 contains parent reported data indicating percentile ranks of their child's age and gender compared to children of similar demographics. A 95% confidence interval was calculated around the following standard score ranges: well-below average = 40-70; below-average = 70-85; average = 85-115; above-average = 115-130; and well-above average = 130-160. Parents of Participant 1 did not complete the SSIS-RS Parent form. Also, although the parents of Participant 4 completed the pre-SSIS-RS Parent Form, they were unable to return the post-SSIS-RS Parent Form to the researcher for evaluation due to medical absenteeism.

Table 14

Pre-and Post-SSIS-RS Parent Findings

Descriptors	Participants 1	2	3	4	5
Pre: Social skills Percentile rank	N/A	<1 Well-below average	1st Well-below average	23rd Average	<1 Well-below average
Post: Social skills Percentile rank	N/A	<1 Well-below average	1st Well-below average	N/A	12th Below average
Pre: Problem behaviors Percentile rank	N/A	98th Well-above average	98th Well-above average	55th Average	96th Well-above average
Post: Problem behaviors Percentile rank	N/A	96th Above average	98th Well-above average	N/A	97th Well-above average

Student Self-Reported SSIS Findings

Students completed a self-report SSIS-RS survey (Appendix E). Table 15 indicates self-ratings of participants' social skills and problem behaviors percentile ranks for students their age and gender. A 95% confidence interval was calculated around the following standard score ranges: well-below average = 40-70; below-average = 70-85; average = 85-115; above-average = 115-130; and well-above average = 130-160.

Based on each participants' self-ratings, only Participant 5 reported no change pre- or post- intervention. However, visual analysis of Participant 5's eye contact, verbal reciprocity, and social engagement indicated the highest improvement.

Table 15

Pre-and Post-SSIS-RS Student Findings

Descriptor	Participants 1	2	3	4	5
Pre: Social skills	<1	7th	1st	6th	2nd
Percentile rank	Well-below average	Below average	Well-below average	Below average	Well-below average
Post: Social skills	2nd	31st	2nd	67th	<1
Percentile rank	Below average	Average	Well-below average	Average	Well-below average
Pre: Problem behaviors	84	78th	96th	19th	98th
Percentile rank	Well-above average	Average	Well-above average	Average	Well-above average
Post: Problem behaviors	50th	52nd	98th	93rd	98th
Percentile rank	Average	Average	Well-above average	Above average	Well-above average

Student Questionnaire

Students completed a post-intervention questionnaire (Appendix H) that asked them to rate six statements using a four-point Likert-type scale: 1 = never true, 2 = sometimes true, 3 = often true, and 4 = always true. Results of the analysis of data are presented in Table 16. A total score of 24 points indicated a high score of treatment acceptability. The results, based on the students' rating scores on the intervention (mean = 19%; range 17-23), indicated an above-average treatment acceptability.

Table 16

Student Questionnaire

Participants	Rating Score
1	17
2	18
3	18
4	23
5	21

CHAPTER 5
DISCUSSION

Introduction

This study was conducted to examine the effects of a structured social skills program in increasing social and emotional skills for six adolescents with comorbid disabilities, predominantly autism spectrum disorder (ASD) and emotional and behavioral disorder (EBD) in a behavioral clinical setting. Overall, this study provided preliminary evidence that a structured social skills program has potential to improve social skills of students with comorbid disabilities and EBD in a clinical setting.

Interpretation of Results

A single-subject multiple baseline design across subjects was used to determine the effectiveness of implementing a structured social skills program to increase direct eye contact, verbal reciprocity, and social engagement for adolescents with disabilities. This study was guided by the following six research questions:

Research Question 1

To what extent does the implementation of gameplay activities using a structured social skills program increase the frequency of eye contact for peers with comorbid disabilities, primarily ASD *and EBD, in a small group setting, as measured using partial-interval recording?*

The structured social skills intervention increased the direct eye contact of all the participants in the study. Specifically, during the Harmony Communication Unit, five of six participants increased direct eye contact more than 50%. Only Participant 1 improved her direct

eye contact less than 50% (mean = 45%; range = 50-75) during the Communication Unit; however, she showed significant improvement during the Peer Relationships Unit (mean = 72; range = 57-80). The other participants increased their eye contact during both the Communication Unit and the Peer Relationships Unit in more than 50% of the observed sessions. All participants obtained a percentage of nonoverlapping data points (PND) calculation of 100%, indicating the Harmony program was highly effective in increasing direct eye contact. Overall, the average increase of direct eye contact for all the participants was 62% (range = 50-90) during the Communication Unit and 82% (57-90) during the Peer Relationships Unit. Therefore, as hypothesized, the implementation of Sanford Harmony gameplay activities effectively increased direct eye contact of students with EBD and comorbid disabilities.

These findings suggest that this type of structured program may be useful for small group or dyad instruction of eye contact as a subskill of social skill training. Previous researchers who have indicated that direct eye contact affects perception, cognition and attention (Senju & Johnson, 2009). As children develop in age, eye contact correlates to dyadic facial recognition of others and is stimulated by language acquisition (Arnold et al., 2000; Carbone et al., 2013; Mirenda et al., 1983; Podrouzek & Furrow, 1988). Bandura (1977) stated, “Most human behavior is learned observationally through modeling” (p. 22). In modeling, learning occurs through direct instruction (Bandura, 1977). The structured social skills program, Sanford Harmony, when modified for use in a clinical setting, provided a format for teaching eye contact through modeling and game play.

Research Question 2

To what extent does the implementation of gameplay activities using a structured social skills program increase the number of verbally reciprocated responses during structured conversation for students with comorbid disabilities, predominantly ASD and EBD, as measured using partial interval recording in a small group setting?

After implementation of the intervention, visual analysis indicated each participant exceeded the hypothesized expectations of meeting their goals to increase verbal reciprocity. All participants more than doubled their verbal responses with individualized implementation of differential reinforcement of other/replacement behaviors (DRO) and the Sanford Harmony curriculum of interverbal games and activities. All five participants increased verbal reciprocity on average 74% (range = 60-85) during the Communication Unit and averaged 81% (range = 55-90) during the Peer Relationships Unit. Data analysis confirmed the hypothesis that implementation of the Sanford Harmony gameplay activities effectively increased verbal reciprocity for students with EBD and comorbid disabilities, including ASD.

These findings hold promise for practitioners working to improve communication skills among a variety of student types. Social competence requires a child to have content-specific conversational skills to engage in appropriate dialogue with others. In this study, the researcher implemented a modified structured social skills program using methods of modeled conversations with the Sanford Harmony Communication Unit. Using principles rooted in the social learning theory and practices of conversational knowledge, social language, pragmatic language structure, and nonverbal communication, the students learned to self-regulate peer-peer conversations and behaviors. These findings suggest that professionals who are working to

increase verbal reciprocity in students with EBD and comorbid disabilities, including ASD, may benefit from a structured game play approach using a curriculum such as Sanford Harmony.

Research Question 3

To what extent does the implementation of gameplay activities using a structured social skills program increase the number of social engagements during structured conversation for students with comorbid disabilities, predominantly ASD and EBD, as measured using partial interval recording in a small group setting?

After the Harmony intervention, visual data analysis showed Participant 4 was the only student whose PND value (50%) indicated the Harmony Communication Unit was a questionable intervention to increase social engagements. The average percentage of social engagement for all other participants was 60% (range = 25-85) during the Communication Unit and 61% (range = 35-90) during the Peer Relationships Unit. Overall, as hypothesized and based on data and visual analysis, Sanford Harmony gameplay activities were effective in increasing social engagements for each participant with EBD and comorbid disabilities including ASD; however, it demonstrated the lowest effectiveness of all other variables.

Researcher's Baron-Cohen et al. (2015) and Mazza et al. (2014, 2017) suggested that theory of mind involves two processes: cognitive and affective. The cognitive process allows individuals to understand the mental state of others. The affective process provides people with the ability to make inferences regarding others' emotions. On this basis, through direct observation, ABA methods and direct instruction of the social skills program, the researcher's data showed increased levels of social engagements for each participant in the study.

Children with ASD often have difficulty understanding other's feelings and the concept of "theory of mind" (Corbett et al., 2014). The acquisition of pragmatic language is the ability to adequately interpret language of others in social engagements (Astington & Jenkins, 1999) and is an important functional skill (Corbett et al. 2014). Although the Peer Relationship Unit yielded the lowest effectiveness rate of those in the study, the finding that all participants showed gains is promising. Child-child interactions have been found to be successful interventions in increasing social engagement of children with ASD (Englund et al., 2000), and the findings in the present study suggest that using a structured social skill program such as Sanford Harmony and game play should be further evaluated.

Research Question 4

To what extent will increased eye contact with peers and the number of words per response during structured conversation be maintained in a one-to-one setting for students with comorbid disabilities, predominantly ASD and EBD, as measured using partial-interval recording?

