SUPERHEROES SOCIAL SKILLS: A STUDY EXAMINING THE EFFECTS OF USING AN EVIDENCE-BASED APPROACH TO TEACH SOCIAL SKILLS TO CHILDREN WITH HIGH-INCIDENCE DISABILITIES

by

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ABSTRACT

The current study evaluated the use of a manualized social skills program, Superheroes Social Skills, to increase the use of prosocial behaviors and decrease the use of aggressive behaviors for children with externalizing behaviors. The training was implemented by a school psychologist in a pullout group with four children with high-incidence disabilities and four typically developing peers at a public elementary school. The program implemented was a multimedia, high interest program that incorporates the use of animation to teach the lessons. This program also uses evidence-based practices (e.g., video-modeling, peer mediation, social stories, and self-management) to help increase the effectiveness of the intervention. There were eleven skills taught during one 30-minute session. Two sessions were taught per week.

Children were videotaped during free play and recess observations for baseline, treatment, and follow-up. Their behaviors were then coded using a partial interval recording system. The behaviors observed were verbal aggression, physical aggression, neutral behavior, positive initiations, and positive responses. The observation codes were used to calculate effect sizes, percentage of nonoverlapping data points, and percentage of all nonoverlapping data points.

The Social Skills Improvement System (SSIS) was used as a pre- and post-measure of treatment effectiveness. Measures were also used to determine social

validity, consumer satisfaction, and treatment integrity. These measures were analyzed using descriptive statistics.

Results indicated that this intervention was effective for decreasing aggressive behaviors, decreasing neutral play, and increasing positive responses in both the treatment setting and the generalized recess setting. Results were also maintained at a 2-week follow-up. Parents and participants indicated the program was effective and favorable. The results of the SSIS indicated minimal treatment effect, although teachers rated a significant increase in social skills. The treatment was implemented with high treatment fidelity. Overall, this study found that the Superheroes Social Skills Program was an effective intervention for children with high-incidence disabilities and externalizing behaviors.

To my amazing and supportive family
(Steve, Dad, Mom, Tom, Susan, Mike, Stella, Sean, Nicolle, Ellora, and Henry).
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Also to my professors and fellow students who challenge me and inspire me daily.

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CHAPTER 1

INTRODUCTION

Many students within the public schools system display deficits that impact their educational performance and social relationships with peers and adults. Many of these students are classified with a high-incidence disability and receive special education services aimed at helping them succeed academically. The term high-incidence disabilities refers to four specific disabilities that are among the most common special education classifications and account for more than 70% of all students who are served within special education (Sabornie, Evans, & Cullinan, 2006). High-incidence disabilities include learning disability (LD), speech/language impairment (SLI), emotional-behavioral disorder (EBD), and mild intellectual disability (MID).

While most children with high-incidence disabilities experience social deficits and behavior deficits, Sabornie, Cullinan, Osborne, and Brock (2005) found that children with EBD were reported to exhibit more problem behavior than approximately 76% of the students with LD or MID. This research implies that there is a great need for effective social skills training for children with EBD. Of these students with EBD, there are the subclassifications of internalizing disorders and externalizing disorders.

Externalizing disorders is a broad category that encompasses a range of specific disorders. Externalizing disorders, such as conduct disorder and Attention

Deficit/Hyperactivity Disorder (ADHD), differ from internalizing disorders, such as depression or anxiety, in that the behavior is manifested outwardly and visibly through aggression and/or disruptive behavior. The Utah State Office of Education (2007) defines externalizing disorders as "behavioral problems that are directed outwardly by the student toward the social environment, and usually involve behavioral excesses" (p. 37) ad internalizing disorders are defined as "a class of behavior problems that are directed inwardly, and often involve behavioral deficits" (p. 37).

Within the schools, children often receive an educational classification of Emotional Disturbance (ED), Specific Learning Disability (SLD), Speech/Language Impairment (SLI), or Other Health Impaired (OHI). The Utah State Office of Education (2007) has provided educators with specific definitions of these four disorders in their Special Education Rules. Some of the psychiatric disorders that are considered to be in these educational classification categories include Depression, Speech/Language Impairment, Anxiety Disorder, Learning Disability, Conduct Disorder, and ADHD. The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR; American Psychiatric Association, 2000) provides criteria for diagnosing these disorders.

While many children with high-incidence disabilities experience difficulty in exhibiting pro-social behaviors, children with externalizing disorders are disruptive in the classroom and can more outwardly alienate peers with their behavior. Conversely, children with internalizing disorders may have emotional arousals that interfere with their ability to perform the pro-social behaviors. This can have an effect on their academic performance, as well as their peer relationships.

Social Skills and Social Competence

Greenspan (1980) posits that social skills are the key to being able to relate to others normally. The level of a person's social development is what allows us to appear normal, not our ability to read and write. Social skills are an essential element of development, but many children do not naturally acquire social skills. This puts them at risk for detrimental effects on their peer relationships, adult interactions, school performance, and work relationships.

A lack of social skills can lead to poor peer relationships and rejection by others. Ultimately, this can impact the child's emotional well-being (Morgan & Jenson, 1988). It is important to provide social skills training to children who do not naturally acquire these skills in order to counteract the potential detrimental effects on their relationships and their emotional well-being.

Morgan and Jenson (1988) define social skills as "verbal and nonverbal behaviors a person uses to interact with others so that the encounter is mutually beneficial and reinforcing" (p. 245). These basic skills, both verbal and nonverbal, are essential to facilitate positive interactions with others.

While social skills can be defined and taught to children, many fail to apply these social behaviors to social interactions and the development of peer relationships. Gresham and Elliott (1987) define the difference between four types of deficits that can affect the ability to learn and use social skills in generalized settings. Skill deficits, which are often called acquisition deficits, are present when the child lacks the ability, or has never been taught to, interact in a way that is socially appropriate. Performance deficits are present when the specific skills have been learned, but the individual is

unable to perform the skill, which may be due to a lack of motivation or a lack of stimulus control. Self-control skill deficits occur when the child is unable to learn the social skill due to an emotional arousal that blocks learning or use of this skill. Self-control performance deficits occur when the child has learned a social skill, but is unable to perform the skill because of an emotional arousal and inability to modulate this arousal. There are many factors that affect a child's ability to become socially competent, which is why teaching the skills alone is not sufficient for the child to build and maintain social relationships.

The integration of the basic and specific learned social skills during social interactions can be defined as social competence. Gresham and Elliott (1987) consider social competence to be the combined use of social skills and adaptive behavior because the child may need to adapt emotions or behavior to the setting in order to successfully use the learned skills. Riggio (1986) described social skills as basic skill components that should be used in combination to develop more complex social patterns in interactions. This suggests that the acquisition of basic social skills is not synonymous with socially competent behavior and the ability to use these skills to form and maintain relationships in generalized settings.

Spence (2002) refers to social competence as the application of the learned social skills to develop and maintain friendships and relationships. Gutstein and Whitney (2002) defined social competence more explicitly as "the skills and strategies that allow individuals to have meaningful friendships; forge close, emotion-based relationships; productively collaborate with groups, teams, and work partners; manage public social settings; and participate in family functioning" (p. 161). All of the research referenced

suggests that the acquisition of social skills in not adequate to produce pr-social behavior in individuals, but there must also be integration of these skills in generalized settings and interactions in order for the child to be considered socially competent and to benefit from the social skills training.

The teaching of social skills, and more importantly, social competence is necessary, but difficult to do effectively. In order to become more effective in the efforts to teach children how to be socially competent, there is a need for more research to identify what makes social skills training programs effective.

Common Components of Social Skills Programs

In order to effectively teach social skills to children, multiple components are often combined within training programs. The goal is to teach the basic social skills to ensure children have the ability to perform the skills and then train them to achieve social competence in order to effectively use these skills in multiple social situations. Table 1 provides an overview of the training sequence of some common social skills programs. There are also many programs that offer group facilitators a guide to develop their own lessons or activities that can be used to create lessons, but do not have a set lesson structure that is provided in the manual.

Many of the social skills programs that are currently used in schools and clinical settings share commonalities in their focus and their method of instruction. McConnell (2002) divided the current social skills programs into five categories. The first category is environmental modification strategies. The focus of these types of interventions is on making changes to the environment in order to encourage social interactions. The second

Table 1

Training Sequence of Common Social Skills Programs

Social Skills Programs	
The Tough Kid Social Skills Book (Sheridan, 1995)	Review Introduce new skill Student pole plays Group discussion/Feedback Set goals/Behavior contract
ACCEPTS (Walker, McConnell, Holmes, Todis, Walker, & Golden, 1983)	Definition/Guided discussion Positive example Negative example Review/Restate definition Positive video example Activities Criterion role-plays Informal contracting
Second Step Program (Committee for Children, 1998)	Story/Discussion Role-plays Wrap up Homework

category of interventions is collateral skills interventions that teach skills, such as play and language, to improve social interaction. Another type of intervention is peer-mediated interventions that use trained typically developing peers to teach skills and encourage social interaction. Child-specific intervention is another type of intervention that teaches specific social skills to children for them to use in their social interactions. The last type of intervention described is comprehensive interventions that combine two or more types of the interventions previously discussed.

Many programs use a demonstration-prompt-practice model to teach social skills to children (Morgan & Jenson, 1988). The lesson format for a demonstration-prompt-practice model, in its most basic approach, begins by teaching the basic skills to children and modeling how to use the skills appropriately, then the children are prompted to use the skill and situations that would be appropriate for using the skills are identified, and lastly, the children practice, or rehearse, by using the skill in multiple scenarios.

It can also be helpful to incorporate other components into the training sequence. When teaching the concept of a new skill, it is helpful to provide a rationale for why it is important to use the skill, teach the steps of the skill explicitly, and then model examples and nonexamples of how to use the skill appropriately. This provides a good foundation for learning a new skill.

Also, it is important for the children to practice only the appropriate use of the skill. As the children practice the skill, the facilitator should provide feedback to increase performance during various role-play situations. Multiple opportunities to practice with varying scenarios provides a wide array of applications of the skill. Practice can continue until the children are able to perform the skill to criterion.

Inclusion of a behavior management system into the lessons can help decrease any problem or interfering behavior. The use of group contingencies can be an effective way to increase compliance during the training process. It is also helpful to integrate a way to reward or reinforce the children's appropriate use of the skills.

Homework is another common component of social skills training that can help to increase the use of the skills outside of the training setting. It also provides a way to review the skill at the beginning of the next training session. Worksheets are often used as a homework component, but a self-monitoring system to help children track their use of the skill outside of the sessions can also be an effective way to use homework.

Many programs vary in the types of skills that are taught. Assessment of skill deficits and individual needs of the child can help to identify the most appropriate programs or individual lessons that may be most beneficial to the children. Many programs target specific skills in the area of foundational skills, compliance skills, friendship making skills, cooperation skills, bullying skills, and coping skills. Table 2 provides a list of the skills and skill areas that some common social skills programs address in their training program.

As more research has been conducted in the area of social skills training, more effective methods have been identified. Lane, Bocian, MacMillan, and Gresham (2004) outline effective strategies for implementing interventions in schools, which include (a) identifying students for participation, (b) identifying specific skill deficits and designing the intervention program, (c) organizing intervention groups, (d) preparing intervention leaders, (e) implementing the intervention, and (f) monitoring student progress. This is consistent with the process that should be, and often is, utilized when servicing students

Table 2

Skills Taught in Common Social Skills Programs

ACCEPTS (Walker, McConnell, Holmes, Todis, Walker, & Golden, 1983)	The Tough Kid Social Skills Book (Sheridan, 1995)	ASSET (Hazel, Schumaker, Sherman, & Sheldon-Wildgen, 1981)
CLASSROOM SKILLS	**SOCIAL ENTRY**	Giving positive feedback
Listening to the teacher	Body basics	Giving negative feedback
Doing your best work	Joining in	Accepting negative feedback
Following classroom rules	Recognize feelings	Resisting peer pressure
BASIC INTERACTION	Express feelings	Problem-solving
Eye contact	**INTERACTIONS**	Negotiations
Using the right voice	Have a conversation	Following instructions
Starting	Play cooperatively	Conversation
Listening	**PROBLEM SOLVING**	
Answering	Solving problems	
Making sense	Using self-control	
Taking turns talking	Solving arguments	
Questioning	Dealing with teasing	
Continuing	Dealing with being left out	
GETTING ALONG	Accepting “no”	
Using polite words		
Sharing		
Following the rules		
Assisting others		
Touching the right way		
MAKING FRIENDS		
Grooming		
Smiling		
Complimenting		
Expressing anger		
Making friends		
COPING		
When someone says “no”		
When someone teases you/tries to hurt you		
When things don’t go right		

with individualized special education services.

They also posit that treatment integrity should be an essential component in this process, but it is often not included in school-based interventions. This is essential when using a manualized and researched program, to ensure that the same methods that were used during the research, which yielded particular results, are also present in the field to increase the likelihood of obtaining similar results to the research studies. Cook, Landrum, Tankersley, and Kauffman (2003) identified the ability to bridge the gap between research and practice as a setback in the implementation of social skills programs and suggested a stronger focus on treatment fidelity as a possible solution to this problem. Wang and Spillane (2009) agree that if the research is finding only questionable results in a controlled setting when the intervention is delivered by researchers, it is unrealistic to expect noteworthy results in an applied setting when delivered by teachers and parents.

There are many manualized social skills programs available, some specific to populations and others more general to be used with multiple populations. Regardless of the type of social skills program, Gresham (1995) recommends some fundamental elements to be included in social skills programs: identify skills that need to be remediated, teach and model the skills, target skills to be taught, coach and prompt proper use and application of the skills, provide opportunities for the skills to be rehearsed, provide reinforcement and feedback for the skill use, implement reductive procedures, and facilitate generalization.

Overall, many of the manualized social skills curriculums utilize a similar structure for their lessons, but with slight variations in the methods used. This common

structure can be used and modified depending on the needs of the children, but it may also be important to include more strategies that are identified in the research as effective.

Current Social Skills Programs

Social skills training has been a research focus for many years and targeted toward many varying populations due to the social deficits that are found across disorders. Overall, programs are aimed at teaching and practicing pro-social behaviors with the intent of overcoming the skill or acquisition deficit, but few have been able to overcome the performance deficits associated with the use of social skills.

The majority of current social skills programs include some or all of the components previously identified as effective, but they are applied differently. Similarly, all of the programs differ in the amount of research supporting the use of the program and the amount of research-based practices that are incorporated into the program. A sample of some of the common social skills curriculum is listed in Table 3.

All of the programs listed are widely used by practitioners and many of them have research supporting their programs. Many of the components that have been found to be effective in these programs have been incorporated into the Superheroes Social Skills program, which is the focus of this study.

Gray (1994) has published multiple books about social stories, which are now widely used in social skills curriculum. Social stories are developed and used by writing a story that incorporates use of the target skill in a specific situation. The child then learns how to use the skill by reading the story or having it read to them. Social stories are incorporated in the Superheroes Social Skills program in the form of comic books

Table 3

Common Social Skills Programs

Common Programs	
Social Competence Intervention Program	Guli, Wilkinson, & Semrud-Clikeman, 2008
Skill Streaming	Goldstein & McGinnis, 1984
Prepare Curriculum	Goldstein, 1988
Navigating the Social World	McKinnon & Krempa, 2005
Building Social Relationships	Bellini, 2006
The New Social Story Book	Gray, 1994
Superflex: A Superhero Social Thinking Curriculum Package	Madrigal & Winner, 2008
Think Social	Winner, 2006
Cool Kids	Fister-Mulkey, Conrad, & Kemp, 1998
The ACCEPTS Program	Walker, McConnell, Holmes, Todis, Walker, & Golden, 1983
ASSET	Hazel, Schumaker, Sherman, & Sheldon-Wildgen, 1981

featuring the characters from the curriculum.

Madrigal and Winner (2008) have developed a social skills curriculum that incorporates a "superhero" theme, but with a focus on social thinking. They utilize specific characters that have to learn skills to overcome a certain social deficit. In contrast, the Superheroes program in this study uses two superheroes and a robot sidekick to teach the specific social skills to children.

Bellini, Akullian, and Hopf (2007) found both self-modeling and video-modeling to be an effective means to teach social skills to children. By using peer video-modeling, children are able to learn the social skills better than if an adult teaches the lessons in a didactic format. This program also uses video-modeling with peers who are shown using the skill being taught in multiple situations. All of these components and others were incorporated into the Superheroes Social Skills program as a way to produce an effective curriculum for children with ASD. Due to the large number of research-based methods incorporated into this program, it may prove effective for other populations, such as those with high incidence disabilities who also exhibit social deficits.

Current Social Skills Programs for Children with Externalizing Behaviors

There are also many programs that have been developed for children with externalizing behaviors. Effective social skills training is essential for this population due to the severe detrimental effects their behavior has on their ability to develop and maintain social relationships with peers and adults. Table 4 provides a sampling of some of the commonly used social skills programs specifically for children who exhibit externalizing behaviors.

Table 4

Common Social Skills Programs for Externalizing Behaviors

Current Social Skills Programs	
Incredible Years	Webster-Stratton, 1984
Aggression Replacement Training	Goldstein & Glick, 1986
Tough Kid Social Skills Book	Sheridan, 1995
First Steps to Success	Walker et al., 1997
Second Step Program	Committee for Children, 1998
Steps to Respect	Committee for Children, 1998
Olweus Bullying Prevention Program	Olweus et al., 2007

The Incredible Years Program (Webster-Stratton, 1984) includes parent, teacher, and child training programs. The main component of these programs is video vignettes that are viewed by the small group and then analyzed through a group discussion that is led by the facilitator. The Dinosaur School, which is the child component of the program, also uses life-size dinosaur puppets to help teach appropriate skills. There have been many research studies completed on the effectiveness of the Incredible Years Program, both by the developer and independent evaluators. The majority of studies (Taylor, Schmidt, Pepler, & Hodgins, 1998; Webster-Stratton & Hammond, 1997;

Webster-Stratton, Reid, & Hammond, 2004) found moderate to large effect sizes for the use of the parent, teacher, or child programs when studied individually and when combined.

Aggression Replacement Training (Goldstein, Glick, Reiner, Zimmerman, & Coultry, 1986) is a program that was developed to provide children with anger control training and pro-social behaviors through skill streaming. Studies by the developers indicate that this program decreased aggressive behaviors and increased positive social behaviors (Goldstein & Glick, 1994). Nugent, Bruley, and Allen (1999) found that Aggression Replacement Training could be an effective component of a multicomponent intervention to increase pro-social behaviors and minimize aggressive behaviors.

The Tough Kid Social Skills Book (Sheridan, 1995) focuses specifically on teaching children with externalizing behaviors pro-social skills. The main teaching strategies employed in these lessons are the discussion introducing the skill to be learned and role-playing activities for the children to practice the skill. One study by Fenstermacher, Olympia, and Sheridan (2006) used the content of this program and delivered in a computer format. They found that the children with ADHD improved their social problem-solving skills.

First Steps to Success (Walker et al., 1997) is a program developed as an early intervention program to prevent anti-social behaviors in children. In response to their exposure to risk factors, many children develop anti-social behavior that can escalate as the children get older. This program identifies risk factors present for these children and then provides school intervention and parent training. Results of studies by the developers and independent evaluators (Loman, Rodriguez, & Horner, 2010; Sprague &

Perkins, 2009; Walker et al., 1998) indicate robust results for the effectiveness of this program when used with children with antisocial behaviors.

Project Second Step (Committee for Children, 1998) is another program designed to increase social skills and decrease antisocial behavior in youth. Taub (2001) found that the program was effective for children in a rural school. Grossman et al. (1997) found similar results for elementary students.

Another program developed by the Committee for Children is the *Steps to Respect* (1998) program that combines friendship-making skills and anti-bullying into one curriculum. Frey et al. (2005) did find a reduction in aggressive and argumentative behavior on the playground following implementation of the program. This was determined by the use of unbiased observations during recess.

The Olweus Bullying Prevention Program (Olweus et al., 2007) was adapted from a program first developed in Norway. It is available for use as a classroomwide program or as a schoolwide program. One study by Bauer, Lozano, and Rivara (2007) found that there was no overall positive effect in a middle school sample. This is consistent with other research in the area of bully prevention.

Overall, there are programs intended for use with children with externalizing behaviors that show some effectiveness in the research. There is a need to continue research to determine what factors make these programs effective for this specific population and what factors could increase the effectiveness and make the results more long-lasting.

Evidence-Based Practice

Due to the wide range of detrimental effects that social skills deficits can have on children, there has been a large focus from researchers on developing social skills interventions that are effective. Social skills programs are widely used in schools and clinical programs for children with social deficits as an attempt to improve their levels of functioning and ability to build and maintain peer relationships. It is necessary to further study and develop programs that are effective in improving the skills necessary for individuals to thrive socially, academically, and in society.

The National Association of School Psychologists (NASP) supports the need for use of evidence-based practice (EBP) by school psychologists. Hoagwood and Johnson (2003) define evidence-based practice as "a body of scientific knowledge, defined usually by reference to research methods or designs, about a range of service practices" (p. 4). Cournoyer and Powers (2002) recommend that the way school psychologists make decisions and provide services be based on the use of evidence-based practices. This means that practitioners use services that have research indicating that the intervention is likely to be beneficial to the person you are using it for and that the practitioner will measure the effects of the intervention on the individual throughout treatment. By doing this, the intervention is likely to produce predictable effects that are beneficial for the individual.

Kratochwill and Shernoff (2003) identified five elements that are needed to effectively utilize evidence-based practice. The first is that there is collaboration between researchers, trainers, and practitioners to ensure that the interventions being developed are effective in practice environments. The second need is for practitioners to use

manualized treatments to increase the treatment fidelity and the likelihood of efficacy when transferring intervention implementation from a research setting into practice. Along with the need for practitioners to use a manual for implementation, it is suggested that more specific practical guidelines be provided to make treatments even more effective. The fourth consideration is the need for professional development for graduate students, trainers, and practitioners to help them make better applications of the interventions to specific practice settings. Finally, it is recommended that a scientist-practitioner model is most effective in supporting the development and research of interventions in practical settings.

The American Psychological Association (APA) also provides guidelines for the development, evaluation, and use of evidence-based practice. APA's Presidential Task Force on Evidence-Based Practice (2006) defined evidence-based practice as "the integration of the best available research with clinical expertise in the context of patient characteristics, culture, and preferences" (p. 273). This definition is also very similar to the definition of evidence-based practice as defined by the Institute of Medicine (2001). The American Psychiatric Association also developed similar guidelines to help physicians with decision-making about the best form of treatment for patients. There is consistency between the definitions and this common language may foster a higher level of integration between the medical and mental health communities. Also, this definition and the guidelines set into place by APA identifies specific goals to make mental health services more cost effective and to make practitioners more accountable for their actions and treatments. Similarly to NASP, APA recognizes that collaboration between

researchers and practitioners is essential to developing and implementing evidence-based practices.

APA Division 12 (Clinical Psychology) and Chambless et al. (1998) have developed criteria for evidence-based practice by delineating between well-established treatments and probably efficacious treatments. Well-established treatments can be determined as such in one of two ways. The first requires at least two good between-group design experiments demonstrating efficacy in that it is more effective than a psychological placebo, other treatment, or an already well-established treatment. The second way in which a well-established treatment can be identified is through a large series of single-case design experiments, with 9 or more participants, which demonstrate efficacy. These single-case design experiments must have used good experimental designs and provide evidence of change by comparing the intervention to another treatment. Both of these methods to identify well-established treatments require treatment manuals, clearly specified client sample characteristics, and effects demonstrated by at least two investigators. Probably efficacious treatments require two experiments that indicate the treatment is superior to a waiting-list control group or a small series of single-case design experiments with three or more participants and otherwise meeting the criteria for a well-established treatment. The guidelines set up by Division 12 give very specific criteria for practitioners to determine the efficacy of interventions for their patients and researchers to develop well-established interventions.

While APA Division 12 and Chambless et al. (1998) provided very clear guidelines for the classification of evidence-based practice, O'Donahue and Ferguson (2006) have identified some weaknesses in this system of classification. In the criteria

previously defined, the determination of evidence-based practice is based on statistical significance rather than clinical significance. Statistical significance is determined by how much chance affects a difference in the results, but clinical significance refers to how meaningful the change is to the client. The second weakness argument against this determination of evidence-based practice is that the decisions are based on efficacy (the treatment is beneficial for patients) rather than effectiveness (if an efficacious treatment will not only be effective in research settings, but also in community settings/private practice). The third weakness found in the EBP criteria is concerned with the issue of heterogeneity versus homogeneity. Most studies that meet this criterion exclude subjects who present with comorbid diagnoses, although in community and private practice settings, the patients are often presenting with multiple conditions. The fourth and last weakness identified by O'Donahue and Ferguson recognizes the bias against inclusion of single-subject, withdrawal, and multiple-baseline research designs due to the requirement of inferential statistics and comparisons to a control group.

Many groups specific to education have also provided information in regards to evidence-based practice. The Council for Exceptional Children (CEC; Odom et al., 2005) has helped by identifying some criteria specifically intended to assist teachers in the identification of research-based practice. Currently, there is not very extensive research on practices that meet EBP criteria and are also relevant for use in an educational setting.

The Department of Education has attempted to provide more educationally relevant criteria to determine if practices are evidence-based. The Institute of Educational Sciences (IES) (2003) has recognized criteria for interventions to be

considered as having "strong" evidence or "possible" evidence of effectiveness. In order to meet the criteria for having "strong" evidence, an intervention must have been effective in well-designed and implemented randomized controlled trials in two or more typical school settings. "Probable" evidence of effectiveness is found in studies with randomized controlled trials, but may not be able to meet the stringent requirements for having "strong" evidence. The IES places a great deal of importance on randomized controlled trials as a research method. Aspects of the randomized controlled trials that the IES also discusses with strong emphasis are accurate outcome measures, long-term outcomes, detailed description of treatment groups, indication that the intervention groups are systematically equal, and that the results are statistically significant. These criteria should all be met before an educational intervention is considered to have "strong" research evidence of effectiveness.

The American Speech-Language Hearing Association (ASHA, 2004) has developed criteria similar to those developed by APA Division 12 as a way of determining the level and amount of research supporting an intervention. They categorize interventions into levels ranging from Level I to Level IV. Level I includes interventions that have been studied through a meta-analysis with one or more studies having randomized designs, Level II can include controlled studies and quasi-experiments, Level III includes case studies and other nonexperimental designs, and Level IV would include interventions without research, but with expert support. Similar to the guidelines developed by the APA, these guidelines give a clear division between the necessary level of research support for interventions and a means to gauge the likely

degree of expected outcomes. This is very helpful to educators as they attempt to make decisions about how to best serve their students.

The National Autism Center (NAC, 2009) has defined three categories of interventions: Established, Unestablished, and Emerging. Some of the criteria for Established treatments include having research providing evidence of beneficial effects, the expectation of long-term beneficial effects, and evidence that the treatment does not produce harmful effects. While these treatments have been shown to be effective, they should not be expected to be effective for every child and multiple types of treatments may need to be tried before the most effective treatment for that individual is found. Unestablished treatments differ from Established treatments in that there is little or no evidence to support them. Unestablished treatments also may have been found to produce little positive effect or negative effects in the research. Emerging treatments are those that do not have enough research to support effectiveness or lack of effect as an intervention. These should be used with caution, as they do not have enough empirical support to determine how effective or detrimental they may be. These guidelines require the practitioner to take a lot of responsibility and use good professional judgment when choosing treatments for patients.

All of these agencies provide guidelines for determining good practice and best practice to be used by professionals in the schools. Superheroes Social Skills has many of the components that have met these stringent guidelines incorporated into the manualized program.

Meta-Analyses

Meta-analyses are used as a means to combine the results of several studies in order to better determine the degree of effectiveness of similar interventions. According to Glass (1976), they are used as a "statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating the findings" (p. 3). Meta-analyses are used because it can be very difficult to detect statistically significant results from individual studies. Oftentimes, there are not enough participants in individual studies to provide the statistical power needed to show large effects. As suggested by Collins et al. (1992), in order to prove that a drug is designed to reduce the risk of disease by 10%, a sample size of 10,000 would be needed in each of the treatment groups to detect any effect with 0% accuracy. By combining individual studies into a meta-analysis, the ability to detect statistical significance is increased.

Blimling (1988) identified four main purposes of meta-analyses: to describe existing studies of a treatment, to determine overall effectiveness of the treatment, to determine influence in the outcome of the treatment, and to quantify the outcome in terms of magnitude and significance. Davis and Crombie (2001) also pointed out some advantages of using meta-analytic research. Using meta-analyses allows people to see the average effects from multiple applications of similar interventions by producing a larger number of participants than the individual studies. This process typically reflects more accurate effects because of the larger sample being used. Another benefit is that meta-analyses are typically more objective than traditional studies and reviews that can often be biased by the researcher or reviewer.

In order to maintain the integrity of the results obtained from meta-analyses, it is essential to follow the process that is defined for conducting a meta-analysis. The process begins when the researcher develops a question and defines inclusion criteria for the studies that will be used. By developing the inclusion criteria at the beginning, the researcher is unable to later exclude studies based on personal preference, thus increasing the objectivity of the studies used. The studies that are chose should have methodological soundness and enough data provided to compare between the studies.

Meta-analyses are an objective and highly effective way to evaluate the efficacy of interventions. They provide more accurate information based on the results of multiple research studies and they provide more guidance toward possible areas for future research.

Efficacy of Social Skills Programs

Social skills are an important part of development for children and there are many populations that do not naturally acquire them, such as children with Autism Spectrum Disorder (ASD), children with internalizing disorders (e.g., depression and anxiety), and children with externalizing disorders (e.g., conduct disorder and ADHD). Programs targeted at helping children develop functional social skills have been developed and targeted for use with many specific groups, including children with depression, behavior disorder, anxiety, and ASD, although the research does not always indicate positive or even neutral results for social skills training (Arnold & Hughes, 1998; DuPaul & Eckert, 1994).

Many social skills programs have been developed, but in current research, they have not been found to be effective in increasing social skills or helpful in generalizing skills across settings (Arnold & Hughes, 1998; DuPaul & Eckert, 1994). It is concerning that despite the limited benefits of social skills training, these programs are widely used in school settings (Landrum, Tankersley, & Kauffman, 2003). There are also many meta-analyses that have been conducted to determine the effect size of social skills training on children. Many studies have found the effect size to be small according to Cohen's (1988) measurement for effect sizes, which indicates that below 0.20 is a small effect size.

Forness and Kavale (1996) conducted a meta-analysis on social skills programs for children with learning disabilities and found small effects. The meta-analysis included 83 independent studies done to determine the effect of social skills training conducted specifically for children with learning disabilities. The average effect size for all of these studies was 0.21. In a later review of this and other meta-analyses, Forness (2001) found that another meta-analysis (Quinn, et al., 1999) also reported a small average effect size of 0.20 for the 35 studies that had met inclusion criteria.

Similarly, another meta-analysis by Forness and Kavale (1999) concluded an effect size of 0.21 for students with specific learning disabilities who received 3 hours per week of social skills instruction. This is another study with a small effect size found for the use of social skills training as an intervention. One conclusion drawn from this research was that students classified as having a disability and requiring special education services are more resistant to social skills interventions than other children who are exhibiting social skills deficits.

Lloyd, Forness, and Kavale (1998) concluded that social skills training programs, in general, are not very effective. Some promising techniques suggested for increasing the effectiveness of social skills included intervene early, monitor students' progress and provide positive consequences for improvement, teach cognitive behavioral self-management, teach academic and cognitive skills directly and systematically, use behavioral techniques to promote the acquisition of academic and social behaviors, and teach mnemonic strategies for understanding and remembering what the students learn. Peer tutoring as also identified as a strategy that may be effective.

The meta-analysis by Bellini, Peters, Benner, and Hopf (2007) focused on school-based social skills programs for children with ASD. Their study measured the effects of social skills training on children's group play, social initiations, and social responses. The results indicated that the interventions implemented in the schools produced moderate maintenance effects and low generalization effects of group play, social initiations, and responding behaviors for the participants. Bellini also found that the social skills training was less effective when taught outside of the natural setting.

Bellini and Akullian (2007) conducted a study that focused on the effects of video-modeling and video self-modeling when used to teach social skills to children with ASD. Their meta-analysis included studies that measured the effect of modeling training on social-communication skills, functional skills, and behavioral functioning. Overall, the studies produced moderate effects for the three variables, with the Percentage of Non-Overlapping Data Points (PND) being 80%. Specifically for the effects in the dependent variables, functional skills had the highest PND of 89%, social-communication skills had a PND of 77%, and behavioral functioning had a PND of 76%. Unlike previous research,

maintenance effects had a PND of 83% and generalization effects had a PND of 74%, indicating moderate effects in these areas. Little difference was found between the effects of video-modeling and video self-modeling.

Wang and Spillane (2009) also studied the effects of social skills training with children with ASD and found them to be generally ineffective. Social stories, peer mediation, and video-modeling were identified from previous research as being evidence-based practices, but the current study concluded that PND resulted in video-modeling as the only evidence-based practice.

Maag (2006) conducted a review of previous research reviews and concluded, "The state of social skills training with students with emotional and behavioral disorders seems to range from dismal to guarded optimism" (p.14). Some of he concerns that were identified I current social skills training programs included a lack of generalization, not focusing on socially valid behaviors, the training was not tailored to the individual students' deficits, lack of socially valid outcome measures, and lack of treatment fidelity. These results may indicate deficiencies in current research, but also provide some insight into what should be incorporated into new programs to increase effectiveness.

Zhang (2008) conducted research on the effects of using peers to mediate social skills interventions for children with ASD. Peer mediation as an intervention was found to have a large effect size of 1.46, follow-up results also had a large effect size of 1.49, as did generalization with an effect size of 1.51. Miller (2006) also found peer mediation to be an effective form of social skills intervention. This meta-analysis found peer mediation had a large effect size of 3.27, as did collateral skill interventions (ES=2.37) and child-specific interventions (ES=2.19). Both of these studies provide support for use

of peer-mediated interventions as an evidence-based practice when used to teach social skills to children with ASD.

A meta-analysis by Lee, Simpson, and Shogren (2007) evaluated the effectiveness of many self-management techniques. The techniques included in this study were self-monitoring, self-assessment, self-evaluation, self-observation, self-recording, self-instruction, and self-reinforcement. Results combined for all forms of self-management produced a PND of 81.9%. The results of this study imply that self-management may be an effective intervention for children with ASD.

Video-modeling, self-management, peer mediation, and social stories are found in the research as being helpful to some children in learning, generalizing, and maintaining social skills (Bellini & Akullian, 2007; Bellini, Akullian, & Hopf, 2007; Charlop-Christy & Danshevar, 2003; Hagiwara & Myles, 1999; Miller, 2006; Thiemann & Goldstein, 2001). The use of these components can be effective for children learning social skills in a group setting. While there is not a complete consensus in the literature that these interventions are helpful to all children, it is encouraging that they are effective for some when used alone and could be even more effective when combined with other evidence-based approaches.

Schneider (1992) is one of the few meta-analyses to indicate moderate or large effect size for social skills training. This study found an overall effect size of 0.87, which is considerably larger than most of the other studies. This was also one of the few meta-analyses that found a moderate effect size at follow-up (ES=0.75). Schneider did find that children who were categorized as aggressive showed smaller effects than the children who were described as withdrawn, implying that social skills training may be more

effective for children with internalizing behaviors rather than those with externalizing behaviors.

A meta-analysis by Quinn et al. (1999) found an effect size of only 0.20 for children with emotional and behavior disorders whom received social skills training for an average of 2.5 hours per week for 12 weeks. This is disconcerting when the reality of the maximum amount of time social skills training occurs for students in the schools in one hour per week. The results indicate that only about 58% of the students who received the treatment showed improvement in their pro-social behaviors.

One study aimed at determining the effectiveness of social skills training for children with conduct disorders not only failed to show benefits from group social skills training, but actually showed evidence of detrimental effects due to the effects of grouping externalizing children (Arnold & Hughes, 1998). In social skills groups for children with behavior disorders, it has been found that the undesirable behaviors were actually enhanced due to the encouragement and experience sharing between the individuals in the group. Thus, social skills interventions for children with behavior disorders are not deemed effective unless there are neutral peers without behavior disorders in the group as well. Use of peers to mediate instruction is an embedded component in the Superheroes Social Skills program.

However, another study by Beelman, Pfingsten, and Losel (1994) found that social skills programs taught with children who have externalizing disorders had an initial moderate effect size of 0.48, but these effects were not maintained over time. This would suggest that while the treatment produced a higher effect size as measured during the

treatment period, the long-term effects of the social skills training were not beneficial for the participants.

Quinn, Kavale, Mathur, Rutherford, and Forness (1999) found the effect size of social skills instruction for children with emotional and behavior disorders to be 0.199. However, the same study did find higher effect sizes for children with anxiety, suggesting that social skills training may be more effective for some children with internalizing disorders. The moderate effect size of 0.422 for social skills training for children with anxiety in this meta-analysis was based on eight individual studies. A more recent meta-analysis conducted by Spence, Donovan, and Brechman-Toussaint (2000) also provides support for use of social skills for children with anxiety. This study paired social skills training with cognitive-behavioral therapy to reduce school-related anxiety. The results of this study indicate that this treatment was effective and was able to be maintained at 12 months after the completion of treatment. This research also provides evidence that social skills training might be effective for children with internalizing disorders.

Miller, Lane, and Wehby (2005) used social skills training in a self-contained classroom with children with high-incidence disabilities. Their study found reductions in inappropriate classroom behavior, and increases in time engaged in academic tasks. Unfortunately, these effects were not reflected in the classroom behavior management system and the teacher and student ratings of social validity were low, which may indicate an effective treatment that lacks generalization.

Maag (2005) reviewed studies that provided social skills to children with emotional and behavior disorders and found many areas for improvement in this area in the future research. This study concluded that the target behaviors were not socially valid

and did not match the performance deficits the children had. There was also a lack of generalization and treatment fidelity, as well as, minimal changes in peer acceptance being observed. It would be important to address some of these issues by assessing the needs of the students, training with peers, and incorporate generalization strategies.

Gresham, Cook, Crews, and Kern (2004) also studied social skills training for children with emotional and behavioral disorders. Some of the conclusions drawn included that social skills training is an effective intervention for children with emotional behavioral disorders. Specifically, it can be effective for children with aggression and externalizing behaviors, children with internalizing behaviors, and children with antisocial behavior patterns. Ineffective or inaccurate outcome measures was one of the weaknesses found in previous studies, implying that future research in this area should consistently use better outcome measures.

Interventions specific to bullying have also been studied more frequently in the recent past. This is an important area of research to consider when working with children with externalizing behaviors who are displaying aggressive behavior toward others. There are a few meta-analyses that have been conducted on the research regarding bullying prevention programs and indicate small effect sizes for the programs currently being used (Livingston, 2008; Merrell, Gueldner, Ross, & Isava, 2008; Wong, 2009). These studies did indicate that there was a higher reduction in victimization as a result of the intervention, but less of an effect on the reduction of bullying behaviors. It is unclear from these studies what factors of the programs are most and least effective, as well as why there seems to be a larger effect on the victim behavior than bullying behavior.

The current research on the use of general social skills programs for children with various disabilities does not seem to provide a large amount of evidence for their effectiveness. While some of the groups showed positive effects, many did not. There are many programs that may be effective for various groups of children, but have not yet been the focus of research at this point. This is an area in great need of more research to support decisions being made for programs developed for and conducted with children.

Some research has indicated that existing social skills programs are not effective and the effects may not be generalizable to multiple settings. DuPaul and Eckert (1994) found that many social skills programs were ineffective because the skills being taught were not generalizable into natural situations where the use of the skill would be beneficial to the child. They used the term "train and hope" method of teaching social skills to refer to the common practice of teaching skills to children and then hoping that the children use the skills in generalized settings, but without any further training to encourage the skills use. DuPaul and Eckert also found that performance deficits impeded the generalization of the skills because knowledge of the skills was acquirable, but the self-control and impulsivity levels of the children kept them from being able to utilize the skills appropriately in actual situations. This would imply that social skills would need to be taught to children who were able to overcome the performance deficits that might be present in order for there to be positive and generalizable effects.

Generalization of Social Skills

Morgan and Jenson (1988) define generalization as having occurred "when the learner exhibits the target behavior outside the training setting, with no specific

intervention" (p.156). There are four types of generalization identified by Drabman, Hammer, and Rosenbaum (1979): generalization across time (maintenance), generalization across setting (stimulus generalization), generalization across behaviors (response generalization), and generalization across subjects. All four types of generalization are relevant when teaching social skills to students in a school setting. It is desirable that the social skills are used in multiple settings where intervention is not occurring, they continue to be used after the training has ended, and the skills are applied to multiple and varied situations.

Sheridan (personal communication, 2001) expands on previous definitions of generalization to be "the use of appropriate social skills in a variety of settings and with a variety of people that were not part of the training situation (such as in classrooms, playgrounds, and hallways; with teachers, classmates, and others)" (slide 2). The desire is to teach skills that will be used in all possible settings and with all of the people the child interacts with, not just in the training setting or in the classroom.

Unfortunately, generalization of social skills is often not achieved from current social skills training programs. Gresham provides a framework for the difference between learning social skills and being able to generalize the skills. In the matrix, Gresham delineates between the difference of learning a skill, or acquiring it, and performing the skill in a generalized setting. For many children, they are able to learn the skill, but are not able to perform the skill outside of the training setting, resulting in a generalization deficit.

There are two types of performance deficits and two types of acquisition deficits. Social performance deficits occur when an emotional arousal response is absent and self-

control performance deficits occur when the emotional arousal response is present. For acquisition deficits, social skill deficits occur when the emotional arousal response is absent and self-control deficits occur when the emotional arousal response is present. These deficits are dependent on the ability to learn the skill and the child's ability to adapt the skill to various situations based on their emotional arousal. These factors should be considered when aiming to increase generalization of learned skills.

DuPaul and Eckert (1994) termed the problem with generalization of social skills as "now you see them, now you don't" (p. 113) because the effects of social skills training may be seen initially, but are not present after training has been completed. In their review of the literature, they concluded that some environmental programming and training in the "real world" setting helped to increase generalization and maintenance. Overall, the effects of social skills training are not present beyond the training setting.

This implies that different strategies would need to be employed that focus on generalization and maintenance if there is to be any practical application and result of social skills training with children. Children need to learn the skills and their specific steps, but also learn to control their emotional arousal and be able to adapt the skills in generalized settings when situations occur that would require them to use the learned skills.

Enhancing Generalization

While generalization has been identified as a necessary component of social skills training (DuPaul & Eckert, 1994), strategies to increase generalization are often not embedded components in many social skills programs. Stokes and Baer (1977) refer to

the commonly used methods for promoting generalization of social skills as the "train and hope" method. This is often seen when students receive pull-out social skills training and then school staff hope they use the skills in generalized settings. Oftentimes, the skills are not used outside of the training setting.

Many strategies to increase generalization have been identified by Morgan and Jenson (1988). Some of the strategies they suggest include sequential modification, natural contingencies of reinforcement, multiple teaching examples, training loosely, indiscriminable contingencies, common stimuli, and self-management.

Sequential modification requires that the same intervention procedures be applied in all settings that the child is exposed to, which can be difficult to implement with multiple teachers in multiple classrooms. Natural contingencies of reinforcement is a concept that would imply that increased social skills are naturally reinforced by teachers and peers by positive response to the child's use of desired behaviors. This is often not the case because positive behaviors are often ignored rather than reinforced.

Another suggested practice is providing numerous teaching examples for the behavior to be learned. If the student learns the skill as it applies in multiple situations, there is a higher likelihood that the student will use the skill in similar situations outside of the training setting. If the student practices the skills in multiple situations, they may be more easily adapted to similar situations in the natural setting. Training loosely is a strategy that Baer (1981) suggests can increase generalization through variation of reinforcement, classroom environment, teachers, and teaching techniques.

Indiscriminable contingencies can be used to vary the reinforcement and behavior that is being reinforced so it becomes unpredictable for the students. Stokes and Baer

(1977) suggest that making the training setting and the generalization setting more alike will help the skills taught in the training setting to be used more in the generalization settings. The last strategy that is suggested to increase generalization is teaching self-management procedures. This helps students learn how to monitor their own behavior in generalized settings leading to increased use of the skills in these settings.

Sheridan (2001) offers similar strategies for increasing generalization. She suggests teaching meaningful skills to the student and adults that are most important based on an assessment of the child's environment. She also suggests bringing the "real world" into training and bringing training into the "real world". This is done by making the training environment similar to the natural environment and by conducting training in the natural environment. Sheridan encourages classwide and schoolwide programs to teach all kids by providing situations in which the skills can occur, using peers as mediators, including all adults (teachers, administrators, aides, parents, peers, etc.), train loosely, using reinforcement, and using cueing techniques in order to increase generalized use of the skills being taught.

Reeve et al. (2007) aimed to increase the helping behavior of children with ASD. During the training trials, the researchers used modeling, video-modeling, and reinforcement to encourage the children to acquire the desired skills. Results of this study indicated that the helping behavior generalized outside of the training setting and was maintained at a 60-day follow-up. Conclusions may be drawn that modeling, video-modeling, and reinforcement can be effective strategies for increasing generalization of some learned skills.

Stokes and Baer (1977) conclude in their article that there is no such thing as generalization without programming. There must be techniques incorporated into programs to foster generalization of skills learned. The tactics they recommend using to increase generalization include:

1. Look for a response that enters a natural community; in particular, teach subjects to cue their potential natural communities to reinforce their desirable behaviors.
2. Keep training more exemplars; in particular, diversify them.
3. Loosen experimental control over the stimuli and responses involved in training; in particular, train different examples concurrently, and vary instructions, social reinforcers, and backup reinforcers.
4. Make unclear the limits of training contingencies; in particular, conceal, when possible, the point at which those contingencies stop operating, possible by delayed reinforcement.
5. Use stimuli that are likely to be found in generalization settings in training settings as well; in particular, use peers as tutors.
6. Reinforce accurate self-reporters of desirable behavior; apply self-recording and self-reinforcement techniques whenever possible.
7. When generalizations occur, reinforce at least some of them at least sometimes, as if "to generalize" were an operant response class.

Based on the research that has been reviewed, there are many common components that are suggested as helpful when trying to increase generalization of skills being taught to children. It is important to include diverse types of reinforcement, natural

reinforcement if possible, peers to teach, self-monitoring, teaching in the "real world" setting, and using multiple teaching examples. These strategies may be useful individually, and even more so if combined into the training program.

Promising Approaches to Make Social Skills More Effective

Video-Modeling Interventions

Video-modeling was incorporated into the Superheroes Social Skills program as one component to help increase its effectiveness. Video self-modeling is implemented by having the target child watch a video of themselves performing the desired skill without error, whereas video-modeling is the process of watching a video of a peer demonstrating appropriate use of the skill or behavior. The child is shown the videos repeatedly and this has resulted in changes in behavior, maintenance, and generalization.

Hitchcock, Dowrick, and Prater (2003) reviewed 18 research studies that included 129 participants and used video self-modeling as an intervention. The behaviors that were targeted by the video-modeling interventions included academics, compliant classroom behavior, peer relationships, disruptive behavior, adaptive behavior, and language. Overall, results indicated that video self-modeling was an effective intervention for changing behavior, improving academics, and increasing communication for children.

Bellini et al. (2007) found that children with ASD demonstrated increased social engagement that was maintained over time as the result of video self-modeling. Bellini, Akullian, and Hopf (2007) also found that video self-modeling not only increased the effectiveness of social skills training, but that the effects were maintained after the

intervention was completed. The maintenance of positive results following treatment, as well as generalization to other individuals and settings was also found by Sherer et al. (2001). Nikopoulos (2007) found increased interaction time and generalization of play skills to new toys and settings for children with ASD after viewing video-modeling of typically developing peers. The generalization of play was also maintained for up to three months.

Charlop-Christy and Danshevar (2003) concluded that generalization increased when using video-modeling and believe that the video stimulus is reinforcing and possibly helpful in controlling overstimulation for children with ASD because the video presentation helps to focus the attention on one stimulus. Research has found video-modeling is more effective than in-vivo modeling and it is also a cost effective alternative to other forms of training (Bellini & Akullian, 2007; Miller, 2006).

While there are many studies that have indicated high effects of video self-modeling, there have also been studies that compare video self-modeling to video-modeling. Results indicate that both forms of modeling produce moderate to large effect sizes, suggesting there is little difference in effectiveness between them (Bellini et al., 2007; Sherer et al., 2001). Thus, video-modeling, either self or peer, is now considered an effective and important component of social skills training.

Peer Mediated Interventions

The use of peer mediation in social skills interventions for children has been used to counteract the poor generalization of social skills taught through didactic instruction delivered by adults (Rogers, 2000). Studies have concluded that peer mediated programs

are an effective way to teach social skills; however, researchers have found the effects are difficult to maintain because children tend to rely on the peer cues and prompts (McConnell, 2002; Rogers, 2000). Miller's (2006) meta-analysis indicated that peer mediated interventions are the most effective for school age children with ASD when learning social behaviors.

Schneider, Goldstein, and Parker (2008) completed a meta-analysis on single-subject research studies conducted with children with autism. Using the percentage of non-overlapping data points (PAND) as a measure of effect, peer mediation was found to be an effective treatment to teach social skills to children with ASD.

Chen (2006) conducted a review of multiple research studies conducted with children with emotional and behavior disorders. The research focused on various strategies for teaching social skills to children and found that peer mediation was an effective component to teaching social skills to children with emotional and behavior disorders. It was naturally reinforcing to children to have peers reinforce their behavior, as opposed to adults. It was also more natural for them to generalize the skills without relying on the prompts they would have received from adults.

The research supporting the use of peers as tutors or in helping teach children social skills is increasing. Many of the social skills programs currently available do not use peer mediation as part of their instruction, but this may prove to be a component that is useful in the development of future social skills training programs.

Self-Management Interventions

Self-management is used to teach children to monitor and record their own behavior by increasing their awareness of the behavior and their use of the behavior in multiple and unsupervised settings. Stahmer and Schreibman (1992) implemented self-management interventions to children with ASD in order to increase appropriate play behaviors. They found that self-management increased the use of appropriate play, decreased self-stimulatory behaviors, and that the results were maintained and generalized to unsupervised settings. Koegel, Koegel, Hurley, and Frea (1992) found similar results when teaching self-management to children with ASD in an attempt to increase social responsiveness and decrease disruptive behavior.

Chen (2006) conducted a review of studies conducted with children with emotional and behavior disorders. The research focused on different strategies for teaching social skills and found that self-monitoring was an effective component to teaching social skills to children with emotional and behavior disorders.

Lewis, Hudson, Richter, and Johnson (2004) identified self-management as a scientifically supported practice for use with children with emotional and behavioral disorders. Generally, social skills training was not found to be effective based on the meta-analysis completed, but self-management was still an effective component of social skills. Based on Strain, Kohler, and Gresham (1998), social skills and self-management may be even more effective than they were found to be in this meta-analysis. Their conclusions are such that single-subject research studies are not appropriate for meta-analyses, which may indicate different effects if analyzed differently.

The self-management training had the desired effects on the individuals and it generalized to multiple settings (school, home, and community) without the treatment provider present. Self-management is another component that has been found to be effective for children and may prove to be an essential component of social skills training programs.

Social Stories

Social stories have also been studied as an effective component of social skills training. Social stories are stories created to reflect realistic situations that might require the use of skills being taught and demonstrating how these skills can be used appropriately in various social situations. Social stories also often include pictures, which can be helpful for children with ASD who benefit from the use of visual formats.

Quirmbach, Lincoln, Feinberg-Gizzo, Ingersoll, and Andrews (2009) found that the use of social stories significantly improved play behavior for children. Hagiwara and Myles (1999), however, did not find consistent and significant results for the participants in their study; rather, the effects were only found for outlier participants. However, for the participants that Hagiwara and Myles found benefited from the intervention, the effects generalized to other situations and could be linked to the skills. Social stories have been shown in the research to be an effective strategy for teaching social skills, but may not be as effective when used as the only form of intervention (Crozier & Tincani, 2007; Sansoti, Powell-Smith, & Kincaid, 2004). It is likely helpful to combine this intervention technique with others when developing social skills programs.

Ravary, Unesi, and Looye (2008) conducted a study with 22 females between the ages of 10 and 11 who were displaying problem behaviors. This study concluded that a story-based social skills intervention successfully reduced symptoms of conduct disorder for the participants.

Hanley-Hochdorfer, Bray, Kehle, and Elinoff (2010) studied the effects of using social stories to increase the pro-social verbalizations of children with ASD. They found that social stories, when used alone as an intervention, were not able to produce large effects. The researchers concluded that social stories should be used with caution as the sole intervention procedure, but that they are far more effective when used in conjunction with other interventions.

The meta-analysis by Kokina and Kern (2010) also found questionable effects of using social stories as the only intervention method. They concluded that social stories were more effective at minimizing disruptive behaviors than increasing pro-social behaviors and teaching social skills. One hypothesis for this outcome that was presented by the researchers was that children might lack the knowledge and training of the social skills necessary to follow the social skills in the social story. This may suggest that by teaching the social skills in tandem with using the social stories, the effects might be greater.

Increasing Generalization with "Stickiness"

In the book *The Tipping Point*, Malcolm Gladwell discusses the concept of epidemics and how certain concepts are made to stick with people. In the chapter entitled The Stickiness Factor, he discusses advertising techniques and television shows that have

found a way to be sticky to their audience. He posits, "if you paid careful attention to the structure and format of your material, you could dramatically enhance stickiness" (p. 110). By increasing the stickiness of what you are teaching, you would also increase the application of the concepts introduced past the immediate environment of exposure. Stickiness can be defined as an attribute of a stimulus that enhances its maintenance across situations and time.

Gladwell uses different advertising techniques as examples of stickiness, but he also examines children's television shows that attempted to increase children's literacy, such as Sesame Street and Blues Clues. The research that was done on the effects of these television shows indicates that there are certain factors that are essential to achieve stickiness with children.

Repetition is one of the key components of stickiness because if a concept is repeated to children, they are able to remember the information and recall it better at a later time. The content should also be creative, so as to draw the child's attention. Another factor that is essential to stickiness for children is to make the presentation of the material appealing (e.g., using muppets and animation). It was also helpful for these television shows to include an interactive element that allowed children the opportunity to answer questions or guess missing information.

In an attempt to appeal to children and make the information sticky for them, it would be important to include some or all of these elements. The stickier the presentation of the material is, the more likely children are to recall this information at later times. This can be applied to any information being taught to children, including

social skills training. As Gladwell states, "There is a simple way to package information that, under the right circumstances, can make it irresistible" (p.132).

Heath and Heath (2008) also lay out a framework for making information "sticky." In their book, *Made to Stick*, they describe a method of SUCCESs: a simple unexpected concrete credentialed emotional story. These factors all help to increase how "sticky" information is when presented. In their book, they use the idea of how "sticky" urban legends are and what makes them this way. They then identify the aspects of urban legends that can be used to increase the "stickiness" of other information that is presented to people.

Simplicity means that the information must be profound, as well as simple. Unexpectedness in the information presented helps to generate interest and curiosity, while making the information concrete in the messages and images makes it easier to remember. The information must seem credible and allow for people to test the ideas for themselves. It is also helpful to make people feel something about the information they are receiving. Stories can also help increase their memory of the information.

By using these strategies, it is implied that information can be made "sticky" for the people exposed to the content. If it is "sticky," they will be more likely to recall the information at a later time. The Incredible Years Program (Webster-Stratton, 1984) is a popular social skills curriculum that has incorporated some of these strategies and has been proven to be effective in the research (Taylor, Schmidt, Pepler, & Hodgins, 1998; Webster-Stratton & Hammond, 1997; Webster-Stratton, Reid, & Hammond, 2004).

The Incredible Years programs use videos that are watched multiple times to make the material repetitive. The group members discuss the content of the video

vignettes in order to provide an interactive component. For the children's lessons, life-sized puppets are used, which makes the material appealing. This is an example of a program that has incorporated some of the elements of "stickiness" in order to effectively teach social skills to children.

Superheroes Social Skills

The Superheroes Social Skills Program (Jenson, et al., 2011) was developed based on past research in order to incorporate many previously discussed evidence-based components of existing social skills programs into one program. Some of the components that are used in this program include video modeling with an optional video self-modeling component, peer mediation through the inclusion of typically developing "peer buddies", self-management of the child's use of the learned skills, and social stories in the form of comic books. The program was developed to teach social skills to children with Autism, Asperger's Disorder, or Pervasive Developmental Disorder – Not Otherwise Specified, but due to the evidence-based practices combined within this program, it may be effectively used with other populations, including children with high incidence disabilities.

Many existing programs are effective, but lack maintenance effects and generalization of the skills that were taught. One of the main goals of this program is not only to effectively teach social skills to children, but for the skills to be generalized and maintained. Block (2010) found the effects of Superheroes Social Skills to generalize to recess and the effects were not only maintained at a 2-week follow-up but they were actually increased.

Superheroes Social Skills includes 18 skills separated into foundational, intermediate, or advanced skills based on the complexity of the skill. Each of the 18 skills is typically taught twice per week, but only 11 of these skills that were considered the most important skills for the children with high incidence disabilities were selected for this study.

The skills selected for use in this study were identified to be the most applicable and pertinent to children with high incidence disabilities. The skills taught were:

1. Introduction/Get Ready
2. Following Directions
3. Anxiety Reduction
4. Participate
5. Body Basics
6. Expressing Wants and Needs
7. Turn Taking
8. Recognizing Emotions
9. Perspective Taking
10. Bullying
11. Problem-Solving

Skills are introduced by the superheroes (The Initiator and Interactor Girl) and their sidekick (Scooter the robot) in an animated video at the beginning of the lessons. The lesson format also includes role-playing social scenarios by pairing children with high incidence disabilities and their peer buddies. Participants then watch a digital comic social story with a hard copy provided to the participants at the end of the lesson. The

video animation and comic books make this program of high interest for children, but while still incorporating evidence-based components to encourage skill acquisition, maintenance, and generalization by the children. In addition to these components, the lessons include social games that reinforce the skills being taught in an enjoyable format. Reinforcement strategies to encourage rule-following behavior and compliance are used throughout the lessons (see Appendix A).

The goal in the development of the Superheroes Social Skills program was to incorporate multiple components that have met the criteria for evidence-based practice. This study has incorporated several evidence-based practices including modeling and video-modeling, peer mediation, self-management procedures, social stories, and direct instruction. The use of multiple evidence-based practices in one program makes the potential for efficacy favorable when compared to other social skills programs. These same components are also likely to overcome some of the shortcomings of other existing programs, including generalization and maintenance of social skills.

The effectiveness of the Superheroes Social Skills program (Jenson, et al., 2011) for use with children with Autism Spectrum Disorders has already been studied by members of the development team. Block (2010) completed research in a public school with four children with high-functioning autism and found large effect sizes during free play observations (M=0.85) and during recess observations (M=2.34). It was also measured that the effects of the social skills training were still present at a two-week follow-up for the free play observations (M=0.74) and the recess observations (M=3.42), indicating that the effects were not only maintained, but continued to increase following treatment. This study also indicated that the program did not increase social initiations

and sometimes the participants actually decreased their use of initiations in interactions, but social responses were consistently and greatly increased.

Radley (2010) completed a research study with preschool children with Autism Spectrum Disorder at a specialized school for children with Autism. He provided the video-based version of the program to one group and taught the program material without using the videos for the other group. His results indicated large effect sizes for both the didactic group (M=1.54) and the video-based group (M=0.93). One of the students in the video-based group was fairly nonresponsive to the treatment and one student in the didactic group was extremely responsive to the treatment, which may account for the higher mean effect size for the didactic group.

Hood (2010) completed research at an out-patient clinical setting with four elementary-aged children with Autism Spectrum Disorder. The lessons were combined and taught once per week in the evenings. The results of the free play observations indicated an overall large effect size for the group (M=1.07). Parents also completed a daily report of their child's use of the skills at home as a measure of generalization. The mean effect size as measured by the daily report was 1.13.

Overall, these studies have indicated that the Superheroes Social Skills program is an effective program for teaching social skills to children with Autism Spectrum Disorder. The current study will expand this research to determine if it is also an effective program to teach social skills to children with high incidence disabilities in a school setting.

Summary

In summary, there are many programs that have been developed to aid children in learning and using social skills, but many have been found to have little, if any, effect. Despite the small effects of social skills programs currently being taught, many schools and clinical settings still provide social skills training due to the negative outcomes that are associated with children with poor social skills. It is necessary for programs to be developed and research to be conducted in order to identify evidence-based social skills programs for children.

The Superheroes Social Skills program (Jenson, et al., 2011) has been developed to meet these criteria by combining many of the components of other programs that have been proven effective in the research. Along with the evidence-based practices, the Superheroes Social Skills program also uses video animation and other high-interest media to increase the children's level of interest, attention to the material, and generalization of the skills.

The present study was conducted to evaluate if the Superheroes Social Skills program is an evidence-based approach to teaching social skills when delivered as a pull-out group intervention in a school setting for four children with high-incidence disabilities. Efficacy was determined by calculating effect size and percentage of nonoverlapping data points (PND) for each participant, as well as an effect size and percentage of all nonoverlapping data points (PAND) for the group.

Statement of Purpose

This study was designed to evaluate the use of the Superheroes Social Skills program (Jenson, et al., 2011) as an evidence-based practice to teach social skills to children with high-incidence disabilities in a pullout group in a school setting. The purpose of this program is to provide children with the appropriate social skills necessary for participation in pro-social interactions with peers and adults. Another goal of this study is to measure generalization of the skills to multiple situations, such as recess, and maintenance of these skills at a 2-week follow-up. The program is based on a superhero theme with animation and comic books as high interest media to appeal to participants and maintain attention to program content throughout the intervention. The program also incorporates research-validated components, such as video-modeling, social stories, peer mediation, and self-management strategies. The program effectiveness was determined by increased use of social skills during free play observation periods following the lessons, observation of increased pro-social behaviors in a generalized recess setting, and completion of checklists including the BIRS, SSIS, and the Children's Consumer Satisfaction Survey.

Research Questions

The following research questions were addressed in this study:

1. What is the effectiveness of the social skills intervention during a free play observation?

Following each session, there were free time play periods that were video-taped and then coded for social behaviors using an adapted partial interval observation system (see Appendix B). The data were then used to calculate effect sizes, PND, and PAND.

2. What is the effectiveness of the social skills intervention as measured by the spontaneous generalized use of pro-social behaviors during recess?

Each participant was observed four times throughout treatment during recess. The observations were video-taped and coded for social behaviors using an adapted observation system. The data were then used to calculate effect sizes, PND, and PAND.

3. What is the maintenance of pro-social behaviors at a 2-week follow-up?

There were two free play and two recess observations completed for each participant conducted two weeks after treatment was completed. The observations were video-taped and coded for social behaviors using an adapted observation system. The data were then used to calculate effect sizes, PND, and PAND.

4. What is the consumer satisfaction with the intervention?

Parents and teachers completed the Behavior Intervention Rating Scale (BIRS) (see Appendix C) following the last treatment session and descriptive statistics were used to analyze the parent satisfaction of the treatment.

5. What is the effectiveness of the intervention based on the results of the Social Skills Improvement System (SSIS)?

Parents and teachers completed the SSIS as a pre- and posttest measure and standard deviation changes in scores were used to determine treatment effects.

6. What is the social validity of the intervention?

Parents and teachers completed an adapted version of the Social Validity Scale (see Appendix D) (Bellini, 2006). Descriptive Statistics were used to analyze the social validity of the intervention.

7. What is the participant satisfaction with the intervention?

Participants completed a child consumer satisfaction survey (see Appendix E) and descriptive statistics were used to determine the consumer satisfaction of the intervention.

8. What amount of progress was made regarding the performance and demonstration of target social skills by student participants as measured by the Superheroes Social Skills Progress Monitoring Tool over the span of 11 role-play scenarios?

Participants were observed role-playing the lesson's skill and steps during each lesson. A percentage for the skill steps that were appropriately demonstrated was calculated.

CHAPTER 2

METHODS

This study was designed to evaluate the use of the Superheroes Social Skills program (Jenson et al., 2011) as an evidence-based practice to teach social skills to children with high-incidence disabilities in a pullout group in a school setting. The purpose of this program is to provide children with the appropriate social skills necessary for participation in pro-social interactions with peers and adults. Another goal of this study is to measure generalization of the skills to multiple situations, such as recess, and maintenance of these skills at a 2-week follow-up. The program is based on a superhero theme with animation and comic books as high interest media to appeal to participants and maintain attention to program content throughout the intervention. The program also incorporates research-validated components, such as video-modeling, social stories, peer mediation, and self-management strategies. The program effectiveness was determined by increased use of social skills during free play observation periods following the lessons, observation of increased pro-social behaviors in a generalized recess setting, and completion of checklists including the BIRS, SSIS, and the Children's Consumer Satisfaction Survey.

Prior to recruitment of participants, consent to conduct the research study by the school district institutional review board and the school was obtained. The primary

researcher also obtained approval from the University of Utah Institutional Review Board.

Participants

This study was conducted with 4 children with high-incidence disabilities and 4 peer buddies between the ages of 5 and 9 who were nominated by school staff. The researcher contacted the parents of the children who were nominated and they were given more detailed information by phone. If the parent wanted to have their child participate in the program, they met with the researcher to complete the parental consent (see Appendix F) and child assent forms (see Appendix G) and the parents of the children with high-incidence disabilities also completed the SSIS and placement checklist during this initial meeting. All of the children with high-incidence disabilities were required to meet the following inclusion criteria.

In order to be included as a participant, children had to meet the following criteria:

1. Have a current medical diagnosis of conduct disorder, anxiety disorder, learning disability, or ADHD by a physician, psychologist, or psychiatrist or an educational classification of emotional disturbance, specific learning disability, speech/language impairment, or other health impairment.
2. Obtain scores on the SSIS and another behavioral measure that meet criteria for having a significant behavioral or social impairment.
3. Obtain a verbal IQ score of 70 or higher on a standardized intelligence test, administered within the past 3 years by a qualified administrator.

4. Possess and demonstrate use of sufficient expressive and receptive language so as to be able to participate in the social skills group.

In addition to meeting these criteria, a placement checklist (see Appendix H) designed for this study to screen participants was administered to parents to aid in the selection of participants. Parents of the participants attended an initial parent training session to be informed about the homework, skills to be taught, and the lesson format. Table 5 provides a summary of the participant characteristics and is followed by a more detailed description of the individual participant characteristics.

Participant 1 is a 5-year-old Caucasian male with a diagnosis of Attention Deficit/Hyperactivity Disorder from a physician. His cognitive ability was assessed in preschool using the Stanford-Binet Intelligence Scales, Fifth Edition. He earned a Full Scale IQ standard score of 98, a Nonverbal IQ of 97, and a Verbal IQ of 98. Based on parent ratings on the SSIS, participant 1 was rated below average (SS=67) on the Social Skills Scale and above average (SS=115) on the Problem Behaviors Scale. His teacher rated him below average (SS=86) on the Social Skills Scale and average (SS=109) on the Problem Behaviors Scale. On the Behavior Assessment System for Children, Second Edition, his mother rated him in the at-risk range (SS=66) on the Externalizing Problems Scale. These scores indicate there are significant deficits in the areas of social skills and problem behaviors and he may benefit from intervention in these areas. Participant 1 is above grade level academically, but is significantly below grade level socially and behaviorally. His teacher reported that he is frequently yelling out in class, has difficulty keeping his hands to himself, does not respect personal space, and he has a difficult time

Table 5

Participant Characteristics

Demographic Information for Participants

	Participant 1	Participant 2	Participant 3	Participant 4	Mean
Child's Age	5.6	7.1	9.1	8.11	7.48
IQ Scores					
FSIQ	98	95	89	80	90.5
NVIQ	97	101	91	79	92
VIQ	98	90	86	83	89.25
SSIS (Pre-intervention) (Social Skills Scale)					
Parent	67	83	77	98	81.25
Teacher	86	81	76	93	84
(Problem Behaviors)					
Parent	115	93	117	116	110.25
Teacher	109	117	121	126	118.25
BASC-II (Externalizing Problems Score)					
Parent	66	58	79	54	64.25
Teacher			88	53	70.5
Conners – 3 (Aggression Score)					
Parent	---	68	122	55	61.5
Teacher		68	104	66	79.3
Conners – 3 (Hyperactivity/Impulsivity Score)					
Parent	---	>90	69	68	79
Teacher		89	97	65	83.6

initiating appropriately with his peers. His parents reported that he is very smart, but has a lot of energy and needs help focusing.

Participant 2 is a 7-year-old male with an educational classification of speech/language impairment. He had not been administered a cognitive assessment prior to this research study. The primary researcher administered the Stanford-Binet Intelligence Scales, Fifth Edition. He earned a Full Scale IQ standard score of 95, a Nonverbal IQ of 101, and a Verbal IQ of 90. Based on parent ratings on the SSIS, participant 2 was rated below average (SS=83) on the Social Skills Scale and average (SS=93) on the Problem Behaviors Scale. His teacher rated him below average (SS=81) on the Social Skills Scale and above average (SS=117) on the Problem Behaviors Scale. On the Behavior Assessment System for Children, Second Edition, his mother rated him in the average range (SS=58) on the Externalizing Problems Scale. On the Conners Rating Scales, Third Edition, his mother rated him in the elevated range (SS=68) in the area of Aggression and in the very elevated range (SS>90) in the area of Hyperactivity/Impulsivity. These scores indicate there are significant deficits in the areas of social skills and problem behaviors and he may benefit from intervention in these areas. Participant 2 is below grade level academically, socially, and behaviorally. His teacher reported that he does not complete assignments, teases other children, and has difficulty making friends. His mother reported that he has difficulty following directions at home.

Participant 3 is a 9-year-old male with a medical diagnosis of Attention Deficit/Hyperactivity Disorder by a physician. He was administered the Stanford-Binet Intelligence Scales, Fifth Edition. He earned a Full Scale IQ standard score of 89, a

Nonverbal IQ of 91, and a Verbal IQ of 86. Based on parent ratings on the SSIS, participant 3 was rated below average (SS=77) on the Social Skills Scale and above average (SS=117) on the Problem Behaviors Scale. His teacher rated him below average (SS=76) on the Social Skills Scale and average (SS=121) on the Problem Behaviors Scale. On the Behavior Assessment System for Children, Second Edition, his mother rated him in the clinically significant range (SS=79) on the Externalizing Problems Scale. These scores indicate there are significant deficits in the areas of social skills and problem behaviors and he may benefit from intervention in these areas. Participant 3 is below grade level in academics and behavior, but on grade level socially. His teacher reports he does not complete assignments and he sometimes lies and steals. His mother reports that he is defiant at home.

Participant 4 is an 8-year-old male with an educational classification of speech/language impairment. He was administered the Stanford-Binet Intelligence Scales, Fifth Edition. He earned a Full Scale IQ standard score of 80, a Nonverbal IQ of 79, and a Verbal IQ of 83. Based on parent ratings on the SSIS, participant 4 was rated average (SS=98) on the Social Skills Scale and above average (SS=116) on the Problem Behaviors Scale. His teacher rated him average (SS=93) on the Social Skills Scale and above average (SS=126) on the Problem Behaviors Scale. On the Behavior Assessment System for Children, Second Edition, his mother rated him in the average range (SS=54) on the Externalizing Problems Scale. On the Conners Rating Scales, Third Edition, his mother rated him in the average range (SS=55) in the area of Aggression and in the elevated range (SS=68) in the area of Hyperactivity/Impulsivity. These scores indicate there are significant deficits in the areas of social skills and problem behaviors and he

may benefit from intervention in these areas. Participant 4 is below grade level academically, socially, and behaviorally. His teacher reports that he gets frustrated and aggressive toward other students, he has tried to choke two students, and he does not complete tasks in class. His mother reports that he gets distracted easily, but he does not show frustration or aggression at home.

Four peer buddies were nominated by school staff to participate in the intervention groups. The typical peer participants ranged in ages from age six to age nine. Of the four typical peer participants, one was female and three were male. No typical peer participants were currently classified with a disability in special education. All of the peer buddies were nominated by staff and identified as having appropriate social skills. Staff also nominated all of the peer buddies as having high average academic performance in class to ensure their participation in the groups did not affect their school performance.

Setting

The sessions of the social skills program were conducted at an elementary school in an urban school district with approximately 40,000 students. All sessions took place in the school psychologist's office that contained one desk, a smartboard and ceiling projector for the videos to be played on, and a rug with color squares for the children to sit on.

The analog free time play was conducted in the same room as the intervention sessions. Toys available to the children during free play included LEGOS (LEGO), Ants in the Pants Spongebob Squarepants Edition (Hasbro), Don't Break the Ice (Hasbro), toy

cars with a track (Mattel), Transformers (Hasbro), and Jenga (Parker Brothers). The 10-minute observation periods during free play were videotaped for coding and reliability purposes. The treatment sessions were also videotaped to ensure treatment integrity.

The recess observations were conducted on one of the two playgrounds located at the school. One playground is surrounded by a cement sidewalk and a fence. The ground of the playground area is covered by woodchips and contains two plastic tubes to crawl in, three large plastic animals to climb on, and a large playground system. The second playground includes a field with soccer goals, a wood-chipped playground area with a large playground system, and a large cement area with basketball hoops, a kickball diamond, and painted foursquare areas.

Dependent Measures

Observation System

An observation system (see Appendix B) was adapted from Bellini's Social Observation System (2007) and Ross and Horner (2009). The observation system was used to code behaviors during the videotaped 10-minute free play periods during baseline, following each treatment session, and at a 2-week follow-up. It was also used to code the videotapes from the baseline, treatment, and follow-up recess observations for each participant.

