

Generalization of Social Skills across Settings: An Investigation of Positive Peer Reporting
Interventions with Interdependent Group Contingencies

A Dissertation Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

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August 2020

Acknowledgements

Throughout the writing of this dissertation, I have received support from many people. First, I would like to thank Dr. Chris Skinner. Dr. Skinner has served as my advisor, mentor and committee chair. Thank you for guiding me through the research process along the years. Your expertise and support has been invaluable along my journey and I have enjoyed working with you. To my committee members, Dr. Tara Moore, Dr. Merilee McCurdy, and Dr. Mari Beth Coleman, thank you for serving on my committee and providing excellent cooperation along the way. To the staff at the elementary school that participated in this research, thank you for your openness to my ideas and willingness to work with me.

I would like to acknowledge my colleagues that are much more than peers, but great friends. Kala Taylor, thank you for showing me the way and being a great peer mentor. Your willingness to share and impart your knowledge is greatly appreciated. Baileigh Kirkpatrick, Stephanie Daniels, and Margaret Crewdson, thank you for your generous support and help with data collection. I am grateful for your listening ears and willingness to work alongside me. You all have made the journey less stressful and more enjoyable.

To my parents, Dennie and Tracy Gibbons, thank you for your support along the way. From a young age you taught me hard work and have been an admirable example each step of the way. Your illustration of diligence is one of the greatest gifts I have received. Finally, to my husband Michael, you are my rock. Thank you for your patience during stressful times, editing numerous papers, providing endless encouragement, and support in every way. Your support and love is a direct correlation to my success in graduate school.

Abstract

Some researchers have found Social Skills Training (SST) does not produce long-lasting, meaningful, generalized results. This dissertation is comprised of two studies investigating the effects of a packaged Positive Peer Reporting (PPR) on the generalization of students' social skill behavior. In Study I, we used a withdrawal design to investigate the effects of a packaged PPR intervention on the compliment-giving behavior of students in a first-grade classroom. Students were taught how to give a compliment, and how to report peers' compliment-giving behavior during a small group math activity. An interdependent group contingency was incorporated into the intervention. Results showed that the intervention was successful in increasing the compliment-giving behavior of students' class wide. However, the study only focused on one social skill and contained multiple components within the intervention.

Study II was designed to evaluate the effects of a PPR intervention on the generalization of multiple social skill behaviors concurrently. We used a multiple baseline design to investigate the effects of the PPR intervention on the compliment-giving, encouragement statements, and thank you behaviors of a first-grade class. Students were given a social skills lesson on all behaviors. After completing baseline data collection, students were taught how to peer report on each target social skill during small group play at a Lego©/ K'Nex© station. Each target behavior was added into the intervention in a staggered, sequential fashion by using randomly-selected criteria. Results showed that the intervention was successful in increasing multiple social skills concurrently.

Overall, our findings demonstrate that PPR may be an effective intervention for increasing social skills in students in generalized settings. Changing the environment in order to support the generalization of social skills and providing high rates of reinforcement appears to be

an essential component. Discussion focuses on limitations to the current research and implications for future researchers.

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List of Abbreviations

ADHD	Attention-deficit/Hyperactivity Disorder
ASD	Autism Spectrum Disorder
EBD	Emotional Behavioral Disorder
ID	Intellectual Disability
PND	Percentage of non-overlapping data
PPR	Positive Peer Reporting
SES	Socioeconomic status
SLD	Specific Learning Disability
SST	Social Skills Training
UACS	University-Assisted Community School

Chapter I

Introduction and Literature Review

Defining Social Skills

Social skills have been defined in several ways. McFall (1982) broadly defined social skills as the specific behaviors exhibited by an individual when interacting with others. Gresham and Elliott (1990) conceptualized social competence into a two-dimensional model including social skills and interfering problem behaviors. Gresham and Elliott (1990) defined social skills as socially acceptable learned behaviors enabling individuals to interact effectively with others and avoid or escape socially unacceptable behaviors exhibited by others. This definition included five response classes: cooperation, assertion, responsibility, empathy, and self-control (Gresham & Elliott, 1990). Within this definition, socially- significant behaviors may include starting a conversation, giving a compliment, or entering ongoing play. Interfering behaviors were defined as internalizing problems (e.g., anxiety, fear, social withdrawal) and externalizing problems (e.g., aggression, disruption, impulsivity).

Gresham (1998) proposed a modification to the definition to include social skill deficits that can be classified as acquisition, performance, or fluency deficits. Acquisition deficits denotes the absence of ability to perform a skill. Performance deficits denotes having the ability to perform a skill, but failure to perform the behavior. Fluency deficits indicate a lack of exposure to that skill, insufficient practice of the skill, or low rates of inconsistent reinforcement for performing that skill (Gresham, 1998).

Social skills are essential across educational, vocational, developmental, and psychosocial domains. These skills are both verbal and nonverbal behaviors and are often specific to the environment or situation (Ng, Bartlett, & Elliott, 2018). Since social skills are important across domains and specific to the environment, the impact of social skills development is observed in many settings.

Social Skills Correlations

A well-developed set of social skills may lead to socially important outcomes (e.g., peer acceptance, friendships, school adjustment, and teacher and parental acceptance). Poor social skills often have an adverse effect on children's behaviors and relationships in school (Tremblay, Vitaro, Gagnon, Piché, & Royer, 1992). Peer influence is highly correlated with important social outcomes for youth. Children who are rejected by peers or have few friendships are at a higher risk for maladaptive outcomes (Ng et al., 2018). Children who have difficulty with friendships often demonstrate antisocial or aggressive behaviors and are at a higher risk for school norm violations (Parker & Asher, 1987).

Strong social skills have been related to higher academic performance (Wentzel, 1991; Wentzel, 1993). Interpersonal skills are associated with motivation and academic achievement (DiPerna, Volper, & Elliot, 2001). One study found the social skills of third-grade students, as assessed by teachers, was a better predictor of eighth-grade academic achievement than third-grade achievement test results (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000). Malecki and Elliott (2002) found that social skills, as rated by teachers, positively correlated ($r = .41$) with academic achievement for elementary students measured by end-of-year, high-stakes tests. Additionally, social skills have been linked to longitudinal outcomes, such as high school grades and graduation rank (Feldhusen, Thurston, & Benning, 1970).

Below average social skills are linked to poor mental health, social isolation, negative self-concept, and limited opportunities to learn (Deshler, Ellis, & Lenz, 1996). Lower social competence was correlated to both externalizing and internalizing problems in the classroom (Henricsson & Rydell, 2006). Furthermore, strong social skills have been associated with better mental health status and decreased vulnerability to mental health problems including depression,

loneliness, and social anxiety (Sergin & Flora, 2000). Jones, Greenberg, and Crowley (2015) found an association between kindergarten students' social-emotional skills and young adult outcomes including education, employment, criminal activity, substance use, and mental health.

Some researchers have even suggested that “social skills knowledge is just as important as content knowledge” (Deshler et al., 1996, p. 371). However, many children are not developing the necessary social skills. One study found approximately 20% of teachers sampled reported 50% or more of their students in their class experienced problems with social skills (Rimm-Kaufman, Pianta, & Cox, 2000). Adleman and Taylor (2005) estimated approximately one third of students in the United States fail to learn because of psychosocial problems that interfere with academic activities.

Students with a disability are at greater risk of having social skill deficits. Students classified with an intellectual disability (ID) and autism spectrum disorder (ASD) often have impaired social skills (Smith & Matson, 2010). Additionally, students with a specific learning disability (SLD) may have significant social competence deficits (Gresham, 1992). Students who are at-risk or meet criteria for emotional disturbance are also at greater risk for exhibiting social skill deficits (Forness & Knitzer, 1992; Gresham, 2002). Finally, students with attention-deficit/hyperactivity disorder (ADHD) often display social skill deficits and problems with peer relations (Landau & Moore, 1991).

While a considerable amount of research has been conducted with students with disabilities, less research has been dedicated to students from disadvantaged backgrounds. Students who come from low SES families, culturally disadvantaged backgrounds, or other at-risk categories also experience many problems with social relationships (Ng et al., 2018). A report from the National Center of Poverty indicated that African-American boys had

significantly lower scores in socio-emotional development (Aratani, Wright, & Cooper, 2011). Poorly developed social skills may make it more difficult for disadvantaged students to establish relationships with their peers, teachers, and parents.

Social Skills Training

One common intervention designed to remedy social competence deficits in students is social skills training (SST). SST is a general term that includes both universal interventions and selected or targeted interventions (Bullis, Walker, & Sprague, 2001). Social skills are often taught in small-group settings, where four to six students are pulled out of the classroom (Gresham, 1998). Most SST comes in a curriculum or package series. Some of the common topics addressed include: understanding feelings, problem-solving, managing anger, setting goals, empathy, respect, bullying prevention, making friends, using manners, and personal relationships (Quinn, Kavale, Mathur, Rutherford, & Forness, 1999). The targeted skills within each topic are often presented in a way where skills build upon each other.

Most SST follows a structured learning method (Merrell & Gimpel, 2014). This method includes choosing critical social skills that need to be taught or improved, then teaching the skill through demonstrating, explaining, or modeling these skills. After the skill has been taught, feedback and reinforcement is provided to the student while practicing the skill directly with the trainer. Next, discussion generally focuses on identifying a variety of social situations in which implementing the skill would be useful (Quinn et al., 1999). For students with social skill acquisition deficits, direct instruction through SST allows students to acquire the behavior or skill (Murphy & Zlomke, 2014).

Results from Meta-Analyses. Several researchers have evaluated the impact of SST using meta-analytic procedures (Ang, & Hughes, 2001; Beelmann, Pfingsten, & Lösel, 1994;

Lösel & Beelmann, 2003; Schneider, 1992; Schneider & Byrne, 1985; Quinn, et al., 1999).

These meta-analyses focused on children with behavioral or emotional difficulties. Together these meta-analyses included approximately 373 studies and over 26,000 participants. All of these studies classified social skills as a similar construct that allows for research synthesis. The overall effect size ranged from .19 to .89 at post treatment. However, it should be noted effect sizes for studies that included a follow-up effect were significantly lower (Lösel & Beelmann, 2003; Schneider, 1992).

Additionally, Cook et al. (2008) completed a mega-analysis using many of the meta-analyses listed above. Overall, Cook et al. (2008) found an effect size of $r = .32$. According to Cohen's (1992) effect size recommendations, this indicates a medium effect size. The authors noted that due to some methodological errors, it is important to consider the results without the Schneider and Byrne (1985) meta-analysis. Excluding this study, the average weighted effect size was $r = .28$ (Cook et al., 2008). According to Cohen's (1992) effect size recommendations, this is a small effect size.

Mathur, Kavale, Quinn, Forness, and Rutherford (1998) examined 64 single-subject studies examining the effectiveness of SST with students with emotional and behavioral problems. Using percentage of nonoverlapping data (PND) between baseline and treatment, effects were considered modest (PND = 62%). Additionally, the mean PND score for studies that included maintenance and generalization was 64%, with the lowest PND for generalization across settings, PND = 53% (Mathur et al., 1998).

Other meta-analyses have been completed on different populations. Forness and Kavale (1999) conducted a meta-analysis examining the effects of SST on students with SLD. The researchers analyzed 53 studies that included approximately 2,113 students and found an average

effect size of .21 (Forness & Kavale, 1999). This effect size suggests modest gains and would be considered small.

Bellini, Peters, Benner, and Hopf (2007) completed a meta-analysis examining the effects of school-based SST for children with ASD. The study examined 52 single-subject studies and included 157 participants. The researchers found low intervention effects with a mean PND of 70% for the studies in the meta-analysis. Of the studies that included maintenance and generalization effects, results indicated moderate maintenance effects (PND $M = 80\%$) and low generalization effects, PND $M = 53\%$ (Bellini et al., 2007).

January, Casey, and Paulson (2011) reviewed 28 studies measuring the effectiveness of classroom-wide interventions for the improvement of social skills. The overall effect size included 12,965 participants and produced an overall effect size of 0.15 (January et al., 2011). This effect size is considered small and consistent with other meta-analyses (Bellini et al., 2007; Forness, & Kavale, 1999; Mathur et al., 1998; Quinn et al., 1999). Based on the results from meta-analyses, SST may not produce large, socially important, long-term, or generalizable changes in the social skills of students.

Modifications to Social Skills Training. Due to the low to moderate effects of SST, researchers have offered recommendations to revise current SST and interventions. One suggestion offered by Gresham (1998) is to develop and install procedures that support functional generalization. Because social behavior typically occurs in context, interventions should take place in naturalistic settings (e.g., classrooms, cafeterias, playgrounds, hallways), rather than in small pull-out groups. Additionally, generalization is more likely to occur if the new behavior (e.g., social skill) can lead to more immediate and reliable reinforcement than

competing behaviors (Gresham, 1998), which may interfere with a child engaging in newly taught social behavior outside of the training session.

Another suggestion offered by Gresham (1998) is to match the intervention to the specific deficit. There are two main deficits (i.e., acquisition deficits and performance deficits). Acquisition deficits occur when the student does not have the skill set and cannot engage in the target behavior. Performance deficits occur when the student has the skill set to successfully complete the behavior but chooses not to or does not respond (Skinner, Pappas, & Davis, 2005). Treatment or intervention should match the skill deficit. For instance, if the child has acquisition deficits, skills must first be taught. However, teaching may not be a sufficient intervention for a child with performance deficits. Strategies such as prompting and reinforcement may be more effective when the student is demonstrating performance deficits.

Positive Peer Reporting

An intervention that takes into consideration the previous suggestions is Positive Peer Reporting (PPR). Grieger, Kaufman, and Grieger (1976) found that rewarding children for naming a peer who had done something nice resulted in increased observed cooperative play and decreased aggression during recess. Ervin, Miller, and Friman (1996) later described a similar intervention in a Boys Town residential treatment center and called it “Positive Peer Reporting” (PPR). PPR is an intervention that has been used in educational settings to enhance peer interactions and peers’ perceptions of students. The intervention is designed to individually target socially rejected children or children with disruptive or negative peer interactions.

Numerous studies have found support for the effectiveness of PPR as an intervention to improve peer interactions with diverse individuals in a variety of settings (Murphy & Zlomke, 2014). Throughout the years, many of the treatment components of PPR have varied. These

components include the selection of participants, choosing a reward system, training students, and intervention sessions (Murphy & Zlomke, 2014). However, many have followed similar procedures to those described in Ervin et al.'s (1996) article. The intervention included the teacher telling students they could earn points for making positive comments about one targeted student at the end of class. During the last 5 min of class, the teacher solicited comments by asking students to raise their hand. The teacher then awarded points to classmates who made positive comments. These points were later exchanged for privileges based on the number of positive comments (Ervin et al., 1996).

PPR is based on the assumption that students may have acquired the appropriate social skill set, but may not respond or engage in these behaviors. While interventions (e.g., SST) have been developed to teach appropriate social skills, it is often difficult to teach behaviors across social contexts and environments. Generalization of social skills is also challenging because of interfering behaviors and the lack of reinforcement in the naturalistic setting. Nonetheless, interventions designed to reinforce prosocial behaviors are uncommon; therefore, students are less likely to be reinforced by peers or teachers for engaging in prosocial behaviors (Skinner, Cashwell, & Skinner, 2000).

Teachers have been taught to observe antisocial behavior and use punishment systems to reduce the frequency of antisocial behavior. Students may learn to not engage in inappropriate or antisocial behavior while being observed by teachers. Because teachers often cannot actively observe all students' behavior constantly, students learn to tattle or observe classmates' undesired behaviors and report them to teachers (Skinner et al., 2000). Tattling puts responsibility on the teacher to decide whether the behavior happened and to determine the consequence. While tattling may have some negative side effects, it may occur frequently

because in some instances, peers are the only witnesses to the inappropriate behavior (Skinner et al., 2000).

Since teachers cannot monitor all antisocial behavior, it is likely they cannot directly observe all instances of prosocial behavior. Perhaps, a majority of teacher time and focus is spent monitoring and punishing inappropriate behaviors (Skinner et al., 2000). At other times, teachers may be aware of prosocial behaviors but believe students do not deserve to be rewarded (Pumroy & McIntire, 1991). Therefore, peers are essential observers. Because students act socially with each other, often prosocial behaviors are occasioned and encouraged through incidental peer interactions (Skinner et al., 2000). Thus, peer influence can effect a variety of behaviors (Jones, Young, & Friman, 2000).

Once learned, students must choose to engage in social skills in the natural environments. When students do engage in newly acquired social behavior, maintenance of these behaviors may require that they be reinforced (Skinner, Neddrenrip, Robinson, Ervin, & Jones, 2002). During PPR, differential reinforcement is used by withholding reinforcement for negative peer reports and rewarding positive peer reports. With PPR, students' desired behavior may be reinforced with attention from classmates who report their positive behaviors. Thus, PPR should enhance desired behaviors and students' attending to and reporting their classmates desired behaviors, as opposed to their undesired behaviors (Ervin et al., 1996). Therefore, the goal of the intervention is to enhance reinforcement for prosocial behaviors by having peers' acknowledge these behaviors in the natural environment (Skinner et al., 2002).

Review of PPR Studies. Many researchers have shown PPR can increase desired social interactions (Chemier, 2010; Ervin et al., 1996; Ervin, Johnston, & Friman, 1998; Grieger et al., 1976; Hoff & Ronk, 2006; Johnson, 2009; Johnson-Gros & Shriver, 2006; Jones et al., 2000;

Libster, 2009). PPR has been shown to increase peer acceptance, typically for students identified as socially rejected children (Ervin et al., 1996; Ervin et al., 1998; Jones et al., 2000; Smith, Simon, & Bramlett, 2009). Additionally, Moroz and Jones (2002) found that PPR was effective in increasing social involvement in three out of four socially withdrawn students.

Morrison and Jones (2007) showed that PPR could be adapted into a class wide intervention. They found that a PPR intervention was effective at lowering the number of items endorsed on a Critical Events Index (CEI). The CEI included low frequency, high intensity behaviors such as stealing, tantrums, somatic complaints, teasing, and physical aggression. Researchers have also found that PPR has been effective in decreasing disruptive/negative behaviors in the classroom (Hofstadter, Jones, & Therrien, 2009; Sherman, 2012; Smith et al., 2009). Johnson-Gros and Shriver (2006) found that high levels of compliance were maintained throughout the PPR intervention.