Follow-up data were able to be measured only for Dyad Group 1. Due to time constraints and the school year ending, the maintenance phase consisted of two consecutive days immediately following the intervention phase. Participants 1 and 2 engaged in tabletop gameplay activities (e.g., children's Monopoly) with their behavior technician supervising the play. The researcher observed an estimated 100% of both participants exhibiting direct eye contact with verbal responses. The participants received no verbal prompts or reinforcement praise during the maintenance phase. Both participants initiated the learned social skills on their own during structured conversations, indicating the hypothesized rationale that the Harmony intervention

would be effectively maintained in a one-to-one setting and would increase students' eye contact and verbal responses.

These findings suggest that the intervention program, which used gameplay activities and lessons with peer-mediated strategies, may be effective in increasing the frequency of direct eye contact, verbal reciprocity, and social engagement. Each dependent variable increased significantly from baseline to the intervention phases. Between the two intervention phases, social skills increased, indicating that the students' future performance were likely to continue to improve post-intervention without verbal prompts or reinforcement praise. Data analysis showed the Peer Relationships Unit improved the students' social skills more effectively than did the Communication Unit.

In the maintenance phase, Participants 1 and 2 maintained significant reciprocity in all the social skills learned from the Harmony intervention. In terms of verbal reciprocity, all participants generally performed above average during the intervention phase, which when calculated, revealed a PND of 100%. This indicate a highly effective intervention, a marked improvement from baseline.

However, because maintenance data is not available for all participants, no conclusions may be drawn regarding the long term results of the intervention.

Research Question 5

What are the perceptions of students, parents, and behavior analysts regarding the implementation of gameplay skills increasing eye contact and communication for students with comorbid disabilities, predominantly ASD and EBD, as measured using the Social Skills Improvement System -Rating Scale (SSIS-RS)?

The SSIS-RS teacher, parent, and student forms showed inconsistencies across the board. The teacher and student forms showed more positive social skills and fewer problem behaviors than identified by the parents; scales showed no matching percentiles in either of the categories. However, only Participant 1 showed almost identical results to those of the two raters (i.e., teacher and student forms). Overall, the perceptions of students, parents, and teachers (behavior analysts) regarding the implementation of Sanford Harmony gameplay skills to increase eye contact and communication for students with EBD and comorbid disabilities were inconclusive.

These findings suggest that behavioral checklists and surveys may not be discrete enough to systematically and effectively assess specific behavioral changes in students during a 10-week intervention. Characteristics of individuals with ASD and other developmental disorders are so vast that it was difficult for a measurement of a five-point Likert-type scale to be accurate in determining effective change over the short time of the present study . Direct observations and evidence-based practices, such as applied behavior analysis (ABA), are identified most frequently as relevant indexes to measure social and emotional behaviors in children with ASD and EBD (Rollins, 2016).

Summary

The results of this study are consistent with findings of previous peer-mediated game-play interventions. The increases in eye contact and social responses by peers in dyadic groups have yielded significant results in improved social skills for students with ASD, EBD and other disabilities (Bock, 2007; Breeman et al., 2015; Laushey & Heflin, 2000; Lynn et al., 2013; Ratto et al., 2011; Solomon et al., 2014). The structured social skills intervention based on the Sanford Harmony program enhanced eye contact and social interactions for students with comorbid disabilities including ASD and EBD.

Previous peer-mediated interventions (Charman et al., 2015; Georgiades et al., 2011; Park et al., 2012a) increased social-communicative behaviors from trained peers with and without ASD and comorbid EBD. In these studies, the researchers found more communication skills linked to functional and behavioral outcomes in children with comorbid disabilities than structural language skills deficiencies. In addition, previous researchers' interventions indicated that as children develop in age, eye contact correlates to dyadic facial recognition of others and is stimulated by language acquisition (Arnold et al., 2000; Carbone et al., 2013; Mirenda et al., 1983; Podrouzek & Furrow, 1988).

Finally, role-playing and similar gameplay activities afford children with ASD the opportunity to improve their empathy and peer relationship skills (Dudzinska et al., 2015). Previous researchers have suggested playing games to improve the physical, cognitive, linguistic, emotional and social development in children with autism (Cankaya & Kuzu, 2010). Behavioral role-play scenarios with dyadic interactions have been found to be successful interventions, increasing the social competence of children and adolescence with ASD (Englund et al., 2000).

Implications for Practice

Results of this study have several implications. First, the study supported research showing that social skills training for children with EBD and comorbid disabilities including ASD can produce increases in eye contact, verbal reciprocity, and social engagement skills. As children age, acquisition behaviors become performance behaviors and are embedded in the child's repertoire. Therefore, social skills training and social-emotional learning is essential for children with EBD and comorbid disabilities to navigate successfully in the classroom and the community, allowing them to confidently engage in social interactions with typically developing peers. Continued focus on tools and procedures for teaching these critical skills is needed.

Second, the results of the present study highlight the potential for providing teachers and behavior analysts with existing tools to implement social and emotional learning interventions in their educational settings. Baseline observations indicated that behavior analysts did not have specific social and emotional learning games or activities to use in instructing students to socially interact. The Sanford Harmony program is a structured program, embedded with child-centered gameplay activities for both peer-to-peer groups or peer-teacher groups to facilitate social skills training, that may hold value in clinical settings.

Another important implication is that the social and emotional learning can be individualized to the needs and interests of each student. The program used in this study provided the basis for (a) skills to be taught, (b) the use of consistent phrases and language by participants and therapists, (c) integrating social and emotional practices into peer relationships, and (d) making an effort to cultivate diversity through social engagements gameplay. However, professional discretion was used in modifying appropriately and making on-the-spot professional

decisions during implementation. Prior to any intervention, teachers should establish individualized planning for peer-mediated activities. Therefore, teachers would benefit from considering the diverse intellectual and functional levels of students prior to intervention practices. This would increase the effectiveness of interventions.

Limitations and Future Research

This study had several limitations. First the study's design was limited to generalized findings in the behavior clinic. The behavior clinic was a large facility with multiple rooms in which to generalize new social and behavioral skills learned (i.e., recreational room and session rooms for multiple children with diverse needs and interests). However, the Harmony intervention was only implemented in the teen room and provided no generalization. Results from the SSIS-RS forms identified discrepancies among the teacher, parent, and student reports, possibly due to the lack of generalization into the home, school, and community.

Second, Participants 3 and 6 had to immediately change their behavior setting due to in-home sessions to accommodate skill deficits requiring immediate attention at home. This change in schedule contributed to decreased social skills training with the intervention program. Future researchers should be able to implement the Harmony program at home to incorporate parents, siblings, and other family members in the social-emotional learning process.

Third, student absences occurred during the Harmony intervention. Participant 4 was recruited for Dyad Groups 2 and 3. Due to medical issues, however, he was often absent, leaving both his dyadic peer in Group 2 and 3 without a buddy to continue the intervention. To account for student absenteeism, future researchers should not incorporate dyadic groups. Groups should

consist of multiple student peers with diverse abilities to ensure when one student is absent the intervention could continue with the remaining students.

Finally, the intervention should be implemented for longer than an eight-week period. The Sanford Harmony program on which the intervention was based has been designed with five social and emotional learning units. This study implemented only two units, which limited the students to a select group of functional learning skills. Future researchers should implement the intervention throughout the school year, extending the program to a daily practice as it has been designed to be implemented. A longer intervention phase may establish a longer maintenance phase for follow-up evaluation.

Conclusion

The results of the present study support the findings of previous researchers (Durlak et al., 2011; Elias et al., 1997; Osher et al., 2016) by demonstrating that social and emotional learning can be implemented effectively with students with comorbid disabilities including ASD and EBD. The study extends previous literature by incorporating gameplay skills as intervention practices to increase direct eye contact, verbal reciprocity, and social engagement for students with comorbid disabilities and EBD. Based on effective implementation, significant social gains were exhibited from the intervention. At a time when social-emotional learning is increasingly gaining traction as a point of interest in schools, specific interventions to support even students with the most challenging behaviors is critical. Although this study was conducted in a clinical setting, the findings suggest there may be value in exploring ways to use the combination of gameplay, a structured social skills training program such as Sanford Harmony, and modification

of materials to meet the social and communication needs of students with a wide range of abiltiies and disabilities across settings.

