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Tootling With a Randomized Independent Group Contingency in a High School Setting

John Dylan Ken Lum
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TOOTLING WITH A RANDOMIZED INDEPENDENT GROUP
CONTINGENCY IN A HIGH SCHOOL SETTING

by
John Dylan Ken Lum

A Dissertation
Submitted to the Graduate School
and the Department of Psychology
at The University of Southern Mississippi
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for the Degree of Doctor of Philosophy

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ABSTRACT

TOOTLING WITH A RANDOMIZED INDEPENDENT GROUP CONTINGENCY IN A HIGH SCHOOL SETTING

by John Dylan Ken Lum

August 2017

Tootling is a procedure where students report their classmates’ positive and prosocial behavior. The present study examined the effects of tootling on students’ disruptive and academically engaged behavior in three general education high school classrooms. An A-B-A-B withdrawal design was used to assess the effects of the intervention. Students wrote tootles anonymously on paper slips and placed them into a marked container. Unlike previous tootling studies, a randomized independent group contingency procedure was used to reward the students to reduce the number of steps required to implement the intervention. At the end of the class period, teachers randomly drew three of the submitted tootles and rewarded those students whom the tootles were written about. Teachers also randomly drew and rewarded two students who submitted a tootle. All three classrooms displayed decreases in disruptive behavior and increases in academically engaged behavior during intervention phases. Effect size calculations for both disruptive and academically engaged behavior indicated strong effects. The results of this study suggest that a modified tootling procedure utilizing a randomized independent group contingency can be an effective intervention for teachers to improve the behavior of students in a high school setting.
ACKNOWLEDGMENTS

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<td>AEB</td>
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<td>PII</td>
<td>Problem Identification Interview</td>
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<td>Passive Off-Task</td>
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<td>PPR</td>
<td>Positive Peer Reporting</td>
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CHAPTER I - INTRODUCTION

Student misbehavior is significantly related to teacher burnout (Aloe, Shisler, Norris, Nickerson, & Rinker, 2014). Valuable instructional time is lost when teachers have to manage the inappropriate behaviors of students (Riley, McKeivitt, Shriver, & Allen, 2011). In the United States of America, 40.7% of teachers in public schools reported that student misbehavior interfered with their teaching (Robers, Kemp, Rathbun, & Morgan, 2014). Classroom environments that have high levels of behavioral problems often lead well-behaved students to eventually engage in negative behaviors as well (Barth, Dunlap, Dane, Lochman, & Wells, 2004). Disruptive behavior and externalizing problems in children and youth have been shown to predict negative outcomes later on in life, such as antisocial behavior (Trentacosta, Hyde, Shaw, & Cheong, 2009; Van Goozen, Fairchild, Snoek, & Harold, 2007).

The method that teachers and school staff use to handle student behavior, using either antecedent or consequent measures, can affect the resulting level of disruption. Educational settings have traditionally introduced punishment after students engage in problem behaviors (Skinner, Cashwell, & Skinner, 2000). Teachers in classrooms with noncompliant students typically use disapproval and reactive behavior management strategies (Pas, Cash, O'Brennan, Debnam, & Bradshaw, 2015). A teacher’s use of reactive management strategies is related to elevated ratings of stress and decreases of student on-task behavior (Clunies-Ross, Little, & Kienhuis, 2008). Furthermore, although these reactive strategies work occasionally (Sulzer-Azaroff & Mayer, 1986), most students simply tailor their approach to avoid being caught while they still engage in the inappropriate behavior (Skinner et al., 2000).
It has been suggested that teachers can improve their reported level of wellbeing and self-efficacy by using interventions that focus on improving student behavior (Hastings & Bham, 2003). School-Wide Positive Behavior Support (SWPBS) is an approach that focuses on prevention and proactive strategies to improve behavior in schools (Sugai & Horner, 2000). With this approach, schools are structured with explicit expectations, and staff members are encouraged to reinforce the appropriate behaviors of students (Horner et al., 2004). SWPBS aims to improve academic and behavioral outcomes for students using empirically supported practices and data-based decisions (Sugai & Horner, 2000). Ross, Romer, and Horner (2012) found that teachers from elementary schools implementing SWPBS with high fidelity had higher levels of perceived efficacy compared to national norms, and significantly lower levels of teacher burnout. Although some teachers and administrators initially believe there will be challenges to implementing SWPBS, research indicates that it can take as little as one year for a school to implement the system with fidelity when given adequate training (Bradshaw, Reinke, Brown, Bevans, & Leaf, 2008). Randomized controlled effectiveness trials have demonstrated that schools implementing SWPBS have experienced significant decreases in office discipline referrals and student suspensions (Bradshaw, Mitchell, & Leaf, 2010), in addition to increased scores on reading assessments and higher perceptions of school safety (Horner et al., 2009). SWPBS has been found to be sustainable as a systems-level school-based practice with proper school and district support, use of implementation and outcome data, and access to resources (McIntosh et al., 2013). This suggests there are positive and sustainable strategies available that schools can employ to improve the environment for students and teachers.
Behavioral Interventions

Peer-Mediated Interventions

Interventions that utilize peers can be an attractive option for educators since they take advantage of the relatively abundant resource of students, while placing only modest demands on teachers (Dufrene, Noell, Gilbertson, & Duhon, 2005). It is unlikely that teachers will be able to directly attend to each student at all times due to the multiple task demands and number of students they have to attend to (Skinner, Neddenriep, Robinson, Ervin, & Jones, 2002). Research has indicated that students are able to serve as effective academic interventionists to their peers across a wide range of target populations. Examples of populations include: general education elementary students (Dufrene et al., 2005), students diagnosed with Attention Deficit Hyperactivity Disorder (DuPaul, Ervin, Hook, & McGoey, 1998), and high school students in special education and remedial classes (Fuchs, Fuchs, & Kazdan, 1999). Rather than using high achieving students as tutors, Menesses and Gresham (2009) even found increases in academic performance with at-risk elementary school students who were trained to tutor each other.

More specifically for behavioral interventions, a meta-analysis by Dart, Collins, Klingbeil, and McKinley (2014) found that peer management interventions are overall moderately effective at positively influencing the behavior (e.g., social skills, disruptive behavior, and academic engagement) of other students. Similarly, Kaya, Blake, and Chan (2015) found that peer-mediated interventions improved behavioral and social skills of elementary, middle, and high school students with emotional and behavioral disorders in a meta-analysis of available research. Preschool students have shown that they could improve the frequency of social interactions for a peer diagnosed with autism (Goldstein,
Kaczmarek, Pennington, & Shafer, 1992). Carden-Smith and Fowler (1984) investigated whether students in a remedial kindergarten classroom could successfully serve as peer ‘monitors’ to remind fellow students about appropriate behaviors. In this study, peer monitors distributed tokens to their peers who were displaying appropriate behaviors. Results showed increases in the monitored students’ participation and reductions in their disruptive behaviors. Positive results were also found by Stern, Fowler, and Kohler (1988) in an elementary school setting when dyads of students were monitored and awarded points for instances of appropriate behavior. In an older population, peers have also been able to increase prosocial behaviors of socially rejected and delinquent adolescents by publicly praising their social behavior in a Positive Peer Reporting (PPR) intervention (Jones, Young, and Friman, 2000). These studies have indicated that students can be a significant influence on each other’s behavior. This influence may occur through a positive form of peer pressure (Carden-Smith & Fowler, 1984). Another potential result of having students monitor their peers’ behavior is that they may learn behaviors through observation (Bandura, Ross & Ross, 1963). If children observe other individuals engaging in behaviors that are positively reinforced, they may be more likely to imitate those behaviors in the future (Bandura et al., 1963; Bandura, 1965). The following discussion reviews the literature on tootling, an intervention in which students monitor and report the positive behavior of peers in their classroom.

Tootling

Tootling receives its name from being the opposite of tattling, and is a twist on the phrase “tooting your own horn” (Skinner et al., 2000, p. 265). Skinner, Skinner, and Cashwell (1998) first presented the intervention with an interdependent group
contingency and asked students to anonymously report their peers’ prosocial behavior on index cards. The students then placed the completed cards into a designated container. The classroom teacher later read the tootles aloud to the students to provide feedback and praise. Tootling allows students to be positively reinforced for both engaging in appropriate behavior, as well as producing tootles.

Skinner et al. (2000) published the first peer-reviewed tootling study. It was conducted in a single general education fourth-grade classroom using an A-B-A-B withdrawal design. The authors set out to examine if an interdependent group contingency and public posting would increase the amount of tootling done by the students. Before the start of data collection, students were trained to identify and report incidental instances of their peers’ prosocial behavior. Experimenters taped index cards onto each student’s desk during the baseline phase, and a shoebox was placed on the teacher’s desk in which completed tootles could be placed. After the initial day of baseline, students received verbal feedback on how many tootles were correctly produced, examples of correct and incorrect tootles submitted by students, and encouragement to continue reporting their peers’ prosocial behavior.

The treatment phase introduced an interdependent group contingency that consisted of the class earning a 30-minute recess session if the cumulative total of tootles submitted by everyone in the class reached 100. During the second treatment phase, the class’ interdependent group contingency goal was increased to 150 tootles for a reward of watching a movie. Classwide publicly posted feedback was also added as a component to tootling. This involved the experimenter announcing to the students the amount of tootles produced the previous day, and publicly posting the amount on a picture of a ladder.
(indicating the class’ progress towards the goal) in the front of the classroom. This also served as a visual prompt to the students to record instances of their peers’ prosocial behavior throughout the day.

Results showed highly variable data in the amount of tootles produced during the initial baseline and intervention phases. Once baseline procedures were reinstated, however, the amount of tootles produced by students approached zero. Data in the second intervention phase were variable again, but tootles were at a higher level compared to the first intervention phase. The school’s principal may have affected the internal validity of the study after threatening to limit recess times (i.e., the students’ first reward for tootling) if missing library books were not returned. The external validity of the study was also diminished by the fact that experimenters (rather than the teacher) carried out the majority of the components of the intervention. This included training the students, setting the index cards, scoring the number of tootles, providing feedback on submitted tootles, and updating the feedback chart. Although the study by Skinner et al. (2000) has possible limitations, it still suggests that incidental reports of peer prosocial behavior can be increased with an interdependent group contingency and publicly posted feedback.

In an attempt to replicate and extend the research from Skinner et al. (2000), Cashwell, Skinner, and Smith (2001) implemented tootling in a second-grade classroom. Intervention procedures similar to Skinner et al. (2000) were implemented with an A-B-A-B withdrawal design. The experimenters instructed the students on how to produce tootles prior to baseline, but no rewards or feedback were given for tootling during this phase. Throughout the intervention phases, students were able to earn a group reinforcer through an interdependent group contingency. Similar to Skinner et al. (2000), a poster
with the image of a ladder was publicly posted to visually display how many tootles the entire class had cumulatively produced up to the current day. Rewards that were earned included an extra 20 minutes of recess time for 100 tootles, and a field trip to a preferred playground for 150 tootles.

The results from Cashwell et al. (2001) showed that rates of tootling were variable across each of the four phases. However, the overall level of tootles submitted was higher when the interdependent group contingency and public posting components were implemented during the intervention phases compared to baseline phases. Although these results indicate increased levels of tootling, the authors noted that it is unknown if the intervention increased positive behaviors. Tootling may have only increased the reporting of peer prosocial behavior rather than the actual behavior.

In 2009, Cihak, Kirk, and Boon examined tootling with a group contingency and public posting, and its effects on decreasing disruptive behavior. The study was implemented in an inclusive third-grade classroom setting where 4 of the total 19 students were identified as having a disability. The A-B-A-B withdrawal design and tootling procedure used was similar to that used in the studies by Skinner et al. (2000) and Cashwell et al. (2001). The authors used the total number of disruptive behaviors performed by the entire class as the dependent measure. This included: “(a) talking out (i.e., audible vocally or manually produced sounds made during a time in which students should be working or listening), (b) out of seat without teacher’s permission (i.e., standing, running, and walking around), and (c) engaging in any motor behavior that interfered with another student’s studying (i.e., any physical contact with another student,
his/her desk, or any objects on it)” (p. 270). The teacher used a bracelet made from construction paper to tally instances of disruptive behavior throughout the school day.

The teacher reviewed how to write tootles at the start of each day during the tootling phases. Prior to the end of the school day, the teacher revealed how many tootles were submitted, and then read them aloud. The intervention also included a publicly posted poster at the front of the classroom which provided feedback to the students regarding the number of tootles submitted and the total number required to reach the class’ collective goal. Cihak et al. (2009) implemented an interdependent group contingency with a criterion of 75 tootles. Once they reached 75 tootles, the class earned a predetermined reward, such as extra recess time. Tootling was terminated once disruptive behavior decreased by 50% compared to the baseline mean for three consecutive days.