Children were coded for using the following behaviors: positive initiations, positive responses, physical aggression, verbal aggression, and neutral behavior. Bellini's Social Observation System provides codes for the areas of positive initiations and positive responses. Codes for verbal aggression and physical aggression were

adapted from Ross and Horner's (2009) definitions, and neutral behavior was added as a behavior code. Positive initiations were defined as appropriately and positively initiates some form of interaction, such as: request assistance, request information, request interaction/participation, provide a greeting or compliment, giving, sharing, showing, offer comfort/physical affection, positively and independently joins play activity/interaction. Positive responses were defined as appropriately and positively responds to an initiation by someone else, including: provides assistance, responds to request/provides information, joins activity when asked, responds to greeting/compliment, responds to physical affection, responds well when others start a conversation/activity, stays calm when teased, responds positively to criticism, positively participates in games or group activities, responds positively or appropriately when pushed or hit. Verbal aggression was defined as directing verbal or gestural negative communication toward one or more children, including: teasing, taunting, threatening, negative body language, and negative gestures. Physical aggression was defined as an act of negative and/or inappropriate physical contact with another person (behaviors within games were considered physical aggression when they went beyond the expectations of the game), such as: hitting, biting, kicking, choking, stealing, throwing objects, restricting freedom of movement, and physically forces others to act against their will. Neutral behavior was defined as taking part in an activity without having any interaction with others (e.g., solitary play, parallel play).

The observation system uses a 10-second partial interval recording method of observing behaviors, in which the observer watches the behavior for 5 seconds, and then records the first behavior observed as a positive initiation, positive response, physical

aggression, verbal aggression, or neutral behavior during the next 5 seconds. The observations for free play periods and recess were all videotaped and then the observations were reviewed and coded by the researcher and 33% of the observations were coded by another graduate student separately. The coding was then compared using Kappa after both observers had completed their coding to determine interrater reliability. The formula that was used to calculate Kappa is $K = (Po - Pe) / (1-Pe)$. *Po* is the observed proportion of agreement and *Pe* is the proportion of agreement expected by chance. Kappa was calculated by entering each raters codes into a website (http://cosmion.net/jeroen/software/kappa/).

Social Skills Improvement System

The Social Skills Improvement System (SSIS) (Gresham & Elliott, 2008) is a rating scale that measures the domains of social skills, problem behaviors, and academic competence. There are separate teacher rating forms and parent rating forms that were completed pre- and posttest. On each item, the rater indicated how frequently the child performed the behavior (Never, Seldom, Often, Almost Always). The ratings were then transferred to a corresponding number (0 = Never, 1 = Seldom, 2 = Often, 3 = Almost Always) and these scores were then converted into standard scores and percentile ranks. The assessment was used to help identify target behaviors and measure progress throughout the treatment based on standard deviation changes between scores, as suggested in the manual.

Behavior Intervention Rating Scale (BIRS)

The BIRS is considered to be a valid measure of treatment acceptability and effectiveness (see Appendix C). The BIRS was administered to the parents of participants following the completion of the intervention. Parents rated questions about the effectiveness of the treatment on a six-point scale. Ratings range from 1 to 6, which indicate the parent and teacher strongly disagrees, disagrees, somewhat disagrees, somewhat agrees, agrees, or strongly agrees. The means were calculated for each item and used to determine the level of treatment acceptability.

Social Validity Checklist

The social validity of the intervention was evaluated using a social validity scale that has already been developed and tested for its psychometric properties. The Social Validity Checklist was developed by Bellini (unpublished) and was adapted for use in this study (see Appendix D). Parents completed the checklist after the last intervention session by responding to five questions about the program's effectiveness. Possible answers on the scale range from strongly disagree to strongly agree. Answers were then given a numerical value (Strongly Disagree = 1, Disagree = 2, Agree = 3, Strongly Agree = 4). The total possible score for each item is 4 and the total possible score for the scale is 20. The means were calculated for each item and used to determine the treatment's level of social validity.

Child Consumer Satisfaction Survey

A child consumer satisfaction survey was administered to the participants and the peer buddies following the intervention in order to determine the acceptability of the treatment from the children's perspective. The Child Consumer Satisfaction Survey (CCSS) was developed for use in this study (see Appendix E). Questions were read aloud to the children and then they circled the answer they felt was most accurate. There are four possible choices for responses to the questions (Strongly Disagree, Disagree, Agree, Strongly Agree). Means were calculated based on the responses and were used to determine the participants' perceptions of the Superheroes Social Skills program.

Treatment Fidelity Checklist

A checklist was created in order to assess the level of fidelity in implementation of the program (see Appendix I). Each step of the lesson implementation was listed on a form and following each session, the researcher indicated which steps were implemented by marking the checklist. A second graduate student reviewed 33% of the videotaped sessions and marked the number of steps followed correctly to ensure reliability. A percentage of successful step implementation was then calculated by dividing the number of steps implemented by the total number of steps for each lesson. All of the treatment fidelity forms were totaled after the completion of all sessions to obtain a mean treatment fidelity percentage.

Design

Data analysis was completed using a replicated AB single-subject design (Harris & Jenson, 1985). Participants were observed during analog free play periods for three baseline sessions, after the eleven intervention sessions, and twice at a 2-week follow-up. The children were also observed at recess for three baseline observations, four observations during the treatment phase, and twice at a 2-week follow-up.

Single-subject research has been used to study the effectiveness of various interventions. Kazdin (1992) stated that single-subject research could be used to draw valid inferences about interventions as long as continuous observations are completed prior to treatment, during the baseline phase, and throughout the treatment phase. Baseline observations are used to determine a trend in the baseline and establish stability. This trend can be compared to treatment observations to determine if the intervention had an effect on the projected trend.

Internal threats of validity exist in this type of single-subject design, including maturation, testing effects, and history threats. Historical confounding could also be a possible threat, but is minimized with more than one subject and frequent observations. According to Kratochwill (1978), threats of maturation are minimized if repeated measurement is used, threats of history can also be minimized, and threats of testing effects are minimized if there is not repetitive exposure to a pretest. Specifically, AB designs with replication are found to control for historical threats to internal validity if subjects are exposed to multiple and variable environments during the treatment period (Harris & Jenson, 1985).

There are many threats to internal and external validity that can be problematic in a single-subject study without any comparison group. Manipulating variables in the study design minimizes some threats. Replicated AB design research has been found to be effective if there are sudden changes in the participants' behavior that correlate and occur simultaneously with the treatment.

Kazdin (1982) stated that single-subject designs are valid if they meet certain criteria. According to Kazdin, a study must include the following to be valid:

1. The data are objective
2. Assessments occur on multiple occasions
3. The target behavior being treated is chronic behavior
4. Participants form a heterogeneous group
5. The intervention produces immediate and marked effects

Kratochwill and Levin (1992) expanded the criteria presented by Kazdin to include the following:

1. The study must be planned
2. There must be a high level of integrity
3. The treatment must be standardized
4. It must produce large effect sizes

Based on the criteria established by Kazdin and Kratochwill, this study is considered to be a valid replicated AB research study. The data in this study are objective in that the behaviors are well defined and the system used for coding is an impartial means of collecting the data. The second criteria requiring that assessments take place on multiple occasions is met by the observations being conducted multiple times during the course of

the study. The target behavior for this study is considered to be chronic behavior. This study was conducted with a heterogeneous group of children of varying ages, genders, diagnoses, intellectual abilities, behaviors, and language levels. This study was well planned and includes a manualized treatment that was implemented by trained graduate students. Results from this study would suggest that there were large changes in behavior and results produced large effect sizes, which would also imply that this study meets criteria for a valid single-subject research study.

Procedures

This study was conducted with four children with high-incidence disabilities and four peer buddies between the ages of 5 and 9 who were nominated by school staff. The primary researcher obtained University of Utah IRB and Granite School District IRB approval. The researcher contacted the parents of the children who were nominated and they were given more detailed information by phone. If the parent wanted to have their child participate in the program, they met with the researcher to complete the parental consent and child assent forms. The parents of the children with high-incidence disabilities also completed the SSIS and the Placement Checklist during the initial meeting.

Once all participants were recruited, parents attended a 30-minute parent training orientation meeting. The orientation included a brief PowerPoint presentation that provided information about the intervention and lessons, and also explained how to help the child complete the homework and properly check the power cards for reliability of the child's self-monitoring.

One classroom was used for the social skills intervention and the free play observations. The classroom contained a teacher desk, a smart board and ceiling projector for watching the videos, a rug with color squares for the children to sit on, and a video camera on a tripod to record the sessions and conduct the free play observations. The six toys used for free play (LEGOS, Ants in the Pants SpongeBob Square pants Edition, Don't Break the Ice, toy cars with a track, Transformers, and Jenga) were spread out on the rug following the treatment session.

Baseline

There were three free play observations and three recess observations completed during the baseline phase. Each observation was 10 minutes in duration and an audio track was added to each video with cues of when to watch the behavior and when to record the observed behavior during the 10-second time sampling intervals. A track of the researcher telling the coder when to watch and when to record was created using the GarageBand program and then the track was added to the videos using the imovie and idvd programs for apple computers. During the free play observations, six toys (LEGOS, Ants in the Pants SpongeBob Square pants Edition, Don't Break the Ice, toy cars with a track, Transformers, and Jenga) were set up, all of which could be used for solitary play or for interactive play. All of the typical peer buddies who attended the treatment session also participated in the free play period, but their social behaviors were not coded.

The recess periods were videotaped during the regular recess time for the students on one of two playgrounds at the elementary school. Both the analog free play and recess observations will be videotaped and coded at a later time and coded to reflect the same

social behaviors (positive initiations, positive responses, physical aggression, verbal aggression, and neutral behavior). The first behavior to be observed during the interval is the behavior that will be coded for that interval. Another graduate student will code 335 of the combined recess and analog observations to determine interrater reliability.

Treatment

Superheroes Social Skills Program

The Superheroes Social Skills Program (Jenson, et. al., 2011) was used as the curriculum to teach social skills to the participants in this study. This program includes 18 lessons and lessons are generally taught twice per week for 18 weeks. Each week, a new skill is taught during the two weekly lessons. This procedure was modified for this study with only 11 lessons that were specifically chosen for the needs of children with high-incidence disabilities with externalizing behaviors. The lessons were taught twice per week for six weeks. Generally, the program prescribes teaching two sessions for each lesson. In this study, each lesson was taught in only one session. Each session was approximately 30 minutes long. The following lessons were taught:

1. Introduction/Get Ready
2. Following Directions
3. Anxiety Reduction
4. Participate
5. Body Basics
6. Expressing Wants and Needs
7. Turn Taking

8. Recognizing Emotions
9. Perspective Taking
10. Bullying
11. Problem-Solving

The social skills are presented in a video by animated superheroes: The Initiator and Interactor Girl, and their sidekick Scooter the Robot. The superheroes introduce the skill, provide rationale for use of the skill, and outline steps for correct demonstration of the skill. The superheroes then introduce a video with children demonstrating the skill. After viewing several video-modeling scenarios of the skill, the facilitator role-plays a nonexample and a correct example of the use of the skill. The participants and their peer buddies then role-play the skill. After role-playing, children watch a social story in the form of a digital comic book. After that, the children play a social game that incorporates the skill they have just learned.

In addition to the use of the DVD's to present social skills, Power Cards are used. Children fill in a circle on the Power Cards every time they use the skill on the card as a way to self-monitor their use of the skills. The children receive a different power card for each skill, following the lesson. Children bring their cards back each lesson and fill in their Power Poster with the number of Power Charges they earned, as a public posting procedure. Social Stories in the form of a printed comic book that match the digital comic books on the video are also given as homework.

Following each of the 11 sessions of Superheroes Social Skills, there was an analog free play period completed. Each student was observed four times at recess during the treatment phase. The analog free play and recess observations completed

during the treatment phase were conducted the same way that the baseline observations were completed.

Other Measures

After the last social skills lesson was completed, participants with high-incidence disabilities and their peer buddies were given the Child Consumer Satisfaction Survey. The researcher explained what each possible answer meant and then read all of the items to the children to ensure they understood toe questions and how they were answering.

Parents and teachers of the children with high-incidence disabilities completed the BIRS, SSIS, and a social validity checklist. These measures were collected by the primary researcher and scored.

Follow-up

Two weeks following the last social skills lesson, each participant will be videotaped for two analog free play and two recess observations. The follow-up observations will be completed in the same way that the baseline phase and treatment phase observations were completed. The videotapes will be coded as a measure of maintenance effects.

Data Analysis

While many single-subject design studies rely on visual analysis to determine success of the treatment, Parker & Hagan-Burke (2007) identified some benefits of calculating an effect size (ES) for these types of studies. The calculation of ES provides

an objective index of change, it can be more sensitive to a positive baseline trend, it is more dependable to compare with replicated effects when confidence intervals are calculated, and it is more credible than visual analysis alone. Other metrics considered to be superior to visual analysis and easily computed for single-subject design studies are percentage of nonoverlapping data points (PND) and percentage of all nonoverlapping data points (PAND). This study calculated Busk and Serlin (1992) ES with confidence intervals and PND for individual participants. Group effects were calculated through PAND and Cohen's d effect size with confidence intervals.

Computation of effect sizes (ES) for each subject was done to determine the effectiveness of the social skills intervention. The Busk and Serlin (1992) No Assumptions Model was used to calculate effect sizes because it is considered to be the most conservative method for calculating effect sizes. ES was calculated by determining the percentage of intervals during which the participant engaged in positive initiations, positive responses, physical aggression, verbal aggression, and neutral behaviors during baseline, treatment, and follow-up. This method is computed by dividing the difference between the baseline means and either the treatment or follow-up means by the pooled standard deviation of the baseline and treatment/follow-up for each subject.

The formula used to calculate the pooled standard deviation was *SDpooled=Square root(((N1-1)*SD1squared)+((N2-1)*SD2squared))/(N1+N2))*. The formula used for effect size calculation was *d =(M2-M1)/SDpooled]*. Confidence intervals for each effect size were also calculated in order to provide a measure of reliability of the effect sizes calculated. The formula used to calculate confidence intervals was *Confidence interval=ES-(or plus)(1.96*SDpooled/SQRT(N1+N2)*.

Participant baseline, treatment, and follow-up means and standard deviations were calculated using the descriptive statistics function on the Statsplus program and visual inspection was used to analyze the means. These calculations were then used to compute the pooled standard deviations, effect sizes, and confidence intervals.

Cohen (1988) identified a classification system for effect size that is based on the standard deviation differences of the effect size. Cohen defines a small effect size as one that falls between 0.1 and 0.3, a medium effect size as those falling between 0.3 and 0.8, and a large effect size as those 0.8 and above. Effect sizes should only be compared to studies of the same design; thus, the effect sizes obtained from this study should only be compared to effect sizes from other single-subject research design studies. The use of effect size can have limitations, but Jenson, Clark, Kircher, and Kristjansson (2007) stated, "Rather than simply rejecting a null hypothesis, effect sizes emphasize a difference between groups that is not confounded by sample size" (p.491).

An alternative approach to determining the effectiveness of an intervention in single-subject research designs is to calculate the percentage of nonoverlapping data points (PND; Scruggs & Mastropieri, 1998). This method is used to compute the percentage of nonoverlapping data between the baseline and treatment conditions. This method can be inaccurate if there are outliers found in the baseline phase or when treatment has a detrimental effect; however, it can be an effective form of data analysis when conducting single-subject research. PND is calculated by dividing the number of data points in the treatment phase that exceed the highest or lowest point in the baseline phase by the total number of data points in the treatment phase, yielding a percentage (Scruggs & Mastropieri, 1998).

Scruggs and Matropieri (1998) found that PND is a useful way to assess the efficacy of interventions and to use as a common measurement in order to be able to compare research. Scruggs and Mastropieri also identify a way of determining the impact of interventions based on the PND score. They indicate that PND scores of over 90 (i.e. 90% of treatment observations exceed the highest baseline observation) can be interpreted as highly effective, scores between 70 and 90 can be considered fairly effective, scores of 50 to 70 should be considered questionable, and scores below 50 should be interpreted as unreliable treatments. This provides a means for classifying and comparing interventions done in single-subject research. Schneider, Goldstein, and Parker (2008) have applied PAND to a meta-analysis calculation and found positive results and a more consistent metric than other meta-analyses of single-subject studies use. Wendt (2009) considers PND to be an easily calculated metric that can add to the visual analysis interpretation of single-subject research. Although, PND only takes into account one baseline data point and ignores the others and it cannot detect slope changes in the data. Because of the possible shortfalls of using PND alone, PND was calculated for each individual participant along with effect size calculations to provide two separate measures of treatment effect.

A variation of the PND calculation, percentage of all nonoverlapping data points (PAND) (Parker & Vannest, 2009; Wendt, 2009) is considered to be a more accurate measure of effect and more closely related to effect size than PND. PAND uses all of the data points and is less likely to be affected by one extreme data point. It can also be translated into Pearson's *Phi*, which is considered to be an effect size calculation. Using this metric allows for the calculation of confidence intervals, which can be used to

determine effect size reliability (Parker, Hagan-Burke, & Vannest, 2007). Confidence intervals are valuable for these calculations with small sample sizes, because it provides an upper limit and a lower limit that contain the true effect size score with 95% probability (Parker, 2006). It is highly recommended that confidence intervals always be reported with ES in research to aid in comparison of similar and replicated studies.

Some limitations of PAND, similar to the limitations of PND, include the insensitivity when there is no data overlap between baseline and treatment and it cannot account for a positive baseline trend. Similarly to PND, PAND also does not account for the distance between the data in the two phases or the magnitude of the effect from the treatment. These two limitations should be taken into account when analyzing the data using the PAND method.

In this study, PAND was calculated by combining all of the data into one calculation in addition to the individual PND calculations for each participant. The method for calculating PAND explicitly described by Riley-Tillman and Burns (2009) was used. The formula that was used is $d = (2\Phi) / (1 - \Phi 2)$. The formula to calculate Φ is $\phi = [a / (a+c)] – [b / (b + d)]$. The values for *a, b, c,* and *d* are derived from a 2 x 2 table that is created from the data. The table is created by determining the percentage of intervention data points that overlap with the baseline data points for all of the subjects. This percentage is then divided by two and placed in cells c and b. The value of cells c and b are subtracted from the percentage of baseline data points and intervention data points and the resulting values are placed in cells a and d. An example of the 2 x 2 table is shown below in Figure 1.

Pre- and posttest scores obtained from the SSIS were compared using visual analysis and based on the difference between the pre- and posttest scores using the standard deviation as a guide for measuring significant change. Descriptive statistics and visual analysis will be used to analyze the results of the BIRS, Bellini's Social Validity measure, and the CCSS.

	Intervention	Baseline	Total
Higher	cell a	cell b	a + b
Lower	cell c	cell d	c + d
Total	a + c	b + d	100%

Figure 1: Example of a PAND 2 x 2 table.

CHAPTER 3

RESULTS

This study was designed to evaluate the use of the Superheroes Social Skills program (2011) as an evidence-based practice to teach social skills to children with high-incidence disabilities in a pullout group in a school setting. The purpose of this program is to provide children with the appropriate social skills necessary for participation in pro-social interactions with peers and adults. Another goal of this study is to measure generalization of the skills to multiple situations, such as recess, and maintenance of these skills at a two-week follow-up. The program is based on a superhero theme with animation and comic books as high interest media to appeal to participants and maintain attention to program content throughout the intervention. The program also incorporates research-validated components, such as video-modeling, social stories, peer mediation, and self-management strategies. The program effectiveness was determined by increased use of social skills during free play observation periods following the lessons, observation of increased pro-social behaviors in a generalized recess setting, and completion of checklists including the BIRS, SSIS, and the Children's Consumer Satisfaction Survey.

Treatment Integrity

In order to determine treatment integrity and ensure that the Superheroes Social Skills program was delivered according to the procedures indicated in the manual, the primary researcher completed a checklist during each session. Each session had 11 components that had to be completed and these components were listed on a checklist. The primary researcher marked each session component as it was completed. Based on these checklists, the intervention was delivered with 100% integrity. Another graduate student also watched videotapes of 33% of the lessons (4 total lessons) and completed the same checklist to ensure reliability. Based on the graduate student's ratings, there was one component missed during one of the lessons, indicating 97.75% agreement between the two raters. Cohen's Kappa was calculated and the agreement between the primary researcher and the graduate student coder was considered acceptable.

Reliability of Observations

Interrater reliability was assessed to ensure consistency, minimize biases, and to ensure that the target positive responses, positive initiations, physical aggression, verbal aggression, and neutral behaviors were well-defined. An acceptable level of interrater reliability is defined by Forehand and McMahon (1981) as 80%, therefore, the researcher and another graduate student coder practiced coding child interactions until 80% agreement was reached.

Interrater agreement was calculated in a sample of 33% of the combined recess and analog free play observations (33 total observations). Reliability was calculated by dividing the number of agreements by the number of agreements and disagreements.

Interobserver agreement was calculated to be 85.6% for 33 (33%) of the observations. Kappa was also calculated as a method of determining both occurrences and nonoccurrence of behavior (Sattler, 2006). Kappa is used to determine the proportion of observer agreements while correcting for chance agreements. Kappa was calculated using the proportion calculated using an online calculator found at http://dfreelon.org/utils/recalfront/recal2/. Kappa was calculated at 0.74 for the observer agreement, which is indicative of a substantial agreement (Sim & Wright, 2005).

Research Question #1

1. *What is the effectiveness of the social skills intervention during a free play observation?*

Following each session, there were free time play periods that were videotaped and then coded for social behaviors using an adapted partial interval observation system. The efficacy of the social skills instruction was measured by determining the number of 10-second intervals in a 10-minute observation period during which the participants engaged in positive initiations and positive responses that were combined to determine total social engagement, physical aggression and verbal aggression that were combined to determine total aggression, and neutral behaviors. The intervals were calculated during baseline and treatment phases.

The data from these observations were used to calculate Busk and Serlin (1992) No Assumptions effect sizes and percentage of nonoverlapping data points (PND) for each participant. A combined No Assumptions effect size was also calculated for the group. Percentage of all nonoverlapping data points (PAND) was calculated for the

group and Cohen's *d* was derived from the PAND scores as an effect size measure for the group.

All Participants

Participants engaged in verbal aggression during an average of 0.83% of baseline intervals and during an average of 1.1% of treatment intervals (see Figure 2). The participants did not engage in physical aggression during any baseline intervals, but did engage in physical aggression during an average of 0.19% of treatment intervals (see Figure 3). Overall, participants engaged in combined aggression during 0.83% of baseline intervals and during 1.29% of treatment intervals (see Figure 4). Based on Cohen's criteria for interpreting effect sizes, a small average effect size was observed for the group's verbal aggression (ES= 0.16), physical aggression (ES= 0.46), and overall aggression (ES= 0.22). Percentage of all nonoverlapping data points (PAND) was calculated for the group as being 0% for verbal aggression, 0% for physical aggression, and 0% for overall aggression. Cohen's d, derived from PAND, yielded no effect sizes because there were no treatment data points that were below the lowest baseline data point.

Participants positively initiated social interactions during an average of 6.1% of baseline intervals and initiated interactions during an average of 6.1% during treatment intervals (see Figure 5). Participants positively responded to social interactions during an average of 34.03% of baseline intervals and during an average of 52.15% of treatment intervals (see Figure 6). Overall, participants were socially engaged during an average of

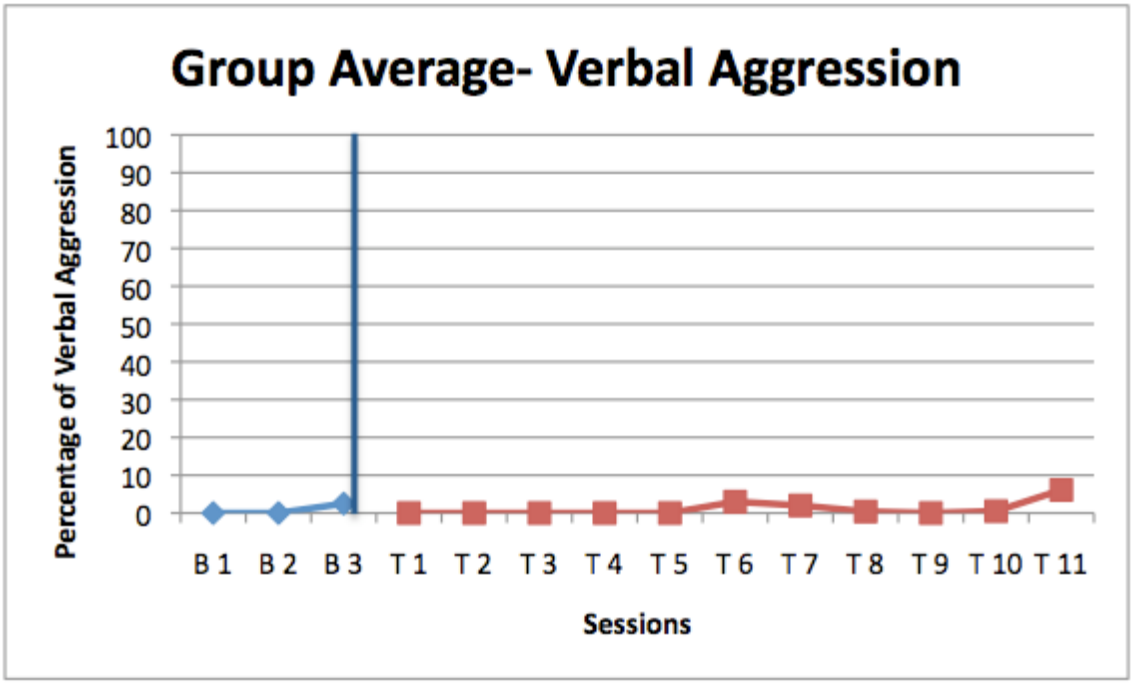

Figure 2: Average analog measure of verbal aggression for all participants.

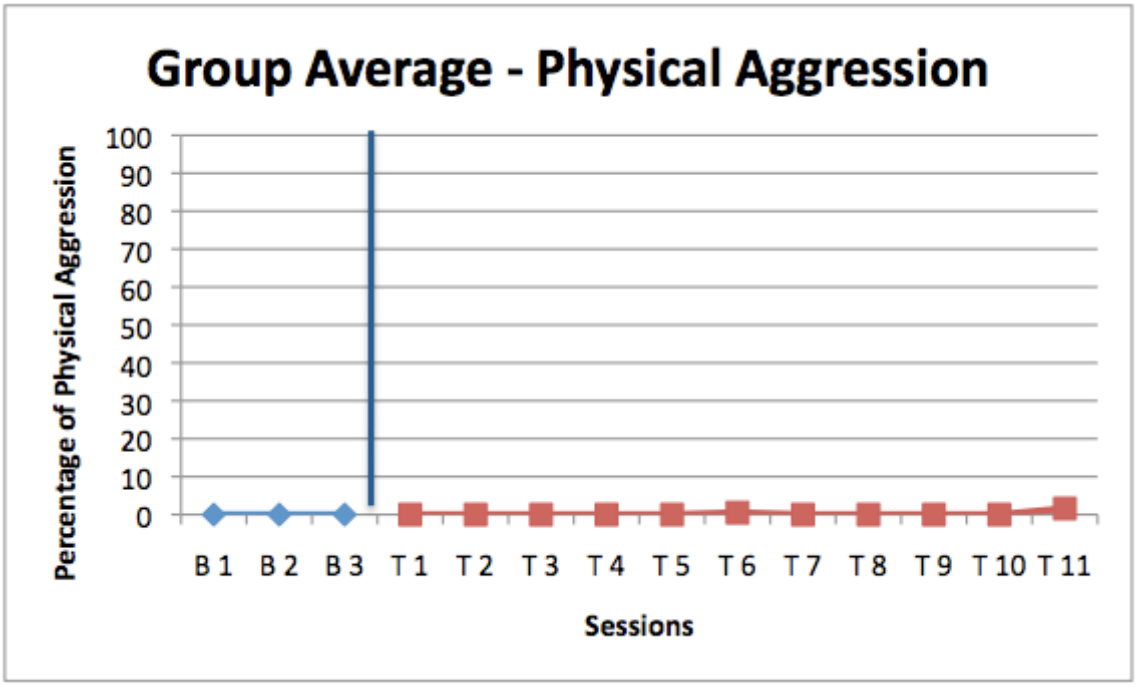

Figure 3: Average analog measure of physical aggression for all participants.

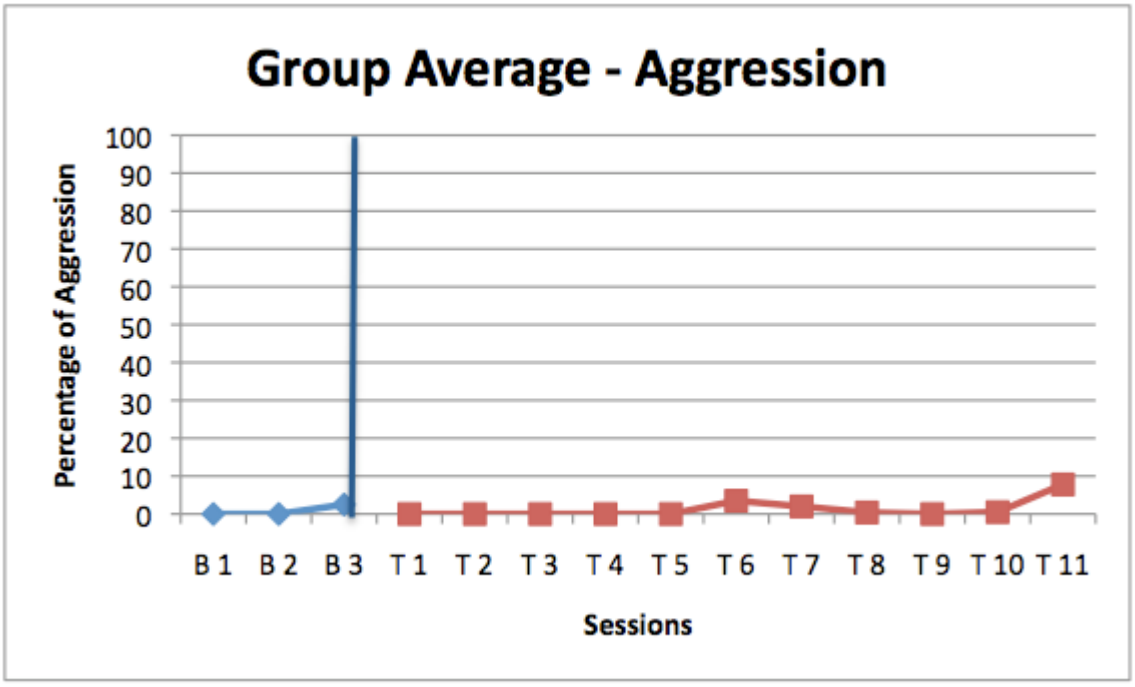

Figure 4: Average analog measure of total aggression for all participants.

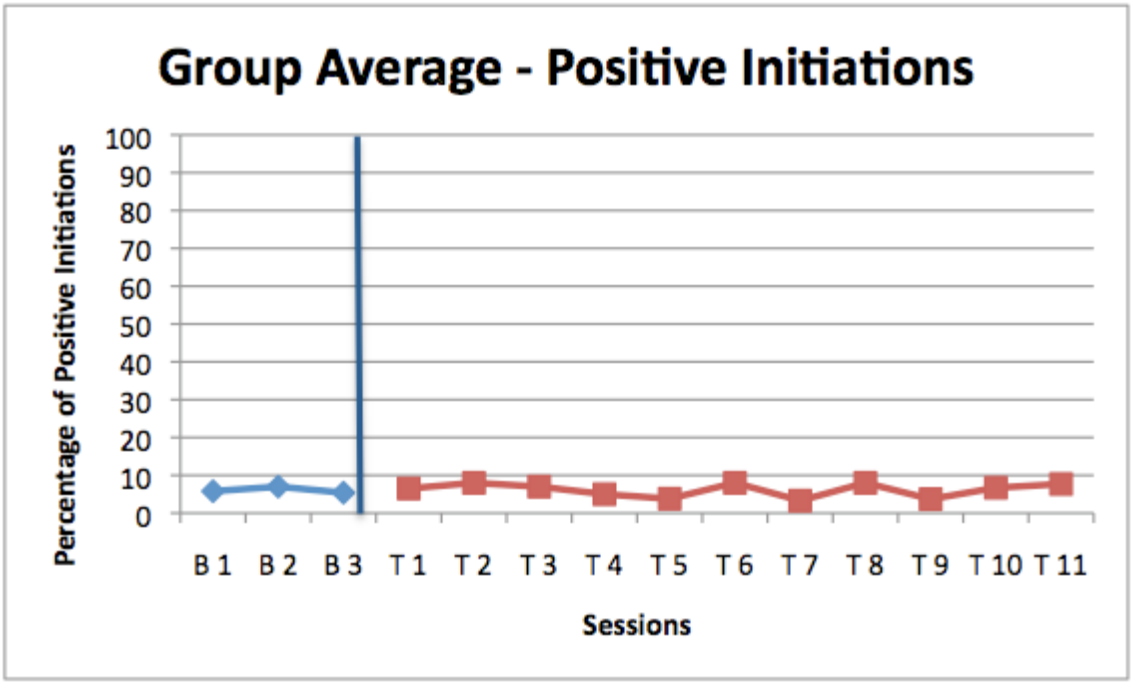

Figure 5: Average analog measure of positive initiations for all participants.

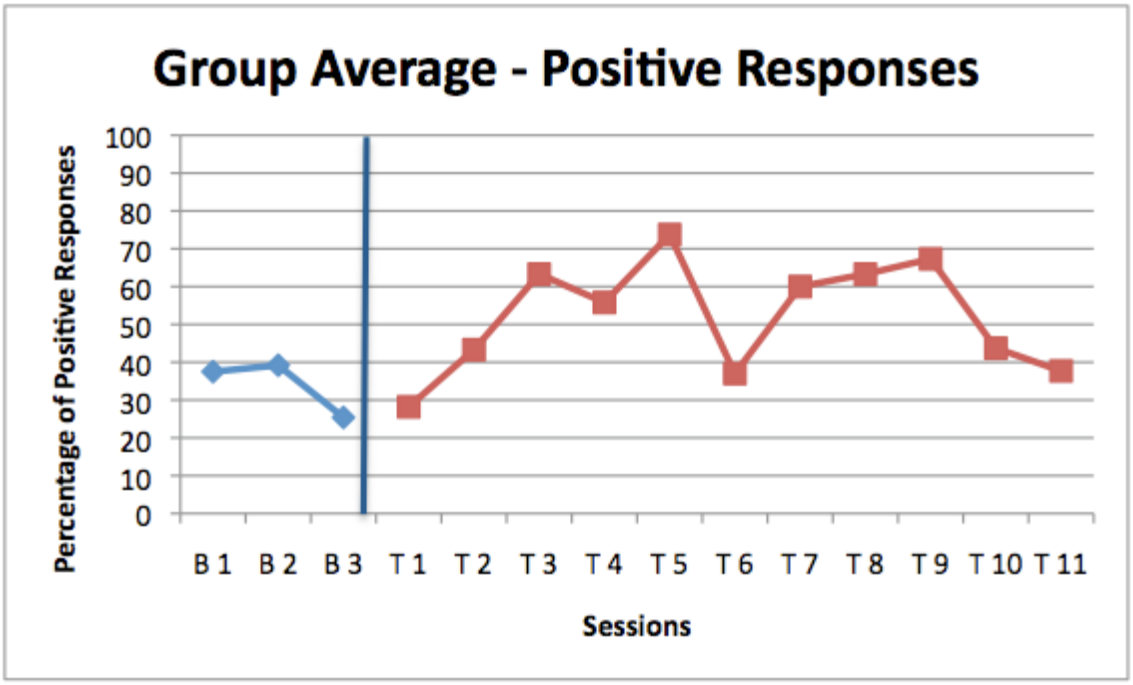

Figure 6: Average analog measure of positive responses for all participants.

40.13% of baseline intervals and during 58.31% of treatment intervals (see Figure 7). Based on Cohen's criteria for interpreting effect sizes, a large average effect size was observed for the group's positive initiations (ES= 1.42), a small average effect size was observed for the group's positive responses (ES= 0.03), and a large average effect size was observed for the group's total social engagement (ES= 1.51). The calculation of PAND for the group was 20.93% for positive initiations, 60.46% for positive responses, and 65.12% for overall social engagement. Cohen's d, derived from PAND, yielded a small average effect size for positive responses (ES= -0.32) and for total social engagement (ES= -0.05). No effect size could be calculated for positive initiations because there was 100% overlap between the baseline and treatment data points.

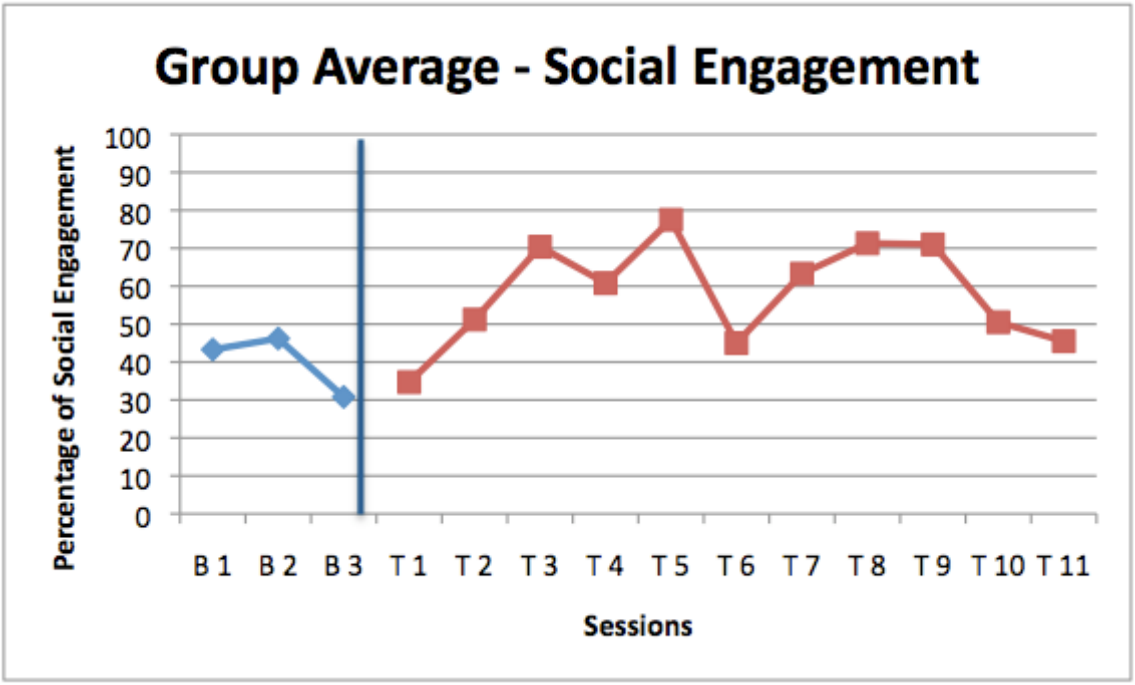

Figure 7: Average analog measure of social engagement for all participants.

Participants engaged in neutral behaviors during an average of 59% of baseline intervals and during an average of 40.6% of treatment intervals (see Figure 8). Based on Cohen's criteria for interpreting effect sizes, a large effect size was calculated for reduction of neutral behavior (ES= -1.67). The calculation of PAND for the group was 15.12% for neutral behavior. Cohen's d, derived from PAND, yielded a small effect size for reduction of neutral behavior (ES= -0.04). Table 6 lists the percentage of engagement in the measured behaviors for the average of all participants. Table 7 summarizes the individual participant effect sizes with confidence intervals and average group effect sizes and PAND with confidence intervals.

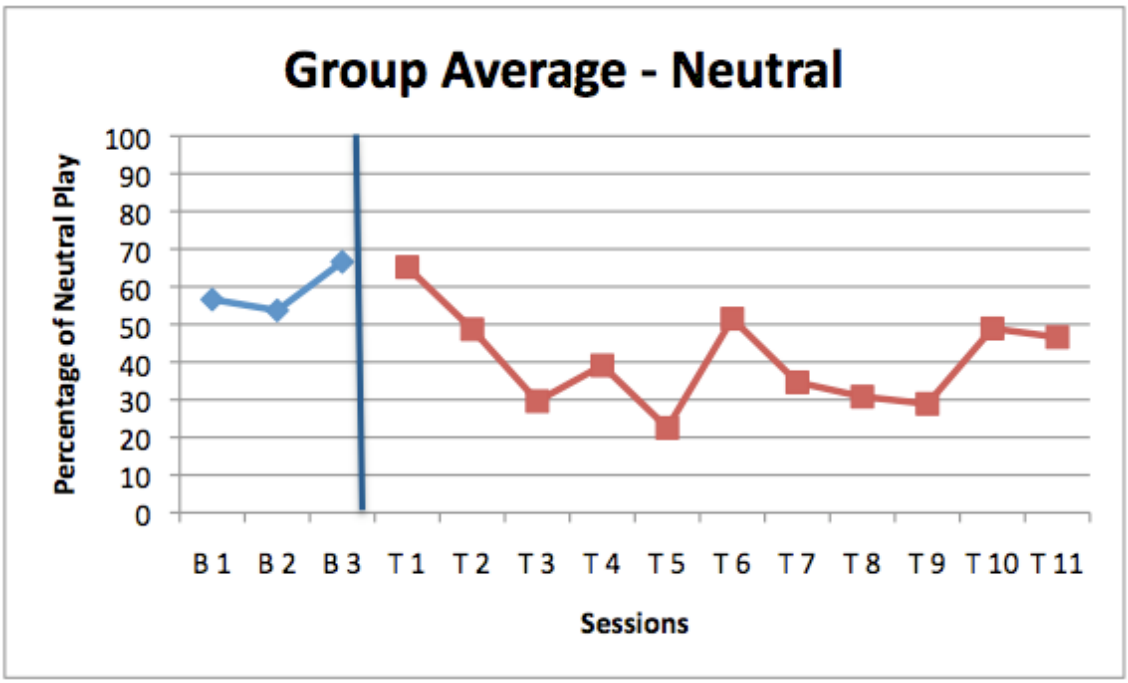

Figure 8: Average analog measure of neutral play for all participants.

Table 6

Average Participant Engagement in Behaviors

Percentages of Social Engagements at Baseline, Treatment, and Follow-up

	Group Average					
	Analog			Recess		
	Baseline	Treatment	Follow-up	Baseline	Treatment	Follow-up
Verbal Aggression	0.83%	1.1%	0%	0.9%	0%	0%
Physical Aggression	0%	0.19%	0%	5.39%	0.2%	0.22%
Total Aggression	0.83%	1.29%	0%	6.3%	0.2%	0.22%
Positive Initiations	6.1%	6.1%	2.97%	5.9%	3.6%	5.7%
Positive Responses	34.03%	52.15%	73.4%	49.9%	66.7%	64.8%
Social Engagement	40.13%	58.31%	76.4%	50.12%	70.37%	70.47%
Neutral	59%	40.6%	23.6%	39.4%	29.4%	29.3%

Table 7

Analog Observation Treatment Results

Effect Sizes and Confidence Intervals

	P1	P2	P3	P4	No Assumption Average	PAND Cohen's d
Verbal Aggress	--	-1.43	--	0.74	0.16	--
95% CI	--	-1.43 to -1.37	--	0.71 to 0.74	0.14 to 0.17	--
Physical Aggress	--	--	--	0.48	0.46	--
95% CI	--	--	--	0.47 to 0.48	0.45 to 0.46	--
Total Aggress	--	-1.43	--	0.70	0.22	--
95% CI	--	-1.43 to -1.37	--	0.66 to 0.70	0.21 to 0.24	--
Positive Initiation	0.96	-0.84	-0.89	0.36	0.03	--
95% CI	1.14 to 1.45	-0.86 to -0.78	-0.91 to -0.85	0.33 to 0.39	0.02 to 0.04	--
Positive Responses	1.29	1.30	-0.41	1.14	1.42	-0.32
95% CI	0.93 to 0.99	1.15 to 1.48	-0.57 to -0.34	0.99 to 1.20	1.33 to 1.50	-0.53 to -0.15
Social Engage	1.61	1.12	-0.52	1.33	1.51	-0.05
95% CI	1.47 to 1.77	0.96 to 1.33	-0.69 to -0.43	1.20 to 1.42	1.43 to 1.61	-0.38 to 0.45
Neutral Behavior	-1.73	-1.01	0.59	-1.83	-1.67	-0.04
95% CI	-1.75 to -1.44	-1.17 to -0.85	0.42 to 0.67	-1.95 to -1.74	-1.74 to -1.59	-0.38 to 0.45

Participant 1

Participant 1 attended all baseline and treatment sessions (3 baseline and 11 treatment) of the program. Table 8 lists the percentage of engagement in the measured behaviors for Participant 1. Participant 1 did not display verbal aggression or physical aggression during any of the analog free play observations. All of the data points were zero, therefore effect size and PND were not calculated for verbal aggression, physical aggression, or total aggression.

Participant 1 initiated social interactions an average of 4.4% of the baseline intervals and an average of 8.75% of the treatment intervals. Participant 1 positively responded to social interactions during an average of 22.22% of baseline intervals and during an average of 50.57% of treatment intervals. Overall, participant 1 was socially engaged during an average of 26.67% of baseline intervals and during 59.26% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a large effect size was observed for positive initiation for participant 1 (ES=0.96), a large effect size was observed for positive responses for participant 1 (ES=1.29), and a large effect size was observed for total social engagement for participant 1 (ES=1.61). For participant 1, PND was calculated to be 45.45% for positive initiations, 72.72% for positive responses, and 90.9% for total social engagement, indicating questionable to acceptable treatment effects.

Participant 1 engaged in neutral behaviors during an average of 73.33% of baseline intervals and during an average of 40.74% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a large average effect size was calculated for

Table 8

Participant 1 Engagement in Behaviors

Percentages of Social Engagements at Baseline, Treatment, and Follow-up

	Participant 1					
	Analog			Recess		
	Baseline	Treatment	Follow-up	Baseline	Treatment	Follow-up
Verbal Aggression	0%	0%	0%	3.6%	0%	0%
Physical Aggression	0%	0%	0%	20.9%	0.83%	0.89%
Total Aggression	0%	0%	0%	24.55%	0.83%	0.89%
Positive Initiations	4.4%	8.75%	5.9%	1.67%	5.9%	4.7%
Positive Responses	22.22%	50.57%	61.6%	14.25%	35.67%	41.3%
Social Engagement	26.67%	59.26%	67.56%	15.9%	41.58%	46.02%
Neutral	73.33%	40.74%	32.44%	59.5%	57.59%	53.08%

the reduction of neutral behavior (ES= -1.61). PND for participant 1 was calculated to be 90.9% for neutral behavior, indicating acceptable treatment effects.

Participant 2

Participant 2 attended all baseline and treatment sessions (3 baseline and 11 treatment) of the program. Table 9 lists the percentage of engagement in the measured behaviors for Participant 2. Participant 2 was verbally aggressive during 3.33% of baseline and 0.15% of treatment analog free play observations. Participant 2 did not display any physical aggression during baseline or treatment sessions. Participant 2 engaged in aggression (physical and verbal combined) during 3.33% of baseline intervals and 0.15% of treatment intervals. No effect size was calculated for physical aggression because there was no data available. Based on Cohen's criteria for interpreting effect sizes, a large effect size was observed for participant 2 for verbal aggression (ES= - 1.43) and overall aggression (ES= -1.43). Percentage of nonoverlapping data points (PND) for participant 1 was 0% for verbal aggression, 0% for physical aggression, and 0% for overall aggression, indicating ineffective treatment effect.

Participant 2 initiated social interactions an average of 7.2% of the baseline intervals and an average of 4.3% of the treatment intervals. Participant 2 positively responded to social interactions during an average of 22.77% of baseline intervals and during an average of 52.32% of treatment intervals. Overall, participant 2 was socially engaged during an average of 30% of baseline intervals and during 56.62% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a small effect size was observed for positive initiation for participant 2 (ES= - 0.84), a large effect size was

Table 9

Participant 2 Engagement in Behaviors

Percentages of Social Engagements at Baseline, Treatment, and Follow-up

	Participant 2					
	Analog			Recess		
	Baseline	Treatment	Follow-up	Baseline	Treatment	Follow-up
Verbal Aggression	3.33%	0.15%	0%	0%	0%	0%
Physical Aggression	0%	0%	0%	0%	0%	0%
Total Aggression	3.33%	0.15%	0%	0%	0%	0%
Positive Initiations	7.2%	4.3%	0%	6.3%	7.7%	10.23%
Positive Responses	22.77%	52.32%	90.52%	57.38%	61.47%	68.29%
Social Engagement	30%	56.62%	90.52%	63.69%	69.18%	78.5%
Neutral	66.67%	43.22%	9.48%	36.3%	30.8%	21.47%

observed for positive responses for participant 2 (ES=1.3), and a large effect size was observed for total social engagement for participant 2 (ES=1.12). For participant 2, PND was calculated to be 0% for positive initiations, 72.72% for positive responses, and 72.72% for total social engagement, indicating questionable treatment effects.

Participant 2 engaged in neutral behaviors during an average of 66.67% of baseline intervals and during an average of 43.22% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a large average effect size was calculated for neutral behavior (ES= -1.01). PND for participant 2 was calculated to be 72.72% for neutral behavior, indicating questionable treatment effects.

Participant 3

Participant 3 attended all baseline sessions and missed one treatment session (3 baseline and 10 treatment) of the program. Table 10 lists the percentage of engagement in the measured behaviors for Participant 3. Participant 3 did not display any verbal, physical, or total combined aggression during baseline or treatment sessions. No effect size was calculated for verbal, physical, or total combined aggression because of a lack of data.

Participant 3 initiated social interactions an average of 8.89% of the baseline intervals and an average of 6% of the treatment intervals. Participant 3 positively responded to social interactions during an average of 59.44% of baseline intervals and during an average of 50.4% of treatment intervals. Overall, participant 3 was socially engaged during an average of 68.3% of baseline intervals and during 56.43% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a small effect size was

Table 10

Participant 3 Engagement in Behaviors

Percentages of Social Engagements at Baseline, Treatment, and Follow-up

	Participant 3					
	Analog			Recess		
	Baseline	Treatment	Follow-up	Baseline	Treatment	Follow-up
Verbal Aggression	0%	0%	0%	0%	0%	0%
Physical Aggression	0%	0%	0%	6.67%	0%	0%
Total Aggression	0%	0%	0%	6.67%	0%	0%
Positive Initiations	8.89%	6%	0.86%	6.55%	0.43%	1.79%
Positive Responses	59.44%	50.4%	81.04%	67.8%	91.7%	91.7%
Social Engagement	68.3%	56.43%	81.89%	74.36%	92.18%	93.49%
Neutral	31.67%	44.57%	18.1%	24.97%	7.65%	6.5%

observed for positive initiation for participant 3 (ES= - 0.89), a small effect size was also observed for positive responses for participant 3 (ES= - 0.41), and a small effect size was observed for total social engagement for participant 3 (ES= - 0.52). For participant 3, PND was calculated to be 9% for positive initiations, 18.18% for positive responses, and 18.18% for total social engagement, indicating ineffective treatment effects.

Participant 3 engaged in neutral behaviors during an average of 31.67% of baseline intervals and during an average of 44.57% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a small effect size was calculated for reduction of neutral behavior (ES=0.59). PND for participant 3 was calculated to be 9% for neutral behavior, indicating ineffective treatment effects.

Participant 4

Participant 4 attended all baseline sessions and all treatment sessions (3 baseline and 11 treatment) of the program. Table 11 lists the percentage of engagement in the measured behaviors for Participant 4. Participant 4 did not display any verbal, physical, or total combined aggression during baseline sessions. During treatment sessions, Participant 4 engaged in verbal aggression during an average of 3.7% of intervals. He engaged in physical aggression during an average of 0.64% of treatment intervals. Participant 4 engaged in total aggression (verbal and physical aggression combined) during an average of 4.34% of treatment intervals. Based on Cohen's criteria for determining magnitude, a small effect size was calculated for verbal aggression (ES=0.74), a small effect size was also calculated for physical aggression (ES=0.48), and a small effect size was calculated for the total combined aggression (ES=0.70). PND of

Table 11

Participant 4 Engagement in Behaviors

Percentages of Social Engagements at Baseline, Treatment, and Follow-up

	Participant 4					
	Analog			Recess		
	Baseline	Treatment	Follow-up	Baseline	Treatment	Follow-up
Verbal Aggression	0%	3.7%	0%	0%	0%	0%
Physical Aggression	0%	0.64%	0%	0%	0%	0%
Total Aggression	0%	4.34%	0%	0%	0%	0%
Positive Initiations	3.8%	5.4%	5.1%	9.3%	0.47%	5.9%
Positive Responses	31.67%	56.46%	60.55%	60.5%	78.08%	57.89%
Social Engagement	35.56%	61.91%	65.63%	69.83%	78.55%	63.86%
Neutral	64.44%	33.74%	34.37%	30.17%	21.45%	36.14%

0% was calculated and interpreted to be indicative of an ineffective treatment for verbal aggression, physical aggression, and total aggression.

Participant 4 initiated social interactions an average of 3.8% of the baseline intervals and an average of 5.4% of the treatment intervals. Participant 4 positively responded to social interactions during an average of 31.67% of baseline intervals and during an average of 56.46% of treatment intervals. Overall, participant 4 was socially engaged during an average of 35.56% of baseline intervals and during 61.91% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a medium effect size was observed for positive initiation for participant 4 (ES=0.36), a large effect size was observed for positive responses for participant 4 (ES=1.14), and a large effect size was also observed for total social engagement for participant 4 (ES=1.33). For participant 4, PND was calculated to be 27.27% for positive initiations, 72.72% for positive responses, and 72.72% for total social engagement, indicating ineffective to questionable treatment effects.

Participant 4 engaged in neutral behaviors during an average of 64.44% of baseline intervals and during an average of 33.74% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a large effect size was calculated for neutral behavior (ES= - 1.83). PND for participant 4 was calculated to be 81.81% for neutral behavior, indicating effective treatment effects.

Appendix J contains all of the figures for individual participant's use of behaviors during baseline and treatment analog observations. Based on the results of the data analysis for the group and individual participants, there were mixed results for this intervention. Participant 3 did not have any large effect sizes or PND calculations that

indicated an effective treatment. Participants 1, 2, and 4 all had effect sizes that were considered large and/or PND calculations that indicated an effective treatment. Participant 2 significantly decreased his percentage of intervals engaged in physical, verbal, and total aggression. Participants 1, 2, and 4 all increased their percentage of intervals engaged in positive initiations, positive responses, and total social engagement. Based on the data collected from this study, this research question was satisfied.

Research Question #2

1. *What is the effectiveness of the social skills intervention as measured by the spontaneous generalized use of pro-social behaviors during recess?*

Each participant was observed four times throughout the treatment phase during recess. The observations were videotaped and coded for social behaviors using an adapted observation system. The data were then used to calculate effect sizes, PND, and PAND.

During the participant's recesses, there were four 10-minute observations that were videotaped and then coded for social behaviors using an adapted partial interval observation system. The efficacy of the social skills instruction was measured by determining the number of 10-second intervals in a 10-minute observation period during which the participants engaged in positive initiations and positive responses that were combined to determine total social engagement, physical aggression and verbal aggression that were combined to determine total aggression, and neutral behaviors. The intervals were calculated during baseline and treatment phases. The data from these observations were used to calculate Busk and Serlin (1992) No Assumptions effect sizes

and percentage of nonoverlapping data points (PND) for each participant. A combined No Assumptions effect size was also calculated for the group. Percentage of all nonoverlapping data points (PAND) was calculated for the group and Cohen's *d* was derived from the PAND scores as an effect size measure for the group.

All Participants

Participants engaged in verbal aggression during an average of 0.9% of baseline intervals and did not engage in verbal aggression during any of treatment intervals (see Figure 9). The participants engaged in physical aggression during an average of 5.39% of baseline intervals and engaged in physical aggression during an average of 0.2% of treatment intervals (see Figure 10). Overall, participants engaged in combined aggression during 6.3% of baseline intervals and during 0.2% of treatment intervals (see Figure 11). Based on Cohen's criteria for interpreting effect sizes, a large effect size was observed for the group's verbal aggression (ES= -1.41), a large average effect size for physical aggression (ES= -3.05), and also a large effect size for total aggression (ES= -5.38). Percentage of all nonoverlapping data points (PAND) was calculated for the group as being 0% for verbal aggression, 25% for physical aggression, and 25% for total aggression. Cohen's d, derived from PAND, yielded no effect size for verbal aggressions because there was complete overlap between baseline and treatment data points. The Cohen's d effect size for reduction of physical aggression was large (ES= -1.26), as was the overall aggression effect size (ES= -1.26). Table 12 summarizes the individual participant effect sizes with confidence intervals and average group effect sizes and PAND with confidence intervals.

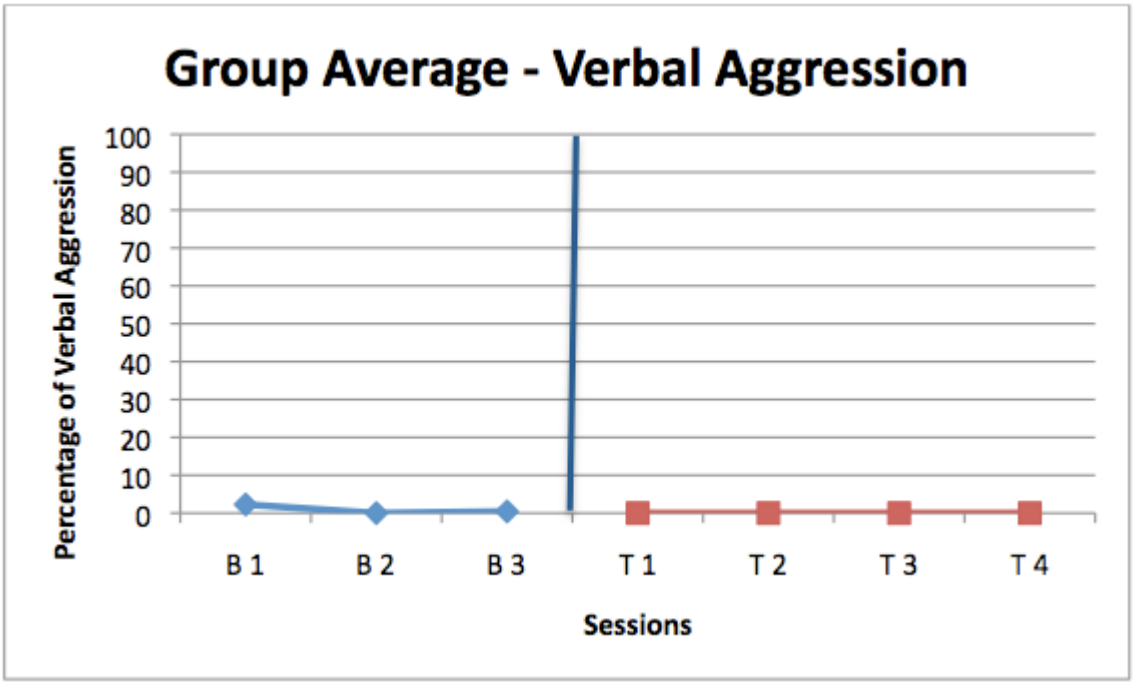

Figure 9: Average recess measure of verbal aggression for all participants.

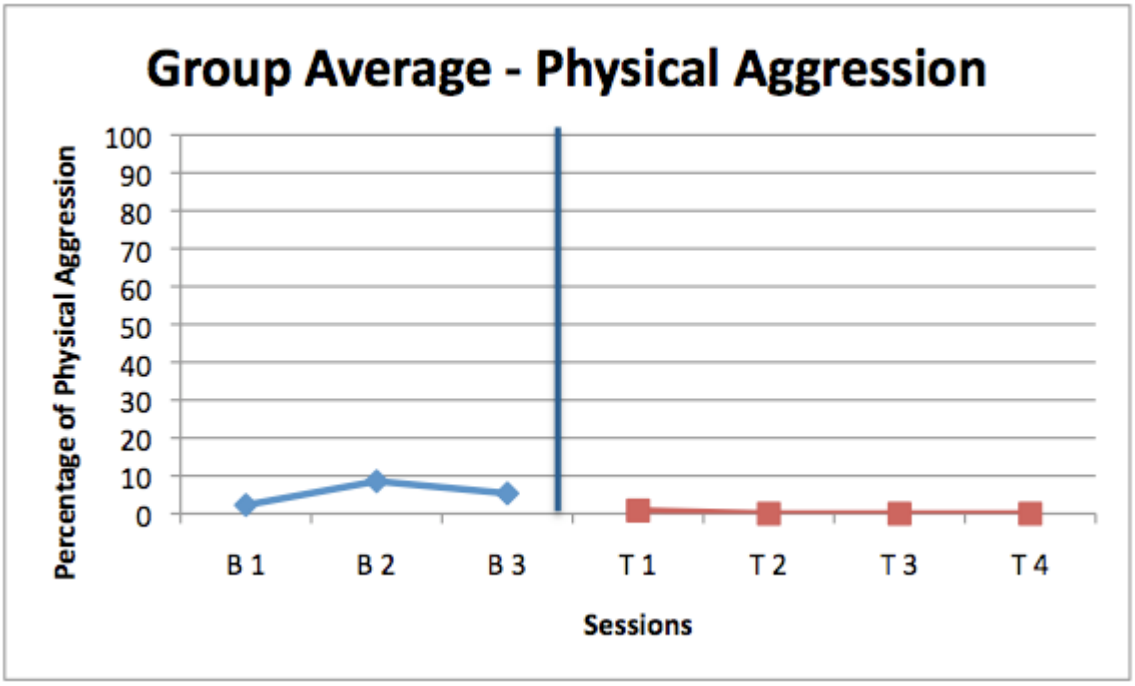

Figure 10: Average recess measure of physical aggression for all participants.

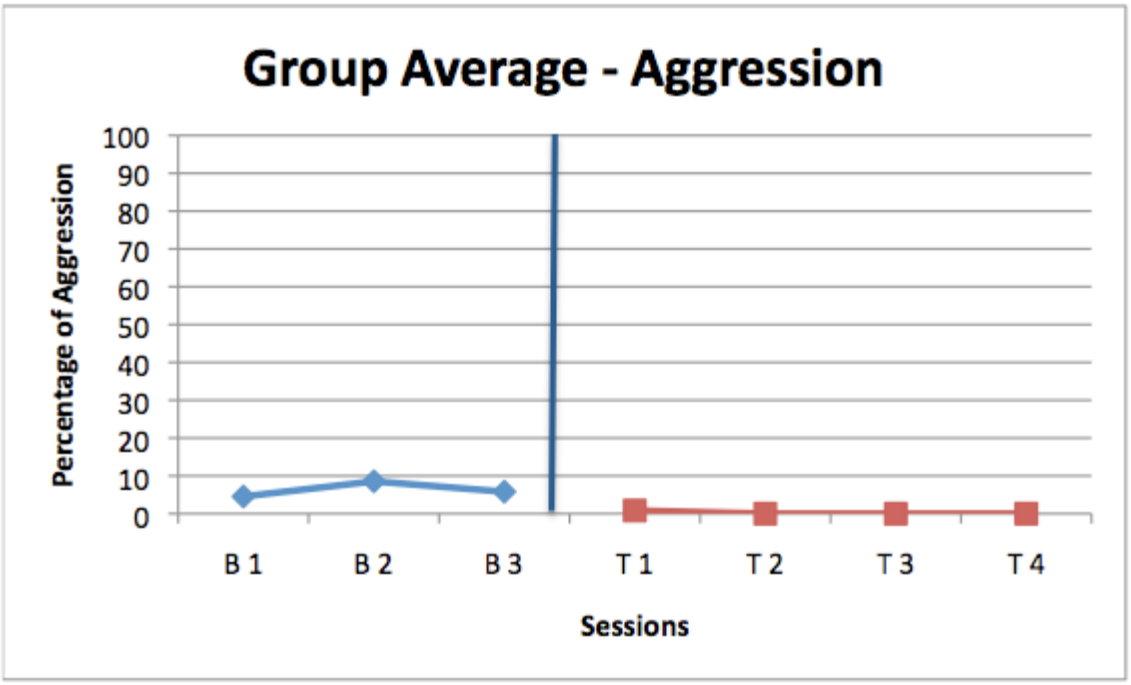

Figure 11: Average recess measure of total aggression for all participants.

Table 12

Recess Observation Treatment Results

Effect Sizes and Confidence Intervals

	P1	P2	P3	P4	No Assumption Average	PAND Cohen's d
Verbal Aggress	-1.41	--	--	--	-1.41	--
95% CI	-1.41 to -1.35	--	--	--	-1.41 to -1.39	--
Physical Aggress	-3.19	--	-1.08	--	-3.05	-1.26
95% CI	-3.21 to -3.06	--	-1.08 to -0.95	--	-3.05 to -3.01	-1.75 to -0.70
Total Aggress	-5.98	--	-1.08	--	-5.38	-1.26
95% CI	-6.0 to -5.90	--	-1.08 to -0.95	--	-5.39 to -5.36	-1.75 to -0.70
Positive Initiation	1.33	0.55	-2.78	-9.07	-2.77	-1.75
95% CI	1.28 to 1.35	0.55 to 0.61	-2.78 to -2.73	-9.08 to -9.05	-2.78 to -2.77	-2.14 to -1.09
Positive Responses	1.29	0.29	2.07	0.62	3.66	0.48
95% CI	1.06 to 1.38	0.14 to 0.50	1.93 to 2.21	0.21 to 0.76	3.61 to 3.73	0.36 to 0.96
Social Engage	1.41	0.45	1.76	0.32	4.13	0.48
95% CI	1.14 to 1.49	0.30 to 0.61	1.63 to 1.87	-0.09 to 0.45	4.07 to 4.19	0.36 to 0.96
Neutral Behavior	-0.11	-0.45	-1.69	-0.32	-2.45	0.21
95% CI	-0.36 to -0.02	-0.59 to -0.28	-1.82 to -1.57	-0.72 to -0.18	-2.51 to -2.42	-0.22 to 0.66

Participants positively initiated social interactions during an average of 5.9% of baseline intervals and initiated interactions during an average of 3.6% during treatment intervals (see Figure 12). Participants positively responded to social interactions during an average of 49.9% of baseline intervals and during an average of 66.7% of treatment intervals (see Figure 13). Overall, participants were socially engaged during an average of 50.12% of baseline intervals and during 70.37% of treatment intervals (see Figure 14). Based on Cohen's criteria for interpreting effect sizes, a small effect size was observed for the group's positive initiations (ES= -2.77), a large average effect size was observed for the group's positive responses (ES= 3.66), and a large effect size was observed for the group's total social engagement (ES= 4.13). The calculation of PAND for the group was 18.75% for positive initiations, 62.5% for positive responses, and 62.5% for overall social engagement. Cohen's d, derived from PAND, yielded a small effect size for positive initiations (ES= -1.75), a moderate effect size for positive responses (ES= 0.48), and a moderate effect size for overall social engagement (ES= 0.48).

Participants engaged in neutral behaviors during an average of 39.4% of baseline intervals and during an average of 29.4% of treatment intervals (see Figure 15). Based on Cohen's criteria for interpreting effect sizes, a large effect size was calculated for neutral behavior (ES= -2.45). The calculation of PAND for the group was 56.25% for neutral behavior. Cohen's d, derived from PAND, yielded a small effect size for reduction of neutral behavior (ES= 0.21).

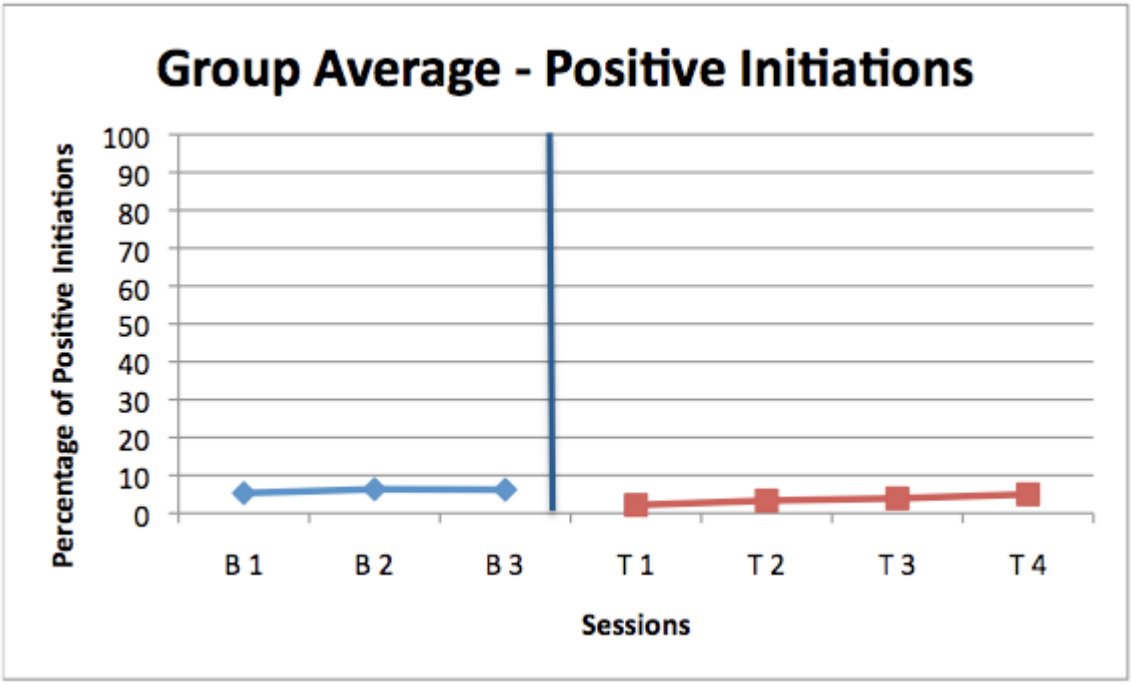

Figure 12: Average recess measure of positive initiations for all participants.

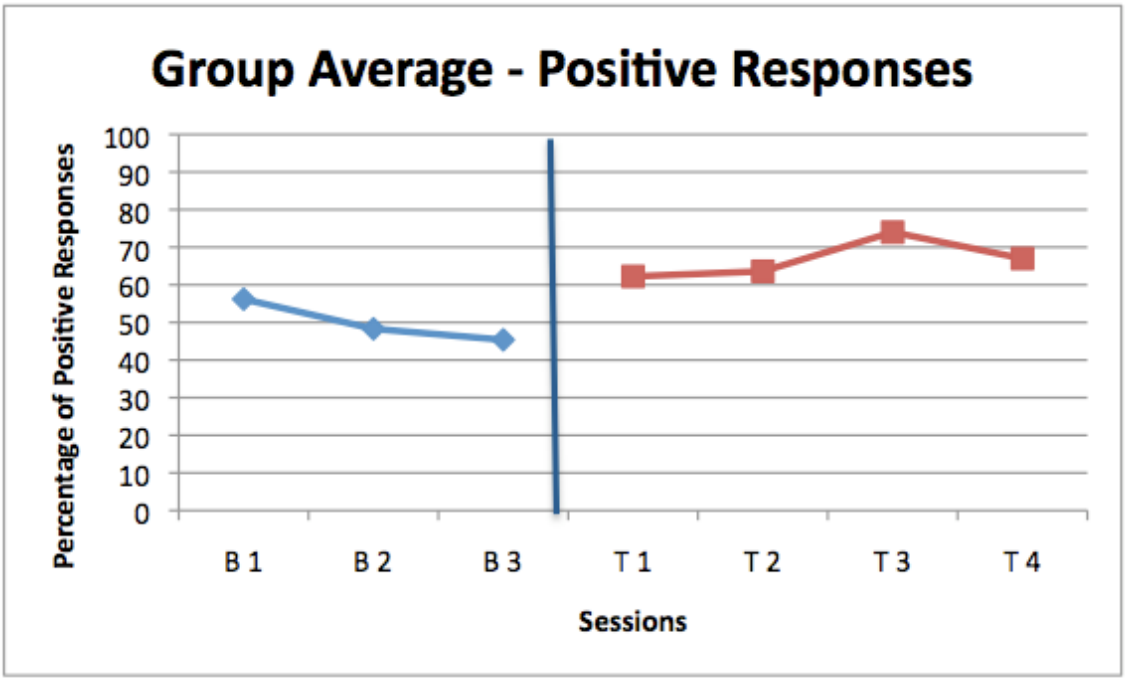

Figure 13: Average recess measure of positive responses for all participants.

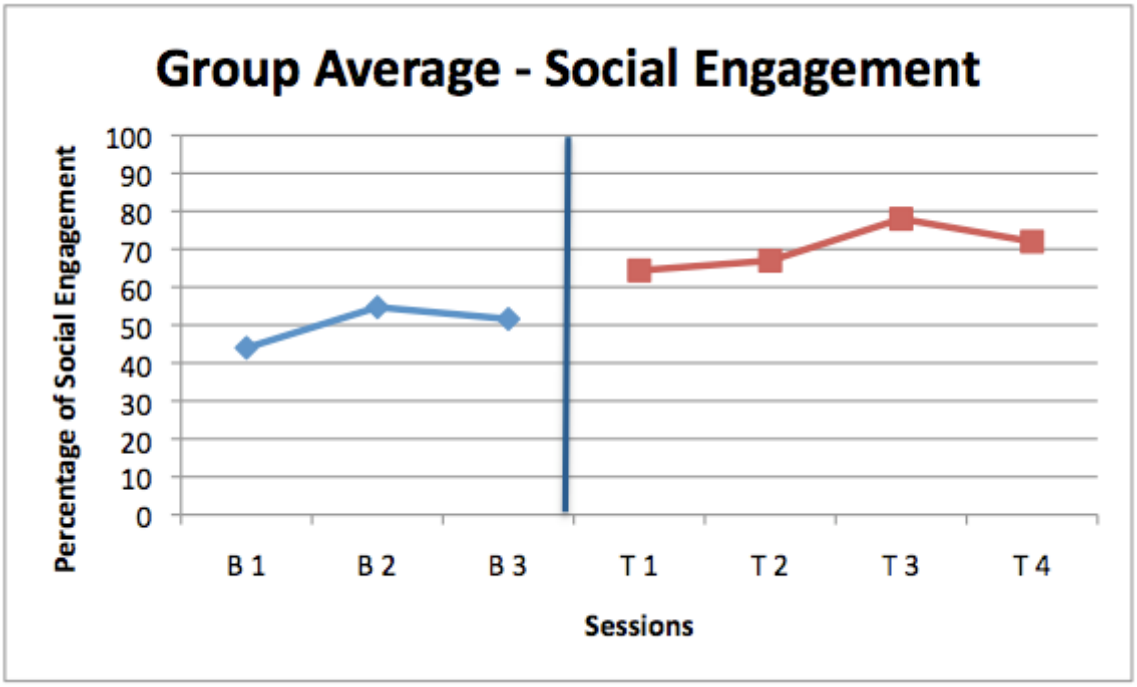

Figure 14: Average recess measure of social engagements for all participants.