APPENDIX A
OVERVIEW OF *MEET UP* AND *BUDDY UP* PRACTICES

OVERVIEW OF *MEET UP* AND *BUDDY UP* PRACTICES

Everyday Practice	Why	When	How	Goals	Learning Objectives
Meet Up – whole class forum	To create and maintain a safe and comfortable learning environment, students must have opportunities to connect with all peers, take ownership of classroom expectations, and solve problems	Occurs the same time every day	Arrange a Meet Up time when all students are able to sit together for 10-20 minutes to share, ask questions, and discuss ideas, events, and expectations for their community	• Foster a classroom environment where all students are part of an inclusive community • Effectively communicate ideas • Provide opportunities for students to share information with peers • Establish a student-centered forum • Guide students in conflict resolution	• Students create a respectful and inclusive environment • Students collaborate with peers through active decision-making • Students ask respectful questions to peers • Students compliment peers • Students consider peers' feelings • Students use social-problem-solving skills
Buddy Up – peer buddy system	To intentionally bring diverse peers together, creates opportunity to learn about classmates with whom they may not typically spend as much time, broadening their SEL experiences	Occurs 4-5 times or more per week, and last from 2-45 minutes, depending on the activity	Students are paired with a different peer each week Buddies engage with one another in activities	• Students engage with diverse peers • Students connect with each other through meaningful activities • Provides opportunities for cultivation • Supports SEL & cognitive growth	• Students interact with peers exhibiting similar or different temperaments, interests, and skills • Students collaborate with diverse peers • Students express feelings with self-confidence & disagree respectfully

Source. http://www.sanfordharmony.org

APPENDIX B
IRB APPROVAL LETTER

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Celestial Wills-Jackson**

Date: **March 12, 2018**

Dear Researcher:

On 03/12/2018 the IRB approved the following modifications / human participant research until 03/11/2019 inclusive:

Type of Review:	Submission Correction for UCF Initial Review Submission Form; Expedited Review Category #6 and #7 – Minor Participants; n=6 *This approval includes a Waiver of Written Documentation of Parental Consent not requiring researcher signature and a Waiver of Child Assent*
Project Title:	Implementing gameplay skills to increase eye contact and communication for students with comorbid autism spectrum disorders and emotional and behavioral disorders
Investigator:	Celestial Wills-Jackson
IRB Number:	SBE-17-13708
Funding Agency:	
Grant Title:	
Research ID:	N/A

The scientific merit of the research was considered during the IRB review. The Continuing Review Application must be submitted 30 days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form **cannot** be used to extend the approval period of a study. All forms may be completed and submitted online at https://iris.research.ucf.edu .

If continuing review approval is not granted before the expiration date of 03/11/2019, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a copy of the consent form(s).

e

APPENDIX C
PARENTAL CONSENT

Implementing gameplay skills to increase eye contact and communication for students with comorbid autism spectrum disorders and emotional and behavioral disorders

Informed Consent

Principal Investigator: Celestial Wills-Jackson, M.S.Ed.

Faculty Advisor: Rebecca Hines, Ph.D.

Investigational Site(s): Camen Behavioral Services
148 Wilshire Blvd.
Casselberry, FL 32707

How to Return this Consent Form:

You are provided with two copies of this consent form. If you give consent for your child to participate in the research, please sign one copy and return it to the researcher or behavior analyst and keep the other copy for your records.

Introduction: Researchers at the University of Central Florida (UCF) study many topics. To do this we need the help of people who agree to take part in a research study. You are being asked to allow your child to take part in a research study which will include about *6* clients at Camen Behavioral Services Your child is being invited to take part in this research study because he or she is a client at Camen Behavioral Services, 148 Wilshire Blvd., Casselberry, FL 32707.

The person doing this research is Celestial Wills-Jackson, M.S.Ed. doctoral candidate of the University of Central Florida. Because Celestial is a graduate student her research is being guided by Rebecca Hines, a UCF faculty advisor in the College of Education and Human Performance.

What you should know about a research study:

- Someone will explain this research study to you.
- A research study is something you volunteer for.
- Whether or not you take part is up to you.
- You should allow your child to take part in this study only because you want to.
- You can choose not to take part in the research study.
- You can agree to take part now and later change your mind.
- Whatever you decide it will not be held against you or your child.
- Feel free to ask all the questions you want before you decide.

Purpose of the research study: The primary purpose of this research study is to investigate whether game play skills can impact eye contact and communication responses of adolescence with comorbid autism spectrum disorders and emotional and behavioral disorders. This study is interested in learning if the activities and games within the Sanford Harmony program has any effect toward helping children with disabilities develop prosocial skills.

What your child will be asked to do in the study:

- The total length of study will be ten weeks, with the first week obtaining baseline social skill ratings for participants, and the tenth week obtaining postintervention social skill ratings. The middle eight weeks of the study is when the activities and games of the Sanford Harmony program will take place.

• Study Phase-Sanford Harmony (SHP)	• Approximate Timeline
• Pre-study phase (SHP-Training)	• April 2018
• Baseline phase	• April 2018
• Intervention phase	• April-May 2018
• Post-intervention phase	• May 2018

- Your child's behavior analyst will be implementing the SHP during a social interaction time in the recreation room. The SHP consists of social activities and games that will last between 35-45 minutes per session.
- The two units of study from the SHP will be Unit 3-Communication and Unit 5-Peer Relationships
- Activities in the Communication Unit will allow your child to participate in observational and experiential exercises to increase their understanding of healthy and unhealthy communication patterns. Your children will learn to identify their own communication styles and will be provided with opportunities to practice effective ways of engaging with peers.
- The Peer Relationships Unit will promote positive interactions and relationships between your child and their peers. Through their participation in paired group activities, your child will learn about qualities important to friendships, negative consequences associated with bullying, and how to provide their peers with support.
- Your child will interact with their behavior analyst and clients at Camen throughout the SHP intervention. Your child does not have to express or identify any emotion word or answer complete every task. You or your child will not lose any benefits if your child skips questions or tasks.

Location: Sanford Harmony program will be implemented at Camen Behavioral Service. The SHP activities and games will take place in the recreation room.

Time required: We expect that your child will be in this research study for 10 weeks, 35-45 min/sessions, twice per week.

Audio or video taping:

Your child will be videotaped during this study. If you do not want your child to be videotaped, your child will *not* be able to be in the study. Discuss this with the researcher or a research team member. If your child is videotaped, the tape will be kept in a locked, safe place. The tape will

be erased or destroyed when once the information needed for the dissertation has been obtained, or no more than 3 years after the completion of the study.

Risks: There are no expected risks for taking part in this study. There are no reasonably foreseeable risks or discomforts involved in taking part in this study.

Benefits:

We cannot promise any benefits to you, your child, or others from your child taking part in this research. However, possible benefits include developing or increasing social skills.

Compensation or payment:

There is no compensation or other payment to you or your child for your child's part in this study.

Confidentiality: We will limit your personal data collected in this study. Efforts will be made to limit your child's personal information to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of UCF.

Federal law provides additional protections of your child's medical records and related health information. These are described in an attached document.

Anonymous research: This study is anonymous. That means that no one, not even members of the research team, will know that the information your child gave came from him or her.

Study contact for questions about the study or to report a problem: If you have questions, concerns, or complaints, or think the research has hurt your child talk to Celestial Wills-Jackson, Ph.D. candidate, College of Education and Human Performance, (cell: 516-316-9288; email cwillsjackson@knights.ucf.edu) or Dr. Rebecca Hines, Faculty Supervisor, College of Education and Human Performance at Rebecca.Hines@ucf.edu.

IRB contact about you and your child's rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901. You may also talk to them for any of the following:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You want to get information or provide input about this research.

Withdrawing from the study:
You may decide not to have your child continue in the research study at any time without it being held against you or your child. If you decide to have your child leave the research, contact the investigator (Celestial Wills-Jackson) so that the investigator can remove your child from the study.

The person in charge of the research study can remove your child from the research study without your approval. Possible reasons for removal include activity that causes harm to your child or other children.

Results of the research:

UCF Health is required by law to protect your PHI. Any publications or presentations of the Research Study findings will not reveal your identity. By signing this document, you authorize UCF Health to use and/or disclose your PHI for the Research Study. Those persons who receive your PHI ("Recipients") may not be required by Federal privacy laws to protect it and may share your PHI with others without your permission.

Parents retain this copy of the consent for their records

APPENDIX D
SANFORD HARMONY PARENT COMMUNICATION AND PEER RELATIONSHIP UNITS

Dear Parent or Guardian(s):

I am ready to begin the Communication Unit of Sanford Harmony! In this unit, your child will increase her awareness of **ineffective communication behaviors** and have opportunities to practice effective and healthy communication strategies. In the first activity, your child will learn about two ineffective communication behaviors, Communication Bloopers, which prevent us from working well in groups. The two Bloopers are ***interrupting*** and ***ignoring***. When students become aware of Communication Bloopers, they are able to catch themselves when they "bloop" and replace it with effective communication strategies.

In the second activity, your child will learn about two **effective communication strategies, Communication Boosters**. The two Boosters are ***listening*** and ***supporting***. The last activity in the Communication Unit will provide your child the opportunity to observe and **practice Communication Boosters** and **avoid Communication Bloopers**. Your child will play a game in which she/he earns points for using Communication Boosters, as she/he works together with a peer to come up with five items they need to bring if they were on a desert island.

An important part of Sanford Harmony is for your child to continue to discuss and practice concepts outside of Camen. Please see the Home-School Connection Tips on the next page for fun ways to practice effective communication at home.