A functional relationship was established between reductions in disruptive behavior and the tootling intervention within the study’s A-B-A-B withdrawal design. During the first intervention phase, mean number of disruptive behaviors tallied by the teacher decreased to 8.4 compared to a mean of 23.2 during the initial baseline phase. During the withdrawal phase, the number of disruptive behaviors increased to a mean of 16, but later decreased to 3.5 once tootling was reimplemented. Although the results of this study indicate a decrease in the number of disruptive behaviors during intervention phases, Cihak et al. (2009) stated that this could either be due to tootling, the interdependent group contingency, or a combination of both tootling and the group contingency.
Sherman (2012) examined how tootling and Positive Peer Reporting (PPR) procedures affected inappropriate and appropriately engaged behavior in an elementary school setting. During the PPR procedure, one student was selected daily as the “star of the class” (p. 2-3). The class voluntarily reported the star’s prosocial behaviors by using praise statements at a selected time. Sherman assessed PPR and a combination of PPR with elements of tootling. The addition of tootling elements with PPR allowed students to report the star student’s positive behavior either publicly (as in the previous PPR condition) or anonymously via index cards to be read aloud by the teacher. This was a variation of the original tootling procedures since it had students focus on writing tootles solely on the individual star student, rather than any student in the class. Participants were chosen based on referrals for disruptive behavior and social difficulties by the principal, and included four general education students between the third and sixth grade.

A pair of multiple-baseline designs across participants was used as the students were organized into two dyads for data collection. The treatment conditions were counterbalanced across pairs of participants to control for order effects due to the two types of intervention, PPR and PPR plus Tootling. During the PPR phase, the teacher announced that a random student would be chosen as the star of the class each day, and that they would be able to observe this student and give public praise for their appropriate behavior. However, the intervention was fixed so that the target students were chosen more frequently. Students were given an opportunity at the end of the day to give public verbal praise about the chosen star student. Students who gave praise statements each earned a token, which accumulated towards a class reward. During the PPR plus Tootling phase, an appropriately submitted tootle also earned a token towards the class reward.
Disruptive and appropriately engaged behavior were defined using the Problem Identification Interview (PII; Kratochwill & Bergan, 1990). Data were collected at times reported by the teacher during which the target student was most likely to engage in inappropriate behavior. At least once per week, the target student was also observed during an alternate time period to see if the effects of the intervention generalized to other activities or settings.

Results showed decreases in disruptive behavior and increases in appropriate behavior for the target students in both dyads following the introduction of PPR or PPR plus Tootling after the initial baseline. The results of the two interventions were consistent with each other despite the counterbalancing of order across dyads. Sherman (2012) suggested that PPR and PPR plus Tootling were similarly effective at decreasing disruptive behavior and increasing appropriate behaviors. The data collected from the alternate observation time also suggested that the effects of the intervention generalized to settings outside of the original lesson activity.

Several limitations of the study were offered by Sherman (2012) despite the observed intervention effects. The number of tootles may have varied across days since no data on the number of tootles submitted or read each day were collected. Another limitation was that some students might have written fewer tootles compared to their classmates. The response effort between interventions could have also been different since some students may have found it easier to give public praise verbally during PPR than to write them down as tootles on notecards and walk over to submit them. Teachers also reported that several students started playing with the notecards intended for tootles. Initially, notecards were placed on each desk at the beginning of the class, however, after
these incidents one of the participating teachers subsequently only allowed students to get a notecard when they intended to write a tootle.

Lambert, Tingstrom, Sterling, Dufrene, and Lynne (2015) attempted to replicate the study from Cihak et al. (2009), and extend the measured dependent variables to include both disruptive and appropriate behaviors. The study utilized an A-B-A-B design with a multiple baseline element and a follow-up phase across a fourth and fifth-grade general education classroom. A tootling procedure with an interdependent group contingency and publicly posted feedback, similar to Skinner et al. (2000), Cashwell et al. (2001), and Cihak et al. (2009), was implemented. A whiteboard near the front of the classroom was used to mark the progress the class had made toward their collective class tootling goal. A goal of 65 tootles was first used in the fourth-grade classroom, which was then increased to 75, and then 85 tootles. The fifth-grade classroom had an original goal of 65 tootles, which was later increased to 100. Data on disruptive and appropriate behaviors were collected by the primary investigator and trained observers. This is in contrast to Cihak et al. (2009) who had the classroom teacher take a frequency count of disruptive behavior.

The results from both participating classrooms in Lambert et al. (2015) demonstrated a decrease in disruptive behavior and an increase in appropriate behaviors during the initial treatment phase and reimplementation of tootling. Additionally, the follow-up phase in both classrooms maintained the low levels of disruptive behavior, and high levels of appropriate behavior found in the previous intervention phase. The classroom teachers also rated the intervention high in terms of treatment acceptability as evidenced by their scores on the Intervention Rating Profile–15 (IRP-15; Martens, Witt,
Elliott, & Darveaux, 1985). Lambert et al. (2015) stated that treatment integrity fell below 80% several times in both classrooms, thus raising the question of which parts of the intervention are “necessary components” for treatment effects to still be observed at a meaningful or significant level (Ward-Horner & Sturmey, 2010). Finally, the authors also suggested that tootling should be explored with different developmental levels and age groups.

Lambert (2014) sought to examine the effects of tootling in an upper elementary and middle school setting. In addition, specific target students identified by classroom teachers were also included during observations. Similar to Lambert et al. (2015), the dependent variables consisted of disruptive and appropriate student behavior. Observations were conducted using a 10-second momentary time sampling procedure for both classwide and target student behavior. Lambert (2014) evaluated tootling using an A-B-A-B withdrawal design in two sixth-grade classrooms and one seventh-grade classroom with a target student in each participating classroom. This included an 11 year-old female (sixth-grade), 12 year-old female (sixth-grade), and 13 year-old male (seventh-grade). During intervention phases, tootling procedures were largely similar to Lambert et al. (2015), and still included publicly posted feedback with an interdependent group contingency.

Overall, results from Lambert (2014) generally showed decreases in disruptive behavior and increases in appropriate behavior when tootling was implemented in all three participating classrooms. The findings of decreased classwide disruptive behavior from this study were consistent with Cihak et al. (2009) and Lambert et al. (2015). The results also replicated the increases in classwide appropriate behavior that Lambert et al.
(2015) had previously found. In addition, Lambert (2014) obtained overall positive treatment effects for the three target students originally chosen by teachers. However, for two of the target students, there was some variability across phases for disruptive and appropriate behavior.

While all participating classroom teachers and target students rated the tootling procedure as acceptable, one classroom teacher still required performance feedback on two occasions due to poor treatment integrity. All classroom teachers also failed to update the feedback chart at some point during the study. Similar to Lambert et al. (2015), it was suggested that tootling research be expanded to other age and grade levels. Two teachers also reported that they believed only a few students were submitting tootles. Lambert suggested that an independent (rather than interdependent) group contingency be considered for use with a tootling intervention to reward individual contributions of tootles.

McHugh, Tingstrom, Radley, Barry, and Walker (2016) also examined the effects of tootling on decreasing disruptive behavior and increasing academically engaged behavior (AEB) for a classroom and target student. Although it was called AEB, it followed the same operational definition used for appropriate behavior in Lambert et al. (2015). The study additionally sought to extend previous tootling research by using a classwide goal of tootles that could be attained daily through an interdependent group contingency. The tootling criterion for reinforcement was a smaller number of tootles, which could feasibly be reached in a single day, as opposed to several days or even a week as in previous tootling studies. Publicly posted feedback indicating how many tootles had been submitted in each classroom was shown on a large laminated picture of a
thermometer. This was erased at the end of each day, as the class would restart working towards the reinforcement criterion (starting at zero) again the following day. A second-grade and two third-grade classrooms were examined within an A-B-A-B withdrawal design. There was also a target student (1 female, 2 males) between the ages of seven and eight years in each classroom. The daily classroom goals for the interdependent group contingency ranged between 25 and 30 tootles.

The results obtained by McHugh et al. (2016) displayed decreases in classwide disruptive behaviors and increases in classwide AEB during intervention phases compared to the baseline and withdrawal phases. Positive effects were also found for each target student’s disruptive and AEB during tootling. Ratings on the IRP-15 suggested a high level of treatment acceptability from the participating teachers. Similar to Lambert et al. (2015) and Lambert (2014), participating teachers in this study had low levels of treatment integrity intermittently. An intervention materials check by independent observers fell to 80% on four different occasions in one classroom, and 60% once in another participating classroom. In lieu of these treatment integrity issues, McHugh et al. (2016) was still able to replicate previous tootling research by Cihak et al. (2009), Lambert (2014), and Lambert et al. (2015). However, the use of a daily tootling criterion did not seem to lead to any increases of intervention effectiveness compared to previous studies using larger criteria.

Lum, Tingstrom, Dufrene, Radley, and Lynne (in press) extended the tootling research to a general education high school setting using an A-B-A-B withdrawal with follow-up design. Similar to the studies by Lambert (2014), Lambert et al. (2015), and McHugh et al. (2016), this study used disruptive behavior as the primary dependent
variable, and AEB as a secondary dependent variable. Slight modifications were made due to the high school setting. This included having the intervention only last during one class period (i.e., 95 minutes), using adolescent oriented reinforcers (e.g., homework passes, bonus points, edible snacks), and changing the intervention name (e.g., Shout Outs, To Be Honest’s). An interdependent group contingency was used again with goals for submitted tootles ranging from 40 to 85. Public feedback on the class’ progress toward the goal was posted on a chart or whiteboard located on one of the classroom’s walls.

The results obtained by Lum et al. (in press) were similar to those found in previous tootling research with elementary and middle school students. Within the A-B-A-B withdrawal design, decreases were found when tootling was implemented compared to baseline and withdrawal phases. Two effect size calculations, Nonoverlap of All Pairs (NAP; Parker & Vannest, 2009) and Tau-U (Parker, Vannest, Davis, & Sauber, 2011), revealed moderate to large effect sizes for disruptive behavior, whereas AEB showed weak to moderate effects across classrooms. Additionally, the three classroom teachers rated the intervention as an overall socially valid treatment based on the results of a modified Behavior Intervention Rating Scale (BIRS; Von Brock & Elliott, 1987). Although their ratings suggested that tootling was a social valid intervention on the BIRS, none of the participating teachers continued implementing it during the follow-up condition where they had a choice to implement the intervention or not. There was also a low level of treatment integrity at several points of the study. Two of the three participating teachers frequently missed reviewing tootling instructions and the class’ progress chart at the start of class, as well as reading a sample of tootles, counting new
tootles, and updating their class’ progress chart at the end of class. Although, even with these issues, the overall results still suggested that tootling could be an appropriate intervention within a high school setting, and provide opportunities for adolescent students to recognize the positive and prosocial behavior of their peers.

In an effort to extend her previous work, McHugh (2016) incorporated a technological component along with traditional tootling procedures. Teachers were instructed to use the ClassDojo website (http://www.ClassDojo.com) that allows them to track and tally student behaviors on a visually animated screen that can be projected in the classroom. This was used in an attempt to make the intervention procedures simpler for the teacher. Participants included three fifth-grade general education classrooms. The dependent variables were once again disruptive and AEB, and were evaluated using an A-B-A-B withdrawal design in each classroom.

Despite some small instances of variability, the intervention decreased levels of disruptive behavior and increased levels of AEB compared to the baseline and withdrawal phases. Effect sizes indicated strong effects for disruptive behavior, and moderate to strong effects for AEB. A limitation of using ClassDojo was possible technological errors or delays, which occurred only once during the study. Teachers had to be trained on how to use the website program, and each classroom required multiple computers connected to the internet to both display the ClassDojo program and allow students to submit tootles. McHugh (2016) also suggested that the ClassDojo program might be inappropriate for older students due to the animated cartoon-like avatars used for each student. Treatment integrity was also not fully adhered to by the participating
teachers. McHugh (2016) noted that teachers occasionally forgot to reward students or did not praise behaviors that earned students their tootles.

*Treatment Integrity*

The studies by Lambert (2014), Lambert et al. (2015), Lum et al. (in press), McHugh et al. (2016), and McHugh (2016) all experienced issues with the treatment integrity of participating teachers. No integrity data were reported for Skinner et al. (2000) or Cashwell et al. (2001). The only traditional tootling study to report consistently high levels of treatment integrity was Cihak et al. (2009), but this study only examined one participating teacher/classroom. Only 50.2% of the studies between 1995 and 2008 involving interventions with children in the school psychology literature reported quantitative treatment integrity data (Sanetti, Gritter, & Dobey, 2011). It has been found that teachers implement school-based interventions (e.g., daily behavior chart, response cost lottery) as planned only 4% of the time when no prompts are given (Wickstrom, Jones, LaFleur, & Witt, 1998). If treatment integrity is poor, it is difficult to determine if there is a functional relationship between a treatment and its effectiveness of changing a target behavior (Dart, Cook, Collins, Gresham, & Chenier, 2012; Gresham, Gansle, Noell, & Cohen, 1993). There have been different strategies to increase treatment integrity. The method of performance feedback, which was used in the Lambert (2014), Lambert et al. (2015), Lum et al. (in press), McHugh et al. (2016), and McHugh (2016) tootling studies, has been shown to increase treatment integrity across many different types of settings (e.g., Codding, Feinberg, Dunn, & Pace, 2005; Martens, Hiralall, & Bradley, 1997; Mortenson & Witt 1998; Noell, Witt, Gilbertson, Ranier, & Freeland, 1997; Noell et al., 2005).
Although performance feedback can be effective, treatment integrity may still decrease if faded or removed (Duncan, Dufrene, Sterling, & Tingstrom, 2013) and it can be cumbersome if teachers or consultants have a lack of time (Sanetti, Chafouleas, Fallon, & Jaffrey, 2014). The complexity, time required, and materials/resources necessary to implement a treatment can all be factors related to treatment integrity outcomes (Gresham, 1989). Most teachers still report a lack of time, resources, training, and support as barriers to treatment implementation even if they rate the intervention acceptable (McGoey et al., 2014). It has been hypothesized that simpler, low risk treatments are implemented with higher integrity (Peterson, Homer, & Wonderlich, 1982). Gresham, MacMillan, Beebe-Frankenberger, and Bocian (2000) also posited “treatments with a large number of well-defined components may be implemented with less integrity than treatments with fewer and more ambiguously defined components” (p. 202). This suggests that having fewer components of an intervention could lead to better levels of integrity, even if they are vague. One possible way to alter the number of intervention components is to change the type of group contingency used.