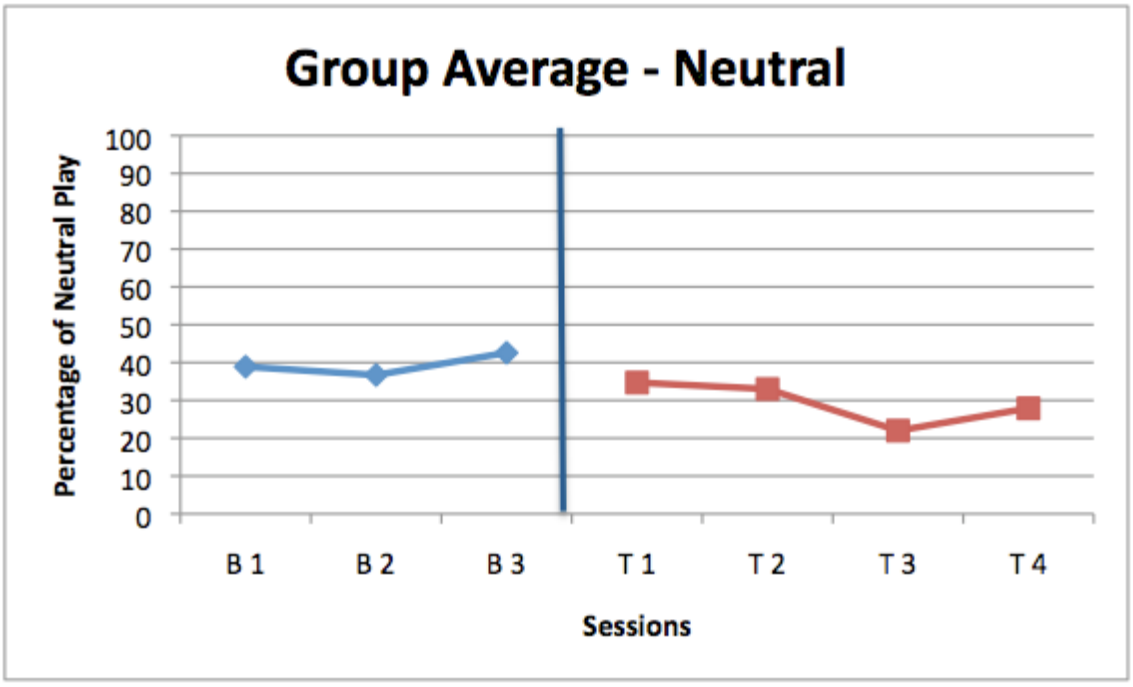

Figure 15: Average recess measure of neutral play for all participants.

Participant 1

Participant 1 was observed during three baseline and four treatment sessions during recess. Participant 1 engaged in verbal aggression during an average of 3.6% of intervals during baseline and did not engage in any verbal aggression during treatment intervals. He demonstrated physical aggression during an average of 20.9% of baseline intervals and during an average of 0.83% of treatment intervals. Participant 1 displayed aggression during an average of 24.55% of baseline recess intervals and an average of 0.83% of treatment recess intervals. Based on Cohen's criteria for determining magnitude of effect size, a large effect size (ES= -1.41) was calculated for verbal aggression, physical aggression (ES= -3.19), and overall aggression (ES= -5.98) for recess observations.

Participant 1 initiated social interactions an average of 1.67% of the baseline intervals and an average of 5.9% of the treatment intervals. Participant 1 positively responded to social interactions during an average of 14.25% of baseline intervals and during an average of 35.67% of treatment intervals. Overall, participant 1 was socially engaged during an average of 15.9% of baseline intervals and during 41.58% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a large effect size was observed for positive initiation for participant 1 (ES=1.33), a large effect size was observed for positive responses for participant 1 (ES=1.29), and a large average effect size was observed for total social engagement for participant 1 (ES=1.41). For participant 1, PND was calculated to be 75% for positive initiations, 75% for positive responses, and 75% for total social engagement, indicating questionable treatment effects.

Participant 1 engaged in neutral behaviors during an average of 59.5% of baseline intervals and during an average of 57.59% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a small average effect size was calculated for neutral behavior (ES= -0.11). PND for participant 1 was calculated to be 50% for neutral behavior, indicating questionable treatment effects.

Participant 2

Participant 2 was observed during three baseline recess observations and four treatment recess observations. Participant 2 did not display any verbal, physical, or combined aggression during any baseline or treatment sessions. There was no data analysis completed for these behaviors because there was no data from the observations.

Participant 2 initiated social interactions an average of 6.3% of the baseline intervals and an average of 7.7% of the treatment intervals. Participant 2 positively responded to social interactions during an average of 57.38% of baseline intervals and during an average of 61.47% of treatment intervals. Overall, participant 2 was socially engaged during an average of 63.69% of baseline intervals and during 69.18% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a moderate effect size was observed for positive initiation for participant 2 (ES=0.55), a small effect size was observed for positive responses for participant 2 (ES=0.29), and a moderate effect size was observed for total social engagement for participant 2 (ES=0.45). For participant 2, PND was calculated to be 0% for positive initiations, 25% for positive responses, and 25% for total social engagement, indicating ineffective treatment effects.

Participant 2 engaged in neutral behaviors during an average of 36.3% of baseline intervals and during an average of 30.8% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a moderate effect size was calculated for neutral behavior (ES= -0.45). PND for participant 2 was calculated to be 25% for neutral behavior, indicating ineffective treatment effects.

Participant 3

Participant 3 was observed during three baseline recess observations and during four treatment recess observations. Participant 3 did not display any verbal aggression during baseline or treatment recess observations. Participant 3 engaged in physical aggression during an average of 6.67% of baseline recess intervals and he did not engage in any physical aggression during the treatment recess intervals. Participant 3 was engaged in total combined aggression during an average of 6.67% of baseline recess intervals, but did not engage in any aggression during treatment recess sessions. No effect size was calculated for verbal aggression because there was no data available. Based on Cohen's criteria for interpreting effect sizes, a large effect size was calculated for physical aggression (ES= -1.08) and also a large effect size for total combined aggression (ES= -1.08) was observed. PND was calculated to be 0% for both physical aggression and total combined aggression, indicating ineffective treatment effects.

Participant 3 initiated social interactions an average of 6.55% of the baseline intervals and an average of 0.43% of the treatment intervals. Participant 3 positively responded to social interactions during an average of 67.8% of baseline intervals and during an average of 91.7% of treatment intervals. Overall, Participant 3 was socially

engaged during an average of 74.36% of baseline intervals and during 92.18% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a small effect size was observed for positive initiation for participant 3 (ES= - 2.78), a large effect size was also observed for positive responses for participant 3 (ES=2.07), and a large effect size was observed for total social engagement for participant 3 (ES=1.76). For participant 3, PND was calculated to be 0% for positive initiations, 75% for positive responses, and 75% for total social engagement, indicating ineffective to questionable treatment effects.

Participant 3 engaged in neutral behaviors during an average of 24.97% of baseline intervals and during an average of 7.65% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a large average effect size was calculated for neutral behavior (ES= - 1.69). PND for participant 3 was calculated to be 75% for neutral behavior, indicating questionable treatment effects.

Participant 4

Participant 4 was observed during three baseline and four treatment recess observations. Participant 4 did not display any verbal, physical, or total combined aggression during any baseline or treatment sessions. There were no effects calculated for verbal, physical, or total combined aggression because there was no data from the observations for these behaviors.

Participant 4 initiated social interactions an average of 9.3% of the baseline intervals and an average of 0.47% of the treatment intervals. Participant 4 positively responded to social interactions during an average of 60.5% of baseline intervals and

during an average of 78.08% of treatment intervals. Overall, participant 4 was socially engaged during an average of 69.83% of baseline intervals and during 78.55% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a small effect size was observed for positive initiation for participant 4 (ES= - 9.07), a moderate effect size was observed for positive responses for participant 4 (ES=0.62), and a moderate effect size was also observed for total social engagement for participant 4 (ES=0.32). For participant 4, PND was calculated to be 0% for positive initiations, 75% for positive responses, and 75% for total social engagement, indicating questionable treatment effects.

Participant 4 engaged in neutral behaviors during an average of 30.17% of baseline intervals and during an average of 21.45% of treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a moderate effect size was calculated for neutral behavior (ES= -0.32). PND for participant 4 was calculated to be 75% for neutral behavior, indicating questionable treatment effects.

Appendix K contains all of the figures for individual participant's use of behaviors during baseline and treatment recess observations. Based on the results of the recess observation data analysis for the individual participants, there were positive results for this intervention. Participants 1 and 3 both had large effect size calculations for aggression codes and social engagement codes, but participants 2 and 4 did not have large effect sizes for any of the behaviors coded. Participant 1 was the only participant with a PND calculation indicative of highly effective treatments. Based on the data collected from this study, this research question was satisfied.

Research Question #3

1. *What is the maintenance of pro-social behaviors at a two-week follow-up?*

During baseline there were three free time play periods and three recess play periods that were videotaped and two videotaped free play observations and two recess play observations completed two weeks following the last treatment session. The observations were then coded for social behaviors using an adapted partial interval observation system. The efficacy of the social skills instruction was measured by determining the number of 10-second intervals in a 10-minute observation period during which the participants engaged in positive initiations and positive responses that were combined to determine total social engagement, physical aggression and verbal aggression that were combined to determine total aggression, and neutral behaviors. The intervals were calculated during baseline and follow-up phases. The data from these observations were used to calculate Busk and Serlin (1992) No Assumptions effect sizes and percentage of nonoverlapping data points (PND) for each participant. A combined No Assumptions effect size was also calculated for the group. Percentage of all nonoverlapping data points (PAND) was calculated for the group and Cohen's *d* was derived from the PAND scores as an effect size measure for the group.

Analog Follow-up

All Participants

Participants engaged in verbal aggression during an average of 0.83% of baseline intervals and during an average of 0% of follow-up intervals (see Figure 16). The participants did not engage in physical aggression during any baseline intervals or follow-

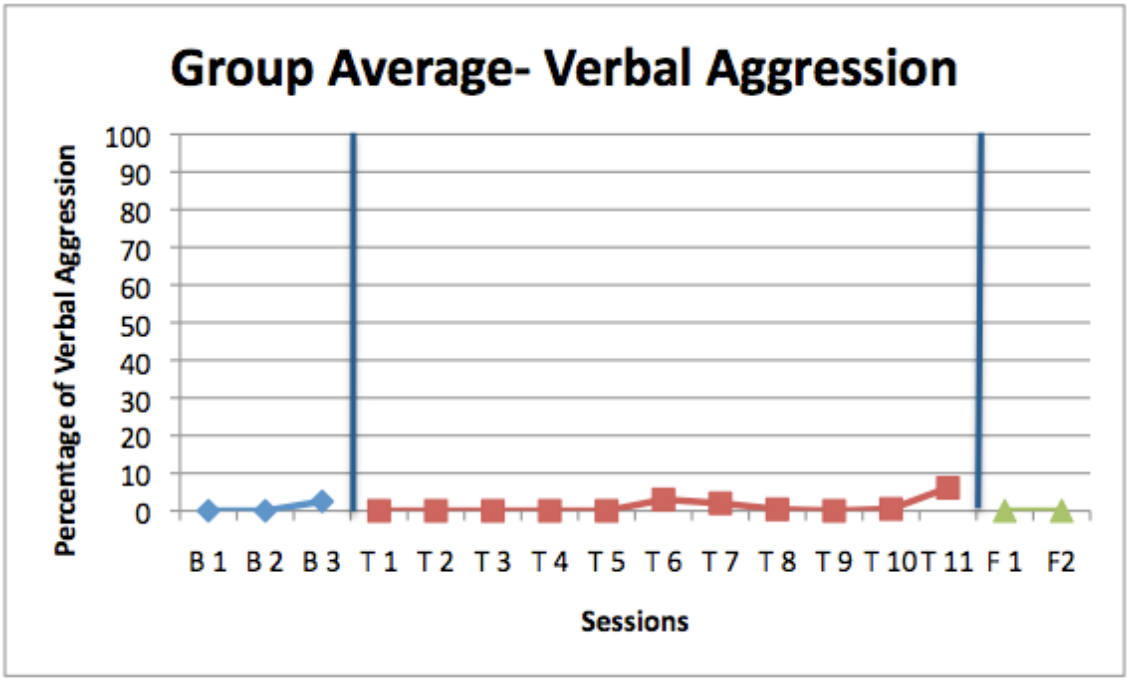

Figure 16: Average follow-up analog measure of verbal aggression.

up intervals (see Figure 17). Overall, participants engaged in combined aggression during 0.83% of baseline intervals and during 0% of follow-up intervals (see Figure 18). Based on Cohen's criteria for interpreting effect sizes, a large effect size was observed for the group's verbal aggression (ES= -0.91) and overall aggression (ES= - 0.91). No data analysis was completed for physical aggression because there was no data available. Percentage of all nonoverlapping data points (PAND) was calculated for the group as being 0% for verbal aggression and 0% for overall aggression. Cohen's d, derived from PAND, yielded no results do to the lack of nonoverlapping data.

Participants positively initiated social interactions during an average of 6.1% of baseline intervals and initiated interactions during an average of 2.97% during follow-up

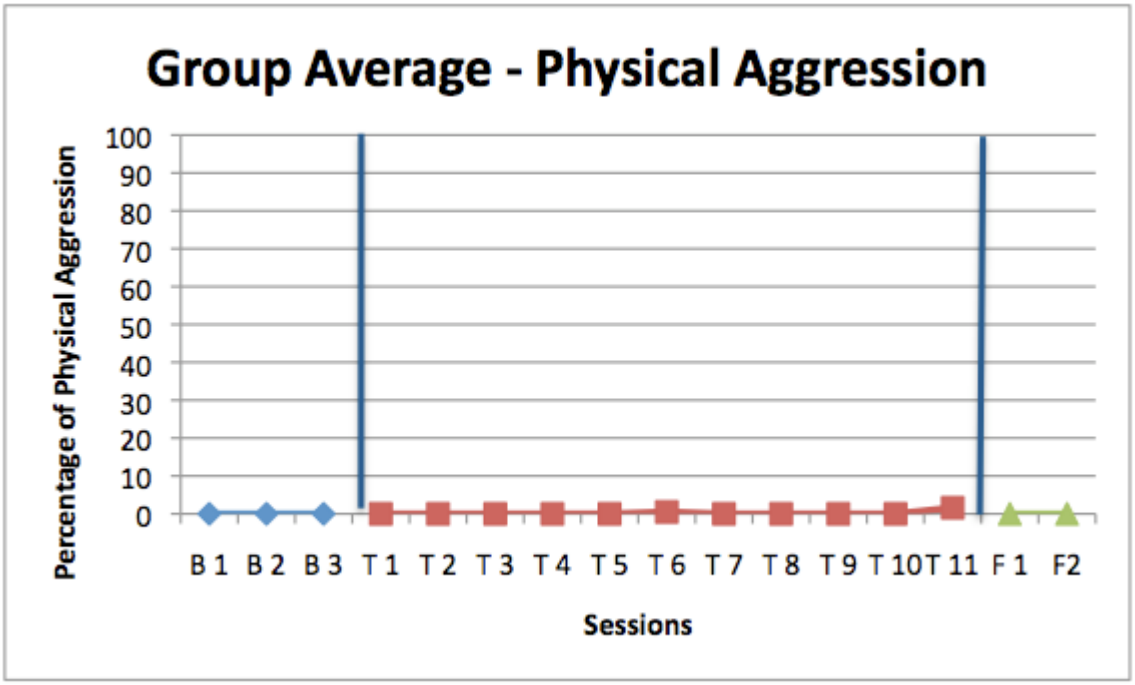

Figure 17: Average follow-up analog measure of physical aggression.

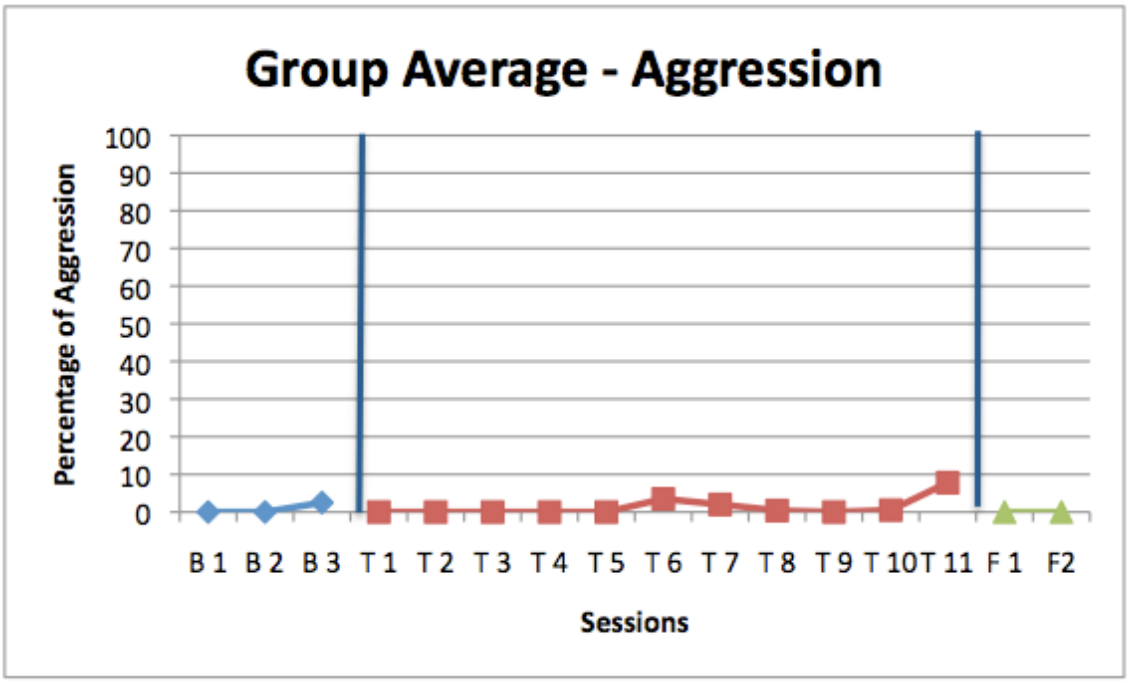

Figure 18: Average follow-up analog measure of total aggression.

intervals (see Figure 19). Participants positively responded to social interactions during an average of 34.03% of baseline intervals and during an average of 73.4% of follow-up intervals (see Figure 20). Overall, participants were socially engaged during an average of 40.13% of baseline intervals and during 76.4% of follow-up intervals (see Figure 21). Based on Cohen's criteria for interpreting effect sizes, a small effect size was observed for the group's positive initiations (ES= -5.02), a large effect size was observed for the group's positive responses (ES= 6.77), and a large effect size was observed for the group's total social engagement (ES= 6.02). The calculation of PAND for the group was 12.5% for positive initiations, 87.5% for positive responses, and 87.5% for overall social engagement. Cohen's d, derived from PAND, yielded a large effect size for positive responses (ES= 2.19) and overall social engagement (ES= 2.19). There was no PAND or Cohen's d calculation for positive initiations because there were no nonoverlapping data points between baseline and follow-up.

Participants engaged in neutral behaviors during an average of 59% of baseline intervals and during an average of 23.6% of follow-up intervals (see Figure 22). Based on Cohen's criteria for interpreting effect sizes, a large effect size was calculated for neutral behavior (ES= -6.72). The calculation of PAND for the group was 62.5% for reduction of neutral behavior. Cohen's d, derived from PAND, yielded a small effect size for neutral behavior (ES= 0.44). Table 13 summarizes the individual participant effect sizes with confidence intervals and average group effect sizes and PAND with confidence intervals.

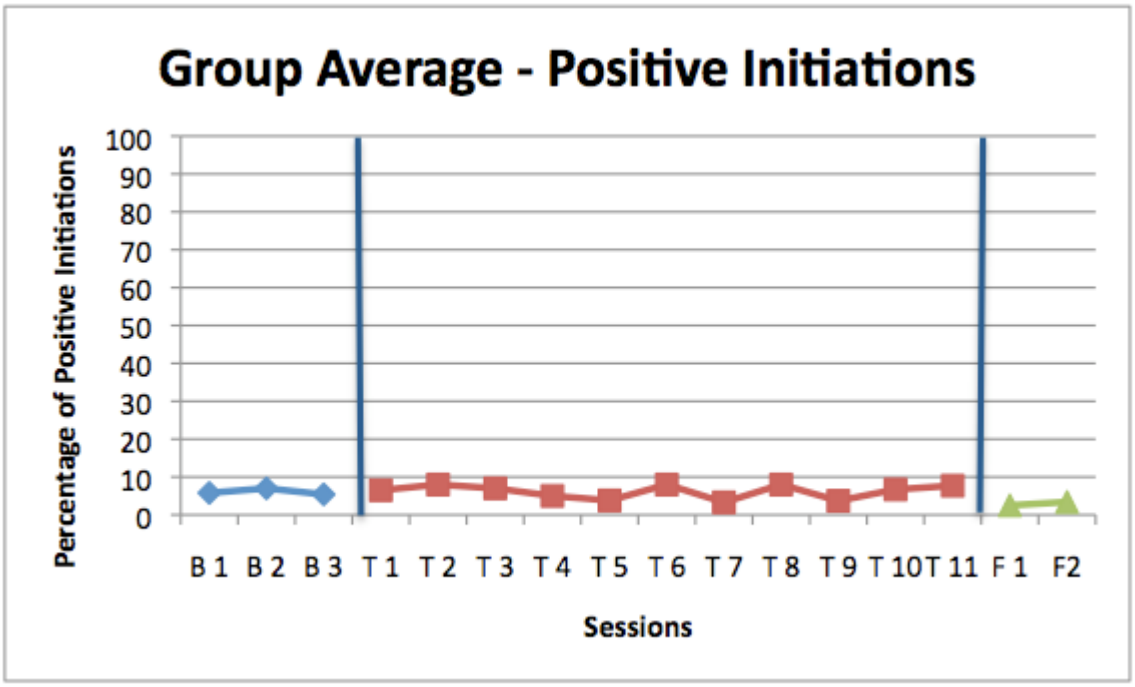

Figure 19: Average follow-up analog measure of positive initiations.

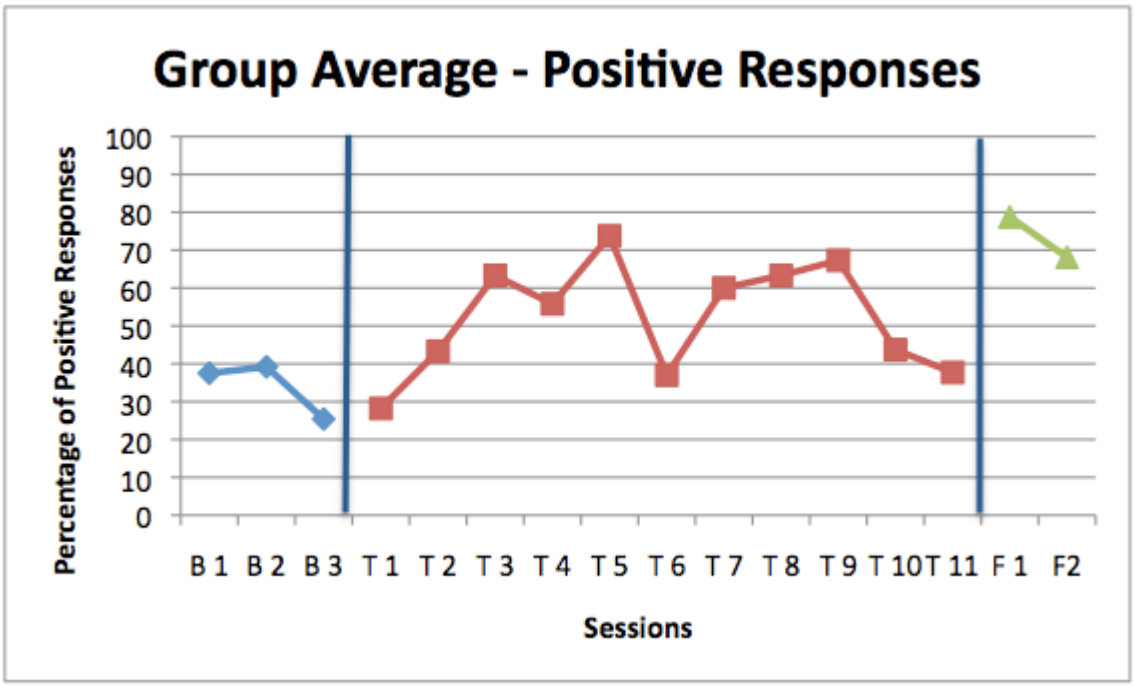

Figure 20: Average follow-up analog measure of positive responses.

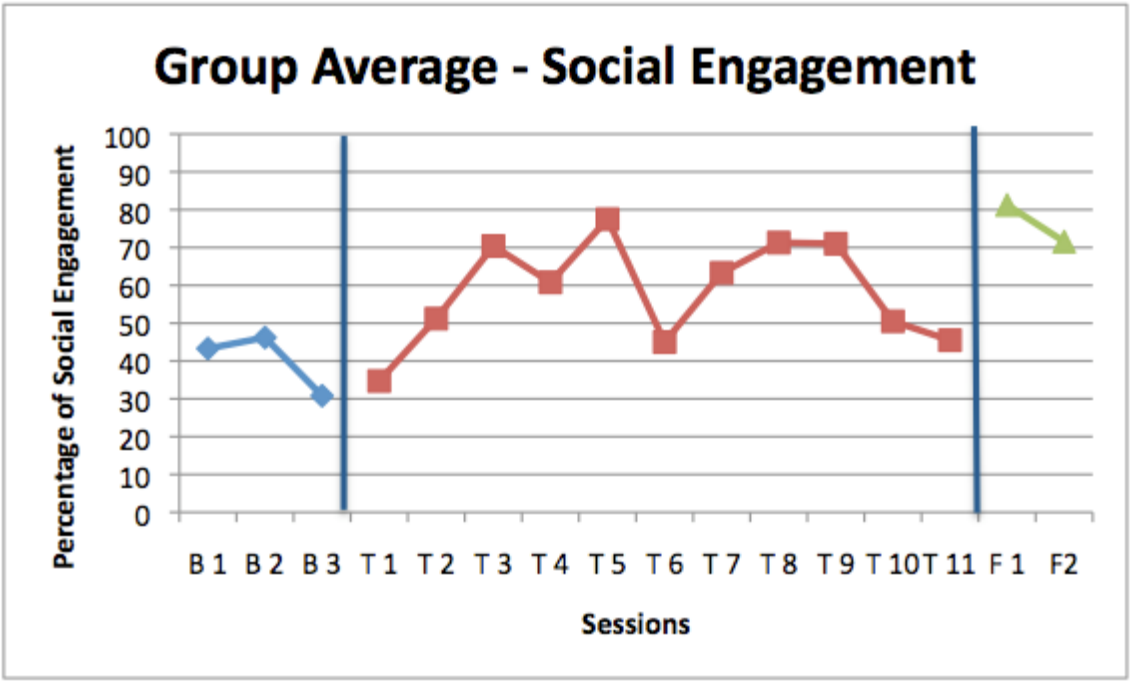

Figure 21: Average follow-up analog measure of social engagement.

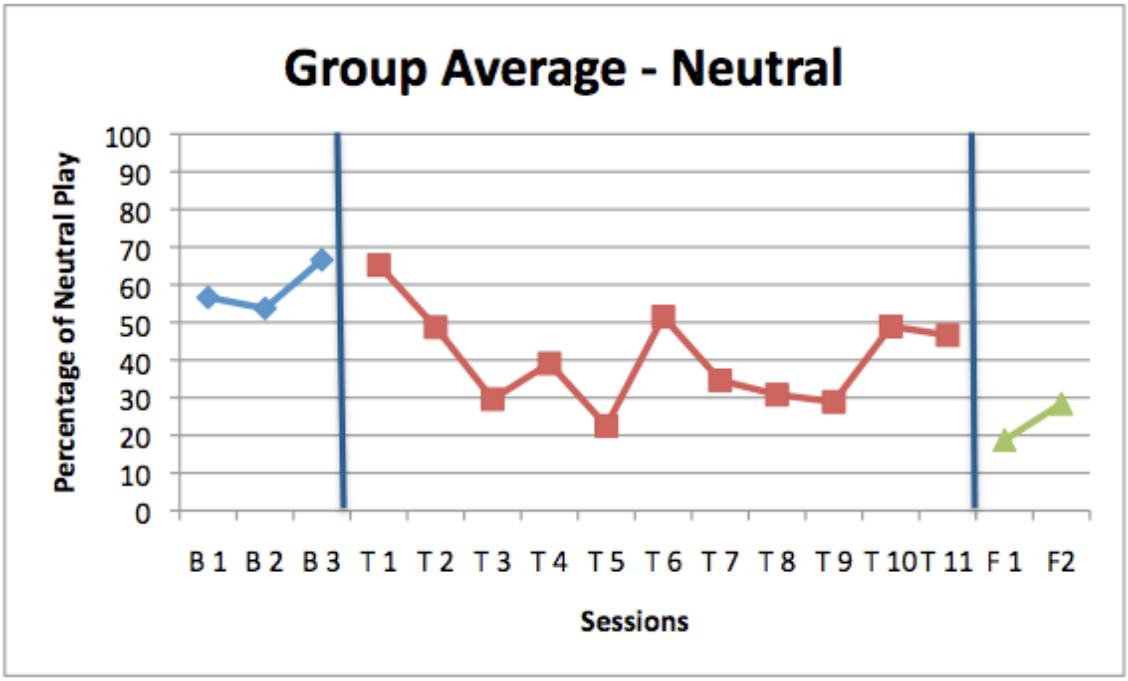

Figure 22: Average follow-up analog measure of neutral play.

Table 13

Analog Observation Follow-up Results

Effect Sizes and Confidence Intervals

	P1	P2	P3	P4	No Assumption Average	PAND Cohen's d
Verbal Aggress	--	-0.91	--	--	-0.91	--
95% CI	--	-0.91 to -0.85	--	--	-0.91 to -0.90	--
Physical Aggress	--	--	--	--	--	--
95% CI	--	--	--	--	--	--
Total Aggress	--	-0.91	--	--	-0.91	--
95% CI	--	-0.91 to -0.85	--	--	-0.91 to -0.90	--
Positive Initiation	1.11	-2.13	-3.55	0.74	-5.02	--
95% CI	1.09-1.13	-2.13 to -2.09	-3.57 to -3.51	0.74 to 0.77	-5.03 to -5.01	--
Positive Responses	3.04	5.92	1.71	1.99	6.77	2.19
95% CI	2.75 o 3.2	5.74 to 6.10	1.34 to 1.78	1.55 to 2.05	6.67 to 6.86	1.32 to 3.40
Social Engage	3.19	4.46	1.09	2.01	6.02	2.19
95% CI	2.92 to 3.36	4.28 to 4.68	0.74 to 1.18	1.57 to 2.10	5.93 to 6.12	1.32 to 3.40
Neutral Behavior	-3.19	-5.44	-1.09	-2.01	-6.72	0.44
95% CI	-3.47 to -3.03	-5.63 to -5.29	-1.45 to -1.01	-2.45 to -1.92	-6.82 to -6.65	0.004 to 0.92

Participant 1

Participant 1 attended all baseline and follow-up sessions (3 baseline and 2 follow-up) of the program. Participant 1 did not display verbal aggression, physical aggression, or total aggression during any of the analog free play observations. Because there were not any data points, effect size and PND were not calculated for verbal aggression, physical aggression, or total aggression.

Participant 1 initiated social interactions an average of 4.4% of the baseline intervals and an average of 5.9% of the follow-up intervals. Participant 1 positively responded to social interactions during an average of 22.22% of baseline intervals and during an average of 61.6% of follow-up intervals. Overall, participant 1 was socially engaged during an average of 26.67% of baseline intervals and during 67.56% of follow-up intervals. Based on Cohen's criteria for interpreting effect sizes, a large effect size was observed for positive initiation for participant 1 (ES= 1.11), a large effect size was observed for positive responses for participant 1 (ES= 3.04), and a large effect size was observed for total social engagement for participant 1 (ES= 3.19). For participant 1, PND was calculated to be 50% for positive initiations, 100% for positive responses, and 100% for total social engagement, indicating questionable to acceptable follow-up effects.

Participant 1 engaged in neutral behaviors during an average of 73.33% of baseline intervals and during an average of 32.44% of follow-up intervals. Based on Cohen's criteria for interpreting effect sizes, a large effect size was calculated for neutral behavior (ES= -3.19). PND for participant 1 was calculated to be 100% for neutral behavior, indicating very effective follow-up effects.

Participant 2

Participant 2 attended all baseline and follow-up sessions (3 baseline and 2 follow-up) of the program. Participant 2 was verbally aggressive during 3.33% of baseline and 0% of follow-up analog free play observations. Participant 2 did not display any physical aggression during baseline or follow-up sessions. Participant 2 engaged in aggression (physical and verbal combined) during 3.33% of baseline intervals and 0% of follow-up intervals. No effect size was calculated for physical aggression because there was no data available. Based on Cohen's criteria for interpreting effect sizes, a large effect size was observed for participant 2 for verbal aggression (ES= -0.91) and overall aggression (ES= -0.91). Percentage of nonoverlapping data points (PND) for participant 2 was 0% for verbal aggression, 0% for physical aggression, and 0% for overall aggression, indicating ineffective follow-up effect.

Participant 2 initiated social interactions an average of 7.2% of the baseline intervals and an average of 0% of the follow-up intervals. Participant 2 positively responded to social interactions during an average of 22.77% of baseline intervals and during an average of 90.52% of follow-up intervals. Overall, participant 2 was socially engaged during an average of 30% of baseline intervals and during 90.52% of follow-up intervals. Based on Cohen's criteria for interpreting effect sizes, a small effect size was observed for positive initiation for participant 2 (ES= - 2.13), a large effect size was observed for positive responses for participant 2 (ES= 5.92), and a large effect size was observed for total social engagement for participant 2 (ES= 4.46). For participant 2, PND was calculated to be 0% for positive initiations, 100% for positive responses, and 100% for total social engagement, indicating questionable to very effective follow-up effects.

Participant 2 engaged in neutral behaviors during an average of 66.67% of baseline intervals and during an average of 9.48% of follow-up intervals. Based on Cohen's criteria for interpreting effect sizes, a large average effect size was calculated for neutral behavior (ES= -5.44). PND for participant 2 was calculated to be 100% for neutral behavior, indicating very effective follow-up effects.

Participant 3

Participant 3 attended all baseline sessions and all follow-up sessions (three baseline and two follow-up) of the program. Participant 3 did not display any verbal, physical, or total combined aggression during baseline or follow-up sessions. No effect size was calculated for verbal, physical, or total combined aggression because there was no data available.

Participant 3 initiated social interactions an average of 8.89% of the baseline intervals and an average of 0.86% of the follow-up intervals. Participant 3 positively responded to social interactions during an average of 59.44% of baseline intervals and during an average of 81.04% of follow-up intervals. Overall, participant 3 was socially engaged during an average of 68.3% of baseline intervals and during 81.89% of follow-up intervals. Based on Cohen's criteria for interpreting effect sizes, a small effect size was observed for positive initiation for participant 3 (ES= - 3.55), a large effect size was observed for positive responses for participant 3 (ES= 1.71), and a large effect size was also observed for total social engagement for participant 3 (ES= 1.09). For participant 3, PND was calculated to be 0% for positive initiations, 50% for positive responses, and 50% for total social engagement, indicating ineffective to questionable follow-up effects.

Participant 3 engaged in neutral behaviors during an average of 31.67% of baseline intervals and during an average of 18.1% of follow-up intervals. Based on Cohen's criteria for interpreting effect sizes, a large effect size was calculated for neutral behavior (ES= -1.09). PND for participant 3 was calculated to be 50% for neutral behavior, indicating questionable follow-up effects.

Participant 4

Participant 4 attended all baseline sessions and all follow-up sessions (3 baseline and 2 follow-up) of the program. Participant 4 did not display any verbal, physical, or total combined aggression during baseline or follow-up sessions. There was no data analysis completed for verbal, physical, and total combined aggression because there was no data available.

Participant 4 initiated social interactions an average of 3.8% of the baseline intervals and an average of 5.1% of the follow-up intervals. Participant 4 positively responded to social interactions during an average of 31.67% of baseline intervals and during an average of 60.55% of follow-up intervals. Overall, participant 4 was socially engaged during an average of 35.56% of baseline intervals and during 65.63% of follow-up intervals. Based on Cohen's criteria for interpreting effect sizes, a moderate effect size was observed for positive initiation for participant 4 (ES= 0.74), a large effect size was observed for positive responses for participant 4 (ES= 1.99), and a large effect size was also observed for total social engagement for participant 4 (ES= 2.01). For participant 4, PND was calculated to be 0% for positive initiations, 100% for positive

responses, and 100% for total social engagement, indicating ineffective to questionable follow-up effects.

Participant 4 engaged in neutral behaviors during an average of 64.44% of baseline intervals and during an average of 34.37% of follow-up intervals. Based on Cohen's criteria for interpreting effect sizes, a large effect size was calculated for neutral behavior (ES= -2.01). PND for participant 4 was calculated to be 100% for neutral behavior, indicating very effective follow-up effects.

Appendix L contains all of the figures for individual participant's use of behaviors during baseline and follow-up analog observations. Based on the results of the data for the individual participants, there were varied results for this intervention. Overall, participants increased the amount of intervals engaged in positive responses and decreased the number of intervals engaged in neutral behavior. Participant 3 did not have any effect sizes or PND calculations that indicated an effective follow-up. Participants 1, 2, and 4 all had effect sizes that were considered and/or PND calculations that indicated an effective follow-up. Participant 2 significantly decreased his percentage of intervals engaged in physical, verbal, and total aggression. Participants 1, 2, and 4 all increased their percentage of intervals engaged in positive initiations, responses, and social engagement.

Recess Follow-up

All Participants

Participants engaged in verbal aggression during an average of 0.9% of baseline intervals and did not engage in verbal aggression during any of the follow-up intervals

(see Figure 23). The participants engaged in physical aggression during an average of 5.39% of baseline intervals and engaged in physical aggression during an average of 0.22% of follow-up intervals (see Figure 24). Overall, participants engaged in combined aggression during 6.3% of baseline intervals and during 0.22% of follow-up intervals (see Figure 25). Based on Cohen's criteria for interpreting effect sizes, a large average effect size was observed for the group's reduced verbal aggression (ES= -1.19), a large average effect size for reduced physical aggression (ES= -2.59), and also a large effect size for total aggression (ES= -4.65). Percentage of all nonoverlapping data points (PAND) was calculated for the group as being 0% for verbal aggression, 25% for physical aggression, and 25% for total aggression. Cohen's d, derived from PAND, yielded a large effect size for physical aggression (ES= -1.36) and overall aggression (ES=-1.36), but no calculation was able to be made for verbal aggression because the data was completely overlapping.

Participants positively initiated social interactions during an average of 5.9% of baseline intervals and initiated interactions during an average of 5.7% during follow-up intervals (see Figure 26). Participants positively responded to social interactions during an average of 49.9% of baseline intervals and during an average of 64.8% of follow-up intervals (see Figure 27). Overall, participants were socially engaged during an average of 50.12% of baseline intervals and during 70.47% of follow-up intervals (see Figure 28). Based on Cohen's criteria for interpreting effect sizes, a small effect size was observed for the group's positive initiations (ES= -0.27), a large effect size was observed for the group's positive responses (ES= 2.23), and a large effect size was observed for the group's total social engagement (ES= 3.52). The calculation of PAND for the group was 25% for positive initiations, 62.5% for positive responses, and 50% for overall social

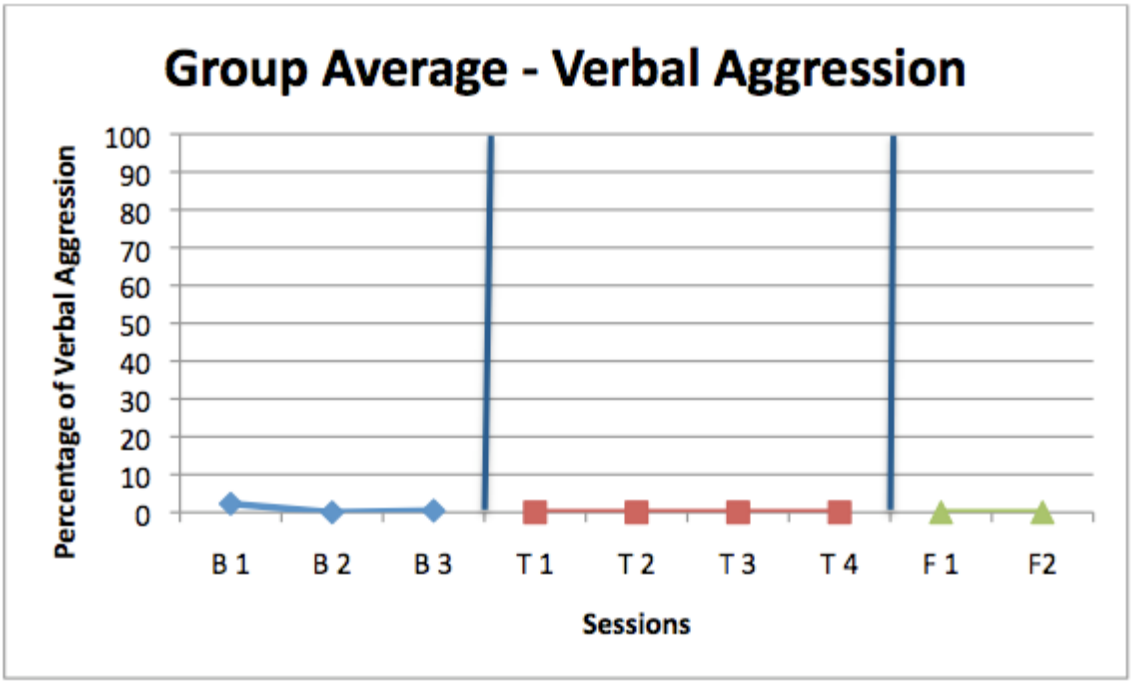

Figure 23: Average follow-up recess measure of verbal aggression.

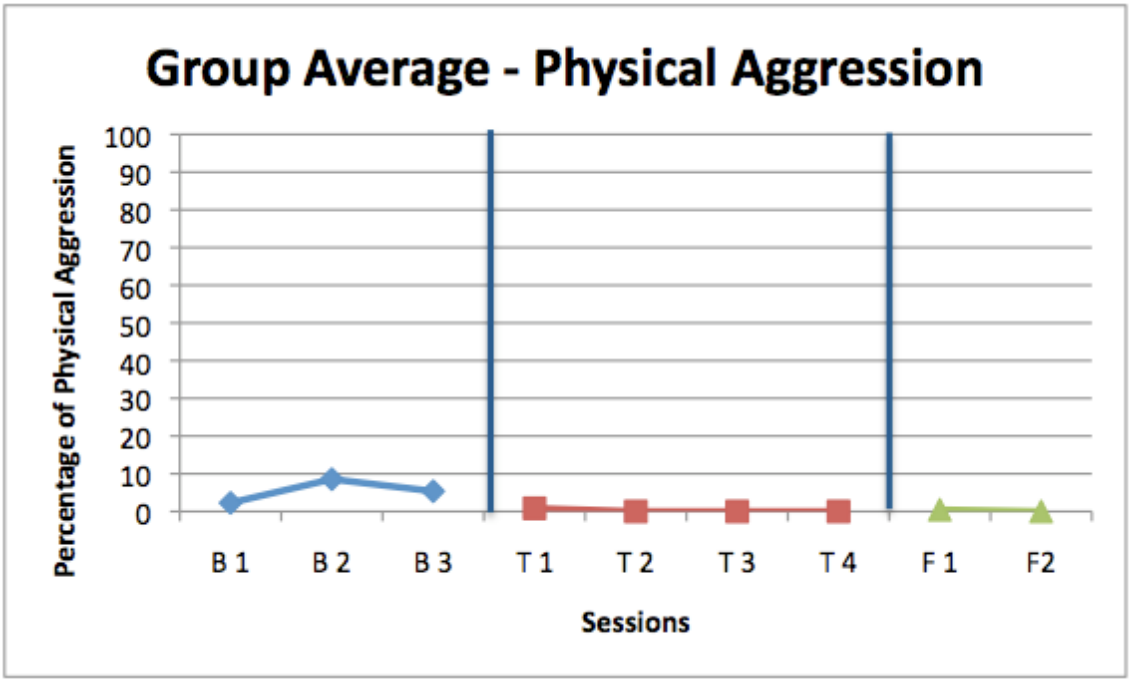

Figure 24: Average follow-up recess measure of physical aggression.

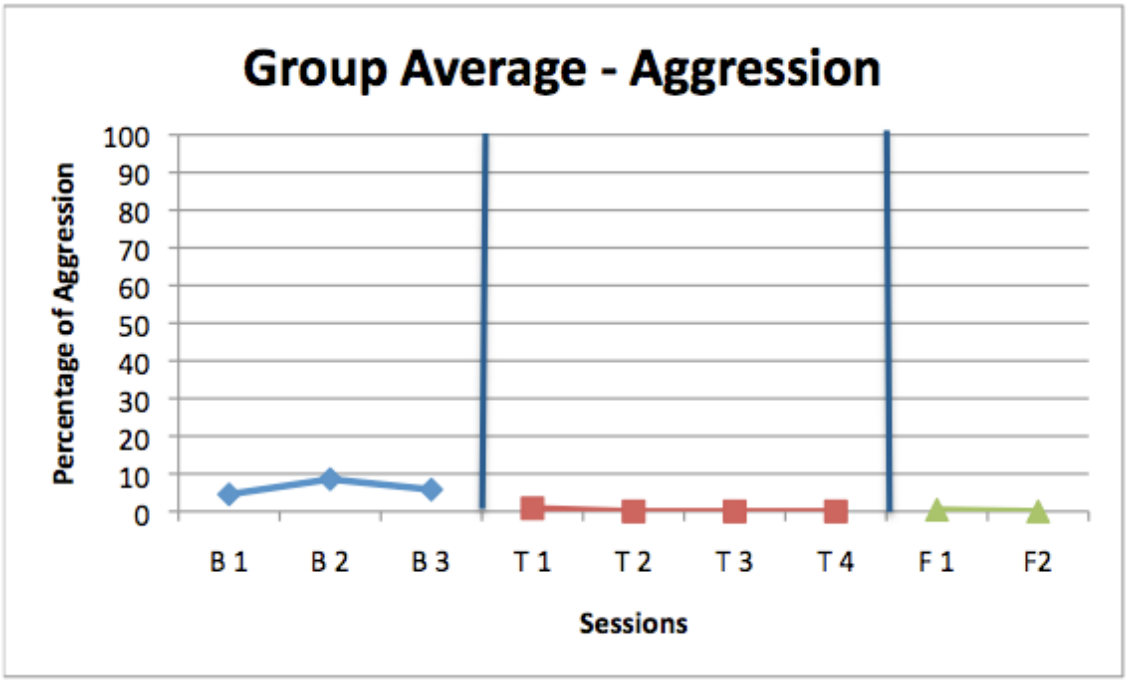

Figure 25: Average follow-up recess measure of total aggression.

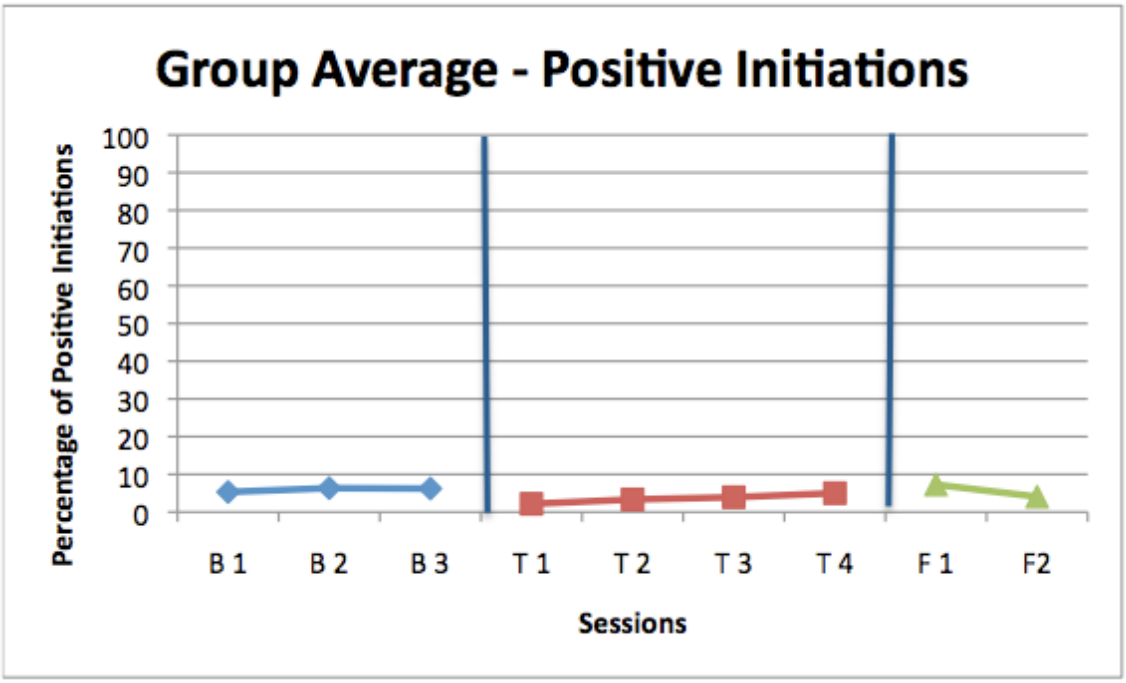

Figure 26: Average follow-up recess measure of positive initiations.

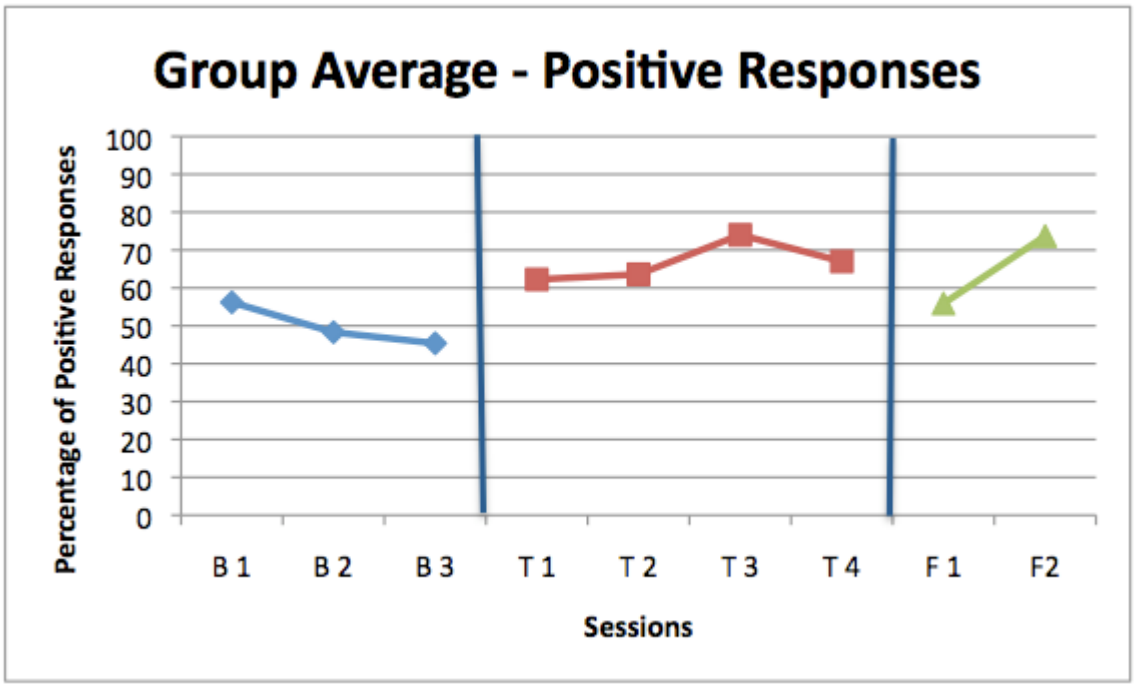

Figure 27: Average follow-up recess measure of positive responses.

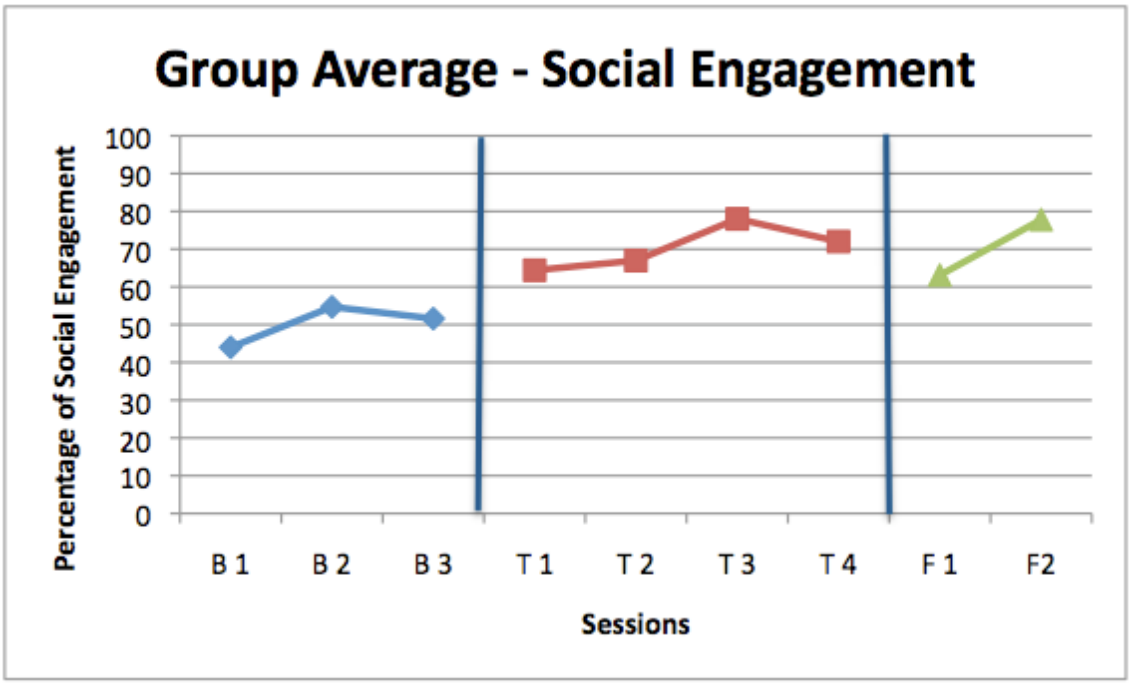

Figure 28: Average follow-up recess measure of social engagement.

engagement. Cohen's d, derived from PAND, yielded a small effect size for positive initiations (ES= -1.36), a moderate effect size for positive responses (ES= 0.44), and a small effect size for total social engagement (ES= -0.08).

Participants engaged in neutral behaviors during an average of 39.4% of baseline intervals and during an average of 29.3% of follow-up intervals (see Figure 29). Based on Cohen's criteria for interpreting effect sizes, a large effect size was calculated for neutral behavior (ES= -2.08). The calculation of PAND for the group was 33.33% for neutral behavior. Cohen's d, derived from PAND, yielded a large effect size for reduction of neutral behaviors (ES= -0.84). Table 14 summarizes the individual participant effect sizes with confidence intervals and average group effect sizes and PAND with confidence intervals.

Participant 1

Participant 1 was observed during 3 baseline and 2 follow-up sessions during recess. Participant 1 was observed to engage in verbal aggression during an average of 3.6% of intervals during baseline and did not engage in any verbal aggression during follow-up intervals. He demonstrated physical aggression during an average of 20.9% of baseline intervals and during an average of 0.89% of follow-up intervals. Participant 1 displayed aggression during an average of 24.55% of baseline recess intervals and an average of 0.89% of follow-up recess intervals. Based on Cohen's criteria for determining magnitude of effect size, a large effect size (ES= -1.19) was calculated for verbal aggression, physical aggression (ES= -2.72), and overall aggression (ES= -5.20) for recess observations. PND for participant 1 was calculated to be 0% for verbal

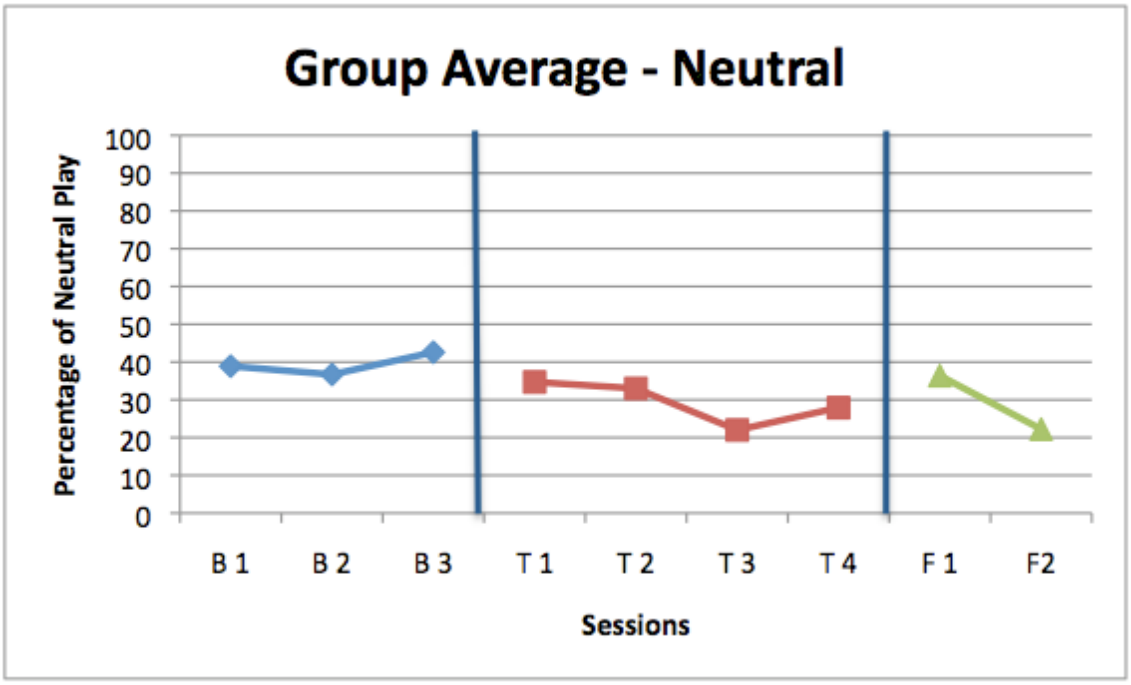

Figure 29: Average follow-up recess measure of neutral play.

Table 14

Recess Observation Follow-up Results

Effect Sizes and Confidence Intervals

	P1	P2	P3	P4	No Assumption Average	PAND Cohen's d
Verbal Aggress	-1.19	--	--	--	-1.19	--
95% CI	-1.19 to -1.14	--	--	--	-1.19 to -1.18	--
Physical Aggress	-2.72	--	-0.91	--	-2.59	-1.36
95% CI	-2.74 to -2.59	--	-0.91 to -0.78	--	-2.60 to -2.56	-1.68 to -0.81
Total Aggress	-5.2	--	-0.91	--	-4.65	-1.36
95% CI	-5.22 to -5.12	--	-0.91 to -0.78	--	-4.65 to -4.63	-1.68 to -0.81
Positive Initiation	1.64	0.94	-1.89	-3.36	-0.27	-1.36
95% CI	1.60 to 1.66	0.84 to 0.99	-1.89 to -1.84	-3.37 to -3.34	-0.30 to -0.26	-1.68 to -0.81
Positive Responses	3.17	0.62	2.72	-0.27	2.23	0.44
95% CI	2.95 to 3.26	0.22 to 0.83	2.62 to 2.86	-0.44 to -0.13	2.05 to 2.29	0.004 to 0.93
Social Engage	4.34	1.08	2.81	-0.61	3.52	-0.08
95% CI	4.17 to 4.42	0.77 to 1.25	2.72 to 2.92	-0.80 to -0.48	3.38 to 3.59	-0.51 to 0.35
Neutral Behavior	-0.91	-1.08	-2.62	0.61	-2.08	-0.84
95% CI	-1.06 to -0.82	-1.39 to -0.91	-2.71 to -2.51	0.43 to 0.75	-2.22 to -2.05	-1.27 to -0.36

aggression, 100% for physical aggression, and 100% for total combined aggression indicating an ineffective to very effective follow-up.

Participant 1 initiated social interactions an average of 1.67% of the baseline intervals and an average of 4.7% of the follow-up intervals. Participant 1 positively responded to social interactions during an average of 14.25% of baseline intervals and during an average of 41.3% of follow-up intervals. Overall, participant 1 was socially engaged during an average of 15.9% of baseline intervals and during 46.02% of follow-up intervals. Based on Cohen's criteria for interpreting effect sizes, a large effect size was observed for positive initiation for participant 1 (ES= 1.64), a large effect size was observed for positive responses for participant 1 (ES= 3.17), and a large average effect size was observed for total social engagement for participant 1 (ES= 4.34). For participant 1, PND was calculated to be 50% for positive initiations, 100% for positive responses, and 100% for total social engagement, indicating questionable to very effective follow-up effects.

Participant 1 engaged in neutral behaviors during an average of 59.5% of baseline intervals and during an average of 53.08% of follow-up intervals. Based on Cohen's criteria for interpreting effect sizes, a large average effect size was calculated for neutral behavior (ES= -0.91). PND for participant 1 was calculated to be 50% for neutral behavior, indicating questionable follow-up effects.

Participant 2

Participant 2 was observed during three baseline recess observations and two follow-up recess observations. Participant 2 did not display any verbal, physical, or

combined aggression during any baseline or follow-up sessions. There was no data analysis completed for these behaviors because there was no data from the observations.

Participant 2 initiated social interactions an average of 6.3% of the baseline intervals and an average of 10.23% of the follow-up intervals. Participant 2 positively responded to social interactions during an average of 57.38% of baseline intervals and during an average of 68.29% of follow-up intervals. Overall, participant 2 was socially engaged during an average of 63.69% of baseline intervals and during 78.5% of follow-up intervals. Based on Cohen's criteria for interpreting effect sizes, a large effect size was observed for positive initiation for participant 2 (ES=0.94), a moderate effect size was observed for positive responses for participant 2 (ES=0.62), and a large effect size was observed for total social engagement for participant 2 (ES= 1.08). For participant 2, PND was calculated to be 50% for positive initiations, 50% for positive responses, and 50% for total social engagement, indicating questionable follow-up effects.

Participant 2 engaged in neutral behaviors during an average of 36.3% of baseline intervals and during an average of 21.47% of follow-up intervals. Based on Cohen's criteria for interpreting effect sizes, a large effect size was calculated for neutral behavior (ES= -1.08). PND for participant 2 was calculated to be 50% for neutral behavior, indicating questionable follow-up effects.

Participant 3

Participant 3 was observed during three baseline recess observations and during two follow-up recess observations. Participant 3 did not display any verbal aggression during baseline or follow-up recess observations. Participant 3 engaged in physical

aggression during an average of 6.67% of baseline recess intervals and he did not engage in any physical aggression during the follow-up recess intervals. Participant 3 was engaged in total combined aggression during an average of 6.67% of baseline recess intervals, but did not engage in any aggression during follow-up recess sessions. No effect size was calculated for verbal aggression because there were no data available. Based on Cohen's criteria for interpreting effect sizes, a large effect size was calculated for physical aggression (ES= -0.91) and also a large effect size for total combined aggression (ES= -0.91) was observed. PND was calculated to be 0% for both physical aggression and total combined aggression, indicating ineffective follow-up effects.

Participant 3 initiated social interactions an average of 6.55% of the baseline intervals and an average of 1.79% of the follow-up intervals. Participant 3 positively responded to social interactions during an average of 67.8% of baseline intervals and during an average of 91.7% of follow-up intervals. Overall, participant 3 was socially engaged during an average of 74.36% of baseline intervals and during 93.49% of follow-up intervals. Based on Cohen's criteria for interpreting effect sizes, a small effect size was observed for positive initiation for participant 3 (ES= -1.89), a large effect size was also observed for positive responses for participant 3 (ES=2.72), and a large effect size was observed for total social engagement for participant 3 (ES=2.81). For participant 3, PND was calculated to be 0% for positive initiations, 100% for positive responses, and 100% for total social engagement, indicating ineffective to very effective follow-up effects.

Participant 3 engaged in neutral behaviors during an average of 24.97% of baseline intervals and during an average of 6.5% of follow-up intervals. Based on

Cohen's criteria for interpreting effect sizes, a large average effect size was calculated for neutral behavior (ES= - 2.62). PND for participant 3 was calculated to be 100% for neutral behavior, indicating questionable follow-up effects.

Participant 4

Participant 4 was observed during 3 baseline and 2 follow-up recess observations. Participant 4 did not display any verbal, physical, or total combined aggression during any baseline or follow-up sessions. There were no effects calculated for verbal, physical, or total combined aggression because there were no data from the observations for these behaviors.

Participant 4 initiated social interactions an average of 9.3% of the baseline intervals and an average of 5.9% of the follow-up intervals. Participant 4 positively responded to social interactions during an average of 60.5% of baseline intervals and during an average of 57.89% of follow-up intervals. Overall, participant 4 was socially engaged during an average of 69.83% of baseline intervals and during 63.86% of follow-up intervals. Based on Cohen's criteria for interpreting effect sizes, a small effect size was observed for positive initiation for participant 4 (ES= -3.36), a small effect size was observed for positive responses for participant 4 (ES= -0.27), and a small effect size was also observed for total social engagement for participant 4 (ES= -0.61). For participant 4, PND was calculated to be 0% for positive initiations, 0% for positive responses, and 0% for total social engagement, indicating ineffective follow-up effects.

Participant 4 engaged in neutral behaviors during an average of 30.17% of baseline intervals and during an average of 36.14% of follow-up intervals. Based on

Cohen's criteria for interpreting effect sizes, a small effect size was calculated for reduction of neutral behavior (ES=0.61). PND for participant 4 was calculated to be 0% for neutral behavior, indicating ineffective follow-up effects.

Appendix M contains all of the figures for individual participant's use of behaviors during baseline and follow-up recess observations. Based on the results of the recess observation data analysis for the individual participants, there were varied results for this intervention. Overall, participants increased their use of positive responses and decreased the percentage of time spent in neutral behaviors. Participants 1 and 3 both had large effect size calculations for aggression codes and social engagement codes, but participants 2 and 4 did not have any large effect sizes for any of the behaviors coded. Based on the data collected from this study, this research question was satisfied.

Research Question #4

What is the consumer satisfaction with the intervention?

After the final treatment session, all of the participants' parents and teachers were asked to complete the Behavior Intervention Rating Scale (BIRS). The BIRS has 24 items on which the parents rate the effectiveness of the intervention on a six-point likert scale (1=strongly disagree, 2=disagree, 3=slightly disagree, 4=slightly agree, 5=agree, 6=strongly agree). The parent form of participant 3 was not returned at the completion of the intervention, but all other parents and teachers completed the form. Overall, parents rated the program as being favorable (M=4.736) and teachers rated to program as slightly less favorable (M=3.625). The parent, teacher, and combined overall means for each item are presented in Table 15.

Table 15

Average Ratings on the Behavior Intervention Rating Scale

BIRS Item Means as Rated by Parents and Teachers

Item	Parent Mean	Teacher Mean	Combined Mean
1. Superhero Social Skills would be an acceptable intervention to improve social skills.	4.67	3.25	3.86
2. Most parents would find Superhero Social Skills appropriate for social skills intervention.	4.67	3.75	4.14
3. Superhero Social Skills should prove effective in targeting social skills.	5	3.25	4
4. I would suggest the use of Superhero Social Skills to other parents.	5	3.75	4.29
5. Poor social skills in my child are severe enough to warrant use of Superhero Social Skills.	4.33	4.5	4.43
6. Most parents would find Superhero Social Skills suitable in targeting social skills.	4.67	4	4.29
7. I would be willing to use Superhero Social Skills in my home.	4.33	4	4.14
8. Superhero Social Skills would not result in negative side effects for the child.	4.67	5	4.86
9. Superhero Social Skills would be an appropriate intervention for a variety of children.	5	4.5	4.71
10. Superhero Social Skills is consistent with other social skills programs I have used at home.	4.67	3.75	4.14
11. Superhero Social Skills is a fair way to teach social skills.	4.67	4	4.29
12. Superhero Social Skills is reasonable for difficulties that arise from social skills.	4.67	4	4.29
13. I like the procedures used in Superhero Social Skills.	5	3.75	4.29
14. Superhero Social Skills is a good way to handle social skills at home.	5	3.75	4.29
15. Overall, Superhero Social Skills would be beneficial for my child.	5.33	4	4.57
16. Superhero Social Skills would quickly improve a child's behavior.	4.67	3	3.71
17. Superhero Social Skills would produce a lasting improvement on a child's behavior.	4.67	2.5	3.96
18. Superhero Social Skills would improve a child's behavior to the point that it would not noticeably deviate from other peer's behavior.	4.33	3	3.57
19. Soon after using Superhero Social Skills, parents would notice a positive change in social skills.	4.67	3	3.71
20. The child's behavior will remain at an improved level even after Superhero Social Skills is discontinued.	4.33	3.25	3.71
21. Using Superhero Social Skills should not only improve the child's behavior in the home, but also in other settings (e.g, classrooms, playground)	5	4	4.43
22. When comparing a participant with a non-participant peer before and after use of Superhero Social Skills, the participant's and peer's behavior would be more alike after using Superhero Social Skills.	4.67	3.75	4.14
23. Superhero Social Skills should produce enough improvement in social skills so the behavior is no longer a problem.	4.33	2.25	3.14
24. Other behaviors related to social skills also are likely to be improved by Superhero Social Skills.	5.33	3	4

On the parent ratings, the majority of the items received favorable ratings, but the three items that were answered the least favorable were the following: Superhero Social Skills would improve a child's behavior to the point that it would not noticeably deviate from other peer's behavior; The child's behavior will remain at an improved level even after Superhero Social Skills is discontinued; and Superhero Social Skills should produce enough improvement in social skills so the behavior is no longer a problem. Parent answers on these questions indicate that parents did not feel this intervention could produce enough change in social skills to make the children with high-incidence disabilities indistinguishable from their typical peers, which was not an expected goal of this research or the program used. The parents also reported that they did not feel the intervention would have effects on the children's social skills after the intervention was completed, but the observation data shows that the children had made more improvements in their social skills at follow-up. The parents also reported that the intervention would not improve behavior enough to where the children's behavior is no longer a problem, which was not a goal of the research or the program used.

On the teacher ratings, the majority of items received lower ratings, but the two items that were rated the least favorable were the following: Superhero Social Skills would produce a lasting improvement in a child's behavior and Superhero Social Skills should produce enough improvement in social skills so the behavior no longer is a problem. The teachers reported that they did not think the intervention would produce a lasting effect, but based on the observation data collected, the children continued to improve their social skills at follow-up. The teachers also reported that they did not think

the intervention would change behavior so that it is no longer a problem, but this was not a goal of the research or the program used.

Parents rated two questions as the most favorable when evaluating the Superheroes Social Skills program. The questions they rated most favorable were the following: Overall, Superhero Social Skills would be beneficial for my child and Other behaviors related to social skills also are likely to be improved by Superhero Social Skills. Parent responses indicated they felt the Superheroes Social Skills program was effective and beneficial for their child and it would be for children with other social skills deficits.

Teachers rated two questions as the most favorable when evaluating the Superheroes Social Skills program. The questions they rated most favorable were the following: Superhero Social Skills would not result in negative side effects for the child and Superhero Social Skills would be an appropriate intervention for a variety of children. Teacher responses indicated that they do not feel there is any risk of detrimental effects from the Superheroes Social Skills program and that this program could be effective with many children in the school setting.

Research Question #5

What is the effectiveness of the intervention based on the results of the Social Skills Improvement System (SSIS)?

Parents and teachers completed the Social Skills Improvement System (SSIS) as a pre- and posttest measure to determine the child's severity of social impairments ad to determine the effects of the intervention. The scores are reported as standard scores

(M=100, SD=15) and standard deviation changes in scores were used to determine treatment effects as recommended in the SSIS manual. The parent of participant 3 did not return any of the posttest checklists to the primary researcher, therefore, there are only pretest scores available for participant 3 and not any posttest scores available for this participant. The parents of all of the other participants completed the pre- and posttest measures and all of the participants' teachers completed all of the pre- and posttest measures.

All Participants

Parent Ratings

The parent of participant 3 did not return the posttest SSIS to the primary researcher, therefore none of the scores (pre- and posttest) for participant 3 were included in the mean parent ratings for the group. Overall, the average social skills scale score on the parent ratings for the participants increased slightly from pre- to posttest. The average score at pretest was 77.33 and the average score for the participants at posttest was 82.6. The mean difference between pre- and posttest scores was 8.