Thank you for your continued support during this research study using the Sanford Harmony Program! Please contact me if you have any questions about the Sanford Harmony program or the research I am conducting.

Sincerely,

Celestial Wills-Jackson, M.S.Ed.
Doctoral Candidate
College of Education & Human Performance
University of Central Florida
(516) 316-9288
cwillsjackson@knights.ucf.edu

Sanford Harmony – Communication Unit
Building Healthy Relationships Among Students

Tips

1. Ask your child to name the Communication Bloopers discussed in the first activity (interrupting and ignoring). Everybody bloops, but we can decrease how often we bloop by catching ourselves in the act. Have a discussion with your child about which Blooper is most difficult for him/her to avoid. Share with your child the Blooper you have trouble avoiding.

2. The second activity describes two types of Communication Boosters: listening and supporting. Which strategies are easiest for your child to use? Which are most difficult? Share those you find challenging.

3. During a family meal or activity, have at least one member of your family keep track of the number of Bloopers and Boosters that occur during the discussion. Do this at least once a week and see if your family can improve their score.

4. Watch your child's favorite TV show with her/him and record how often specific characters display Bloopers or Boosters. Discuss how they influence the way characters think, fell, and behave and how they affect their interactions with others.

Dear Parent or Guardian (s):

The quality of peer relationships that children develop at school has important implications for their social, emotional, and academic functioning. The last unit of Sanford Harmony, the Peer Relationships unit, provides your child with the opportunity to practice strategies to develop and maintain positive relationships with their classmates. Your child will learn the qualities important to friendships, develop a Friendship Pledge to identify and commit to how they want to treat their friends, practice providing their peers with support, and practice effective ways for handling bullying situations. Please refer to the Home-School Connection Tips on the next page for suggestions on how to reinforce and practice these concepts at home.

Your child had a lot of fun participating in Sanford Harmony activities!! I hope that you enjoyed observing all the new skills and strategies your child has learned and that the Home-School Connection Tips have been beneficial to you and your family.

Please let me know if you have any questions about your child's participation in Sanford Harmony, or if you would like to discuss additional ways to help your child build positive peer relationships. I would also enjoy hearing about any successes or challenges you had trying out the Home-School Connection Tips, and if you noticed any specific changes in your child this year. Together, I hope we helped your child learn the social and academic skills that will enable him/her to develop positive relationships at school, at home, and in the community.

Sincerely,

Celestial Wills-Jackson
Doctoral Candidate
College of Education and Human Performance
University of Central Florida
(516) 316-9288
cwillsjackson@knights.ucf.edu

Sanford Harmony – Peer Relationships Unit
Building Healthy Relationships Among Students

Tips

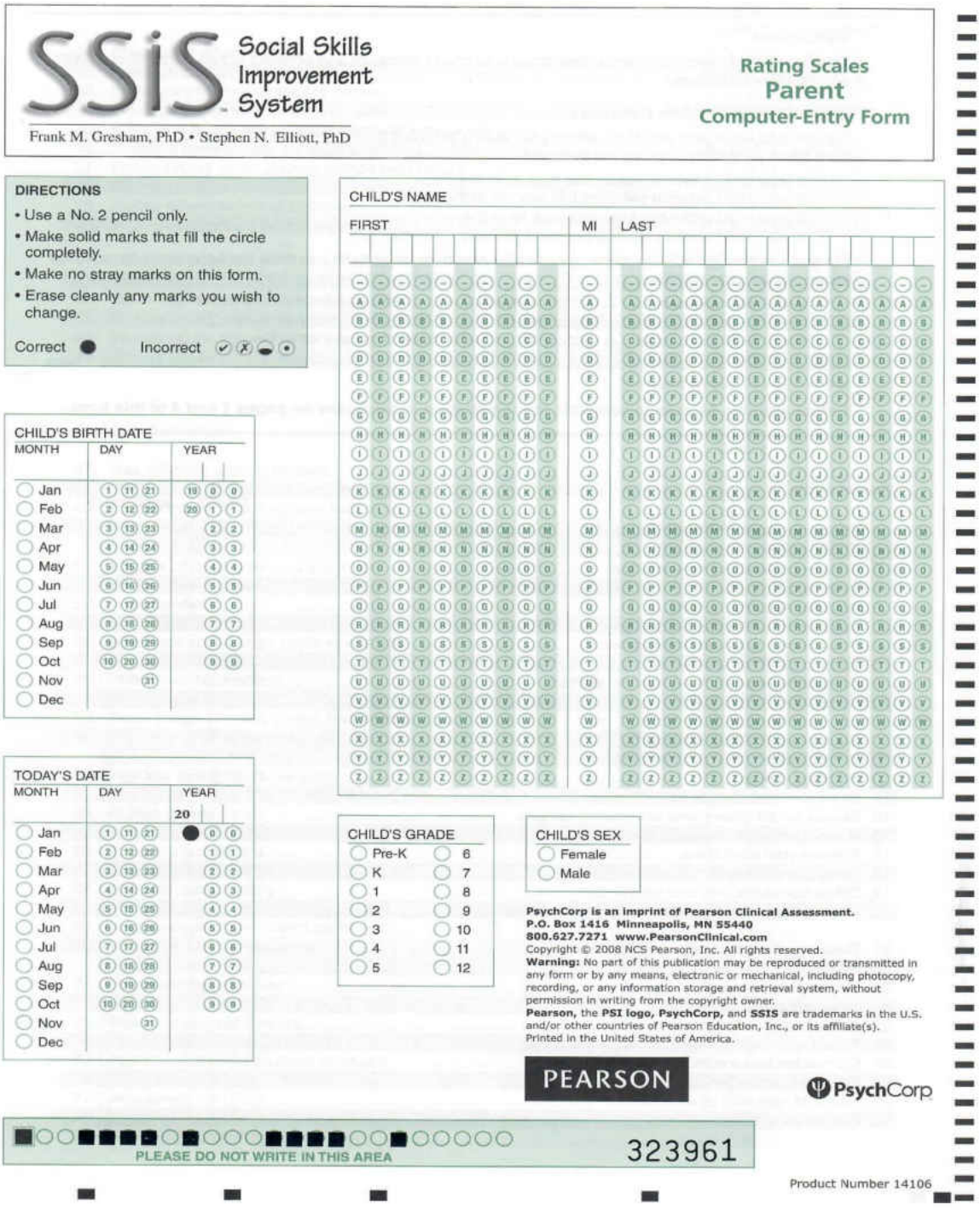
1. Encourage your child to make friends with diverse peers. Interacting and building close this with a diverse peer offers children the opportunity to broaden their perspectives, learn new skills, challenge existing stereotypes, and practice diverse interaction styles.

2. Ask your child about the characteristics and behaviors that he/she listed on his/her Friendship Pledge. Develop and display a Family Pledge at home to encourage all family members to commit to treating each other in positive and respectful ways.

3. Over the next couple of weeks, your child will be working on being supportive of each other. I am going to hand out "I've Got Your Back" tickets when I notice students providing support to each other. Try this at home! Meet with your family to identify ways you can support each other and distribute tickets (or tokens, marbles, etc.) when you observe one another engaging in these behaviors. Once you reach a certain number of tickets, celebrate with a special activity.

4. In our las activity, your child will learn about effective strategies for handling bullying situations at school. Discuss the negative consequences of bullying with your child and encourage him/her to speak up if he/she, or someone he/she knows, is being bullied. Encourage and reinforce positive and inclusive behaviors towards peers.

APPENDIX E
SSIS-RS PARENT, TEACHER, AND STUDENT FORMS


SSiS
Social Skills Improvement System
Frank M. Gresham, PhD • Stephen N. Elliott, PhD
Rating Scales
Parent
Computer-Entry Form
DIRECTIONS
• Use a No. 2 pencil only.
• Make solid marks that fill the circle completely.
• Make no stray marks on this form.
• Erase cleanly any marks you wish to change.
Correct
Incorrect
CHILD'S NAME
FIRST
MI
LAST
CHILD'S BIRTH DATE
MONTH
DAY
YEAR
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
TODAY'S DATE
MONTH
DAY
YEAR
20
CHILD'S GRADE
Pre-K
K
1
2
3
4
5
6
7
8
9
10
11
12
CHILD'S SEX
Female
Male
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PsychCorp
PLEASE DO NOT WRITE IN THIS AREA
323961
Product Number 14106

Instructions

This booklet contains statements describing your child's behavior and consists of two parts: Social Skills and Problem Behaviors.

Social Skills & Problem Behaviors

Please read each item and think about your child's behavior during the past two months. Then, decide **how often** your child displays the behavior.

If your child **never** behaves this way, fill in the ⓝ.
If your child **seldom** behaves this way, fill in the ⓢ.
If your child **often** behaves this way, fill in the ⓞ.
If your child **almost always** behaves this way, fill in the ⓐ.

For each of the Social Skills items, please also rate **how important** you think the behavior is for success for your child's development.