**Group Contingencies**

A method for encouraging desirable behaviors with students involves the manipulation of group contingencies. Three types of group contingencies have been described in the literature: dependent, independent, and interdependent (see Hulac & Benson, 2010; Litow & Pumroy, 1975). When using a dependent group contingency, consequences are given to the whole group based on the performance of a select individual or individuals. For example, awarding extra recess time to an entire class of students if one or a small group of students engage in a certain level of appropriate
behavior. With independent group contingencies, reinforcers are technically available to everyone, but only given to the members of the group who meet the criteria. This may take the form of extra recess time for any student who makes above a certain grade on her or his own math test. In an interdependent group contingency, rewards are allocated based on the performance of all students in the group combined. Tootling is an example of an interdependent group contingency since the students in the class work as a unified team to submit tootles towards a group goal, which results in a reward for everyone.

Comparisons between the three types of group contingencies have indicated that no single type is clearly more effective over another. Only the earliest study to make comparisons (Gresham & Gresham, 1982) found that their independent group contingency condition decreased disruptive behavior less than the dependent and interdependent group contingencies. However, the study’s findings are limited due to its sequentially ordered treatment phases and possible carry-over effects. More recent studies have shown no practical differences between either of the group contingencies for improving spelling performance (Shapiro & Goldberg, 1986), reading fluency (Alric, Bray, Kehle, Chafouleas, & Theodore, 2007), homework completion (Lynch, Theodore, Bray, & Kehle, 2009), and classroom disruptive behavior (Theodore, Bray, & Kehle, 2004). In a meta-analysis, Little, Akin-Little, and O’Neill (2015) also found no clear differences between the effectiveness of the different group contingencies, and stated that “group contingencies are an effective intervention with children, particularly in the classroom, for a wide variety of academic behaviors, problem behaviors, and prosocial behaviors” (p. 335).
Independent group contingencies have not been studied as frequently as interdependent or dependent group contingencies (Little et al., 2015). Maggin, Johnson, Chafouleas, Ruberto, and Berggren (2012) did not include independent group contingencies in their review of group contingencies “due to concern regarding their consistency with other group contingency formats, the breadth of the definition, and the potential difficulty of differentiating these interventions from other types of management procedures” (p. 648). Skinner et al. (2000) specifically chose an interdependent group contingency for use with tootling because they believed it would focus students’ attention on the target behavior (Gresham & Gresham, 1982) and foster cooperation, rather than competition. Independent group contingencies do not inherently have the social motivation component found in dependent and interdependent group contingencies (Sloman, Reyes, & Vollmer, 2014). This may make independent group contingencies limited in terms of the types of interventions or settings they can be applied to. Tootling may provide a unique social situation, however, since it is a peer-based intervention that requires students to observe one another. This allows for a social component to be involved naturally.

A strength of an independent group contingency is that it can avoid possible antagonizing of specific students who do not want or are unable to participate in an intervention. It may also provide a method for deterring situations when only a few individuals are responsible for a group’s success in an interdependent contingency, which was anecdotally reported by teachers in Sherman (2012) and Lambert (2014). An independent group contingency may also help individuals feel more inclined to get a specific reward. This type of contingency can incorporate a choice or randomized
component for when individuals pick their own reward. With an interdependent group contingency, the whole class typically receives the same reward. The needs of adolescents can be more sophisticated and complex than younger children. Interventions used with this older age group may require more compelling personalized reinforcers to contend with other non-school related reinforcers, such as sexual activity and materialistic goods (Jenson, 1978). Although Skinner et al. (2000) chose an interdependent group contingency to promote cooperation and avoid competition when using tootling with elementary students, the Good Behavior Game (GBG) studies that translated the intervention to a high school setting did the opposite. Kleinman and Saigh (2011), Mitchell (2014), and Mitchell, Tingstrom, Dufrene, Ford, and Sterling (2015) all decided to introduce the GBG specifically as a competition, whereas previous studies in elementary settings only referred to it as a “game” (p. 226, Tingstrom, Sterling-Turner, & Wilczynski, 2006).

Several studies have additionally introduced a randomization component within a group contingency. This includes randomizing aspects of the intervention, such as target behaviors, reinforcers, reinforcement criteria, and target students (e.g., Coogan, Kehle, Bray, & Chafouleas, 2007; Kelshaw-Levering, Sterling-Turner, Henry, & Skinner, 2000; Lynch et al., 2009; Theodore, Bray, Kehle, & Dioguardi, 2004; Theodore, Bray, Kehle, & Jensen, 2001). This has been likened to the Mystery Motivator intervention (Rhodes, Jenson, & Reavis, 1992), which Moore, Waguespack, Wickstrom, and Witt (1994) identified “reinforcement uncertainty” (p. 106) as one of the key treatment components of the intervention. The inclusion of random reinforcement within treatments may be more
effective than nonrandomized reinforcement due to the element of surprise (Coogan, et al., 2007).

This form of randomization utilizes a variable ratio (VR) schedule of reinforcement where a variable number of responses produce a reinforcer. This type of schedule typically produces consistent, steady, and quick rates of responding (Cooper, Heron, & Heward, 2007). VR schedules have been shown to be more effective than fixed ratio (FR) schedules for increasing the exercise behavior of children (De Luca & Holborn, 1992), increasing the time visually attending and decreasing disruptive behavior of deaf elementary school students (Van Houten & Nau, 1980), as well as the amount of work completed by adults (Pritchard, Leonard, Von Bergen, & Kirk, 1976). This method also incorporates an indiscriminable contingency, where the contingencies of reinforcement are intentionally made less predictable (Stokes & Baer, 1977).

Indiscriminable contingencies are beneficial because they help program for maintenance and typically avoid scalloped rates of responding (Ferster & Skinner, 1957; Fowler & Baer, 1981; Freeland & Noell, 2002). Randomization of certain components of a group contingency may increase the overall effectiveness of the intervention compared to its traditional version (Kelshaw-Levering et al., 2000; Theodore et al., 2001). While previous tootling studies already incorporated using randomization in a small capacity (i.e., when the teacher read a sample of submitted tootles), true randomization of reinforcement components has not yet been examined.

**High School Setting**

Between the years of 1995 and 2008, there have been many more experimental studies in school psychology journals that have included treatment integrity with
elementary-aged children ($n = 186$) than high school-aged children ($n = 44$; Sanetti et al., 2011). This may be related to the fact that most group contingency interventions are also focused on elementary populations, whereas few are used in a high school setting (Little et al., 2015). Group contingency interventions have been primarily successful for students in late elementary and early middle school (Maggin et al., 2012). Despite the small amount of research with students in a secondary/high school setting, the limited research with this population does suggest behavioral interventions can be effective. In 2001, Theodore et al. conducted a study with randomized contingencies for reinforcement and reinforcers to examine its effects on decreasing the disruptive behavior of students in a high school self-contained special education class. Theodore et al. (2004) extended the previous study to conduct a three-way comparative study of the effectiveness of the different group contingencies for reducing disruptive behavior with adolescents. Use of a digital scoreboard giving digital tokens after periods of appropriate student behavior has also been shown to decrease disruptive behavior and increase active engagement in high school inclusion classrooms (Christ & Christ, 2006). The Mystery Motivator intervention has also been used in an interdependent group contingency format to successfully decrease problem behavior (Schanding & Sterling-Turner, 2010). More recently, as mentioned above, the GBG has been successfully converted from an elementary setting to a high school setting (Flower, McKenna, Muething, Bryant, & Bryant, 2014; Kleinman & Saigh, 2011; Mitchell, 2014; Mitchell et al., 2015). Classroom start/transition times have also been improved using an interdependent group contingency in a high school setting (Hawkins, Haydon, Denune, Larkin, & Fite, 2015). An independent group contingency has also been combined with self-management strategies and randomized
reinforcers to increase the amount of high school students’ written work and responding (Trevino-Maack, Kamps, & Wills, 2015).

Using peer reporting of prosocial behaviors with adolescents may be more socially relevant compared to younger students. Peer pressure and peer group conformity are strong predictors of risky behavior in high school populations (Santor, Messervey, & Kusumakar, 2000). Adolescents who are highly susceptibility to peer influence are more likely to engage in problem behaviors, have lower academic performance, and be involved with deviant peer groups (Fuligni, Eccles, Barber, & Clements, 2001). Peer pressure was listed by one-third of individuals as one of the most difficult things they had to deal with as a teenager (Brown, 1982). It has been found that antisocial behavior of individuals between 16 and 20 years old are affected largely by socialization with peers (Monahan, Steinberg, & Cauffman, 2009). It seems that high school students may be even more likely to notice the prosocial behaviors of other students since the behavior of their peers, in general, tends to be more salient to them during their adolescent years. Tootling inherently has a positive peer pressure component since it encourages students look for peers engaging in instances of prosocial behaviors.

Tootling can allow students to be supported and recognized by their peers for engaging in positive behaviors. Increased peer support in high school can lead to a greater sense of school membership (Isakson & Jarvis, 1999). On the other hand, students may choose to drop out of school once they are older. Teacher ratings of a student’s peer competence (i.e., how socially competent and popular they are with other students) are highly correlated with behavioral problems (Jimerson, Egeland, Sroufe, & Carlson, 2000). Behavioral problems are one of the top three risk factors that can predict student
drop out (Suh & Suh, 2007). Disruptive behavior is also associated with other negative life outcomes, such as substance abuse amongst adolescents (Kuperman et al., 2001). McGue and Iacono (2005) obtained results that suggest adolescent problem behavior is associated with large increases in the risk of dependence on nicotine, alcohol, and drugs, in addition to instances of major depressive disorder and antisocial personality disorder by the age of 20.

Teachers also typically report more behavior problems in high school classrooms where students report more occurrences of antisocial behavior (LeBlanc, Swisher, and Trembley, 2008). It has been found that promoting prosocial behavior during adolescence may serve to decrease aggressive behaviors and improve academic achievement (Caprara et al., 2014). Teachers at the high school level are susceptible to teacher burnout from multiple job related stressors including work overload and negative classroom climate (Byrne, 1994). It has been suggested that school psychologists should instruct teachers in middle and high schools more on classwide interventions, not just those tailored to individual children (Gregory, Allen, Mikami, Hafen, & Pianta, 2014).

Purpose of the Present Study

The purpose of this study was to test the effects of tootling with a randomized independent group contingency in a general education high school setting on decreasing disruptive behavior and increasing academic engaged behavior. To this date, only one peer-reviewed study has investigated the effects of tootling on decreasing disruptive behavior as well as improving appropriate behavior (Lambert et al., 2015), and only one additional peer-reviewed study has examined solely disruptive behavior (Cihak et al., 2009). Further research needs to be conducted to replicate and extend these previous
studies, especially since only Lum et al. (in press) has investigated tootling in a high school setting. Teachers in high school need a positive intervention that can be used effectively with students in a classwide format. Positive interventions, such as tootling, that fit in a SWPBS system can significantly reduce problem behavior for students in high schools (Flannery, Fenning, Kato, & McIntosh, 2014).

Behavior change cannot be accurately attributed to an intervention if treatment integrity is not adhered to (Dart et al., 2012; Gresham et al., 1993). Low levels of treatment integrity were found with several participating teachers in previous tootling studies by Lambert (2014), Lambert et al. (2015), Lum et al. (in press), McHugh et al. (2016), and McHugh (2016). One possible way to increase treatment integrity is to decrease the number of intervention steps or make them simpler for the teacher (Gresham, 1982; Gresham et al., 2000; Peterson et al., 1982). With tootling, this may be done by using an independent group contingency, rather than the traditional interdependent group contingency. Using a randomized independent group contingency can allow teachers to simply pick a number of submitted tootles at the end of the class and reward those students about whom the tootles were written. This method randomly reinforces students who demonstrate prosocial behaviors in the classroom. A separate container holding the names of individuals who submitted a tootle can also be used to randomly draw students to be rewarded for actively participating in the intervention. This format allows the teacher to forgo creating a progress chart, and eliminates the daily tasks of counting all the submitted tootles and updating the chart.

Switching to an independent group contingency should have no detrimental effects to the effectiveness of the intervention, as multiple studies have shown that there
are no significant differences between the group contingencies across a wide variety of academic, problem, and prosocial behavioral interventions (e.g., Little et al., 2015; Theodore et al., 2004). It may actually have additional benefits at a high school level since an independent group contingency may prevent situations when only a few individuals are responsible for submitting tootles, and it may motivate students to work more for a personal reward. Additionally, including a randomization of who is rewarded (i.e., which tootles are drawn) could increase the overall effectiveness of tootling compared to its traditional form (Kelshaw-Levering et al., 2000; Theodore et al., 2001). Applying tootling with these simplified steps may provide high school teachers with a sustainable intervention that allows them to prevent student disruptions and promote positive behaviors in their classroom.