Parent ratings on the problem behaviors scale decreased slightly from pre- to posttest. The average score at pretest was 109 and the average score at posttest was 108. The mean difference for participants was 5.6.

Teacher Ratings

Overall, the average social skills scale score on the teacher ratings for participants increased from pre- to posttest. The average score at pretest was 79.75 and the average

score for the participants at posttest was 94.5. The mean difference between pre- and posttest scores was 14.75 and nearly one standard deviation (SD=15) difference, which is considered a significant change on this measure.

Teacher ratings on the problem behavior scale indicated that there was almost no change between pre- and posttest scores. The average pretest score based on teacher ratings was 118.25 and the average posttest score was 118.5. The mean change for the participants was 3.75.

Teacher ratings on the academic competence scale indicated there was a slight increase in scores from pre- to posttest. The average score at pretest was 92.25 and the average score at posttest was 97.25. The mean change for participants was 11. The average scores for participants are reported below (see Table 16).

Participant 1

Parent Ratings

Parent ratings for participant 1 indicated no significant changes from pre- to posttest on the social skills scale or the problem behaviors scale (see Figure 30). On the social skills scale, participant 1 was rated with a pretest score of 67, which is considered to be well below average. He was rated with a posttest score of 71, which is considered to be below average and indicating a difference of 4 from pre- to posttest. On the problem behaviors scale, participant 1 received an above average pretest score of 115 and an above average posttest score of 122, indicating a 7-point increase.

Table 16

Average Participant Scores on the SSIS

Average Participant Pre- and Posttest Scores on the SSIS

	Pretest	Posttest	Difference
Social Skills			
Parent Means	77.33	82.6	5.27
Teacher Means	79.75	94.5	14.75
Problem Behaviors			
Parent Means	109	108	1
Teacher Means	118.25	118.5	0.25
Academic Competence			
Teacher Means	92.25	97.25	5

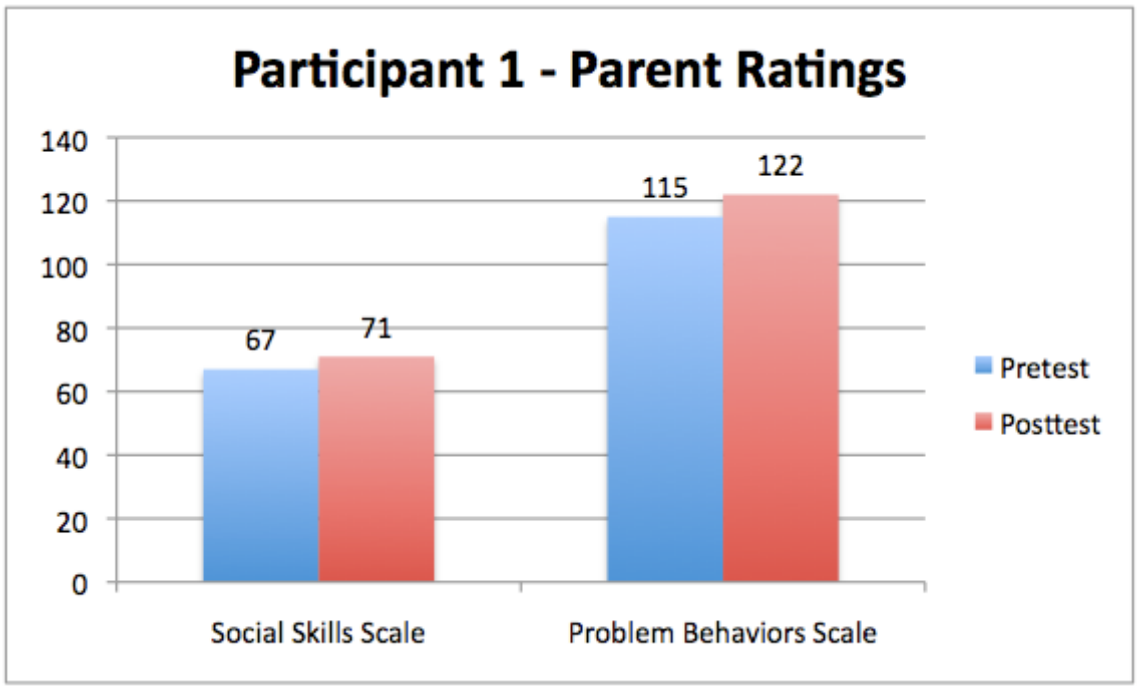

Figure 30: Participant 1 parent ratings on the SSIS.

Teacher Ratings

Teacher ratings for participant 1 indicated a significant change on the social skills scale, but insignificant changes on the problem behavior scale and academic competence scale (see Figure 31). On the social skills scale, participant 1 had an average score of 86 at pretest and also an average score of 102 at posttest, but indicating a significant 16 point increase in his use of social skills. On the problem behaviors scale, participant 1 received an average score of 109 for both the pretest and the posttest measure, indicating no change in scores. On the academic competence scale, the teacher of participant 1 indicated an above average score of 118 at pretest and an average score of 112 for posttest, indicating a 6-point decrease in academic competence. All of the scores for participant 1 are listed below (see Table 17).

Participant 2

Parent Ratings

Parent ratings for participant 2 indicated that there was a significant change from pre- to posttest on the social skills scale, but there was not a significant change on the problem behaviors scale (see Figure 32). On the social skills scale, participant 2 was rated with a well below average pretest score of 67 and a below average posttest score of 83, indicating a significant social skills increase of 16. On the problem behaviors scale, participant 2 received an average pretest score of 96 and an average posttest score of 93, indicating a decrease of 3 points for problem behaviors.

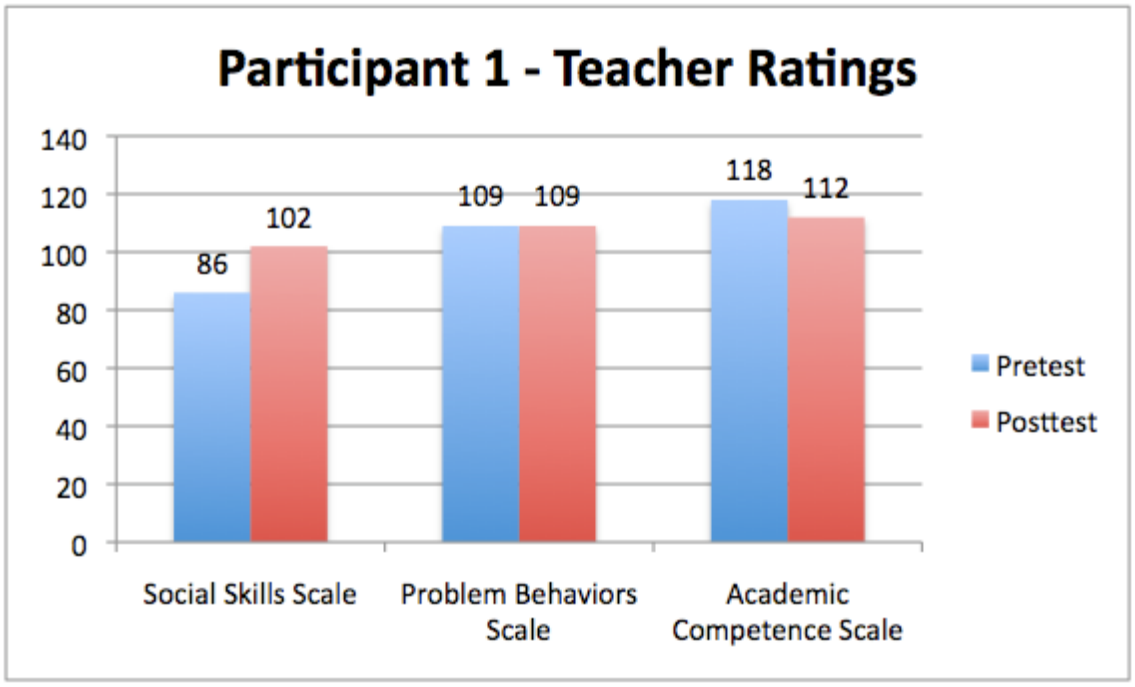

Figure 31: Participant 1 teacher ratings on the SSIS.

Table 17

Participant 1 SSIS Scores

Participant 1 Parent and Teacher Ratings on the SSIS

	Pretest	Posttest	Difference
Social Skills			
Parent	67	71	4
Teacher	86	102	16*
Problem Behaviors			
Parent	115	122	7
Teacher	109	109	0
Academic Competence			
Teacher	118	112	6

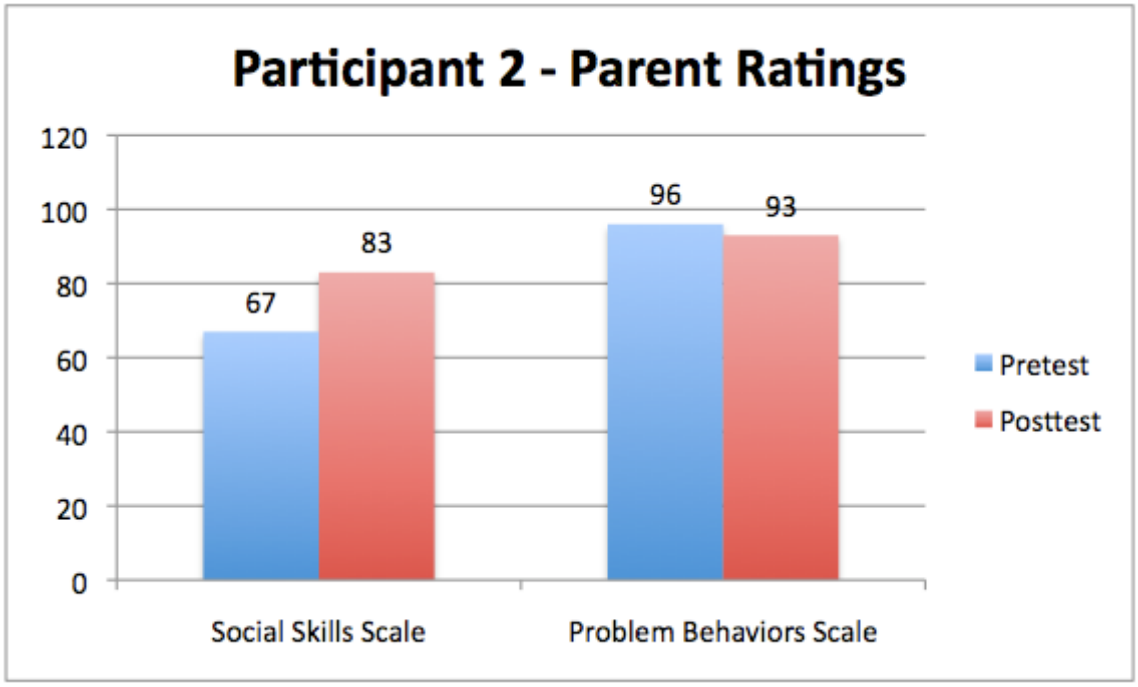

Figure 32: Participant 2 parent ratings on the SSIS.

Teacher Ratings

Teacher ratings for participant 2 indicated no significant changes on any of the scales, including the social skills scale, the problem behavior scale, and academic competence scale (see Figure 33). On the social skills scale, participant 2 had a below average score of 81 at pretest and a below average score of 86 at posttest, indicating an increase of 5 points in his use of social skills. On the problem behaviors scale, participant 2 received an above average score of 117 for the pretest and an above average score of 119 for the posttest measure, indicating a slight increase in problem behaviors scores. On the academic competence scale, the teacher of participant 2 indicated an average score of 87 at pretest and an average score of 81 at posttest, indicating a decrease

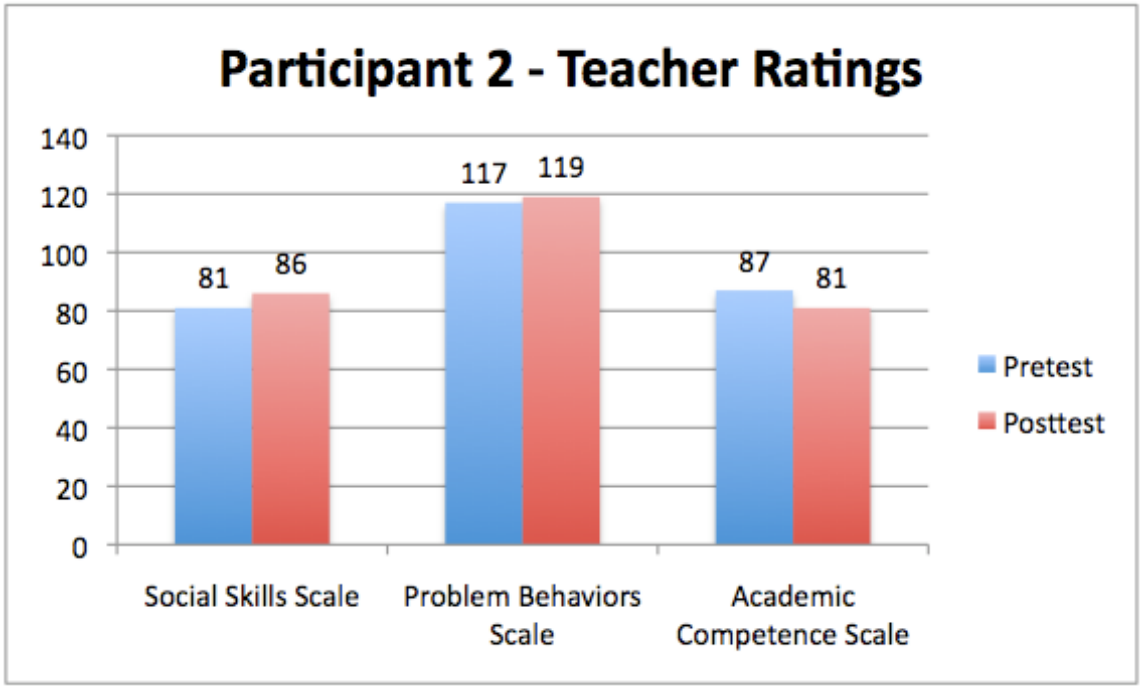

Figure 33: Participant 2 teacher ratings on the SSIS.

of 6 points in academic competence. All of the scores for participant 2 are listed below (see Table 18).

Participant 3

Parent Ratings

There are no posttest ratings for participant 3, because the measure was not returned to the primary researcher, therefore, only pretest scores will be reported for the parent ratings for participant 3 (see Figure 34). On the social skills scale, participant 3 was rated with a pretest score of 77, which is considered to be below average. On the problem behaviors scale, participant 3 received a pretest score of 117, which is considered to be in the above average range.

Table 18

Participant 2 SSIS Scores

Participant 2 Parent and Teacher Ratings on the SSIS

	Pretest	Posttest	Difference
Social Skills			
Parent	67	83	16*
Teacher	81	86	5
Problem Behaviors			
Parent	96	93	3
Teacher	117	119	2
Academic Competence			
Teacher	87	81	6

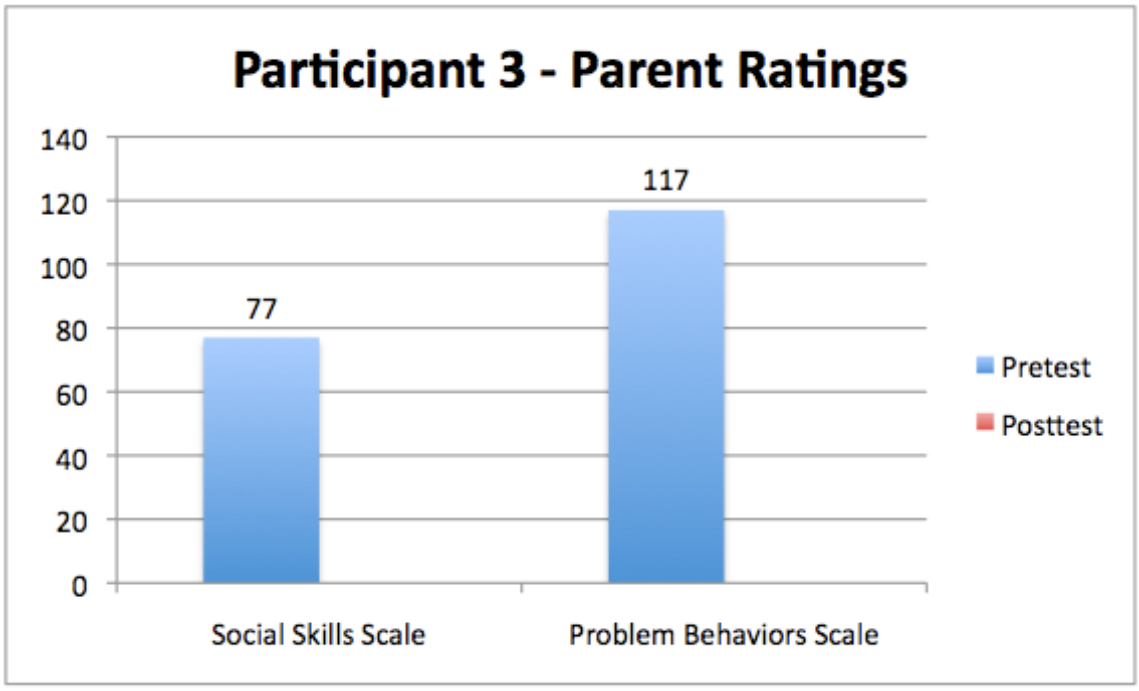

Figure 34: Participant 3 parent ratings on the SSIS.

Teacher Ratings

Teacher ratings for participant 3 indicated significant changes on the social skills scale and the academic competence scale, but no significant change on the problem behaviors scale (see Figure 35). On the social skills scale, participant 3 had a below average pretest score of 76 and an average score of 97 at posttest, indicating a change of 21 points and a significant increase in social skills. On the problem behaviors scale, participant 3 received an above average score of 121 for the pretest and an above average score of 127 for the posttest measure, indicating a slight increase of 6 points for problem behaviors scores. On the academic competence scale, the teacher of participant 3 indicated a well below average score of 69 at pretest and an average score of 91 at posttest, indicating a significant increase of 22 points for academic competence. All of the scores for participant 3 are listed below (see Table 19).

Participant 4

Parent Ratings

Parent ratings for participant 4 indicated that there were not significant changes from pre- to posttest on the social skills scale and the problem behaviors scale (see Figure 36). On the social skills scale, participant 4 was rated with an average pretest score of 98 and an average posttest score of 94, indicating a slight decrease of 4 points for use social skills. On the problem behaviors scale, participant 4 received an above average pretest score of 116 and an average posttest score of 109, indicating a decrease of 7 points for problem behaviors.

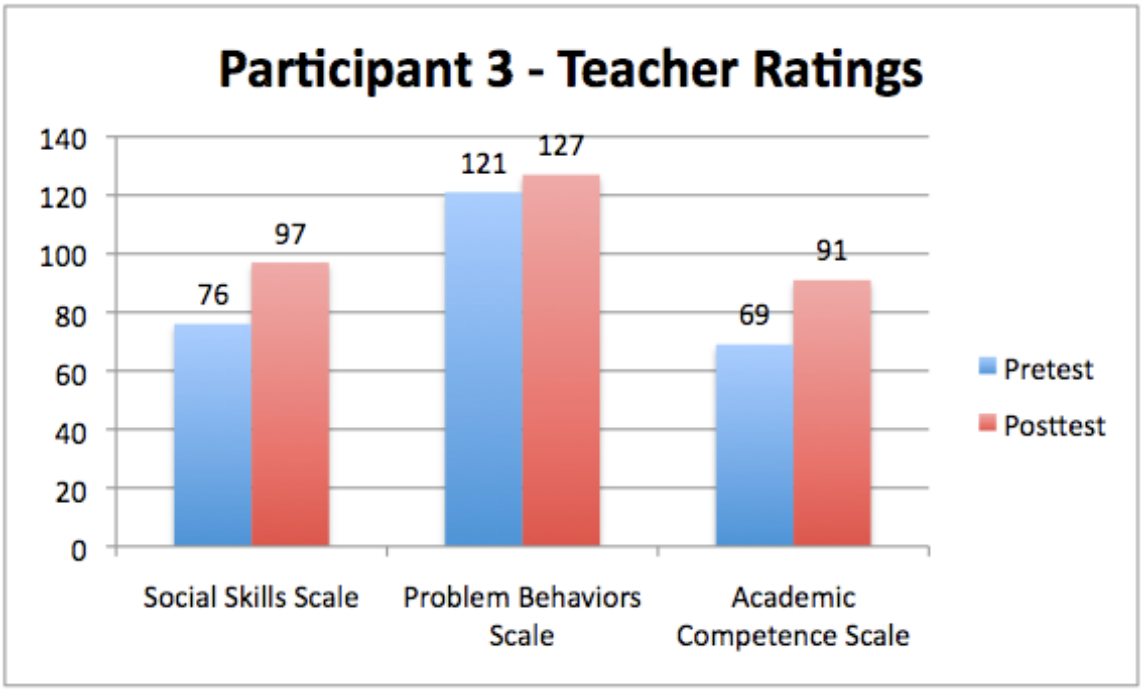

Figure 35: Participant 3 teacher ratings on the SSIS.

Table 19

Participant 3 SSIS Scores

Participant 3 Parent and Teacher Ratings on the SSIS

	Pretest	Posttest	Difference
Social Skills			
Parent	77	--	--
Teacher	76	97	21*
Problem Behaviors			
Parent	117	--	--
Teacher	121	127	6
Academic Competence			
Teacher	69	91	22*

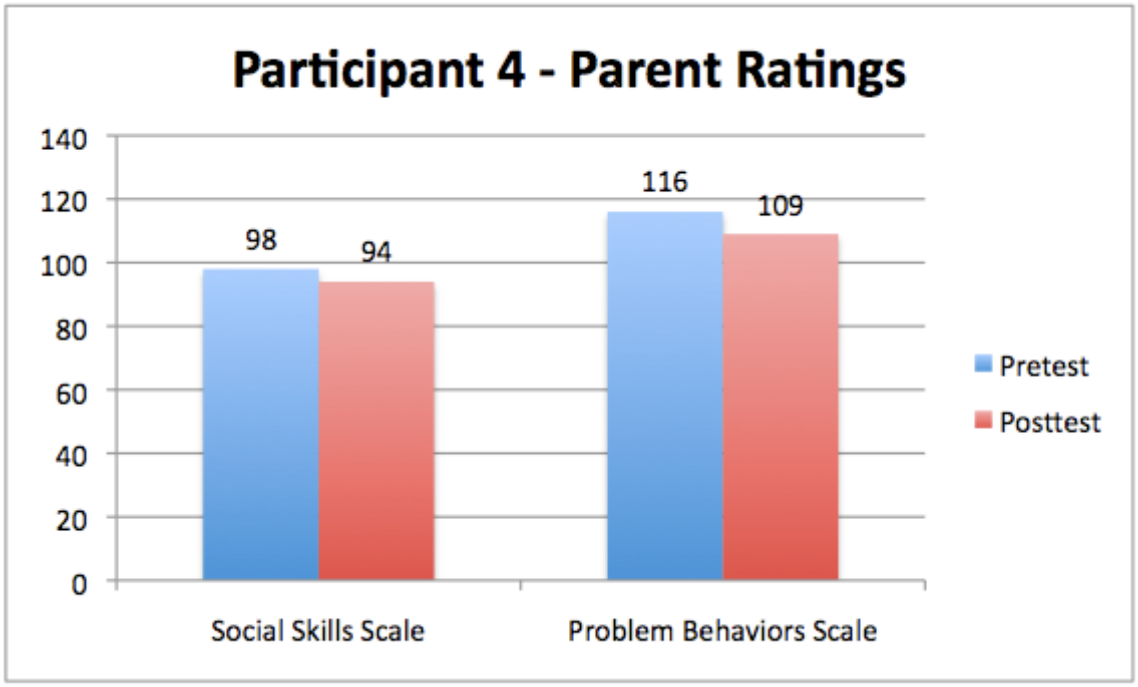

Figure 36: Participant 4 parent ratings on the SSIS.

Teacher Ratings

Teacher ratings for participant 4 indicated a significant change on the social skills scale, but no significant changes on the problem behaviors scale and the academic competence scale (see Figure 37). On the social skills scale, participant 4 had a below average pretest score of 76 and an average score of 93 at posttest, indicating a change of 17 points and a significant increase in social skills. On the problem behaviors scale, participant 4 received an above average score of 126 for the pretest and an above average score of 119 for the posttest measure, indicating a slight decrease of 7 points for problem behaviors scores. On the academic competence scale, the teacher of participant 4 indicated an average score of 95 at pretest and an average score of 105 at posttest,

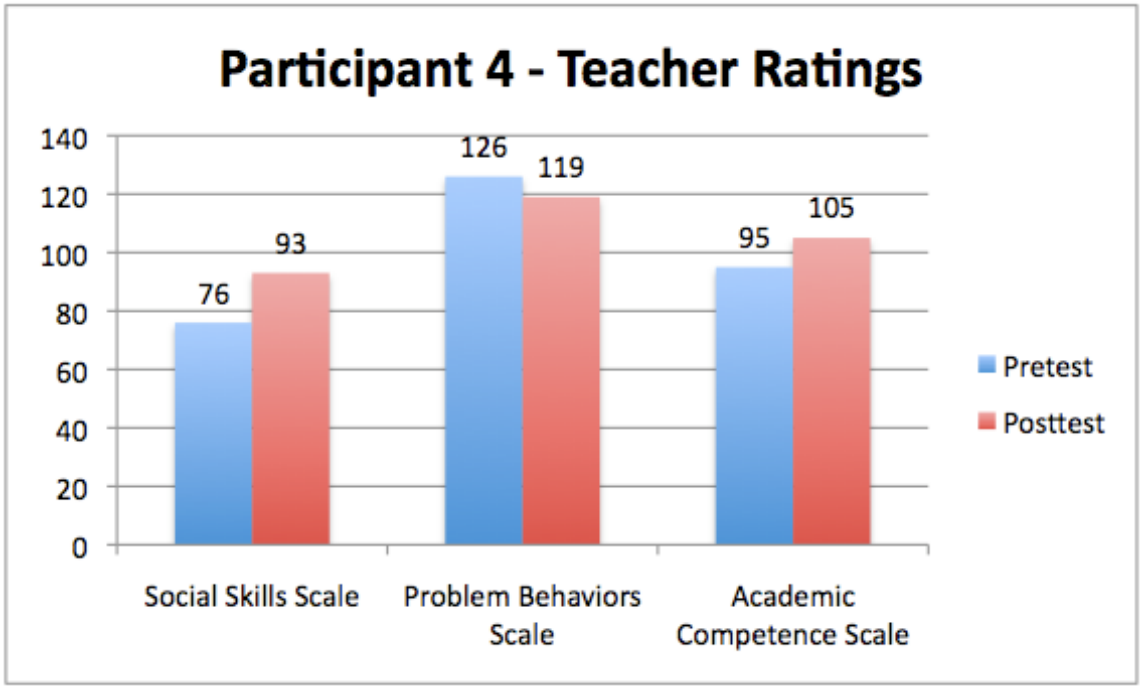

Figure 37: Participant 4 teacher ratings on the SSIS.

indicating an increase of 10 points for academic competence. All of the scores for participant 4 are listed below (see Table 20).

Overall, there were significant changes for some of the participants in the areas of social skills, problem behaviors, and academic competence based on the results of the parent and teacher pre- and posttest ratings. The results of the SSIS provide sufficient data to satisfy this research question.

Research Question #6

What is the social validity of the intervention?

Following the treatment, parents and teachers completed an adapted version of the Social Validity Scale (Bellini, 2006). There were nine questions answered by indicating if the

Table 20

Participant 4 SSIS Scores

Participant 4 Parent and Teacher Ratings on the SSIS

	Pretest	Posttest	Difference
Social Skills			
Parent	98	94	4
Teacher	76	93	17*
Problem Behaviors			
Parent	116	94	4
Teacher	126	119	7
Academic Competence			
Teacher	95	105	10

raters strongly disagree, disagree, agree, or strongly agree. The answers provided for items 3 through 9 were then given a score (1=strongly disagree, 2=disagree, 3=agree, and 4=strongly agree). Items 1 and 2 were reverse scored. Descriptive Statistics were used to analyze the social validity of the intervention. Parent, teacher, and overall mean scores are listed below by item and total score (see Table 21).

Overall, parents and teachers rated the social validity of this program favorably (M=3.29). Based on the combined parent and teacher rating means, the items that were rated most favorably indicated that the intervention was not distracting to the other students, the children enjoyed watching the videos, the children enjoyed being part of the intervention, and the parents and teachers also enjoyed being part of the intervention. Overall, the items that were rated least favorably indicated that the home and school

Table 21

Social Validity Scale Scores

Mean Scores on the Social Validity Scale

Item	Parent Mean	Teacher Mean	Total Mean
1. The intervention has interfered with my child/student's normal class activity.	3.33	3	3.14
2. The intervention is distracting to the other students.	3.33	3.5	3.43
3. My child/student enjoys watching the videos	3.66	3.25	3.43
4. My child/student enjoys reading the comic books.	3.66	3	3.29
5. My child/student enjoys the Superhero power cards.	3.66	2.75	3.14
6. The school/home component of the intervention is easy to implement.	3	3	3
7. I believe the intervention is beneficial to my child/student.	3.66	2.75	3.29
8. My child/student enjoyed being part of this intervention.	4	3.5	3.71
9. I enjoyed being part of this intervention.	3.66	3.25	3.43
Total Average Score	3.58	3.08	3.29

components were not easy to implement, the intervention interfered with the children's normal classroom activities, and the children did not enjoy the power cards. Even though these items were rated as the least favorable, all of the average ratings were above a rating of 3.

Parent ratings of the most favorable items indicated the children enjoyed participating in the intervention, the parents felt the intervention was beneficial to the children, the parents enjoyed participating in the intervention, and the children enjoyed the power cards, videos, and comic books. The item they rated least favorable (M=3) indicated that the home components of the program were not easy to implement. Teacher ratings of the most favorable items indicated the children enjoyed participating in the intervention and the intervention was not distracting to other students. The items they rated as least favorable indicated they did not believe the intervention was beneficial to the children (M=2.75) and the children did not enjoy the power cards component of the intervention (M=2.75).

Overall, the parents and teachers rated the Superheroes Social Skills program as being enjoyable for the children and parents felt the program was beneficial for their children. The data available from the social validity scale are sufficient to satisfy the research question.

Research Question #7

What is the participant satisfaction with the intervention?

Participants completed a child consumer satisfaction survey following the last treatment session. The questionnaire was administered to the whole group after treatment

was completed. One peer buddy was absent when the survey was administered, so the data summarizes the responses of four participants and three peer buddies (7 total responders). The primary researcher explained the possible answers to the participants and peer buddies and then read each question aloud, providing them time to circle the initials for the answer they felt was most appropriate. The possible responses they could choose were strongly disagree (SD), disagree (D), agree (A), and strongly agree (SA). These responses were converted into numerical scores. The answers provided for items 2 through 9 were then given a score (1=strongly disagree, 2=disagree, 3=agree, and 4=strongly agree). Item 1 was reverse scored. Descriptive Statistics were used to analyze the social validity of the intervention. Participant, peer buddy, and overall mean scores are listed below by item and total score (see Table 22).

Overall, the Superheroes Social Skills program was rated favorably by participants and peer buddies (M=3.33). The items rated most favorably overall indicated that the participants and peer buddies felt the program helped them learn how to make friends (M=4), they enjoyed participating in the Superheroes Social Skills program (M=4), they felt the skills they were taught are important (M=4), and they would like to participate in Superheroes Social Skills again.

The participant means were extremely favorable of the experience and effects of the Superheroes Social Skills program (M=3.67). Participants on average rated every item with the highest rating (M=4), except the first item (M=1) that indicated the participants felt the program interfered with their other classes. This was the only item on the rating scale that is reverse scores, so it is likely that the children misunderstood how to rate this item properly.

Table 22

Child Consumer Satisfaction Survey Scores

Mean Scores on the Child Consumer Satisfaction Survey

Item	Participant Mean	Peer Buddy Mean	Total Mean
1. Superhero Social Skills has interfered with my other classes.	1	3.67	2.14
2. Superhero Social Skills helped me learn how to make friends.	4	4	4
3. I liked watching the videos	4	3.67	3.86
4. I liked reading the comic books.	4	3.33	3.71
5. I liked the Superhero Social Skills power cards.	4	3.67	3.86
6. I believe that Superhero Social Skills has helped me.	4	3.67	3.86
7. I enjoyed participating in Superhero Social Skills.	4	4	4
8. The things we talked about in the lessons are important.	4	4	4
9. I would like the Superheroes to teach me more.	4	4	4
Total Average Score	3.67	3.78	3.71

The total mean rating of the peer buddies (M=3.78) was higher than the participant's mean, but the scores were more variable than the participant's scores. The items that peer buddies rated least favorably were the items indicating the program interfered with their classes (M=3.67), they felt the program helped them (M=3.67), and they liked the components of the program, such as the videos (M=3.67), the comic books (M=3.33), and the power cards (M=3.67). Even these items that were rated least favorably still received high ratings. The items they rated as being the most favorable were items indicating the program helped them make friends (M=4), they enjoyed Superheroes Social Skills (M=4), they thought the skills taught during the lessons were important (M=4), and they would like to participate in Superheroes Social Skills again (M=4).

Overall, the participants and peer buddies rated the Superheroes Social Skills program as being enjoyable and beneficial for them. All of the items were rated favorably and many of the items were given the highest ratings by all of the participants and peer buddies. The data available from the child consumer satisfaction survey are sufficient to satisfy this research question.

Research Question #8

What amount of progress was made regarding the performance and demonstration of target social skills by student participants as measured by the Superheroes Social Skills Progress Monitoring Tool over the span of eleven role-play scenarios?

Participants were observed during the lessons and reviewed on videotapes of the lessons to determine the steps of each skill that were mastered during the role-playing component of the lessons. A percentage for the skill steps that were appropriately demonstrated was calculated by dividing the number of steps completed correctly by the number of steps completed correctly and the steps not completed correctly.

All of the participants were able to perform all of the skills steps correctly for all 11 skills. The children all reached mastery level for the steps during the role-play component of the lessons. The percentage of mastery for each participant was 100% and the overall mean for skill mastery was 100%. Based on the data from this study, this research question was satisfied.

CHAPTER 4

DISCUSSION

The current study investigated the effectiveness of the Superheroes Social Skills program for children with externalizing behaviors and high-incidence disabilities. This intervention was completed with four children between the ages of 5 and 9 and four peer buddies between the ages of 5 and 9. Participants met strict inclusion criteria, such as having an IQ above 70, possessing appropriate receptive and expressive language skills, have either a clinical diagnosis or educational classification of a high-incidence disability by a qualified examiner, and have a behavioral checklist completed by a parent indicating significant externalizing behaviors (T-score above 65). School staff nominated participants and peer buddies.

Prior to the onset of the intervention, parents and teachers attended a training that outlined the Superheroes Social Skills program and its key components. Parental consent and child assent forms were completed prior to beginning the intervention. Both the parents and the teachers of the participants completed several questionnaires (e.g., placement checklist, BASC-II and/or Conners-3, and SSIS). The placement checklist provided behavioral, language, and social information about the participants. The BASC-II and the Conners-3 were used to confirm that the participants were engaging in externalizing behavior. The SSIS was used to measure the participants' pretreatment

levels of social skills, problem behaviors, and academic competence to compare to the results of the same measure completed at posttreatment.

During the baseline phase of the study, the participants with high-incidence disabilities were videotaped and observed during analog free play sessions and at recess. Each observation was ten minutes in duration and the observed behaviors were coded using an adapted partial interval recording system. The behaviors coded were positive initiations, positive responses, total social engagement, verbal aggression, physical aggression, total aggression, and neutral play. After these behaviors were coded, the total percentage of intervals spent in each behavior was calculated. During the analog free play sessions, participants and peer buddies had access to six toys that could be used for independent or interactive play. During the recess sessions, the participants had access to anything on the school playground, including a field, a playground system, and a blacktop area.

Following the three baseline analog free play sessions and the three baseline recess observations, the primary researcher began small groups using the Superheroes Social Skills program. The group was held twice per week for 6 weeks, with one each of the 11 lessons being taught in one session. Each session was approximately 30 minutes in duration. There were 11 lessons that were chosen and taught because they were believed to be most beneficial to children with externalizing behaviors. The primary researcher completed a treatment fidelity checklist after each session and another graduate student watched 33% of the videotaped lessons and marked the same checklists to ensure treatment fidelity. After each lesson, there was an analog free play session

completed and videotaped for later coding. During the intervention phase, there were four recess observations completed and videotaped for later coding.

After the last intervention session, participants and peer buddies completed the Child Consumer Satisfaction Survey to evaluate how enjoyable and beneficial their participation in Superheroes Social Skills was for them. The teachers and parents completed the Behavior Intervention Rating Scale, the Social Validity Scale, and the SSIS to determine their consumer satisfaction and evaluate if there were significant changes in their use of social skills, problem behaviors, and academic competence.

Two weeks following the last intervention session, the participants and peer buddies attended two more follow-up analog free play sessions. Participants were also videotaped during two more recess observations. These observations were coded using the same observation system. A graduate student coded 33% of the analog and recess observations to ensure interrater reliability.

Main Findings

The overall results of the current study indicate that Superheroes Social Skills is an effective way to teach social skills to children with externalizing behaviors and high-incidence disabilities. It also demonstrates that this program can be effective in producing generalization and maintenance effects after a two-week follow-up. The Superheroes Social Skills program incorporated the use of many evidence-based practices, such as video-modeling, peer mediation, self-monitoring, and social narratives, which may have improved the effectiveness of this intervention.

PAND and Cohen's *d*

The data collected from the analog observations indicated large group effect sizes during the free play sessions for total combined aggressions at treatment (ES=-2.33) and follow-up (-5.19). The effect sizes found for social engagement was small between baseline and treatment (ES= -0.046), but was large for baseline and follow-up (ES=2.19). PAND was calculated for the analog treatment periods and indicated small effects for total combined aggression for baseline and treatment (PAND=-50%) and baseline and follow-up (PAND= -50%). The PAND calculation for social engagement was small for baseline and treatment (PAND=15.12%), but was larger for baseline and follow-up (PAND=87.5%). Data analysis suggests that there were larger effects for the group at follow-up, indicating increased maintenance effects.

The data collected from the recess observations indicated large effects for total combined aggression during baseline and treatment (ES= -1.25), as well as, for the baseline and follow-up (ES= -1.36) measure. The recess observations yielded small effects for both baseline and treatment (ES=0.48) and baseline and follow-up (ES= -0.083). PAND calculations indicated a small effect for total combined aggression for baseline and treatment (PAND=25%) and for baseline and follow-up (PAND= -25%). PAND calculations for social engagement indicated moderate effects for baseline and treatment (PAND=62.5%) and baseline and follow-up (PAND=50%).

Based on these results, this intervention was more effective at minimizing aggressive behavior than increasing social engagement for the overall group. Aggression was not observed during many intervals of baseline, treatment, or follow-up, which was not surprising considering aggression is a low frequency and high intensity behavior. For

the participants that did engage in aggressive behavior, there was a decrease in the behavior from baseline to treatment and baseline to follow-up. Larger effects were seen in the areas of increasing positive responses and decreasing neutral behavior than increasing positive initiations. The positive effects that were indicated in the social engagement results were found in the baseline and follow-up measure, suggesting the gains made were maintained and possibly increased at follow-up. The results of the group data analysis were based on the combination of all data from all participants.

Individual calculations of effect indicated large individual effect sizes were found for three of the four participants for social engagement from baseline and treatment and large effect sizes for all four participants between baseline and follow-up. The results of the recess observations also yielded large social engagement effect sizes for two of the four participants from baseline to treatment and large effect sizes for social engagement for two of the four participants from baseline to follow-up. This suggests that there were benefits from the program for individual participants that may not be noticeable in the overall group effect sizes.

Treatment Effect Based on Data Analysis Methods

There were multiple types of data analysis used for the current study. For the individual participant data analysis, percentage of nonoverlapping data points (PND) and Effect sizes were calculated using the Busk and Serlin (1992) No Assumptions method because it is considered to me a more conservative method of calculating effect size. This calculation uses the pooled standard deviation, which is what makes it a more conservative measure. PND was also calculated for individual participants because it is a

commonly employed method for data analysis in single-subject research and it is fairly easy to calculate. There are some limitations of using PND because it only calculates the percentage of treatment data points that do not overlap with baseline data points. This was evident in the results of the current study. There were some participants who had one high outlier baseline point that led to a 0% PND because none of the treatment data points exceeded this outlier despite the rest of the data points that were indicative of more than 0% treatment effects. It also does not take into account the magnitude of the data points and it does not account for outlier data in the baseline data points.

An alternative to PND that is emerging in single-subject research is percentage of all nonoverlapping data points (PAND). PAND uses all of the data points to calculate a percentage, so it is less susceptible to being affected by outliers in the baseline data points. Also, the PAND formula can also be used to calculate Cohen's *d*, which is an effect size calculation. In order to use PAND, there must be a minimum of 20 data points; therefore, PAND and Cohen's *d* could only be used for the group calculations. The goal in this study was to utilize the PAND calculation to minimize the effects of outliers in the data and to calculate Cohen's *d* as a group effect size.

Social Skills Improvement System

Results from the Social Skills Improvement System (SSIS) indicated increased the participants' use of social skills from pre- to posttreatment. At pretest, parents rated participants in the low average range (M=77.33) for the social skills scale and at posttest, the parents rated the participants as having increased their scores (M=82.6), but their mean score was still in the low average range. On the social skills scale, teachers also

rated participants in the low average range (M=79.75) at pretest, but their ratings increased into the average range (M=94.5) at posttest. There may have been a larger increase for teachers because the classroom setting is often more structured than the home setting and there is more interaction with peers and adults in the classroom, so the teachers had more opportunity to observe increases in these behaviors. Also, many of the skills are focused on teaching self-management and compliance skills, which would be more noticeable in the school setting. The positive change in teacher ratings from pre- to posttest on the SSIS indicates that there was a significant positive shift in participant behavior. This shows that there was a significant change in classroom behavior during the course of intervention. On the scale measuring problem behaviors, neither parents nor teachers noticed significant differences in the participants' behavior. Only teachers rated participants on the academic competence scale. Their ratings indicated a small average increase in scores from pretest (M=92.25) to posttest (M=97.25) for academic competence.

Progress Monitoring

The Superheroes Social Skills manual provides progress monitoring forms to be used to track participant progress. The children were observed performing the skills during the role-playing portion of the lesson and the primary researcher marked the skill steps that each child had mastered. All of the children were able to perform all of the steps of all of the skills during the sessions, resulting in 100% skill step mastery. Unfortunately, the second session of each lesson was not taught, so there was not a way

to indicate if they could still display mastery of the skill steps outside of the initial session.

Consumer Satisfaction and Social Validity

The overall results of the Behavior Intervention Rating Scale (BIRS), the Social Validity Scale, and the Child Consumer Satisfaction Survey (CCSS) specified that the parents, teachers, and participants endorsed that the Superheroes Social Skills intervention was enjoyable, beneficial, and an acceptable intervention to be used with a variety of children. This is important because parents and teachers are necessary to increase the effects of the intervention and if they or the participants did not enjoy participating in the intervention, it would not be successful.

Parents rated the program slightly higher than the teachers did on the BIRS and the Social Validity Scale. The intervention was completed two weeks before the school year ended, which is a hectic time in the schools, so this may have affected some of the teacher ratings. Also, the majority of the teacher raters invited the primary researcher to teach the Superheroes Social Skills Program in the classrooms after the intervention was completed. These teachers have also incorporated the Get Ready skill into their classroom management, as well as other skills that are taught in this program. While their ratings did not reflect high levels of satisfaction, they did feel the program was helpful and wanted their classroom students to participate in the same intervention.

Participants and peer buddies rated the program very highly. They enjoyed participation in the intervention and reported enjoying the program components. The children also indicated that they would like to participate in another Superheroes Social

Skills group in the future. The component that was rated as least favorable was the comic book component. Despite this rating, the participants consistently asked the researcher for the comic books following each treatment session. After the intervention was completed, many of the participants and peer buddies approached the primary researcher asking if they could be in another group during the upcoming school year. This is consistent with their ratings on the CCSS.

Treatment Integrity

The treatment integrity of the intervention was calculated and indicated an extremely high degree of fidelity in delivery of the intervention. The primary researcher, who taught all of the lessons, was also a developer of the program, which indicates a very high level of familiarity with the program and its components. Other reasons the intervention was able to be delivered with such high fidelity may include: the lesson format, which is consistent for all lessons; there is a posted schedule that is reviewed frequently with the participants throughout the lesson, making it less likely that the facilitator would skip steps; and the majority of the lessons are taught in video format leaving less chance for missed steps. The manualization and format of this intervention makes it easy to implement with high fidelity, which would make it more likely for other facilitators to achieve similar results to this study.

How Results Correspond with Prior Research

This study was able to follow recommendations found in previous research (Gresham, 1995; Lane, Bocian, MacMillan, & Gresham, 2004) in order to make this

social skills training program effective. Gresham (1995) recommends some fundamental elements to be included in social skills programs: identify skills that need to be remediated, teach and model the skills, target skills to be taught, coach and prompt proper use and application of the skills, provide opportunities for the skills to be rehearsed, provide reinforcement and feedback for the skill use, implement reductive procedures, and facilitate generalization. The Superheroes Social Skills program employs these strategies within the manualized format and were used for this study.

Lane, Bocian, MacMillan, and Gresham (2004) also outline effective strategies for implementing interventions in schools, which include (a) identifying students for participation, (b) identifying specific skill deficits and designing the intervention program, (c) organizing intervention groups, (d) preparing intervention leaders, (e) implementing the intervention, and (f) monitoring student progress. These recommendations were followed when preparing to conduct this study and in implementing the intervention for this study.

The majority of prior research indicates a lack of effect from social skills training and possibly even detrimental effects from grouping children with externalizing behaviors (Arnold & Hughes, 1998; DuPaul & Eckert, 1994; Quinn et al., 1999). These studies also indicate there is a lack of generalization and maintenance from the use of social skills training. This study indicated more favorable effects than this previous research in the area of social skills for children with externalizing behaviors. The results of this study are not congruent with the findings from these prior research studies. Some of the positive effects from the Superheroes Social Skills Program may be due to the use

of multiple evidence-based practices, the high-interest media used to teach the lessons, and the embedded generalization strategies.

Previous research conducted with this manualized social skills program (Block, 2010; Hood, 2010; Radley, 2010) indicate larger effects for increasing positive responses and decreasing neutral behavior than increasing positive initiations. The current research is consistent with these prior results. The current research also assessed aggressive behaviors, and indicated that when aggressive behaviors are present, they are decreased during and following the implementation of this treatment.

The effects of social skills programs when implemented with children with high-incidence disabilities indicates small results (Forness, 2001; Forness & Kavale, 1996; Forness & Kavale, 1999; Quinn, et al., 1999). The current research implies the possibility of more promising results of using social skills interventions with this population.

Some social skills programs developed for use with children with externalizing behaviors have been found to be effective. The Incredible Years Program (Webster-Stratton, 1984) has been found to be effective for children with externalizing behaviors (Taylor, Schmidt, Pepler, & Hodgins, 1998; Webster-Stratton & Hammond, 1997; Webster-Stratton, Reid, & Hammond, 2004). This program also employs a high-interest format with life-size puppets and video vignettes, which may have been instrumental in producing moderate to large effects for participants.

Other programs have also been able to produce effects for children with externalizing behaviors. Aggression Replacement Training (Goldstein, Glick, Reiner, Zimmerman, & Coultry, 1986) was found to reduce aggressive behaviors and increase

positive social behaviors (Goldstein & Glick, 1994). The Tough Kid Social Skills Book (Sheridan, 1995) was also found to have positive effects for children with ADHD (Fenstermacher, Olympia, & Sheridan, 2006). The current research is congruent with the findings from these studies.

There is a consistent finding across many research studies that aim to reduce aggressive behavior and increase positive social engagement for children with externalizing behaviors that find little to no effect (Cook, Landrum, Tankersley, & Kauffman, 2003; Landrum, Tankersley, & Kauffman, 2003; Lloyd, Forness, & Kavale, 1998; Maag, 2006; Ravary, Unesi, & Looye, 2008). The current study produced larger effects in these areas by incorporating a wide array of evidence-based practices into a manualized social skills program.

Video-modeling

Video-modeling is a promising approach that was used in this program to aid in increasing the effectiveness of the intervention. Hitchcock, Dowrick, and Prater (2003) found that video self-modeling was an effective intervention for changing behavior, improving academics, and increasing communication for children. Other studies specifically focusing on children with ASD concluded that the use of video self-modeling and video-modeling increased social engagement, interaction, and play skills that were generalized and maintained over time (Bellini et al., 2007; Bellini, Akullian, & Hopf, 2007; Nikopoulos, 2007; Sherer et al., 2001). These results may be so effective because Charlop-Christy and Danshevar (2003) hypothesized that the video stimulus is reinforcing and possibly helpful in controlling overstimulation for children with ASD

because the video presentation helps to focus the attention on one stimulus. Video-modeling has been found to be effective and it is also a cost effective alternative to other forms of training (Bellini & Akullian, 2007; Miller, 2006). Thus, video-modeling, either self or peer, is now considered an effective and important component of social skills training. The Superheroes Social Skills program employed the use of video-modeling as one component of the program.

Peer Mediation

The use of peer mediation in social skills interventions for children has been used to counteract the poor generalization of social skills taught through didactic instruction delivered by adults (Rogers, 2000). Studies have concluded that peer mediated programs are an effective way to teach social skills; however, researchers have found the effects are difficult to maintain because children tend to rely on the peer cues and prompts (McConnell, 2002; Rogers, 2000). The research supporting the use of peers as tutors or in helping teach children social skills is increasing. The Superheroes Social Skills program employed the use of peer mediation as one component of the program. Many of the social skills programs currently available do not use peer mediation as part of their instruction, but this may be a component that was effective in this study.

Self-Management Interventions

Self-management is used to teach children to monitor and record their own behavior by increasing their awareness of the behavior and their use of the behavior in multiple and unsupervised settings. Studies have found that self-management increased

the use of appropriate play, decreased self-stimulatory behaviors, and that the results were maintained and generalized to unsupervised settings for children with ASD (Koegel, Koegel, Hurley, & Frea, 1992; Stahmer & Schreibman, 1992). Chen (2006) found that self-monitoring was an effective component to teaching social skills to children with emotional and behavior disorders. The self-management training had the desired effects on the individuals and it generalized to multiple settings (school, home, and community) without the treatment provider present. Self-management is another component that has been found to be effective for children and may have helped increase the generalization of skills learned in this study. The Superheroes Social Skills program employed the use of self-management as one component of the program.

Social Stories

Social stories have also been studied as an effective component of social skills training. Quirmbach, Lincoln, Feinberg-Gizzo, Ingersoll, and Andrews (2009) found that the use of social stories significantly improved play behavior for children. Hagiwara and Myles (1999), however, did not find consistent and significant results for the participants in their study; rather, the effects were only found for outlier participants, but for the participants who did benefit, the effects generalized to other situations and could be linked to the skills. While social stories have been shown in the research to be an effective strategy, it has also been found to not be as effective when used as the only form of intervention (Crozier & Tincani, 2007; Kokina & Kern, 2010; Sansoti, Powell-Smith, & Kincaid, 2004). It is likely helpful to combine this intervention technique with others when developing social skills programs. The Superheroes Social Skills program

employed the use of social stories as comic books as one component of the program. Participants also reported that this component was enjoyable both in printed and digital format.

Generalization and Maintenance of Skills

Two of the major problems cited in social skills training research are the lack of generalization and maintenance effects (DuPaul & Eckert, 1994). Morgan and Jenson (1989) define generalization as having occurred "when the learner exhibits the target behavior outside the training setting, with no specific intervention" (p.156). DuPaul and Eckert (1994) termed the problem with generalization of social skills as "now you see them, now you don't" (p. 113) because the effects of social skills training may be seen initially, but are not present after training has been completed. Stokes and Baer (1977) refer to the commonly used methods for promoting generalization of social skills as the "train and hope" method. This is often seen when students receive pull-out social skills training and then school staff hope they use the skills in generalized settings. Oftentimes, the skills are not used outside of the training setting. Many strategies to increase generalization have been identified by Morgan and Jenson (1989). Some of the strategies they suggest include sequential modification, natural contingencies of reinforcement, multiple teaching examples, training loosely, indiscriminable contingencies, common stimuli, and self-management. Reeve et al. (2007) concluded that modeling, video-modeling, and reinforcement could be effective strategies for increasing generalization of some learned skills. It is important to be able to identify strategies that have been

effective in producing generalization and maintenance effects and incorporate them into social skills training programs.

Stokes and Baer (1977) provided a list of techniques that could be incorporated into programs to foster generalization of skills learned, including:

1. Look for a response that enters a natural community; in particular, teach subjects to cue their potential natural communities to reinforce their desirable behaviors.
2. Keep training more exemplars; in particular, diversify them.
3. Loosen experimental control over the stimuli and responses involved in training; in particular, train different examples concurrently, and vary instructions, social reinforcers, and backup reinforcers.
4. Make unclear the limits of training contingencies; in particular, conceal, when possible, the point at which those contingencies stop operating, possible by delayed reinforcement.
5. Use stimuli that are likely to be found in generalization settings in training settings as well; in particular, use peers as tutors.
6. Reinforce accurate self-reporters of desirable behavior; apply self-recording and self-reinforcement techniques whenever possible.
7. When generalizations occur, reinforce at least some of them at least sometimes, as if "to generalize" were an operant response class.

Based on the research that has been reviewed, there are many common components that are suggested as helpful when trying to increase generalization of skills being taught to children. It is important to include diverse types of reinforcement, natural reinforcement if possible, peers to teach, self-monitoring, teaching in the "real world"

setting, and using multiple teaching examples. These strategies may be useful individually, and even more so if combined into the training program. The Superheroes Social Skills program has incorporated these components into the intervention procedures, which may have been helpful in producing generalization and maintenance of skill use in this study.

Additionally, increasing the stickiness of information can increase the generalization and maintenance of skills (Gladwell, 2000; Heath & Heath, 2007). Gladwell posits, "if you paid careful attention to the structure and format of your material, you could dramatically enhance stickiness" (p. 110). By increasing the stickiness of what you are teaching, you would also increase the application of the concepts introduced past the immediate environment of exposure. Stickiness can be defined as an attribute of a stimulus that enhances its maintenance across situations and time.

Gladwell examined children's television shows that attempted to increase children's literacy, such as Sesame Street and Blues Clues and the research that was done on the effects of these television shows indicated that there are certain factors that are essential to achieve stickiness with children. Repetition is one of the key components of stickiness because if a concept is repeated to children, they are able to remember the information and recall it better at a later time. The content should also be creative, so as to draw the child's attention. Another factor that is essential to stickiness for children is to make the presentation of the material appealing (e.g., using muppets and animation). It was also helpful for these television shows to include an interactive element that allowed children the opportunity to answer questions or guess missing information. The

Superheroes Social Skills program incorporated a number of these sticky strategies with the use of animated superheroes that are appealing, the comic books that are creative, there is a great deal of repetition in the lessons, and the lessons are interactive for the participants.

Heath and Heath (2008) also lay out a framework for making information "sticky". In their book, *Made to Stick*, they describe a method of SUCCESs, which is a simple unexpected concrete credentialed emotional story that can be used to increase the "stickiness" of other information that is presented to people.

The Incredible Years Program (Webster-Stratton, 1984) is a popular social skills curriculum that has incorporated some of these strategies and has been proven to be effective in the research (Taylor, Schmidt, Pepler, & Hodgins, 1998; Webster-Stratton & Hammond, 1997; Webster-Stratton, Reid, & Hammond, 2004). This programs uses videos that are watched multiple times to make the material repetitive. The group members discuss the content of the video vignettes in order to provide an interactive component. For the children's lessons, life-sized puppets are used, which makes the material appealing. This is an example of another program that has incorporated some of the elements of "stickiness" in order to effectively teach social skills to children and has produced positive effects.

Limitations and Future Research

The current study had several limitations that should be discussed. The first is that the study was a single-subject AB design, which makes it susceptible to multiple external and internal threats to validity. The intervention is provided in group format,

thus making a multiple baseline study unfeasible. Kazdin (1982) and Kratochwill (1992) both identified strategies that can be incorporated into single-subject research to ensure the studies completed are valid. The current study is considered valid because it met the criteria set out by Kazdin (e.g., objective data, repeated assessments, stable target behavior, heterogeneous groupings, and immediate and substantial effects) and Kratochwill (e.g., planned study, high treatment integrity, and standardized treatment).

A second limitation to this study is that the researcher who implemented the intervention was one of the developers of the program. Therefore, this study was not completed by an independent researcher. Also, the familiarity with the lesson format and components makes it difficult to determine exactly how well others not familiar with program could implement the same intervention with fidelity. It also indicates the need for independent researchers to study the intervention, as that is an essential component of identifying a well-established and evidence-based intervention (Chambless et al., 1998).

The third limitation of this study was that each lesson was only taught once. The manual indicates each lesson should be taught during two sessions, but that was not possible in this study. This minimized the repetition of the content for the participants and the opportunity to assess the skill mastery through use of the progress monitoring tool.

A fourth limitation that was unavoidable in this study was the awareness of the participants that the researcher was videotaping them at recess. Most of the participants knew they were being observed and videotaped and this likely impacted their behavior. Previous studies conducted with Superheroes Social Skills, were completed with children

with ASD and were less likely than children with externalizing behaviors to notice or be distracted by the observations.

This study produced some moderate and large effects for the acquisition, generalization, and maintenance of social skills for children with externalizing behaviors. While these results are promising, it would be important for more research to be done in this area. The Superheroes Social Skills program was originally designed to be used with children with ASD, therefore, more studies targeted specifically at children with externalizing behaviors, the skills most beneficial for them, and how to better measure effects for this population would be important focus for future research. It would also be really important to better measure generalization in the classroom and at home in future studies.

Another possible focus for future research would be determining the effects of using Superheroes Social Skills as a classwide or schoolwide intervention. This study was conducted as a small-group pull-out intervention in the school psychologist's office, but there may be benefits of teaching this program in the classroom, which is the child's natural setting.

Implications for Practice

Results of the current study provide support for the use of the Superheroes Social Skills program with elementary age children with high-incidence disabilities who exhibit externalizing behaviors. Children with various educational classifications and diagnoses responded positively to the social skills training and were able to generalize and maintain their acquisition of the skills learned.

This study also provides support for the ability for this program to be implemented with high levels of treatment fidelity. This is important for practitioners because the likelihood of implementing a manualized treatment with fidelity increases the probability of obtaining similar results to the research.

There are many children with multiple disabilities and educational classifications that display externalizing behaviors who could benefit from effective social skills interventions. It is extremely important to identify programs, such as the Superheroes Social Skills program that can teach social skills and encourage decreases in externalizing and aggressive behaviors to help them succeed with their peer and adult interactions and provide the opportunity for them to be able to succeed better academically.

APPENDIX A

SAMPLE LESSON

SUPERHERO SOCIAL SKILLS LESSON PLAN

Foundational Skills 1--Lesson 1

Skill: *Following Directions*

****Prerequisite: Introduction Lesson**

Objective	**Group members will be able to demonstrate the 4 steps to following directions within 3 to 5 seconds in the session, at home, and at school.**	
Rationale	**If you follow directions quickly, you will make the person happy and you will know how to do something correctly the first time. People will know that you are listening to what they are saying or asking you to do.**	
Steps to Following Directions	***1. Look at the person*** ***2. Listen to their words*** ***3. Nod your head or say okay*** ***4. Do what the person asks right away***	***(Make sure to discuss situations where you don't have to follow directions—strangers, directions that would harm, etc. at an appropriate point)***
Materials Needed	**DVD #1 FOLLOWING DIRECTIONS Lesson, DVD Player & TV or computer** **Power Card #1 Following Directions for each** **Power Poster #1 Following Directions for each** **Following Directions Scenario Cards** **Comic Book #1 Following Directions** **Scooter Cards, Black Hole Cards, lanyards, reinforcers, spinner, water-based markers**	

Starting the Lesson:

Check in	Review names, use name tags again if necessary.
Daily Schedule and Group Rules	Post schedule and rules ***Remind them they can earn Scooter Cards for following rules, Black Hole Cards for not following rules.*** 1. Get Ready **2. Follow Directions (today's lesson)** 3. Be Cool 4. Participate
Introduce New Skill And Power Card	Skill: Following Directions (state rationale) **POWER CARD #1: FOLLOWING DIRECTIONS**
Watch Video	**DVD #1: FOLLOWING DIRECTIONS (Play All)**
Role-plays	**Option: Video-record role-plays for self-as-model DVD** 1. Facilitator shows non-example, allow group to correct example *A teacher (child in group)) tells the class that it is time to clean off your desk and line up for recess. Facilitator (role-playing the student) does not comply. Exaggerate non-compliance of each step.* 2. Facilitator does another example, this time a positive one. *A teacher (child from group) tells a "student" (facilitator) to take out his/her reading book and read quietly (facilitator complies). Show the steps clearly.*

	3. Facilitator third example, a scenario when you DON'T have to follow directions. *Another child tells a "student" (facilitator) to give him his lunch money (bullying situation). Facilitator thinks out loud and decides he doesn't know or trust this person very well and does not comply.* 4. Group members take turns role playing scenarios with facilitator giving directions for them to follow ***FOLLOWING DIRECTIONS SCENARIO CARDS*** *can be used or children can make up their own* Facilitator emphasizes each step as it occurs, provides error correction 5. As each child demonstrates the steps during role-plays, mark a power spot on the **POWER CARD #1.** *Emphasize that participating means they are following directions.*
Social Story Comic Book On DVD	Watch the **DIGITAL COMIC BOOK** on **DVD #1, FOLLOWING DIRECTIONS LESSON** The video will ask some multiple choice questions to fill in the blank bubbles. It will pause and give an answer, but explore other answers given with the group.
Social Game	Scooter Says (Simons Says) *Facilitator can assist group members to take turns being "Simon" or "Scooter"*
Free Time and Reinforcement	Incidental teaching and error correction. Provide games and toys for social play. Use **SCOOTER CARDS** (Write name on back) for following rules and following directions Use **BLACK-HOLE CARDS** for noncompliance Mark Power Cards as children show the steps to Following Directions At end of free time, draw a card for Superhero of the Day, have that child draw to see if group gets a reinforcer. Use **SPINNER** to determine **REINFORCER** **Options: Group Project Development time** **Examples: Develop own superhero—decide on a name and mission** **Put together video motivator project—decide on a title for video**
Power Poster Update	Allow group members to update their **POWER POSTERS** with the Power Charges they have earned during role play and free time.
Explain Homework	1. Watch **FOLLOWING DIRECTIONS LESSON DVD #1** every day at home. 2. Earn Power Charges on **POWER CARD #1** by following the steps at home and school. 3. Have parents and teachers mark and sign the **POWER CARD**, <u>bring it back next time.</u> 4. Color in the **COMIC BOOK #1** and fill in the empty thought bubbles. <u>Bring it back next time.</u>
Goodbyes	Time to provide **REINFORCERS** and transition out

APPENDIX B

OBSERVATION CODING SYSTEM

Behavior Codes

1. Physical Aggression: An act of negative and/or inappropriate physical contact with another person (behaviors within games were considered physical aggression when they went beyond the expectations of the game), such as: Hitting, biting, kicking, restricting freedom of movement, physically forcing others to act against their will, choking, stealing, throwing objects.

2. Verbal Aggression: Directing verbal or gestural negative communication toward one or more children including: Teasing, taunting, threatening, doing something that is not physical to make others feel scared, verbally force others to act against their will, negative body language, negative gestures.

3. Neutral: Taking part in an activity without having any interaction with others, including: solitary play, parallel play.

4. Positive Initiations: Appropriately and positively initiates some form of interaction, such as: Requests assistance, requests interaction/participation, giving, sharing, showing, positively and independently joins play activity/interaction, requests information, provides a greeting or compliment, offers comfort/physical affection

5. Positive Responses: Appropriately and positively responds to an initiation by someone else, including: Provides assistance, responds to request, joins activity when asked, responds to greeting, responds to physical affection, responds well when others start a conversation, responds positively to criticism, positively

6. participates in game or group activities, responds positively and appropriately when pushed or hit.

Setting (Circle One): **Analogue** **Recess** **Participant ID:**

VA = Verbal Aggression PA = Physical Aggression PR = Positive Response
PI = Positive Initiation N = Neutral

	1	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**
VA																								
PA																								
PR																								
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	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
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VA																								
PA																								
PR																								
PI																								
N																								

APPENDIX C

BEHAVIOR INTERVENTION RATING SCALE

1.	Superhero Social Skills would be an acceptable intervention to improve social skills.	1	2	3	4	5	6
2.	Most parents would find Superhero Social Skills appropriate for social skills intervention.	1	2	3	4	5	6
3.	Superhero Social Skills should prove effective in targeting social skills.	1	2	3	4	5	6
4.	I would suggest the use of Superhero Social Skills to other parents.	1	2	3	4	5	6
5.	Poor social skills in my child are severe enough to warrant use of Superhero Social Skills.	1	2	3	4	5	6
6.	Most parents would find Superhero Social Skills suitable in targeting social skills.	1	2	3	4	5	6
7.	I would be willing to use Superhero Social Skills in my home.	1	2	3	4	5	6
8.	Superhero Social Skills would not result in negative side-effects for the child.	1	2	3	4	5	6
9.	Superhero Social Skills would be an appropriate intervention for a variety of children.	1	2	3	4	5	6
10.	Superhero Social Skills is consistent with other social skills programs I have used at home.	1	2	3	4	5	6
11.	Superhero Social Skills is a fair way to teach social skills.	1	2	3	4	5	6
12.	Superhero Social Skills is reasonable for difficulties that arise from social skills.	1	2	3	4	5	6
13.	I like the procedures used in Superhero Social Skills.	1	2	3	4	5	6
14.	Superhero Social Skills is a good way to handle social skills at home.	1	2	3	4	5	6

15.	Overall, Superhero Social Skills would be beneficial for my child.	1	2	3	4	5	6
16.	Superhero Social Skills would quickly improve a child's behavior.	1	2	3	4	5	6
17.	Superhero Social Skills would produce a lasting improvement in a child's behavior.	1	2	3	4	5	6
18.	Superhero Social Skills would improve a child's behavior to the point that it would not noticeably deviate from other peer's behavior.	1	2	3	4	5	6
19.	Soon after using Superhero Social Skills, parents would notice a positive change in social skills.	1	2	3	4	5	6
20.	The child's behavior will remain at an improved level even after Superhero Social Skills is discontinued.	1	2	3	4	5	6
21.	Using Superhero Social Skills should not only improve the child's behavior in the home, but also in other settings (e.g., classrooms, playground).	1	2	3	4	5	6
22.	When comparing a participant with a non-participant peer before and after use of Superhero Social Skills, the participant's and the peer's behavior would be more alike after using Superhero Social Skills.	1	2	3	4	5	6
23.	Superhero Social Skills should produce enough improvement in social skills so the behavior no longer is a problem.	1	2	3	4	5	6
24.	Other behaviors related to social skills also are likely to be improved by Superhero Social Skills.	1	2	3	4	5	6

APPENDIX D

SOCIAL VALIDITY SCALE

Social Validity Form

Child/Student's Name: Completed by:
Date: Relationship to Student: Parent Teacher

Please indicate what you think of the intervention, Superhero Social Skills. Please circle the response that best describes how you felt about the intervention.
SD = Strongly Disagree D = Disagree A = Agree SA = Strongly Agree

1. The intervention has interfered with my child/student's normal classroom activity

   SD D A SA

2. The intervention is distracting to the other students

   SD D A SA

3. My child/student enjoys watching the videos

   SD D A SA

4. My child/student enjoys reading the comic books

   SD D A SA

5. My child/student enjoys the Superhero power cards

   SD D A SA

6. The school/home component of the intervention is easy to implement

   SD D A SA

7. I believe the intervention is beneficial to my child/student

   SD D A SA

8. My child/student enjoyed being part of this intervention

   SD D A SA

9. I enjoyed being part of this intervention

   SD D A SA

Additional Comments:

APPENDIX E

CHILD CONSUMER SATISFACTION SURVEY

Child Consumer Satisfaction Survey

Name:_____ Date:_____

Please indicate how you felt while participating in the Superhero Social Skills Program. Please circle the response that best describes how you felt.

SD = Strongly Disagree D = Disagree A = Agree SA = Strongly Agree

1. Superhero Social Skills has interfered with my other classes

   SD D A SA

2. Superhero Social Skills helped me learn how to make friends

   SD D A SA

3. I liked watching the videos

   SD D A SA

4. I liked reading the comic books

   SD D A SA

5. I liked the Superhero Social Skills power cards

   SD D A SA

6. I believe the Superhero Social Skills has helped me

   SD D A SA

7. I enjoyed participating in Superhero Social Skills

   SD D A SA

8. The things we talked about in the lessons are important

   SD D A SA

9. I would like the Superheroes to teach me more

   SD D A SA

Additional comments:

APPENDIX F

PARENTAL PERMISSION

Parental Permission Document

BACKGROUND

Your child_____ is being asked to take part in a research study to be completed at an elementary school in Granite School District. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully. Ask if there is anything that is not clear or if you would like more information. The Principal Investigator, Ms. Hood, is available to answer any questions or concerns you may have prior to you giving your permission for your child to participate. Take time to decide whether you will allow your child to take part in the study.

The purpose of this research study is to evaluate the effectiveness of a school-based social skills training program designed for elementary-aged children receiving special education services. Peers that are not receiving special education services will also participate in this program. Additionally, this study will assess how well students, parents, and teachers like the program. Research has shown that the majority of social skills interventions currently used in schools with students are marginally effective. Because many children in special education experience difficulty relating to others socially, it is essential to find interventions that work to increase and develop children's social abilities and competencies. This social skills program is unique in that it combines a variety of interventions known to be effective with children with high-incidence disabilities, such as video-modeling, inclusion of same-aged peers without disabilities, and self-management techniques. There are also generalization strategies such as a social story homework component in the format of a comic book and a "Power Card" that is marked by the student when the child displays the targeted social skill outside of the group context. The presentation style of the program is intended to be of high interest and motivating to the students. Essentially, animated "superhero" characters introduce, teach the steps to, demonstrate, and provide a rationale for why each social skill is important via video instruction. It is crucial to investigate whether or not this program works, as the results could lead to important practical implications of social skills training for students receiving special education services in our schools.

The research will be conducted by Ms. Julia Hood, who is a school psychologist intern in the Granite School District, and who is also a Ph.D. candidate at the University of Utah in the Educational Psychology Department.

STUDY PROCEDURE

This study involves several different parts. Initially, your child will be selected to participate in the social skills training group because either he or she was identified as a student receiving special education services or was nominated by his or her teacher as a student without a disability that could benefit from participation in this group and act as a "peer buddy" or helper to the other students. Prior to the onset of the study, Ms. Hood will have the parents and

teachers of the students in special education complete rating scales or questionnaires to ensure the child meets criteria for special education eligibility, as well as to gather initial information regarding their social skills and competencies of the student. It will take between 35-50 minutes to complete these scales. The parents and teachers of the other students will not be required to complete any of the questionnaires.

If you and your child consent to be in the study, your child will participate in the social skills group twice per week for 11 weeks or 22 sessions. Each session will last approximately 30 minutes and follow a similar format. During each session, your child will be taught various social skills through the instruction of animated superheroes via a DVD video. Some examples of the skills taught include following directions, anxiety reduction, initiating and maintaining a conversation, joining in, and responding to teasing and bullying. The characters “The Initiator,” “Interactor Girl,” and their sidekick robot, “Scooter,” will define, provide a rationale, give the discrete steps to, and demonstrate the social skills. Additionally, peer models will also demonstrate the social skills on the video. Children in the group will have the chance to practice newly acquired skills during role-plays, social games, and in free-time. For example, the social game in the following directions lesson is called “Scooter Says,” a variation on “Simon Says.” Children will also watch a digital comic book, which is a social story where the animated characters further show how to use the targeted social skills in specific situations.

During instructional time, your child will have the opportunity to earn small rewards for following group rules. Additionally, Ms. Hood will monitor when your child displays the steps and demonstrates the skills he or she is learning by marking the occurrences on a special card called a “Power Card.” This card will go home with your child so that your child can also mark the card outside of the group. Your child will be provided with a homework assignment at the end of each lesson. Homework assignments typically consist of reading a social skills comic book. You will be asked to do these activities with your child three times a week. The DVD and cards will be provided to you. You are not required to do the homework and there will be no consequence to you or your child for not completing the homework. These procedures will be explained again during a parent training session prior to the start of the study and any questions or concerns you may have can be addressed then or you may also contact Ms. Hood at any time. The social skills program is experimental, meaning that it has not been previously tested.

At the end of the study, Ms. Hood will again have the parents and teachers of the students in special education complete rating scales and questionnaires. Again, it will take between 35-50 minutes to complete these scales. Periodically throughout the study, your child’s social behaviors will be observed and coded through use of an observational system. This will occur during the social skills group free play time as well as during your child’s recess. The purpose of this

system is to assess the impact of the social skills training on your child's social skills, specifically your child's social engagement with others. The parents and teachers of the other students will not be required to complete any of the questionnaires and the children will not be observed with the observational system.

Your child will be videotaped by the primary researcher during the free play time following the sessions and during recess periodically. The videotapes will then be used to code the use of pro-social behaviors in both settings. The primary researcher and another graduate student will review the videos and code the behaviors. The videos will be kept on an external hard drive that the primary researcher and her faculty advisors have access to. Some of the videotapes from this study may be used in research or professional presentations.