If you think the behavior is **not important** for your child's development, fill in the ⓝ.
If you think the behavior is **important** for your child's development, fill in the ⓘ.
If you think the behavior is **critical** for your child's development, fill in the ⓒ.

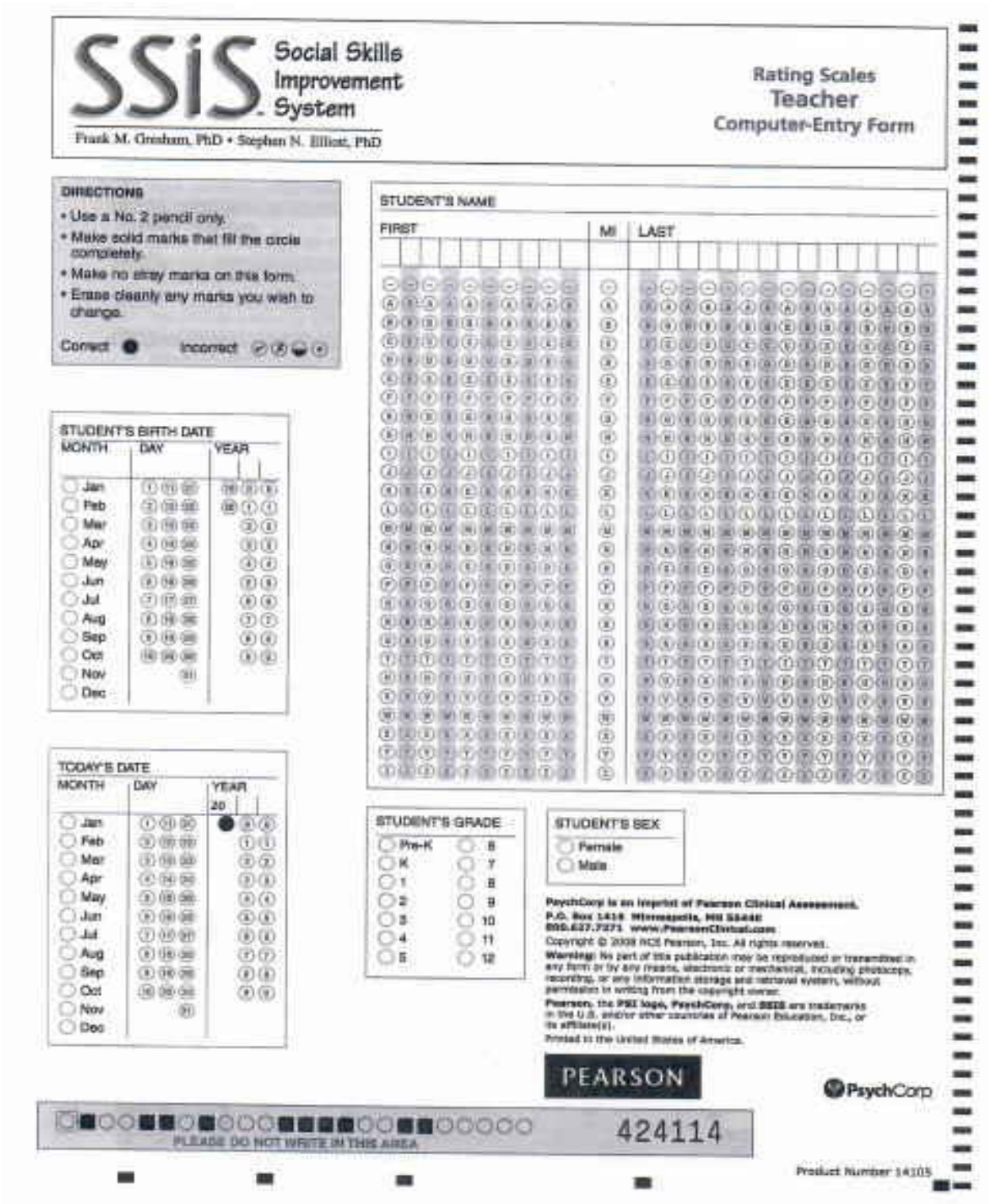
Please mark every item. If you are uncertain of your response to an item, give your best estimate. There are no right or wrong answers.

Before starting, be sure to complete the information in the boxes on pages 1 and 4 of this form.

Social Skills	How Often?	How Important?
1. Expresses feelings when wronged.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
2. Follows household rules.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
3. Tries to understand how you feel.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
4. Says "thank you."	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
5. Asks for help from adults.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
6. Takes care when using other people's things.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
7. Pays attention to your instructions.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
8. Tries to make others feel better.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
9. Joins activities that have already started.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
10. Takes turns in conversations.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
11. Says when there is a problem.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
12. Works well with family members.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
13. Forgives others.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
14. Speaks in appropriate tone of voice.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
15. Stands up for others who are treated unfairly.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
16. Is well-behaved when unsupervised.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
17. Follows your directions.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
18. Tries to understand how others feel.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
19. Starts conversations with peers.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
20. Uses gestures or body appropriately with others.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
21. Resolves disagreements with you calmly.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
22. Respects the property of others.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
23. Makes friends easily.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
24. Says "please."	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
25. Questions rules that may be unfair.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
26. Takes responsibility for her/his own actions.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
27. Completes tasks without bothering others.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
28. Tries to comfort others.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
29. Interacts well with other children.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ
30. Responds well when others start a conversation or activity.	ⓝ ⓢ ⓞ ⓐ	ⓝ ⓘ ⓒ

	How Often?	How Important?
31. Stays calm when teased.	0 1 2 3	0 1 2
32. Does what she/he promised.	0 1 2 3	0 1 2
33. Introduces herself/himself to others.	0 1 2 3	0 1 2
34. Takes criticism without getting upset.	0 1 2 3	0 1 2
35. Says nice things about herself/himself without bragging.	0 1 2 3	0 1 2
36. Makes a compromise during a conflict.	0 1 2 3	0 1 2
37. Follows rules when playing games with others.	0 1 2 3	0 1 2
38. Shows concern for others.	0 1 2 3	0 1 2
39. Invites others to join in activities.	0 1 2 3	0 1 2
40. Makes eye contact when talking.	0 1 2 3	0 1 2
41. Tolerates peers when they are annoying.	0 1 2 3	0 1 2
42. Takes responsibility for her/his own mistakes.	0 1 2 3	0 1 2
43. Starts conversations with adults.	0 1 2 3	0 1 2
44. Responds appropriately when pushed or hit.	0 1 2 3	0 1 2
45. Stands up for herself/himself when treated unfairly.	0 1 2 3	0 1 2
46. Stays calm when disagreeing with others.	0 1 2 3	0 1 2

Problem Behaviors	How Often?
47. Has difficulty waiting for turn.	0 1 2 3
48. Repeats the same thing over and over.	0 1 2 3
49. Forces others to act against their will.	0 1 2 3
50. Has stereotyped motor behaviors.	0 1 2 3
51. Fidgets or moves around too much.	0 1 2 3
52. Keeps others out of social circles.	0 1 2 3
53. Is inattentive.	0 1 2 3
54. Acts without thinking.	0 1 2 3
55. Becomes upset when routines change.	0 1 2 3
56. Is aggressive toward people or objects.	0 1 2 3
57. Withdraws from others.	0 1 2 3
58. Has temper tantrums.	0 1 2 3
59. Does things to make others feel scared.	0 1 2 3
60. Breaks into or stops group activities.	0 1 2 3
61. Has low energy or is lethargic.	0 1 2 3
62. Uses odd physical gestures in interactions.	0 1 2 3
63. Bullies others.	0 1 2 3
64. Acts anxious with others.	0 1 2 3
65. Talks back to adults.	0 1 2 3
66. Says nobody likes her/him.	0 1 2 3
67. Gets distracted easily.	0 1 2 3
68. Acts sad or depressed.	0 1 2 3
69. Is preoccupied with object parts.	0 1 2 3
70. Disobeys rules or requests.	0 1 2 3
71. Has sleeping problems.	0 1 2 3
72. Lies or does not tell the truth.	0 1 2 3
73. Gets embarrassed easily.	0 1 2 3
74. Says bad things about self.	0 1 2 3
75. Has nonfunctional routines or rituals.	0 1 2 3
76. Cheats in games or activities.	0 1 2 3
77. Acts lonely.	0 1 2 3
78. Fights with others.	0 1 2 3
79. Has eating problems.	0 1 2 3


SSiS
Social Skills Improvement System
Frank M. Gresham, PhD • Stephen N. Elliott, PhD
Rating Scales
Teacher
Computer-Entry Form
DIRECTIONS
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• Make no stray marks on this form.
• Erase cleanly any marks you wish to change.
Correct
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STUDENT'S NAME
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STUDENT'S BIRTH DATE
MONTH
DAY
YEAR
Jan
Feb
Mar
Apr
May
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Jul
Aug
Sep
Oct
Nov
Dec
TODAY'S DATE
MONTH
DAY
YEAR
20
STUDENT'S GRADE
Pre-K
K
1
2
3
4
5
6
7
8
9
10
11
12
STUDENT'S SEX
Female
Male
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Instructions

This booklet contains statements describing a student's behavior and level of academic performance. It consists of three parts: Social Skills, Problem Behaviors, and Academic Competence.