**Research Questions**

1. Will a tootling procedure with a randomized independent group contingency in which students are individually rewarded for their positive behaviors and for submitting tootles decrease classwide disruptive behaviors in a high school general education classroom setting?

2. Will a tootling procedure with a randomized independent group contingency in which students are individually rewarded for their positive behaviors and for submitting tootles increase classwide academically engaged behavior in a high school general education classroom setting?

3. Will a tootling procedure with a randomized independent group contingency in which students are individually rewarded for their positive behaviors and
for submitting tootles be rated as socially valid by teachers and acceptable by students in a high school general education classroom setting?
 CHAPTER II - METHOD

Participants and Setting

Students and their teachers from three general education classrooms from a rural high school (i.e., ninth, tenth, eleventh, or twelfth-grade) in a southeastern state served as participants for this study. The high school had approximately 550 students enrolled during the time of the study, with 68% receiving a free or reduced lunch. Historically, the school offered specialized agricultural programs; however, it currently functions as a traditional public high school, although students are still able to enroll in select agricultural courses as electives. A semester-based system with a block schedule for courses was used during the 10-month school year with four 95-minute blocks within one school day. Participating classrooms were selected from referrals reported by school administrators for classrooms exhibiting concerning levels of disruptive behavior. During the study, all data collection and training procedures took place in the participating classrooms. In order to qualify for the current study, only classrooms exhibiting disruptive behaviors in 30% of intervals or greater during initial screening observations were selected (Lambert et al., 2015). Each participating classroom met this screening criterion by exhibiting disruptive behavior for at least 30% of observed intervals during at least one of two initial screening observations.

Authorization to conduct the study was acquired from school administrators, and a university Institutional Review Board approved all procedures (see Appendix A). All participating teachers gave informed consent for their participation in the study (see Appendix B). Parental consent was also obtained following the conclusion of the intervention to allow students to rate the acceptability of the intervention (see Appendix
C). At the start of the study, each participating teacher was interviewed to gain information regarding their basic demographics and that of the students in their classroom (see Appendix D).

Classroom A was an Algebra II course during the school’s 3rd block, and was comprised of 22 students (13 females) in the tenth (10), eleventh (9), and twelfth (3) grades. The class consisted of 16 Caucasian, 5 African American, and 1 Hispanic student. Three students received special education services under the category of Specific Learning Disability (SLD). The teacher for Classroom A was a 23-year-old Caucasian female in her first year of teaching. All observations were conducted at the start of the class period.

Classroom B was an Accelerated English II course during 3rd block, which consisted of 24 students (17 females) all from the tenth grade. Fifteen of the students were Caucasian, 8 were African American, and 1 was Hispanic. No students in this class received special education services. Classroom B was led by a 25-year-old Caucasian female in her third year of teaching. All observations were conducted after students returned from their lunch break approximately 25 minutes into the class period.

Classroom C was an English IV course during 2nd block with 26 students (14 females) in the twelfth grade. The class was comprised of 15 Caucasian students and 11 African American students. Four students received special education services under the category of SLD, and one under OHI. The teacher for Classroom C was a 30-year-old Caucasian female teacher in her sixth year of teaching. All observations in Classroom C occurred after the students’ initial bellwork assignment, which was approximately 20 minutes into the class period.
Materials

Tootling

Each teacher was provided a script for the student tootling training session (see Appendix E). Printed slips of paper specifically created for writing tootles were provided to the students (see Appendix F). Students wrote a traditional tootle about the prosocial behavior of another student on one half, and the reporting student additionally wrote their own name on the other half, which was torn off before they submitted the tootle. Two decorated containers were positioned next to each other in an easily accessible location within the classroom (e.g., teacher’s desk). One container was for students to deposit the left side of their completed paper slips, which had a space in which to record the prosocial behavior of their peers. The other container was for students to place the right side of their paper slip in, which had their name written on it. Reward items were selected by consulting with classroom teachers and students to determine suitable choices that were highly preferred. Possible rewards included: bonus points, homework passes, candy bar, chips, and soda.

Social Validity

After the completion of the intervention, participating teachers rated the social validity of tootling via the BIRS (Von Brock & Elliott, 1987; see Appendix G). The BIRS is comprised of 24 items. Participants rated each item on a 6-point Likert scale ranging from strongly disagree (1) to strongly agree (6). Higher scores on the BIRS signify higher levels of social validity for the intervention. Three factors make up the BIRS: Acceptability, Effectiveness, and Time (Von Brock & Elliott, 1987). The Acceptability factor is created from the 15 items on the IRP-15 (Martens et al., 1985).
There are seven additional items that load on the Effectiveness factor, and two other items that load on the Time factor. The Acceptability, Effectiveness, and Time factors yielded coefficient alphas of .97, .92, and .87, respectively (Von Brock & Elliott, 1987). Technical evaluations of the BIRS by Elliott and Treuting (1991) found it to have overall high internal consistency ($\alpha = .97$), along with good content and construct validity. For this study, the BIRS was modified by substituting the word “intervention” with “tootling,” and using past tense wording. It has been shown that modifying the wording of items to state the intervention used and changing the tense of items do not significantly alter the psychometric properties of the BIRS (Sheridan & Steck, 1995; Sheridan, Eagle, Cowan, & Mickelson, 2001).

A modified version of the Children’s Intervention Rating Profile (CIRP; Witt & Elliott, 1985) was used to assess student acceptability of the tootling intervention (see Appendix H). All responses from students were obtained anonymously, and only students who returned an affirmative parental consent letter were allowed to complete the form. Students who returned a completed parental consent letter received a candy bar or bag of chips, regardless if it was affirming or denying consent. Students who did not have parental consent were instructed to work on another school-related assignment while other students completed the CIRP. The CIRP is a seven-item questionnaire that requires students to rate their acceptance of an intervention on a 6-point Likert scale. Higher ratings indicate higher intervention acceptability. A score of 24.5 or higher represents a rating of “acceptable” (Turco & Elliott, 1986). Measures of the CIRP were reported to have a high internal reliability within items as indicated by a Chronbach’s alpha of .89 (Witt & Elliot, 1985). The original version of the CIRP was modified slightly to use past
tense phrasing for some items and rewording to negate the need for reverse scoring (e.g., Lambert, 2016). Similar modifications have previously been made to the CIRP, and have found it to still possess good internal consistency ($\alpha = .79$; Mitchell et al., 2015).

Dependent Measures

*Disruptive Behavior*

Disruptive student behavior was the primary dependent variable assessed during this study. Data collected on disruptive behavior was also used to decide when phase changes would occur. Each classroom teacher informed the definition of disruptive behaviors. Participating teachers were interviewed with a modified PII (see Appendix I; Kratochwill & Bergan, 1990) to determine what they considered to be the three most frequent disruptive behaviors in their class. This modified PII was different from the original version as it was condensed into just 10 questions, was worded to identify classwide behaviors, and it did not incorporate plans for future data collection procedures (Lambert et al., 2015). Each participating teacher chose: (a) being out of seat, (b) inappropriate vocalizations, and (c) playing with objects as the most frequent behaviors that disrupt their class. Out-of-seat behavior was coded if the student’s bottom broke contact with their seat without prior permission from the teacher (an exception was made if they were in the process of submitting a tootle). Any verbalization made by a student without the prior permission of the teacher was defined as inappropriate vocalizations. Playing with objects was defined as any time the student manipulated an item not related to the task presented by the teacher. While the PII has had no formal reports of its psychometric properties, it has been cited as a frequently used interview in behavioral consultation (Zuckerman, 2005).
Academically Engaged Behavior

A second dependent measure of student AEB was also collected. AEB was operationally defined as: “the student being actively involved or attending to (e.g., looking at) independent seatwork, teacher instruction, designated classroom activities, and/or engaging in task related vocalizations with teachers and/or peers” (Lambert et al., 2015, p. 418).

Passive Off-Task

Another dependent variable that was included was passive off-task (POT), and it was defined as when the observed student engaged in any inattentive or passive behavior of not attending to the assigned task in an academically engaged manner, but was also not being disruptive. Only one dependent variable (i.e., disruptive behavior, AEB, or POT) was coded for each observation interval since they were mutually exclusive.

Data Collection

During the PII, the teacher was also asked what time during the class period they believed disruptive behavior was the most problematic in order for observers to conduct observations during this time. The primary researcher and trained observers collected data from an unobtrusive location (e.g., the back of the room) in each of the participating classrooms. A 10-second momentary time sampling recording procedure was used during 20-minute observations to measure the dependent variables. The momentary time sampling procedure was chosen since research has shown it to have fewer observer errors and greater representativeness compared to whole and partial interval recording (Green, McCoy, Burns, & Smith, 1982; Radley, O'Handley, & LaBrot, 2015). During data collection, observers used an audio recording to be cued for each 10-second interval.
Students were observed in a predetermined fixed order (i.e., Individual-Fixed). To begin, one student was momentarily observed at the start of each 10-second interval. They were recorded as either engaging in disruptive behavior, POT, or AEB (see Appendix J). A different student was observed at the start of a new interval. Once all students in the class had been observed, the observers restarted and rotated through each student again. The rotation order for observing students was based approximately on the seating chart in each classroom. This procedure was repeated until each interval in the 20-minute observation has been completed. The Individual-Fixed observation method has been found to be a good balance between accurate data collection and practical concerns (i.e., not having to randomize the order of students observed; Briesch, Hemphill, Volpe, & Daniels, 2015). Although the classroom teacher indicated three types of disruptive behaviors to be used during observations, the three types were collapsed into a single category of disruptive behaviors. Data were reported as the classwide percentage of intervals of occurrence for each dependent variable. This was calculated by dividing the total number of intervals of occurrence by the total number of intervals in the observation, and then multiplying the result by 100. The percentages of each dependent variable were calculated and reported individually. Data collection procedures remained the same across all phases of the study.

Design

An A-B-A-B withdrawal design was implemented in the three classrooms to determine the effectiveness of tootling for decreasing disruptive and POT, and increasing AEB. The withdrawal design provided opportunities for experimental demonstrations of treatment effects through prediction, verification, and replication (Hayes, Barlow, &
Nelson-Gray, 1999). If the data of the baseline and initial treatment phase are approximated in the withdrawal and treatment reimplementation phases, there is strong evidence that the independent variable is responsible for behavior change.

In order to determine when phase changes would occur, visual analysis of level, trend, and variability around the level and trend of disruptive behavior was used. A minimum of five observations were conducted in each phase; however, one exception occurred in the final phase for Classroom C for which only four data points were collected due to time constraints at the end of the semester. It has been recommended that at least five data points be collected, if there are no ethical or practical concerns, to increase the confidence in the reliability of the data (Kratochwill et al., 2010). The classroom entered the initial treatment phase when data for disruptive behavior showed an increasing trend or became stable during the initial baseline phase. Likewise, data were collected in the withdrawal phase until disruptive behavior indicated an increasing trend or the data became stable.

Procedures

**Screening**

In order to qualify for participation in the study, all classrooms were subject to screening observations. During these observations, teachers were asked to use their regular classroom management procedures. Participating classrooms met a criterion of at least 30% of observed intervals of classwide disruptive behavior during either the first (Classroom A) or second (Classroom B and C) screening observation. Lambert et al. (2015) established this criterion to prevent floor effects from occurring since potential observed effects from the intervention would be visible below 30%. Classwide disruptive
behavior above 30% may also be sufficiently high enough to disrupt students and teachers from learning and teaching effectively. Screening observations were included as part of the baseline phase.

**Baseline**

For a minimum of five sessions, data were collected on students’ disruptive behavior, POT, and AEB prior to the start of the training and tootling procedures. Just as they did in the screening phase, teachers were asked to continue their typical classroom routines and behavior management strategies throughout baseline.

**Teacher Training**

The primary investigator then meet with each participating teacher to go over the training script (Appendix E) that was used later to train students. Each step of the script was explained to the teacher, and time to practice the steps was given. The primary investigator provided any necessary feedback on errors or missed steps. Intervention materials were also given to teachers during this time, and teachers were given the chance to ask any questions before they had to conduct the student training.

**Student Introduction and Training**

Each participating teacher used the script that they were given during the teacher training, which outlined how to train the students in their classroom on the tootling procedures (Appendix E). The teacher trained students after the baseline phase had been completed, but prior to the implementation of the intervention. The training aimed to instruct students on how to observe and record the appropriate prosocial behaviors of their peers. Similar to Lum et al. (in press), the teacher began by calling the procedure *positive comments* to try to make the tootling intervention sound more age appropriate for
high school students. Additionally, the intervention was first described as a competition to see which students can earn positive comments to increase their chances of getting a reward. This is similar to how Lum et al. (in press) introduced the tootling interdependent group contingency, and how Kleinman and Saigh (2011), Mitchell et al. (2015), and Mitchel (2014) introduced the Good Behavior Game as a competition to high school classrooms.