RISKS

The risks of this study are minimal. There is a risk that your child may not enjoy participating in the social skills lessons and may become uncomfortable while practicing the skills being learned. If your child feels upset in any way as a result of their participation, you or your child may tell Ms. Hood, who can help to alleviate any distress. There is a risk that your child may become embarrassed when leaving the classroom to attend the social skills group and may feel afraid that other children may tease him or her. Efforts will be made to keep other students from knowing your child is participating in the intervention and to also schedule the social skills group at a time where your child is least likely to miss valuable academic instruction. These risks are similar to those that your child might experience in his or her every day school experience in a typical educational setting.

In addition to the risks listed above, your child may experience previously unknown or unforeseen risk.

BENEFITS

We cannot promise any direct benefit to your child for taking part in this study. However, possible benefits from participation in the social skills training program include acquisition and mastery of new social skills, increased demonstration of socially appropriate behaviors, as well as the development of new friendships and maintenance of prior social relationships. The results of the questionnaires may also provide useful information to you and your child's teacher. We also hope the information we get from this study may help develop a greater understanding of what school-based social skills treatments are most effective for children receiving special education services.

ALTERNATIVE PROCEDURES

If you do not want your child to participate in this study, your child will continue with his or her regularly scheduled school activities. There are alternative social skills programs and interventions for children in special education that can be

provided to you and your child's teacher. You may talk with Ms. Hood in her role as the school psychologist intern at Carl Sandburg Elementary to discuss alternative school-based interventions and/or referrals to mental health specialists and resources found within the community. Your child's participation will not prevent you from receiving additional help and/or treatments.

CONFIDENTIALITY

Personal information obtained about your child will be kept strictly confidential. Each child receiving special education that participates will be assigned a number, which will be used on study materials instead of their name. The hard copies of the study materials will be stored in a locked filing cabinet located in Ms. Hood's private office within the school. Ms. Hood is the only person that has the key and access to the filing cabinet. Electronic data will be stored on Ms. Hood's personal computer, which is password protected. Only Ms. Hood and the members of the research team will have access to this information. The results of this study may be presented at professional conferences and/or published in a professional journal. If this occurs, your child's personal information will be protected.

As mandated by reporting laws, should your child disclose actual or suspected abuse, neglect, or exploitation of a child, or disabled or elderly adult, the researcher or any member of the study staff must, and will, report this to Child Protective Services (CPS), Adult Protective Services (APS) or the nearest law enforcement agency.

PERSON TO CONTACT

If you have questions, complaints, or concerns about the research or related matters, or if you feel your child has been harmed as a result of participation in the study, please contact Ms. Hood at Carl Sandburg Elementary, either by phone or by e-mail. You may also leave a message on a confidential voicemail if you do not reach Ms. Hood in person. Contact information is listed below:

Julia Hood (Principal Investigator)
3900 South 5325 West
West Valley City, UT 84120
(385) 646-5008, ext. 1208
jhood@graniteschools.org

Institutional Review Board: Contact the Institutional Review Board (IRB) if you have questions regarding your child's rights as a research participant. Also, contact the IRB if you have questions, complaints or concerns which you do not feel you can discuss with the investigator. The University of Utah IRB may be reached by phone at (801) 581-3655 or by e-mail at irb@hsc.utah.edu.

Research Participant Advocate: You may also contact the Research Participant Advocate (RPA) by phone at (801) 581-3803 or by email at participant.advocate@hsc.utah.edu.

VOLUNTARY PARTICIPATION
It is up to you to decide whether to allow your child to take part in this study. Participation is strictly voluntary. Refusal to allow your child to participate or the decision to withdraw your child from this research will involve no penalty or loss of benefits to which your child is otherwise entitled. This will not affect your or your child's relationship with Ms. Hood or the services she provides to children at Carl Sandburg Elementary School. You may choose to withdraw your child at any time without providing a reason.

COSTS AND COMPENSATION TO PARTICIPANTS
There are no costs to participate in this study. The materials used in the program, such as the comic book social stories to review at home will be given to you at no charge.

As noted previously in the sections above, your child may be given small rewards for following the group rules and for his or her participation during group time. The rewards will be different and may vary in cost. Your child will not know what the reward is beforehand. Examples may include free game time, popcorn party, various food treats, a juice box, or a small toy. Any reward that you or your child is not comfortable with will not be used.

CONSENT
By signing this consent form, I confirm I have read the information in this parental permission form and have had the opportunity to ask questions. I will be given a signed copy of this parental permission form. I voluntarily agree to allow my child to take part in this study.

_____
Child's Name

_____
Parent/Guardian's Name

_____ _____
Parent/Guardian's Signature Date

_____
Relationship to Child

_____
Name of Researcher or Staff

_____ _____
Signature of Researcher or Staff Date

APPENDIX G

CHILD ASSENT

Assent to Participate in a Research Study

Purpose of the Research

We are asking you to take part in a research study because we are trying to learn more about helping children learn how to make new friends and be a good friend to others.

Procedure/Intervention/Method

If you agree to be in this study, you will participate in a social skills group outside of your classroom two times a week for approximately thirty minutes. The group will be held in Ms. Hood's office in the school for about fifteen weeks. There will be several other students close to your same age that will also participate in the group. You will learn and practice what you can do to make new friends and be a good friend to others. Some examples of the things you may learn are how to follow directions, feel calm when you are worried or nervous, and how to respond when another child is teasing and/or bullying you.

During each group, you will watch movies, act out some of the things you learn, play games, and read comic books about superheroes. You may earn small rewards for following the group rules. You will be asked to practice some of the things we learn in group at home, such as reading a comic book with your parents. After the group ends, you will be asked to complete a questionnaire about yourself and what you thought about being in the group. It will take you less than ten minutes to do this.

Risks

By participating in this group, there may be several risks. You may not like leaving class to attend group. Your teachers will try to make sure that you leave class at a time where you will miss the least amount of work and they will help you make up any work you may miss. They will also try to make sure that other children don't know that you are in the study if you don't want them to know. You may feel nervous when you are asked to practice some of the things you learn in group. If this happens, your teachers will try to help you feel better and find ways to make it easier for you. You may also not like completing the questionnaires. If you have any questions, you can ask for help at any time. You also can choose not to participate at any time.

Benefits

Being in this study will help us to understand the best way to help kids learn how to make friends and be a good friend to others. Your participation in this group may help you make friends and learn how to be a better friend.

Alternative Procedures and Voluntary Participation

If you don't want to be in this study, you don't have to be in it. Remember, being in this study is up to you and no one will be upset if you don't want to participate. You can change your mind later if you want to stop. Please talk this over with your parents before you decide whether or not to participate. We will also ask your parents to give their permission for you to take part in this study. But even if your parents say "yes" you can still decide not to do this.

Confidentiality

All of your records about this research study will be kept locked up so no one else can see them. We will not use your name when we talk about this study and only your teachers and the other students participating with you will know that you came to group.

Person to Contact

You can ask any questions that you have about the study. If you have a question later that you didn't think of now, you can call me, Ms. Hood, at school at (385) 646-5008, or ask me next time you see me, or ask your teacher if you can come by my office.

Consent

Signing my name at the bottom means that I agree to be in this study. My parents and I will be given a copy of this form after I have signed it.

_____

Printed Name

_____ _____

Sign your name on this line Date

_____

Printed Name of Person Obtaining Assent

_____ _____

Signature of Person Obtaining Assent Date

The following should be completed by the study member conducting the assent process if the participant agrees to be in the study. Initial the appropriate selection:

_____ The participant is capable of reading the assent form and has signed above as documentation of assent to take part in this study.

_____ The participant is not capable of reading the assent form, but the information was verbally explained to him/her. The participant signed above as documentation of assent to take part in this study.

APPENDIX H

PLACEMENT CHECKLIST

Social Skills Placement Checklist

Purpose: Have caregivers and educators complete to assist in making group constellation and inclusion decisions

Directions: Please answer the following questions as best as you can. Pick only one answer and try to complete all items. If you are unsure about how to answer a question, use your best judgment and answer based on the child's behavior over the past two weeks.

Background Questions

Respondents's Name: _____ Relationship to child:_____
Child's Name: _____ Child's Date of Birth: _____
At what developmental age does the child function? _____
What grade is the child in at school? _____

Language Abilities

How would you describe the child's language abilities? (Circle one)
Nonverbal (or Echolalic) Use of 1-2 words Phrase speech Verbally fluent

Cognitive/Problem Solving Abilities

How would you describe the child's cognitive abilities? (Circle one)
Superior Above average Average Below Average Impaired
If the child has been given an IQ test, please provide the information below:
Name of test: _____Who administered the test? _____
When was the test given? _____ Where was the test given?_____
What were the scores? _____

Behaviors and Interests

Does the child have any particularly intense or unusual interests/behaviors that interfere with his/her social interactions with others? Yes/No
Does the child demonstrate self-injurious behavior? Yes/No
If so, please describe below:
_____
_____
_____

Motivation and Learning Style

What is the child's typical motivational level? (Circle one)
Very motivated Somewhat motivated Not motivated
What kinds of toys does the child like?_____
What kinds of toys does the child not enjoy?_____
What kinds of games does the child like?
_____

What kinds of games does the child not enjoy?_____

Please rate how well your child enjoys the following things using the scale below:
1= dislikes very much, 2=does not like, 3=has no preference, 4=likes, 5=likes very much

Legos/building blocks _____ Cars/Trucks_____ Books_____
Dolls/Figurines_____ Board games_____ Playdoh_____
Art materials (color, paint, draw)_____

What kinds of things does the child find reinforcing or rewarding (e.g. small treats or food items)? _____

Does the child have any food allergies and/or food items you would not like him//her to have during group time? _____

Is the child more of a visual or auditory learner? _____

Attention Span and Persistence

Describe the child's activity level (Circle one)

Extremely active Somewhat active Average Below average Lethargic

Memory Abilities

Describe the child's memory abilities (Circle one)

Excellent Good Average Fair Poor

Anxiety and other Psychological Factors

What causes the child to become upset? (Circle all that apply)

New situations New people Change in routine Frustrating activities

Can the child calm himself when upset or does s/he need help in doing so?

_____

What strategies have assisted the child in managing negative feeling states? _____

Other relevant factors

Are there any other important factors or considerations we should know about your child?

_____

_____

Thanks for your help in completing this. The information is very useful!

APPENDIX I

TREATMENT FIDELITY CHECKLIST

Social Skills Intervention Treatment Integrity Checklist

Facilitator: Date:

Lesson Number: Targeted Skill:

Instructions: **Put an X next to each step you have completed for each lesson**

Lesson Components	Session 1	Component Integrity %
Conduct Check-Ins (review/transfer charges)		
Daily Schedule and Group Rules		
Introduce New Skills		
Play Animation/Peer Modeling Video		
Conduct Role-Plays (facilitator and peers)		
Watch Digital Comic Book		
Play Social Game		
Analogue Free Play Period		
Reinforcement Provided Throughout Session		
Homework Explained (complete comic, return "charges" on card)		
Superhero of the Day/Reinforcement Spinner		
Total # of X's		
Session Integrity %		

APPENDIX J

INDIVIDUAL PARTICIPANT GRAPHS FOR ANALOG TREATMENT

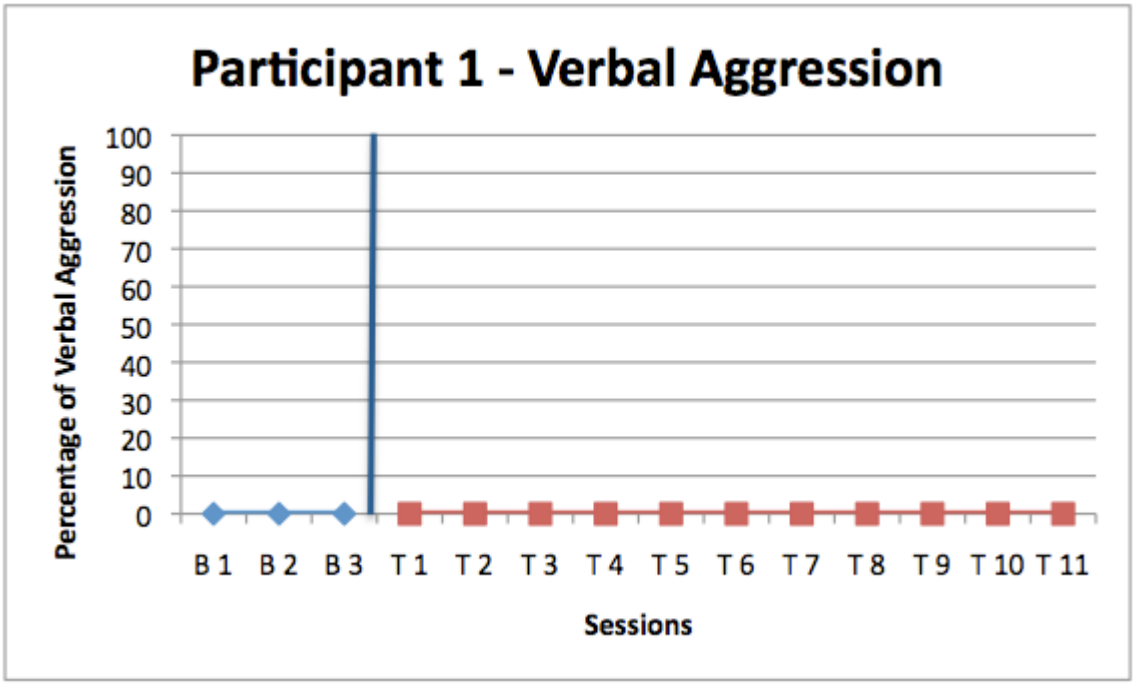

Figure J1: Analog measure of verbal aggression for participant 1.

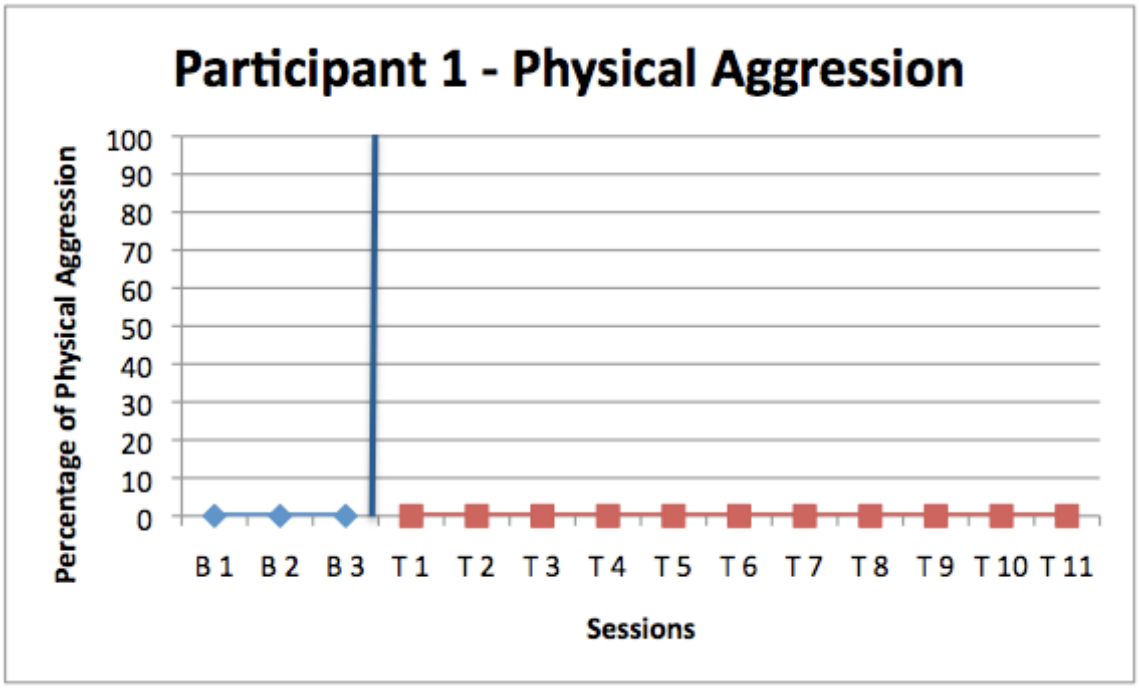

Figure J2: Analog measure of physical aggression for participant 1.

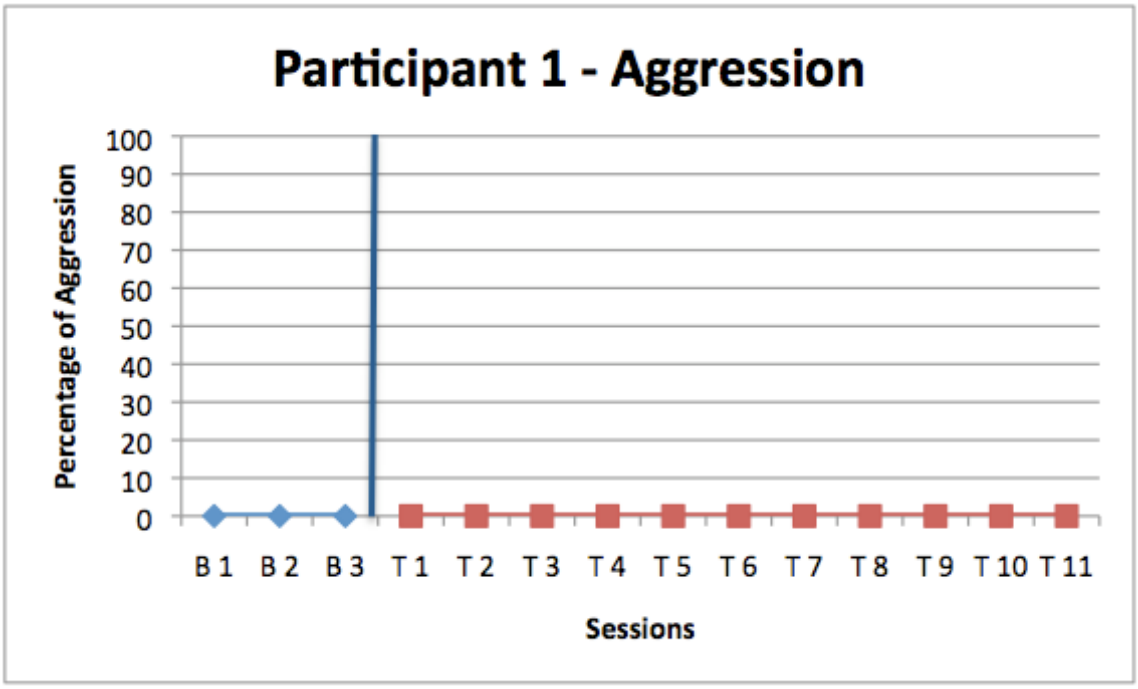

Figure J3: Analog measure of total aggression for participant 1.

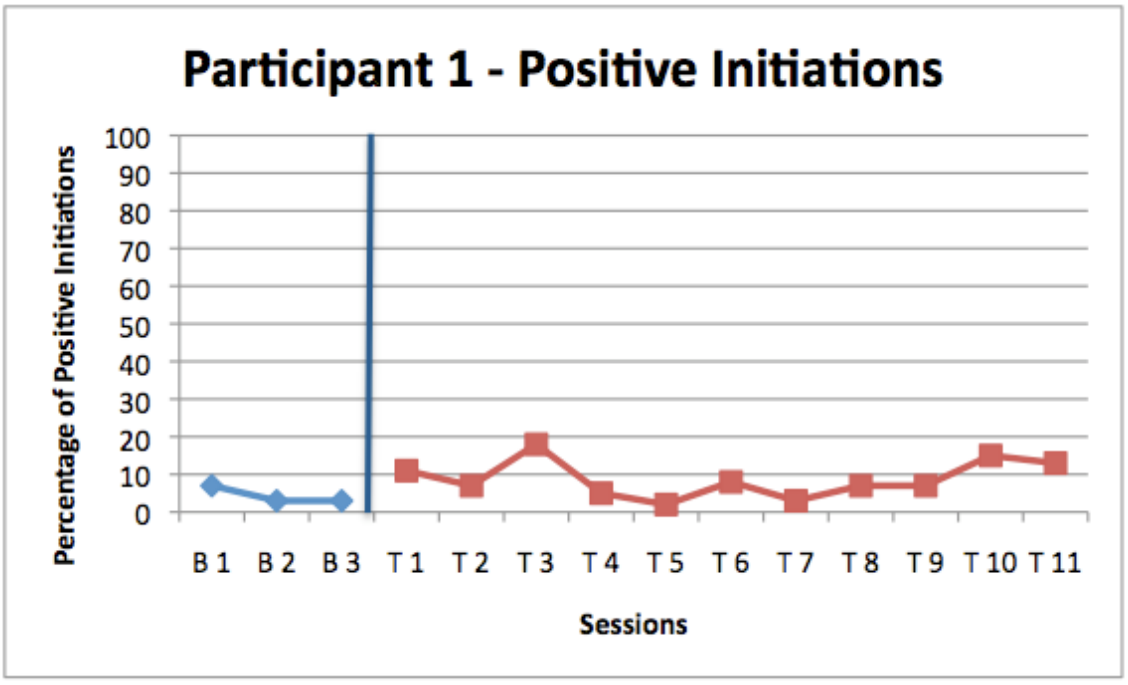

Figure J4: Analog measure of positive initiations for participant 1.

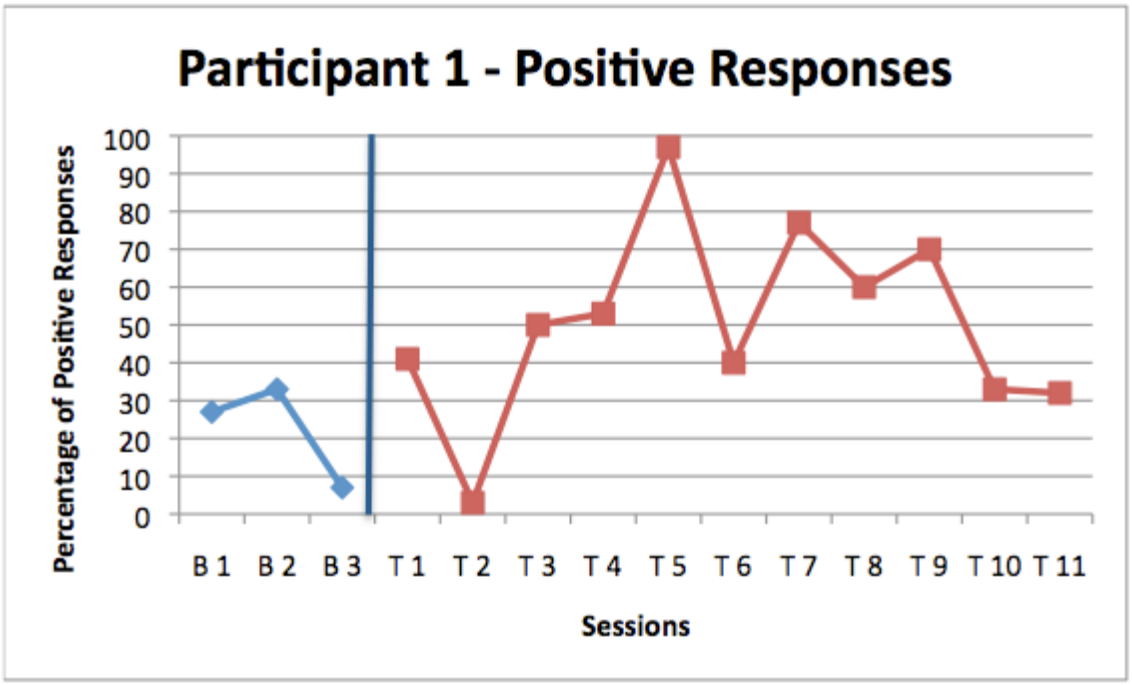

Figure J5: Analog measure of positive responses for participant 1.

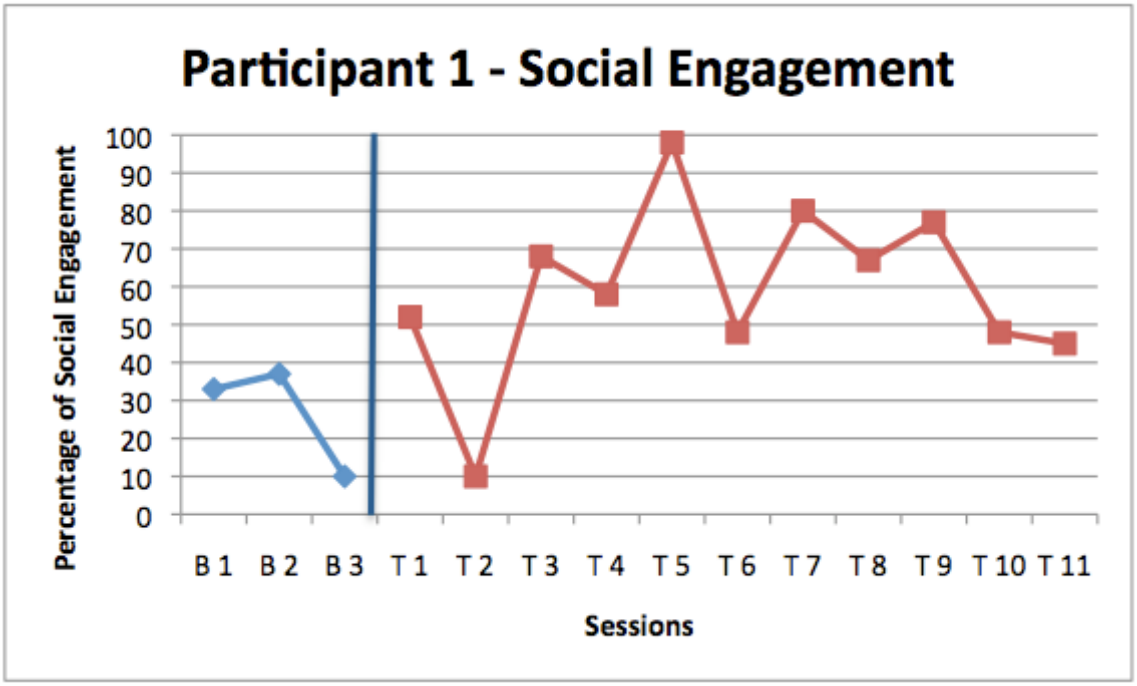

Figure J6: Analog measure of social engagement for participant 1.

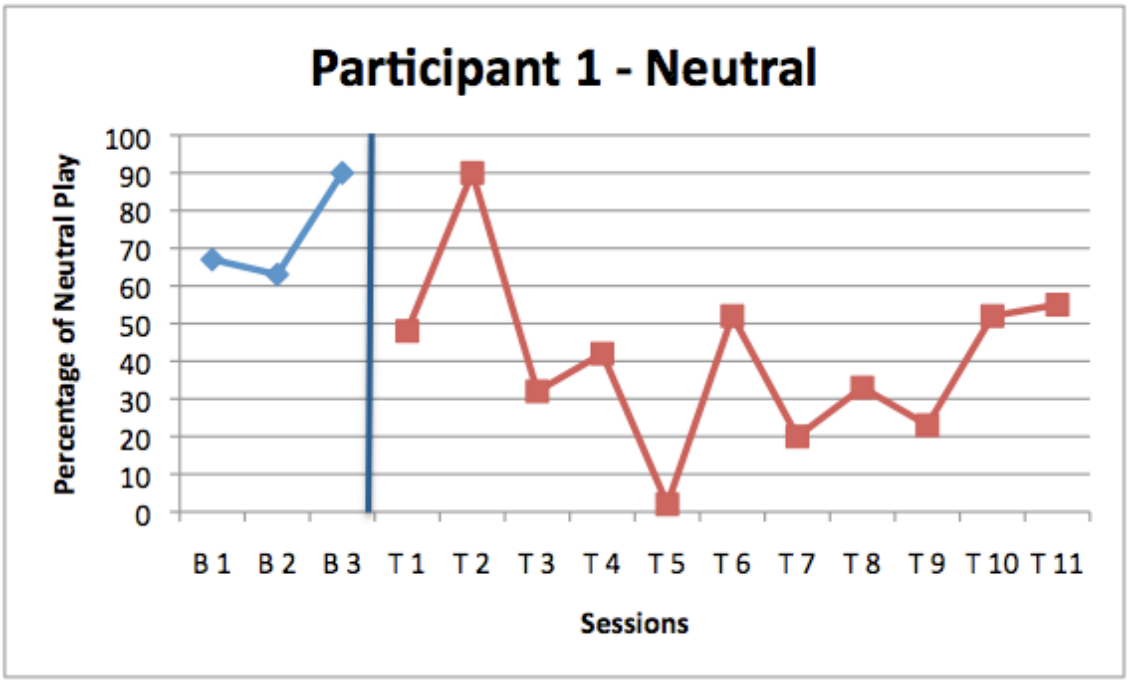

Figure J7: Analog measure of neutral play for participant 1.

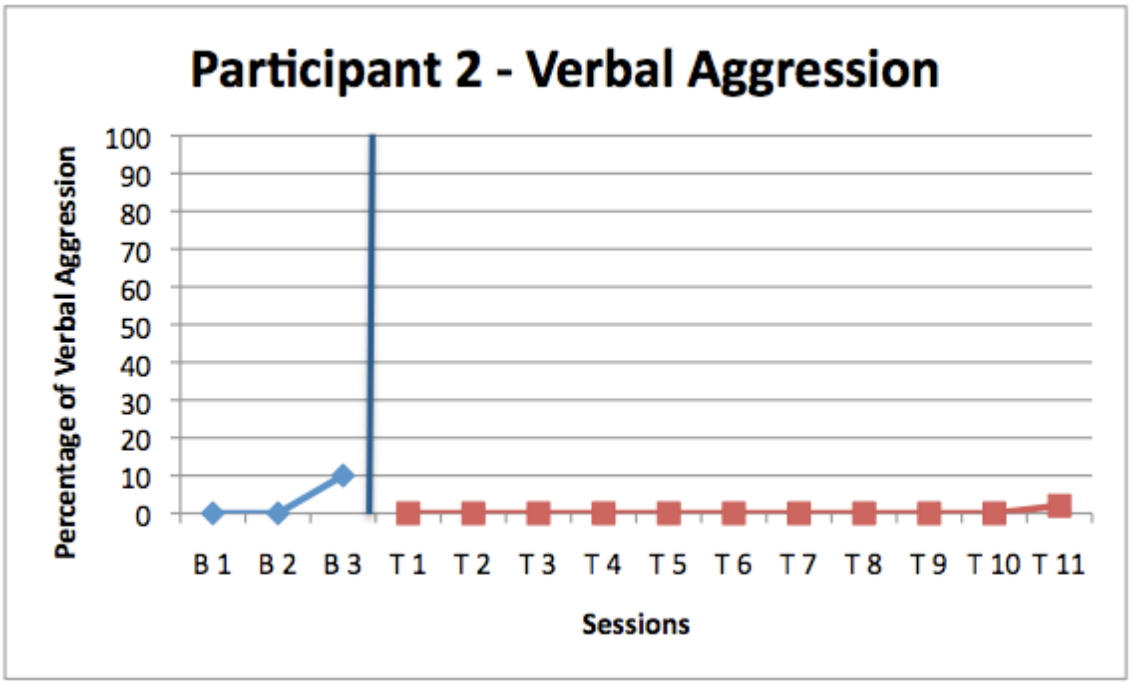

Figure J8: Analog measure of verbal aggression for participant 2.

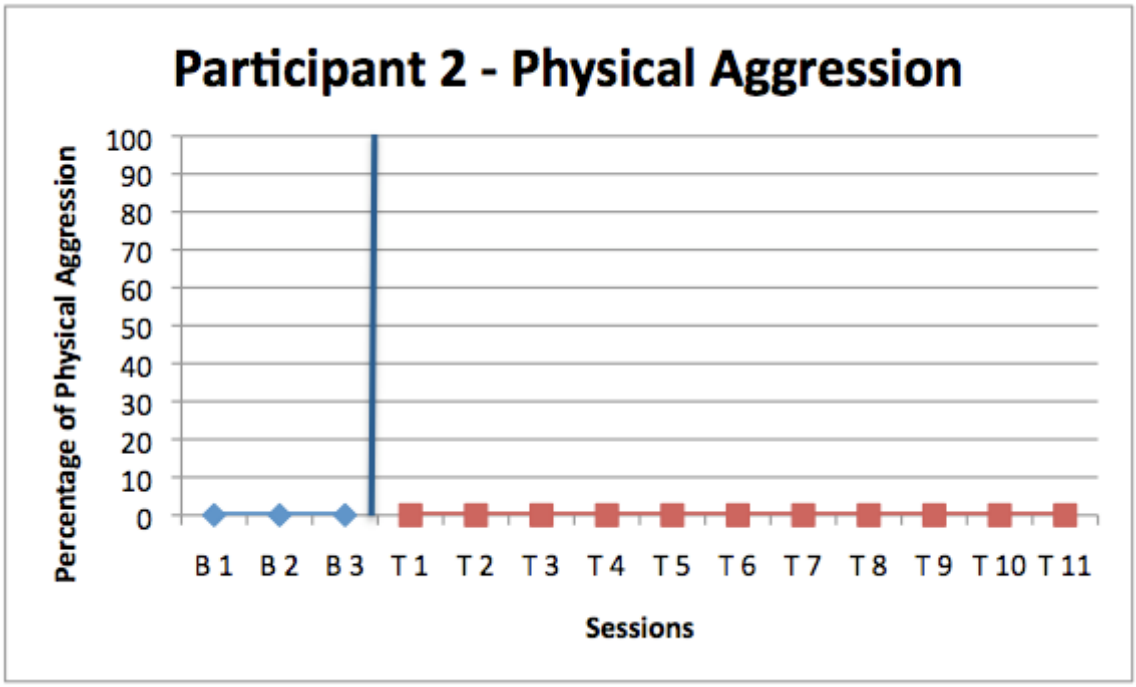

Figure J9: Analog measure of physical aggression for Participant2.

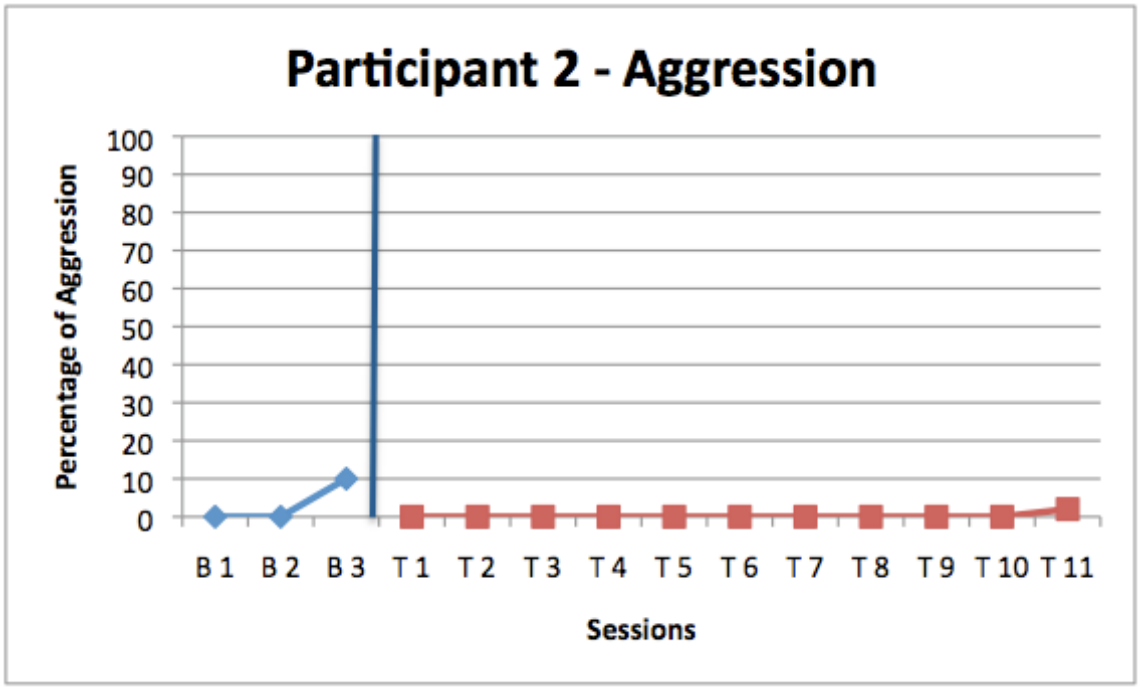

Figure J10: Analog measure of total aggression for participant 2.

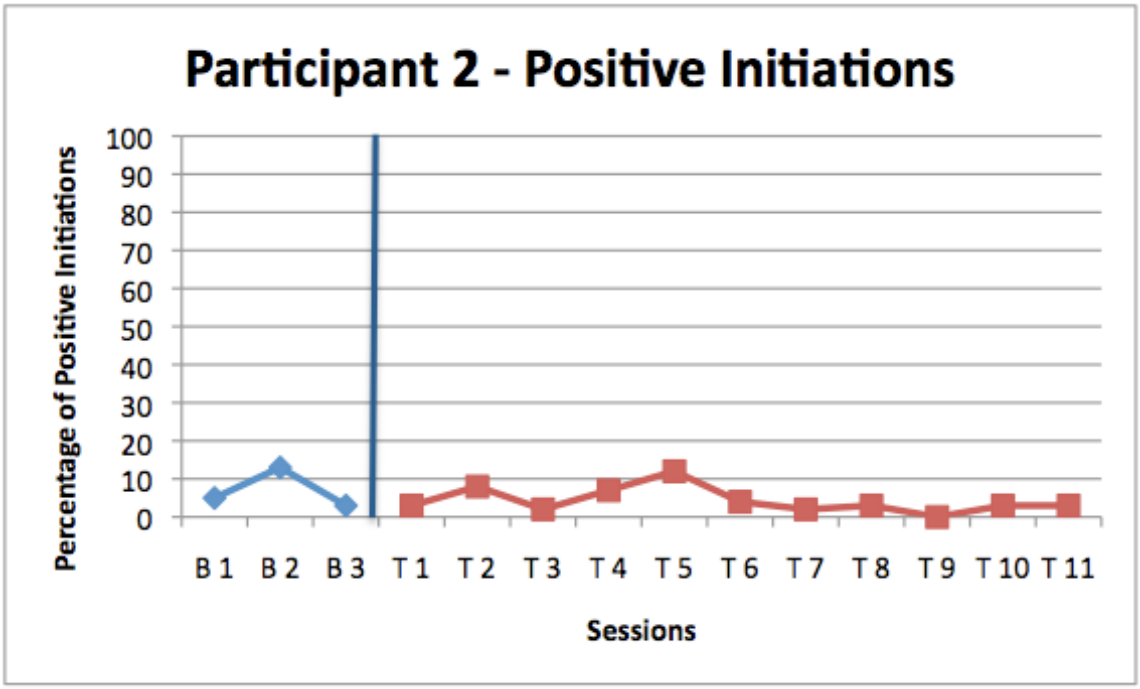

Figure J11: Analog measure of positive initiations for participant 2.

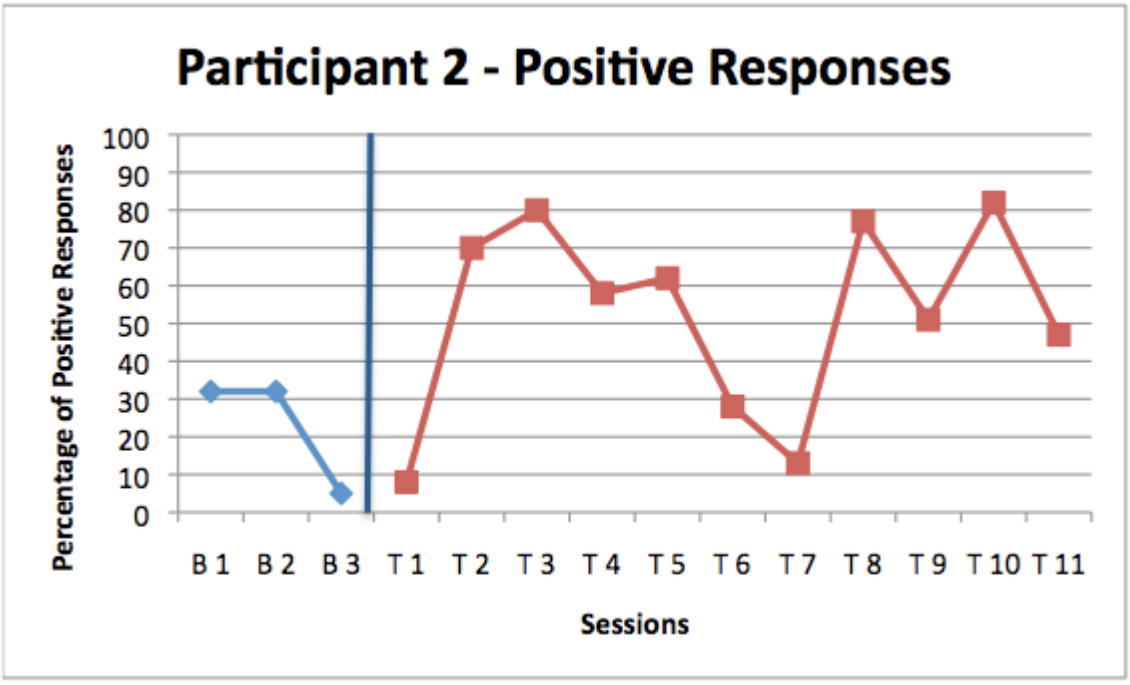

Figure J12: Analog measure of positive responses for participant 2.

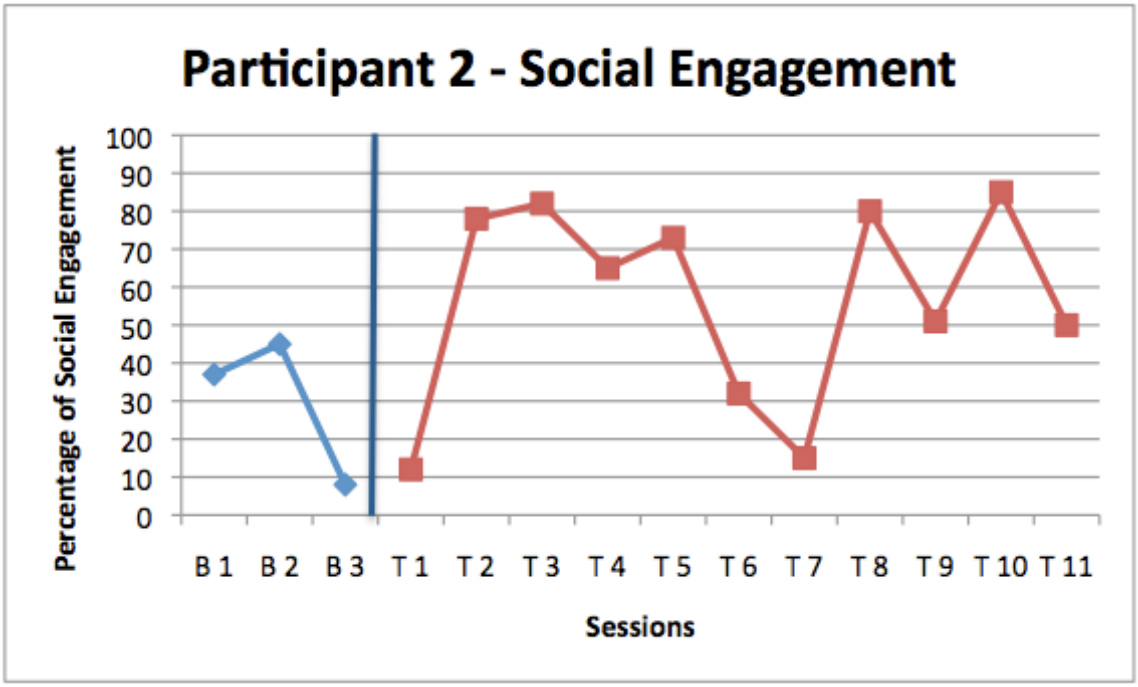

Figure J13: Analog measure of social engagement for participant 2.

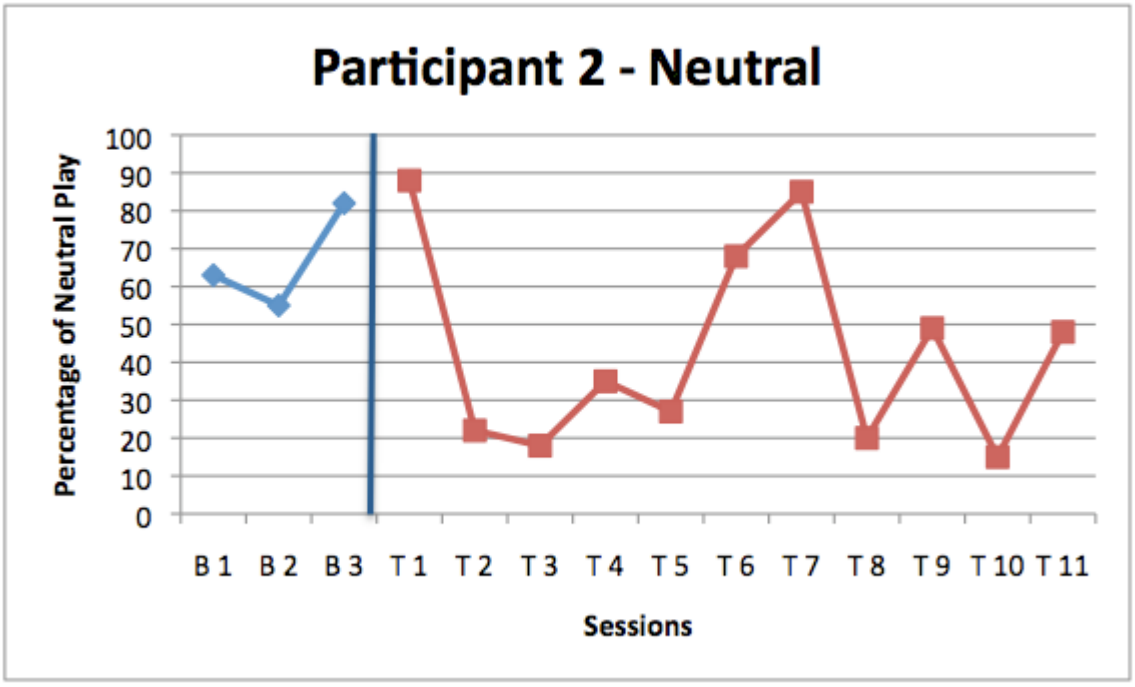

Figure J14: Analog measure of neutral play for participant 2.

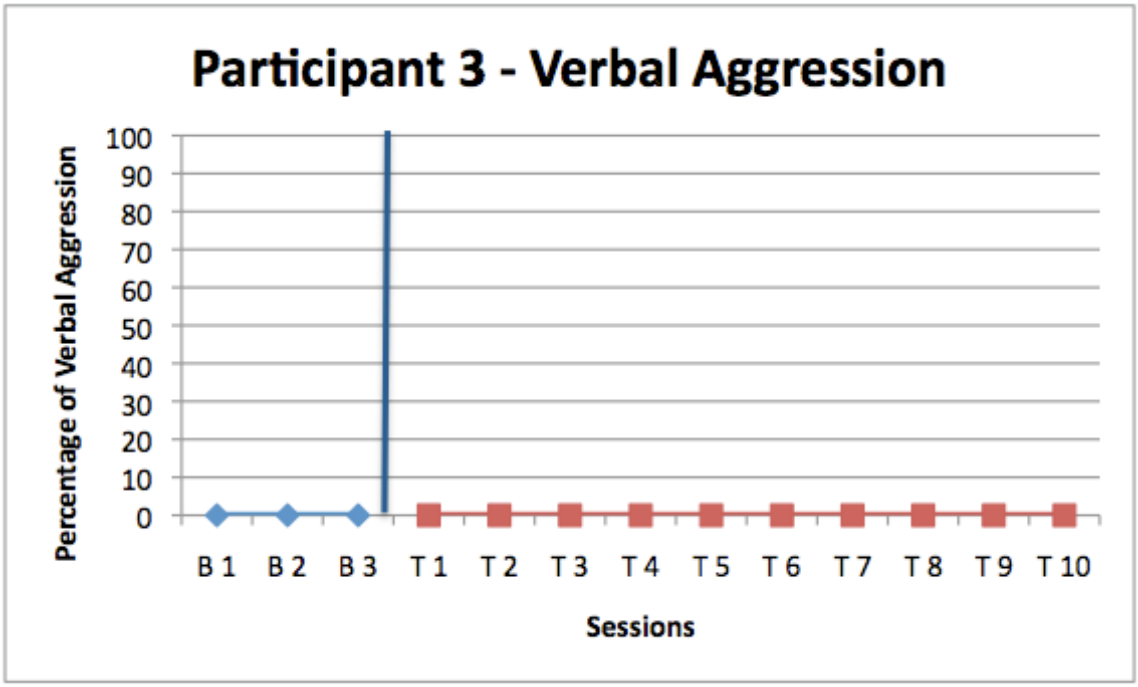

Figure J15: Analog measure of verbal aggression for participant 3.

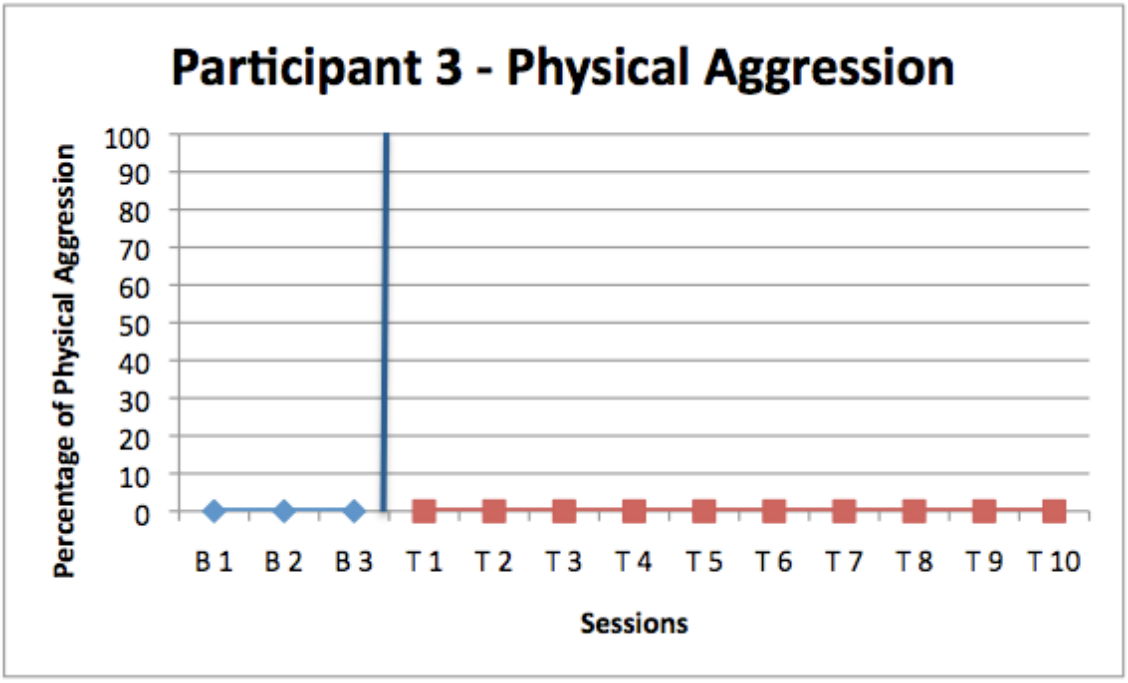

Figure J16: Analog measure of physical aggression for participant 3.

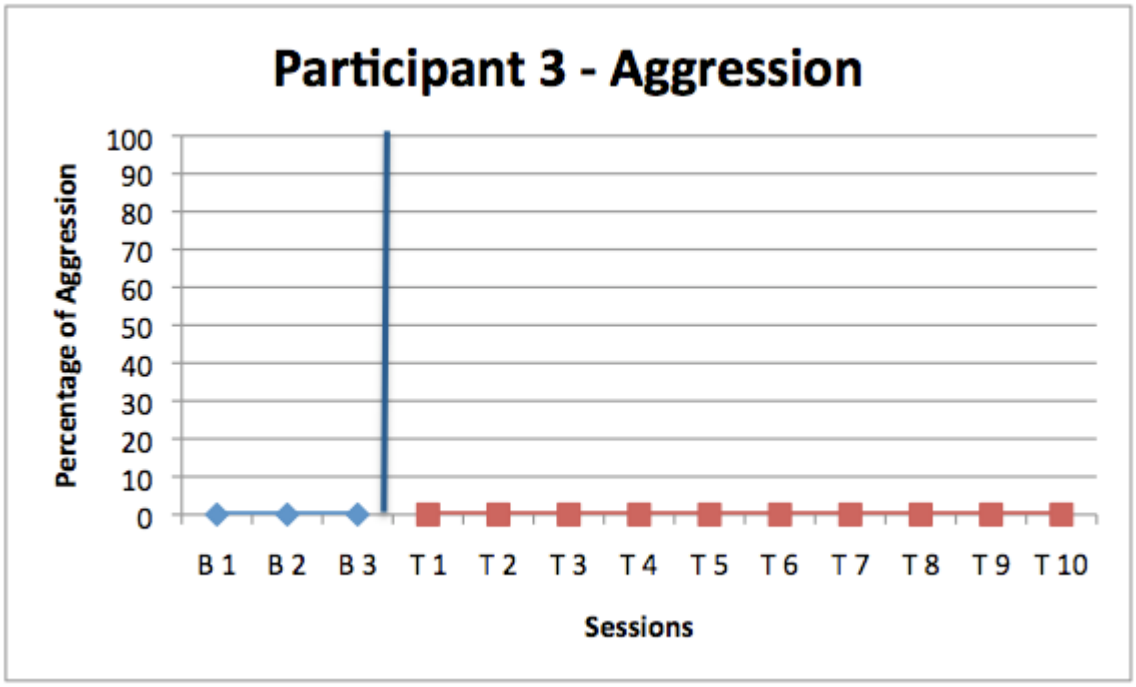

Figure J17: Analog measure of total aggression for participant 3.

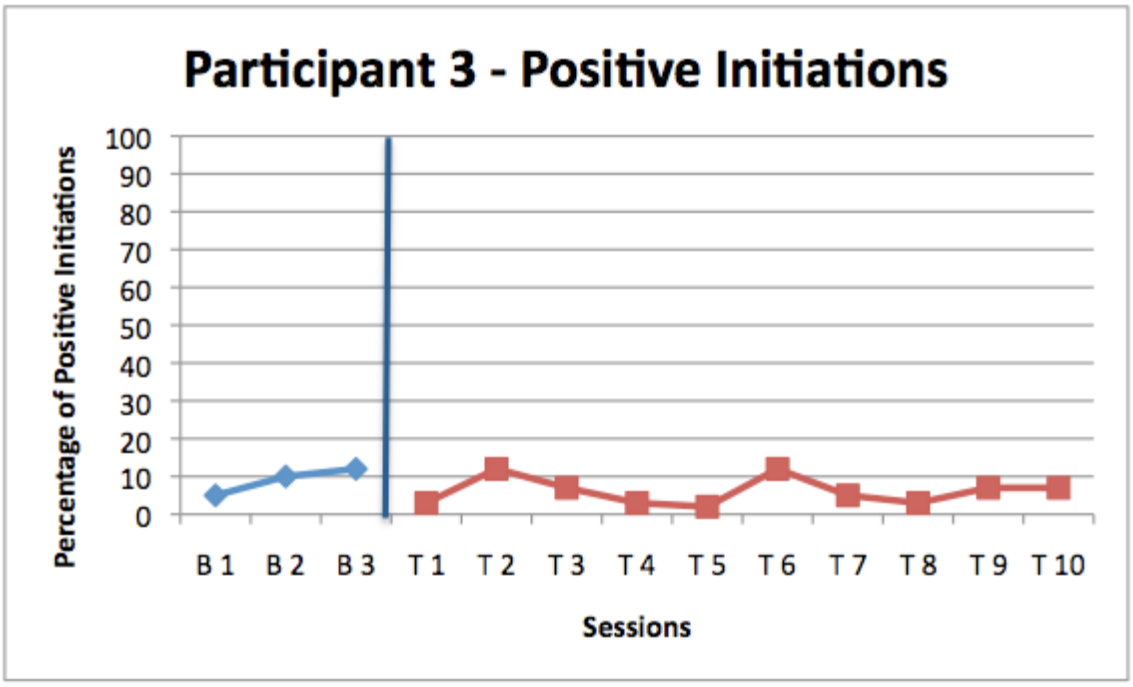

Figure J18: Analog measure of positive initiations for participant 3.

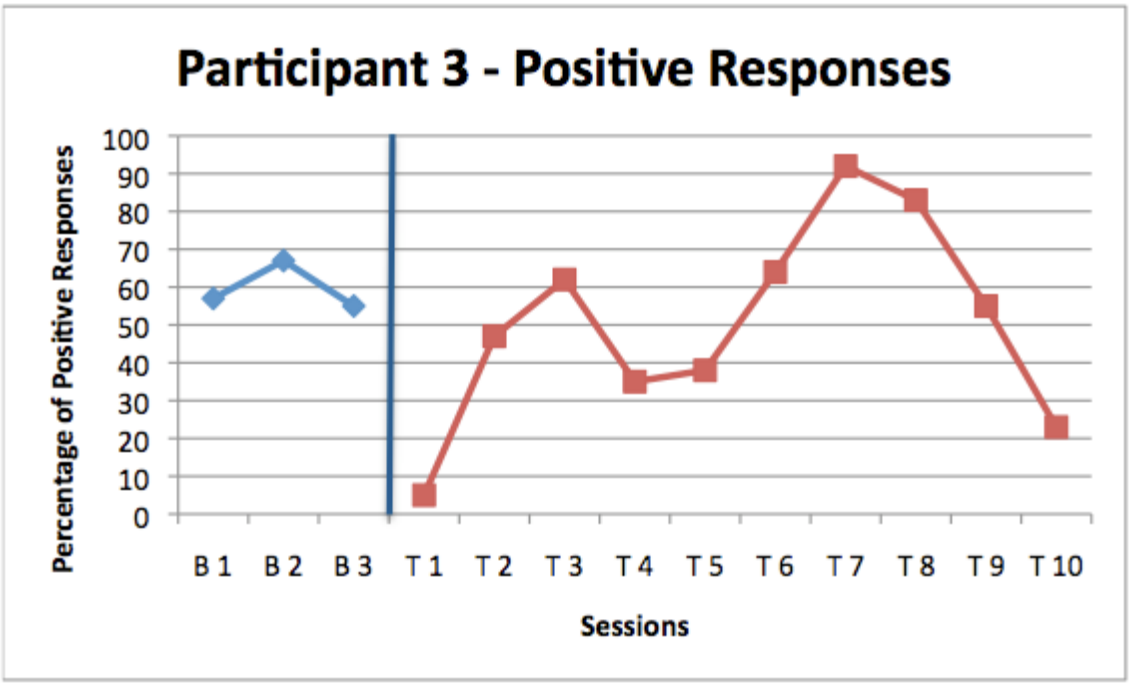

Figure J19: Analog measure of positive responses for participant 3.

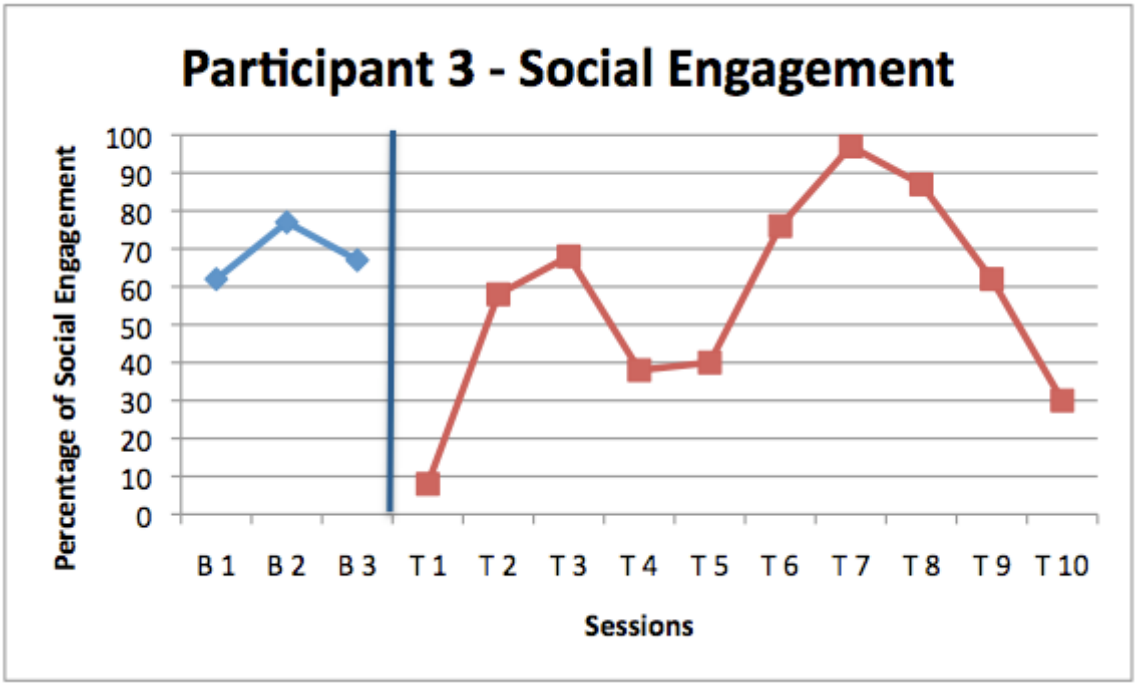

Figure J20: Analog measure of social engagement for participant 3.

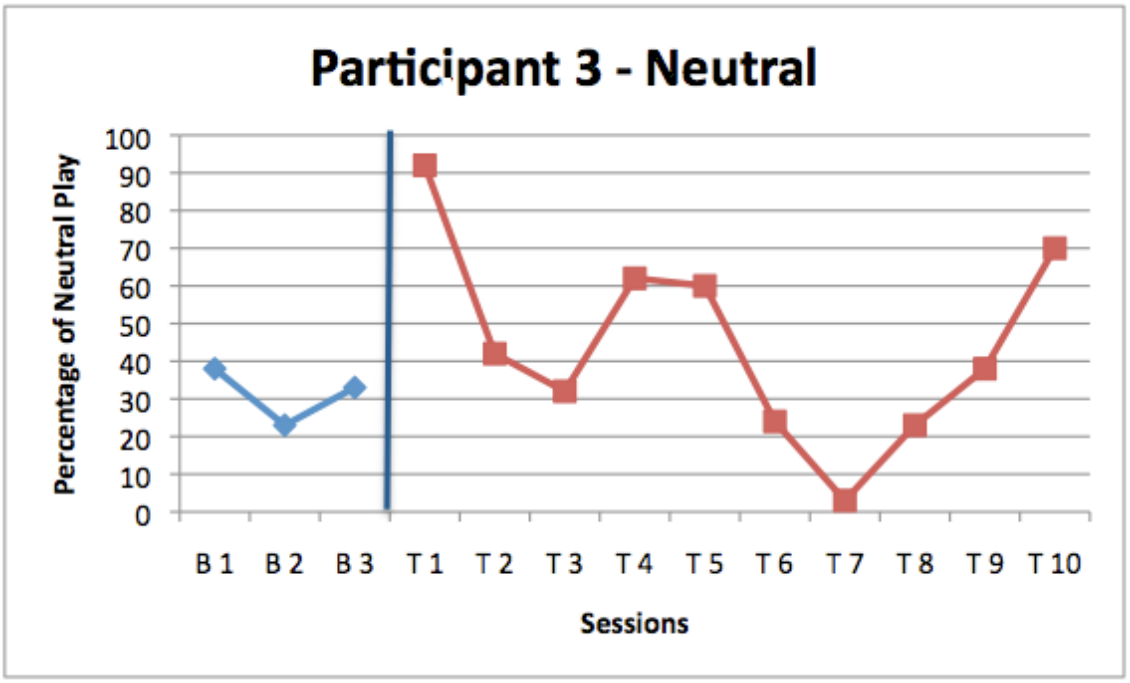

Figure J21: Analog measure of neutral play for participant 3.

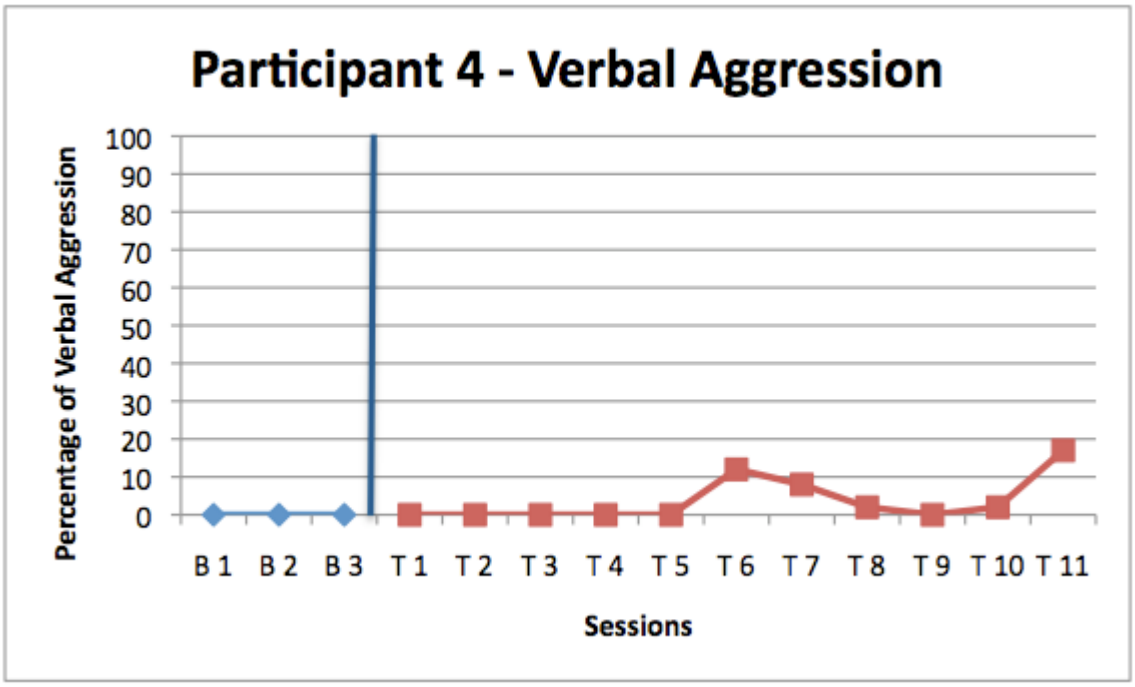

Figure J22: Analog measure of verbal aggression for participant 4.

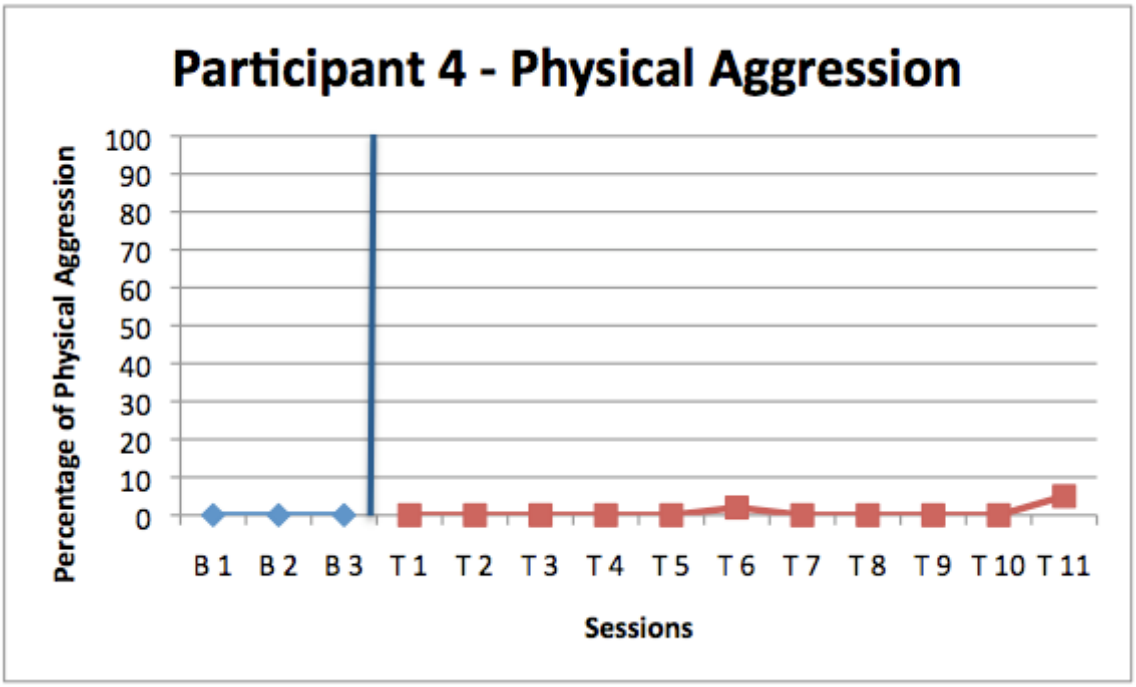

Figure J23: Analog measure of physical aggression for participant 4.

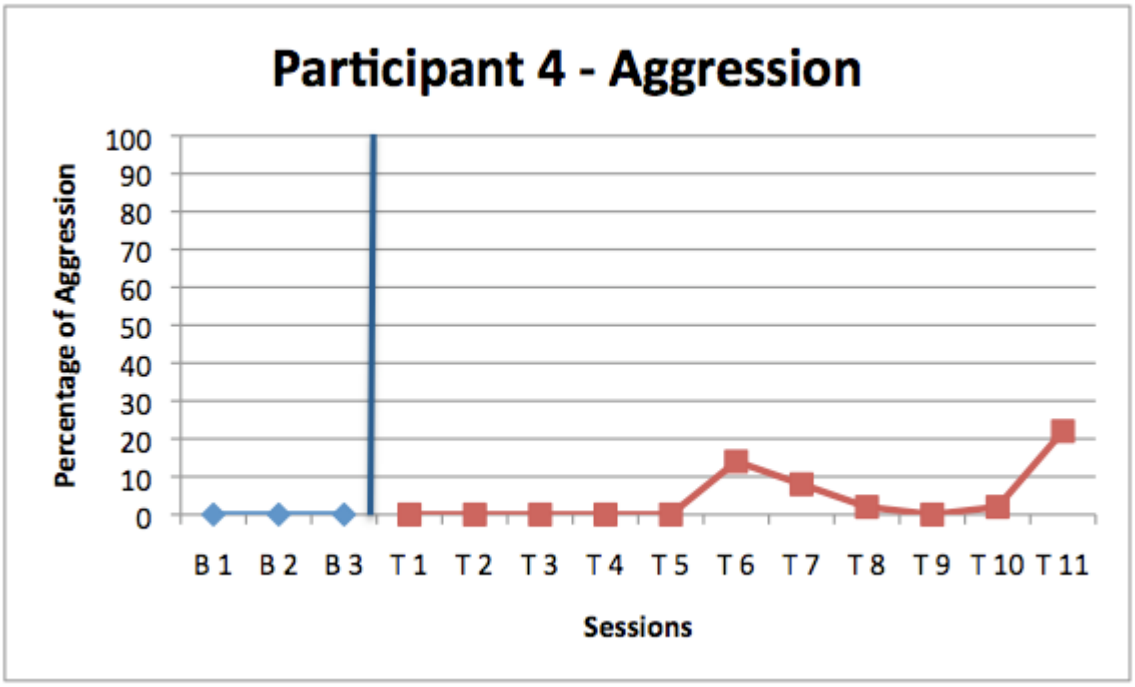

Figure J24: Analog measure of total aggression for participant 4.

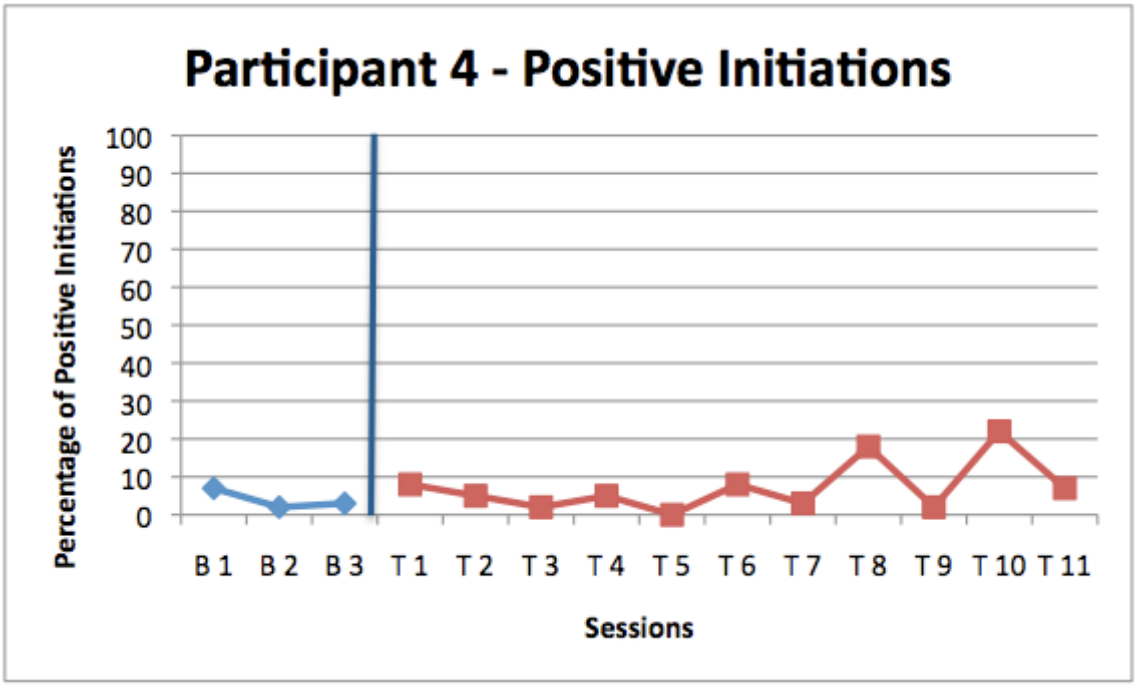

Figure J25: Analog measure of positive initiations for participant 4.