Social Skills & Problem Behaviors

Please read each item and think about this student's behavior during the past two months. Then, decide **how often** this student displays the behavior.

If this student **never** exhibits the behavior, fill in the (N).
If this student **seldom** exhibits the behavior, fill in the (S).
If this student **often** exhibits the behavior, fill in the (O).
If this student **almost always** exhibits the behavior, fill in the (A).

For each of the Social Skills items, please also rate **how important** you think the behavior is for success in your classroom.

If you think the behavior is **not important** for success in your classroom, fill in the (0).
If you think the behavior is **important** for success in your classroom, fill in the (1).
If you think the behavior is **critical** for success in your classroom, fill in the (2).

Please mark every item. In some cases, you may not have observed this student perform a particular behavior. If you are uncertain of your response to an item, give your best estimate. There are no right or wrong answers.

Social Skills	How Often?	How Important?
1. Asks for help from adults	N S O A	0 1 2
2. Follows your directions	N S O A	0 1 2
3. Tries to comfort others	N S O A	0 1 2
4. Says "please"	N S O A	0 1 2
5. Questions rules that may be unfair	N S O A	0 1 2
6. Is well-behaved when unsupervised	N S O A	0 1 2
7. Completes tasks without bothering others	N S O A	0 1 2
8. Forgives others	N S O A	0 1 2
9. Makes friends easily	N S O A	0 1 2
10. Responds well when others start a conversation or activity	N S O A	0 1 2
11. Stands up for herself/himself when treated unfairly	N S O A	0 1 2
12. Participates appropriately in class	N S O A	0 1 2
13. Feels bad when others are sad	N S O A	0 1 2
14. Speaks in appropriate tone of voice	N S O A	0 1 2
15. Says when there is a problem	N S O A	0 1 2
16. Takes responsibility for her/his own actions	N S O A	0 1 2
17. Pays attention to your instructions	N S O A	0 1 2
18. Shows kindness to others when they are upset	N S O A	0 1 2
19. Interacts well with other children	N S O A	0 1 2
20. Takes turns in conversations	N S O A	0 1 2
21. Stays calm when teased	N S O A	0 1 2
22. Acts responsibly when with others	N S O A	0 1 2
23. Joins activities that have already started	N S O A	0 1 2
24. Says "thank you"	N S O A	0 1 2
25. Expresses feelings when wronged	N S O A	0 1 2
26. Takes care when using other people's things	N S O A	0 1 2
27. Ignores classmates when they are distracting	N S O A	0 1 2
28. Is nice to others when they are feeling bad	N S O A	0 1 2
29. Invites others to join in activities	N S O A	0 1 2
30. Makes eye contact when talking	N S O A	0 1 2
31. Takes criticism without getting upset	N S O A	0 1 2
32. Respects the property of others	N S O A	0 1 2
33. Participates in games or group activities	N S O A	0 1 2
34. Uses appropriate language when upset	N S O A	0 1 2
35. Stands up for others who are treated unfairly	N S O A	0 1 2
36. Resolves disagreements with you calmly	N S O A	0 1 2
37. Follows classroom rules	N S O A	0 1 2

	How Often?	How Important?
38. Shows concern for others		
39. Starts conversations with peers		
40. Uses gestures or body appropriately with others		
41. Responds appropriately when pushed or hit		
42. Takes responsibility for part of a group activity		
43. Introduces herself/himself to others		
44. Makes a compromise during a conflict		
45. Says nice things about herself/himself without bragging		
46. Stays calm when disagreeing with others		
Problem Behaviors		
47. Acts without thinking		
48. Is preoccupied with object parts		
49. Bullies others		
50. Becomes upset when routines change		
51. Has difficulty waiting for turn		
52. Does things to make others feel scared		
53. Fidgets or moves around too much		
54. Has stereotyped motor behaviors		
55. Forces others to act against their will		
56. Withdraws from others		
57. Has temper tantrums		
58. Keeps others out of social circles		
59. Breaks into or stops group activities		
60. Repeats the same thing over and over		
61. Is aggressive toward people or objects		
62. Gets embarrassed easily		
63. Cheats in games or activities		
64. Acts lonely		
65. Is inattentive		
66. Has nonfunctional routines or rituals		
67. Fights with others		
68. Says bad things about self		
69. Disobeys rules or requests		
70. Has low energy or is lethargic		
71. Gets distracted easily		
72. Uses odd physical gestures in interactions		
73. Talks back to adults		
74. Acts sad or depressed		
75. Lies or does not tell the truth		
76. Acts anxious with others		

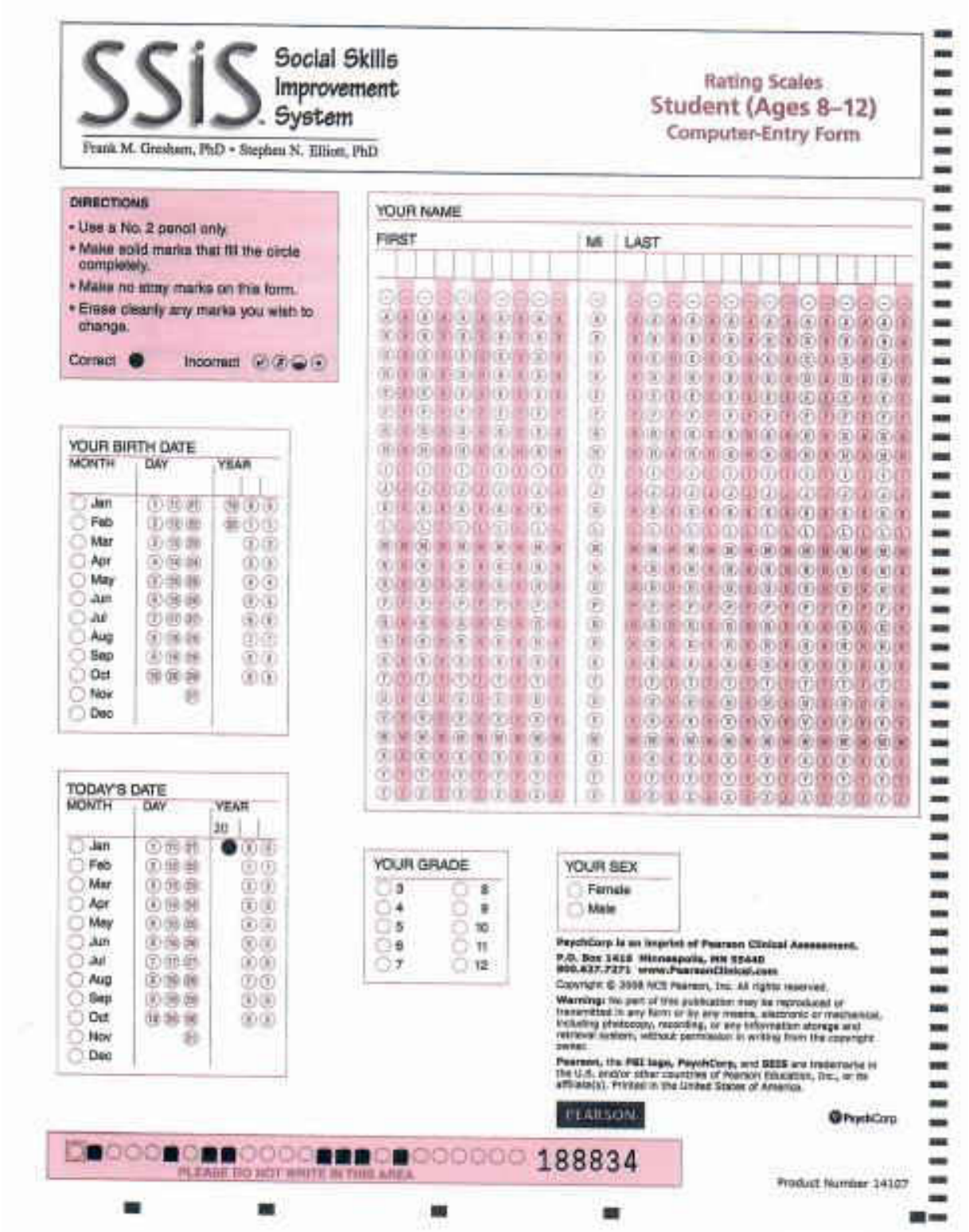
Academic Competence (for students from kindergarten through Grade 12)

Please assess this student's academic or learning behaviors in your classroom. Compare this student with other students in the same classroom.

Mark all items using a scale of 1 to 5. Mark "1" if this student is in the lowest 10% of the class. Mark "5" if this student is in the highest 10% of the class.