The training script incorporated examples of correct and incorrect ‘positive comments.’ A correct ‘positive comment’ included an instance of a prosocial behavior exhibited by a peer, which was written on the given paper slip. For example, “Mark helped Travis pick up his pencil” or “Anna raised her hand before speaking.” An incorrect ‘positive comment’ was if there were no name written to state who engaged in the prosocial behavior or if the written statement was not about a prosocial or positive behavior, such as “The front row has a worksheet”. Next, students were asked to submit examples of their own. The teacher then read and provided corrective feedback on the submitted examples to confirm the students had a sufficient understanding of how to write a correct ‘positive comment.’ The teacher then demonstrated how to properly submit a paper slip by describing each side of it (i.e., left side is for writing the tootle about a peer, the right side is for writing the submitting student’s own name), and showing how to tear the paper in half and submit each side into the correct corresponding container. It was emphasized that students should only write their own names on the right side of the paper slip, as the tootles themselves are meant to be anonymous.

The classroom teacher then conducted a student vote to decide what the intervention would be named. Students were be able to vote on the provided examples of
‘Brag,’ ‘Compliments,’ ‘Holla,’ ‘Kudos,’ ‘Positive Comments,’ ‘Shout Outs,’ or ‘Tootles,’ in addition to an option where students could offer their own suggestion (Lum et al., in press). The choice that received the most votes was deemed the winner, and the intervention was referred to as such for the remainder of the study. Classroom A voted to name the intervention “Tootles,” Classroom B voted for “Snaps,” while Classroom C also voted for the original “Tootles” name.

**Tootling**

The implementation of tootling procedures began after students had been trained. Each day before the class period began, the teacher placed a slip of paper designed specifically for recording tootles (Appendix F) on each student’s desk. Teachers encouraged students to write and submit any of their peers’ prosocial behavior observed during the class period. Students were told that they should only record one tootle on each slip of paper. Once they were ready to submit, they tore the paper slip along its marked line, and placed the left side (with the tootle) in the tootling collection container, and the other half of the paper slip (with their name on it) in the second ‘submitters’ container. Then they then retrieved a new slip of paper and brought it back to their desk.

A randomized independent group contingency was used with the tootling procedures. At the end of the class period, the classroom teacher retrieved the tootling collection container and randomly selected three of the submitted tootles. After silently pre-reading the selected tootles for appropriateness, the teacher then read the three drawn tootles aloud to the class. The three individuals who the selected tootles were written about were allowed to select a reward. If more than one of the selected tootles was about the same student, the teacher redrew another tootle until all three tootles were on different
individuals. After this, the teacher also selected two paper slips from the container housing the names of students who submitted tootles. Similar to the first selection process, the teacher continued to draw names until two different individuals were drawn. However, a student could have received two rewards in one day if their name was drawn once from both containers (i.e., they could be rewarded for doing a prosocial behavior and submitting a tootle). Each student who was drawn was allowed to select an individual reward from a small selection of options (e.g., bonus points, homework passes, chips, candy bars, and soda).

A total of five rewards were given out daily. This number was chosen since previous tootling studies (Lambert, 2014; Lambert et al., 2015; Lum et al., in press; McHugh et al., 2016) had the teacher read approximately five tootles at the end of each day. Since this study had an average of 24 students per class, this theoretically allowed for each student to be rewarded at least once within a week if a tootle was written about them or if they submitted a tootle, which approximates the reinforcement schedule range of previous tootling studies (Cihak et al., 2009; Lambert, 2014; Lambert et al., 2015; Lum et al., 2015). This was considered an independent group contingency since it allowed any individual student who had engaged in a prosocial behavior (and had a tootle written about them) and any student who had written a tootle to be rewarded. However, this procedure was also randomized (i.e., there is a random-ratio schedule of reinforcement) because the teacher randomly drew the names of students who were rewarded. The choice to reward three students who had tootles written about them compared to only two students who submitted tootles was done to place more emphasis...
on students engaging in positive or prosocial behaviors, rather than just the reporting of it.

Withdrawal

All intervention procedures were removed for a minimum of five days. If students asked about the intervention during this phase, the classroom teacher was trained to tell the students that the class was “not doing the intervention for now.” As in the previous phases, any instances of disruptive behavior, POT, or AEB that occurred were recorded by observers.

Reimplementation of Tootling

Following the withdrawal phase, tootling with the randomized independent group contingency was reimplemented similar to the initial intervention phase. At least five observations were conducted to determine if any treatment effects were present by analyzing the level, trend, and variability of the data. As mentioned above, one exception was made in Classroom C, as only four data points were able to be collected in this phase due to time constraints of data collection extending until end of the semester.

Interobserver Agreement

Interobserver agreement (IOA) was measured between the primary observer and a secondary observer for at least 33% of observations per each phase of each classroom. In total, IOA was collected across 40% of all sessions. IOA was calculated separately for each dependent variable as in Lambert (2014), Lambert et al. (2015), Lum et al. (in press), McHugh et al. (2016), and McHugh (2016) and reported as the total agreement of occurrence and nonoccurrence of behavior. In order to get a percentage, the total number
of agreements was divided by the combined number of agreements and disagreements, and then multiplied by 100.

Prior to collecting any data, a secondary observer was trained on all observation procedures and behavioral definitions of the target behaviors. This observer was a graduate student in a school psychology program who had attained a 90% IOA criterion during a previous training session with the primary investigator. The secondary observer was required to maintain a minimum of 90% agreement for each dependent variable when simultaneously and independently collecting data with the primary observer. Retraining on the observation procedures and operational definitions were conducted before collecting any further data if this 90% agreement threshold was not maintained. Retraining occurred on two occasions for Classroom B and once for Classroom C.

Classroom A’s IOA was obtained for 40% of baseline observations, 40% of observations in the initial tootling phase, 33% of withdrawal observations, and 40% of observations during the re-implementation of tootling phase. IOA for disruptive behavior in Classroom A averaged 94% (range = 90-97%) across all phases, POT averaged 96% (range = 92-98%) across all phases, and AEB averaged 93% (range = 90-96%) across all phases. Total IOA for disruptive behavior, POT, and AEB combined averaged 94% (range = 91-97%) across all phases.

For Classroom B, IOA was obtained for 33% of observations in baseline, 40% of observations in the initial Tootling phase, 40% of observations in the withdrawal phase, and 40% of observations during the re-implementation of tootling. IOA for disruptive behavior in Classroom B averaged 93% (range = 88-98%) across all phases, POT averaged 97% (range = 92-100%) across all phases, and AEB averaged 92% (range = 87-
97%) across all phases. Total IOA for disruptive behavior, POT, and AEB combined averaged 94% (range = 90-97%) across all phases.

IOA in Classroom C was collected for 40% of observations during the baseline phase, 40% of observations during the initial tootling phase, 40% of observations in the withdrawal phase, and 50% of observations during the re-implementation of the intervention. IOA for disruptive behavior in Classroom C averaged 93% (range = 87-97%) across all phases, POT averaged 96% (range = 93-98%) across all phases, and AEB averaged 92% (range = 88-95%) across all phases. Total IOA for disruptive, POT, and AEB combined averaged 94% (range = 91-96%) across all phases.

Kappa

In addition to IOA, the Kappa coefficient was also calculated. This was conducted for disruptive behavior, POT, and AEB using the formula outlined by Uebersax (1982). The Kappa coefficient is a statistical measure that establishes the proportion of agreement between raters or observers when chance agreement is accounted for. Viera and Garrett (2005) suggested that when interpreting Kappa values below 0 represent less than chance agreement, values between .01 and .20 are considered slight agreement, values between .21 and .40 signify fair agreement, values between .41 and .60 suggest moderate agreement, values between .61 and .80 reflect substantial agreement, and values between 0.81 and 0.99 indicate almost perfect agreement.

Classroom A had a mean Kappa value of 0.79 (95% CI = 0.67–0.91), which suggests substantial agreement between observers across disruptive behavior, AEB, and POT. The mean Kappa value for Classroom B was also 0.79 (95% CI = 0.68–0.91), suggesting substantial agreement between observers across all dependent variables.
Classroom C’s mean Kappa value was also 0.79 (95% CI = 0.68–0.90) indicating substantial agreement between observers across all three dependent variables.

Procedural Integrity

First, an integrity checklist with 17 items was completed to determine if the primary investigator appropriately trained each participating teacher to conduct the tootling training for students (see Appendix K; Lynne, 2015). Integrity was found to be 100% during all three training sessions with teachers as rated by the primary investigator. Additionally, IOA data were obtained by a secondary observer for all three of the training sessions with teachers, and was 100% for the training sessions with the teachers from Classroom B and C; however, 88.2% IOA was obtained in Classroom A because the secondary observer disagreed with the satisfactory completion of two steps: “Allow the teacher to practice each step of the teacher script” and “Provide feedback on any errors or omitted steps.” The secondary observer anecdotally reported that they wanted the teacher to engage in a full role-play of each step, whereas the primary investigator believed it was sufficient that the teacher was sitting at her desk while describing how they would carry out these steps.

Additionally, the primary investigator used an integrity checklist on the first day the classroom began the intervention to assess whether or not the teacher implemented the necessary steps needed to train students on how to tootle correctly (see Appendix L; Lambert et al., 2015). Each participating teacher implemented the steps with 100% integrity. IOA data were also obtained for all of the student training sessions by a secondary observer, and was 100%.
Treatment Integrity

Treatment integrity was assessed with a checklist similar to Lambert et al. (2015) and Lum et al. (in press). The checklist contained four steps required for appropriate implementation of the intervention (see Appendix M). The teacher was required to use an integrity checklist each day after completing the intervention steps. This self-report measure was used since the primary investigator was not be able to see all aspects of the intervention each day. Treatment integrity, as rated by the classroom teacher for Classroom A, B, and C, were all 100% across both treatment phases.

The primary investigator also assessed treatment integrity by completing a checklist while they were in the classroom for observations, although there were only two steps in the current study, compared to the four or more steps in the previous studies (e.g., Lambert, 2014; Lambert et al., 2015; Lum et al., in press; McHugh et al., 2016; McHugh, 2016). This evaluated the presence of necessary intervention materials in the room, such as having the collection container in an accessible place for students, and whether the students had tootling paper slips on their desks (see Appendix N; Lambert et al., 2015).

Treatment integrity as rated by the observers was 100% for Classroom A, B, and C. During intervention phases, IOA for treatment integrity was also collected for a minimum of 40% of observations during each treatment phase (42% of observations in these phases in total). Treatment integrity IOA was calculated as number of agreements of steps completed divided by the number of total steps. Treatment integrity IOA was 100% across all observations in each participating classroom.

For the withdrawal phase, integrity was also checked throughout the phase to confirm intervention materials were absent and procedures were not being implemented.
(see Appendix O). This included: (a) Paper slips NOT visible on the students’ desks, and (b) Tootling collection containers are NOT visible. The withdrawal phase treatment integrity checks were completed at 100% in all three classrooms. IOA for withdrawal treatment integrity was collected for a minimum of 33% of observations in each withdrawal phase (average of 38% across all three participating classrooms) and was 100%.

Data Analysis

Visual Analysis

Visual analysis was used to evaluate the consistency of level, trend, variability, overlap, consistency of data patterns across multiple presentations of intervention and nonintervention conditions, and immediacy of effect after the implementation or withdrawal for each classroom to determine if there was a functional relationship between the intervention and each dependent variable (Horner et al., 2005; Kratochwill et al., 2010). An effect size calculation, Tau-U, was also used to evaluate treatment effects. Parker et al. (2011) proposed Tau-U, which combines nonoverlap between phases with trend from within the baseline phase. Although they are based on similar calculation procedures, Tau-U is typically a more conservative calculation of effect size compared to Nonoverlap of All Pairs (NAP; Parker & Vannest, 2009), which is an index of data overlap between phases. Parker and Vannest (2009) found NAP to have good discriminability of effects, and it was strongly correlated with the established effect size index of $R^2$. As opposed to other commonly used non-overlap measures, Tau-U score distributions do not show artificial ceilings, and can display a more complete index of change between phases (Parker et al., 2011). Tau-U scores between 0.00 and 0.20 are
interpreted as small effects, scores between 0.20 and 0.60 are considered moderate
effects, scores from 0.60 to 0.80 are considered a large change, and scores from 0.80 to
1.00 indicate “large to very large change, depending on the context” (p. 408, Vannest &
Ninci, 2015). Each classroom was evaluated individually since this study used a within-
series design.

*Effect Sizes*

To calculate effect sizes, each baseline phase was compared to the first
intervention phase, and each withdrawal phase was compared to the reimplementation
intervention phase. After these calculations were conducted, a combined weighted
average of the two results were also made. However, in order to calculate effect size
scores for disruptive behavior, the data from each intervention phase was switched with
the corresponding baseline or withdrawal phase data it was being compared with since
there was a predicted decrease in levels of behavior during tootling. For Tau-U, the data
for each initial phase (i.e., tootling phases for disruptive behavior and POT, and baseline
and withdrawal phases for AEB) were analyzed for evidence of a significant trend. The
trend was corrected during Tau-U calculations if the trend level resulted in a score above
0.4. This trend correction was conducted twice: once for Classroom B’s baseline phase
for POT calculations, and again for Classroom B’s withdrawal phase for AEB
calculations.
CHAPTER III - RESULTS

Classroom Observation Data

Classroom A

During baseline, disruptive behavior for Classroom A (Figure 1, top panel) was slightly variable (i.e., range was less than 20%) with a small increasing trend, and had a mean of 29% during observed intervals (range = 22-37%). Disruptive behavior then decreased with the implementation of tootling to a mean of 18% of observed intervals (range = 12-25%), and a decreasing trend was evidenced consistently throughout the phase. Disruptive behavior was slightly variable during the withdrawal phase, and increased to a mean of 31% of observed intervals (range = 23-41%). Upon the reimplementation of the intervention, disruptive behavior immediately decreased and remained fairly stable with an average of 17% (range = 15-18%) of observed intervals. Data patterns between intervention and non-intervention phases were fairly consistent. Table 1 presents Tau-U effect size calculations between phases. Overall, the intervention in Classroom A had a large effect in decreasing disruptive behavior according to the weighted average from Tau-U calculations, which indicates a high level of non-overlap of data points.