Tootling. Another intervention procedure that encourages peers to report incidental prosocial behaviors is called tootling. Tootling is a class wide intervention developed on similar assumptions to PPR. Tootling is based on the assumption that students spend too much of their time monitoring and reporting classmate's inappropriate behaviors (i.e., tattling) and give little attention or time to prosocial behaviors. The goal of the intervention is to create better classroom environments because students become more aware and appreciative of classmates' prosocial behaviors (Skinner et al., 2002).

Skinner et al. (2000) first developed the tootling intervention. Tootling intervention procedures share some aspects with PPR. In both interventions, students are trained to report peers' incidental positive behaviors. However, tootling differs because it requires all students to monitor the prosocial behaviors of all of their classmates (Skinner et al., 2002), while a majority

of PPR interventions focus on targeted or selected students. Second, a majority of PPR interventions have students publicly report target student behaviors; whereas, with tootling students are required to privately write the prosocial behavior of a student on an index card. Lastly, tootling includes an interdependent group contingency reward system (Skinner et al., 2002). For step-by-step procedure implementation guidelines, refer to Skinner et al. (2002). It is important to note that treatment components of both PPR and tootling interventions vary across studies as modifications are often made.

Tootling research began with two studies that showed second- and fourth-grade students could effectively learn how to report peers' prosocial behaviors. Additionally, the studies found that interdependent group contingencies increased the overall number of tootles (Skinner et al., 2000; Cashwell, Skinner, & Smith, 2001). Since these initial studies, tootling has been shown as an effective intervention for reducing inappropriate behaviors (Cihak, Kirk, & Boon, 2009; Lambert, Tingstrom, Sterling, Dufrene, & Lynne, 2015; Shelton-Quinn, 2009; Sherman, 2012) and decreasing antisocial interactions (Wright et al., 2017). McHugh, Tingstrom, Radley, Barry, and Walker (2016) extended tootling research by demonstrating that tootling reduced disruptive behavior and increased academically engaged behavior for individual students, as well as class wide. Lum et al. (2018) found similar results, as tootling was effective for decreasing disruptive behavior and increasing academic behavior with high school students.

Group Contingencies

Both PPR and tootling include group-oriented contingencies. Contingencies are based on an if-then environment-behavior relationship; *if* a student exhibits a behavior in the presence of appropriate stimuli, *then* the environment will respond with a consequent event (Skinner, Skinner, Burton, 2009). Contingencies can be described as reinforcement and punishment

(Cooper, Heron, & Heward, 2007). Reinforcement refers to a consequence that increases the likelihood of a behavior reoccurring. Punishment refers to a consequence that decreases the probability of the same behavior reoccurring (Kazdin, 2001).

Litow and Pumroy (1975) distinguished between individual and group contingencies. Individual contingencies are used when each student receives a specific behavioral intervention (e.g., behavior contract). Individual contingencies are considered individual because the consequence is only delivered to the student based solely on his/her behavior (Hall & Hall, 1998). There are three different types of group-oriented contingencies: dependent, interdependent, and independent (Litow & Pumroy, 1975).

With dependent group-oriented contingencies, all members of a group (e.g., a class) receive access to a reward contingent upon the behavior of one or a few classmates' behavior (Litow & Pumroy, 1975). Thus, with these contingencies a student's access to consequences may not be contingent upon their own behavior, but the behaviors of classmate(s). Such contingencies are considered unfair and may cause students to blame or aggress against classmates when they fail to earn a group rewards. Thus, target student may feel an immense amount of pressure to meet criteria (Skinner et al., 2009).

Independent Group Contingencies. Like individual contingencies, independent group-oriented contingencies involve delivering consequences based solely on each student's own behavior. However, as reflected in the term "group-oriented," contingency components (i.e., antecedent, target behavior, criteria, and consequence) are the same for the entire group (Litow & Pumroy, 1975). A common example of an independent group-oriented contingency is classroom grades (e.g., if a student receives a 90% or above he earns an A). These contingencies are common in schools in part because educators and students view them as fair. In fact, they are

fair as each student receives the same consequences based on the same behavior meeting the same criteria (Skinner, Skinner, Skinner, & Cashwell, 1999; Turco & Elliott, 1990; Witt, Elliott, & Martens, 1984).

Independent group contingencies have been used in PPR interventions. Ervin et al. (1996) described intervention procedures where the teacher gave individual points to students who made positive comments. These points could later be exchanged for privileges. This is an example of an independent group contingency because each student was rewarded individually and the target behavior (i.e., delivering a positive behavior report), criteria (i.e., making positive comments), and reward (i.e., points) were the same for all students.

One challenge with independent group contingencies is identifying a reward that is reinforcing for all students. Ervin et al. (1996) awarded students points that could be exchanged for different privileges. As each student got to choose their preferred privilege, each student could work for consequences that were reinforcers. Another factor that makes independent group contingencies difficult to apply is setting a criterion that is appropriate for each student. Unfortunately, this challenge can be difficult to overcome. For example, suppose a contingency is established where each student earns a reward (e.g., extra recess time) if they score 90% or higher on an assignment. For some students this criterion may be unattainable, in which case students may not even attempt to meet the criteria (Skinner, Williams, & Neddenriep, 2004; Skinner, Wright, & McCallum, in press).

Also, because some students earn rewards and other do not, independent group contingencies can make it very difficult to deliver activity rewards. For example, someone will have to supervise the students who do not earn extra recess, while another adult supervises those who do. Tangibles (e.g., candy) are easier to deliver to some students but not others. However,

students can obtain them in other ways including purchasing them and stealing them from classmates. Also, students who do not earn reward may obtain them when classmates share. All of these ways of obtaining rewards without meeting contingency criteria can reduce the effectiveness of the contingency (Skinner, 2018).

When some students earn rewards and others do not, numerous negative social interaction may follow. Those who do not earn rewards may ridicule those who try to earn rewards and the rewards themselves. Thus, classmates may make fun of a student for working hard to earn rewards. Additionally, those who earn rewards may socially aggress against those who do not earn rewards (Skinner et al., 2004).

Interdependent Group Contingencies. Interdependent group-oriented contingencies provide all members of a group (e.g., class) access to a consequence based on the group's behavior meeting a group-oriented criterion (Litow & Pumroy, 1975). For example, all members of a class may receive a reward if the class averages an 85% on a test. The "interdependency" is the result of rewards being delivered contingent upon a student's own behavior and the behavior of others in his group (e.g., class). Tootling is an intervention that includes an interdependent group contingency (Skinner et al., 2000). During tootling, the entire class receives a reward based on the number of "tootles" or prosocial peer reports. Thus, the group was working toward a cumulative group-oriented criterion (i.e., a certain number of reports). When the class met their goal, every student in the class is rewarded (Cashwell et al., 2001).

This interdependency can occasion numerous desired side effects. Students may encourage, prompt, or remind each other to engage in desired behaviors. Additionally, students may praise and compliment one-another for their desired behaviors. Finally, when the entire class earns a reward, students often celebrate their success together. These social side effects are

consistent with the goal of enhancing students' desired social behaviors in natural classroom environments (Slavin, 1991; Skinner, 2018; Skinner et al., in press).

Interdependent group contingencies are easy to manage, as the teacher only needs to administer one contingency (Gresham & Gresham, 1982; Pumroy & McIntire, 1991). It is often easier for teachers to deliver rewards to all or no students in a class. Such contingencies allow educators to use activity reinforcers (e.g., recess) which may be difficult to deliver to some students but not others (Skinner et al., 2009). Finally, when tangible reinforcers are delivered to everyone, stealing and belittling is less likely to occur (Skinner, 2018).

A disadvantage to interdependent group-oriented rewards is that all students receive the same consequence. A specific consequence may be rewarding to some and punitive to others. Those students who are punished by the consequence, would be negatively reinforced and may sabotage the group's performance (Skinner, Cashwell, & Dunn, 1996). One way to address this problem is to focus on using rewards that are not typically available in the classroom and soliciting feedback from the students to determine if all find them rewarding. Because scarcity breeds demand, using rewards that are not typically available in a classroom setting also makes the contingency seem like a "bonus" reward or something extra (Skinner et al., 2018). For example, in their tootling program Cashwell et al. (2001) allowed students to attend recess at their old overgrown playground, something that had not been allowed for over a year.

A second disadvantage of interdependent group-oriented contingencies is they are considered "unfair" because students who excel may not earn a reward because their classmates performed poorly. To address this concern, researchers do not recommend trying to convince students that they are fair or applying high stakes consequences (Skinner et al., 2018). Instead, educators should indicate that these additional contingencies do not replace typical classroom

procedures and behavior expectations, but allow all students to earn extra or “bonus” rewards. “Bonus” rewards imply an additional contingency added to complement other contingencies in place (Scott et al., 2017; Skinner et al., 2009). If students complain about the unfair contingency, they should be reminded that no rewards are being removed, and that the all students can only benefit when they receive bonus rewards (Skinner et al., 2004). One strategy educators can use when students complain is to offer to stop giving them the opportunity to earn bonus rewards (Andrews & Williams, 1970; Skinner et al., in press).

Incorporating a group-oriented contingency is likely an essential component to implementing PPR and tootling interventions. Students are unlikely to report positive behaviors of other students if this reporting behavior is not reinforced. Interdependent group-oriented contingencies have effectively addressed this problem as the entire class can earn rewards for reporting their classmates desired social behaviors (Cashwell et al., 2001; Skinner et al., 2000).

Also, implementing an interdependent group contingency with PPR and tootling interventions is likely to occasion other positive social interactions. Since interdependent group contingencies are delivered to the group based on the group’s performance, students are more likely to work, encourage, prompt, and celebrate as a group (Slavin, 1991; Skinner, 2018). These behaviors are consistent with good social skills and enhance the classroom environment. Since it is difficult to identify who caused the group to not receive the award, blaming peers is also reduced.

Summary and Purpose

Social skills are significant behaviors exhibited in specific situations that predict important social outcomes for students (Gresham, Sugai, & Horner, 2001). Social skills allow students to learn how to effectively engage with other students and to avoid unacceptable social

behaviors (Gresham & Elliot, 1990). These behaviors are correlated with socially important outcomes (e.g., peer acceptance, friendships, school adjustment, and teacher and parental acceptance). Strong social skills have been related to higher academic performance, and fewer externalizing and internalizing problems in the classroom (Henricsson & Rydell 2006; Wentzel, 1991). Poor social skills also are linked to adverse effects on children's behaviors and relationships in school (Tremblay et al., 1992) and increase vulnerability to mental health problems including depression, loneliness, and social anxiety (Sergin & Flora, 2000).

Many students have difficulty developing social skills, including students with disabilities and students considered at-risk (Forness & Knitzer, 1992; Gresham, 1992; Gresham, 2002; Landau & Moore, 1991; Smith & Matson, 2010). A common intervention used to remediate social skills deficits is SST. SST includes target instruction that allows students to acquire social skills (Quinn et al., 1999). While SST may allow student to acquire social skills and perform them during SST sessions (Murphy & Zlomke, 2014), often SST does not produce meaningful, generalized changes in students' social behaviors. Thus, SST may not enhance students' social behavior in their natural social environments (Gresham, 1998).

Providing reinforcement for socially desirable behaviors that occur in natural environments may address this problem (Gresham, 1998; Skinner et al., 2000). Although teachers are unlikely to observe each student's desired social behavior (Skinner et al., 2000), the classmates they are interacting with can observe and report them (Skinner et al., 2002). While students can learn to report positive behaviors of their classmates (Grieger et al., 1976; Ervin et al., 1996), in order to occasion this behavior during typical classroom activities students need to be rewarded for reporting the desirable behavior of others (Cashwell et al., 2001; Skinner et al., 2000). Interdependent group-oriented bonus rewards can be used to reinforce such behavior and

may also occasion other prosocial behaviors (Skinner et al., 2002). Thus, after students acquire social skills via SST, using interdependent group-oriented bonus rewards may enhance these behaviors in naturally occurring social situations. However, no PPR or tootling studies have examined the effectiveness of these procedures in enhancing specific, recently taught, social skills in natural settings.

Study I was designed to extend research on a modified positive peer reporting package intervention to increase social skills performance and generalization. Specifically, an A-B-A-B withdrawal design was used to evaluate the effects of an intervention that include SST, PPR, an interdependent group-oriented bonus reward, and public posting on compliment-giving behavior of students in a first-grade classroom. Study II was designed to extend this research by evaluating the effects of a similar intervention on increasing compliments, encouragement, and thank you statements of a different group of first-grade students.

Research Questions

The following questions are considered:

Study I. Can an intervention which includes SST, PPR, interdependent bonus rewards, and public posting enhance compliment-giving behavior of first-grade students during a typical classroom activity?

Study II. Can a similar intervention enhance and maintain multiple social skills during a typical classroom activity?

Chapter II

Study I: Generalization of Compliment-Giving Behavior in an After-School Setting

Abstract

The current study was designed to determine if a recently trained social skill would be more likely to generalize across settings when a modified Positive Peer Reporting intervention was applied. PPR was modified into a package intervention called “Catching Compliments” and included publicly posted feedback and an interdependent group-oriented bonus reward where the entire class earned rewards for reporting their observations of classmate’s giving compliments. A withdrawal design was used to determine if the “Catching Compliments” intervention increased compliment-giving behavior of students in a first grade, after-school classroom. Visual analysis of a repeated measures graph and effect size data suggest the intervention caused immediate, consistent, and meaningful increases in compliment-giving behavior. Discussion focuses on applied implications associated with supplementing social skills training with positive peer reporting and directions for future research.

Social skills are needed across multiple domains. Social skills predict many important social outcomes for children including peer acceptance, friendships, and school adjustment (Gresham, Sugai, & Horner, 2001). These skills have also been linked to higher academic performance (Wentzel, 1991; Wentzel, 1993), fewer externalizing and internalizing problems in the classroom (Henricsson & Rydell, 2006), and decreased vulnerability to mental health problems (Sergin & Flora, 2000). Poor social skills are associated with poor mental health, social isolation, negative self-concept, and limited opportunities to learn (Deshler et al., 1996).

Students with disabilities including ASD, SLD ID, EBD, and ADHD are more likely to have social skills deficits (Forness & Knitzer, 1992; Gresham, 1992; Gresham, 2002; Landau & Moore, 1991; Smith & Matson, 2010). Also, students who come from low SES families and culturally disadvantaged backgrounds are at a higher risk to experience problems with social relationships (Ng et al., 2018). Thus, these students are less likely to establish positive relationships with peers, teachers, and parents, and may have more learning problems in school settings.

Students who are displaying poorly developed social skills may receive Social Skills Training (SST). SST is typically taught in small-group settings, where four to six students are pulled out of the classroom (Gresham, 1998). In these small group settings, students are taught a skill through describing, demonstrating, explaining, and modeling. After a skill is acquired it is practiced in the training session and the teacher provides cues, feedback and reinforcement. SST focuses on many different objectives including: understanding feelings, problem-solving, managing anger, setting goals, empathy, respect, bullying prevention, making friends, using manners, and personal relationships (Quinn et al., 1999).

SST is a popular intervention used in educational settings and meta-analytic studies suggest that such procedures do result in students acquiring social skills (Ang & Hughes, 2001; Beelmann et al., 1994; Schneider, 1992). However, researchers have shown that SST may not remedy social problems of children (Bellini et al., 2007; Forness, & Kavale, 1999; Mathur et al., 1998; Quinn et al., 1999). Specifically, meta-analytic studies have found that maintenance effect sizes for SST are considered modest at best (Losel & Beelmann, 2003; Schneider, 1992) and effect sizes for generalization across settings may be even lower (Mathur et al., 1998). This suggests that students may be able to learn social skills in a training setting, but these skills may not generalize and be maintained in natural social environments.

Researchers have offered recommendations designed to enhance generalization and maintenance of newly acquired social skills to natural environments. Gresham (1998) recommended modifying SST training programs so that they promote functional generalization. Specific suggestions include implementing interventions in naturalistic settings, and providing immediate and reliable reinforcement when skills are displayed in natural settings. These recommendations are designed to enhance the probability that after acquiring social skills, students will choose to engage in these newly acquire behaviors in their natural social environments.

An intervention that incorporates these recommendations is Positive Peer Reporting (PPR), an intervention designed to enhance peer interactions and perceptions of students (Ervin, Miller, & Friman, 1996). The intervention involves teachers telling students they can earn points for making positive comments about one target student. These points can then be exchanged for privileges (Ervin et al., 1996). Thus, students are directly reinforced for observing and reporting classmates' prosocial behaviors. The classmates' reports may also reinforce classmates' desired

behaviors and serve as cues that allow other students to identify and perform desired behaviors that are likely to be reinforced with peer reports.

Tootling is an intervention based on similar assumptions to PPR. During the tootling intervention, students are told to monitor prosocial behavior of all their classmates and privately write incidental prosocial behavior on an index card (e.g., record who did what for whom). An interdependent group-oriented bonus reward is applied where the entire class earns a reward contingent upon the number of written “tootles” (Skinner et al., 2002). Tootling differs from PPR in that all students can serve as reporters and as target students. Additionally, the interdependent bonus reward structure means that each student is more likely to receive reinforcement when they do well (i.e., engage in and report others’ prosocial behaviors) and their peers do well. Consequently, this contingency is likely to influence classmates to encourage each other’s reporting and performance of prosocial behaviors.

PPR and tootling have been shown to be effective interventions for decreasing typical inappropriate classroom behaviors such as out of seat (Cihak, Kirk, Boon, 2009; Lambert et al., 2015; Shelton-Quinn, 2009; Sherman, 2012) and antisocial interactions (Wright et al., 2017). Additionally, these program have been shown to increase positive social interactions (Chemier, 2010; Ervin et al., 1996; Erwin, Johnston, & Friman, 1998; Grieger et al., 1976; Hoff & Ronk, 2006; Johnson, 2009; Johnson-Gros & Shriver, 2006; Jones et al., 2000; Libster, 2009), peer acceptance (Ervin et al., 1996; Ervin et al., 1998; Jones, Young, & Friman, 2000; Smith, Simon, & Bramlett, 2009;), and academically engaged behavior (Lum et al., 2018; McHugh et al., 2016). However, researchers have not evaluated the effects of these behaviors on recently taught social skills.