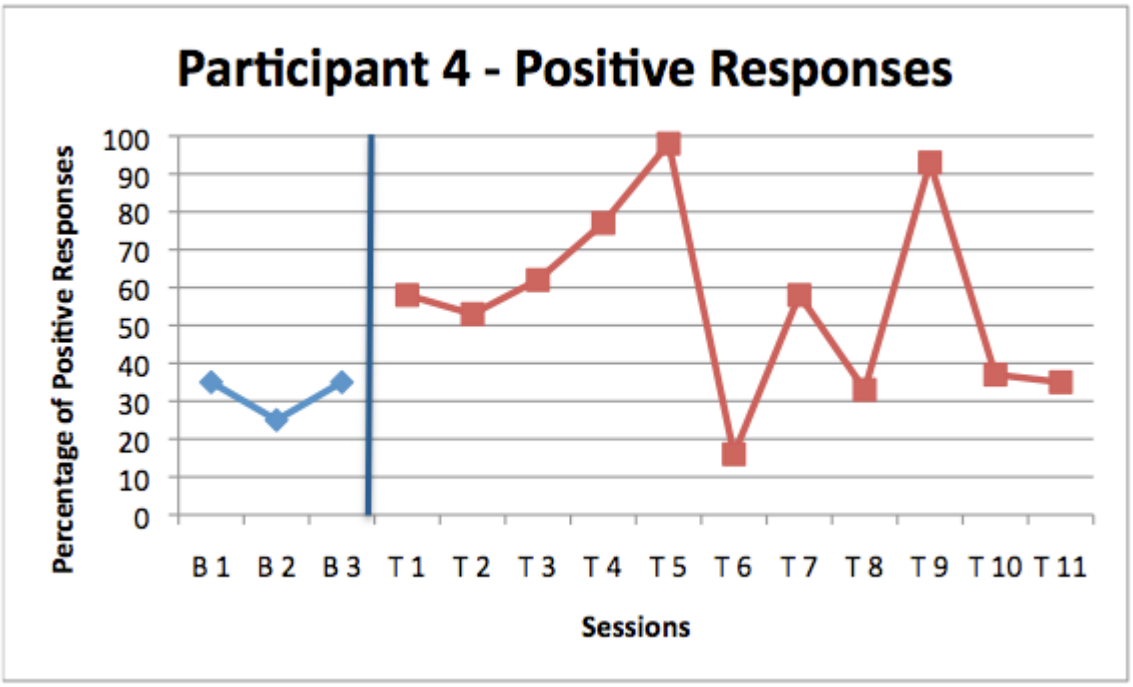

Figure J26: Analog measure of positive responses for participant 4.

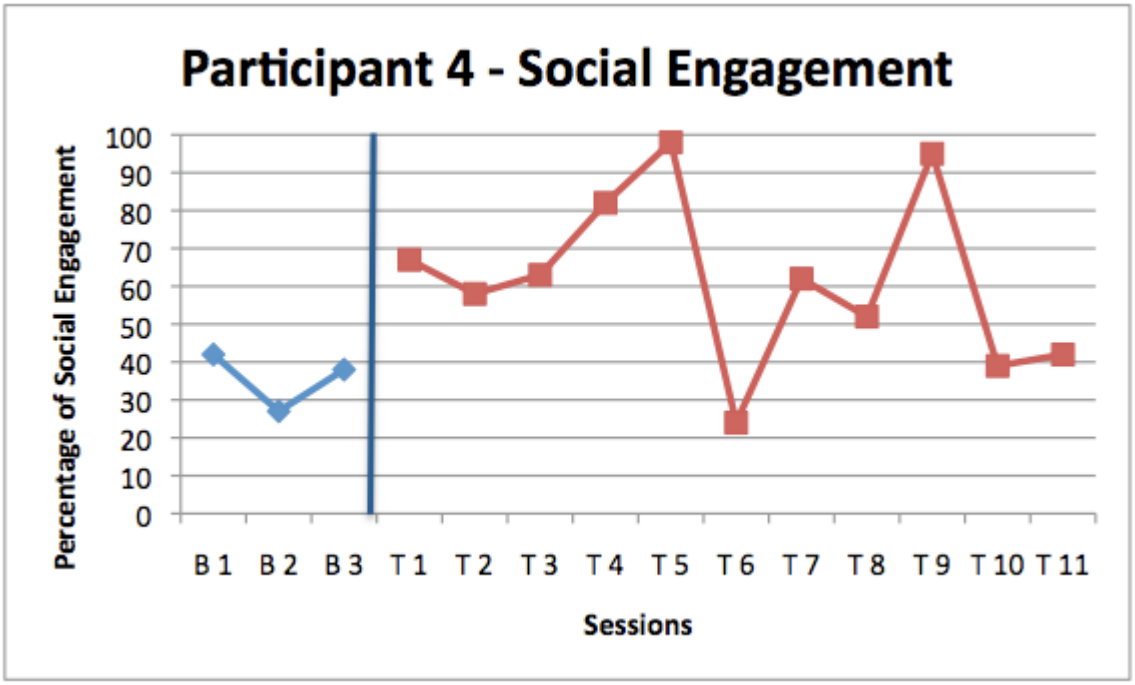

Figure J27: Analog measure of social engagement for participant 4.

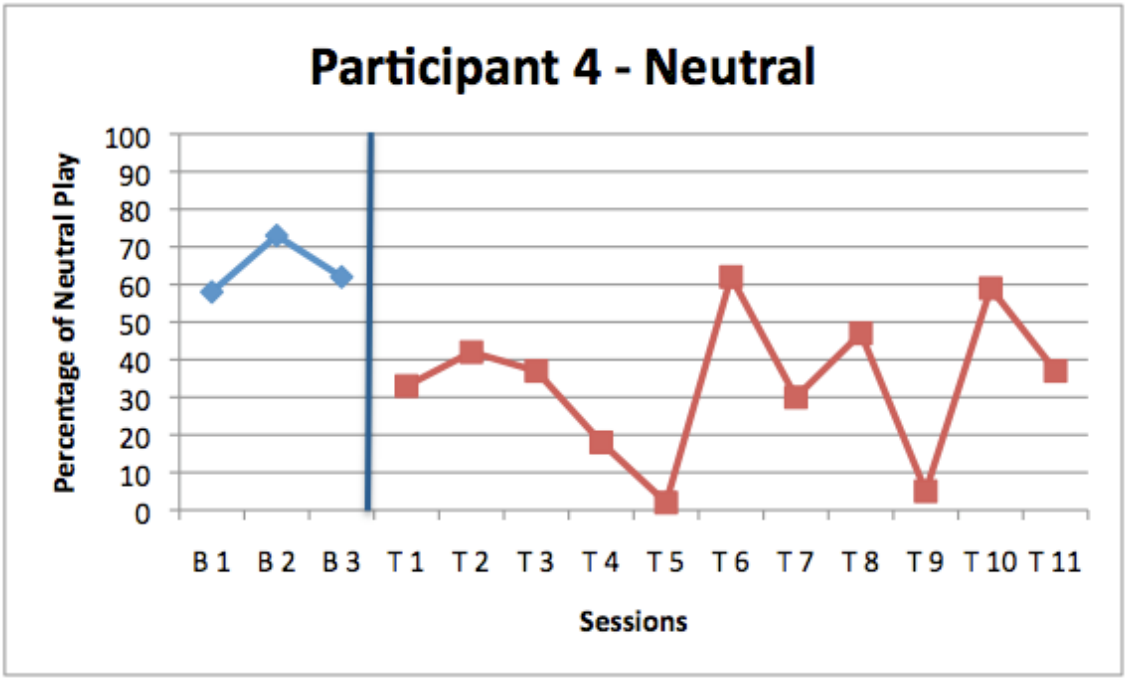

Figure J28: Analog measure of neutral play for participant 4.

APPENDIX K

INDIVIDUAL PARTICIPANT GRAPHS FOR RECESS TREATMENT

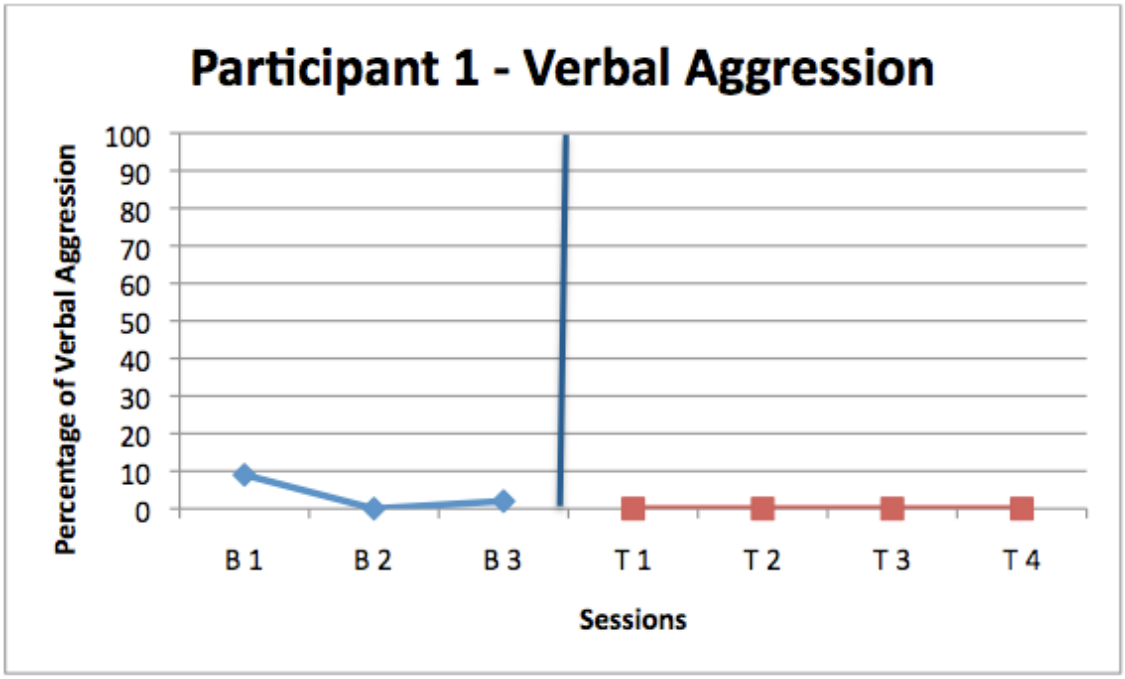

Figure K1: Recess measure of verbal aggression for participant 1.

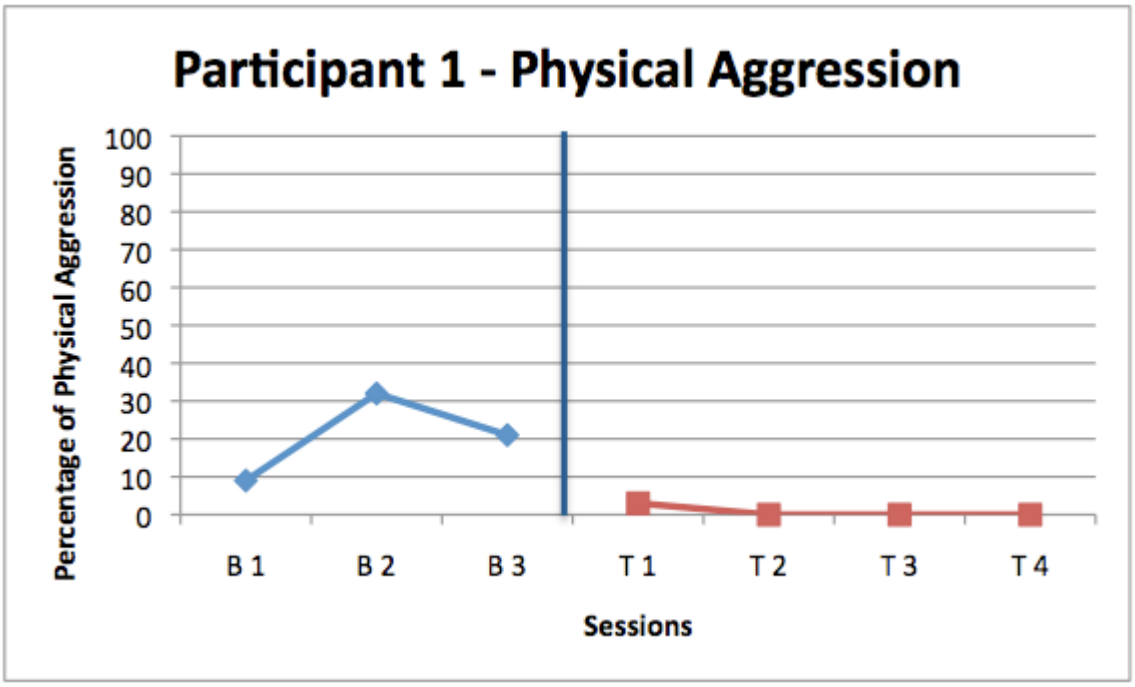

Figure K2: Recess measure of physical aggression for participant 1.

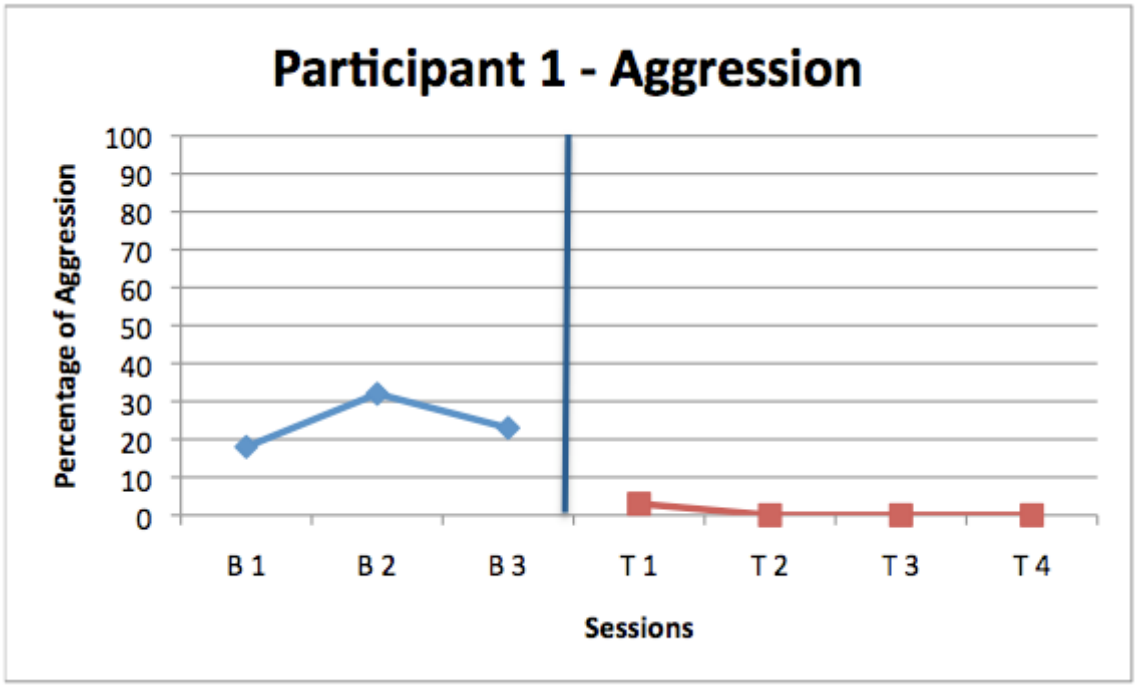

Figure K3: Recess measure of total aggression for participant 1.

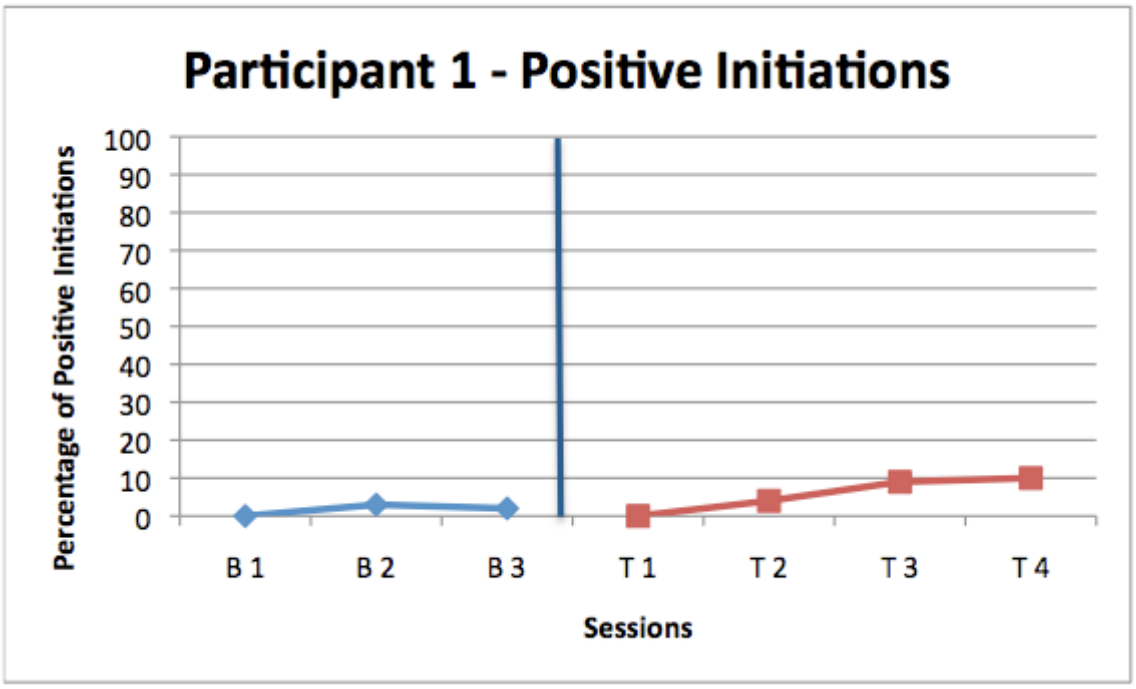

Figure K4: Recess measure of positive initiations for participant 1.

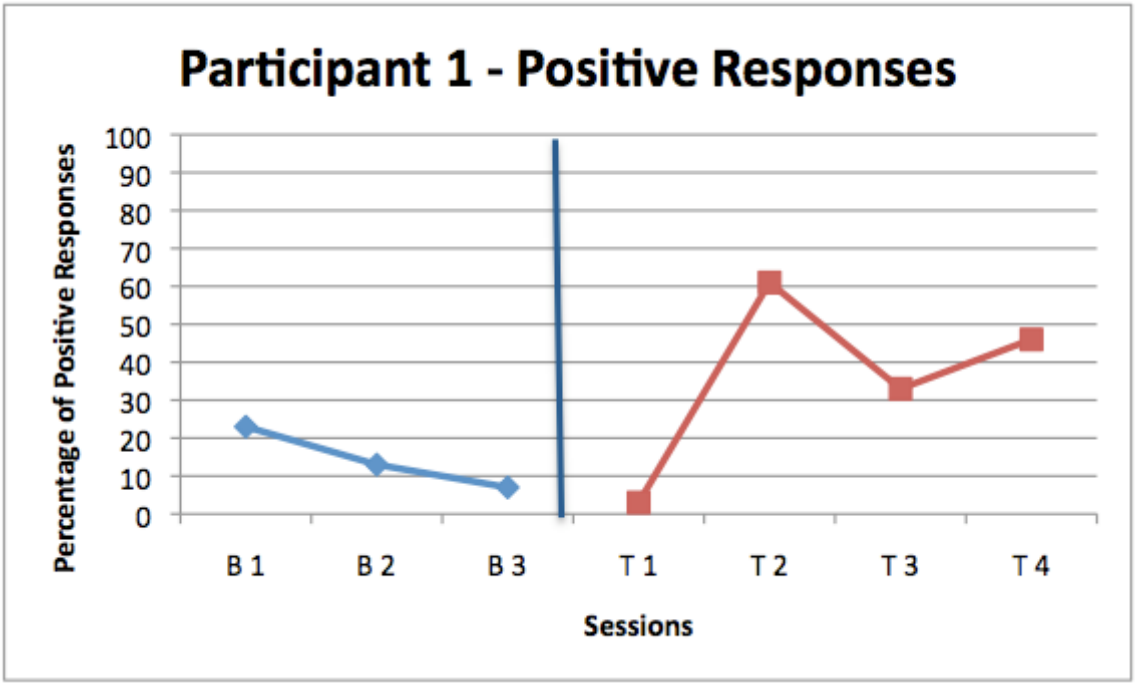

Figure K5: Recess measure of positive responses for participant 1.

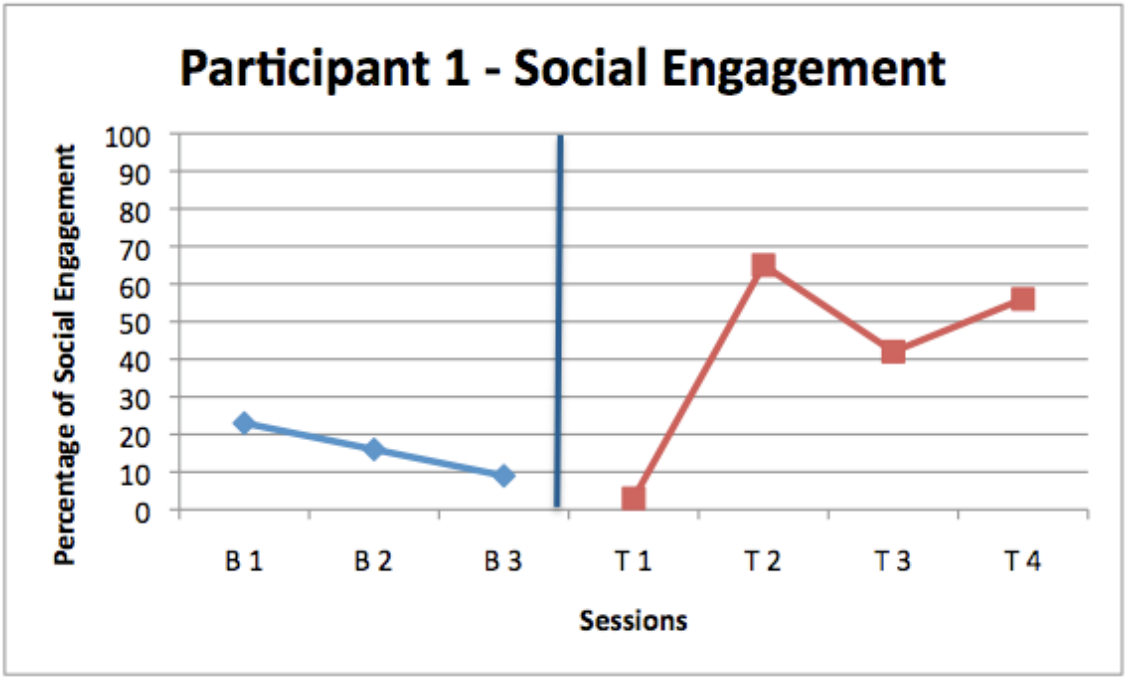

Figure K6: Recess measure of social engagement for participant 1.

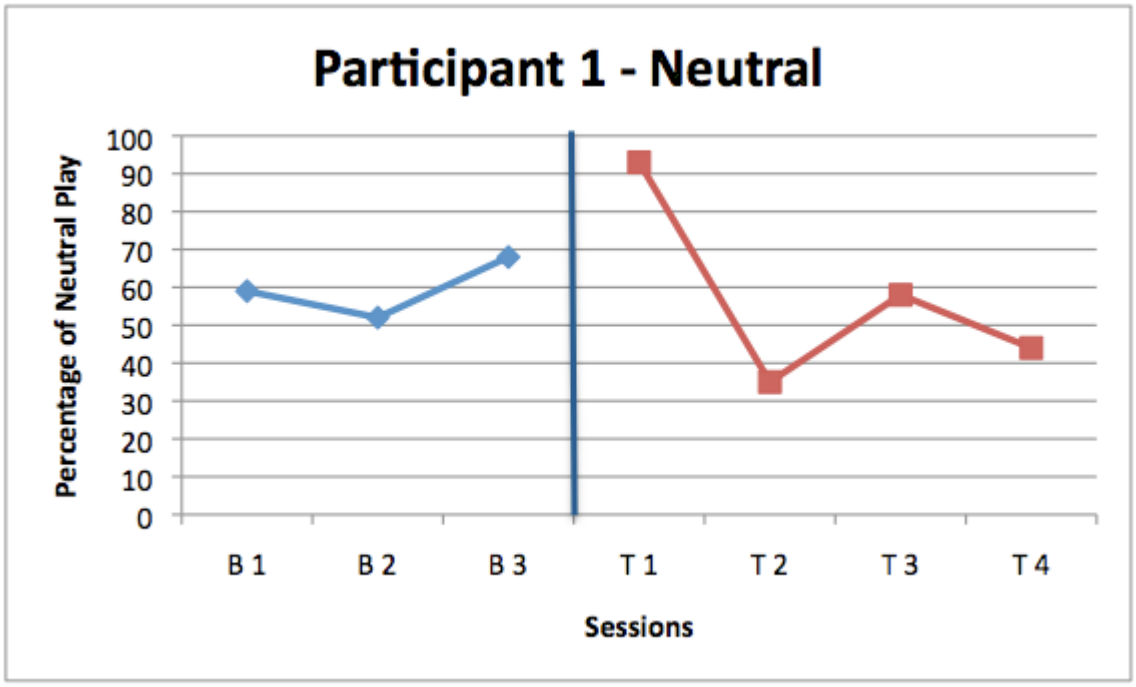

Figure K7: Recess measure of neutral play for participant 1.

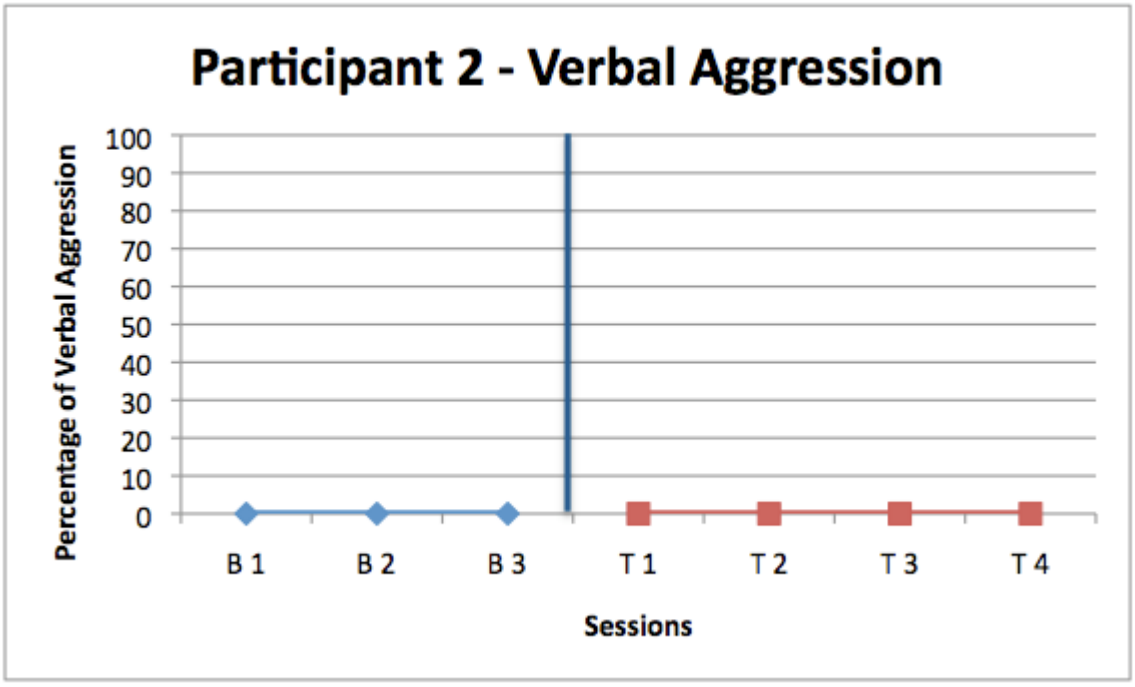

Figure K8: Recess measure of verbal aggression for participant 2.

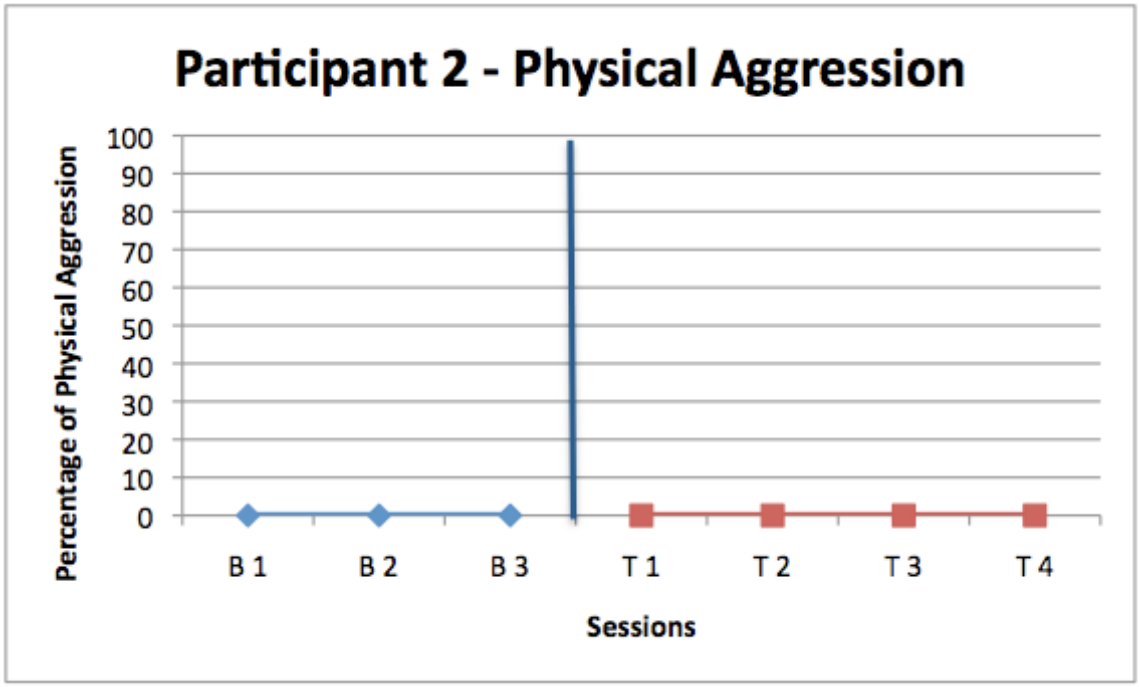

Figure K9: Recess measure of physical aggression for participant 2.

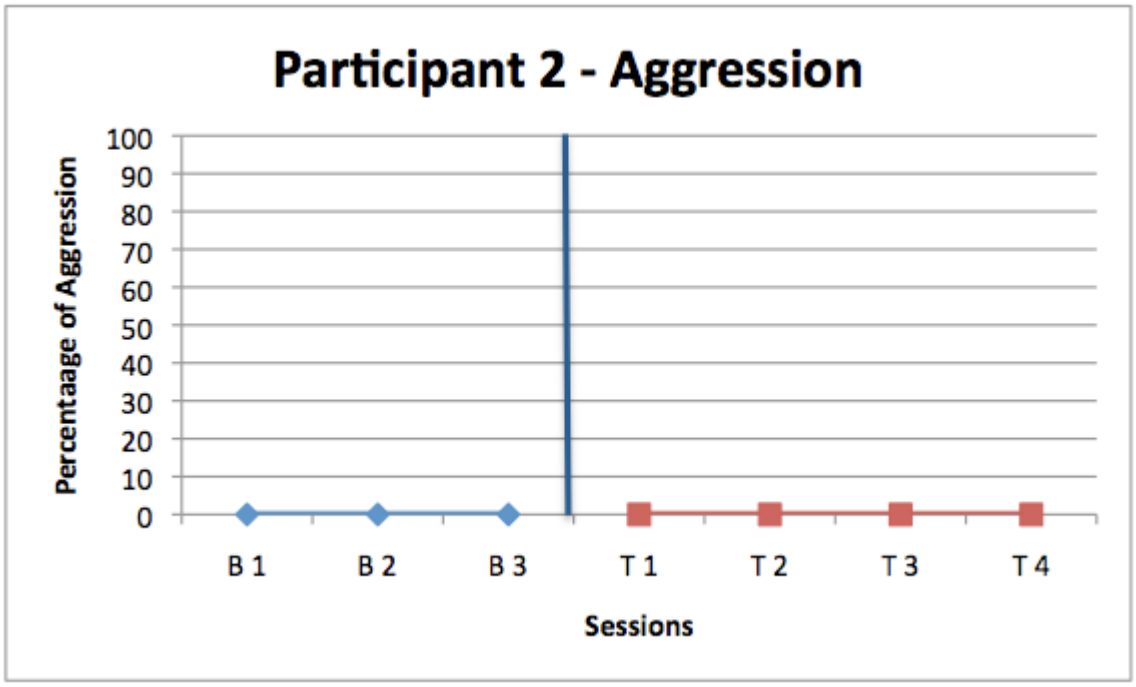

Figure K10: Recess measure of total aggression for participant 2.

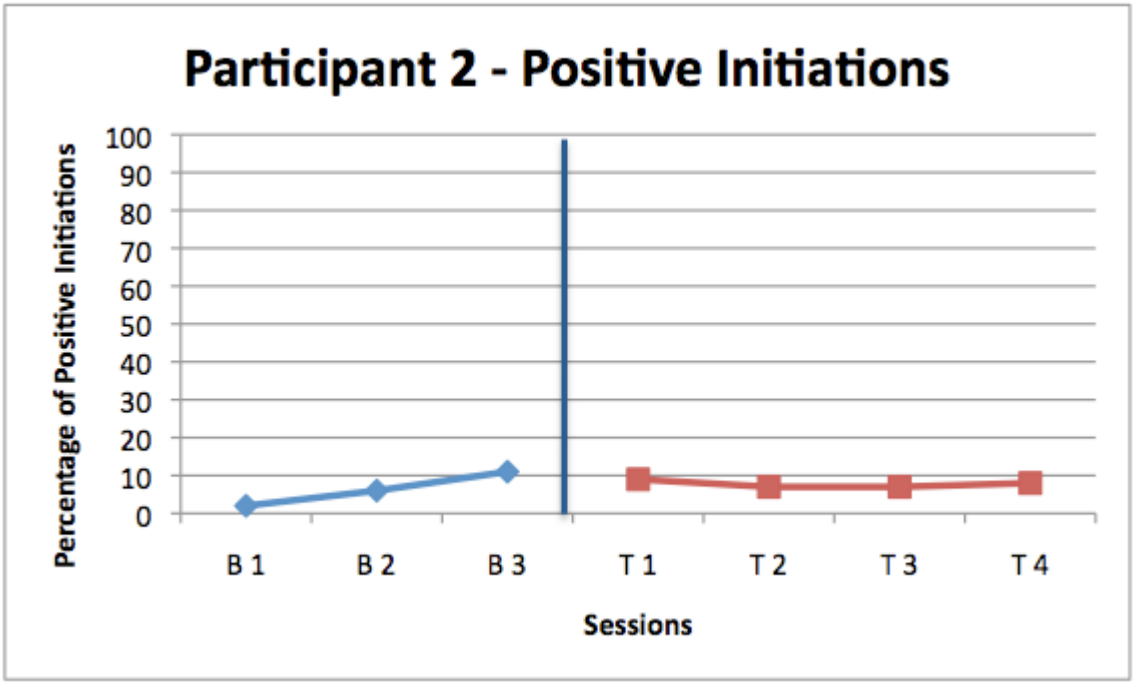

Figure K11: Recess measure for positive initiations for participant 2.

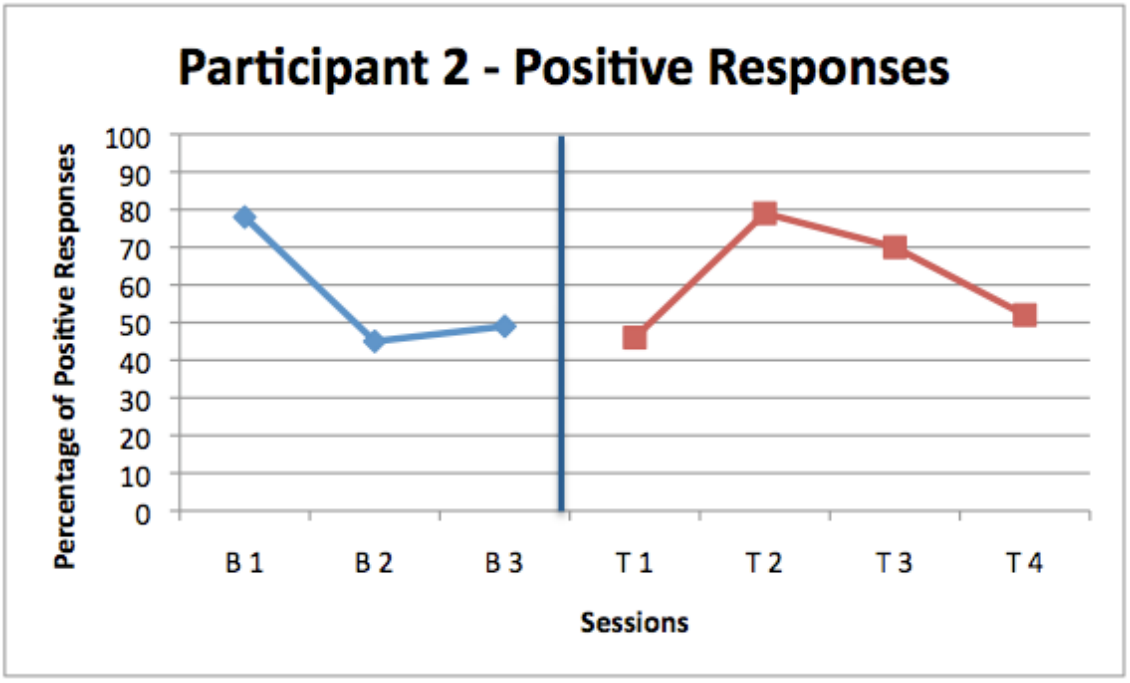

Figure K12: Recess measure of positive responses for participant 2.

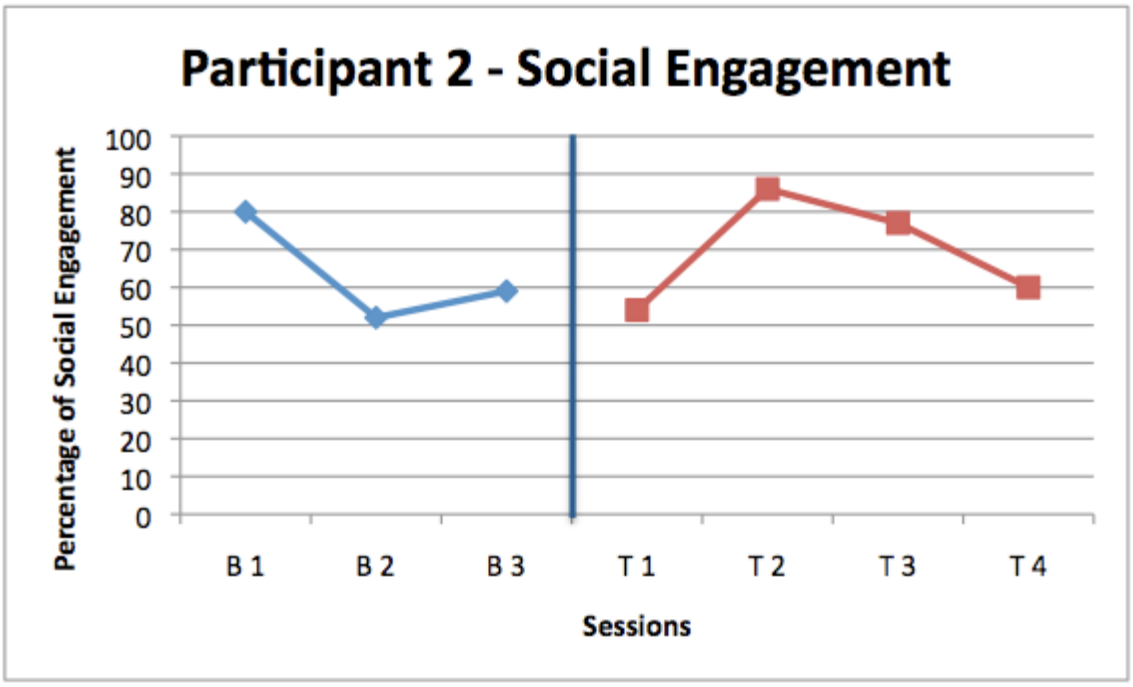

Figure K13: Recess measure of social engagement for participant 2.

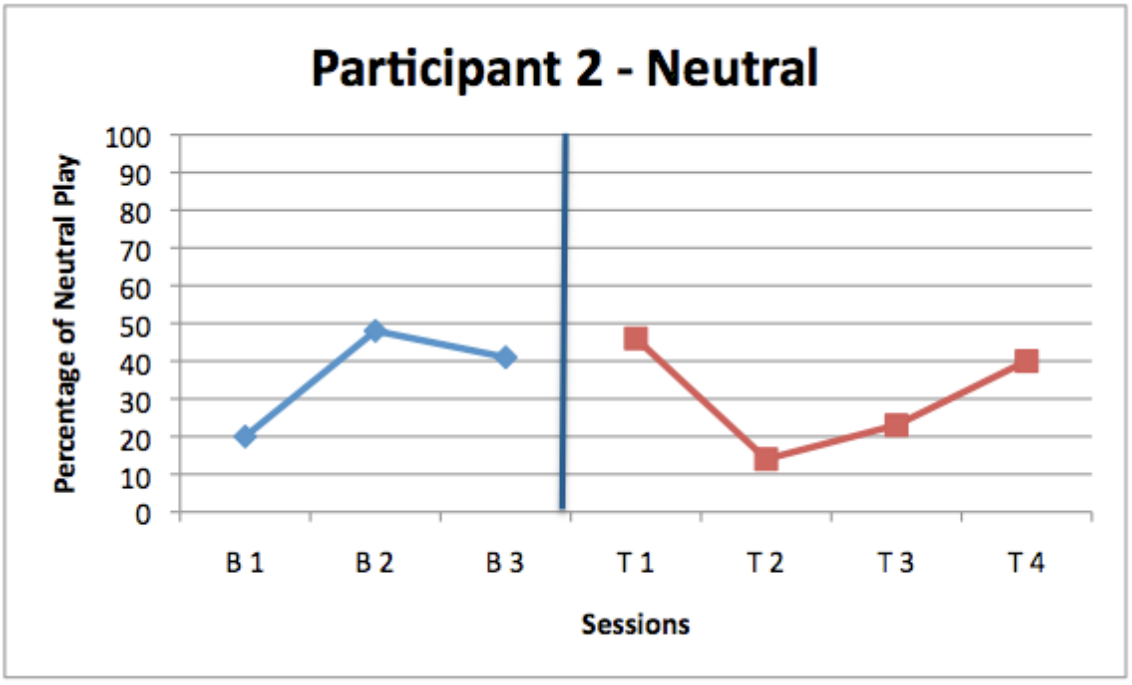

Figure K14: Recess measure of neutral play for participant 2.

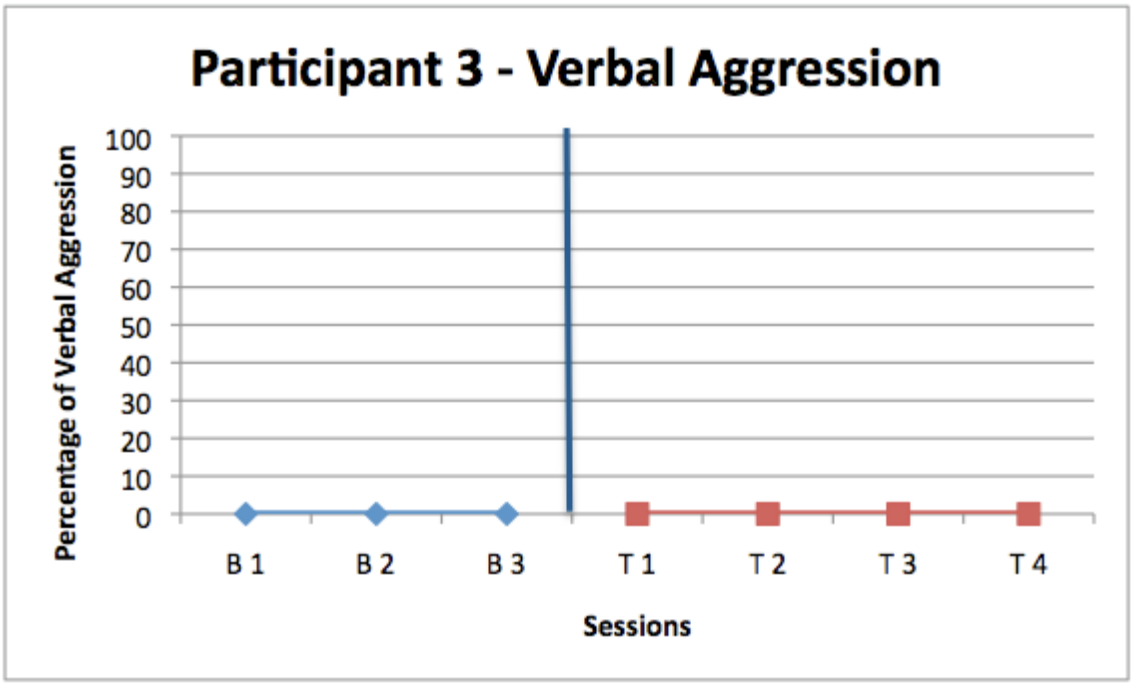

Figure K15: Recess measure of verbal aggression for participant 3.

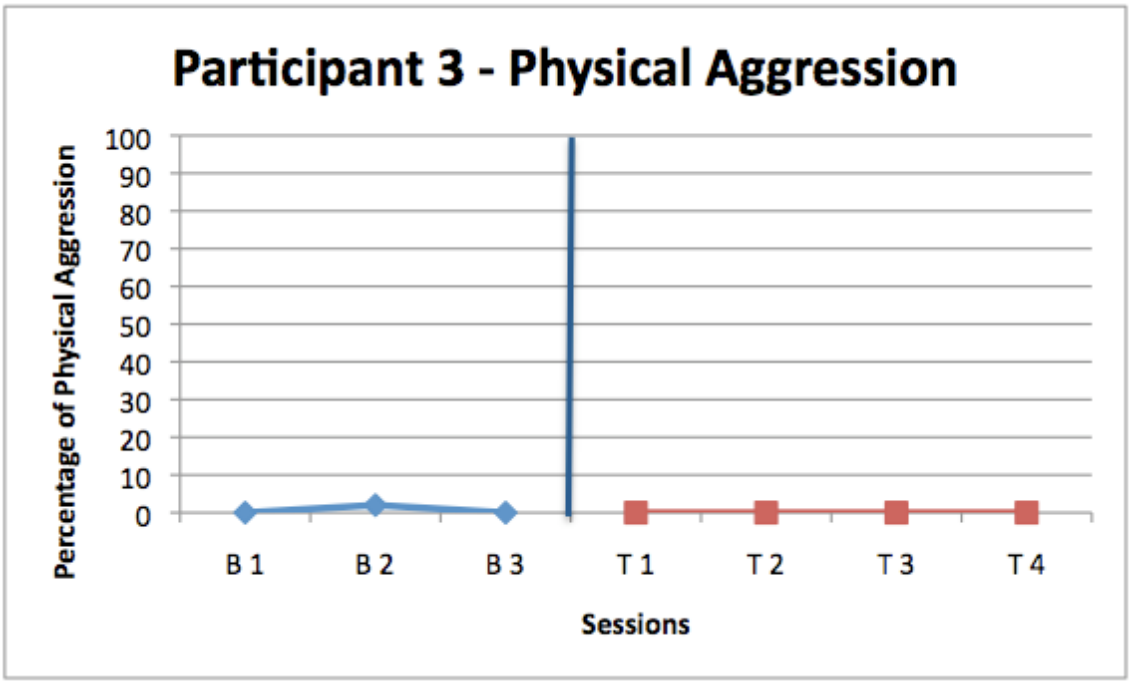

Figure K16: Recess measure of physical aggression for participant 3.

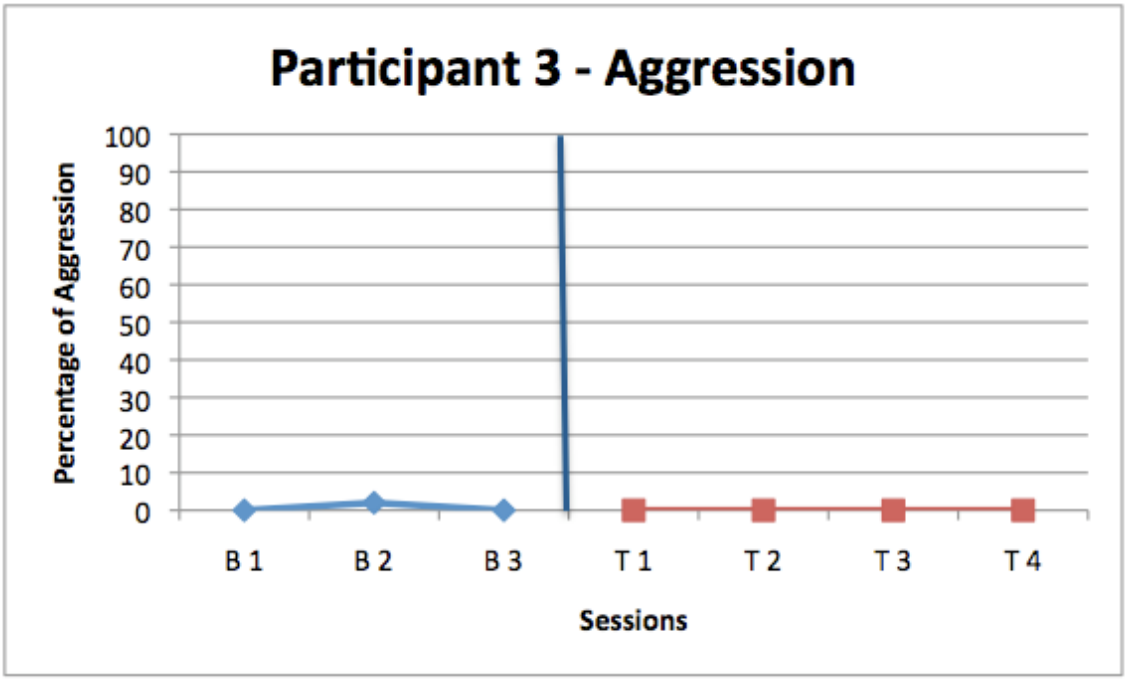

Figure K17: Recess measure of total aggression for participant 3.

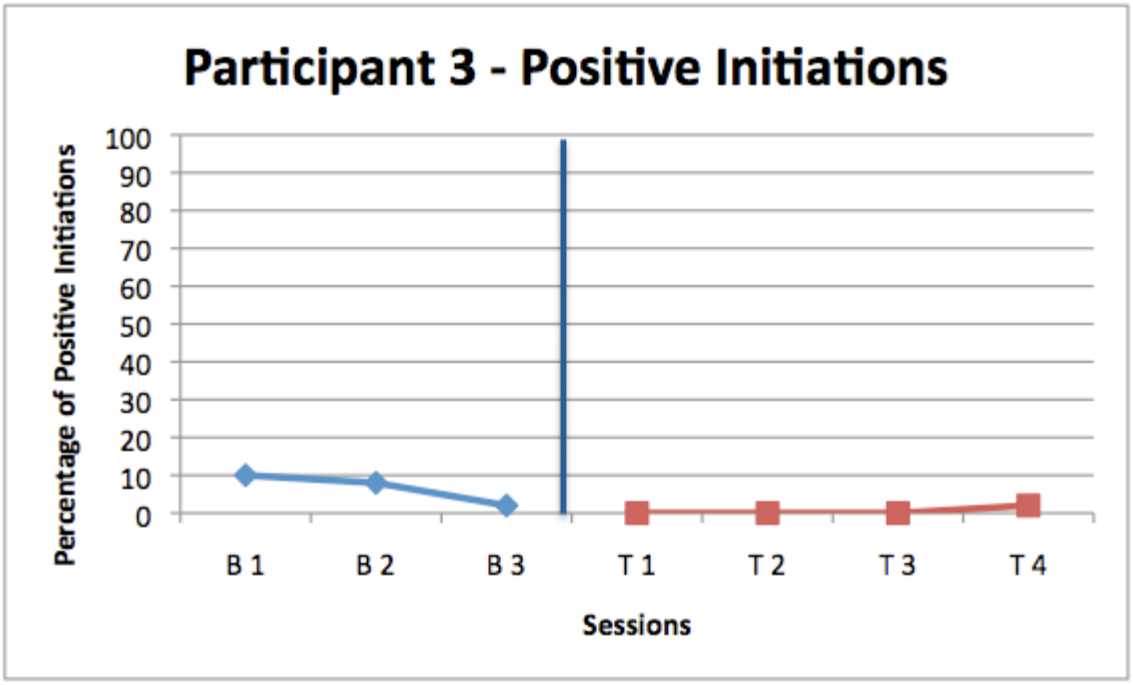

Figure K18: Recess measure of positive initiations for participant 3.

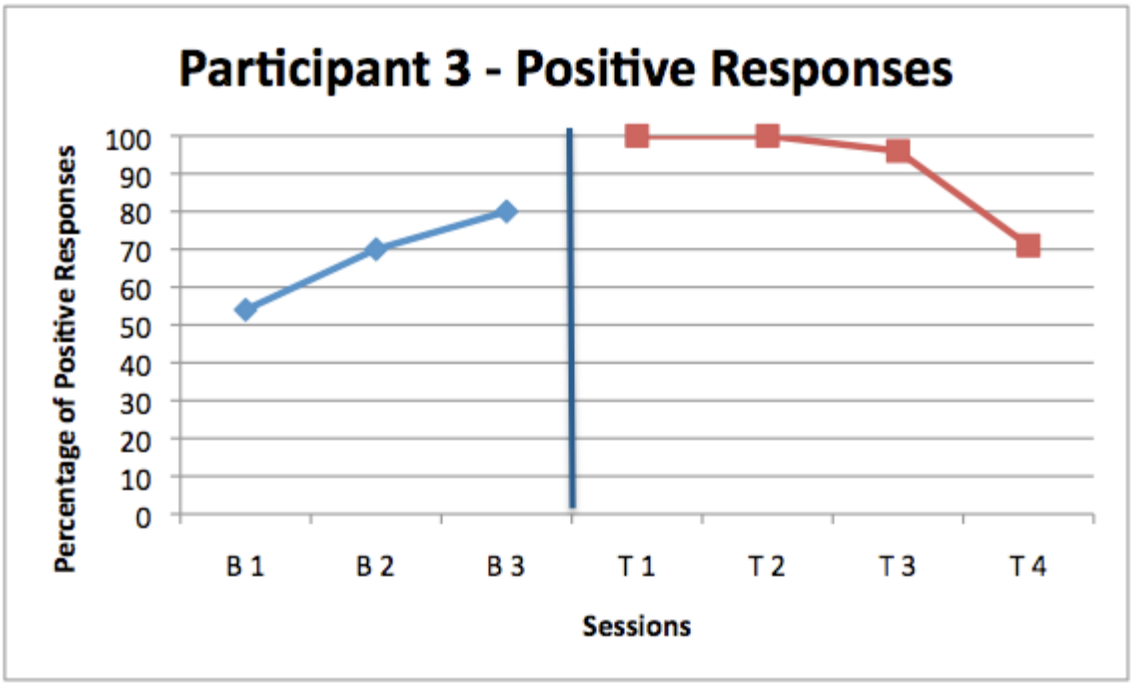

Figure K19: Recess measure of positive responses for participant 3.

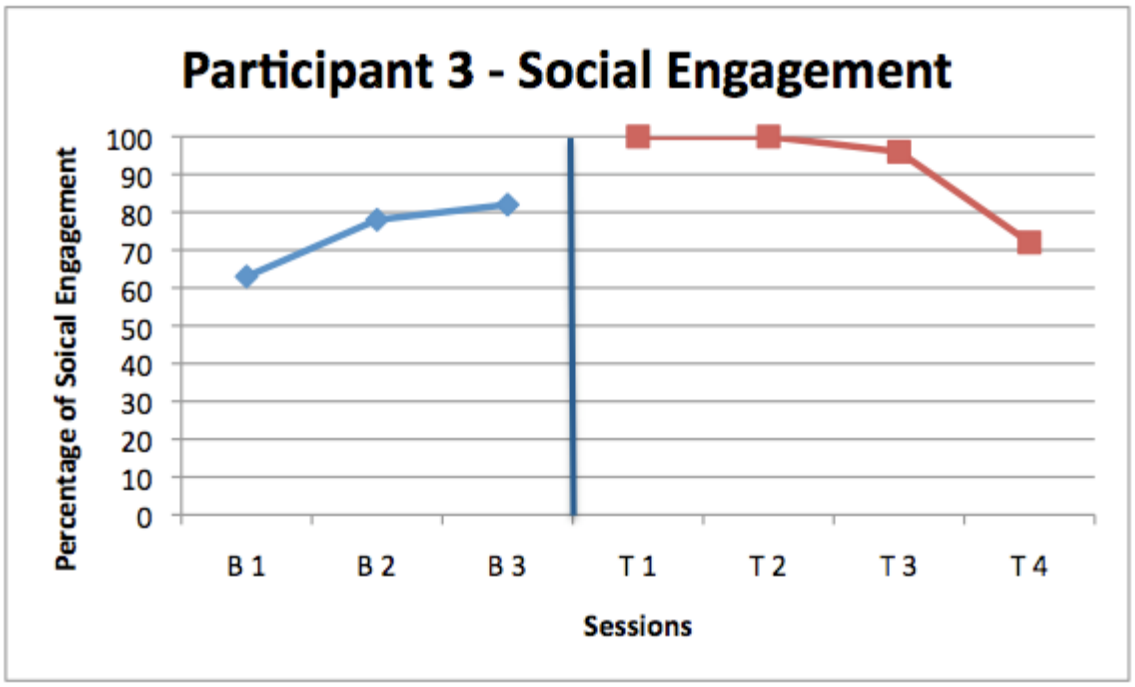

Figure K20: Recess measure of social engagement for participant 3.

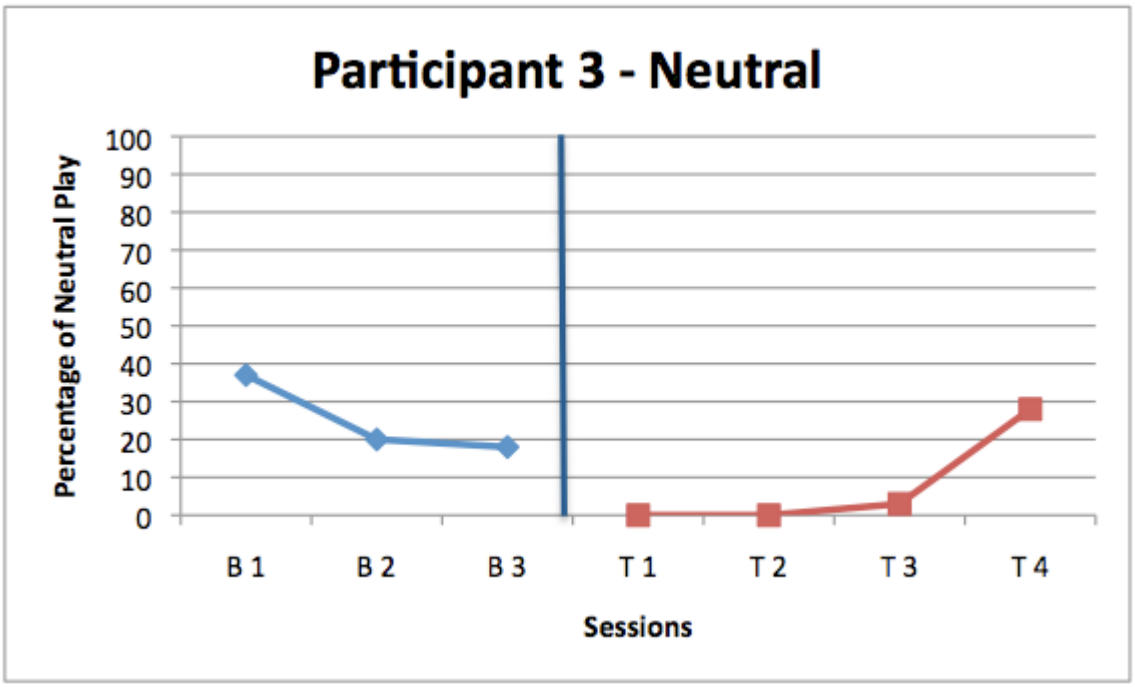

Figure K21: Recess measure of neutral play for participant 3.

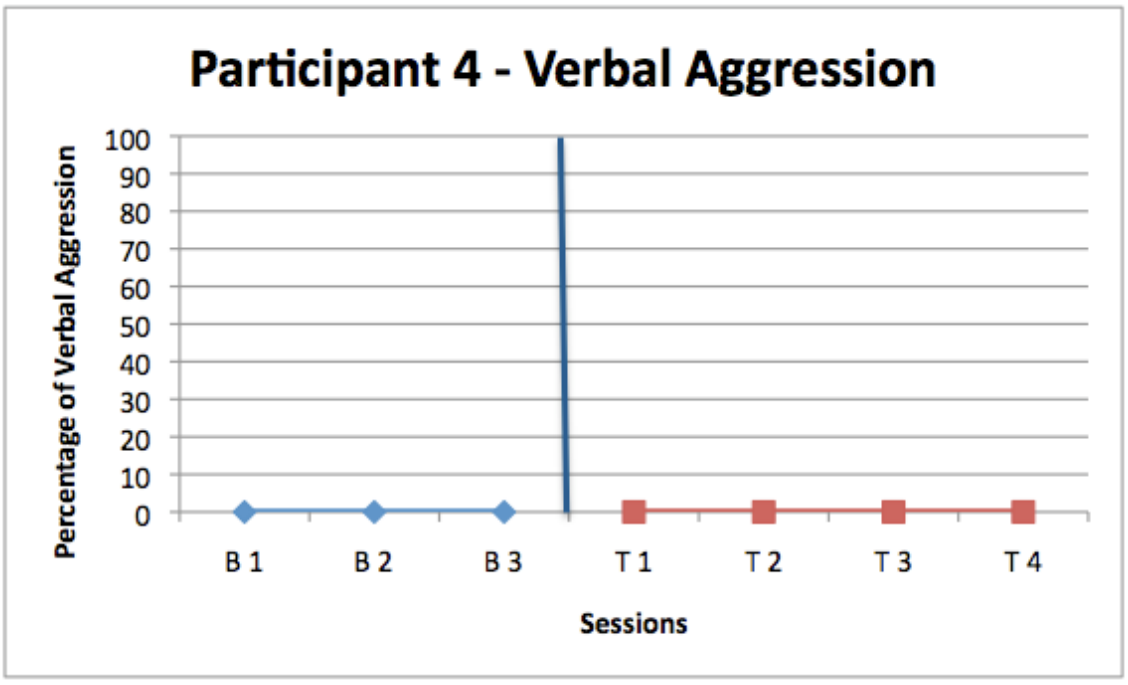

Figure K22: Recess measure of verbal aggressions for participant 4.

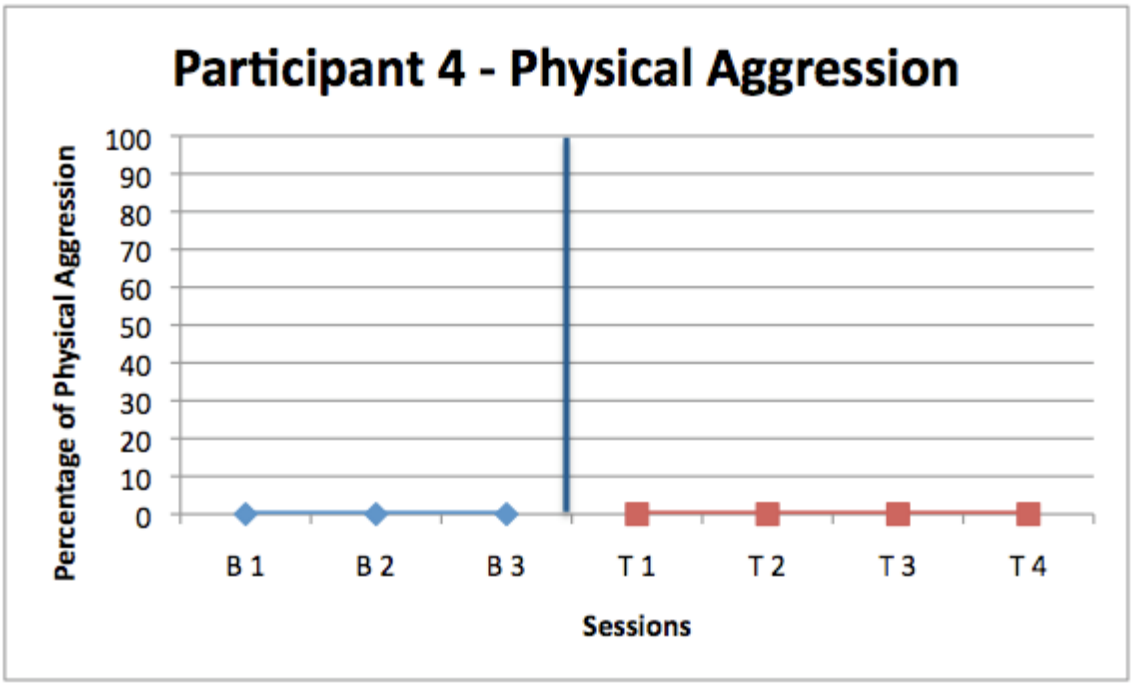

Figure K23: Recess measure of physical aggression for participant 4.

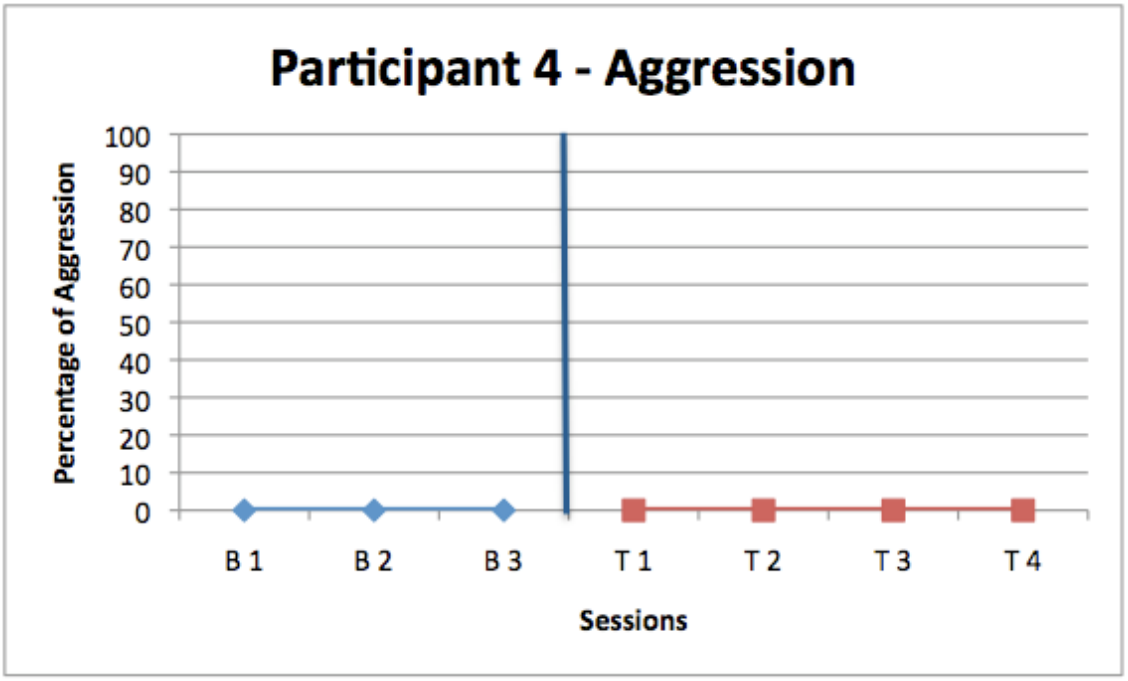

Figure K24: Recess measure of total aggression for participant 4.

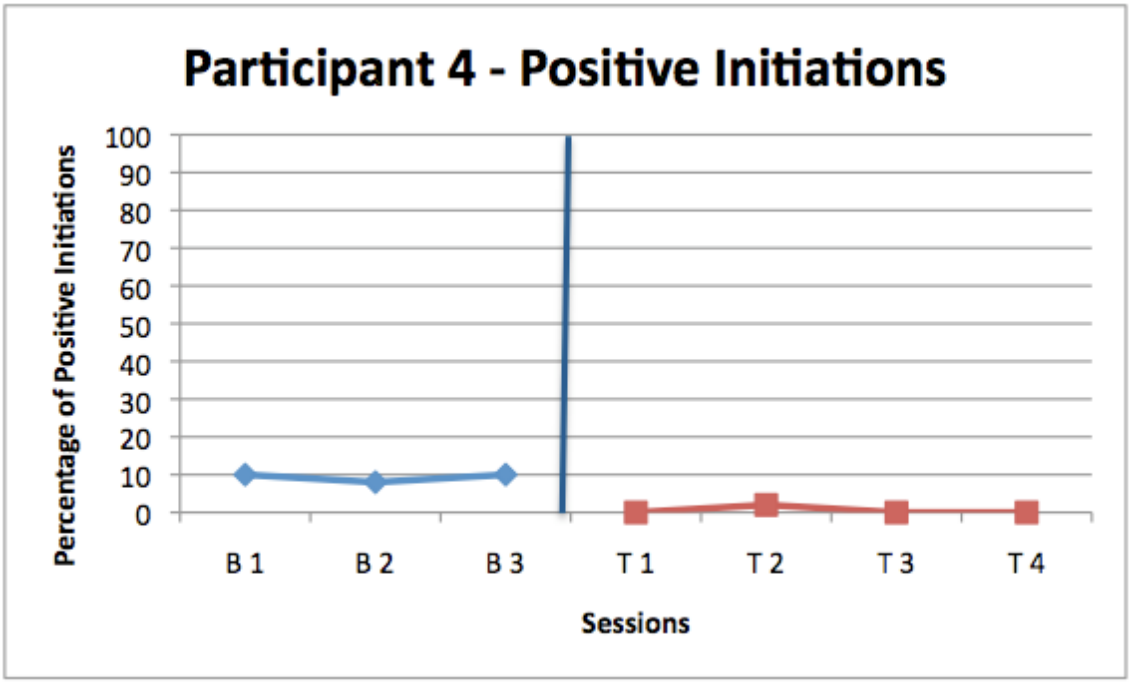

Figure K25: Recess measure of positive initiations for participant 4.

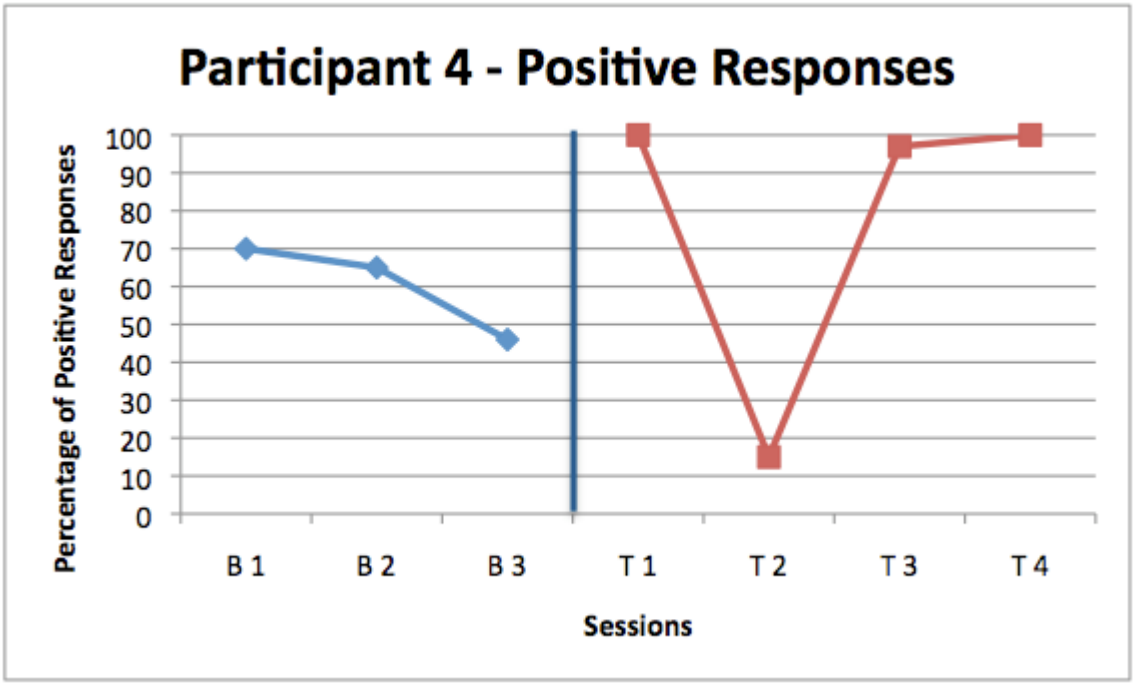

Figure K26: Recess measure of positive responses for participant 4.