Lowest 10%	Next Lowest 20%	Middle 40%	Next Highest 20%	Highest 10%
①	②	③	④	⑤

77. Compared with other students in my classroom, the overall academic performance of this student is:	① ② ③ ④ ⑤
78. In reading, how does this student compare with other students?	① ② ③ ④ ⑤
79. In mathematics, how does this student compare with other students?	① ② ③ ④ ⑤
80. In terms of grade-level expectations, this student's skills in reading are:	① ② ③ ④ ⑤
81. In terms of grade-level expectations, this student's skills in mathematics are:	① ② ③ ④ ⑤
82. This student's overall motivation to succeed academically is:	① ② ③ ④ ⑤
83. Compared with other students in my classroom, this student's intellectual functioning is:	① ② ③ ④ ⑤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Frank M. Gresham, PhD • Stephen N. Elliott, PhD
Rating Scales
Student (Ages 8–12)
Computer-Entry Form
DIRECTIONS
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12
YOUR SEX
Female
Male
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Product Number 14107

Instructions

This booklet contains a list of things students your age may do and has two parts: Social Skills and Problem Behaviors. Please read each sentence and think about yourself.

Social Skills & Problem Behaviors

Decide **how true** each sentence is for you.

If you think it is **not true** for you, fill in the (N).
If you think it is a **little true** for you, fill in the (L).
If you think it is **a lot true** for you, fill in the (A).
If you think it is **very true** for you, fill in the (V).

Please answer all questions with the best response for you for each sentence, even if it is hard for you to make up your mind. There are no right or wrong answers. Please ask questions if you do not know what to do. Begin working when told to do so.

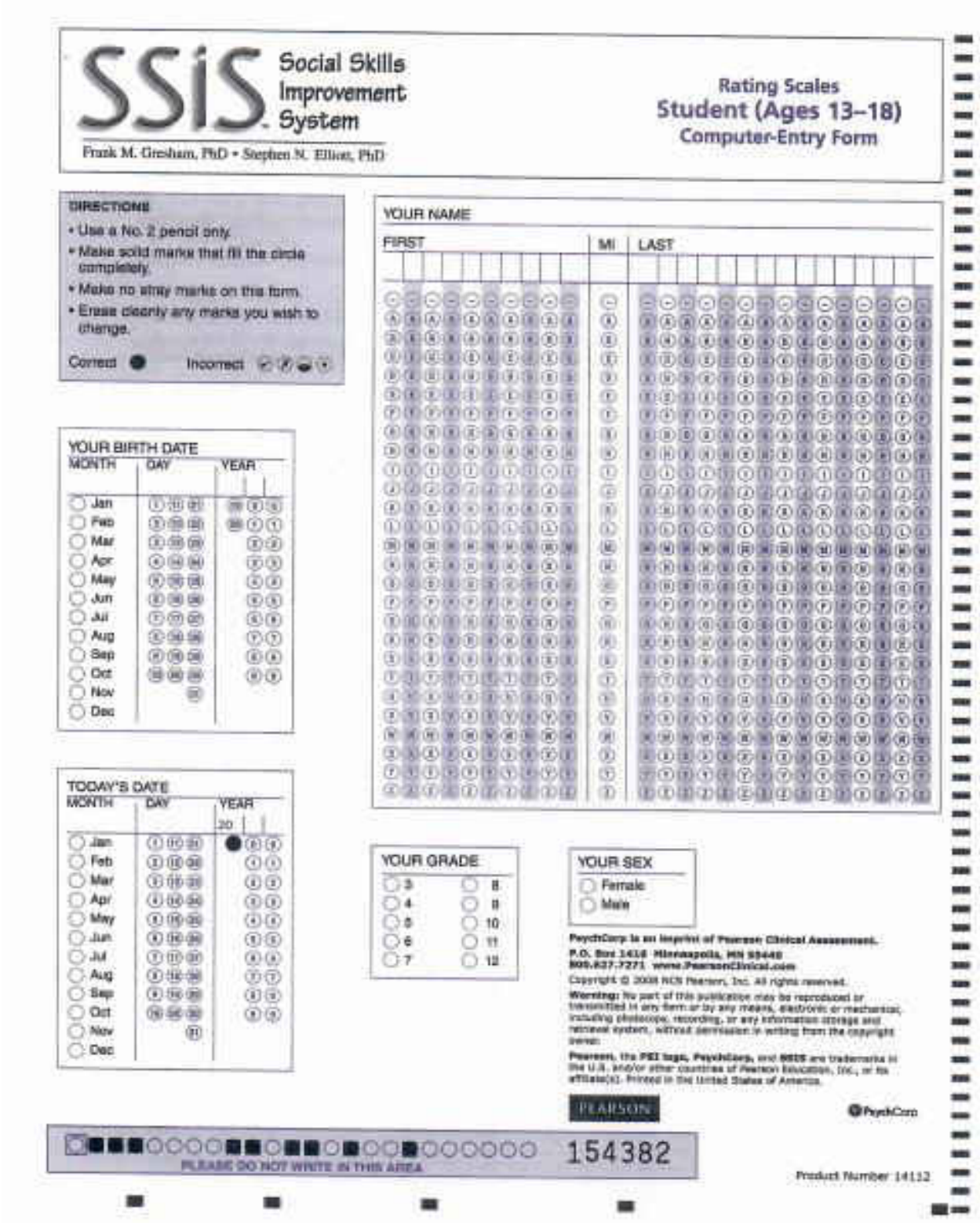
Before starting, be sure to complete the information in the boxes on page 1 of this form.

Social Skills	How True?
1. I ask for information when I need it	N L A V
2. I pay attention when others present their ideas	N L A V
3. I try to forgive others when they say "sorry"	N L A V
4. I'm careful when I use things that aren't mine	N L A V
5. I stand up for others when they are not treated well	N L A V
6. I say "please" when I ask for things	N L A V
7. I feel bad when others are sad	N L A V
8. I get along with other children/adolescents	N L A V
9. I ignore others who act up in class	N L A V
10. I take turns when I talk with others	N L A V
11. I show others how I feel	N L A V
12. I do what the teacher asks me to do	N L A V
13. I try to make others feel better	N L A V
14. I do my part in a group	N L A V
15. I let people know when there's a problem	N L A V
16. I look at people when I talk to them	N L A V
17. I help my friends when they are having a problem	N L A V
18. I make friends easily	N L A V
19. I do my work without bothering others	N L A V
20. I am polite when I speak to others	N L A V
21. I stay calm when I am teased	N L A V
22. I follow school rules	N L A V
23. I ask others to do things with me	N L A V
24. I am well-behaved	N L A V
25. I say nice things about myself without bragging	N L A V
26. I stay calm when people point out my mistakes	N L A V
27. I try to think about how others feel	N L A V
28. I meet and greet new people on my own	N L A V
29. I do the right thing without being told	N L A V
30. I smile or wave at people when I see them	N L A V

	How True?
31. I try to find a good way to end a disagreement	N L A V
32. I pay attention when the teacher talks to the class	N L A V
33. I play games with others	N L A V
34. I do my homework on time	N L A V
35. I tell others when I'm not treated well	N L A V
36. I stay calm when dealing with problems	N L A V
37. I am nice to others when they are feeling bad	N L A V
38. I ask to join others when they are doing things I like	N L A V
39. I keep my promises	N L A V
40. I say "thank you" when someone helps me	N L A V
41. I stay calm when others bother me	N L A V
42. I work well with my classmates	N L A V
43. I try to make new friends	N L A V
44. I tell people when I have made a mistake	N L A V
45. I ask for help when I need it	N L A V
46. I stay calm when I disagree with others	N L A V

Problem Behaviors

	How True?
47. I'm afraid of a lot of things	N L A V
48. I make people do what I want them to do	N L A V
49. I often do things without thinking	N L A V
50. I often feel sick	N L A V
51. I swear or use bad words	N L A V
52. I find it's hard to focus on what I am doing	N L A V
53. I get embarrassed easily	N L A V
54. I hurt people when I am angry	N L A V
55. I have temper tantrums	N L A V
56. I think bad things will happen to me	N L A V
57. I lie to others	N L A V
58. I often get distracted	N L A V
59. I can't sleep well at night	N L A V
60. I do not let others join my group of friends	N L A V
61. I find it hard to sit still	N L A V
62. I feel lonely	N L A V
63. I cheat when playing games	N L A V
64. I make careless mistakes in schoolwork	N L A V
65. I think no one cares about me	N L A V
66. I try to make others afraid of me	N L A V
67. I break things when I'm angry	N L A V
68. I often get tired	N L A V
69. I talk back to adults	N L A V
70. I waste a lot of time	N L A V
71. I feel nervous with my classmates	N L A V
72. I say things to hurt people's feelings	N L A V
73. I fight with others	N L A V
74. I feel sad	N L A V
75. I break the rules	N L A V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Frank M. Gresham, PhD • Stephen N. Elliott, PhD
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Student (Ages 13–18)
Computer-Entry Form
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YOUR GRADE
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12
YOUR SEX
Female
Male
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Product Number 14112

Instructions

This booklet contains a list of things students your age may do and has two parts: Social Skills and Problem Behaviors. Please read each sentence and think about yourself.