Purpose

Applied researchers can modify evidence-based practices to enhance educators' ability to remediate social skill deficits in their students (Skinner, 2013). Thus, the current study was designed to extend research on SST, by supplementing SST with a PPR intervention referred to as "Catching Compliments." The "Catching Compliments" intervention included publically-posted feedback and interdependent bonus rewards that were delivered contingent upon peer reports of classmates giving compliments in natural environments and public posting of these reports. An A-B-A-B withdrawal design was used to evaluate the effects of the intervention on students' compliment giving behavior.

Method

Participants and Setting

This study was conducted in an urban area in the southeastern United States. The primary experimenter was a school psychology PhD student who had prior experience applying positive peer reporting and group contingency procedures to elementary school students. Two additional school psychology PhD students helped collect interobserver agreement.

Participants included students enrolled in a university-assisted community school (UACS), full-service after-school program for at-risk students. The after-school program served students from an elementary school with 325 Kindergarten through fifth-grade students. Of these students, 51% were boys and 49% were girls. Additionally, 42% were black, 41% were white, and 15% were Hispanic-Latino. Approximately 18% of students were receiving special education services and 3% were English Language Learners. In addition, more than 60% of students were from economically disadvantaged homes.

Students are selected for the UACS after-school program based on attendance, tardies, behavioral referrals, grades, and test scores. The intervention was implemented class wide. The class consisted of 18, first-grade students. The class included 8 females (44%), and 10 males (56%). The majority of the class was African American (66%). Approximately 17% were Hispanic or Latino(a) and 17% were non-Hispanic white.

The UACS after-school program includes time for academics and a variety of other activities (e.g., gardening, cooking, and dance). Due to the nature of the after-school program, behavioral expectations and consequences for inappropriate behavior are more lenient than the regular school day. Academic hour took place in a first-grade teacher's classroom. The classroom consisted of a first-grade general education teacher and a teacher's aide. Due to the organization of the after-school program, students in the first-grade classroom were from different general education classrooms. Therefore, some of the students were in the same classroom during the regular school day, while others were not.

Data were collected during the academic hour of the after-school program. During academic hour, students spent the first 15 to 20 min reviewing spelling words assigned during the regular school day by playing team games (e.g., spelling tic-tac toe). The students then spent the remainder of the academic hour working in stations. Students were assigned specific groups in which they rotated from station to station. Student groups did not change from day to day.

Stations included activities where students could review spelling and sight words, practice reading fluency, work independently on computer reading programs, and work together with a small group using a Promethean© ActivPanel playing math games. The class rotated through the different stations in small groups of three to four students. Students spent approximately 10 min at each station. Data collection took place during small group work using

the Promethean © ActivPanel. During this station, students were advised to work together when playing math games (e.g., math bingo) that required students to answer simple addition or subtraction math facts. Students were always on the same team (i.e., not playing against one another) and therefore, would win or lose the game together. Students did not play against other groups; thus, all group could win the game. During this time, there were many opportunities for social interactions among the students.

Materials

Materials included the Promethean © ActivPanel, which included multiple apps with math review games (e.g., math bingo) for students to play. The experimenter created slips of paper by dividing 8.5 x 11 inch colored, printer paper into thirds. Each slip had the instructions “Circle 1” and the names of each student in a group listed at the top of the slip. Each slip of paper also included a clip art graphic of two children, and the words “gave a compliment” underneath the picture. The experimenter created these slips of paper using a personal computer and a laser printer. Students were instructed to record observations of peers’ compliment-giving behavior during the math game and place completed slips of paper in a decorative box kept by the Promethean © ActivPanel. Students’ progress towards earning their reward (i.e., a small piece of candy) was displayed on a poster board. The experimenter created the poster board by drawing a ladder and attaching a removable smiley face to move up the ladder based on the number of reported compliments. A piece of candy was chosen as the award because it was resource efficient and recommended by the teacher.

Independent and Dependent Variables. The primary independent variable was the modified Positive Peer Reporting (PPR) package intervention. The intervention was described to the class as a game called “Catching Compliments.” The PPR package intervention was similar

to the tootling intervention developed by Skinner et al. (2000). A modification was made to focus solely on compliment-giving behavior. The primary dependent variable was intervals scored with an observed compliment. To develop an operational definition of compliment-giving behavior, the primary experimenter reviewed definitions from previous researchers (see Apple, Billingsley, Schwartz, & Carr, 2005; Macpherson, Charlop, & Miltenberger, 2015). The experimenter spent approximately three days in the classroom observing students and making narrative recordings. During this process, the experimenter developed an operational definition and examples of behaviors that would be considered a compliment and behaviors that would not be scored.

The researcher chose to include both verbal and nonverbal compliment-giving behavior. A verbal compliment was operationalized as a positively worded statement that conveyed approval about another student or a student's action said at an audible level. Examples included a positive describing word with or without target item of possession or activity of engagement (e.g., neat, cool shoes). "I like" statements with the inclusion of the item (e.g., I like your shoes), and "You have/made" statements along with a positive-describing word and the item of possession or activity were also included within the definition (e.g., You made a nice picture!). Other positively worded statements were included as well. Non-examples included statements of excitement (e.g., Yay!), or statements of encouragement (e.g., You can do it!). A non-verbal compliment was operationalized as a nonverbal action that conveyed a message of approval. Examples included giving a thumbs up, and giving a high five. As hand-clapping and dancing were often celebratory, they were not scored as a compliments.

Design and Procedures

An A-B-A-B withdrawal design was used to evaluate the effects of the “Catching Compliments” game on students’ compliment giving behavior. This design allows for three demonstrations of control, two demonstrations of a treatment effect (i.e., initial A-B phases and second A-B phases), and a third demonstration of an experimental control when the treatment is withdrawn (Kazdin, 2011). Across all phases, data were collected between 3:45 and 4:30 p.m.

Baseline phase and assessment procedures. During baseline, typical classroom procedures were applied. Partial-interval recording with 20 s intervals was used to collect data during the Promethean© ActivPanel station. Data were collected on one group of two to four students for approximately 10 min. After approximately 10 minutes, the groups rotated stations. Data collection would begin as soon as all group members were at the board. During each interval, all students in the small group were observed. Intervals were scored if any of the observed students displayed a verbal or nonverbal compliment during the 20 s interval. If a student was absent or stepped away from the Promethean © ActivPanel station, that was noted and those intervals were not scored and excluded when calculating the percentage of intervals scored with a compliment. If only one student was present in a group, data was not collected due to absence of opportunity for social interactions.

Training students. Following the initial baseline phase, the primary experimenter gave a social skills training lesson on giving compliments to the entire class. The lesson followed an outline revised from Coucouvanis (2005). The lesson included defining a compliment, describing how compliments make you feel, giving examples and non-examples, and asking students for suggestions (see Appendix D). The lesson took place during the students’ “snack

and play” period. This period occurred from approximately 2:45 to 3:30 p.m. and took place in a separate classroom from academic hour. During this time, a teacher’s aide provided supervision.

Following the lesson, the primary researcher presented PPR as a class-wide-game they were going to play called “Catching Compliments.” The experimenter then taught the students to report peers’ compliment-giving behaviors. The primary experimenter explained the specific type of compliments she wanted students to report. The criteria were: (a) the behavior observed had to be that of another classmate working in the same group (students were told not to report themselves), and (b) the behavior occurred during the Promethean© ActivPanel station in academic hour. Next, the students were instructed on how to report examples of peer compliments on the provided slips of paper. Students were instructed to circle the name of the classmate who gave a compliment at the top of the slip and then place the piece of paper in the provided, decorated box. The next day, the primary experimenter reviewed the compliment-giving behavior and procedures for the game.

Intervention Phase. The intervention phase began two days after training. Each intervention day began with a review of the game instructions. Next, the class was told the cumulative number of positive peer reports turned in from the previous day. Based on the number of reports turned in, the experimenter would move a smiley face up a ladder drawn on a poster board. Each step of the ladder represented 10 positive peer reports. There was a total of 6 steps; therefore, once the class reached a total of 60 reports turned in, they won the game. If the smiley face reached the top of the ladder, the class was told they won the game. The class was not told what the reward would be. Peer reporting slips of paper were provided to each group when they arrived at the Promethean© ActivPanel station to play math games. When all students were present at the station, data collection began. At the end of class, researchers counted the

number of peer reports turned in. If two or more students' names were circled on a single slip, each report was counted separately. Students had academic hour on Mondays, Wednesdays, and Thursdays; therefore, an experimenter collected data three days per week. Students won the game and earned a reward (i.e., a small piece of candy) after five days of intervention.

Withdrawal Phase. After five days of intervention, students were told the “Catching Compliments” game was going to be withdrawn. During this time, the class resumed typical classroom activities as described in the baseline phase. The PPR materials (e.g., slips of paper and reward poster board) were removed from the classroom. During this phase, researchers continued to collect compliment-giving behavior data during the Promethean© ActivPanel station. The withdrawal phase was implemented for three days.

Intervention Reimplementation Phase. The PPR intervention was re-implemented over five days. The primary experimenter told the class they would be playing the “Catching Compliments” game again. The experimenter reviewed the PPR procedures, posted the reward poster board, provided materials, and implemented procedures similar to the initial intervention phase. During this phase, students earned a reward once after two days of intervention and again, after three more days.

Analysis Procedures. After each day, the class average of percent of intervals scored with a compliment was plotted on a time-series graph. Visual analysis of this graph was used to make decisions regarding the variability, trend, or level in data to determine effectiveness of the intervention. As a secondary level of analysis, percent non-overlapping data points (PND; Mastropieri & Scruggs, 1985-86; Parker & Hagan-Burke, 2007) was used to evaluate the effectiveness of the intervention. PND is the percentage of data points in the treatment phase over the highest point of distribution in the baseline phase. PND of 90% or higher indicates a

highly effective intervention, 70%-89% indicates a moderate effect, 50%-69% indicates a mild or questionable effect, and below 50% is considered an ineffective intervention (Scruggs et al., 1986). Effect size data was also calculated using Hedge's g to take into account the different number of observations in each phase. Hedge's g was calculated by dividing the difference in means across adjacent phases by the pooled standard deviations of the matching phases (Hedges, 1981). Hedge's g effect size of .80 or higher indicates a large effect size. Hedge's g of .50-.79 would be considered a medium effect size, where .20 and lower would be considered a small effect size (Cohen, 1992).

Procedural Integrity and Interscorer Agreement

An independent observer scored procedural integrity using a checklist across all steps implemented each day for the training session (see Appendix B) and at least 33% of all phases (Appendix B). Procedural integrity was 100%. To calculate interobserver agreement (IOA) data for compliment giving, the primary experimenter and an additional researcher collected data simultaneously and independently for seven days, including at least 33% of days per phase. Interobserver agreement was calculated by dividing the number of interval agreements by the number of agreements plus disagreements and multiplying by 100. This procedure was completed for each individual student. Mean interobserver agreement was 100% for baseline, 99% for intervention, 100% for withdrawal, and 97% for reimplementation.

Results

Figure 1 shows the daily percentage of intervals scored with a compliment aggregated across all target students. During baseline, the percentage of intervals containing at least one compliment shows a flat trend over five days (i.e., 0% intervals scored with a compliment). The only exception was the second day where 2% of the intervals observed were scored with a

compliment. Immediately after the intervention was first applied, there was an increase in the number of intervals scored with a compliment. During the first intervention phase, the percentage of compliment-giving behavior follows an increasing trend with one outlier, an exceptionally low percentage on the eight day. On the last day of the intervention phase, the trend appears to level out. When the intervention was withdrawn, percentage of intervals scored with a compliment immediately decreased to 0% and remained at 0% for the other two days of the withdrawal phase. When the intervention was re-implemented, there was an immediate level change as the percentage of compliment-giving behaviors increased to 14%. However, this day appeared to be an outlier. After this day, the number of intervals scored with a compliment was dropped to approximately 6.7%, and then followed an increasing trend during the reimplementation phase.

Effect size measures were calculated across phases and conditions using percent non-overlapping data points (PND). When each intervention phase is compared with each no intervention phases (baseline and withdrawal), there were zero overlapping data points, which indicate large ES (Scruggs et al., 1986). PND analysis suggests the “Catching Compliments” intervention consistently resulted in more intervals scored with compliments than the no-treatment condition.

Table 1 displays the phase means, standard deviations, and ranges when interval data were aggregated for the entire class and each group. During the baseline phase the mean percentage of intervals scored with a compliment was 0.20 (SD = .45). During the first intervention phase, the mean percentage of intervals scored with a compliment increased to 6.09% (SD = 3.56). When the intervention was withdrawal, compliments returned to baseline levels ($X = 0\%$ of intervals). During the second intervention phase, the mean percentage of

intervals scored with a compliment increased to 9.74% (SD = 3.45), which was over a 50% improvement over the first intervention phase.

Additional effect size data was calculated using Hedges g . Table 3 shows the mean difference, pooled standard deviation, Hedge's g , and qualitative description for each adjacent phase comparison. All effect sizes comparing adjacent phases were large, with $g > 2.0$ across all adjacent phases. These analyses suggest that the intervention caused meaningful increases in compliment-giving behavior.

Because phase changes were based on class-wide data, no cause-and-effect conclusions regarding groups or individuals is appropriate (Fudge et al., 2008). However, visual analysis by group is provided in Figure 2 through Figure 6. Additionally, mean data and effect size data is listed for each group in Table 1, 2, 3, and 4. Mean data by phases contained in Table 1 show that each group had more intervals scored with compliments during both intervention phases relative to both no-treatment phases. When comparisons are made across groups, these data suggest that some groups responded better to the intervention than others. For example, group 2 showed much smaller increases in intervals scored with a compliment after the intervention was applied than groups 3, 4, and 5.

Discussion

While PPR and tootling interventions have been shown to increase positive social interactions (Chemier, 2010; Ervin et al., 1996; Erwin, Johnston, & Friman, 1998; Grieger et al., 1976; Hoff & Ronk, 2006; Johnson, 2009; Johnson-Gros & Shriver, 2006; Jones et al., 2000; Libster, 2009), previous research did not focus on specifically increasing a recently taught social skill. The current study extended PPR and tootling research by evaluating the effects of a PPR

package intervention on students' compliment-giving behavior in natural, as opposed to SST, environments.

When comparing compliment-giving behavior across adjacent phases, visual analysis of the repeated-measures graph suggests that applying the "Catching Compliments" game increased compliment-giving behavior, providing two demonstrations of a treatment effect. A third demonstration of experimental control occurred when the treatment was withdrawn and compliment-giving behavior decreased. Visual analysis of the repeated measures graph was supported with mean comparisons across phases and effect size estimates, which were considered large across all phase comparisons. Together, these analyses suggest that the SST and "Catching Compliments" intervention cause immediate (visual analysis of repeated measures graphs), consistent (PND) and meaningful (Hedge's *g*) increases in compliment-giving behavior in a generalized setting.

While results suggest that the intervention enhanced generalization of social skills to naturalistic settings, it would be premature to assume the "Catching Compliments" game would be effective for other participants in other settings. The intervention occurred in a UACS after-school program designed for at-risk students. In this program, behavior expectations are more relaxed. Therefore, additional studies should examine the effects of the intervention in a general education setting. Additionally, similar studies are needed with other students, including students with autism spectrum disorder, emotional-behavioral disorders, and attention deficit/hyperactivity disorder. Also, the current study only targeted one specific social skill, giving compliments. Researchers should examine the effects of similar interventions on other social behavior (e.g., saying thank you, providing encouragement). Researchers should also examine the interventions effectiveness on multiple social skills concurrently.

Another limitation is that data were collected while students were engaged in an academic game. During the time spent at the Promethean© ActivPanel station, there was an increased likelihood for social interaction. Also, students worked together on the same team to win the game which may have enhanced their responsiveness to the interdependent group-oriented contingency. Thus, researchers should examine the effects of this on similar interventions across other activities that provide the opportunity for social interactions including small group work, physical education classes, and behavior during free time, recess or while eating lunch at the cafeteria.

While the current study suggested the intervention was effective, future research should determine why it was effective. Because the game was implemented as a package intervention, there were many components (i.e., SST, peer reporting, an interdependent group contingency, publicly posted feedback). Additional studies should consider examining the components separately to identify causal mechanisms. For example, providing SST before baseline data is collected would allow one to isolate the effects of the “Catching Compliments” components of the intervention.

Social skills problems are associated with a plethora of undesirable social, health, and academic outcomes (Caprare et al., 2000; Deschler et al., 1996; DiPerna et al., 2001; Feldhusen et al., 1970; Henricsson & Rydell, 2006; Jones et al., 2015; Malecki & Elliott, 2002; Ng et al., 2018; Parker & Asher, 1987; Sergin & Flora, 2000; Tremblay et al., 1992; Wentzel, 1991; Wentzel, 1993). The current study suggests that combining SST with the “Catching Compliments” game enhanced students compliment-giving behavior in generalized settings. If future researchers can demonstrate that similar interventions can cause generalized improvement in social behavior across participants, settings, activities, and social skills over time; perhaps

some of these associated problems can be mitigated in at-risk students. Further studies should also examine the longitudinal effects and generalization of the PPR intervention for social skills

Chapter III

Study II: Generalization of Multiple Social Skills in an Academic Setting

Abstract

The current study was designed to extend research on a social skills intervention in a first-grade classroom. An intervention that included SST and a positive peer reporting intervention, where students were reinforced for reporting social behaviors of their classmates, was implemented during the academic hour in an after-school setting. The intervention was designed to increase compliment-giving, encouragement-giving, and saying thank you. The intervention included an interdependent group contingency based on randomized criteria. A concurrent multiple-baseline across-behavior design was used to evaluate the effects of the packaged intervention. Visual analysis of a multiple-baseline across behavior, and effect size data were used to determine the effectiveness of the intervention.

Study I provided evidence that a SST and PPR packaged intervention can be effective in increasing generalized compliment-giving behavior in an after-school program for at-risk students in a first-grade classroom. While Study I provided promising evidence, the study only focused on one recently taught social skill. One way to concurrently address multiple social skills may be to apply interdependent group-oriented bonus rewards with randomly selected target behaviors (Skinner & Watson, 1997). When target behaviors are unknown and randomly selected, students may be motivated to perform all possible target behaviors (McKissick, Hawkins, Lentz, Hailley, & McGuire et al., 2010; Popkin & Skinner, 2003).