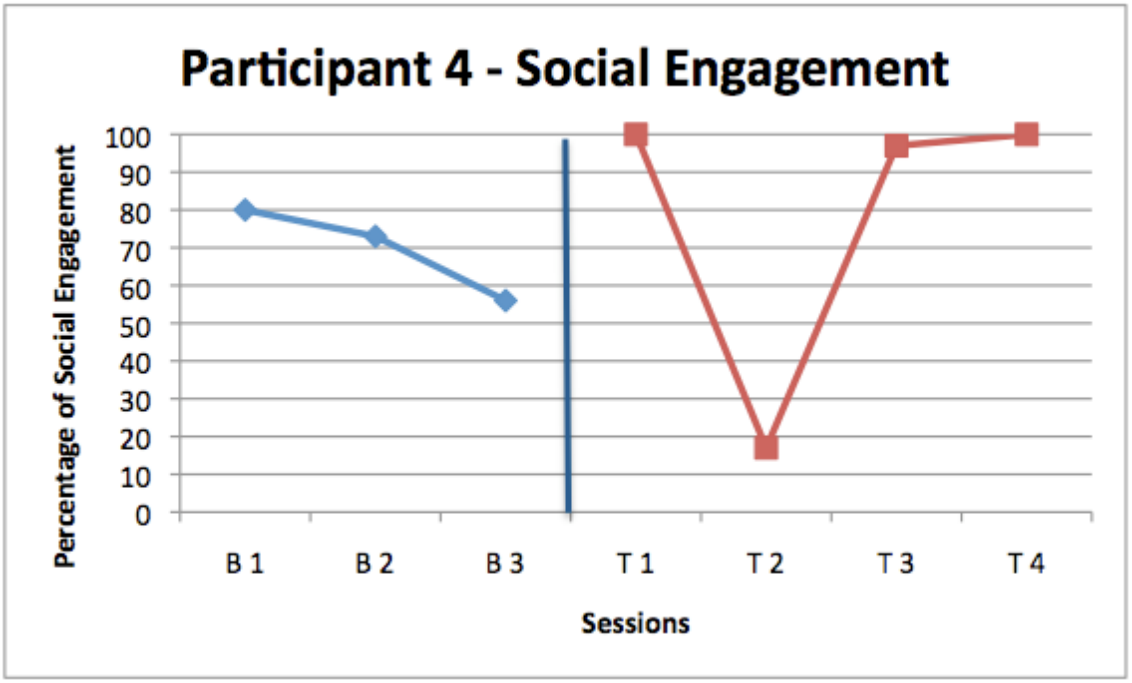

Figure K27: Recess measure of social engagement for participant 4.

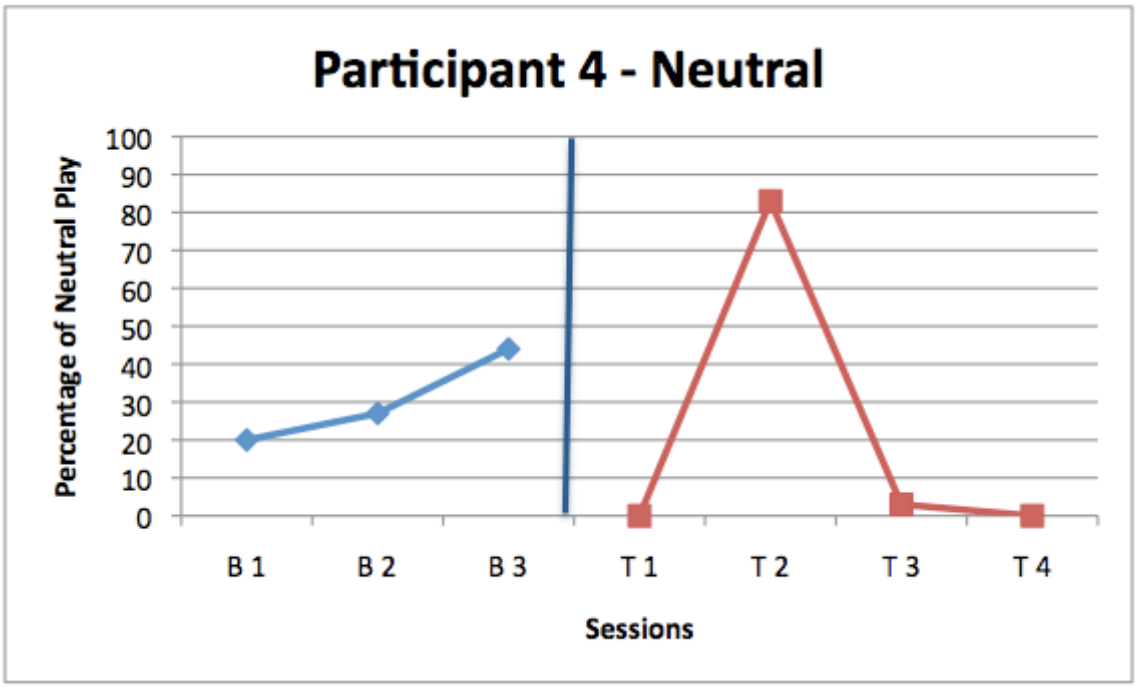

Figure K28: Recess measure of neutral play for participant 4.

APPENDIX L

INDIVIDUAL PARTICIPANT GRAPHS FOR ANALOG FOLLOW-UP

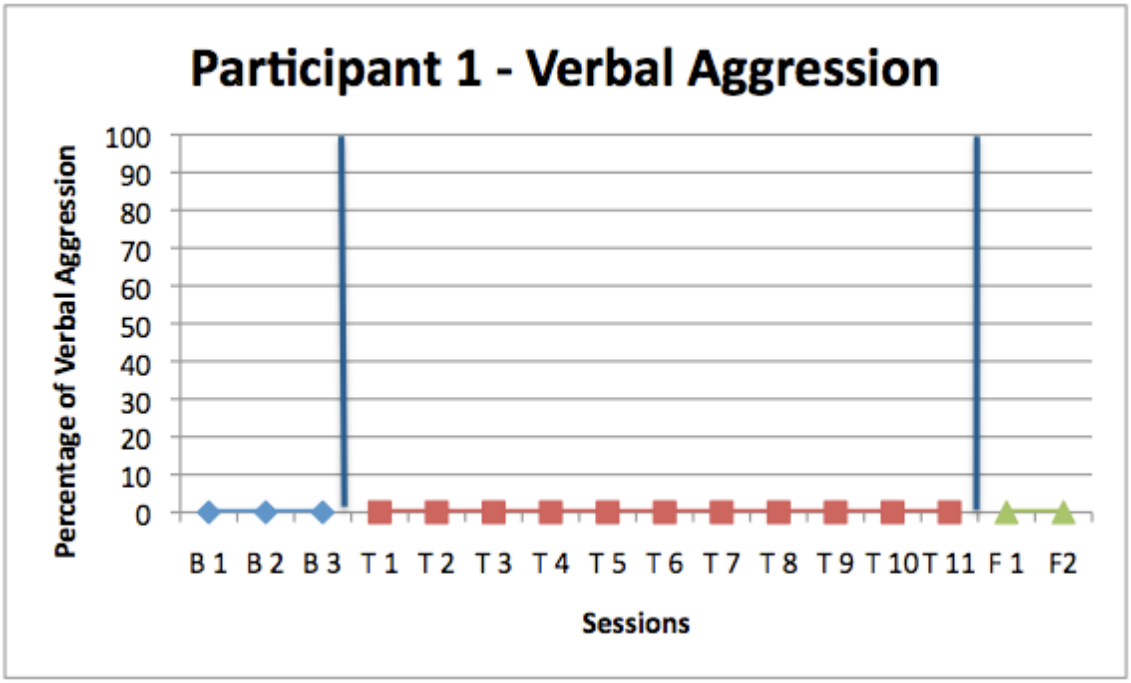

Figure L1: Follow-up analog measure of verbal aggression for participant 1.

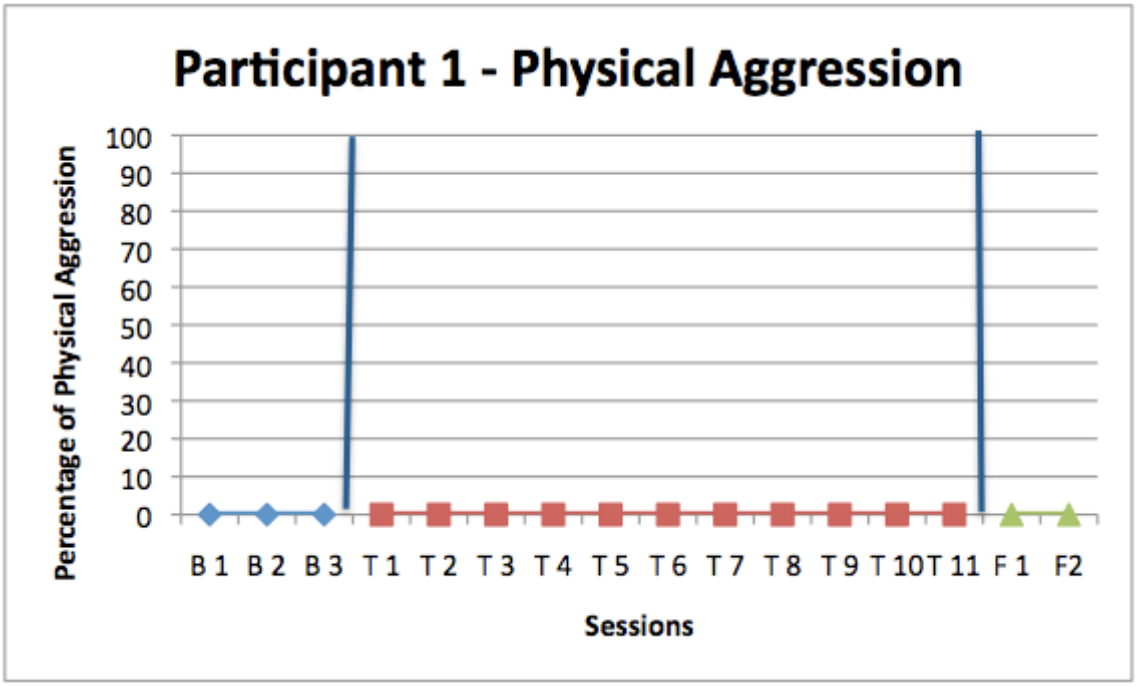

Figure L2: Follow-up analog measure of physical aggression for participant 1.

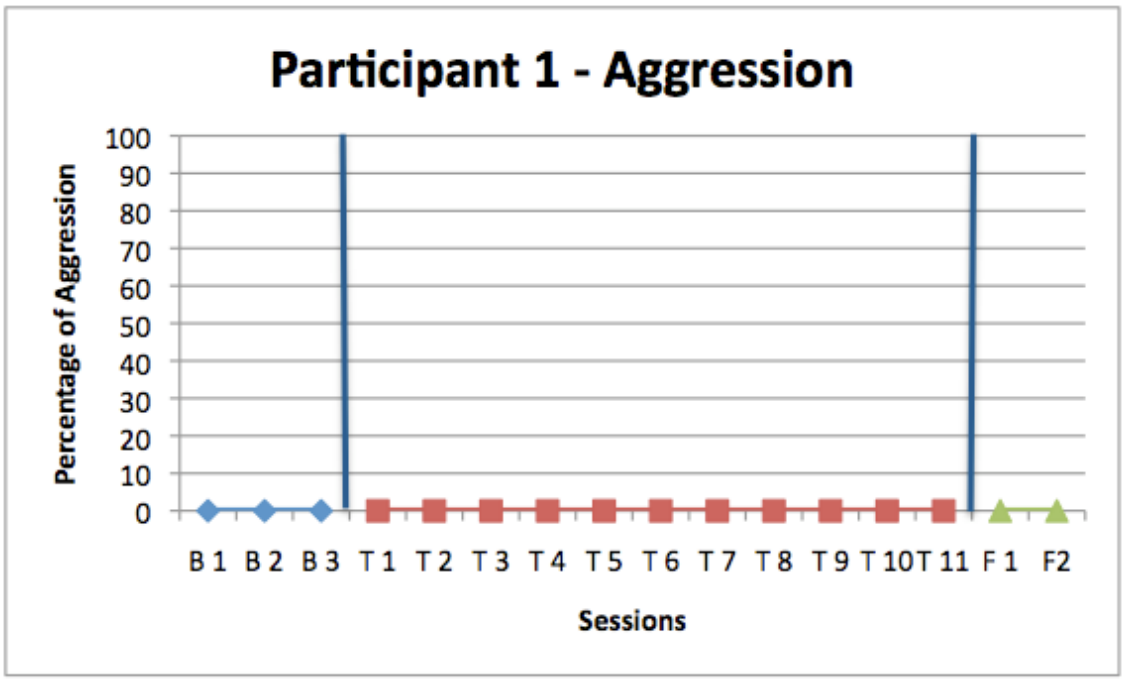

Figure L3: Follow-up analog measure of total aggression for participant 1.

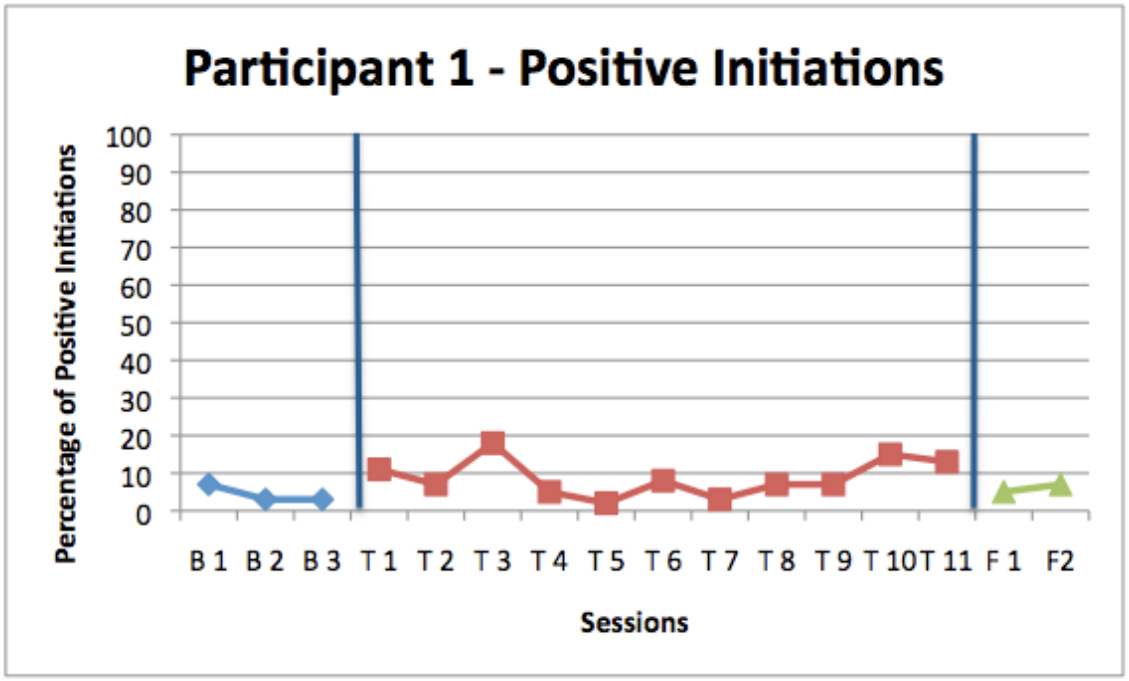

Figure L4: Follow-up analog measure of positive initiations for participant 1.

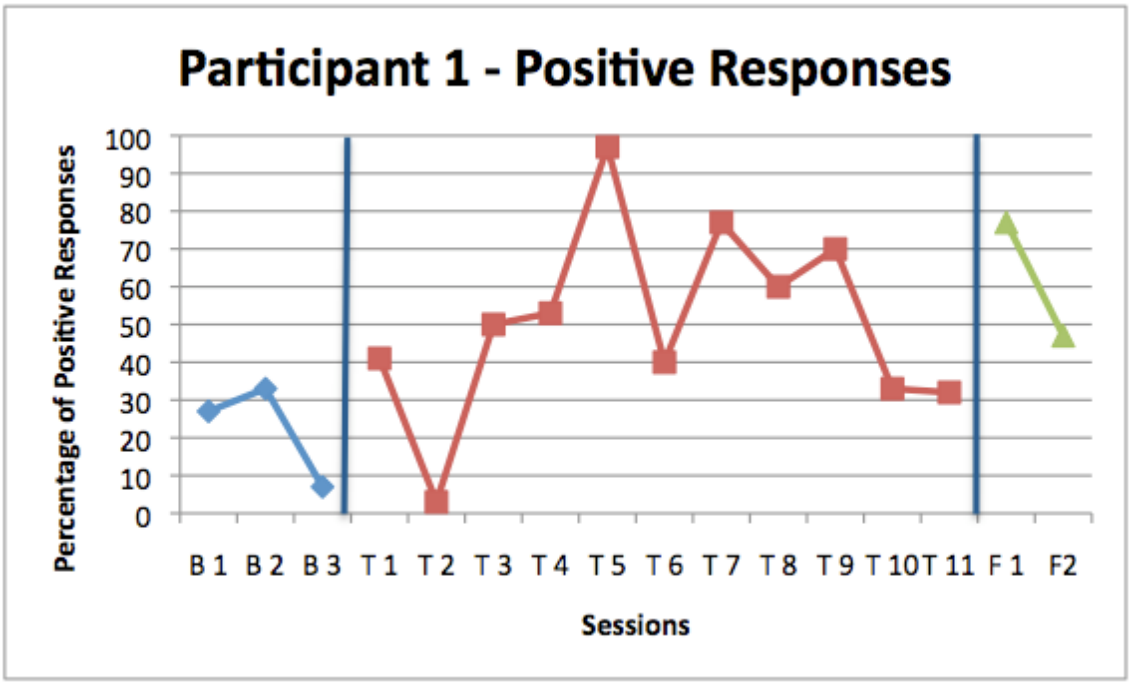

Figure L5: Follow-up analog measure of positive responses for participant 1.

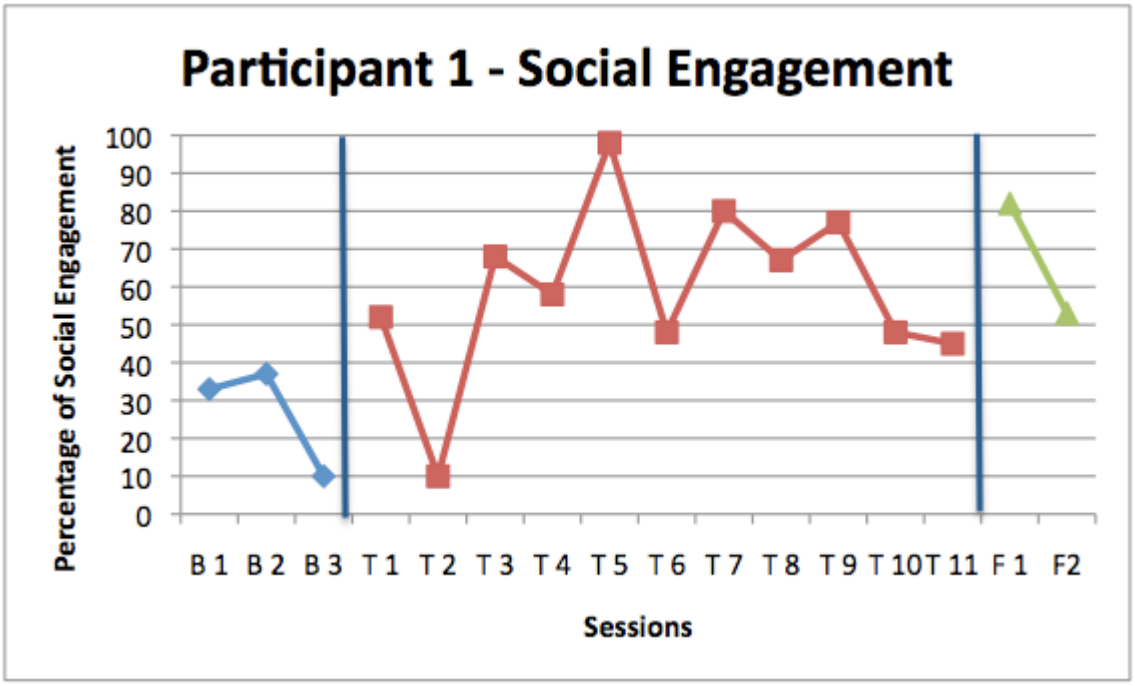

Figure L6: Follow-up analog measure of social engagement for participant 1.

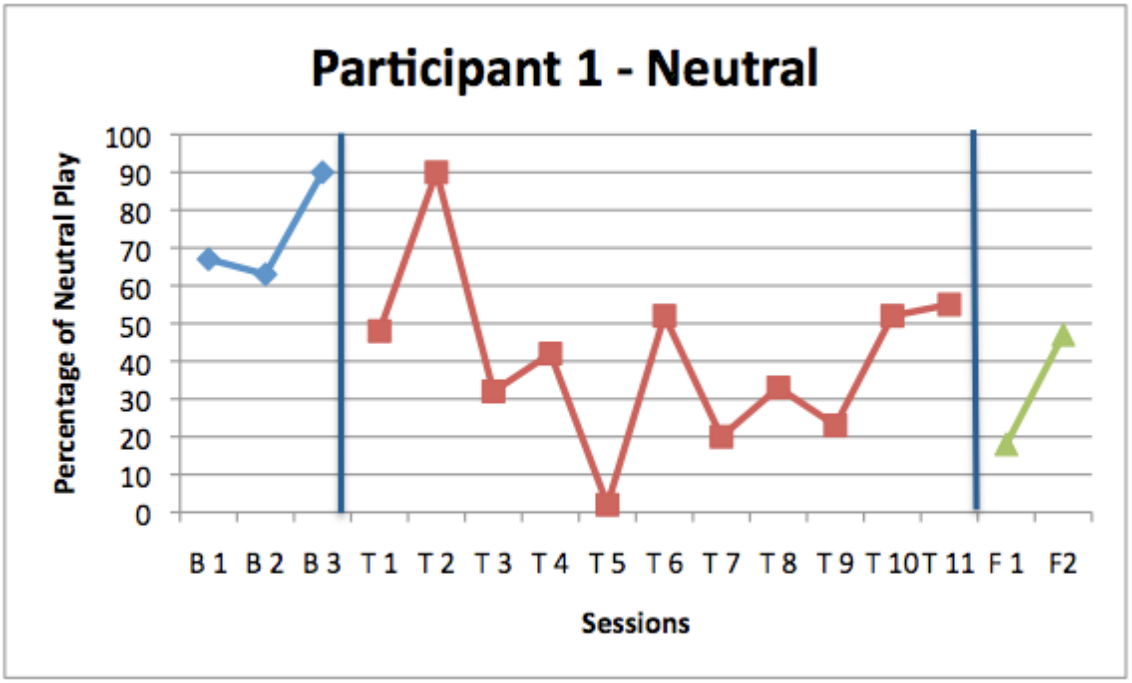

Figure L7: Follow-up analog measure of neutral play for participant 1.

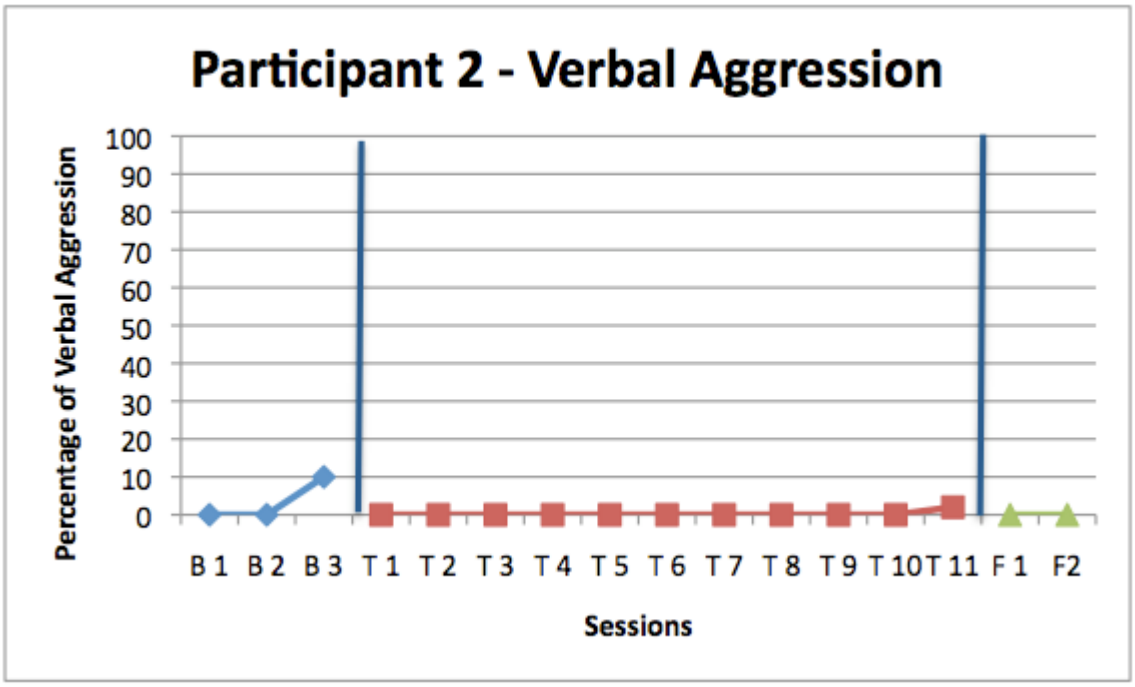

Figure L8: Follow-up analog measure of verbal aggression for participant 2.

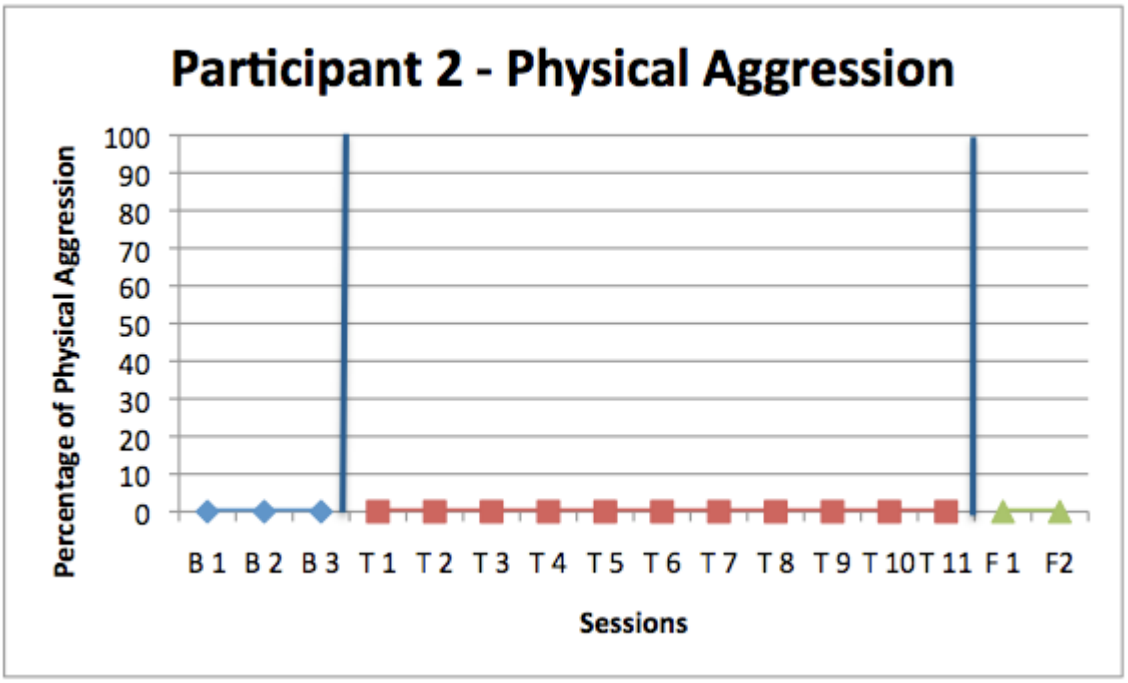

Figure L9: Follow-up analog measure of physical aggression for participant 2.

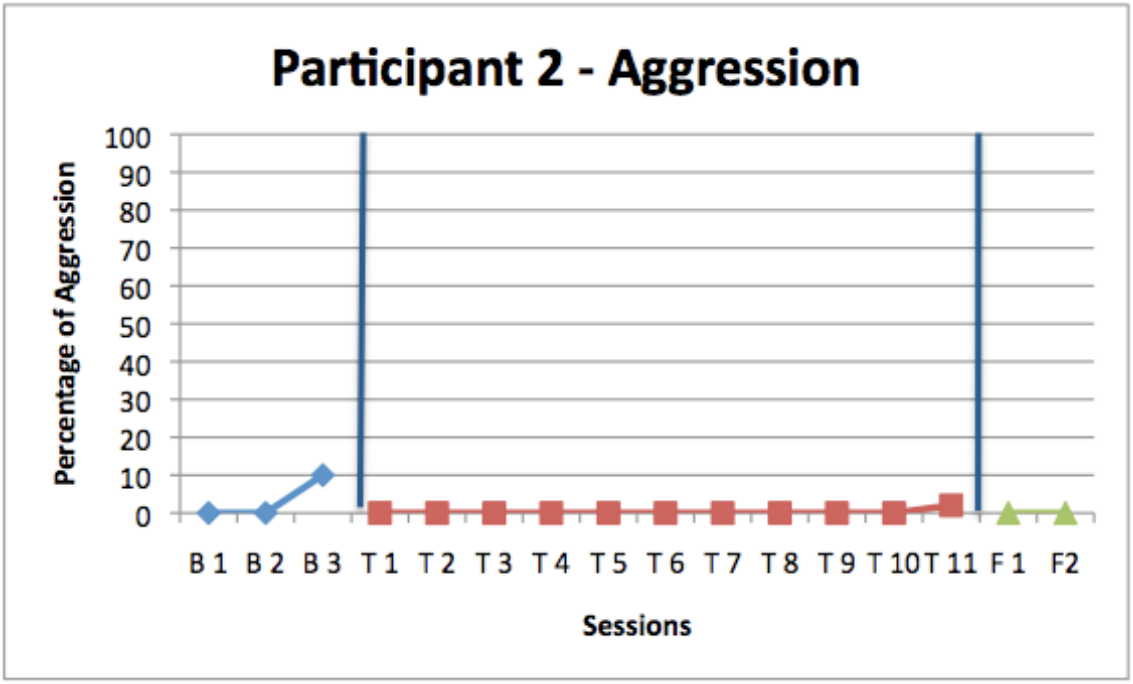

Figure L10: Follow-up analog measure of total aggression for participant 2.

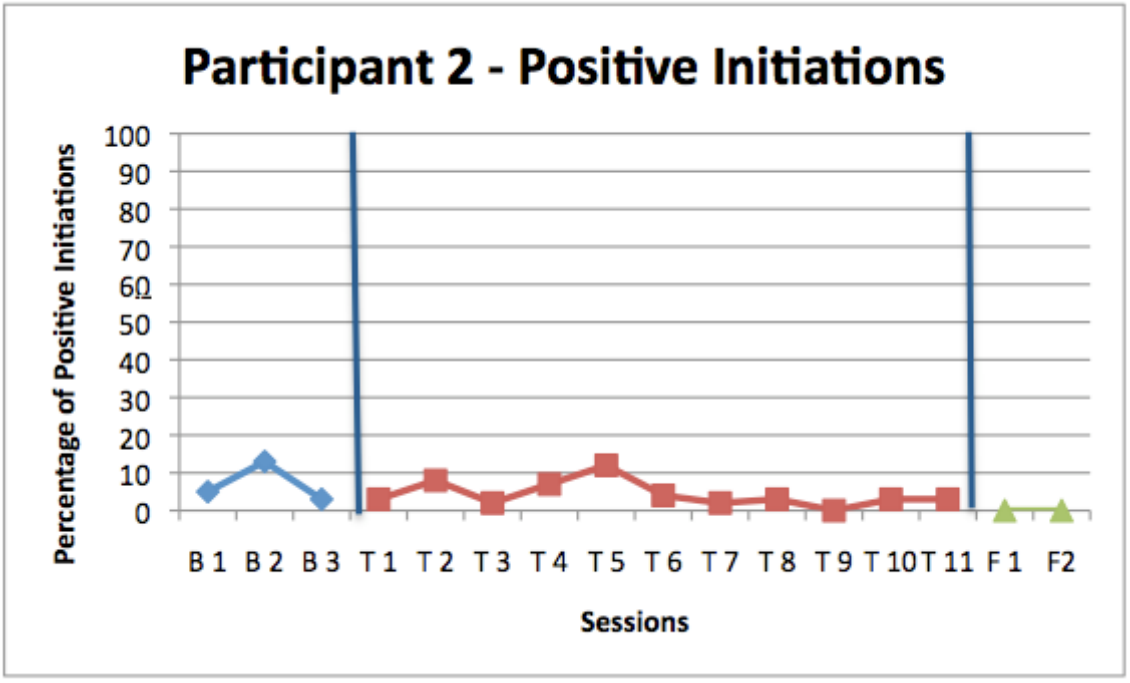

Figure L11: Follow-up analog measure for positive initiations for participant 2.

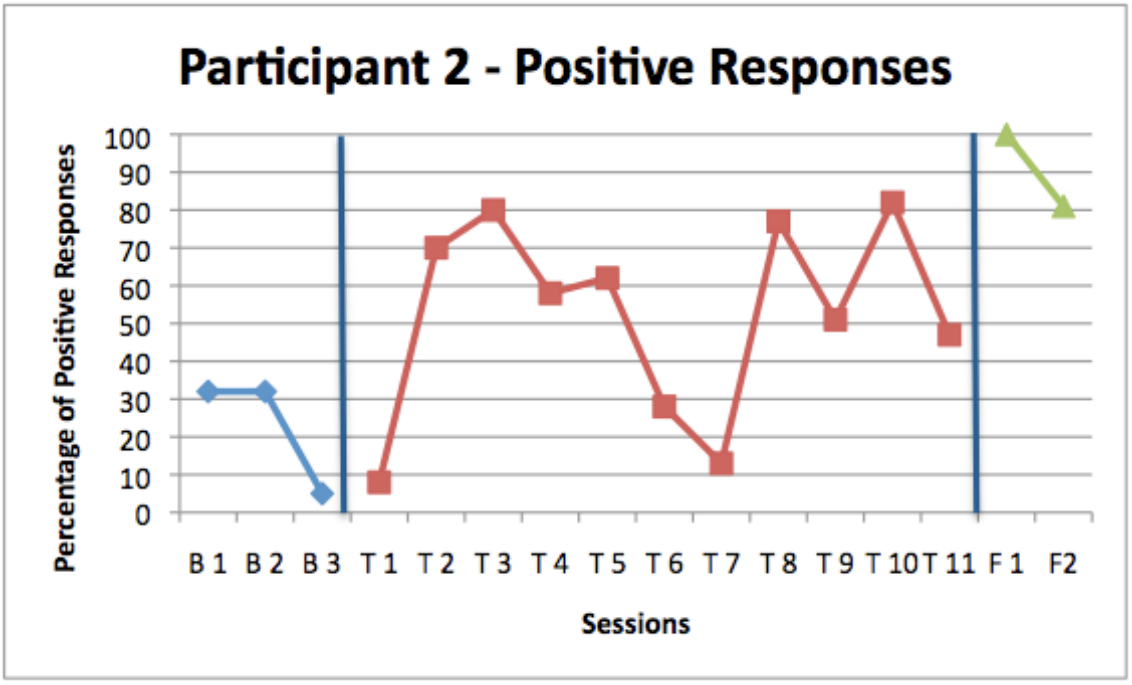

Figure L12: Follow-up analog measure of positive responses for participant 2.

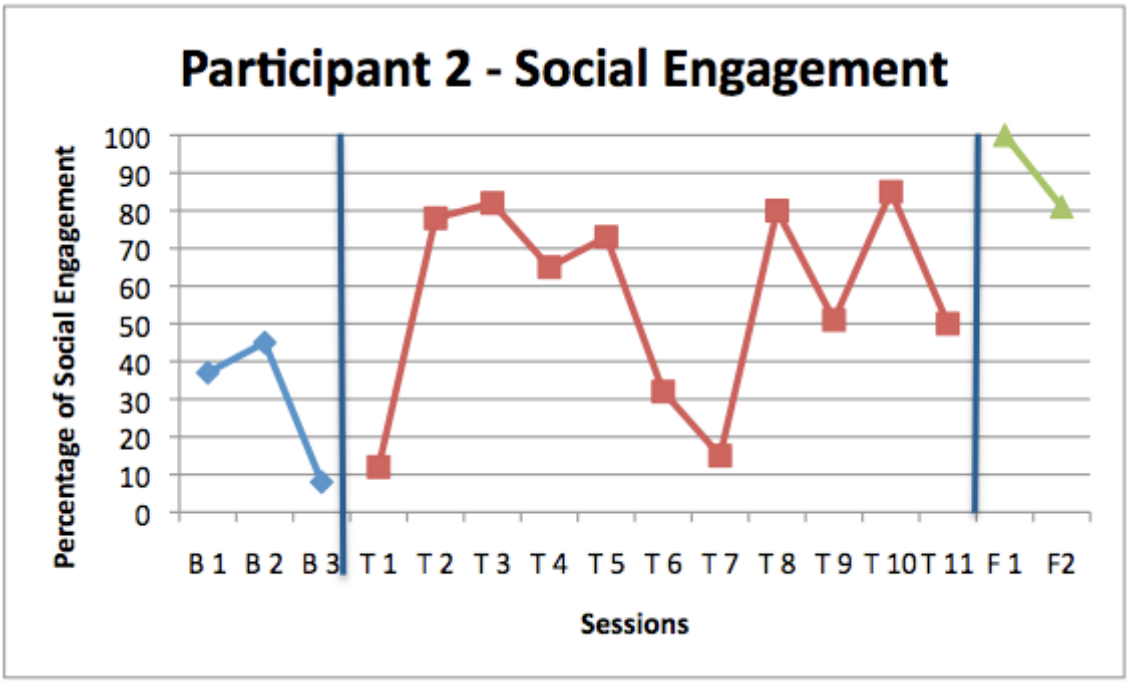

Figure L13: Follow-up analog measure of social engagement for participant 2.

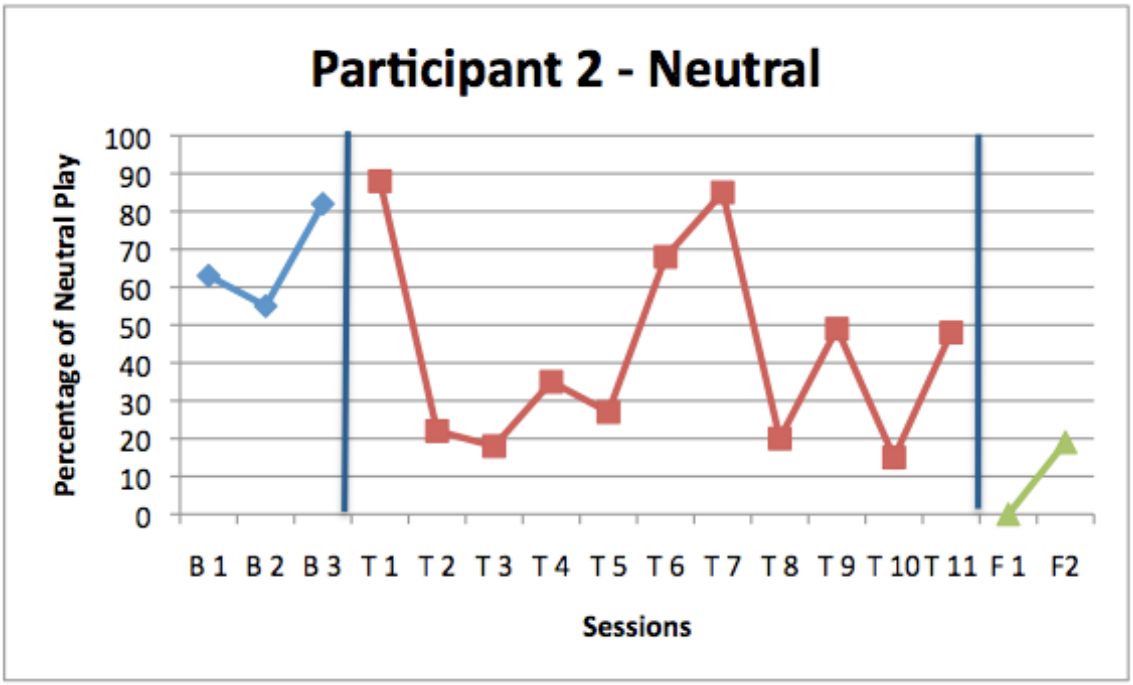

Figure L14: Follow-up analog measure of neutral play for participant 2.

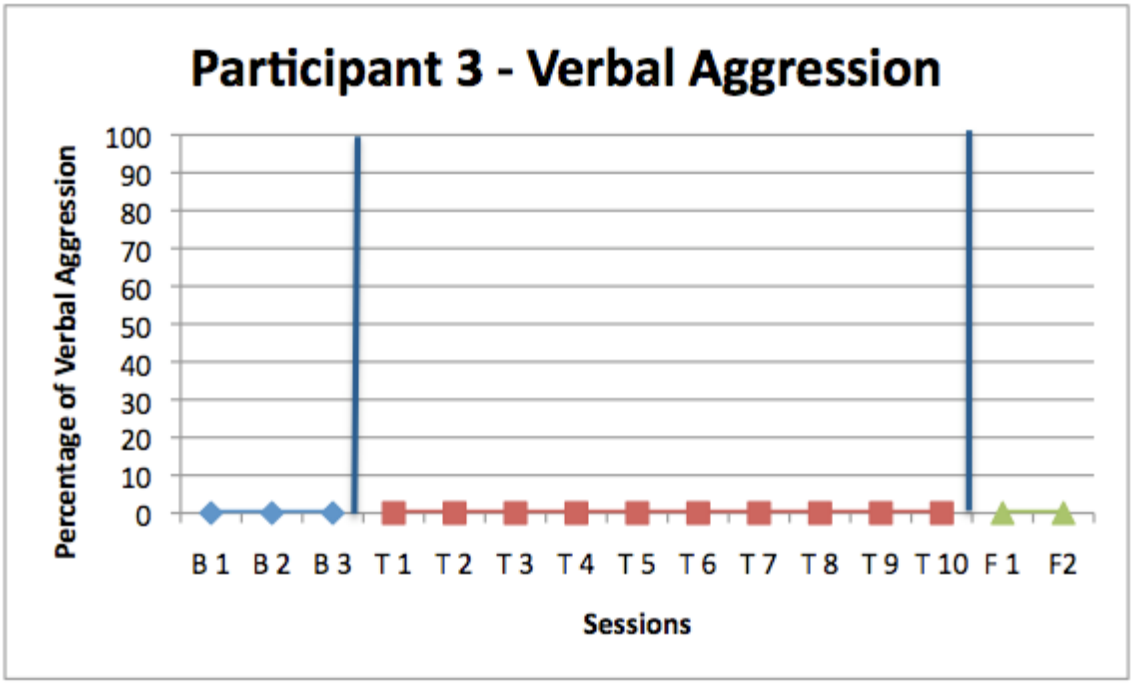

Figure L15: Follow-up analog measure of verbal aggression for participant 3.

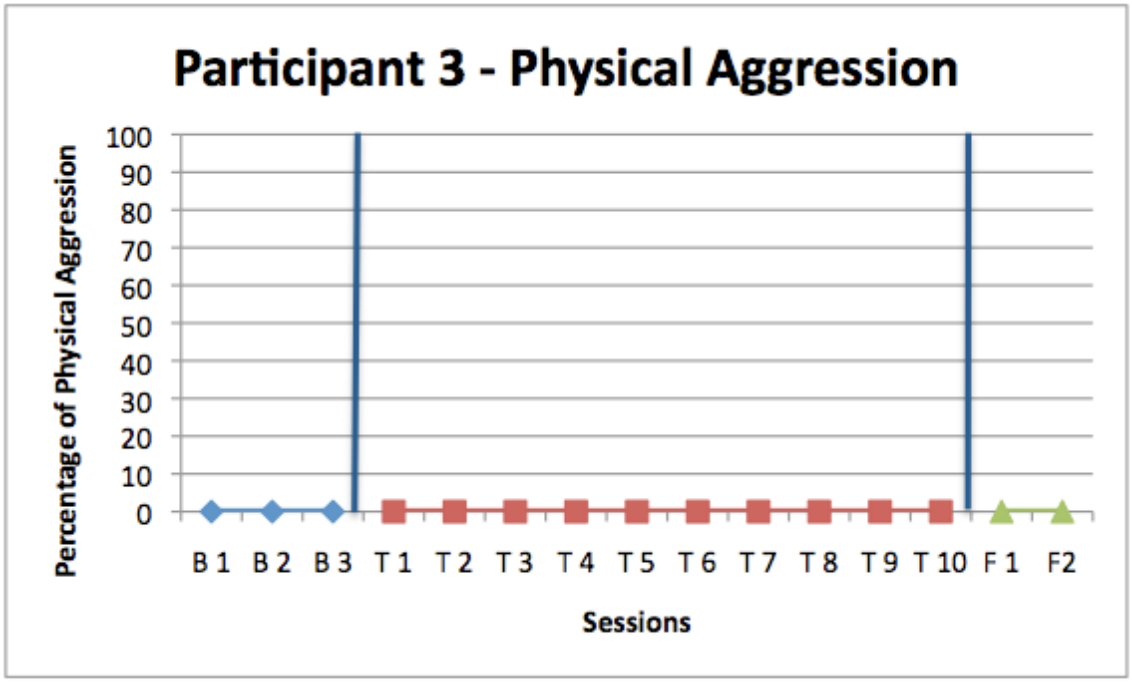

Figure L16: Follow-up analog measure of physical aggression for participant 3.

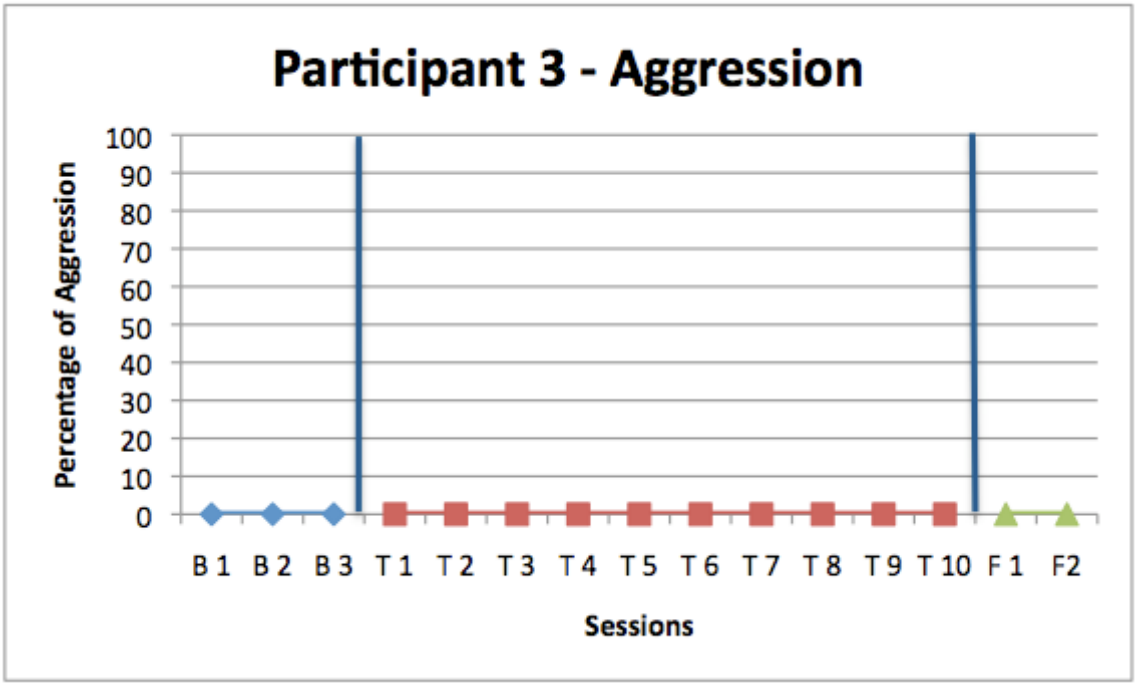

Figure L17: Follow-up analog measure of total aggression for participant 3.

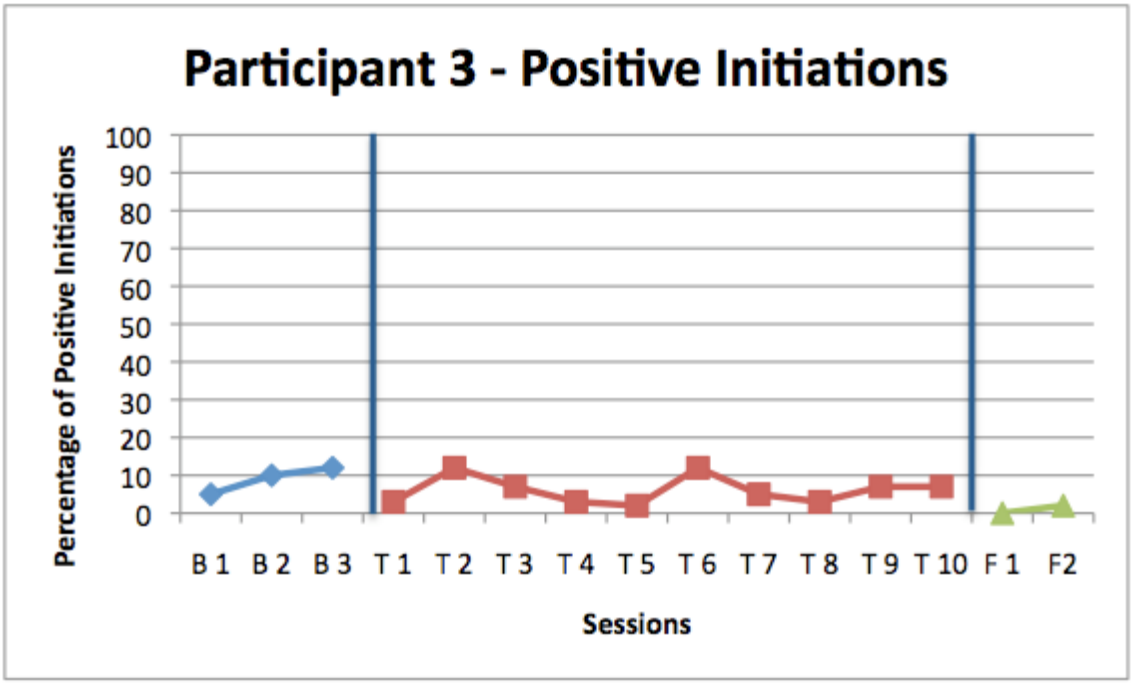

Figure L18: Follow-up analog measure of positive initiations for participant 3.

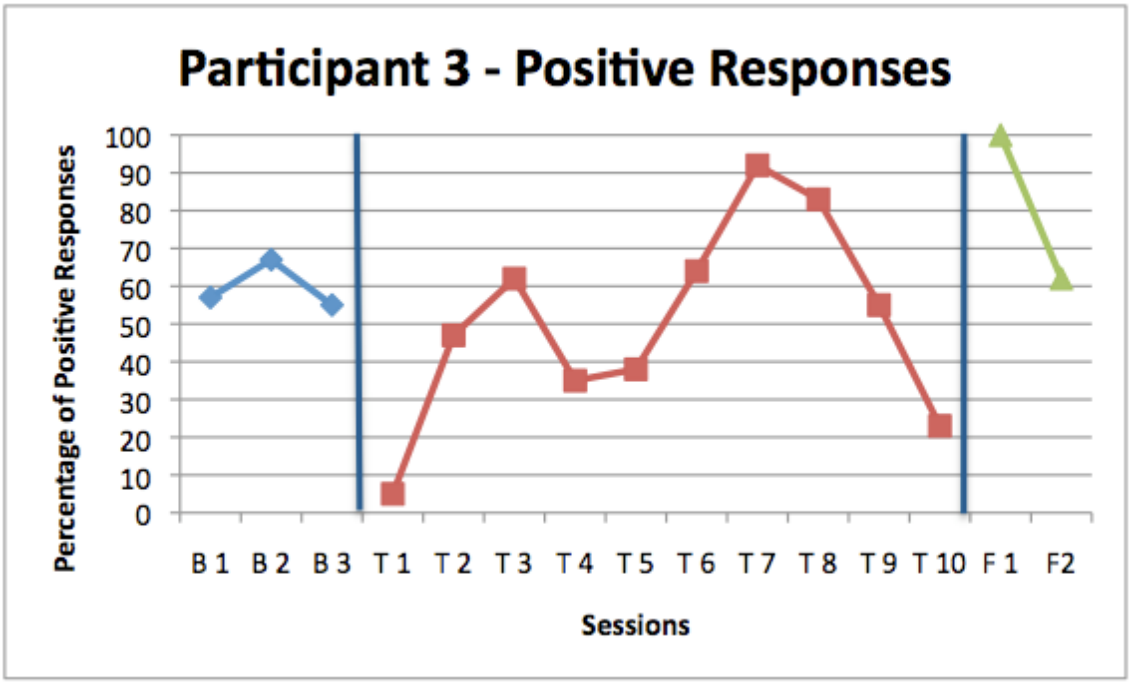

Figure L19: Follow-up analog measure of positive responses for participant 3.

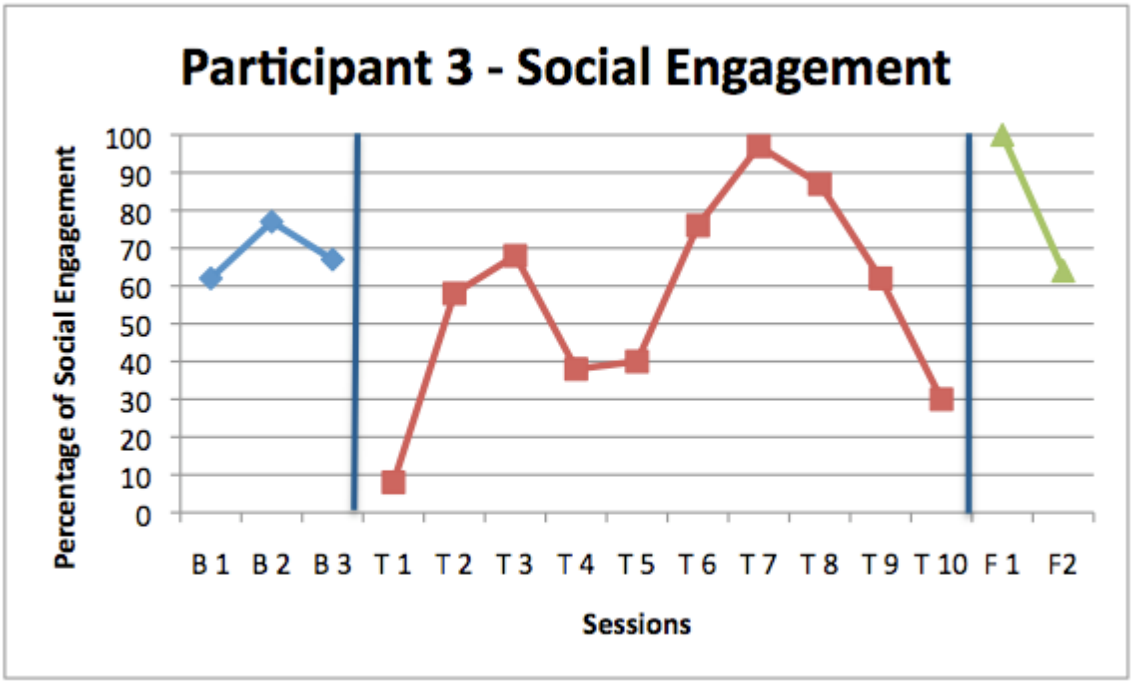

Figure L20: Follow-up analog measure of social engagement for participant 3.

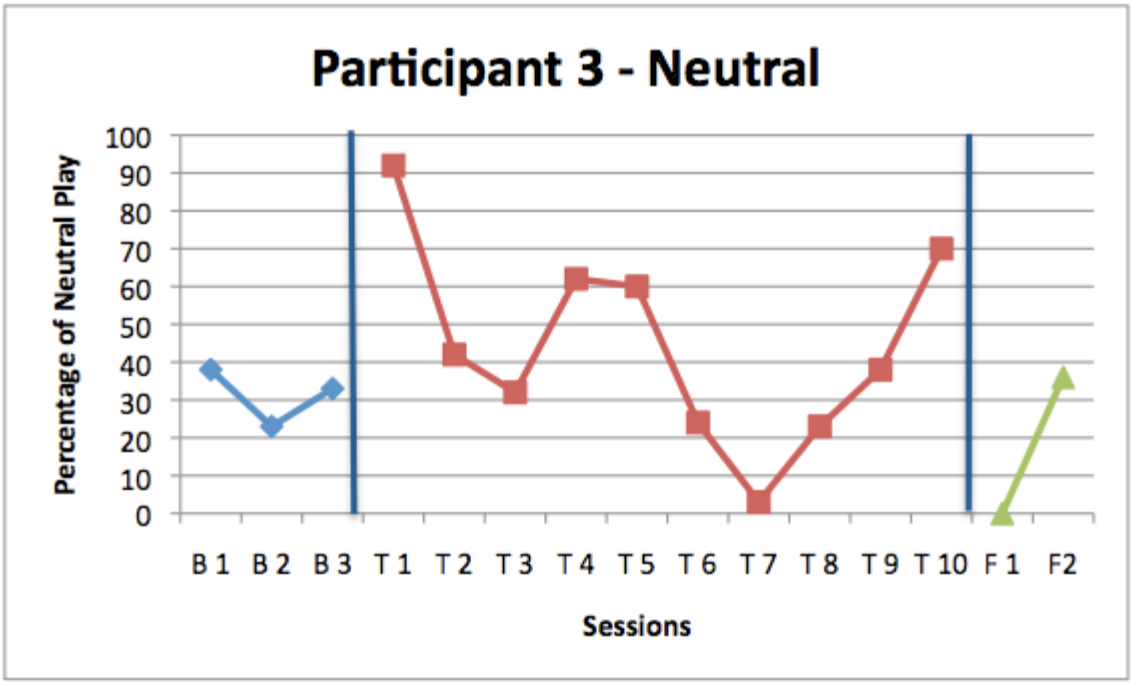

Figure L21: Follow-up analog measure of neutral play for participant 3.

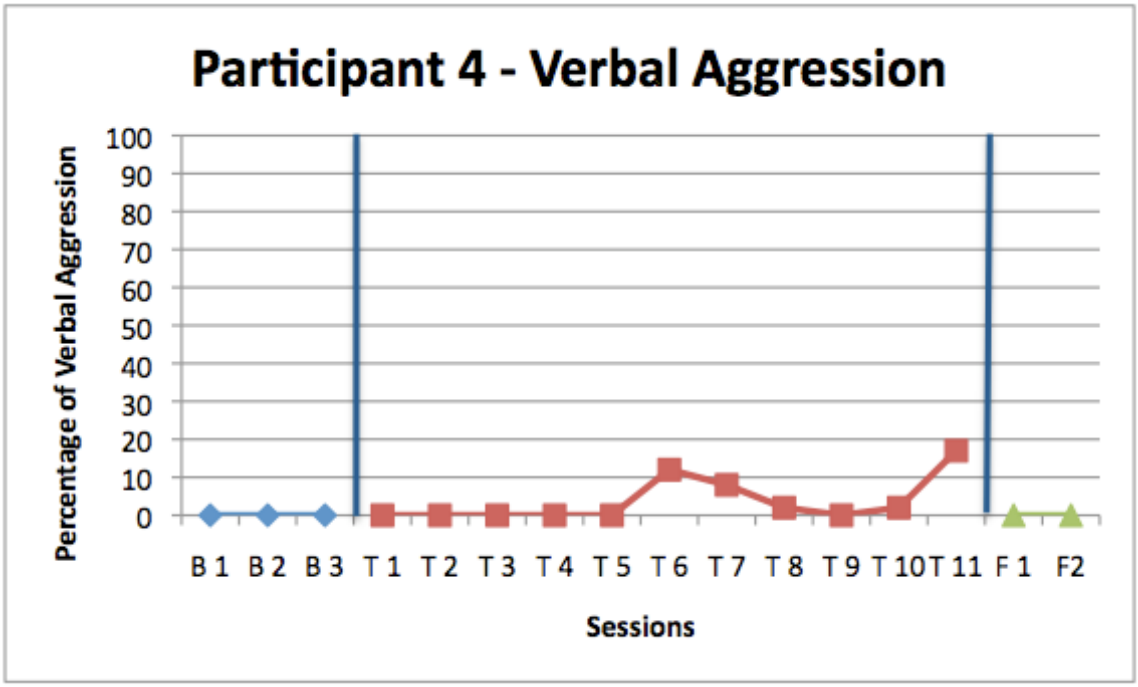

Figure L22: Follow-up analog measure of verbal aggressions for participant 4.

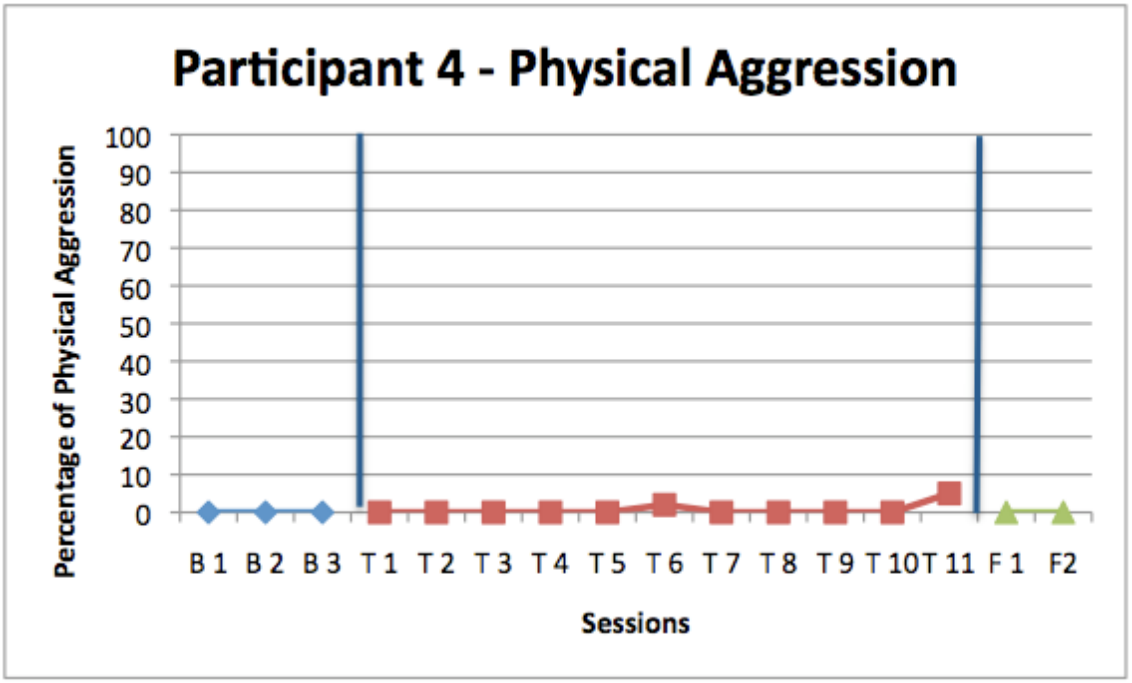

Figure L23: Follow-up analog measure of physical aggression for participant 4.

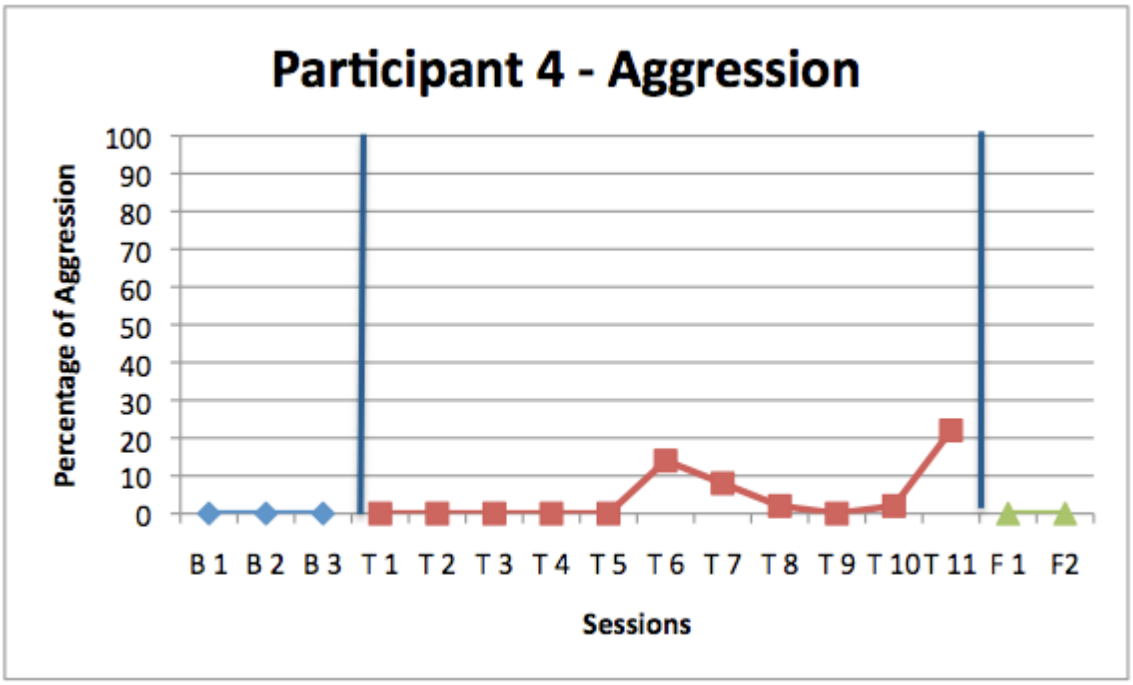

Figure L24: Follow-up analog measure of total aggression for participant 4.

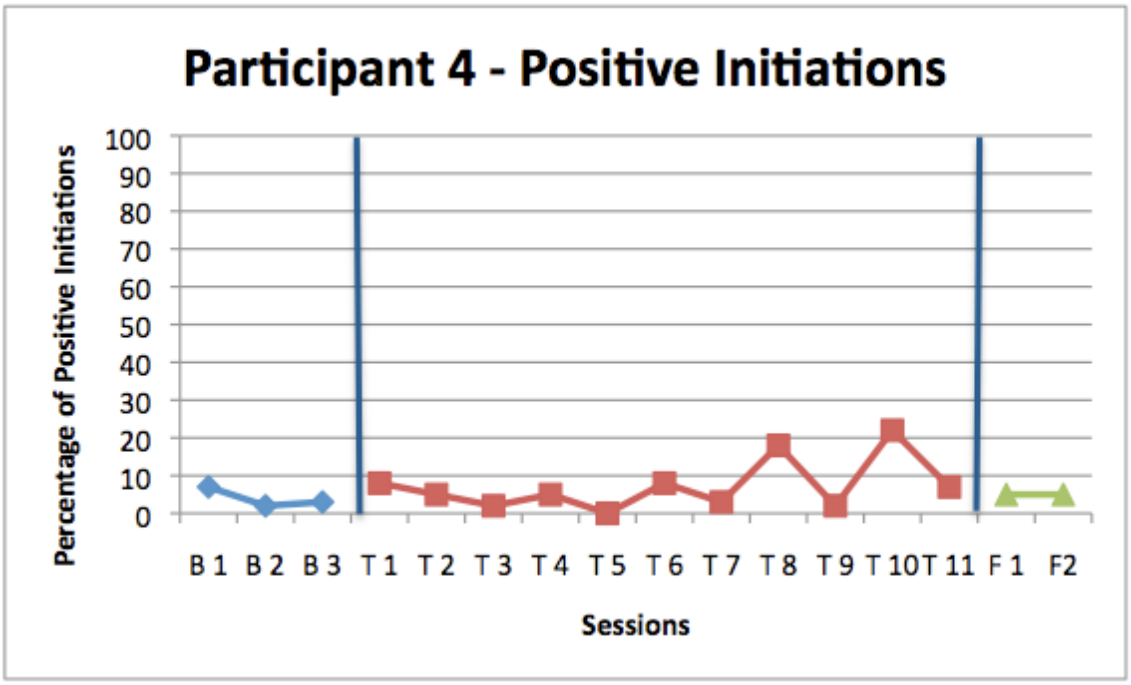

Figure L25: Follow-up analog measure of positive initiations for participant 4.

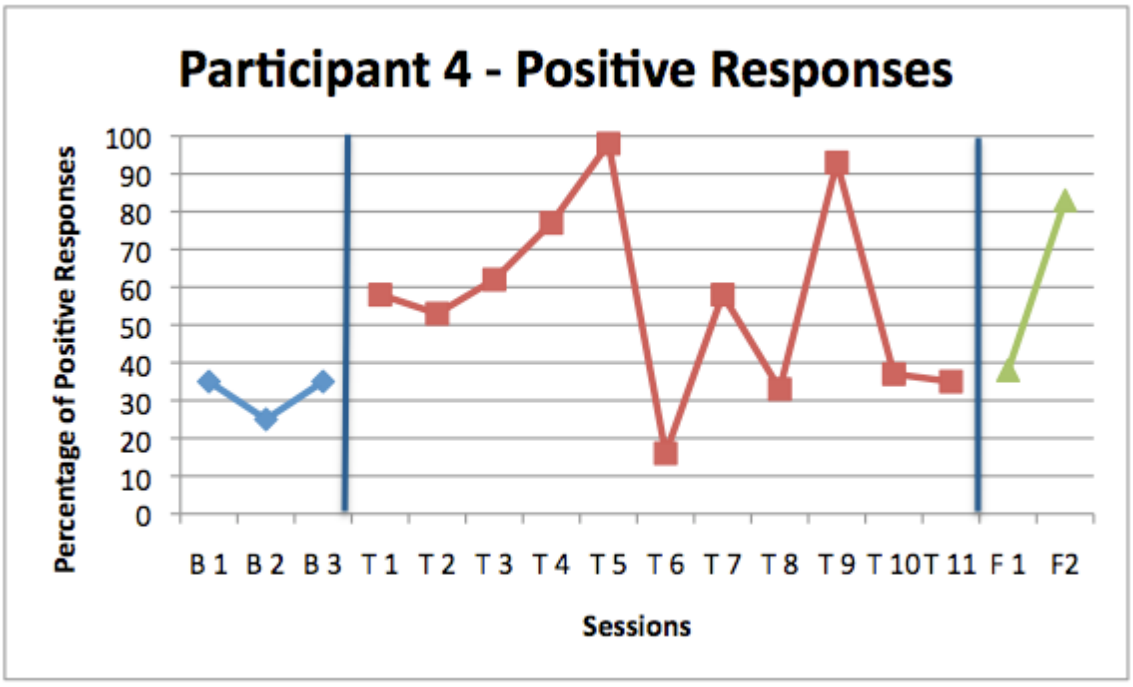

Figure L26: Follow-up analog measure of positive responses for participant 4.

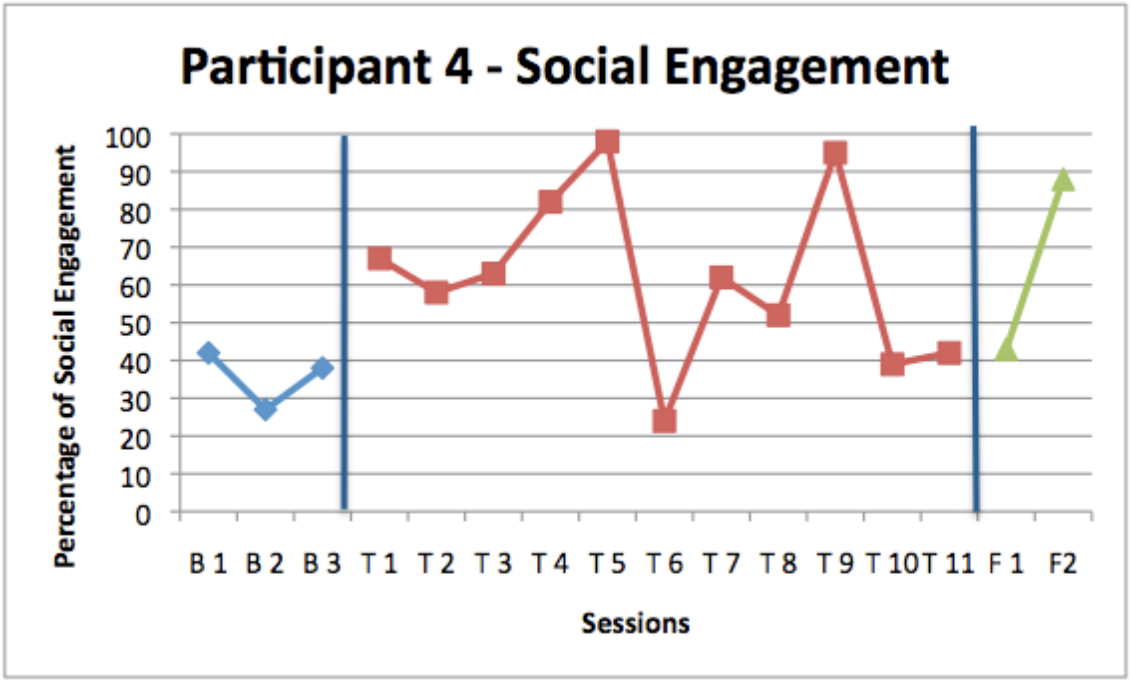

Figure L27: Follow-up analog measure of social engagement for participant 4.