AEB for Classroom A displayed variable data (M = 61% of observed intervals; range = 51-73%) during the baseline phase. During the first intervention phase, an increasing trend was found for AEB with a mean of 75% of observed intervals (range = 69-83%). AEB then decreased during the withdrawal phase similar to baseline levels to a mean of 60% of observed intervals (range = 49-71%). During the second implementation of the intervention, AEB increased immediately and remained relatively stable with a
range between 74-82% of observed intervals (M = 78%). Consistency of data patterns was observed between baseline and withdrawal, and both tootling phases. The weighted Tau-U effect size score for increasing AEB was large for Classroom A.

![Figure 1](image)

*Figure 1.* Percentage of intervals of occurrence for disruptive behavior, passive off-task, and academically engaged behavior.
Table 1

*Effect Size Calculations for Classroom A*

<table>
<thead>
<tr>
<th></th>
<th>Tau-U</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Disruptive Behavior</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline/Initial Tootling</td>
<td>0.88</td>
<td>Large</td>
</tr>
<tr>
<td>Withdrawal/Reimplementation</td>
<td>1</td>
<td>Large</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>0.94</td>
<td>Large</td>
</tr>
<tr>
<td><strong>Academically Engaged Behavior</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline/Initial Tootling</td>
<td>0.92</td>
<td>Large</td>
</tr>
<tr>
<td>Withdrawal/Reimplementation</td>
<td>1</td>
<td>Large</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>0.96</td>
<td>Large</td>
</tr>
<tr>
<td><strong>Passive Off-Task</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline/Initial Tootling</td>
<td>0.56</td>
<td>Moderate</td>
</tr>
<tr>
<td>Withdrawal/Reimplementation</td>
<td>0.03</td>
<td>Small</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>0.29</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

POT for Classroom A displayed slightly variable data (M = 10% of observed intervals; range = 6-18%) during the baseline phase. Data were relatively stable during the first intervention phase with a mean of 7% of observed intervals for POT (range = 4-11%). POT continued with a similar level during the withdrawal phase, averaging 8% of observed intervals (range = 5-14%). During the second implementation of Tootling, POT continued around the same level as the previous phases and remained relatively stable with a range between 3-10% of observed intervals (M = 8%). Patterns of collected POT data were also consistent between similar phases. Overall, effect sizes for decreasing POT were moderate for Tau-U calculations.

*Classroom B*

Students in Classroom B (Figure 1, middle panel) demonstrated disruptive behavior for a mean of 29% of observed intervals (range = 23-36%) across baseline
observations. When tootling was introduced, disruptive behavior decreased immediately, which resulted in a mean of 16% of observed intervals (range = 13-20%). Upon removal of the intervention in the withdrawal phase, disruptive behavior was stable and increased to near baseline levels with a mean of 26% (range = 22%-31%) of observed intervals. When tootling was re-implemented in Classroom B, mean levels of disruptive behavior decreased to 14% of observed intervals (range = 12-19%). The data patterns for disruptive behavior between baseline and withdrawal, and both intervention phases were fairly consistent. Effect sizes for decreasing disruptive behavior in Classroom B (Table 2) indicate large effects from the tootling intervention based on Tau-U calculations, and no instances of data overlap between adjacent intervention and non-intervention phases.

Table 2

Effect Size Calculations for Classroom B

<table>
<thead>
<tr>
<th></th>
<th>Tau-U</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Disruptive Behavior</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline/Initial Tootling</td>
<td>1</td>
<td>Large</td>
</tr>
<tr>
<td>Withdrawal/Reimplementation</td>
<td>1</td>
<td>Large</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>1</td>
<td>Large</td>
</tr>
<tr>
<td><strong>Academically Engaged Behavior</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline/Initial Tootling</td>
<td>1</td>
<td>Large</td>
</tr>
<tr>
<td>Withdrawal/Reimplementation</td>
<td>0.76</td>
<td>Large</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>0.88</td>
<td>Large</td>
</tr>
<tr>
<td><strong>Passive Off-Task</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline/Initial Tootling</td>
<td>0.37</td>
<td>Moderate</td>
</tr>
<tr>
<td>Withdrawal/Reimplementation</td>
<td>0.20</td>
<td>Moderate</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>0.28</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

AEB data in Classroom B was slightly variable during baseline with a mean of 62% (range = 52-71%) of observed intervals. The introduction of tootling increased the
level of AEB to a mean of 77% of observed intervals (range = 74-80%). During the withdrawal phase, mean level of AEB decreased to a mean of 67% (range = 63-75%) of observed intervals. The re-implementation of tootling saw mean levels of AEB increase to levels similar as those in the first intervention phase with an average of 79% of observed intervals (range = 77-83%). Consistency of data patterns was found across similar phases for AEB. Table 2 also lists the effect sizes for increasing AEB for Classroom B using Tau-U calculations, which indicate tootling had a large effect during both intervention phases.

Baseline results for POT in Classroom B showed a slight decreasing trend. In this phase, there was a mean of 9% of observed intervals for POT (range 5-13%). During the first intervention phase, POT remained stable with a mean of 7% of observed intervals (range = 6-8%). The withdrawal phase resulted in slightly variable data for POT, with a range of 3-13% of observed intervals (M = 8%). The re-implementation of the intervention in Classroom B had a mean of 7% (range = 2-12%) during observed intervals for POT, as the phase started with a decreasing trend and ended with relatively stable data. Patterns were consistent for Classroom B’s POT data. Moderate effects were found overall for decreasing POT in Classroom B based upon Tau-U effect size calculations.

Classroom C

Classroom C (Figure 1, bottom panel) exhibited disruptive behavior for an average of 30% of observed intervals during baseline sessions (range = 26-39%) with an increasing trend. During the first intervention phase, disruptive behavior had a slight decreasing trend along with a mean of 16% of observed intervals (range = 15-21%). The
withdrawal phase in Classroom C produced an increasing trend and greater variability in disruptive behavior with a mean of 26% (range = 17–38%) of observed intervals. The re-implementation of the intervention saw disruptive behavior stabilize and fall to a mean of 17% of observed intervals (range = 15-18%). Data patterns were overall consistent between baseline and withdrawal, and the two intervention phases. Effect size calculations for Classroom C are listed in Table 3. The intervention in Classroom C had a large effect on decreasing disruptive behavior in both intervention phases using Tau-U calculations.

Table 3

*Effect Size Calculations for Classroom C*

<table>
<thead>
<tr>
<th></th>
<th>Tau-U</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Disruptive Behavior</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline/Initial Tootling</td>
<td>1</td>
<td>Large</td>
</tr>
<tr>
<td>Withdrawal/Reimplementation</td>
<td>0.75</td>
<td>Large</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>0.87</td>
<td>Large</td>
</tr>
<tr>
<td><strong>Academically Engaged Behavior</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline/Initial Tootling</td>
<td>0.92</td>
<td>Large</td>
</tr>
<tr>
<td>Withdrawal/Reimplementation</td>
<td>0.95</td>
<td>Large</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>0.93</td>
<td>Large</td>
</tr>
<tr>
<td><strong>Passive Off-Task</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline/Initial Tootling</td>
<td>0.16</td>
<td>Small</td>
</tr>
<tr>
<td>Withdrawal/Reimplementation</td>
<td>0.10</td>
<td>Small</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>0.13</td>
<td>Small</td>
</tr>
</tbody>
</table>

In Classroom C, baseline results for AEB exhibited variable data with a decreasing trend. In this phase, there was a mean of 61% with a range of 48-72% during observed intervals for AEB. During the first intervention phase, AEB increased gradually before stabilizing near the end of the phase, and had a mean of 76% of observed intervals.
The withdrawal phase resulted in a decreasing trend for AEB, with a range of 57-75\% of observed intervals (M = 67\%). AEB data patterns were consistent across intervention and non-intervention phases. Re-implementation of tootling in Classroom C resulted in a high, stable level of AEB with a mean of 76\% (range = 75-78\%) during observed intervals. Tau-U effect size calculations indicate large effects on increasing AEB.

POT for Classroom C had a mean of 9\% (range = 8-13\%) of observed intervals during the baseline phase. When tootling was introduced, POT remained stable with a mean of 8\% of observed intervals, and a range between 6\% and 11\%. POT continued along the same level during the withdrawal phase similar to the previous phases, averaging 7\% of observed intervals (range = 4-8\%). During the second implementation of the intervention, POT remained relatively stable with a range between 5-8\% of observed intervals (M = 7\%). Consistency was found for POT data patterns across similar phases. Overall weighted effect sizes for decreasing POT were small for Tau-U calculations in Classroom C.

Social Validity

Teacher Ratings

Participating teachers completed the BIRS at the conclusion of the intervention (Elliott & Von Brock Treuting, 1991) to assess the social validity of tootling in their classroom. Possible scores on the BIRS ranged from 1 to 6, with higher scores signifying a greater level of acceptability for the intervention. The overall mean per item from Classroom A’s teacher was 4.57. Classroom B’s teacher endorsed an overall mean of 4.83 per item. Finally, responses from Classroom C’s teacher yielded an overall mean of
4.17 per item. Results of the BIRS suggest moderate levels of social validity of the intervention, in addition to the three factors of Acceptability, Effectiveness, and Time of Effect (see Table 4). The teachers from both Classroom A and C chose not to answer question 21 of the BIRS, “Using Tootling did not only improve the students’ behavior in the classroom, but also in other settings (e.g., other classrooms, home),” and anecdotally reported that they did not have any information to make an informed answer for this item. This item was not included in calculations for Classroom A and C, but was still included for Classroom B.

Table 4

Mean Teacher Ratings on the Behavior Intervention Rating Scale

<table>
<thead>
<tr>
<th>Factor</th>
<th>Classroom A</th>
<th>Classroom B</th>
<th>Classroom C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptability</td>
<td>4.73</td>
<td>5.27</td>
<td>4.40</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>4.33</td>
<td>4.00</td>
<td>3.67</td>
</tr>
<tr>
<td>Time of Effect</td>
<td>4.00</td>
<td>4.50</td>
<td>4.00</td>
</tr>
<tr>
<td>Overall Mean (Social Validity)</td>
<td>4.57</td>
<td>4.83</td>
<td>4.17</td>
</tr>
</tbody>
</table>

Student Ratings

Ratings by students on the CIRP also suggest that students found Tootling to be an acceptable intervention. Classroom A had 13 students return affirmative parental consent forms along with student assent, which is a 59.1% return rate (out of 22 students). Responses from Classroom A yielded an average item score of 4.93 (out of 6), and average total score of 34.54. There were 10 students (out of 24, 41.7% return rate)
from Classroom B who completed the CIRP. Classroom B’s responses also produced an average item score of 4.93 and average total score of 34.50. Classroom C had a 50% return rate (13 out of 26 students), and had an average overall score of 5.33 and average total score of 37.31. All three classrooms’ average total score on the CIRP were above the 24.5 score criterion Turco and Elliott (1986) outlined, which suggests that the students perceived the intervention was acceptable. The item average for all 36 student responses from the three classrooms combined was 5.08, and none of the individual 7 items had an average below the mid-point of the 6-point Likert scale (range = 4.31-5.67). Similarly, the combined average total score for all three participating classrooms was 35.45. Only 1 student in Classroom B scored the intervention below the 24.5 criterion with a total score of 23 (range of all students’ total score = 23-42). The Chronbach’s Alpha score calculated for this modified version of CIRP was 0.74, which suggests a satisfactory level of reliability between items (Bland & Altman, 1997).
CHAPTER IV – DISCUSSION

Research Questions

Research Question 1

The first research question of this study examined if a tootling procedure with a randomized independent group contingency in which students are individually rewarded for their positive behaviors and for submitting tootles would decrease classwide disruptive behaviors in a high school general education classroom setting. Visual analysis of the results reflect decreases in disruptive classwide behavior during both intervention phases relative to the baseline and withdrawal phases in each participating classroom. This is in line with previous tootling studies looking at the effects on disruptive behavior (Cihak et al., 2009; Lambert, 2014; Lambert et al., 2015; Lum et al., in press; McHugh et al., 2016; McHugh, 2016), but also extends the research to tootling with a randomized independent group contingency. Additionally, Tau-U effect size calculations resulted in scores that were in the large range for decreasing disruptive behavior when intervention phases were compared to non-treatment phases (i.e., baseline or withdrawal). Lum et al. (in press) is the only previous tootling study which has utilized Tau-U calculations, and found scores within the moderate to strong range; however, Lum et al. used more conservative score ranges based on NAP score ranges (Parker & Vannest, 2009). Comparing raw Tau-U scores suggests that this study had scores similar to Lum et al. (in press).