Randomized criteria can be used to maintain behavior change over time. If criteria are randomly selected, students do not know how well they need to perform to earn a reward. Students will attempt to do their best, in order to increase the probability of earning a reward (Skinner et al., 2004). Additionally, randomizing criteria may increase the behavior change across all students (Skinner et al., 2004).

Two studies provided examples of how to apply interdependent group-oriented bonus rewards with randomly selected target behaviors and criteria. Kelshaw-Levering, Sterling-Turner and Skinner (2000) investigated the effects of randomized components within a group-oriented contingency. Researchers used a multiphase time-series design. During the initial intervention phase, students received a random reward contingent upon the class's number of disruptive behaviors (i.e., 36 or fewer disruptive behaviors within a 1 hour and 15 min period). During the second intervention phase, the class was told they were going to play the same game but the criteria was unknown. After each interval (i.e., 1 hour and 15 min time period) the teacher randomly selected a behavior from a jar containing slips of paper labeled a) a specific behavior (e.g., off task) and number or b) the word "all" and a number. The number criteria ranged from

0-36 represented the total number of disruptive behaviors. Another jar contained pieces of paper with either “Whole Class” or “Individual Student” labeled on them. When the “Whole Class” was selected, the teacher evaluated the target behavior of all students in the class. If “Individual Student” was selected, the teacher evaluated the behavior of a randomly selected student’s name from another jar. Researchers found that both interventions (i.e., randomized reinforcers and multiple randomized components) were effective at decreasing disruptive behaviors. Results indicated randomizing multiple components was slightly more effective than just randomizing reinforcers (Kelshaw-Levering et al., 2000).

Popkin and Skinner (2003) used an interdependent group-oriented contingency program with randomly selected criteria to modify the performance on five students with EBD spelling, mathematics, and English daily assignments. Initially, students received access to a reward based on the class average percent correct on daily spelling assignments. The average percent correct needed to receive access to the reinforcer was randomly selected with criteria ranging from 25-100%. During the second phase of the intervention, rewards were contingent on randomly selected spelling or math daily assignments. During the third phase of the intervention, English daily assignments were added to the randomly selected target behavior. Popkin and Skinner (2003) found that randomly selected criterion level increased the academic performance of students who were choosing not to engage in daily assignments. Additionally, researchers found that students could effectively maintain behavior change across multiple target behaviors when interdependent group-oriented contingencies with randomly selected target behavior were in place (Popkin & Skinner, 2003).

The purpose of the current study is to extend research on SST and a modified PPR package intervention. Specifically, a concurrent multiple-baseline across-behaviors design was

used to evaluate the effects of a PPR package intervention on multiple, recently taught social skills concurrently. The modification to the PPR package was to apply an interdependent bonus reward with randomized target behaviors and criteria.

Methods

This study was conducted in an urban area in the southeastern United States. The primary experimenter was a school psychology PhD student who had prior experience applying PPR interventions with interdependent group contingencies. One additional school psychology PhD student helped collect interobserver agreement.

Participants included students enrolled in a university-assisted community school (UACS), which is a full-service after-school program for at risk students. The intervention was implemented class wide in a first-grade classroom. The after-school program served students from an elementary school with approximately 325 students. Of these students, approximately 51% were boys and 49% were girls. Approximately 42% of the students were black, 41% were white, and 15% were Hispanic-Latino. Around 18% of students received special education services and 3% were English Language Learners.

Students were admitted into the UACS full-service program based on attendance problems, low grades or test scores, behavioral problems, or other risk factors. The intervention was implemented in a first-grade class which included 19 students, 12 (63%) boys and 7 (37%) girls. The majority of the class was African American (53%) and approximately 47% were non-Hispanic white. The classroom consisted of a credentialed first-grade general education teacher and a teacher's aide.

The UACS full-service program included a transition/snack time, academic hour, a variety of extracurricular clubs, and dinner. Data were collected two days a week from 3:30 to

4:30 pm in the first-grade teacher's classroom. The intervention took place during academic hour, where students reviewed academic skills taught during the school day, and participated in other group activities. During academic hour, students spent the first 5 min transitioning and listening to class instructions. The students spent the remainder of the academic hour working in stations. Students were assigned specific groups in which they rotated from station to station. Student remained in the same groups daily. Groups consisted of four to five students.

There were four stations during academic hour. Stations included activities where students could practice reading fluency, work together to play a board game, a Lego©/ K'Nex© station, and a coloring/worksheet station. Data collection took place during the Lego©/ K'Nex© station. At this station, students could work independently or together to build and create. At this station, students were able to interact freely with one another. Data were collected at this station because the experimenters could observe each student's behavior and the activity allowed for many social interactions among students.

Materials

Materials included the Lego© building blocks or K'Nex© building toys provided by the teacher. The researcher created slips of paper by dividing 8.5 x 11 inch colored printer paper into fourths. Each slip had the instructions "Circle" and the names of each student in a group listed at the top of the slip. Each slip also had the words "Compliment," "Encouragement," and "Thank you" printed at the bottom. Each behavior was accompanied with a small clip art picture, demonstrating the behavior. The experimenter created these slips by using a personal laptop and laser printer. Students were instructed to place completed slips of paper into a decorative box kept at the Lego©/ K'Nex© station. The researcher also used a 6 x 9-inch envelope. The envelope contained small slips of paper that had reward criterion written on them. Students were

rewarded with a small piece of candy. A piece of candy was chosen as the reward because it was rarely given to students in the after-school program, thus, considered a bonus prize.

Independent and Dependent Variables

The primary independent variable was a modified version of a PPR package intervention. The intervention was introduced to the class as a game. The PPR package intervention used similar methods to those described in Study I. In the current study, the experimenter trained students on three social skills: compliments, encouragement, and saying thank you. The dependent variable was intervals scored with an observed compliment, statement of encouragement, or saying thank you. The same operational definition in Study I was used for verbal compliment-giving behavior. However, since nonverbal gestures could be identified as a compliment or encouragement, nonverbal behaviors were excluded from this study.

To develop an operational definition of encouragement-giving behavior, the primary experimenter reviewed definitions from previous researchers (see Abramowitz, O’Leary, & Rosén, 1987; Khandelwal, 2009; Reeve, & Jang, 2006). An encouragement statement was operationalized as statements that provide support, confidence, hope, or boost or sustain the peer’s engagement occurring before or during an activity said at an audible level. Examples included statements such as “You’re close,” “You can do it,” “Try your best,” “I know you can do it,” “Keep it up,” “Keep trying.” Non-examples included compliments, questions, or other statements made to another peer. Saying thank you was operationalized as a statement expressing thanks or appreciation. Examples included statements such as “Thanks,” “Thank You,” “I appreciate you,” and “Appreciate it.”

Design and Procedures

In this study, a concurrent multiple-baseline across-behaviors design was used. This design allows researchers to improve students' behavior without implementing or withdrawing procedures with the potential of making behavior worse. Since behaviors are not required to reverse, the design is beneficial for behaviors that may not reverse when the intervention is withdrawal (Winn, Skinner, Allin, & Hawkins, 2004). This design controls for threats to internal validity by staggering when each behavior is added to the intervention. The possibility that an outside event occurred that caused behavior change at the same time the intervention was implemented is evaluated by making comparisons across three target behaviors (Campbell & Stanley, 1963).

The intervention was used to address additional target behaviors. The target behaviors were added to the intervention in a staggered fashion. Initially, the intervention targeted compliment-giving behavior, while baseline data continued to be collected for encouragement statements and saying thank you. After establishing a trend from implementing the intervention with only one target behavior, the second target behavior (i.e., encouragement) was added to the intervention. Researchers were able to target a second behavior by adding criteria for encouragement into the randomly selected criteria and teaching students how to peer report encouragement. During this time, baseline data were still collected for the third target behavior (i.e., thank you). Finally, after establishing a trend for the second behavior, the third target behavior was added to the intervention in the same way. This allowed for three demonstrations of experimental control each time a new behavior is targeted (Harris & Jenson, 1985; Popkin & Skinner, 2003).

Teaching Students. Before collecting baseline data, the primary experimenter gave a lesson on giving compliments, encouragement, and saying thank you. The lesson included some examples from Coucouvanis (2005). For each skill, the researcher gave a definition, examples, and non-examples. The lesson also included discussion about appropriate times to engage in the defined skills and how the skills tied into the school wide rule *Be Respectful* (see Appendix E). The lesson took place between 3:00 and 3:30 p.m., during snack and play time. The lesson occurred in the same classroom and was immediately before academic hour. Procedural steps for the social skills lesson are in Appendix C.

Baseline Phase and Assessment Procedures. Immediately following social skills instruction, baseline data were collected. Typical classroom procedures were implemented. Data collection took place at the Lego©/ K’Nex© station. During this station, partial-interval recording with 15 s intervals was used to collect data. Data were collected with one small group at a time. Each group consisted of four to five students. Data collection was approximately 10 min for each group. Data collection began once all students in a group were at the station. An interval was scored if any student in the group gave a compliment, statement of encouragement, or said thank you to another student within the 15 s interval. Each behavior was recorded separately for each student and all students in the small group were constantly observed. Similar to Study 1, behavioral data was not collected if there was only one student in a group due to absences or students stepping away from the station. Behavior data was only collected on students’ who had parental consent.

Training Students. After baseline data collection, the primary experimenter introduced the class to the PPR intervention. Before the implementation of experimental procedures, the intervention was presented to the class as a game. The experimenter taught students to report

peers' compliment-giving behavior. The researcher reviewed the definition of compliments with the class. She then explained that the criteria for compliments peer reports were (a) the behavior observed had to be of another classmate working in the same group, and (b) the behavior occurred during the Lego©/ K'Nex© station. Students were taught not to report on themselves.

Next, the students were instructed on how to report peers compliments. The class was provided with slips of paper. Students were instructed to circle the name of the classmate who gave the compliment. Students were also instructed to circle the behavior of the student (i.e., compliment) and then place the slip of paper in a decorated box located at the Lego©/ K'Nex© station. During the training session, students were only taught to report compliment-giving behavior. Each day before a new skill (i.e., encouragement and thank you) was implemented, the same procedures were reviewed for the new behavior.

After reviewing the procedures for peer reporting, the experimenter explained the group contingency to the students. The experimenter created criteria based on baseline data and data from Study I. The 30 criteria were: ten slips of paper labeled one through ten compliments, ten slips of paper labeled one through ten encouragement, and ten slips of paper labeled one through ten thank you. The researcher included all the criteria for compliments in an envelope labeled "Goals". As each new behavior was introduced and added to the game, the criteria for that behavior was also added to the "Goals" envelope. Therefore, initially the only criteria in the "Goals" envelope were ten slips of paper labeled one through ten compliments. Using the script from Appendix F, the primary researcher told the class they would have the opportunity to earn rewards based on the number of social skills reports that they turn in each day. The researcher told the class that either everyone or no one would earn the reward based on class-wide performance.

Intervention. During the concurrent multiple-baseline across-behaviors (Con M-B A-B), typical classroom procedures remained in place. When students came into the classroom, the researcher reminded students of the procedures for the game. The primary researcher randomly selected criterion from the “Goals” envelope and placed it on the whiteboard in the front of the classroom. Students continued to work and rotate through stations identical to typical classroom procedures. At the end of academic hour, the researcher counted the total number of compliment peer reports, encouragement peer reports, and thank you peer reports. If the class’s total peer reports met or exceeded the randomly selected criteria for the day, the class was told they had won the game. The researcher made this announcement at the end of academic hour. If the class won the reward, a small piece of candy was awarded to each student.

Analysis procedures. After each session, the class average percent of intervals scored with a compliment, encouragement, and thank you was plotted on a time-series graph. Visual analysis of the graph was used to make decisions regarding the variability, trend, or level in data to determine the effectiveness of the intervention. Additionally, Tau (Parker, Vannest, Davis, & Sauber, 2011) and Hedge’s *g* (Hedges, 1981) effect size data were also used to determine the effectiveness of the intervention. Tau combines non overlapping data between phases with trend data from the intervention, while also controlling for undesirable baseline trends. To interpret Tau, Parker et al. (2011) suggestions were applied (i.e., small effect = 0.0 to 0.62, moderate to high effect = 0.63 to 0.92, and large effect = 0.93 and above). Hedge’s *g* was calculated by dividing the mean difference across adjacent phases by the pooled standard deviation of the matching phases and Ferguson’s (2009) interpretation guidelines were followed.

Procedural Integrity and Interscorer Agreement

An independent observer scored procedural integrity for both the teaching session and intervention treatment sessions. The teacher's aide completed the procedural integrity checklist (Appendix C) during the teaching session and procedural integrity was scored 100%. An independent observer collected procedural integrity for 40% of treatment sessions (Appendix C). Procedural integrity ranged from 88 – 100% of steps completed. On one intervention day the researcher did not prompt students to turn in any remaining slips before rotating stations, resulting in a lower procedural integrity score for that day. Additionally, the primary researcher and independent observer calculated interobserver agreement (IOA) data by simultaneously and independently collecting behavioral data for eight days, and at least 20% of each phase. Interobserver agreement was calculated by dividing the number of agreements over agreements plus disagreement and then multiplying by 100. A disagreement was considered any time the primary researcher and the independent observer had scored an interval differently. For example, if one observer scored an interval for a compliment and the other did not score the interval. IOA data was collected on each target student, and separately for each behavior. Mean interobserver agreement for compliments was 100% for baseline and 99.8% for intervention. Mean interobserver agreement for encouragement was 100% for baseline and intervention. Average IOA data for thank you was 99.9% for baseline and 100% for intervention.

Results

Within-Series Analysis

Figure 7 depicts the percentage of intervals scored with a compliment, statement of encouragement, and thank you aggregated across groups by session. The percentage of intervals scored with a compliment was 0% across all baseline sessions. Immediately after the PPR

package intervention was implemented, compliment-giving behavior increased. Compliment giving behavior then shows a decreasing trend which levels off from sessions 14 through 19.

Figure 7 shows the percentage of intervals scored with a statement of encouragement was 0% across all baseline sessions. Immediately after encouragement was added to the randomized group contingency, the percentage of intervals scored with a statement of encouragement increased. Encouragement-giving behavior remains at the same level during the 13th session and then appears to follow an increasing trend with the exception of sessions 16 and 17.

Percentage of intervals scored with thank you was more variable during baseline phase. For the first four sessions, percentage of intervals scored with thank you was 0%. After the 4th session, the percentage of intervals scored with saying thank you follows an increasing trend until session 8. Then the data appears to level out for the next three sessions. The percentage of intervals scored with a student saying thank you appeared to increase when compliment-giving was added to the group contingency. The percentage of intervals scored with thank you spikes during session 12, but this day appears to be an outlier. After session 12, the percentage of intervals scored with a student saying thank you decreases on session 13 and returns to 0% on session 14. After thank you was added to the randomized group contingency, the percentage of intervals scored with thank you increased immediately. Over the final four sessions, intervals scored with a thank you decrease slightly and remains stable during the remainder of the intervention phase.

Across-Series Visual Analysis

When the group contingency was first introduced to targeting compliments, there was no concomitant increase in encouragement statements, but there was an increase in students saying thank you; however, these increases were not as large as the increases in compliments and show

little stability until thank you statements were added to the contingency. When encouragement statements were added to the contingency the only increase in thank you statements was an outlier that occurred on session 12. The other three thank you baseline-phase data points were similar to the rest of the baseline data points.

Across-series across-phase comparisons are a universal element of a concurrent multiple-baseline design as data series that are still in baseline allow one to assess threats to internal validity. With the current study, one concern was that adding additional target behavior(s) may decrease levels of target behavior(s) that are already included in the randomized contingency (Popkin & Skinner, 2003). When encouragement was added to the contingency, there was an immediate decreasing trend in compliments. However, this decreasing trend ceased and became stable immediately before thank you was added to the contingency. When thank you was added to the contingency, there was no change in trends or levels for compliments. Additionally, there was not consistent change in encouragement.

Table 5 displays the phase means, standard deviations, and ranges when interval data were aggregated for the entire class and each group. For the entire class and for each group phase, means are higher after the intervention was added to the contingency than during baseline. This pattern occurred across all target behaviors. However, there was some variability across groups and target behaviors. For example, all groups showed a larger increase in compliments than encouragement. Additionally, Group 2 showed the smallest increases in both compliments and encouragement. Table 6 displays the phase means and standard deviations across individual students. Again, there is noted variability across students. Additionally there is variability within student data across behaviors.

To estimate effect sizes, Tau (Parker et al., 2011) and Hedge's g were calculated. Tau results are presented in Table 7. To identify any existing baseline trends for the class-wide data, each phase was contrasted with itself. None of the baseline trends required correction (none of the Tau data were significant, at $p = 1.00$, $p = 1.00$, and $p = .11$ for compliments, encouragement, and thank you respectively). Additionally, none of the baseline trends for each group were significant. For the class-wide data, the baseline-to-intervention comparison for compliments and encouragement both suggest a large effect (Tau = 1.00, $p = 0.002$ for compliments and Tau = 1.00, $p = 0.0002$ for encouragement). The Tau score for baseline-to-intervention comparison for thank you suggests a moderate to high increase (Tau = .91, $p = 0.003$).

Tau scores are also provided for each group in Table 7. These data show significant increases across all groups when compliments were targeted and these differences were either large or moderate to high. When encouragement was added to the contingency, Groups 1 and 3 showed insignificant and small increases in encouragement. Groups 2 and 4 both showed significant increases in encouragement, with the increase for Group 4 being moderate to high and the increase for Group 2 being small. When thank you was added to the contingency, Groups 2 and 3 showed significant and moderate to high increases and Groups 1 and 4 showed small and insignificant increases.