Social Skills & Problem Behaviors

Decide **how true** each sentence is for you.

If you think it is **not true** for you, fill in the (N).
If you think it is a **little true** for you, fill in the (L).
If you think it is **a lot true** for you, fill in the (A).
If you think it is **very true** for you, fill in the (V).

Then, decide **how important** you think the sentence is when you are with others.

If you think it is **not important** for you, fill in the (0).
If you think it is **important** for you, fill in the (1).
If you think it is **critical** for you, fill in the (2).

Please answer all questions with the best response for you for each sentence, even if it is hard for you to make up your mind. There are no right or wrong answers. Please ask questions if you do not know what to do. Begin working when told to do so.

Before starting, be sure to complete the information in the boxes on page 1 of this form.

Social Skills	How True?	How Important?
1. I ask for information when I need it	N L A V	0 1 2
2. I pay attention when others present their ideas	N L A V	0 1 2
3. I try to forgive others when they say "sorry"	N L A V	0 1 2
4. I'm careful when I use things that aren't mine	N L A V	0 1 2
5. I stand up for others when they are not treated well	N L A V	0 1 2
6. I say "please" when I ask for things	N L A V	0 1 2
7. I feel bad when others are sad	N L A V	0 1 2
8. I get along with other children/adolescents	N L A V	0 1 2
9. I ignore others who act up in class	N L A V	0 1 2
10. I take turns when I talk with others	N L A V	0 1 2
11. I show others how I feel	N L A V	0 1 2
12. I do what the teacher asks me to do	N L A V	0 1 2
13. I try to make others feel better	N L A V	0 1 2
14. I do my part in a group	N L A V	0 1 2
15. I let people know when there's a problem	N L A V	0 1 2
16. I look at people when I talk to them	N L A V	0 1 2
17. I help my friends when they are having a problem	N L A V	0 1 2
18. I make friends easily	N L A V	0 1 2
19. I do my work without bothering others	N L A V	0 1 2
20. I am polite when I speak to others	N L A V	0 1 2
21. I stay calm when I am teased	N L A V	0 1 2
22. I follow school rules	N L A V	0 1 2
23. I ask others to do things with me	N L A V	0 1 2
24. I am well-behaved	N L A V	0 1 2
25. I say nice things about myself without bragging	N L A V	0 1 2
26. I stay calm when people point out my mistakes	N L A V	0 1 2
27. I try to think about how others feel	N L A V	0 1 2
28. I meet and greet new people on my own	N L A V	0 1 2
29. I do the right thing without being told	N L A V	0 1 2
30. I smile or wave at people when I see them	N L A V	0 1 2

	How True?	How Important?
31. I try to find a good way to end a disagreement	N L A V	N I A
32. I pay attention when the teacher talks to the class	N L A V	N I A
33. I play games with others	N L A V	N I A
34. I do my homework on time	N L A V	N I A
35. I tell others when I'm not treated well	N L A V	N I A
36. I stay calm when dealing with problems	N L A V	N I A
37. I am nice to others when they are feeling bad	N L A V	N I A
38. I ask to join others when they are doing things I like	N L A V	N I A
39. I keep my promises	N L A V	N I A
40. I say "thank you" when someone helps me	N L A V	N I A
41. I stay calm when others bother me	N L A V	N I A
42. I work well with my classmates	N L A V	N I A
43. I try to make new friends	N L A V	N I A
44. I tell people when I have made a mistake	N L A V	N I A
45. I ask for help when I need it	N L A V	N I A
46. I stay calm when I disagree with others	N L A V	N I A

Problem Behaviors	How True?
47. I'm afraid of a lot of things	N L A V
48. I make people do what I want them to do	N L A V
49. I often do things without thinking	N L A V
50. I often feel sick	N L A V
51. I swear or use bad words	N L A V
52. I find it's hard to focus on what I am doing	N L A V
53. I get embarrassed easily	N L A V
54. I hurt people when I am angry	N L A V
55. I have temper tantrums	N L A V
56. I think bad things will happen to me	N L A V
57. I lie to others	N L A V
58. I often get distracted	N L A V
59. I can't sleep well at night	N L A V
60. I do not let others join my group of friends	N L A V
61. I find it hard to sit still	N L A V
62. I feel lonely	N L A V
63. I cheat when playing games	N L A V
64. I make careless mistakes in schoolwork	N L A V
65. I think no one cares about me	N L A V
66. I try to make others afraid of me	N L A V
67. I break things when I'm angry	N L A V
68. I often get tired	N L A V
69. I talk back to adults	N L A V
70. I waste a lot of time	N L A V
71. I feel nervous with my classmates	N L A V
72. I say things to hurt people's feelings	N L A V
73. I fight with others	N L A V
74. I feel sad	N L A V
75. I break the rules	N L A V

APPENDIX F
BEHAVIOR OBSERVATION FORM

Behavior Observation Form

Differential Reinforcement of Other Behavior (DRO)

Student: _____ Date: _____ SHP Unit/Topic: _____

Directions: Please complete this form each day. Record a "Y" if the component was implemented; if the component was not implemented, record an "N".

Intervention Days	**M**	**T**	**W**	**T**	**F**
1. Reviewed behavior goal(s) with student.	Y/N	Y/N	Y/N	Y/N	Y/N
2. Cued student to self-monitor and record response.	Y/N	Y/N	Y/N	Y/N	Y/N
3. Compared ratings with student.	Y/N	Y/N	Y/N	Y/N	Y/N
4. Provided verbal praise for accurate ratings.	Y/N	Y/N	Y/N	Y/N	Y/N
5. Gave reward when behavioral goal was met.	Y/N	Y/N	Y/N	Y/N	Y/N
6. Sent behavior recording form to parent.	Y/N	Y/N	Y/N	Y/N	Y/N
Total Possible Daily Points = 6	___	___	___	___	___

Yes = 1 point

No = 0 point

APPENDIX G
INTERVENTION FIDELITY CHECKLIST

INTERVENTION FIDELITY CHECKLIST

Intervention name: _____ Date: _____

Interventionist: _____Checklist completed by: _____

BEFORE (Check boxes when observed)

□ 1. Has the correct student and teacher materials (i.e., teacher guide and activity materials.)

□ 2. Starts intervention ON TIME

≈ All participants are present (not checklist item)

- If not, list participants absent:

_____

DURING

□ 3. Follows SHP curriculum and uses appropriate materials at appropriate times

□ 4. Behavior analyst is actively teaching intervention components

□ 5. Answers participants' relevant questions accurately and appropriately

□ 6. When Behavior analyst instructs clients to participate, ALL CLIENTS PARTICIPATE

□ 7. Does not allow participants to leave instruction unless necessary

□ 8. Intervention last the whole-time period it is supposed to

□ 9. Provides participants ample opportunities to respond

□ 10. If participants do not understand concept, behavior analyst works with them to demonstrate molding, rehearsal, feedback, and reductive procedures

≈ Offers more positive reinforcement than redirections (with ultimate goal being approx. 4:1) (not checklist item). *Yes* _____ *No* _____

FIDELITY CHECK:

# of boxes checked = _____ # of boxes total = _____

Percent intervention completed with fidelity = _____

Goal = at least **80%** Goal Met (check one)? *Yes* _____ *No* _____

Source. (Bateman et al., 2015, p. 150)

APPENDIX H
SOCIAL VALIDITY QUESTIONNAIRE

Behavior Technician Questionnaire

Thank you again for your participation in this study. The final step after completing the Sanford Harmony program is to complete a behavior technician questionnaire. Your thoughts, perceptions, and experiences with the Sanford Harmony program will be useful implications for practice. This is an anonymous form, not linked to you or the clinic. This questionnaire will take approximately 10-15 minutes.

1. Do you believe that it is important to implement a social and emotional learning program in a behavioral clinic? Please, explain.

2. How did your client respond to the Sanford Harmony program? Please, explain.

3. Did you observe any difference in outcomes (social skills and/or behavioral) in your client? Please, explain.

4. What was the most positive or useful feature about Sanford Harmony?

5. What was negative or needs improvement in Sanford Harmony?

Student Questionnaire

Name _____ Grade _____ Age _____

School _____ Today's Date _____

I am a: □ boy □ girl

	Never True	Sometimes True	Often True	Always True
1. I learned new skills from the Sanford Harmony program.	1	2	3	4
2. I can communicate better with my friends.	1	2	3	4
3. I can make friends easier.	1	2	3	4
4. I enjoyed games and activities in Harmony program.	1	2	3	4
5. I use the Harmony skills at home.	1	2	3	4
6. I would like to continue using the Harmony program.	1	2	3	4

Total Score _____

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