Research Question 2

The second research question examined if a tootling procedure with a randomized independent group contingency in which students are individually rewarded for their
positive behaviors and for submitting tootles would increase classwide AEB in a high school general education classroom setting. Results from the three participating classrooms displayed higher levels of AEB during tootling phases compared to baseline and withdrawal. These results using a randomized independent group contingency are similar to previous tootling studies that have investigated its effects on AEB with an interdependent group contingency (Lambert, 2014; Lambert et al., 2015; Lum et al., in press; McHugh et al., 2016; McHugh, 2016). Similar to disruptive behavior, effect size calculations based on Tau-U were considered large. Lum et al. (in press) is the only other previous tootling study to utilize Tau-U calculations to examine effect sizes for AEB, and they found effect sizes within the weak to moderate range. Although Lum et al. (in press) used a more conservative range for effect size scores, comparisons of raw Tau-U scores indicate that the present study had higher values.

Research Question 3

The goal for the third research question was to determine if a tootling procedure with a randomized independent group contingency in which students are individually rewarded for their positive behaviors and for submitting tootles would be rated as socially valid by teachers and acceptable by students in a high school general education classroom setting. Based on the results from a modified BIRS, the teachers from each participating classroom felt that the tootling intervention was an overall acceptable intervention for use in their classrooms. The teacher from Classroom B anecdotally reported that she felt the intervention had a positive effect on the behavior in the classroom, even for her students who were selected to be in an accelerated course. This replicates previous tootling research that had teachers complete the IRP-15 (Lambert, 2014; Lambert et al., 2015;
McHugh et al. (2016) and found that teachers thought the tootling intervention was acceptable. The current study additionally follows more recent tootling research that has used the BIRS with teachers who rated the intervention as overall socially valid, and agreed that the intervention was acceptable, effective, and had an adequate time to effectiveness (Lum et al., 2016; McHugh, 2016). Furthermore, student ratings on a modified CIRP indicate overall acceptance of the intervention in all three classrooms. This is similar to the high ratings found from all individual target students from Lambert (2014) and two out of three target students from McHugh et al. (2016).

Limitations

The results of this study should be viewed in light of some limitations. First, only a single high school was used. Furthermore, this high school was an agricultural school located in a rural community in a Southeastern state, and treatment effects found in the current study may not generalize to other settings. More replications should be conducted to determine if tootling with a randomized independent group contingency would be effective with different populations and settings. It is also unknown if the positive effects of this intervention generalized outside of the classroom period in which students were participating (e.g., did a student’s disruptive behavior decrease in their second block class, even if they only participated in the intervention during their first block class). Observations for this study were also only conducted for 20 minutes during each class. Although this 20-minute period was reported by the classroom teacher as what they believed was the most disruptive time during the class, this was not confirmed by any direct observations comparing different times of the class period.
The cost of rewards is also a limitation with regard to the external validity of this study. The edibles used in this study were provided mainly by the primary investigator. The time taken to purchase the edibles, as well as the monetary cost, may not be sustainable for teachers or other professionals conducting this type of intervention over longer periods of time. Although other types of rewards were used in this study (e.g., bonus points and homework passes), the teachers in Classroom A and B initially did not want to use these rewards due to concerns of artificially inflating the grades of students. The use of edibles, such as candy or chips, may also be a health concern, and could potentially have a low level of acceptability by parents, guardians, or administrators.

In addition, the three participating classrooms did not exhibit severe levels of disruptive behavior. Although all three classrooms met the screening criterion of having an observation with levels of disruptive behavior during more than 30% of intervals, the average mean of disruptive behavior only ranged from 29 to 30% of intervals during baseline and 26 to 31% of intervals during withdrawal phases across all participating classrooms. Positive intervention effects were still found with these levels of behavior, but it is unknown how effective tootling with a randomized independent group contingency would work in classrooms with higher levels of initial disruptive behavior. POT, although not specifically examined as part of a research question, was still observed and reported. No meaningful changes were found using visual analysis and effect size calculations indicated only small to moderate changes, which suggests the intervention primarily affected the disruptive behavior of students by replacing it with AEB.

Finally, Tau-U effect size calculations for all of the dependent variables also ignore the magnitude of behavior change. Calculations for this study resulted in a range
of effect size scores, but these scores do not directly signify the meaningfulness or clinical significance of the behavior change resulting from the intervention. However, considering the immediacy and magnitude of improvement, as well as the increased stability in disruptive behavior and AEB when the intervention was first implemented and even re-implemented following baseline and withdrawal phases, respectfully, changes in these behaviors appear meaningful and clinically significant. In addition, social validity data gathered from the BIRS and acceptability data from the CIRP suggest that student behavior changed during intervention phases to a level that was noticeable to both teachers and students.

Possibilities for Future Research

The use of a randomized independent group contingency with tootling should be replicated in an elementary or middle school setting to see if similar effects are found on disruptive behavior, AEB, and POT. Additionally, future studies should include POT as a dependent variable for inclusion of visual analysis and effect sizes as the current study was the first to include it in a tootling study. As mentioned above, the initial levels of disruptive behavior were not as high as other previous tootling studies (e.g., Lambert, 2014; Lambert et al., 2015; Lum et al., 2016; McHugh et al., 2016; McHugh, 2016). Examining if tootling with a randomized independent group contingency is effective with high levels of problem behaviors and other forms of disruptive behaviors than those found in this study (i.e., inappropriate vocalizations, out-of-seat, playing with objects) would help determine if this intervention is able to generalize to more types of referral concerns from teachers or school administrators.
Future research may also incorporate procedures used in previous tootling studies to observe a target student during observations to determine if the intervention is having an effect on an individual student (Lambert, 2014; McHugh et al., 2016). A component analysis can also be used to determine which components of the intervention are necessary (Ward-Horner & Sturmey, 2010), as the tootling procedure may be made even simpler or streamlined for teachers to implement. The intervention may be investigated in the context of a high school implementing SWPBS, and how tootling procedures can work in conjunction with school-wide rewards systems.

Implications for Practice

The results from this study indicate that tootling with a randomized independent group contingency can provide teachers a structured method of delivering positive reinforcement for appropriate behaviors to students in their classrooms. The use of a randomized independent group contingency reduced the number of steps teachers needed to complete each day compared to previous forms of tootling, which resulted in 100% treatment integrity levels across all participating teachers. Decreasing the number of tasks that the teacher has to complete for the intervention, in addition to effectively improving student behavior may help reduce levels of teacher stress and burnout (Aloe et al., 2014; Byrne, 1994). The current study also adds to the literature base that the type of group contingency that is used within interventions can be changed and still result in behavior changes in the intended direction (e.g., Little et al., 2015; Theodore et al., 2004). Furthermore, this study adds to the limited research on classwide interventions in high school settings (Flower et al., 2014; Kleinmen & Saigh, 2011; Lum et al., in press, Mitchell et al., 2015; Mitchell, 2014; Schanding & Sterling-Turner, 2010).
Tootling with a randomized independent group contingency incorporates both teacher and peer-based reinforcement of appropriate behavior and extinction of inappropriate behavior. In addition, the tootling paper slips alone or in combination with the other students in the class may function as discriminative stimuli to engage in appropriate behavior. This indicates that the intervention may be adapted for use in many different educational environments, including a high school setting, either alone or in combination with other SWPBS procedures at a Tier I or Tier II level. The inherent positive focus of this intervention allows it to fit seamlessly within SWPBS procedures. Overall, the intervention provides teachers with an efficient method for applying sound behavioral practices within their classroom to decrease disruptive behaviors and increase academically engaged behavior.
APPENDIX A – Institutional Review Board Approval

THE UNIVERSITY OF
SOUTHERN MISSISSIPPI

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional.review.board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 15091803
PROJECT TITLE: Texting with a Randomized Independent Group Contingency in a High School Setting
PROJECT TYPE: New Project
RESEARCHER(S): John Lum
COLLEGE/DIVISION: College of Education and Psychology
DEPARTMENT: Psychology
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 10/20/2015 to 10/19/2016

Lawrence A. Hosman, Ph.D.
Institutional Review Board
Title of Study: Tootling with a Randomized Independent Group Contingency in a High School Setting

Purpose of Study: Your permission is requested for participation in a study that is investigating the effects of an intervention called tootling for decreasing classwide disruptive behaviors and increasing academically engaged behaviors.

Who can participate: Students in high school (grades 9-12) and their teachers can participate in the study. Additionally, students must exhibit behavior that is inappropriate and/or disruptive to the classroom.

Methods and Procedures: Upon agreeing to participate, you will be contacted by the primary researcher to obtain information regarding your class’ overall disruptive behaviors and to determine target behaviors to be observed. If the criterion for inclusion is not met, you may request services through an alternative intervention. If the criterion of 30% classwide disruptive behavior is met, you will be asked to implement the tootling intervention. The primary researcher will train you in implementing the intervention using all necessary materials. You will also be given instructions about how to train the students on the tootling intervention. In tootling, the students will privately write classmates’ appropriate behaviors on paper slips throughout the class period and place them in a designated box for collection. In consultation with the primary researcher, you will select the target behaviors to be observed. At the start of each class during the intervention, you will provide the students with specific slips of paper, and encourage them to write tootles. Students will be told that if a tootle written about them is randomly drawn at the end of the day, they will earn a reward. They may also earn a reward if they are drawn from a container that includes the names of individuals who submitted tootles.

After the intervention has been running for a period of time, the primary researcher will ask you to briefly stop the intervention in your classroom. This withdrawal phase is to check if the intervention is in fact causing behavior in the classroom to change. Although this withdrawal phase typically only continues for a few days, if at any time you would like to resume the intervention earlier, please contact the researcher to restart tootling immediately.

The researcher and trained graduate students will conduct observations during the previously decided time when disruptive behavior is most likely to occur during a learning activity. Disruptive behaviors of concern and appropriate behaviors you wish to improve will be observed and recorded.

Benefits: Your benefits by participating in this study may include observed improvements in student behavior, and learning a unique intervention designed to improve student behavior.
Risks and Discomfort: There are few anticipated risks associated with participation. Initially, you may not be comfortable with the time required to implement toiletting in your classroom. You also may not feel comfortable implementing an unknown and new procedure in your classroom. However, you will be provided with training by the primary investigator as well as any additional materials needed for implementation. The primary investigator will also be available to answer any questions you may have. Throughout the experiment, your students’ behavior will be monitored. Problem behaviors may also increase again to pre-intervention levels during the withdrawal phase. In the event that undesired and unanticipated effects arise (e.g., increase in disruptive behaviors during the intervention), modifications or termination of procedures will occur, and you and your students will be provided with other services.

Confidentiality of Records: All interviews, observations, and other information obtained during this study will be kept strictly confidential. Your name, students’ names, and other identifying information will not be disclosed to any person not connected with this study. Results from this research project may be shared at professional conferences or published in scholarly journals; however, all identifying information will be removed from presentations and/or publications.

Voluntary Participation: Your participation in this study is voluntary. You may withdraw from this study at any time without penalty, prejudice, or loss of benefits. Whereas no assurance can be made concerning results that may be obtained (as results from investigational studies cannot be predicted), the primary investigator will take every precaution consistent with the best scientific practice.

Teacher’s Consent: If you agree to participate, please read, sign, and return the following page. Please keep this letter for your records. If you have any questions about this study, please contact John Lum or Dr. Daniel Tingstrom (Phone: 601-266-5255; Email: john.lum@eagles.usm.edu; daniel.tingstrom@usm.edu). This project and this consent form have been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the Institutional Review Board Office, The University of Southern Mississippi, Box 5147, Hattiesburg, MS 39406-5147; (601) 266-6820.

Sincerely,

____________________________
John Lum, B.A., B.Ed.
School Psychologist-in-Training
Department of Psychology
The University of Southern Mississippi

____________________________
Daniel H. Tingstrom, Ph.D.
Supervising Licensed Psychologist
MS License #29-422
Department of Psychology
The University of Southern Mississippi
I have read the above documentation and consent to participate in this project. I have had the purpose and procedures of this study explained to me and have had the opportunity to ask questions. I am voluntarily signing this form to participate under the conditions stated. I have also received a copy of this consent. I understand that I will be asked to implement a classroom-based intervention, and observations will be conducted in the classroom on the students’ behavior. In order to do so, I will be required to complete a consultation session, to implement the intervention, and to complete a structured questionnaire to assess my satisfaction with the intervention. In addition, I will be trained on all of the intervention procedures by the primary researcher. I further understand that all data collected in this study will be confidential and that my name and the students’ names will not be associated with any data collected. I understand that I may withdraw my consent for participation at any time without penalty, prejudice, or loss of privilege.

___________________________  ______________________
Signature of Teacher           Date

___________________________
Signature of Witness
APPENDIX C – Parental Consent Form for the Children’s Intervention Rating Profile

Parental Permission Requested

Overview
Your child’s teacher has been implementing a new classroom management strategy over the past several weeks as part of a local research project. Your child is being asked to complete a brief survey about the intervention to determine if he/she liked the intervention. The survey will take 1-2 minutes to complete and should not cause any discomfort to your child.