Additional effect sizes were calculated using Hedge's g (see Table 9). To calculate Hedge's g , the mean differences for each adjacent phase was divided by the pooled standard deviation. Mean differences and pooled standard deviations for the entire class and each group can be found in Table 8. Because few data points were used in some phases, Ferguson's (2009) conservative interpretation guidelines were used to interpret effects. Ferguson (2009) suggested an effect size of $g = .41$ to $g = 1.14$ to be considered for RMPE (recommended minimum effect

size representing a “practically” significant effect for social science data). An effect size of $g = 1.15$ to $g = 2.69$ is considered moderate and an effect size of $g = 2.70$ and higher is considered a strong effect (Ferguson, 2009). For the class-wide data, the baseline-to-intervention comparison for compliments and encouragement both suggest a moderate effect (Hedge’s $g = 2.64$ for compliments and Hedge’s $g = 2.04$ for encouragement). Hedge’s g for baseline-to-intervention for thank you suggests a strong effect (Hedge’s $g = 3.13$).

Additional Hedge’s g effect size data for each group can be found in Table 9. As with Tau, these data show inconsistent effects across groups and target behaviors. When compliments were targeted, effect size differences were moderate across all groups. When encouragement was added to the contingency, Groups 1, 2, and 3 showed practical, significant effects. Group 4 showed moderate increases in encouragement. When thank you was added to the group contingency, Groups 1, 2, and 3 showed moderate increases and Group 4 showed an insignificant increase.

Discussion

While Study 1 provided evidence that a PPR packaged intervention was effective in increasing generalized compliment-giving behavior, previous researchers did not focus on increasing multiple recently taught social skills (Chemier, 2010; Ervin et al., 1996; Ervin, Johnston, & Friman, 1998; Grieger et al., 1976; Hoff & Ronk, 2006; Johnson, 2009; Johnson-Gros & Shriver, 2006; Jones et al., 2000; Libster, 2009). The current study extended research by evaluating the effects on three recently taught social skills by using a PPR intervention with interdependent group-oriented bonus rewards with randomly selected target behaviors. The study examined the effects of a PPR intervention during a small-group, play activity rather than a SST environment.

When comparing compliment-giving, encouragement statements, and thank you across adjacent phases, visual analysis of class-wide data suggests that the packaged PPR intervention increased each target behavior during play at the Lego©/ K'Nex© station. Three demonstrations of experimental control occurred when each target behavior was included in the intervention. Visual analysis is further supported by effect size estimates. In combination, class-wide data suggest the PPR intervention caused immediate (visual analysis of multiple baseline graph), consistent (Tau), and meaningful (Hedge's *g*) increases in class-wide compliments, encouragement statements, and thank you behavior in a generalized setting.

Additionally, the current study separated components of the intervention to allow for component analysis. In the current study, the researcher gave the social skills lesson before baseline data to determine differences from SST and SST in combination with the PPR intervention. The SST component was implemented immediately before the baseline phase and baseline levels remained at 0% for each target behavior. When each target behavior is added to the packaged PPR intervention, visual analysis and effect size estimates suggests increases for each behavior. These findings support previous researchers who found that SST may not result in generalized increases in trained behaviors (Bellini et al., 2007; Forness, & Kavale, 1999; January et al., 2011; Mathur et al., 1998; Quinn et al., 1999) and suggests the PPR intervention is likely a necessary component to increasing social skill behavior.

The current study did not include publicly posted feedback. The researcher announced the number of peer reports turned in daily, but did not display them to the class. Because social skill performance increased without publicly posted feedback, this may not be a necessary component in the packaged PPR intervention. However, the package PPR intervention included other components (i.e., peer reporting, interdependent group rewards). Future researchers should

continue component analysis studies to isolate the effects of providing tangible reinforcers and interdependent bonus rewards.

For each group, average phase data for each target behavior increased when each target behavior was included in the group contingency. While these changes are in the correct direction, this study was not designed to enhance or evaluate the effects of the intervention on individuals or small-groups. Additionally, according to effect size estimates, the intervention seemed more effective for some groups than others. Researchers should attempt to determine why this may have happened and investigate solutions to fix the problem. Perhaps some groups relied on other groups to receive the class reward. Future researchers may consider adding in an additional component to the randomized criteria. For example, the reward could be contingent on an unknown randomly selected group's performance (Heering & Wilder, 2006; Scott et al., 2017). By keeping criterion a "mystery," all groups will attempt to do their best, in order to increase the likelihood of earning a reward.

While the results suggest that the intervention enhanced generalization of three recently taught social skills to another setting (i.e., Lego©/ K'Nex© station) concurrently, future researchers should determine if the PPR intervention would be effective for other recently taught social skills. Researchers collected data during the Lego©/ K'Nex© station for several reasons. Researchers were able to observe and record social interactions while students worked in close proximity to each other and the station allowed for free social interactions. In the current study, researchers found some social skills were performed at a higher rate (i.e., compliments) than others (i.e., encouragement). Perhaps the environment at the Lego©/ K'Nex© station provided more opportunities to perform compliment-giving behavior than to give encouragement. Future researchers should examine social skill behavior by activity interactions. For example,

encouragement may be more likely to occur when students are engaged in goal directed behavior (e.g., see Study I) than when engaged in parallel play. Additionally, researchers should investigate the effects of a similar intervention across other social skills (e.g., sharing behavior, joining in) and settings (e.g., cafeteria, recess, gym class).

The current study suggested that the PPR intervention effectively increased three target behaviors concurrently. While the study provided three clear demonstrations of experimental control, each target behavior also maintained at levels above baseline as additional target behaviors were added to the group contingency. However, data was collected only when the intervention was being implemented. Therefore, improved performance may have been caused by students receiving the reward. Future researchers should continue examining the effects of maintenance of social skills after the intervention is no longer in place. Researchers can also use other procedures to enhance maintenance such as variable schedules, and using less discriminable contingencies (Stokes & Baer, 1978).

In order for students to generalize social skills across settings, those behaviors need to be reinforced in those generalization settings (Gresham, 1998). Many environments may not support reinforcement or not provide immediate or thick enough reinforcement schedules. The current study suggests that using a PPR intervention with an interdependent bonus reward to reinforce peer reports of recently taught social skills can enhance students' compliment-giving, encouragement statements, and thank you behaviors concurrently. Researchers should consider implementing a similar intervention in combination with a social skills curriculum to examine the promotion of social skill performance. Applying similar procedures in conjunction with SST curriculum may prove to be an effective strategy for teaching and occasioning social behaviors outside of the small group setting.

Chapter IV

General Discussion and Directions for Future Research

Social skills are generally taught through SST. SST is typically taught in a curriculum package series and occurs in small group settings. Meta-analyses have shown that SST may not produce large, meaningful, generalizable results (Bellini et al., 2007; Forness, & Kavale, 1999; January et al., 2011; Mathur et al., 1998; Quinn et al., 1999). Since SST has been shown to have low to moderate effects, researchers have offered suggestions to revise SST. One suggestion offered by Gresham (1998) is to develop and install procedures that support functional generalization. Social skills are more likely to generalize if the new behavior occasions immediate, and reliable reinforcement (Gresham, 1998).

This dissertation consists of two studies designed to investigate the effects of a packaged PPR intervention on generalization of student social skill behavior. Previous researchers have shown PPR can increase desired social interactions (Chemier, 2010; Ervin et al., 1996; Ervin, Johnston, & Friman, 1998; Grieger et al., 1976; Hoff & Ronk, 2006; Johnson, 2009; Johnson-Gros & Shriver, 2006; Jones et al., 2000; Libster, 2009). Additionally, a similar class wide intervention, tootling, has been shown to reduce inappropriate behavior (Cihak, Kirk, & Boon, 2009; Lambert, Tingstrom, Sterling, Dufrene, & Lynne, 2015; Shelton-Quinn, 2009; Sherman, 2012;), decrease antisocial interactions (Wright et al., 2017), and increase academic engagement (Lum et al., 2018; McHugh et al., 2016). Both interventions include group contingencies.

Study I extends current research by investigating the effects of a packaged PPR intervention on the compliment-giving behavior of a first-grade class. The packaged PPR intervention included SST, positive peer reporting, publicly posted feedback, and interdependent group contingencies. A withdrawal designed was used to determine if the intervention caused generalized increases of compliment-giving behavior during a small-group math activity. Visual

analysis and effect size estimates suggest the intervention increased compliment-giving behavior during the math game.

While Study I provided evidence that a packaged PPR intervention can increase a recently taught social skill, the intervention contained many components (i.e., SST, positive peer reporting, publicly posted feedback, and interdependent group contingencies). Thus, researchers could not demonstrate which components or combination of components influenced cause-effect relationships. For example, the increases in compliment giving may have been caused solely by SST. Additionally, the intervention was only implemented with one target social skill (i.e., compliments). Thus, researchers were limited in determining the effects of the intervention on other social skills and the performance of social skills concurrently. Lastly, when the intervention was withdrawn compliment-giving behavior returned to baseline levels, suggesting the target social skill was not maintained.

Study II was designed to evaluate the effects of a similar PPR intervention on increasing three recently taught social skills (i.e., compliments, encouragement, thank you) of a first-grade class. For Study II, researchers conducted the SST immediately before baseline phase data was collected. By teaching the social skills lesson first, researchers were able to determine the effects of the SST unaccompanied and in combination with the PPR intervention. Additionally, researchers used a multiple baseline design to determine if the intervention caused generalized effects of each target behavior during play at a Lego©/ K'Nex© station. This design allowed for three demonstrations of experimental control, one for each social skill. Researchers also used randomized criteria for the interdependent group bonus award. By using randomized criteria, students attempted each target behavior in order to earn a reward. Visual and effect size

estimates suggest the intervention was effective at increasing three targeted social skills concurrently during the Lego©/ K’Nex© station.

Implications

SST is typically provided in small group settings where students acquire and practice social skills (Gresham, 1998; Quinn et al., 1999). However, SST may not provide long-term, meaningful generalizable results (Bellini et al., 2007; Forness, & Kavale, 1999; January et al., 2011; Mathur et al., 1998; Quinn et al., 1999). Results from Study I and Study II suggest that a packaged PPR intervention increases recently taught social skills into generalized settings. Findings indicate that students’ acquired social skills need to be reinforced in the generalized setting in order for students to perform those behaviors.

Educators should consider applying similar interventions and procedures in order to increase the generalization of social skills. Applying similar procedures in combination with SST curriculum that builds social skills in a sequential fashion may increase the likelihood of occasioning social skill behaviors across participants, settings, and activities. Educators should also consider other forms of reinforcement (e.g., teacher praise) in combination with SST and PPR interventions in order to create interventions that are easy to implement and feasible in the classroom. By incorporating similar procedures (i.e., PPR and reinforcement) into SST, educators may be able to produce generalized, meaningful, lasting changes in social skills; thus, preventing negative mental health, social, and academic outcomes.

Limitations and Future Research

While both Study I and Study II found promising effects for the use of a PPR packaged intervention on increasing recently taught social skills, the studies are limited due to the sample characteristics. Both studies took place in a UACS after-school program designed for at-risk

students. This after school program was not designed to replicate the general education school day; thus, researchers should consider evaluating similar interventions in a general education setting. Future researchers should also examine the effects of a similar intervention in other social settings (e.g., playground and cafeteria). Because behavior is likely influenced by the activity, researchers should also examine behavior by activity interactions. Both studies were only conducted in one first-grade class. Therefore, the studies are limited by sample size and diversity. Future researchers should continue examining the effects of similar interventions across multiple samples, particularly students at greater risk for having social skill deficits (e.g., students with ID, ASD, EBD, ADHD).

While both studies revealed increases in desired social behaviors of first-grade students in a generalized setting, the researcher implemented the intervention and was responsible for day-to-day procedures, which may not be feasible for a teacher. Ideally, interventions would be developed to limit teacher time. Procedures may include randomly selecting a group's reports rather than counting all of the peer reports daily, fading reinforcement over time, or not implementing the game daily.

Norm data for the time or frequency students perform social skills does not exist. As previously mentioned, social skill performance is likely influenced by the activity. Thus, future researchers should continue examining the different levels of social skill performance to find meaningful, natural levels of social skill performance increases for different activities.

Conclusions

The current findings in this line of research led researchers to consider changing the environment in order to support the generalization of social skills in students. Creating an environment that supports immediate and high levels of reinforcement appears to be a key

element. Additionally, reinforcing PPR appears to be an efficient way to indirectly reward increased desired social behaviors.

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Appendices

Appendix A
Tables and Figures

Table 1

Study I: Means, Standard Deviations, and Ranges for each Phase

	Baseline Mean (SD) [Range]	Intervention Mean (SD) [Range]	Withdrawal Mean (SD) [Range]	Reimplementation Mean (SD) [Range]
All Target Students	0.20 (0.45) [0-1%]	6.09 (3.56) [2-10%]	0.00 (0.00) [N/A]	9.74 (3.45) [7-14%]
Group 1	0.00 (0.00) [N/A]	4.38 (1.86) [2-7%]	0.00 (0.00) [N/A]	7.37 (10.03) [0-22%]
Group 2	0.00 (0.00) [N/A]	1.16 (2.02) [0-4%]	0.00 (0.00) [N/A]	2.33 (2.51) [0-5%]
Group 3	0.00 (0.00) [N/A]	12.67 (4.91) [8-19%]	0.00 (0.00) [N/A]	11.85 (2.02) [10-14%]
Group 4	0.4 (0.89) [0-2%]	26.4 (25.34) [0-56%]	0.00 (0.00) [N/A]	22.07 (27.59) [0-53%]
Group 5	0.00 (0.00) [N/A]	10.98 (10.52) [0-26%]	0.00 (0.00) [N/A]	21.78 (15.70) [6-44%]

Table 2

Study I: Effect Sizes (ES), Percentage Non-Overlapping Data (PND) for each adjacent phase

Participants	Baseline- Intervention PND [Size]	Intervention- Withdrawal PND [Size]	Withdrawal- Reimplementation PND [Size]
All Target Students	100% [Large ES]	100% [Large ES]	100% [Large ES]
Group 1	100% [Very Effective]	100% [Very Effective]	75% [Effective]
Group 2	33% [Ineffective]	0% [Ineffective]	66% [Questionable]
Group 3	100% [Very Effective]	100% [Very Effective]	100% [Very Effective]
Group 4	75% [Effective]	0% [Ineffective]	66% [Questionable]
Group 5	80% [Effective]	0% [Ineffective]	100% [Very Effective]

Note. *PND = percentage non-overlapping data points.

Table 3

Study I: Mean Differences and Pooled Standard Deviations across phases for each group

Participants	Baseline- Intervention Mean Difference (SD)	Intervention- Withdrawal Mean Difference (SD)	Withdrawal- Reimplementation Mean Difference (SD)
All target students	5.89 (2.54)	-6.09 (2.91)	9.74 (1.31)
Group 1	4.38 (1.44)	N/A [N/A]	N/A [N/A]
Group 2	1.16 (1.42)	-1.16 (1.65)	2.33 (2.05)
Group 3	12.66 (3.21)	-12.66 (3.81)	11.85 (1.43)
Group 4	26.00 (16.60)	-26.40 (19.63)	22.06 (19.51)
Group 5	10.98 (7.43)	-10.98 (8.58)	21.78 (12.82)

Table 4

Study I: Effect Sizes (ES), Hedge's g effect size across each adjacent phase for each group

Participants	Baseline- Intervention [Size]	Intervention- Withdrawal [Size]	Withdrawal- Reimplementation [Size]
All target students	2.32 [Large ES]	2.10 [Large ES]	7.43 [Large ES]
Group 1	3.04 [Large ES]	N/A [N/A]	N/A [N/A]
Group 2	0.82 [Large ES]	-0.71 [Medium ES]	1.13 [Large ES]
Group 3	3.94 [Large ES]	-3.33 [Large ES]	8.30 [Large ES]
Group 4	1.56 [Large ES]	-1.34 [Large ES]	1.13 [Large ES]
Group 5	1.47 [Large ES]	-1.28 [Large ES]	1.70 [Large ES]

Table 5

Study II: Means, Standard Deviations, and Ranges for each phase and target behavior

	Compliments		Encouragement		Thank You	
	Baseline Mean (SD) [Range]	Intervention Mean (SD) [Range]	Baseline Mean (SD) [Range]	Intervention Mean (SD) [Range]	Baseline Mean (SD) [Range]	Intervention Mean (SD) [Range]
All Target Students	0.00 (0.00) [NA]	3.12 (1.30) [1.4-6%]	0.00 (0.00) [N/A]	1.02 (0.73) [0.2-2.1%]	0.46 (0.50) [0-1.8%]	1.9 (0.32) [1.7-2.5%]
Group 1	0.00 (0.00) [N/A]	4.07 (3.55) [0-11.5%]	0.00 (0.00) [N/A]	1.10 (2.90) [0-7.7%]	0.38 (0.93) [0-2.5%]	4.78 (5.71) [0-11.1%]
Group 2	0.00 (0.00) [N/A]	2.97 (2.21) [0.8-10%]	0.00 (0.00) [N/A]	0.65 (.86) [0-1.6%]	0.42 (0.60) [0-2%]	1.95 (0.66) [1-2.6%]
Group 3	0.00 (0.00) [N/A]	2.69 (2.01) [0-5.2%]	0.00 (0.00) [N/A]	0.58 (0.85) [0-2.2%]	0.56 (1.38) [0-5%]	3.73 (1.35) [3-5.1%]
Group 4	0.00 (0.00) [N/A]	3.00 (2.70) [0-7.3%]	0.00 (0.00) [N/A]	2.18 (3.56) [0-10.3%]	0.35 (0.53) [0-1.5%]	0.55 (0.56) [0-1.3%]

Table 6

Study II: Means and Standard Deviations for each phase and target behavior across students