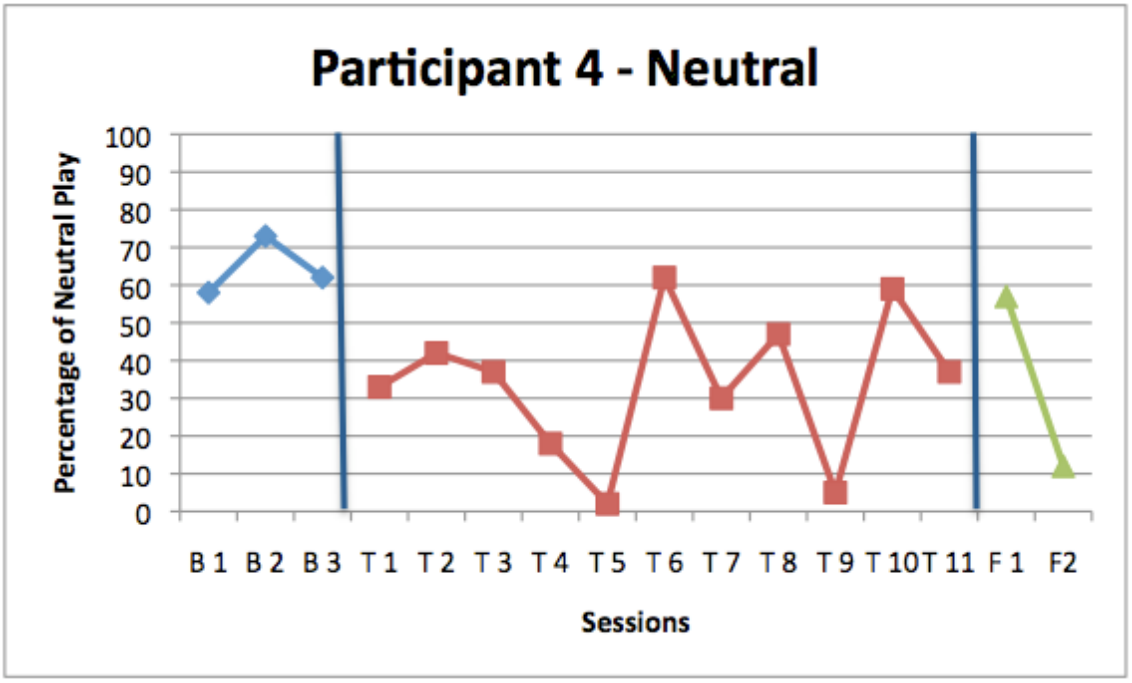

Figure L28: Follow-up analog measure of neutral play for participant 4.

APPENDIX M

INDIVIDUAL PARTICIPANT GRAPHS FOR RECESS FOLLOW-UP

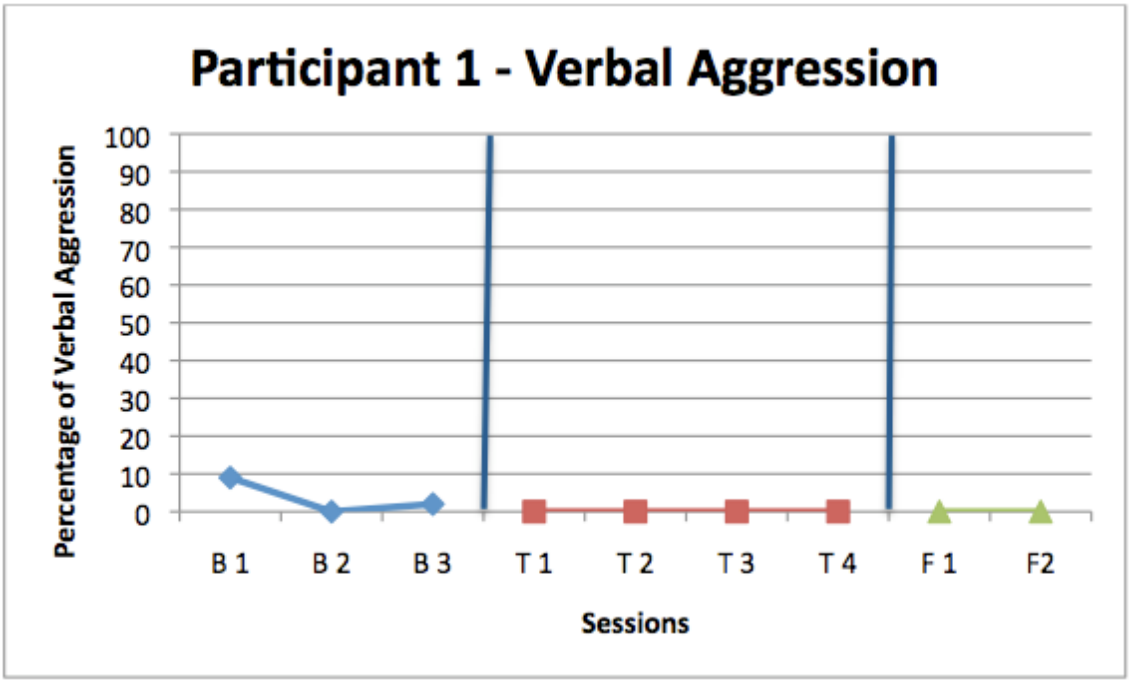

Figure M1: Follow-up recess measure of verbal aggression for participant 1.

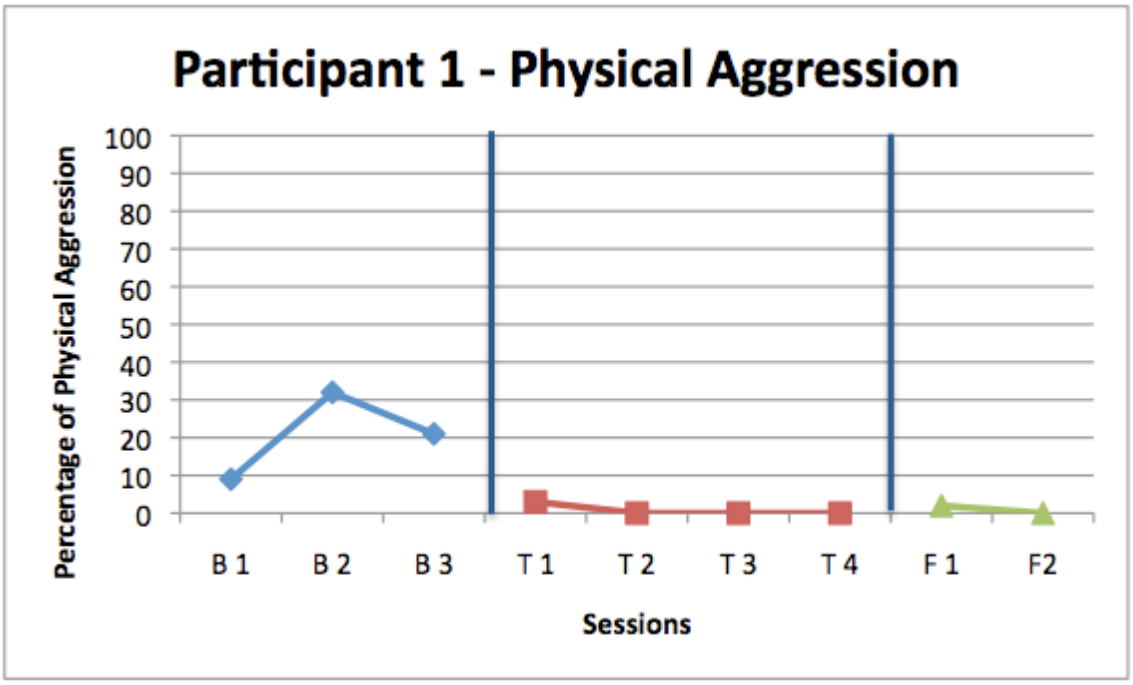

Figure M2: Follow-up recess measure of physical aggression for participant 1.

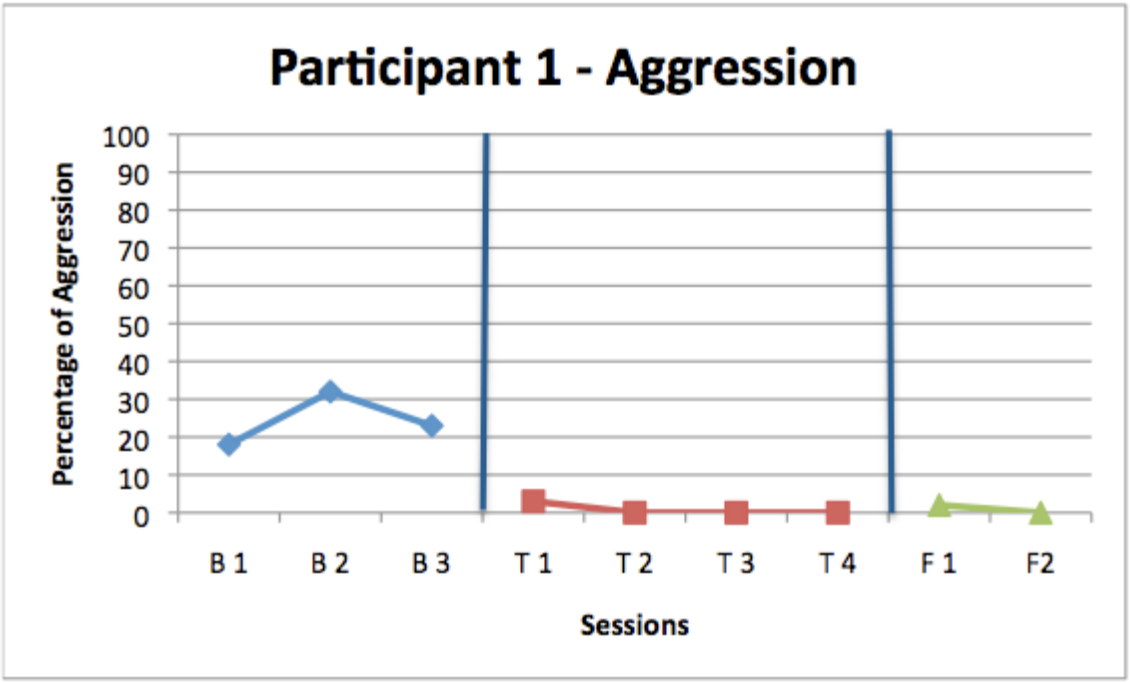

Figure M3: Follow-up recess measure of total aggression for participant 1.

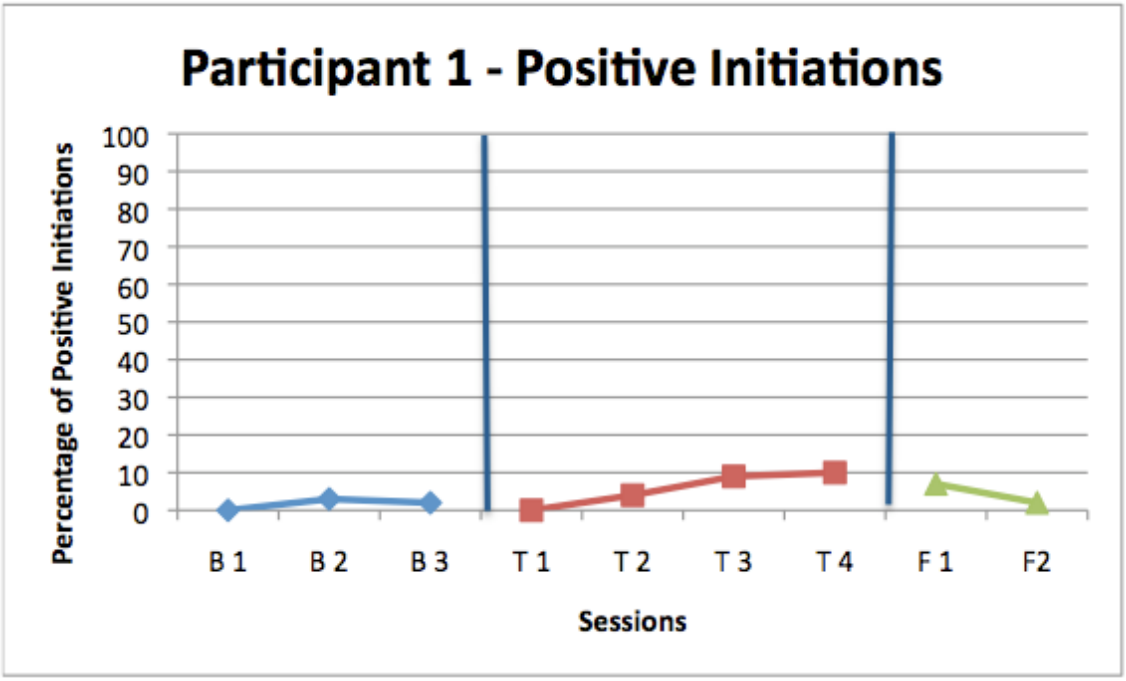

Figure M4: Follow-up recess measure of positive initiations for participant 1.

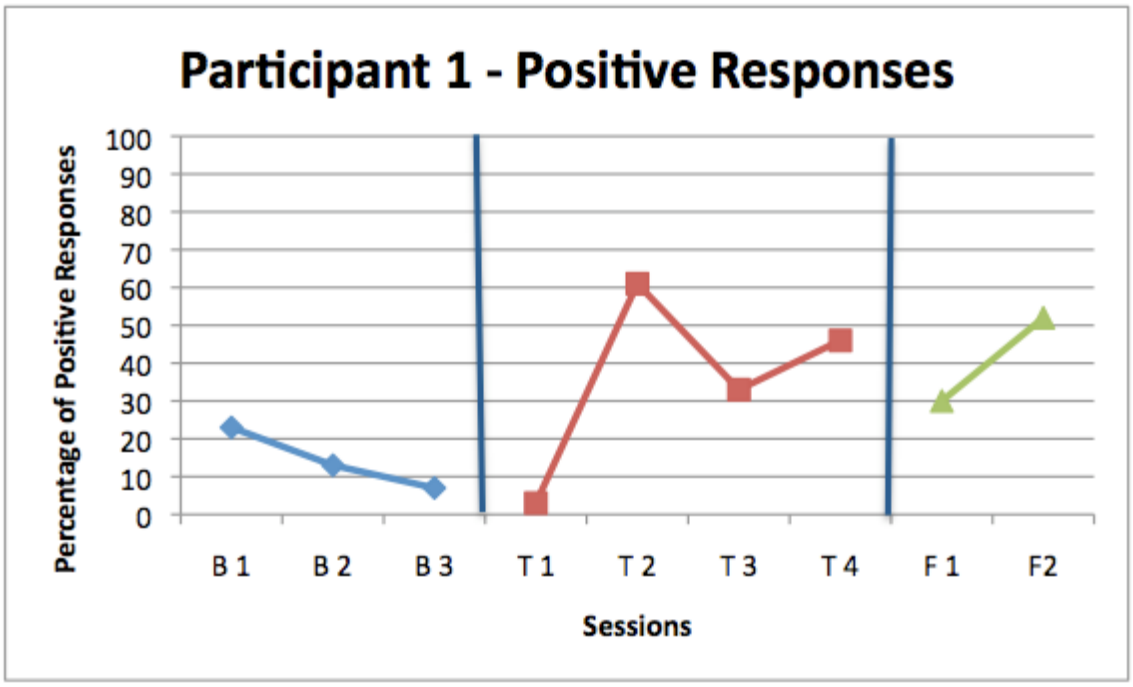

Figure M5: Follow-up recess measure of positive responses for participant 1.

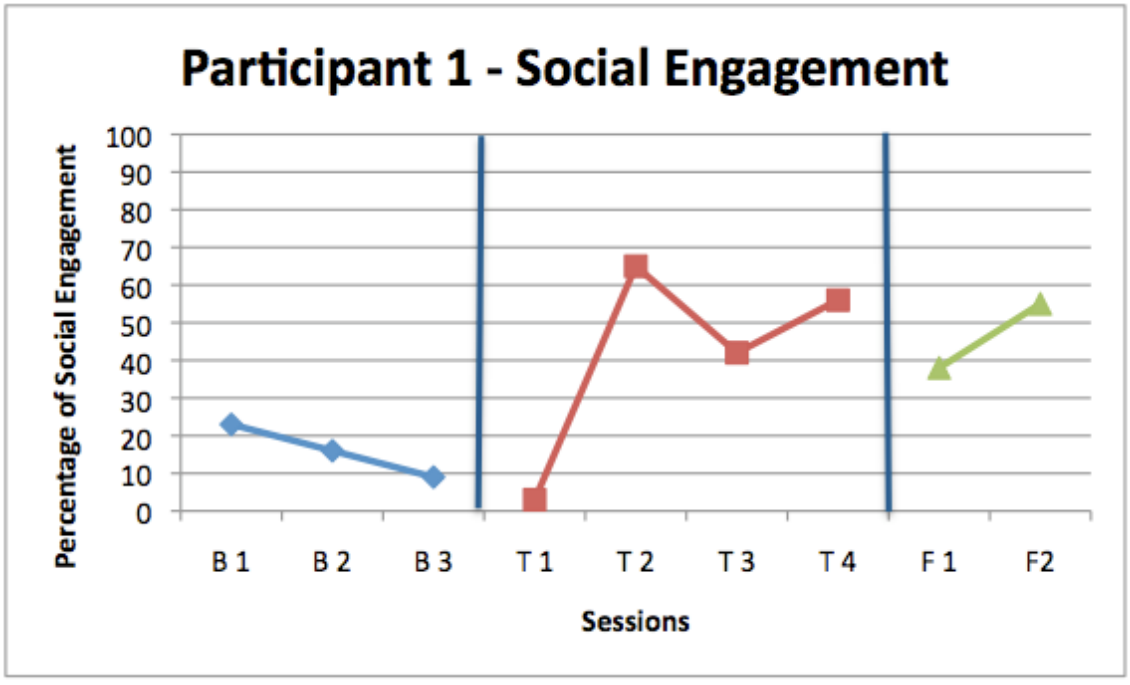

Figure M6: Follow-up recess measure of social engagement for participant 1.

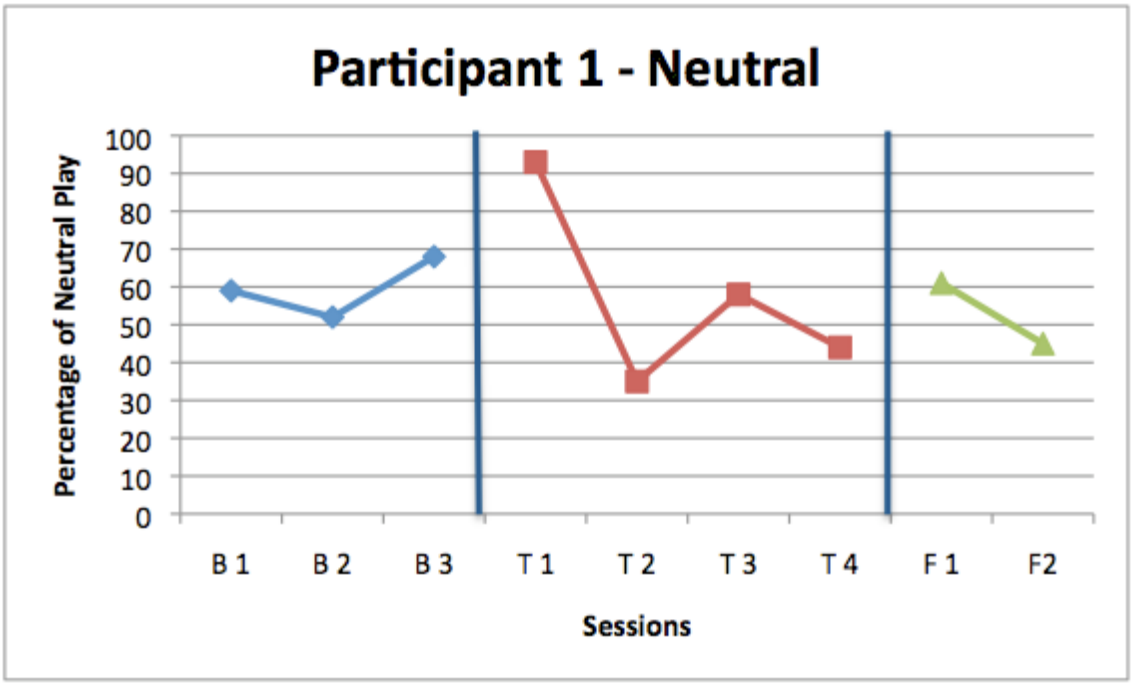

Figure M7: Follow-up recess measure of neutral play for participant 1.

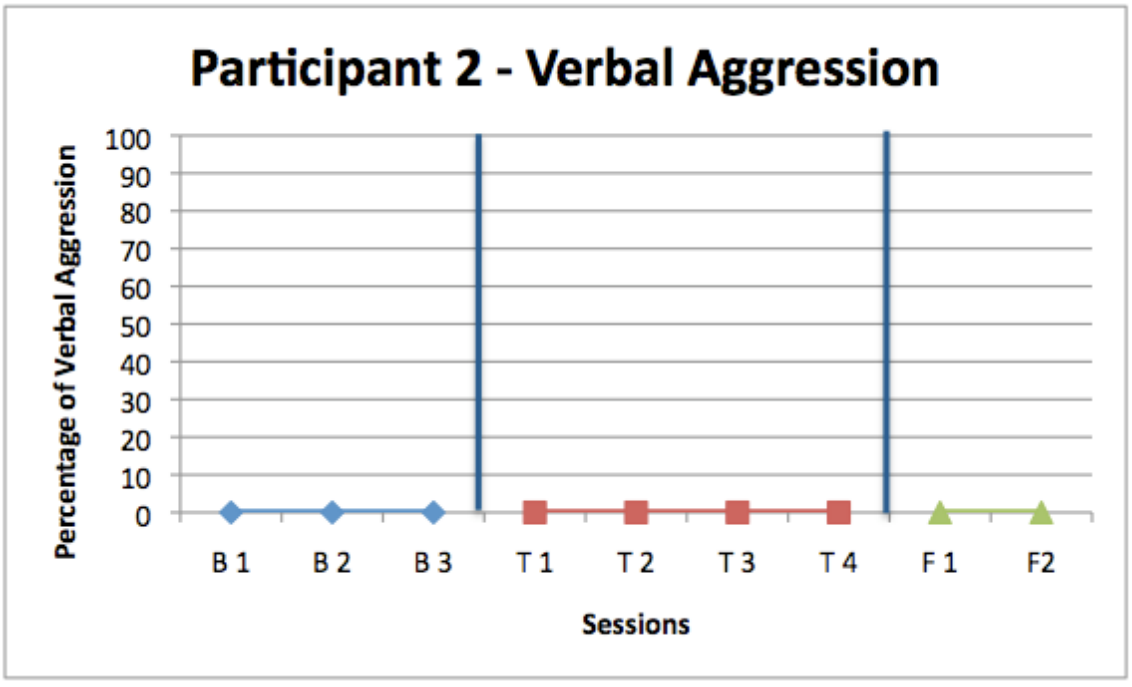

Figure M8: Follow-up recess measure of verbal aggression for participant 2.

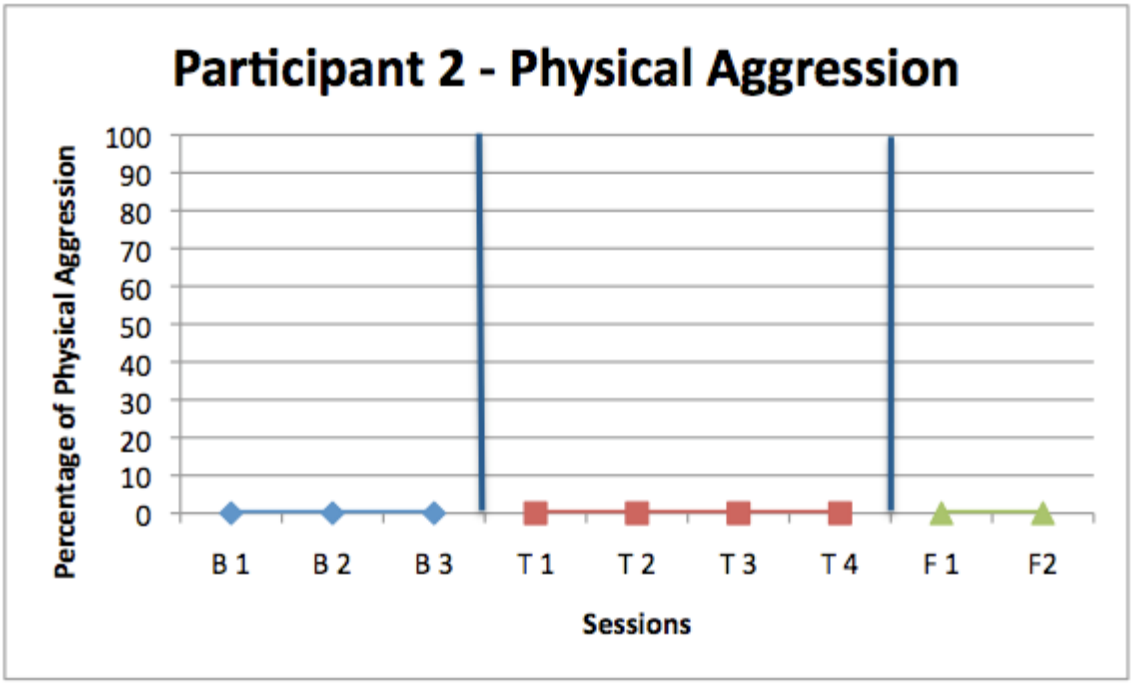

Figure M9: Follow-up recess measure of physical aggression for participant 2.

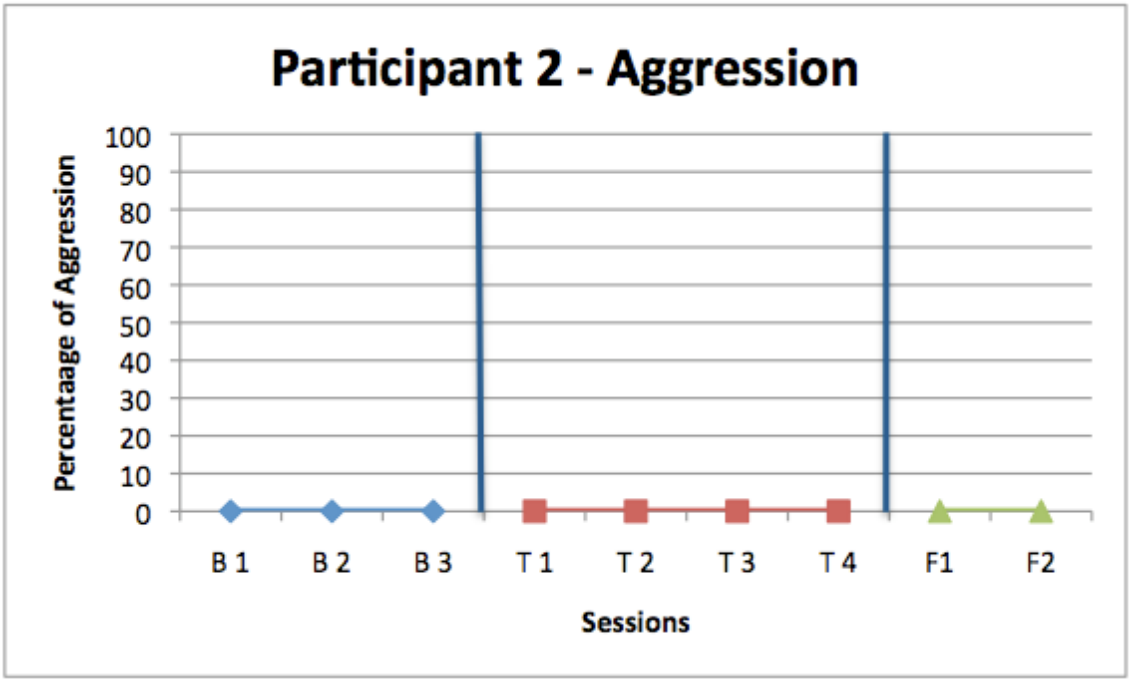

Figure M10: Follow-up recess measure of total aggression for participant 2.

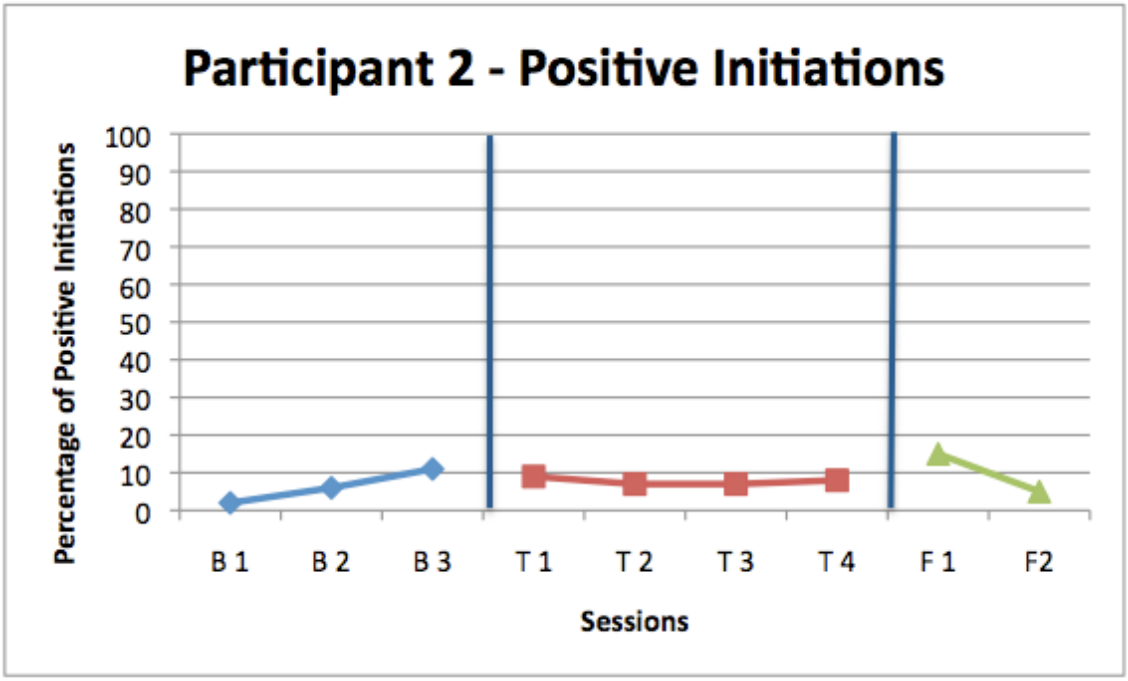

Figure M11: Follow-up recess measure for positive initiations for participant 2.

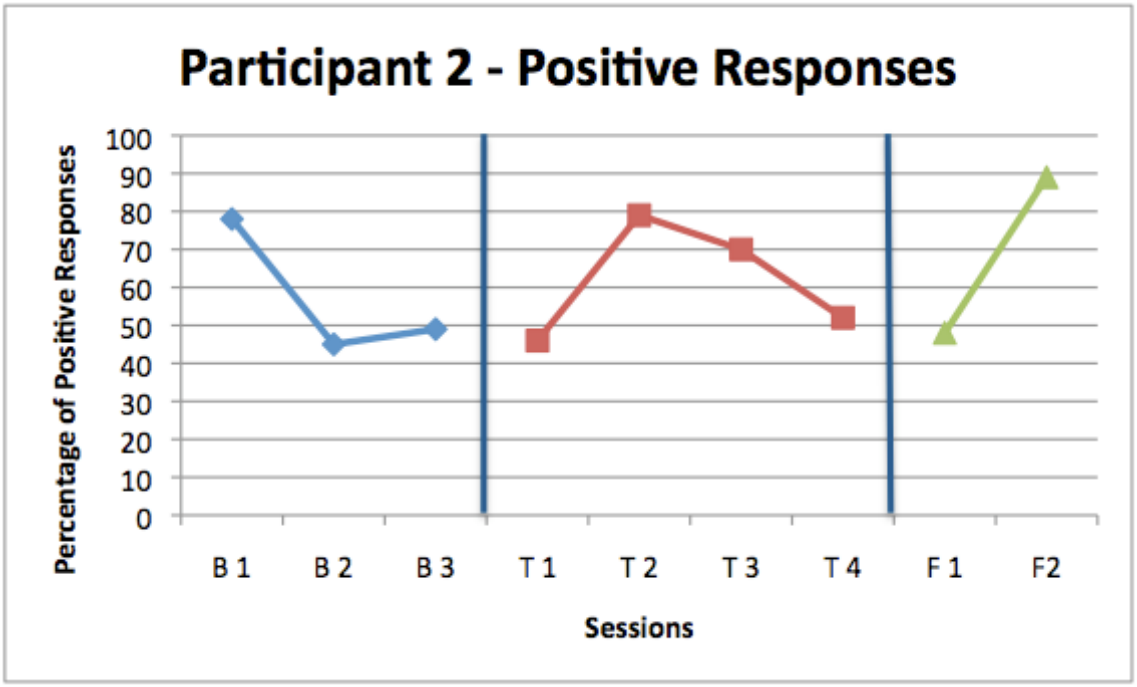

Figure M12: Follow-up recess measure of positive responses for participant 2.

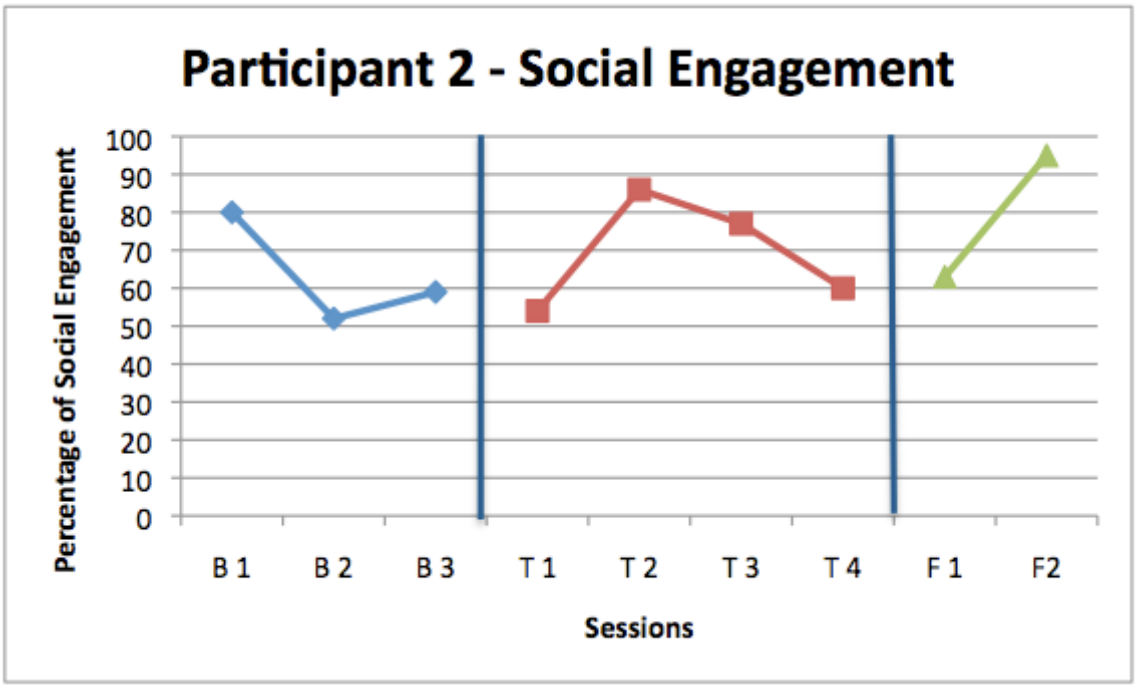

Figure M13: Follow-up recess measure of social engagement for participant 2.

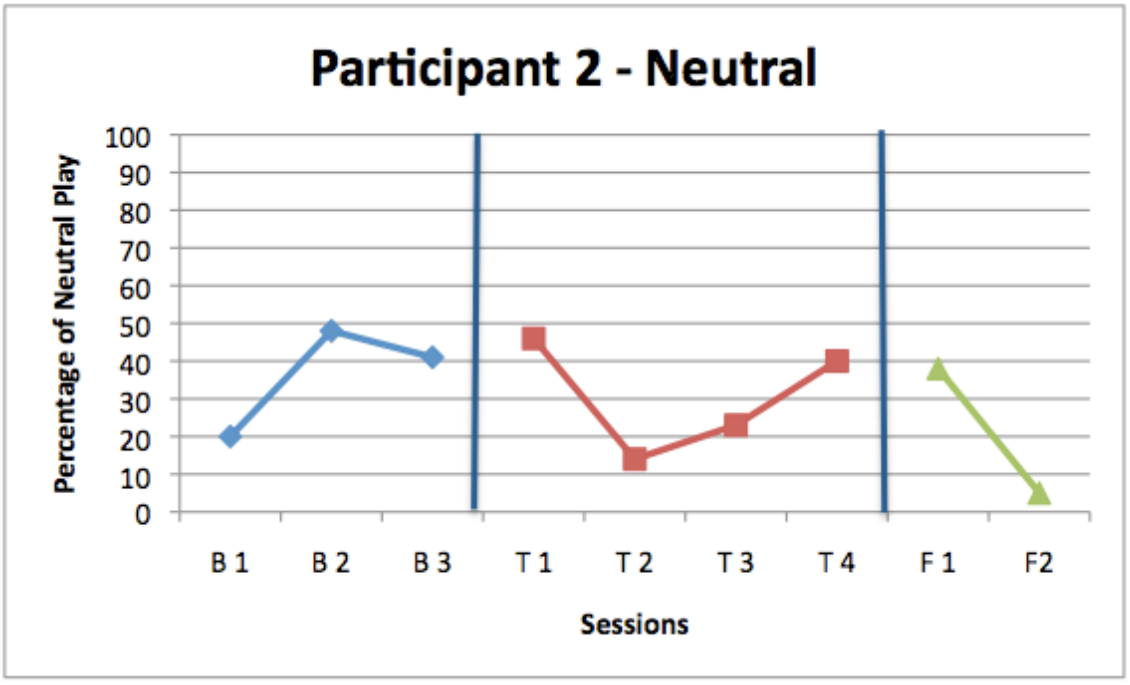

Figure M14: Follow-up recess measure of neutral play for participant 2.

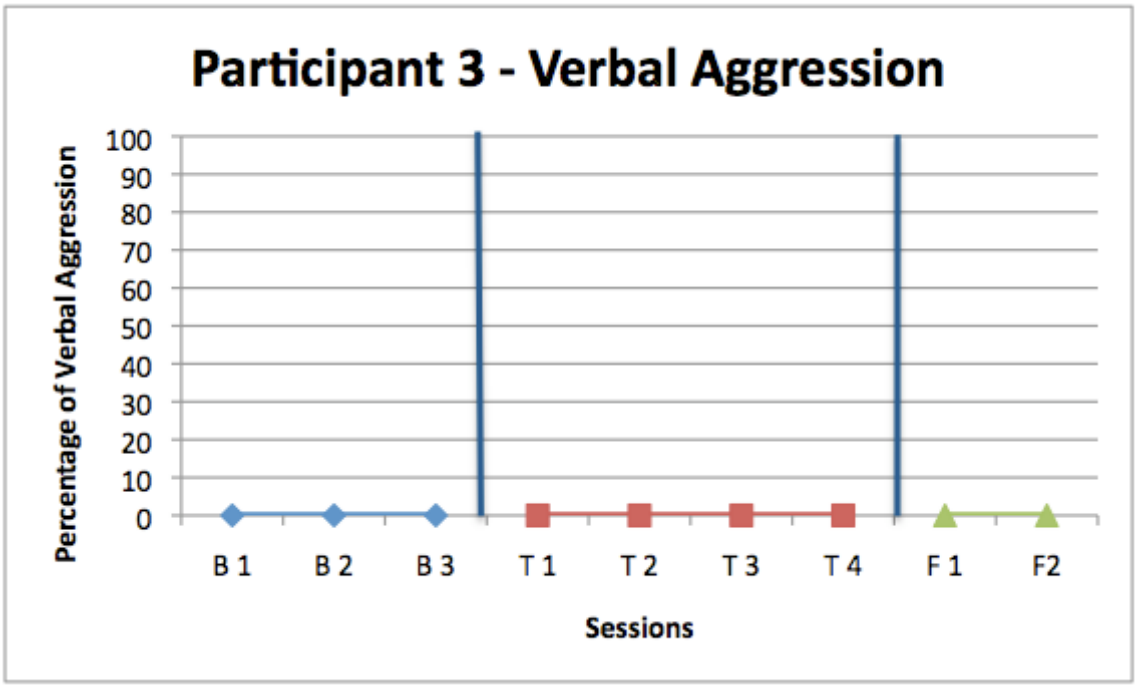

Figure M15: Follow-up recess measure of verbal aggression for participant 3.

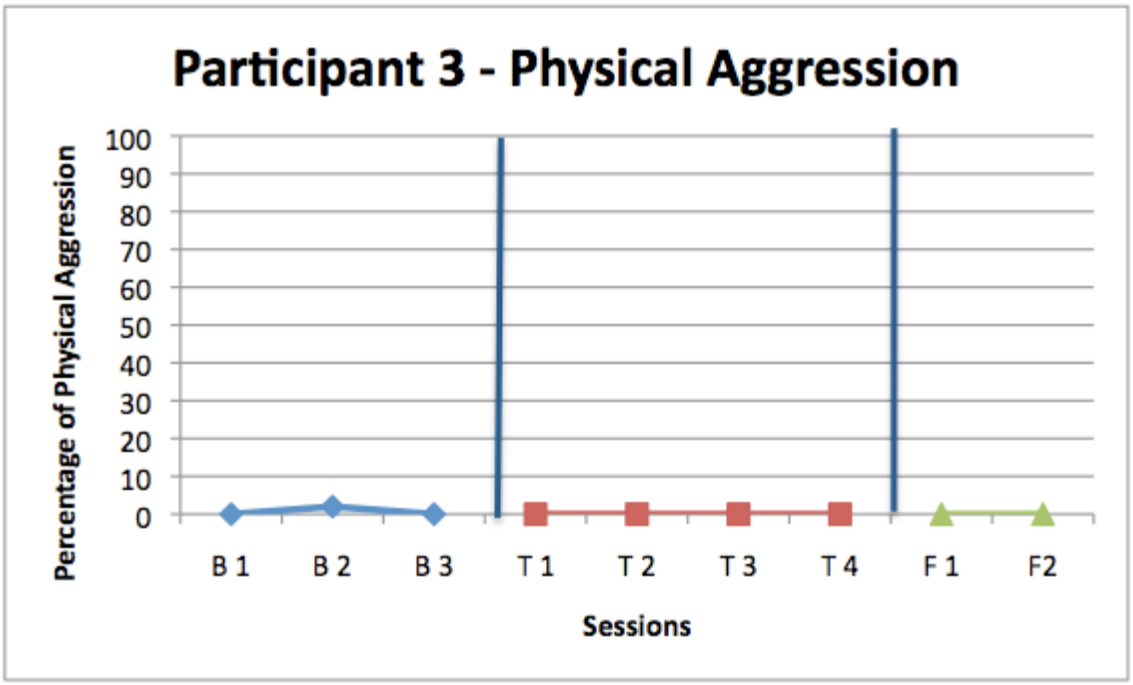

Figure M16: Follow-up recess measure of physical aggression for participant 3.

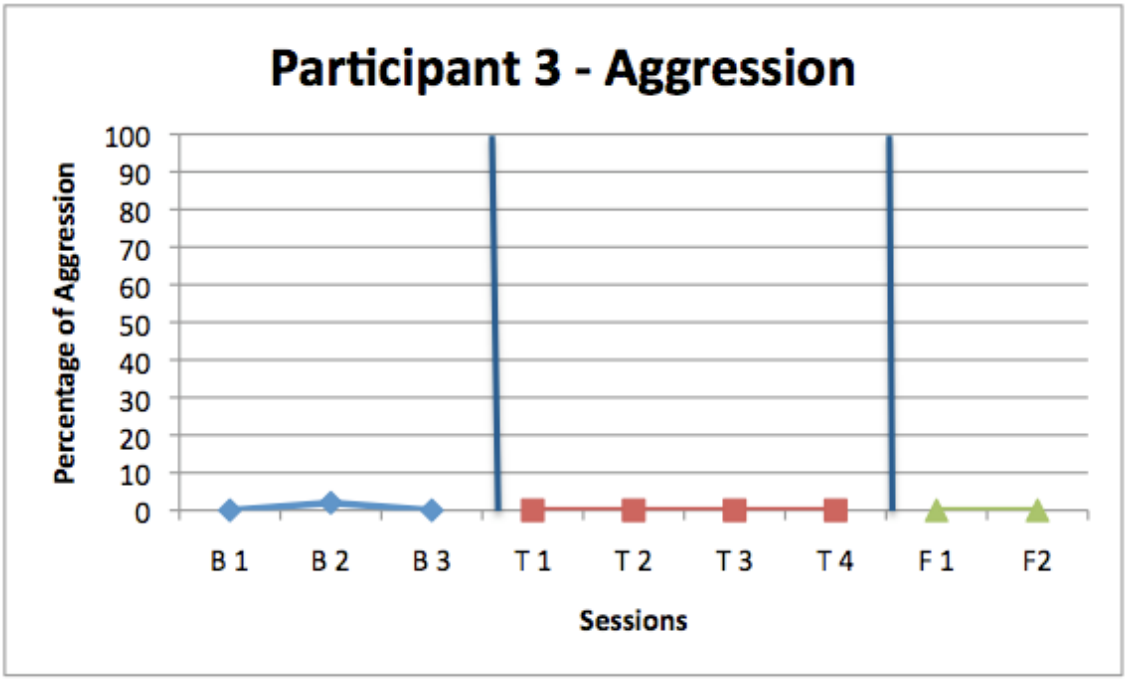

Figure M17: Follow-up recess measure of total aggression for participant 3.

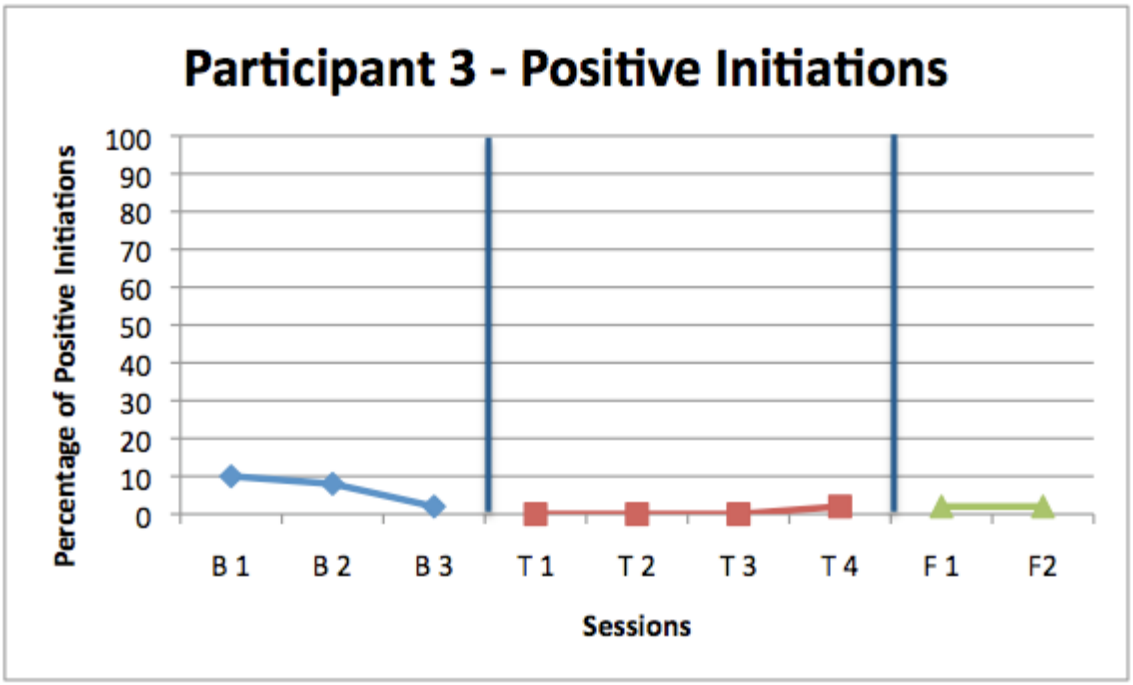

Figure M18: Follow-up recess measure of positive initiations for participant 3.

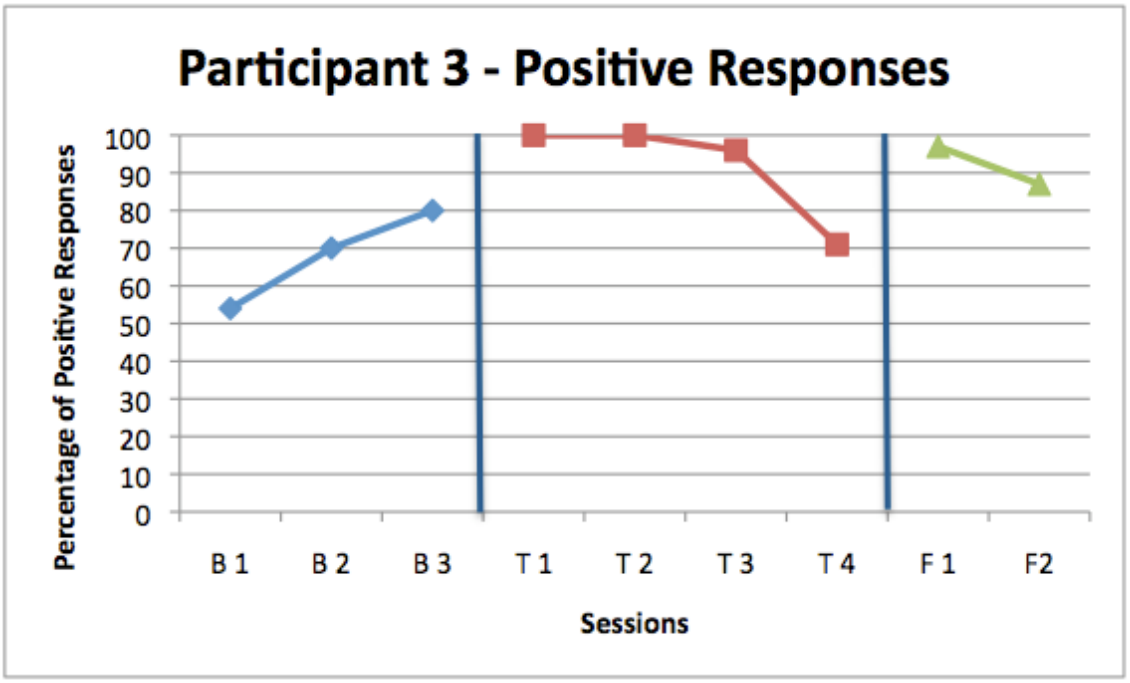

Figure M19: Follow-up recess measure of positive responses for participant 3.

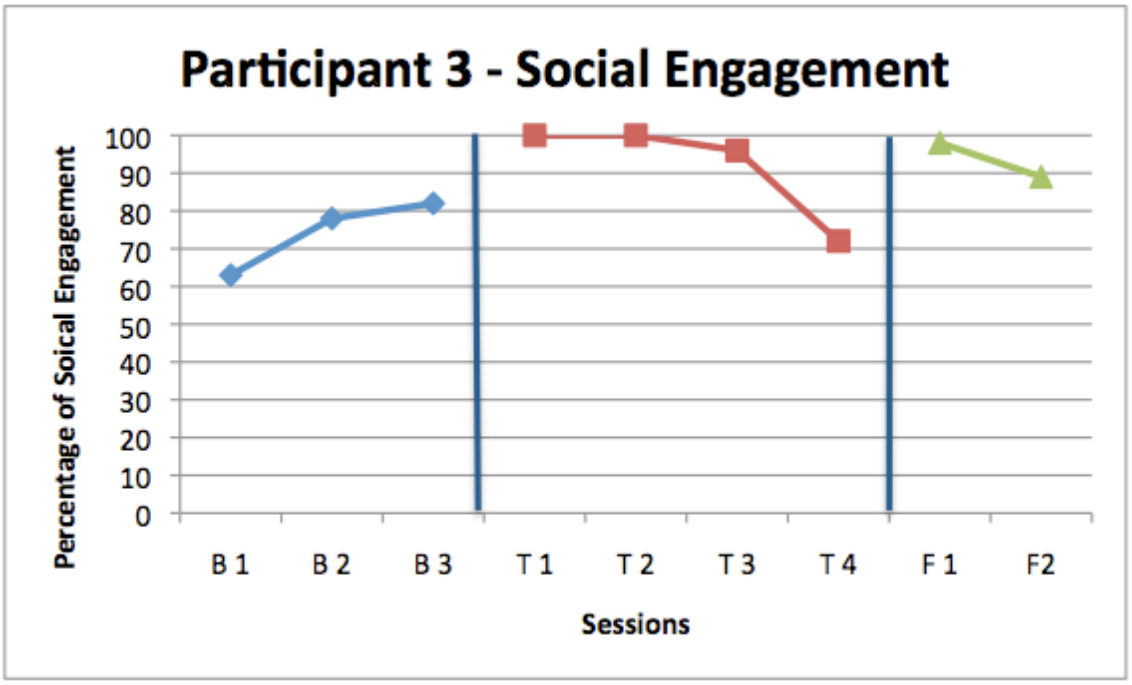

Figure M20: Follow-up recess measure of social engagement for participant 3.

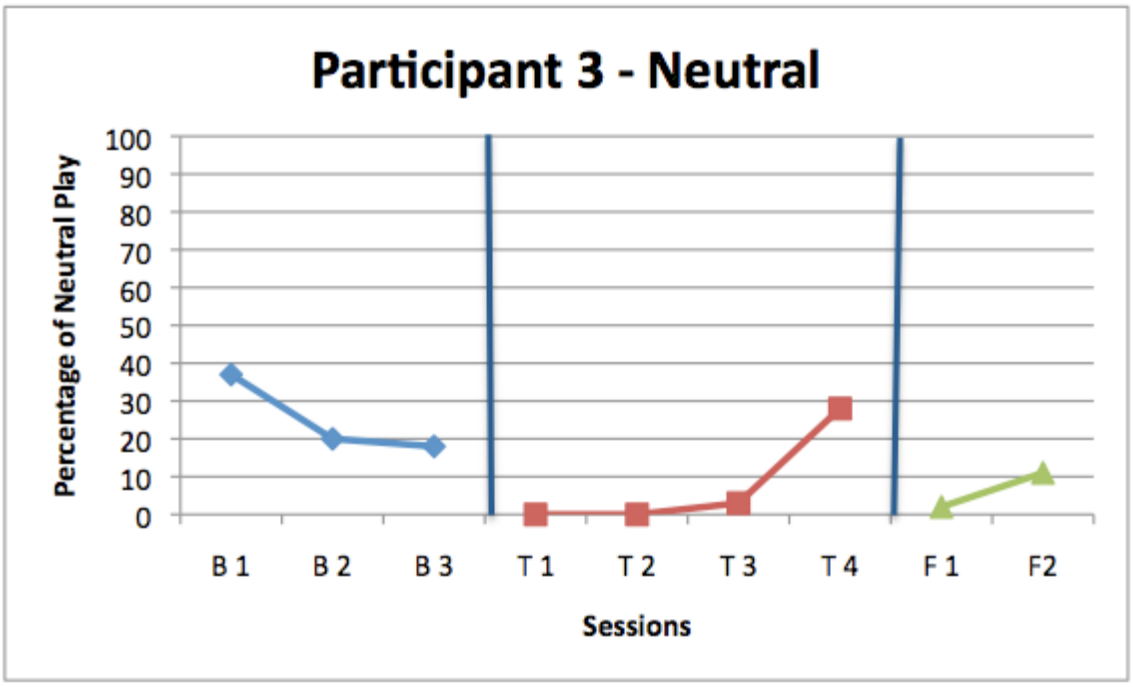

Figure M21: Follow-up recess measure of neutral play for participant 3.

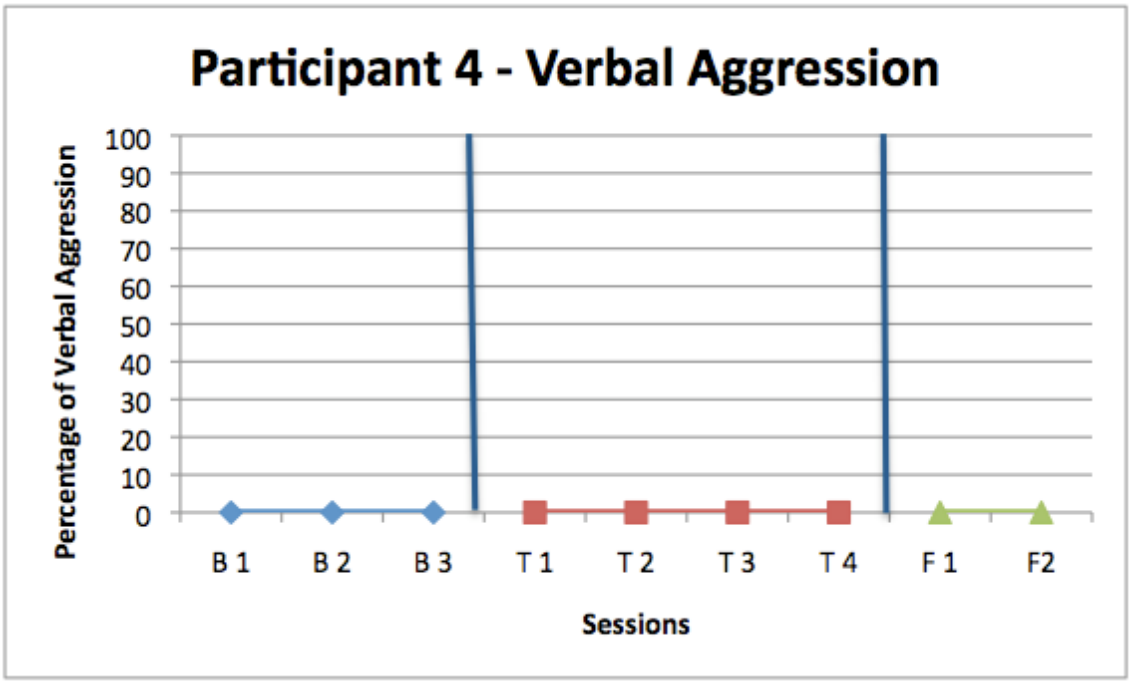

Figure M22: Follow-up recess measure of verbal aggressions for participant 4.

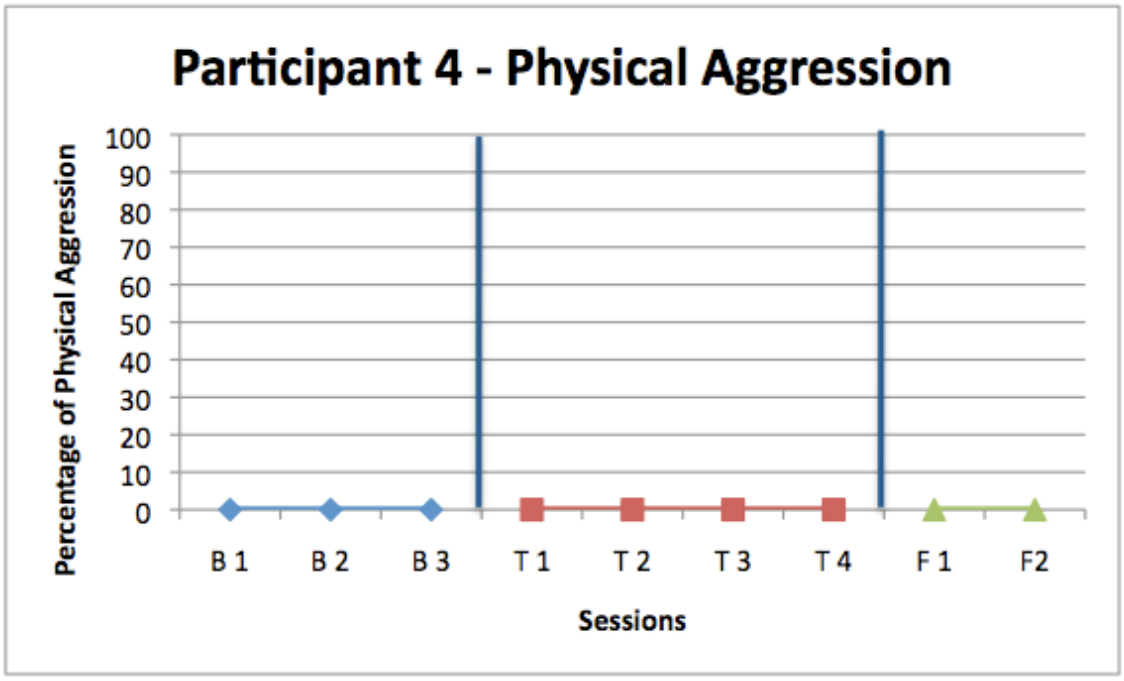

Figure M23: Follow-up recess measure of physical aggression for participant 4.

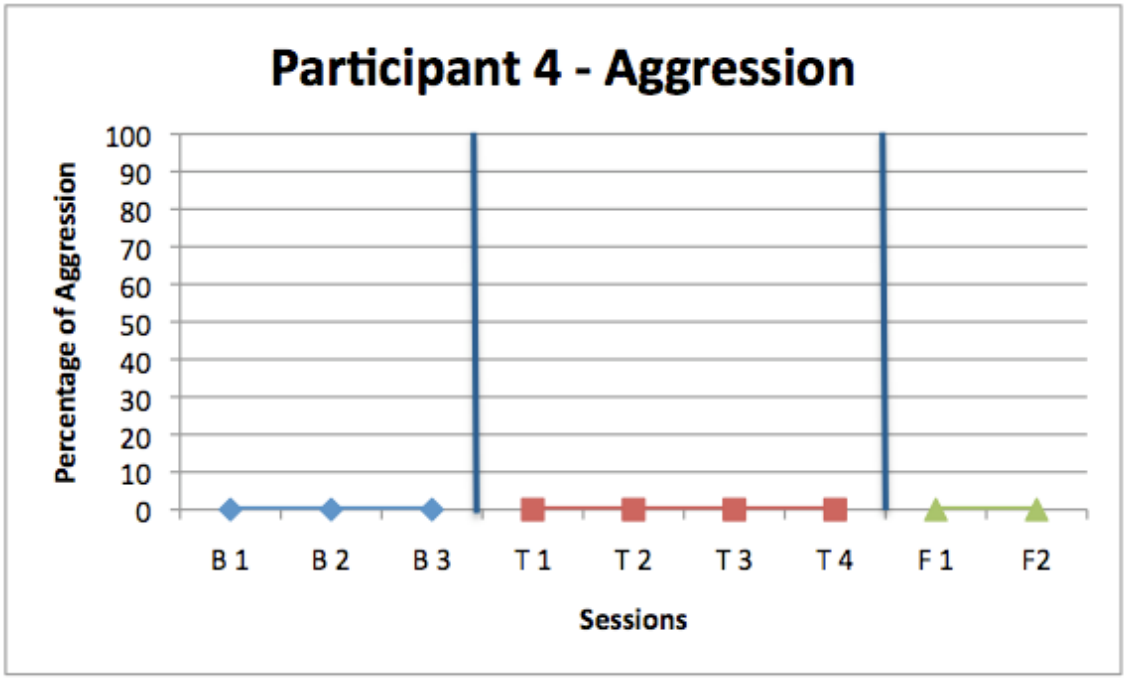

Figure M24: Follow-up recess measure of total aggression for participant 4.

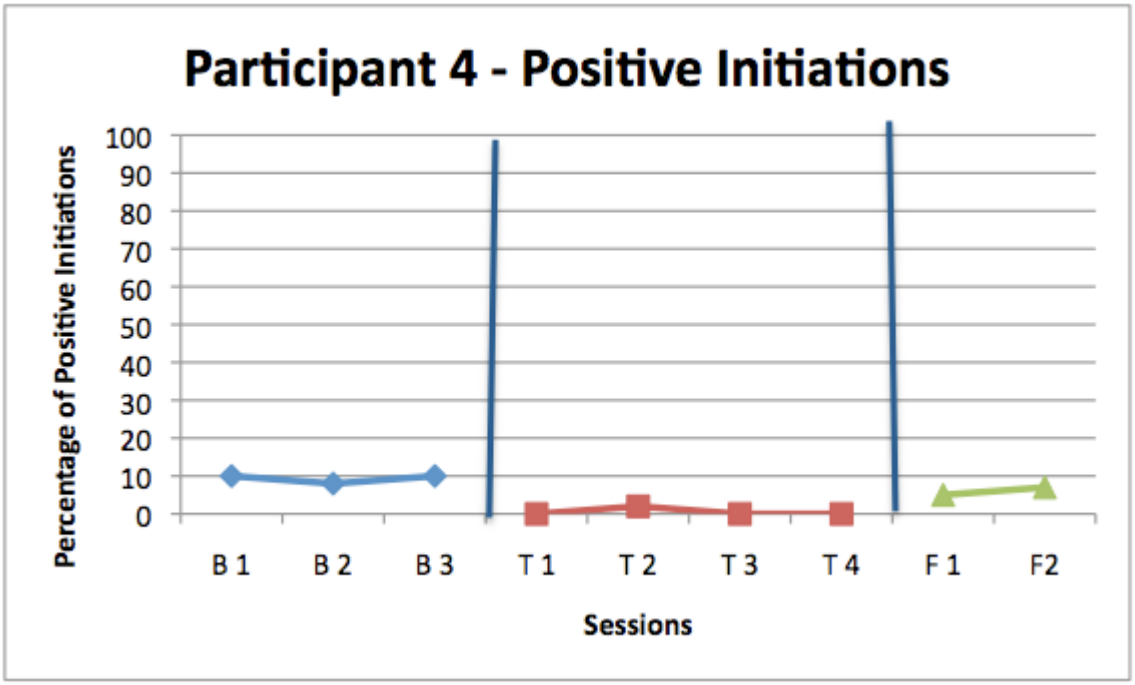

Figure M25: Follow-up recess measure of positive initiations for participant 4.

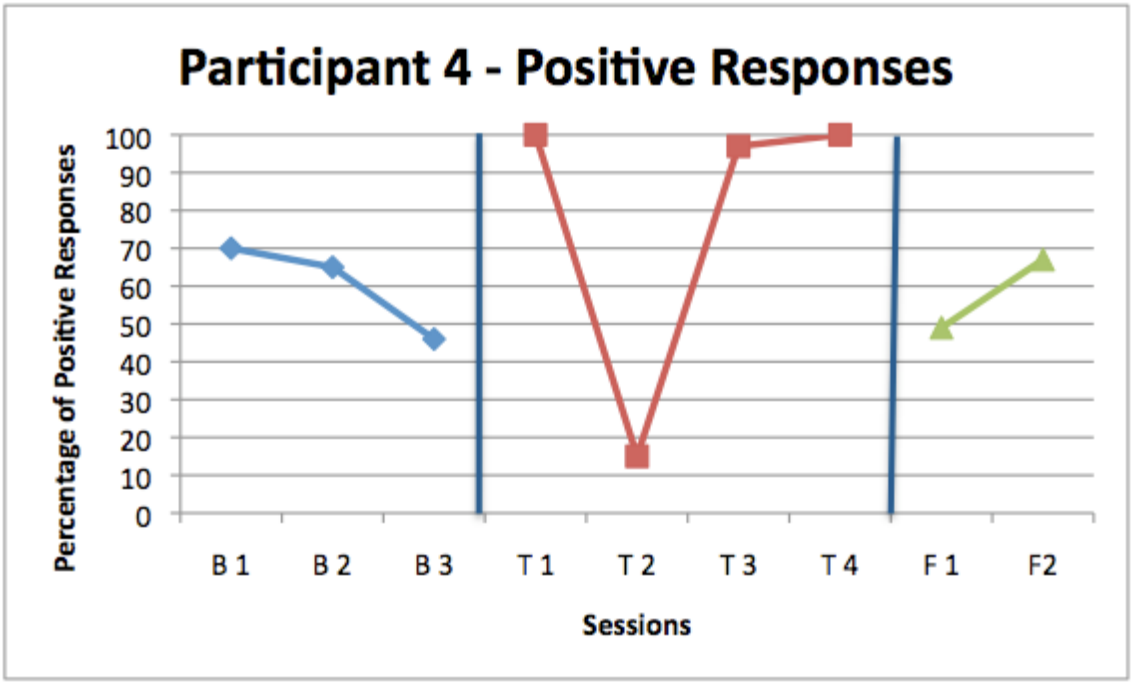

Figure M26: Follow-up recess measure of positive responses for participant 4.

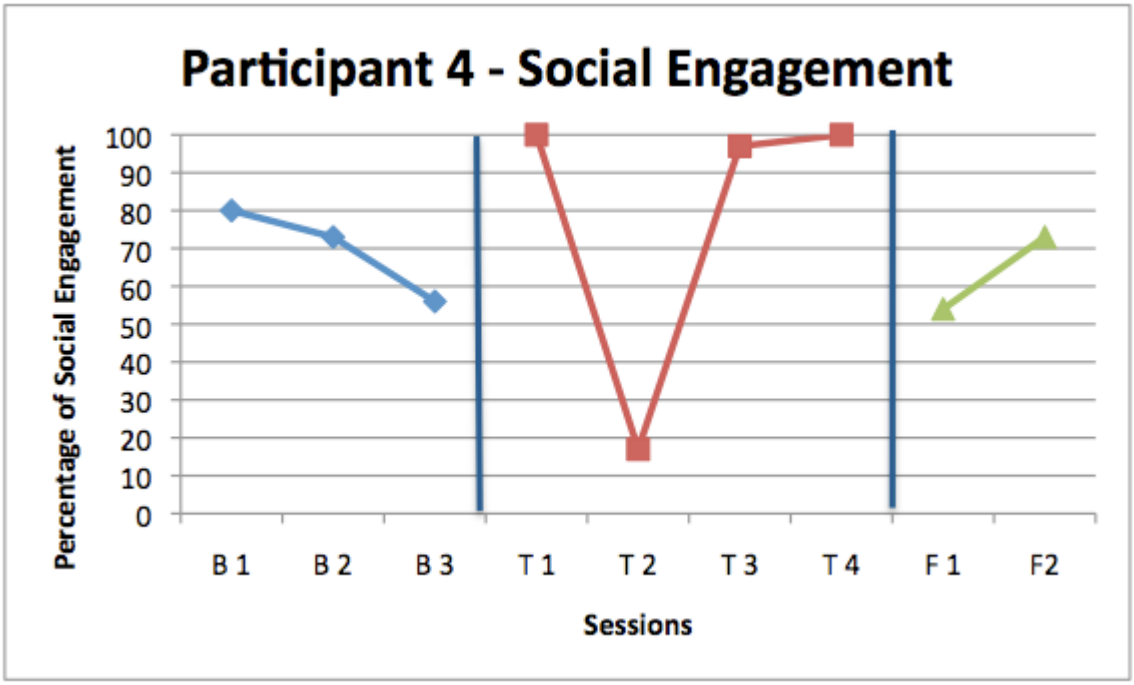

Figure M27: Follow-up recess measure of social engagement for participant 4.

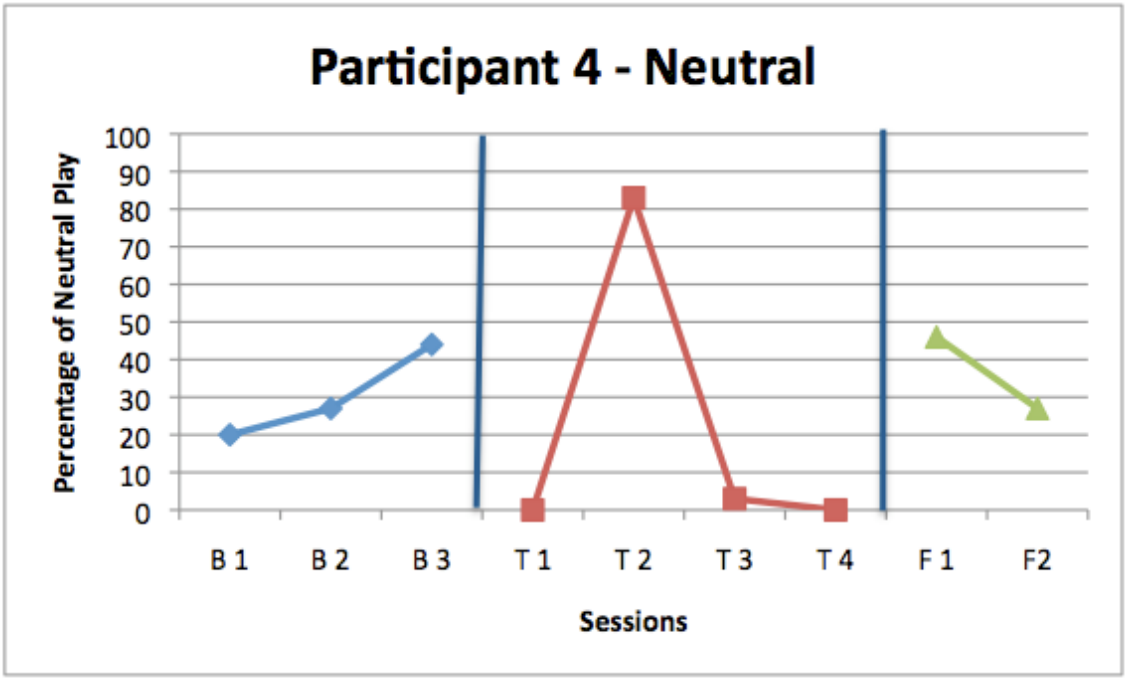

Figure M28: Follow-up recess measure of neutral play for participant 4.

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