	Compliments		Encouragement		Thank You	
	Baseline Mean (SD)	Intervention Mean (SD)	Baseline Mean (SD)	Intervention Mean (SD)	Baseline Mean (SD)	Intervention Mean (SD)
Student 1	0.00 (0.00)	4.53 (3.42)	0.00 (0.00)	1.54 (3.44)	0.61 (1.30)	0.00 (0.00)
Student 2	0.00 (0.00)	1.33 (2.31)	0.00 (0.00)	N/A	0.57 (1.51)	N/A
Student 3	0.00 (0.00)	3.10 (4.24)	0.00 (0.00)	0.00 (0.00)	0.61 (1.30)	0.00 (0.00)
Student 4	0.00 (0.00)	4.06 (4.82)	0.00 (0.00)	1.66 (2.70)	0.22 (0.84)	2.50 (2.89)
Student 5	0.00 (0.00)	4.50 (5.37)	0.00 (0.00)	0.83 (1.77)	0.00 (0.00)	1.26 (1.74)
Student 6	0.00 (0.00)	4.53 (5.76)	0.00 (0.00)	0.00 (0.00)	0.97 (1.84)	2.05 (2.81)
Student 7	0.00 (0.00)	2.25 (2.92)	0.00 (0.00)	0.66 (1.32)	0.98 (1.38)	1.03 (1.41)
Student 8	0.00 (0.00)	1.60 (2.34)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	3.28 (2.44)
Student 9	0.00 (0.00)	4.64 (3.71)	0.00 (0.00)	1.16 (1.70)	0.00 (0.00)	4.30 (2.89)
Student 10	0.00 (0.00)	1.15 (1.94)	0.00 (0.00)	0.00 (0.00)	1.25 (2.92)	2.81 (2.07)
Student 11	0.00 (0.00)	1.79 (2.19)	0.00 (0.00)	0.00 (0.00)	0.65 (1.49)	2.06 (2.52)
Student 12	0.00 (0.00)	1.19 (2.42)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.51 (1.15)
Student 13	0.00 (0.00)	2.44 (3.08)	0.00 (0.00)	0.76 (1.30)	0.38 (0.94)	0.00 (0.00)
Student 14	0.00 (0.00)	5.82 (6.14)	0.00 (0.00)	5.16 (8.14)	0.38 (0.94)	0.00 (0.00)

Table 7

Study II: Effect Sizes (ES), Tau for each adjacent phase and each target behavior

Participants	Compliments Baseline- Intervention Tau, p value [Size]	Encouragement Baseline- Intervention Tau, p value [Size]	Thank You Baseline- Intervention Tau, p value [Size]
All Target Students	1.00, $p = 0.002$ [Large]	1.00, $p = 0.0002$ [Large]	0.91, $p = 0.003$ [Moderate to high]
Group 1	0.91, $p = 0.008$ [Moderate to high]	0.14, $p = 0.63$ [No effect]	0.62, $p = 0.10$ [No effect]
Group 2	1.00, $p = 0.002$ [Large]	0.56, $p = 0.04$ [small]	0.91, $p = 0.003$ [Moderate to high]
Group 3	0.71, $p = 0.03$ [Moderate to high]	0.38, $p = 0.18$ [No effect]	0.89, $p = 0.007$ [Moderate to high]
Group 4	0.67, $p = 0.04$ [Moderate to high]	0.67, $p = 0.01$ [Moderate to high]	0.20, $p = 0.51$ [No effect]

Table 8

Study II: Mean Differences and Pooled Standard Deviations across phases for each group

Participants	Compliments Baseline- Intervention Mean Difference (SD)	Encouragement Intervention- Withdrawal Mean Difference (SD)	Thank You Withdrawal- Reimplementation Mean Difference (SD)
All target students	3.12 (1.18)	1.02 (0.50)	1.44 (0.46)
Group 1	4.07 (3.42)	1.10 (1.90)	4.40 (2.32)
Group 2	2.97 (2.00)	0.65 (0.59)	1.53 (0.61)
Group 3	2.69 (1.81)	0.58 (0.56)	3.17 (1.37)
Group 4	3.00 (2.45)	2.18 (1.29)	0.20 (0.53)

Table 9

Study II: Effect Sizes (ES), Hedge's g effect size across each adjacent phase for each group

Participants	Compliments Baseline- Intervention [Size]	Encouragement Baseline- Intervention [Size]	Thank You Baseline- Intervention [Size]
All target students	2.64 [Moderate ES]	2.04 [Moderate ES]	3.13 [Strong ES]
Group 1	1.19 [Moderate ES]	0.58 [RMPE]	1.90 [Moderate ES]
Group 2	1.49 [Moderate ES]	1.10 [RMPE]	2.50 [Moderate ES]
Group 3	1.49 [Moderate ES]	1.04 [RMPE]	2.31 [Moderate ES]
Group 4	1.22 [Moderate ES]	1.69 [Moderate ES]	0.38 [Not NMPR]

Note. RMPR = recommended minimum effect size representing a “practically” significant effect size for social science data

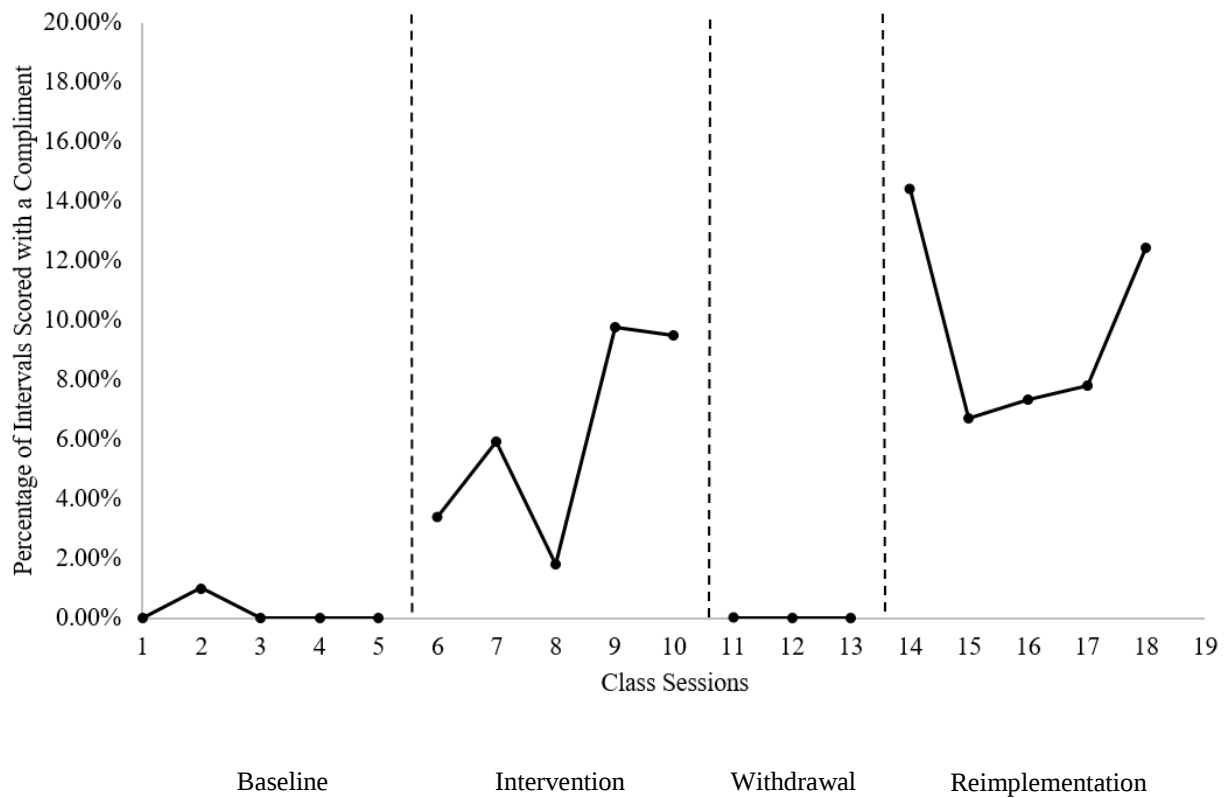


Figure 1. Percentage of intervals scored with a compliment for a first grade class across baseline and treatment phases

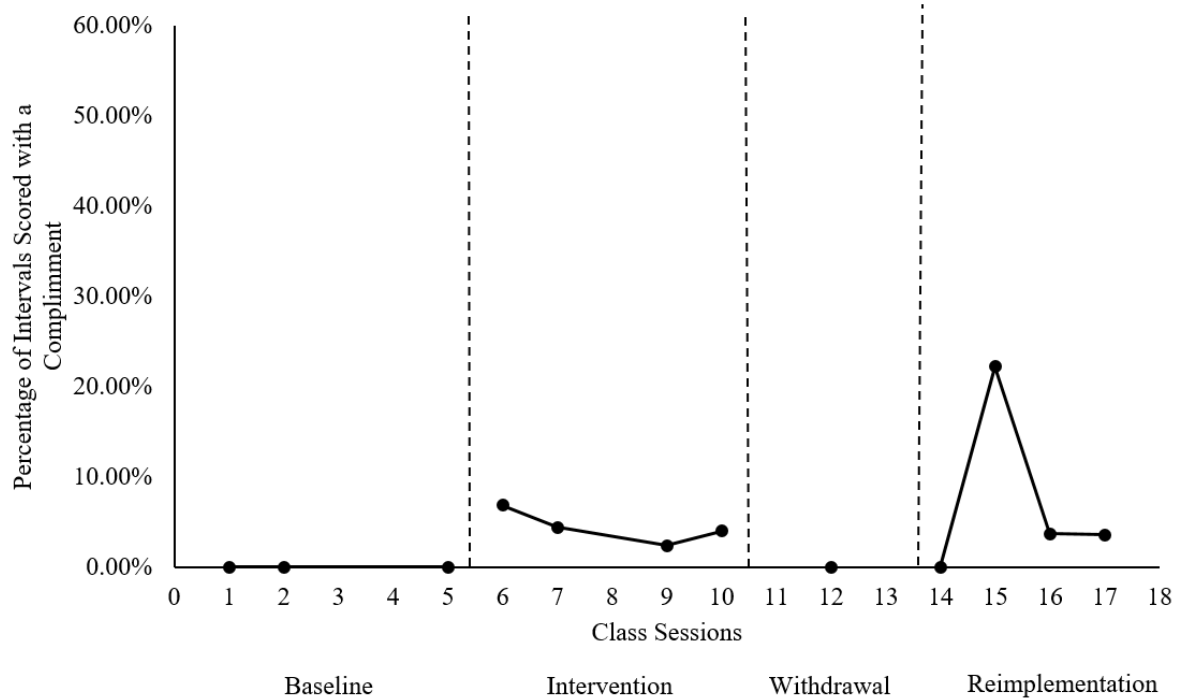


Figure 2. Percentage of intervals scored with a compliment for Group 1 across baseline and treatment phases.

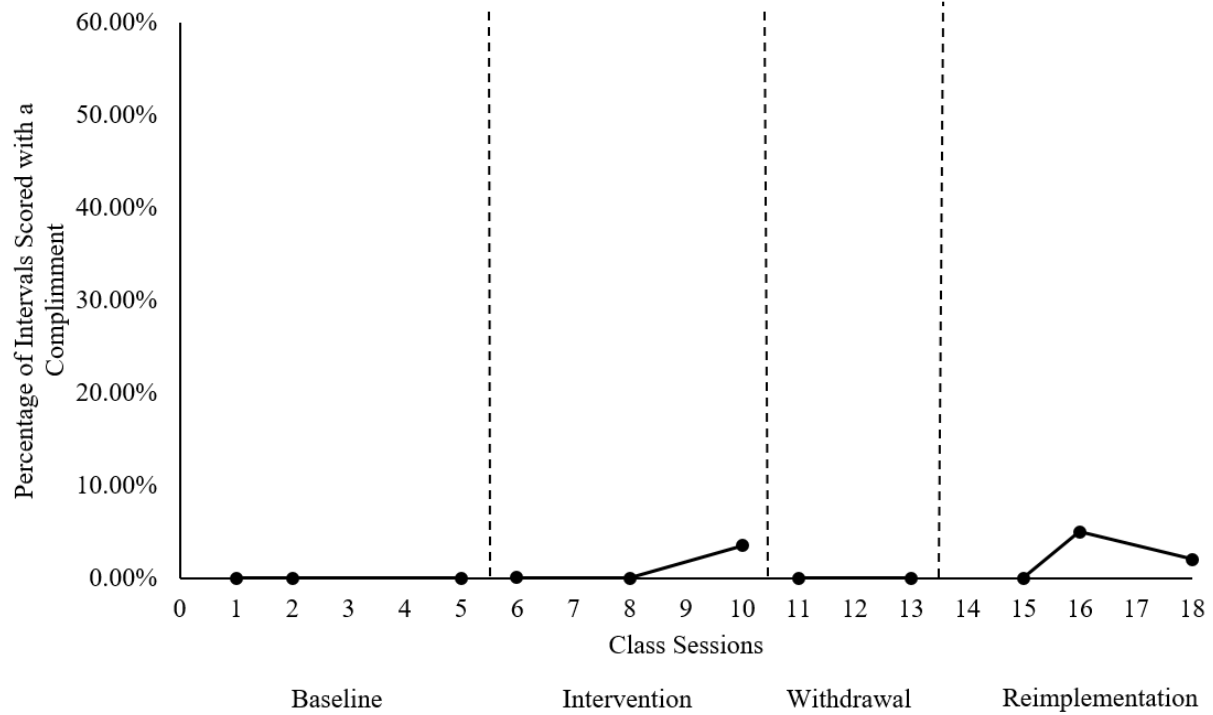


Figure 3. Percentage of intervals scored with a compliment for Group 2 across baseline and treatment phases.

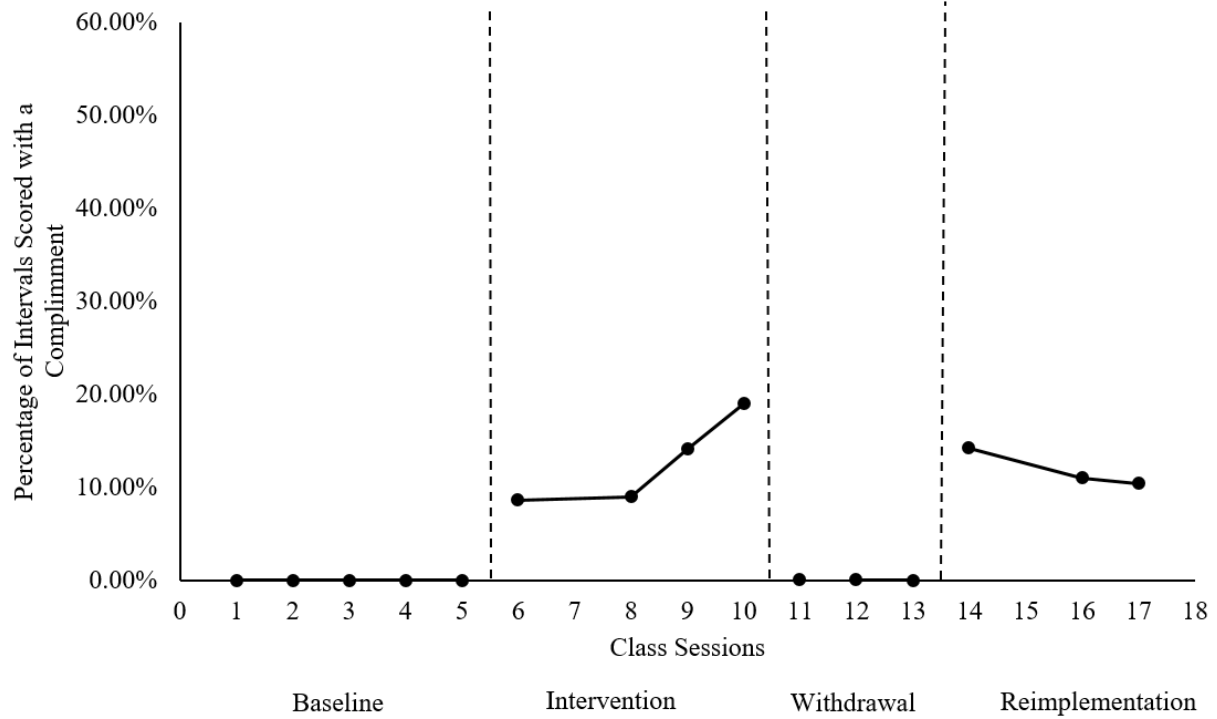


Figure 4. Percentage of intervals scored with a compliment for Group 3 across baseline and treatment phases.

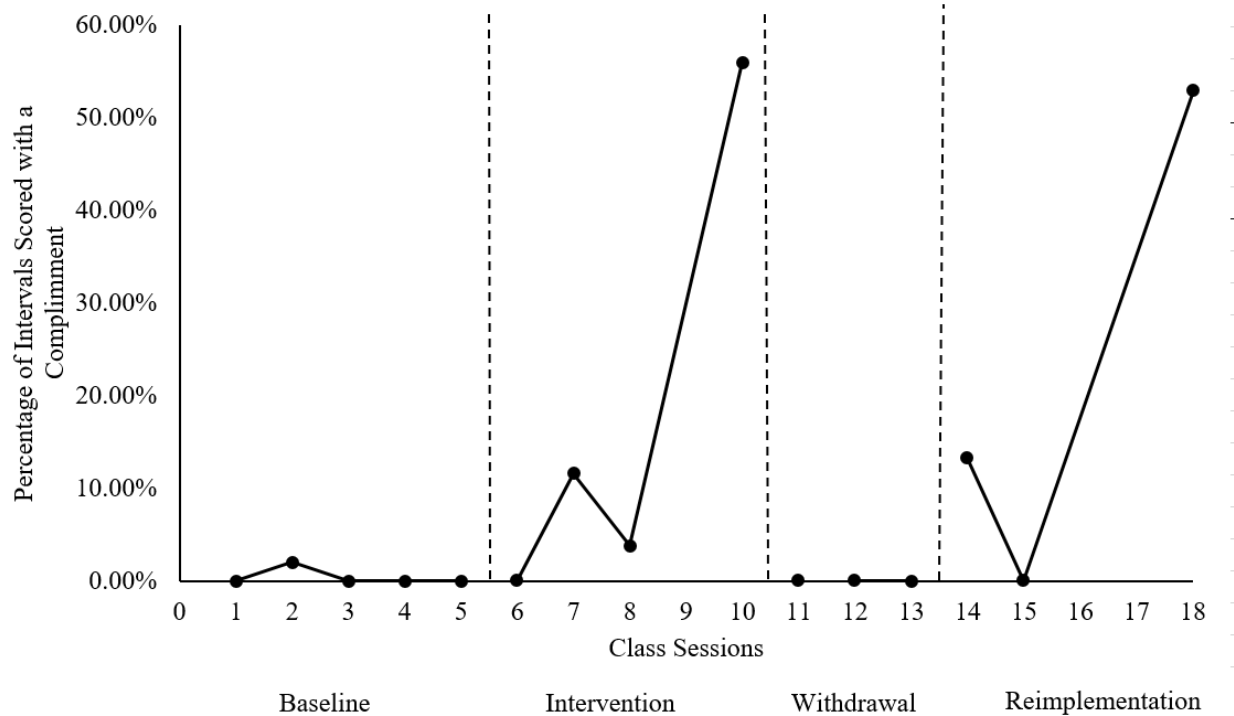


Figure 5. Percentage of intervals scored with a compliment for Group 4 across baseline and treatment phases.

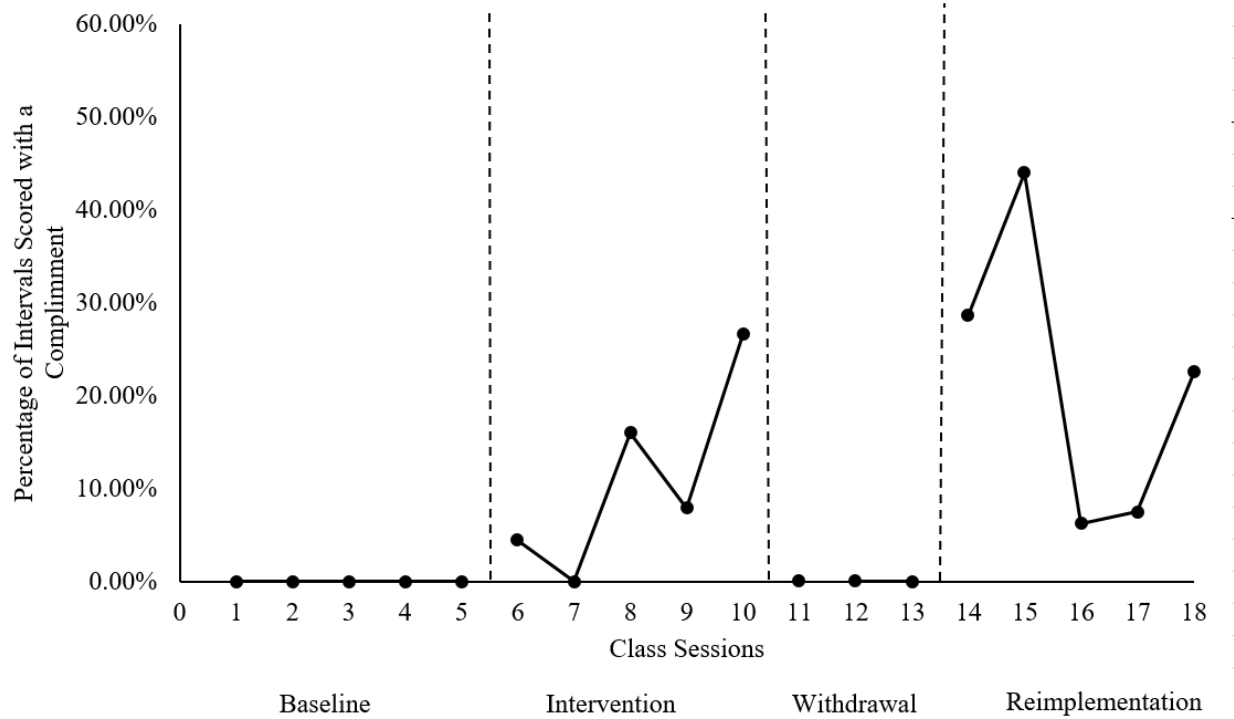


Figure 6. Percentage of intervals scored with a compliment for Group 4 across baseline and treatment phases.

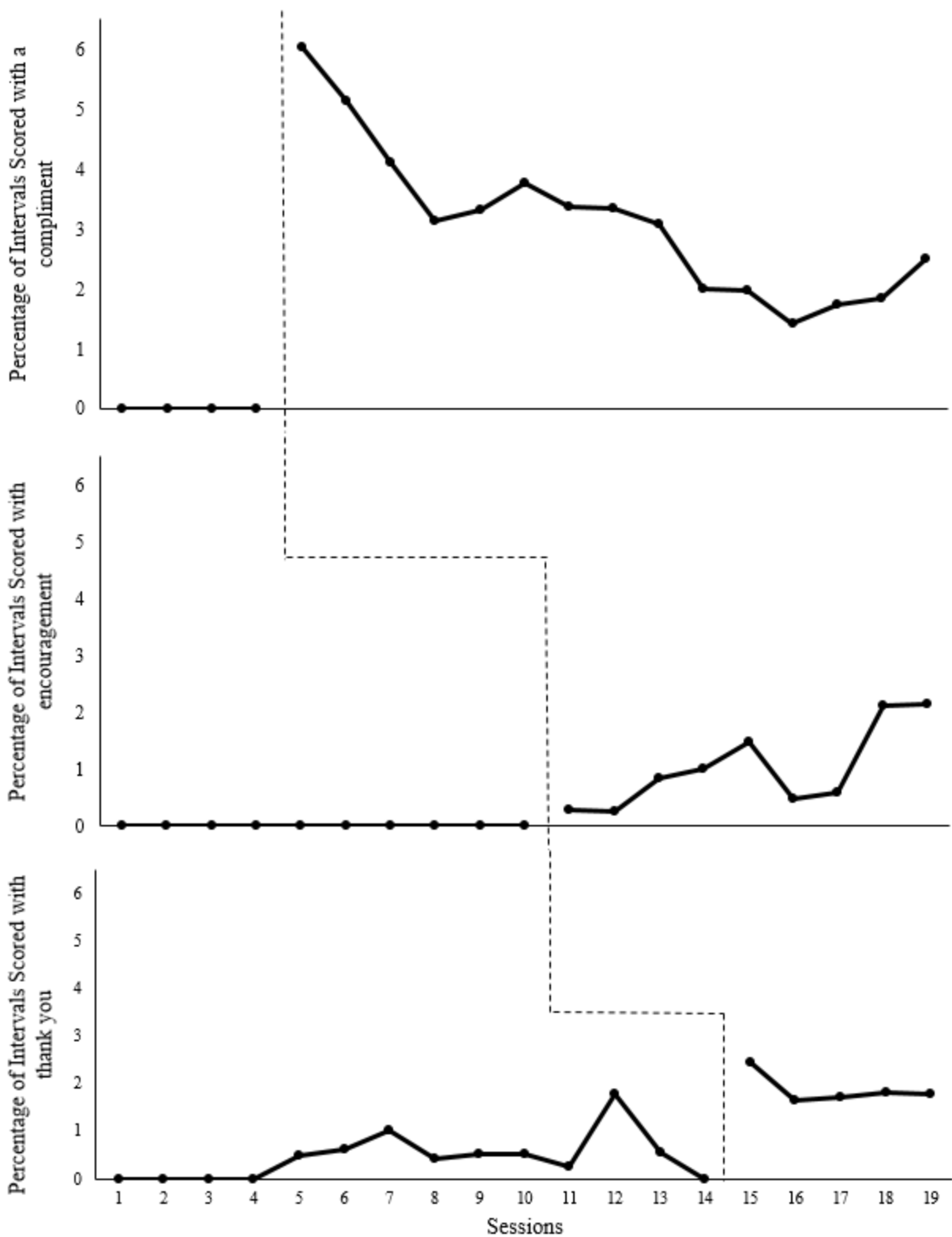


Figure 7. Percentage of intervals scored with a compliment, encouragement, and thank you for a first grade class across baseline and treatment phases.

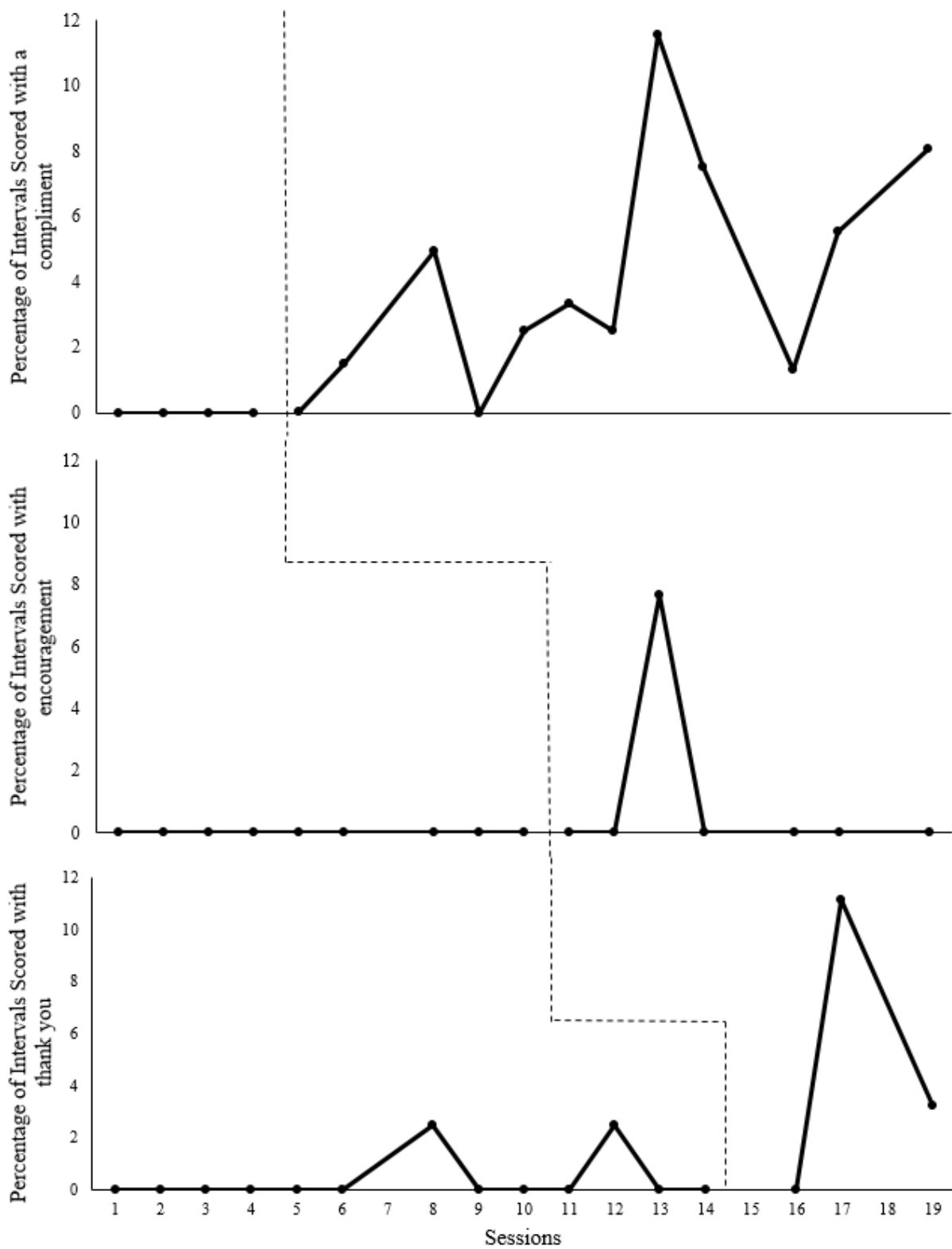


Figure 8. Percentage of intervals scored with a compliment, encouragement, and thank you for Group 1 across baseline and treatment phases.

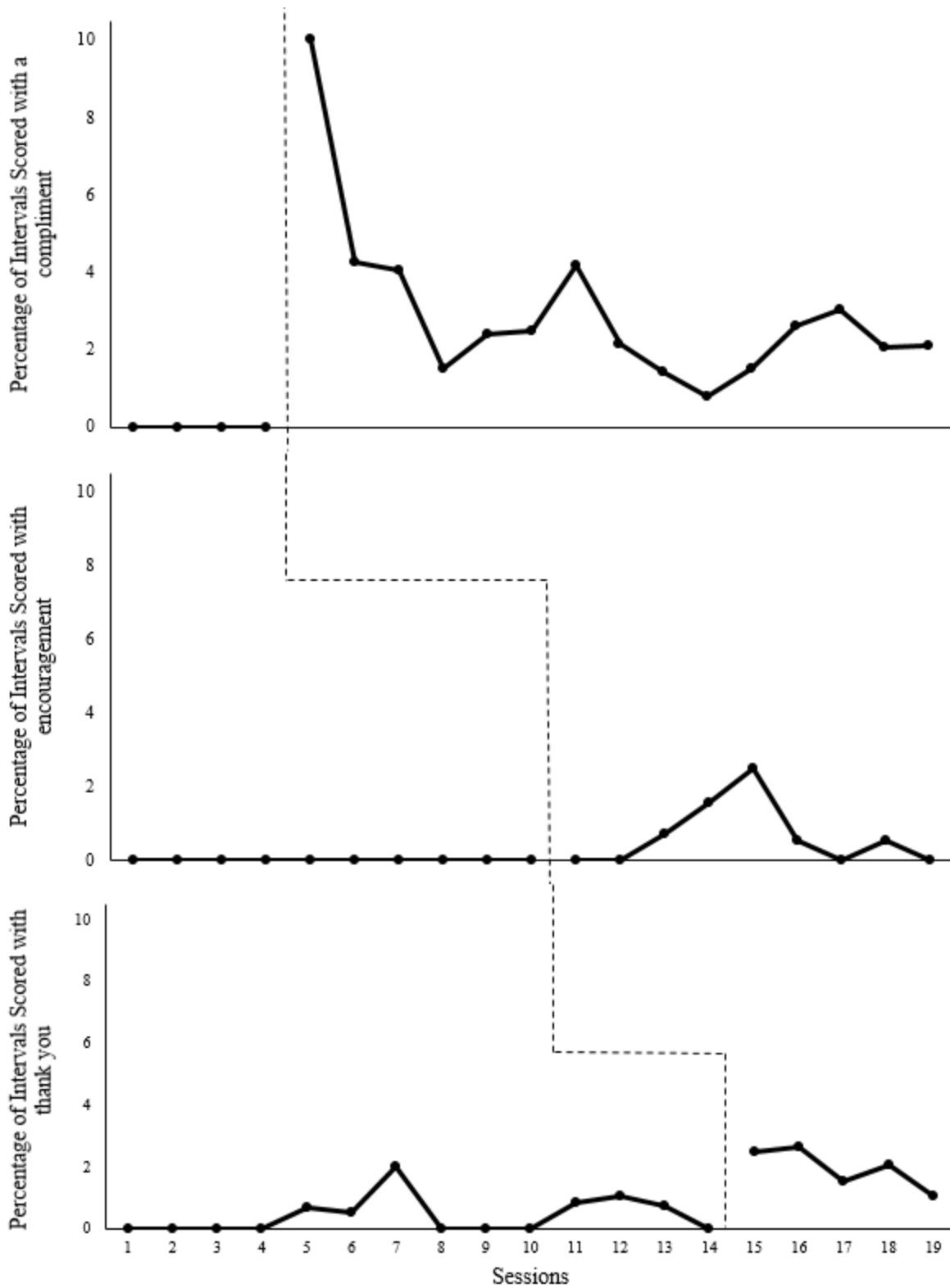


Figure 9. Percentage of intervals scored with a compliment, encouragement, and thank you for Group 2 across baseline and treatment phases.

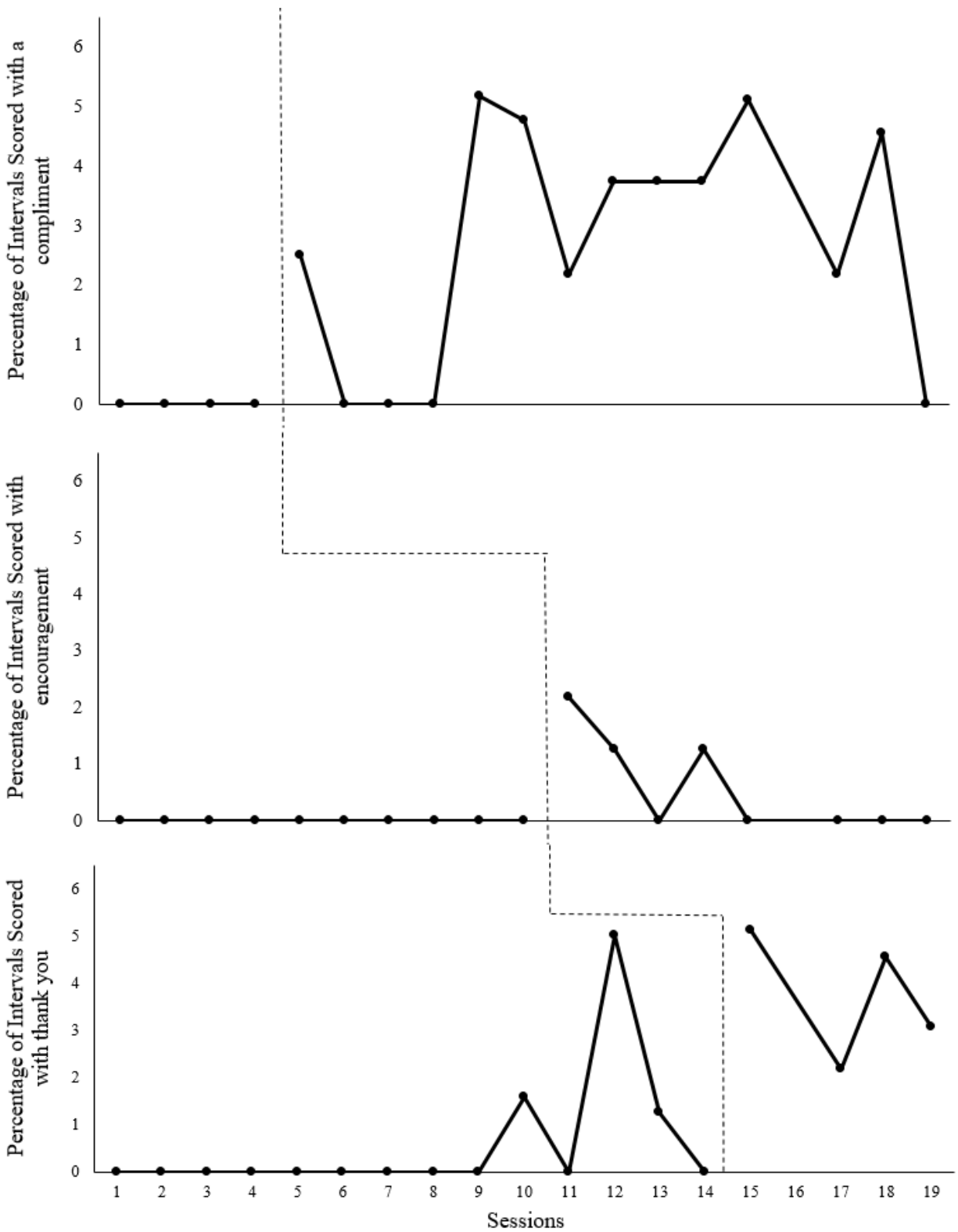


Figure 10. Percentage of intervals scored with a compliment, encouragement, and thank you for Group 3 across baseline and treatment phases.

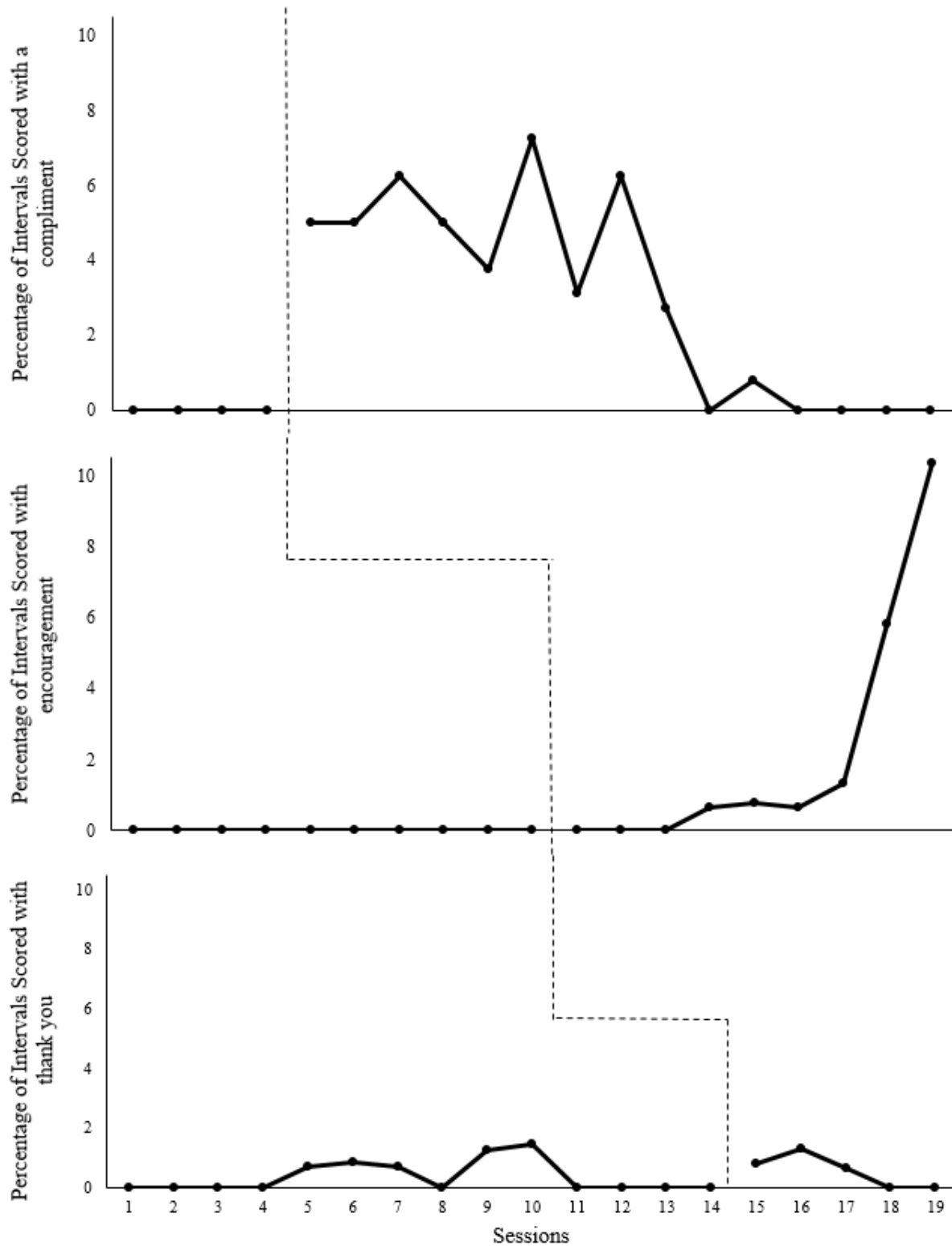


Figure 11. Percentage of intervals scored with a compliment, encouragement, and thank you for Group 4 across baseline and treatment phases.

Appendix B

Experimental Protocols: Study I

Integrity for Peer Reporting Training and Compliment Teaching

Date: _____

Observer: _____

		Yes	No
1	Introduction to a new game to be implemented in class		
2	Defines Compliments		
3	Ask students to give examples of compliments		
4	Class discussion of examples and non-examples		
5	Go over rules of games		
6	Explain game procedures		
7	Explain where to put peer reports and when they can do it		
8	Explain poster and how to win the game		
9	Answer any questions from the students		

Number of steps completed: **/9**

Percentage of steps completed:

Comments:

Treatment Integrity for Catching Compliments¹ : Study I

Date: _____

Observer: _____

		Yes	No
1	Review “Catching Compliments” instructions (if needed) and answer any student questions		
2	Give feedback from yesterday’s performance and update poster		
3	Provide compliment slips to students at the Promethean© ActivPanel station		
4	Collect behavioral partial interval data		
5	At the end of each station rotation, prompt students to turn in their compliment slips		
6	Add up the total number of compliment slips for the day and record in data sheet		
7	Notify teacher, if students have reached criteria for a reward for the next day		

Number of steps completed: _____

Percentage of steps completed: _____

Comments:

¹Adapted from Lambert, A. M., Tingstrom, D. H., Sterling, H. E., Dufrene, B. A., & Lynne, S. (2015). Effects of tootling on classwide disruptive and appropriate behavior of upper-elementary students. *Behavior Modification*, 39, 413-430.

Appendix C

Experimental Protocols: Study II

Procedural Integrity for Social Skills Lesson

Date: _____

Observer: _____

		Yes	No
1	Introduction to a lesson on social skills		
2	Defines Compliments		
3	Ask students to give examples of compliments		
4	Class discussion of examples and non-examples of compliments		
5	Defines Encouragement		
6	Ask students to give examples of encouragement		
7	Class discussion of examples and non-examples of encouragement		
8	Defines “Thank you”		
9	Class discussion of examples and non-examples		

Number of steps completed: **/9**

Percentage of steps completed:

Comments:

Treatment Integrity for Social Skills Game¹

Date: _____

Observer: _____

		Yes	No
1	Review game instructions and answer any student questions		
2	Select a criterion from the “Goals” envelope		
3	Provide social skills slips to students at the Lego©/ K’Nex© station		
4	Collect behavioral partial interval data		
5	At the end of each station rotation, prompt students to turn in their slips		
6	Add up the total number of turned in compliment, encouragement, and thank you slips for the day and record in data sheet		
7	Provide feedback to the class in regards to if they met their goal		
8	Provide a piece of candy to the entire class if their goal was met		

Number of steps completed: _____

Percentage of steps completed: _____

Comments:

¹Adapted from Lambert, A. M., Tingstrom, D. H., Sterling, H. E., Dufrene, B. A., & Lynne, S. (2015). Effects of tootling on classwide disruptive and appropriate behavior of upper-elementary students. *Behavior Modification*, 39, 413-430.

Appendix D

Lesson on Compliments

“Hello! I’m Miss Shelby and I am a student at the University of Tennessee. I’m sure you have seen me in your class the past few weeks. I’m here today to tell you guys about a game that I would like you all to play in academic hour. The game is called Catching Compliments and everyone in the class gets to play.”

Ask students to explain.

Before I can tell you about the game, I want to talk to you about giving compliments. Can anyone tell me what a compliment is?

Give definition of a compliment: *A compliment is something nice we say to a friend. We can give compliments about the way that somebody acts, the way somebody looks, or anything good that a person does.*

Discuss how compliments make us feel: *How do compliments make us feel? Call on students to give examples. We give compliments to our friends because we want them to feel good.*

Ask students for examples.

Can anyone tell me some examples of a compliment?

I really like those examples you guys gave. Here are a few examples I came up with.

Give examples:

I can compliment a person because I like something about them. For example, _____ I like the shirt you are wearing. Or, _____ I like the way your hair is styled.

I can also give someone a compliment because they did a good job. For example, _____ good job solving that math problem! Or Nice job spelling that word correctly!

Even if one of my friends gets an answer wrong, I can give them a compliment by saying “Nice try!” or “you worked really hard on that answer”.

What are some ways that I can give a compliment without saying anything?

Some ways to give a compliment without saying anything include giving someone a thumbs up, or giving someone a high-five!

Give non-examples:

What are some things that are not compliments?

That’s right, those are mean or not nice things to say. Some other things that are not compliments are “You’re wrong!” or “Shut up”, or “You’re stupid for thinking that’s the answer”.

Ask students for suggestions.

When are some times that we can give each other compliments?

Those are all great examples, we can give compliments to each other throughout the day. You can give compliments during in class, during games, on the playground, and in the cafeteria. When someone gives you a compliment, the nice thing to say back is thank you.

Explain game:

For this game, we are going to report on our other classmates when we see them giving a compliment. The way we will do that is by using these slips of paper (Show examples). On these pieces of paper, it will have your classmates' names on the top and a picture of two people giving a compliment on the bottom. You will start by circling the name of someone in your group who you saw giving a compliment (circle name). Then you will circle the picture at the bottom (circle picture). After you have finished you will put the pieces of paper in this box. (show kids box). You will be playing this game during academic hour. When it's your groups turn to play math games on the board, you will use be using these slips and watching for others in your group to give compliments. When it is time to switch groups you will turn your slips of paper into this box.

Each day I will be graphing the number of peer reports or papers turned in that happen each day. The way you win the game is to move up the ladder. Once you get to the top of the ladder, you win the game! Does anyone have any questions?

Appendix E

Social Skills Lesson

Compliments

“Hello! I’m Miss Shelby and I am a student at the University of Tennessee. I’m sure you have seen me in your class the past few weeks. I’m here today to give a quick lesson on some important skills. Many of these skills are things you already know and are a part of your school’s rule: Be respectful

Ask students to explain.

I want to talk to you about giving compliments. Can anyone tell me what a compliment is?

Give definition of a compliment: *A compliment is something nice we say to a friend. We can give compliments about the way that somebody acts, the way somebody looks, or anything good that a person does.*

Discuss how compliments make us feel: *How do compliments make us feel? Call on students to give examples. We give compliments to our friends because we want them to feel good.*

Ask students for examples.

Can anyone tell me some examples of a compliment?

I really like those examples you guys gave. Here are a few examples I came up with.

Give examples:

I can compliment a person because I like something about them. For example, _____ I like the shirt you are wearing. Or, _____ I like the way your hair is styled.

I can also give someone a compliment because they did a good job. For example, _____ good job solving that math problem! Or Nice job spelling that word correctly!

Even if one of my friends gets an answer wrong, I can give them a compliment by saying “Nice try!” or “you worked really hard on that answer”.

Give non-examples:

What are some things that are not compliments?

That’s right, those are mean or not nice things to say. Some other things that are not compliments are “You’re wrong!” or “Shut up”, or “You’re stupid for thinking that’s the answer”.

Ask students for suggestions.

When are some times that we can give each other compliments?

Those are all great examples; we can give compliments to each other throughout the day. You can give compliments during in class, during games, on the playground, and in the cafeteria.

Encouragement

Ask students to explain.

Now I want to talk to you about encouragement. Can anyone tell me what encouragement is?

Give definition of encouragement: *Encouragement is when you say something to someone to help them feel hopeful, such as “keep trying”. So encouragement is something we say to one another before an activity to help them feel good about what they are trying to do, cheer them up, let them know you support them, and that you are their friend.*

Discuss how encouragement make us feel: *How does encouragement make us feel? Call on students to give examples. We give encouragement to our friends because we want them to feel good or better.*

Ask students for examples.

Can anyone tell me some examples of encouragement?

I really like those examples you guys gave. Here are a few examples I came up with.

Give examples:

I can encourage a person because they are working hard on something “You can do it”.

I can encourage someone who is very close to finishing a problem “You’re close, keep trying”.

Even if one of my friends feels doubtful or feels like they can’t do something “Try your best, I know you can do it”

Give non-examples:

What are some things that are not encouragement?

That’s right, those are mean or not nice things to say. Some other things that are not encouragement are “There’s no way you can do that” or “I can do that better than you”

Ask students for suggestions.

When are some times that we can give each other encouragement?

Those are all great examples; we can give encouragement to each other throughout the day. You can give encouragement during in class, during games, on the playground, and in the cafeteria.

Thank You

The last skill I want to talk about is what we do when someone gives you a compliment or says something encouraging. What do we say?...That’s right, the polite thing to say is thank you. This lets the other person know that you heard them and that you appreciate their nice words. Some ways we can say thank you is Thanks! Or Thank you for helping me _____.! Another way is, “I appreciate the nice things you said about me”.

Appendix F

Group Contingencies Intervention Script

Prior to intervention phase, introduce intervention procedures:

Primary researcher to class: “We will be playing a new game over the next few weeks. We want to see your performance on some important skills. For this game, we are going to report on our other classmates when we see them giving a compliment.

The way we will do that is by using these slips of paper (Show examples). Each day at the Lego©/ K’Nex© station, each group will be provided with pieces of paper. On these pieces of paper, it will have your classmates’ names on the top and a picture of two people giving a compliment on the bottom. You will start by circling the name of someone in your group who you saw giving a compliment (circle name). Then you will circle the picture at the bottom (circle picture). After you have finished you will put the pieces of paper in this box. (show students box).

You will be playing this game during academic hour. When it’s your groups turn to play at the Lego©/ K’Nex© station, you will use be using these slips and watching for others in your group to give compliments. When it is time to switch groups you will turn your slips of paper into this box.

Now I’ll tell you how you can win the game. Every afternoon, we will start class by drawing a goal from the envelope. The goal might be 2 compliments, 4 compliments, 6 compliments, 8 compliments, or 10 compliments. I will not tell you what the goal is until the end of the day. When academic hour is over, I will announced the goals and how many reports were turned in. If the class meets the goal for the day, everyone will get a piece of candy.

Assessment check: Let’s make sure everyone understands how to play the game. Who can tell me what we do with these pieces of paper at the Lego©/ K’Nex© station? So, if the goal was 6 compliments and the class turned in a total of 8 compliments, what would happen? What would happen if the class turned in 4 compliments and the goal was 10 compliments?”

Appendix G

Youth Assent Form

Implementing PBIS in an After School Setting

Examiner: Hello, my name is Shelby Wright. I'm a researcher at the University of Tennessee. Your guardian/parent and your teacher say you might be willing to help me with a research project. We are working with your teachers to help students behave appropriately in the classroom and we are trying out new things that might help with that. We are asking that you let us use data about your behavior in our research. If we do use your data, we would never use your name or even your school's name. Anything that could identify you will be kept secret.

Are you willing to help me with this project and let me use your data in my research?
(YES/NO)

Great! I think you will find this fun to do. If you decide that you don't want to do this anymore, all you have to do is tell me.

I appreciate your help!

If you sign this form, it means you have decided to help me with this research project.

Signature of student

Date

Signature of researcher

Appendix H

Parent Consent Form

Dear Families,

As you know, appropriate behavior and the reduction of inappropriate behavior are important to us here at [REDACTED] during the after school program. [REDACTED] is working with researchers from the University of Tennessee to help our students do their best in our program. Our common goal is that student behavior improves so that they can learn all they can from our program.

We want to share what we learn with other teachers and professors, so we will be writing articles for them to read, and we will make presentations at meetings. Sometimes it will be helpful in articles and presentations if we can tell how our children have improved, or share their grades or scores to show how much they have learned. If you give us permission, we would like to be able to use your child's examples in articles and presentations. This will be completely confidential, and your child's real name will never be used.

If it is okay with you for us to use your child's examples in our articles and presentations, please sign and date both copies of this form, keep one for yourself, and return the other to the front office at [REDACTED]. It is completely up to you and if you do not wish for us to use your child's examples, it will make no difference at all – we will do your best job at helping everyone!

If you have any questions about our project, please feel free to contact us. We are very excited about working with your children this year!

[REDACTED]
[REDACTED]
University Assisted Community School Coordinator

Dr. Merilee McCurdy
University of Tennessee
School Psychology Program Coordinator
[REDACTED]

Parent Permission Form

I understand that the purpose of this study is for [REDACTED] and Dr. McCurdy to learn more about how to help my student do their best – in the classroom, during transition time, and in their relationships with teachers and peers at [REDACTED]. I also understand that articles may be written and the researchers may make presentations to help other teachers and professors.

I understand that if I give my permission, my child's grades, educational record, and behavior data might be used in articles and presentations. It will be completely confidential and my child's real name will never be used.

I understand that my child's participation is completely voluntary and that the teachers and researchers at [REDACTED] will do their best to help all children whether they are allowed to use the examples or not. If I change my mind, I can tell [REDACTED] or Dr. McCurdy at any time and they will not use my child's examples.

If I have any questions about my rights as a research participant, I may contact the IRB compliance officer at (865)-974-7697 or at utkirb@utk.edu.

I give permission for my child to participate.

Child's name (please print)

Parent/Guardian's Name (please print)

Parent/Guardian's Signature

Date

Vita

Shelby Wright was born in Cincinnati, Ohio to Dennis and Tracy Gibbons. She is the second of three daughters, Kirsten and Rachel. She grew up in the small town of Hamersville, Ohio. She attended the University of the Cumberlands where she ran Cross Country and Track and Field. She graduated Summa Cum Laude in 2015 with a Bachelor of Science degree in Psychology and Human Services. Later that year, she accepted a position in the School Psychology PhD program at the University of Tennessee. Shelby earned a Master of Science degree in Applied Educational Psychology in May 2018. In August of 2019, Shelby will begin an internship with the Tennessee Internship Consortium in Psychology. In August of 2020, Shelby will complete her doctorate degree.