If you elect for your child not to complete the survey, they will be asked to complete other school work while his/her classmates complete the questionnaire. Your child’s academic standing will not be affected by completion or non-completion of the survey. No identifying information (such as your child’s name) will be collected.

Background Information
This survey will be used by researchers at The University of Southern Mississippi to evaluate the acceptability and effectiveness of a classroom management intervention. Your child’s classroom teacher utilized the intervention over the past several weeks to determine its effects on academic engagement and disruptive behavior. This research is intended to improve the services we can give children in public schools and is not associated with agency other than The University of Southern Mississippi and your child’s school district.

Additional Information
A copy of the survey will be made available to you upon request. Students returning a signed copy of this form will be provided with a small reward. Rewards will be provided for any student returning the form regardless of parental decision of consent.

If you have questions or concerns, please contact John Lum or Dr. Daniel Tingstrom. Phone: 601-266-5255; Email: john.lum@eagles.usm.edu; daniel.tingstrom@usm.edu
## Consent

By signing this portion of the consent form, I acknowledge that I have read the information in this form and **I agree to allow** my child to take part in this brief survey.

<table>
<thead>
<tr>
<th>Child’s Name</th>
<th>Parent/Guardian’s Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>--------------</td>
<td>------------------------------</td>
</tr>
</tbody>
</table>

**Relationship to Child**

Or

By signing this portion of the consent form, I acknowledge that I have read the information in this form and **I will not allow** my child to take part in this survey.

<table>
<thead>
<tr>
<th>Child’s Name</th>
<th>Parent/Guardian’s Signature</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

**Relationship to Child**
APPENDIX D – Teacher Demographics Form

**Teacher Demographics:**

Age ____________
Number of years teaching ____________
Race ____________
Gender ____________
Highest Degree earned _______________________

**Classroom Demographics:**

Number of students in the class _________
Number of: Males _________ Females _________
Number of: African-American _____ Asian _____ Caucasian _____ Hispanic _____

Circle one:  General Education     Special Education Inclusion

Number of SPED students in your classroom: __________
Please list the disability categories of each child in SPED (do not include names or any other identifying information):

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
APPENDIX E – Script for Tootling Training Session

Training Steps

1. Indicate the need to change the focus of behaviors towards *positive* instances.

   **Say:** In school, we often only focus on the bad things students do. Take a few seconds to think of all of the good things a teacher has told you about your behavior, and then think about all of the bad things a teacher has told you about your behavior.

   *(Pause for a few seconds)* I am guessing most of you have heard more negative comments about your behavior than positive ones. I want to change that in this classroom. I would like to make sure everyone is recognized for the good things they do, big and small.

2. Introduce the Tootling procedure.

   **Say:** We are going to start a procedure where you will report and write down when you see another student doing something good or helpful.

   While I’m explaining this now, we will call it giving a ‘positive comment,’ but we will vote on a specific name when I’m finished explaining how this works.

3. Start a discussion with the class, asking for specific examples of prosocial behavior in the classroom. Start the discussion by giving an example. Also include some unacceptable examples.

   **Say:** For example, a good positive comment would be “Mark helped Travis pick up his pencil” or “Anna raised her hand before speaking” or “Tom was working quietly on his worksheet.” An incorrect ‘positive comment’ would be if there is no name mentioned for the student doing the good behavior or if what’s written down is not a specific example of a good behavior, like “The front row has a worksheet.”

4. Teach the class what to write on the paper slips.

   **Say:** On the left side of each paper, you will write the student’s name and what he or she did that was good or helpful. On the right side, you will write your own name.

5. Hand out the paper slips and have each student write a practice tootle on a paper slip.
I want everyone to write one positive comment on a paper slip for practice. When you’re finished, I will collect them and read it out loud so we can practice some more together.

**Praise acceptable examples and provide feedback for inappropriate examples.**

6. Explain the procedure.

**Say:** Every day I will give each of you a paper slip on your desk. Each time you see a classmate doing something good or helpful, I want you to write it down. Remember, when you write a positive comment be sure to put the person’s name and what they did, and then put your name on the other side.

7. Tell the class that they need to put the two sides of the paper slip into two differently marked containers.

**Say:** Tear the paper slip along the line to separate the two sides. Put the left side with the comment about another student in this container (hold up only the tootling collection container). Then put your name in the second ‘submitters’ container (hold up the submitters container).

8. Let students know they can submit their paper slips during transition times.

**Say:** You can put your paper slips in these containers during your free time between assignments or activities. For example, this means you will have to hold on to your paper slips until it’s time to switch from bellwork to the start of the lesson, or until class ends. Then you may get up and put your positive comments and name in the containers.

9. Explain that this is anonymous, and that they retrieve another paper slip after handing one in.

**Say:** This is completely anonymous, so do not write your own name down anywhere on the left side – only the name of the person you are writing a positive comment for. Make sure your name only goes on the right side. Once you hand in a positive comment in the containers, you should pick up another paper slip and bring it back to your desk.

10. Tell the class that you will randomly draw five names each day to be rewarded - three from the positive comments and two from the submitters’ container.

**Say:** This is a competition. At the end of each class, I will draw three positive comments. Whoever the positive comments are written about will get to pick a reward. I also want to reward the students who take the time to submit positive
comments, so I will also draw two names from the submitters container. The only catch is that you can only get one reward from each container in one day. You can get two rewards, but only if your name is drawn once from both containers.

11. Tell the class the rewards that are available (e.g., bonus points, homework pass, small drinks, or snacks). Ask the class to come up with additional reward ideas that can be included in the future.

12. Vote on a name for the tootling procedure.

**Write on the board:** Brags, Compliments, Hollas, Kudos, Positive Comments, Shout Outs, Tootles

**Say:** We will now vote on what were are going to call this procedure. Here are seven choices I have thought of: Brags, Compliments, Hollas, Kudos, Positive Comments, Shout Outs, or Tootles. Are there are any other suggestions?

Have students anonymously vote on the choices. After tallying the results, announce the winning name.

APPENDIX F – Tootle Paper Slip

Tootle Card

Who: ______________________
Did: ______________________

__________________________
__________________________

Your Name: __________________

APPENDIX G – Behavior Intervention Rating Scale

Please respond to each of the following statements thinking about the intervention you implemented (i.e., Tootling). Please then circle the number associated with your response. Be sure to answer all statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tootling was an acceptable intervention for the students’ problem behavior(s).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
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<tr>
<td>Most teachers would find tootling appropriate for other classroom behavior problems.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Tootling proved effective in helping to change students’ problem behavior(s).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I would suggest the use of tootling to other teachers.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>The behavior problems were severe enough to warrant use of this intervention.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Most teachers would find tootling suitable for the classroom use described.</td>
<td>1</td>
<td>2</td>
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<td>5</td>
<td>6</td>
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<tr>
<td>I would be willing to use tootling again in the classroom.</td>
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<td>2</td>
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<tr>
<td>Tootling did not result in negative side effects for the students.</td>
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<td>2</td>
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<tr>
<td>This intervention would be appropriate for a variety of students.</td>
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<td>2</td>
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<td>Tootling was consistent with interventions I have used in the classroom setting.</td>
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<td>2</td>
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<tr>
<td>Tootling was a fair way to handle the students’ problem behavior.</td>
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<td>2</td>
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<tr>
<td>Tootling was reasonable for the problem behaviors described.</td>
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<tr>
<td>I liked the procedures used in tootling</td>
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<td>Tootling was a good way to handle the students’ problem behavior.</td>
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<td>Overall, tootling was beneficial to the students.</td>
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<td>Tootling quickly improved the students’ behavior.</td>
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<td>Tootling produced a lasting improvement in the students’ behavior.</td>
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<td>Tootling improved the students’ behavior to the point that it did not noticeably deviate from other classmates’ behavior.</td>
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<tr>
<td>Soon after using Tootling, the teacher noticed a positive change in the problem behavior.</td>
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<td>The students’ behavior remained at an improved level even after Tootling was discontinued.</td>
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<tr>
<td>Using Tootling did not only improve the students’ behavior in the classroom, but also in other settings (e.g., other classrooms, home).</td>
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<tr>
<td>When comparing the students with other well-behaved peers before and after the use of the intervention, the students’ and the peers’ behavior more alike after using the intervention.</td>
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<tr>
<td>The intervention produced enough improvement in the students’ behavior so the behavior was no longer a problem in the classroom.</td>
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<tr>
<td>Other behaviors related to the problem behavior were also likely improved by the intervention.</td>
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**APPENDIX H – Children’s Intervention Rating Profile**

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<tr>
<td>[Tootling]* was fair.</td>
<td>1</td>
<td>2</td>
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<td>[Tootling] was easy.</td>
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<tr>
<td>[Tootling] did not cause problems with my friends.</td>
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<td>[Tootling] is a good way to handle problem behavior in the classroom.</td>
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<tr>
<td>I think other students would like [Tootling].</td>
<td>1</td>
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<tr>
<td>I like [Tootling].</td>
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<td>[Tootling] helped me do better in school.</td>
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* “Tootling” was replaced with the name that won by the students’ vote in each classroom during the training phase.


APPENDIX I – Problem Identification Interview Form

Student: _____________________  Teacher (s): _______________________________

School: _____________________  Age: _____  Sex:  Male  Female

Date: _____________________

1. Describe the class’ behavior problems in order of severity and give examples.

2. How manageable is the problem behavior?

3. In what settings does the problem behavior occur?

4. Goals for the problem behavior (what would you like to see happen)

5. Tell me about what happens before the behavior occurs. After the behavior occurs?

6. Intervention attempts, degree of success, reasons for failure.
   a. What procedures have you tried in the past to deal with this problem behavior?
   b. What, if anything, have you done to deal with similar behavior problems in the past?
   c. What’s worked? What hasn’t?

7. Rules and typical procedures carried out in the classroom (constraints and assets).

8. Reinforcers - used now and potentials for future (e.g., praise, activities, or notes sent home).

9. Any data collected presently?

10. Ask teacher for any additional comments or questions.


APPENDIX J – Observation Form

Classroom: ____________________  Date: ____________________
Phase: _____________________  Observer Initials: ________________

<table>
<thead>
<tr>
<th>Interval</th>
<th>1.1</th>
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<td>____ / 120 = ____%</td>
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<td>Passive Off-Task:</td>
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<td>____ / 120 = ____%</td>
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<td>Academically Engaged Behavior:</td>
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<td>____ / 120 = ____%</td>
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APPENDIX K – Teacher Training Script Procedural Integrity Checklist

1) Introduction of Tootling:
   - Give the classroom teacher the “Script for Tootling Training Session”
   - Explain what a “tootle” is

2) Explanation of each step of the tootling procedure:
   - Step 1 – Change focus to positive behaviors
   - Step 2 – How to define/introduce the intervention
   - Step 3 – Give appropriate and inappropriate examples of tootles
   - Step 4 – How to properly write a tootle
   - Step 5 – Have students practice writing a tootle
   - Step 6 – Explain the daily tootling procedure
   - Step 7 – How to submit the two pieces of a tootle
   - Step 8 – Students can submit during transition times
   - Step 9 – Explain that tootles are anonymous
   - Step 10 – How rewards will be drawn
   - Step 11 – Rewards available and student requests
   - Step 12 – Name the intervention

3) Practice the tootling procedure:
   - Allow the teacher to practice each step of the teacher script.
   - Provide feedback on any errors or omitted steps.

4) Questions & Answers:
   - Ask the teacher if there are any questions regarding the procedure.

Number of steps completed: _______ / 17  =  _______%

Date: ______________________

Observers’ initials: ____________  ____________


81
APPENDIX L – Integrity for Student Tootling Training

Date: __________________________  Observer: __________________________

<table>
<thead>
<tr>
<th>Training Steps</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Introduction indicating a shift to a ‘positive’ focus</td>
<td></td>
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<tr>
<td>2 Defines Tootling</td>
<td></td>
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<tr>
<td>3 Class discussion of examples and non-examples</td>
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<tr>
<td>4 Teach students how to write on paper slips</td>
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<tr>
<td>5 Have each student write a practice tootle</td>
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<tr>
<td>6 Explain tootling procedures</td>
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<tr>
<td>7 Explain how to submit tootles</td>
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<td></td>
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<tr>
<td>8 Tell students when they can submit tootles</td>
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<tr>
<td>9 Remind students tootling is anonymous</td>
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<td></td>
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<tr>
<td>10 How rewards are given out</td>
<td></td>
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<tr>
<td>11 Ask for input on rewards</td>
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<tr>
<td>12 Vote on a new name for “Tootling”</td>
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Number of steps competed: /12

Percentage of steps completed: ______
APPENDIX M – Treatment Integrity for Tootling

*To be completed by the classroom teacher daily*

Date: ___________________ Teacher: _____________________

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<tr>
<th>Tooting Steps</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td><strong>Beginning of the Period/Class</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Provide paper slips to students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Remind students to tootle</td>
<td></td>
<td></td>
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<tr>
<td><strong>During Transitional Times</strong></td>
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<tr>
<td>3 Allow students time during transitions to put tootles in box</td>
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<tr>
<td><strong>End of the Period/Class</strong></td>
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<tr>
<td>4 Draw 3 tootles and 2 submitters to reward students</td>
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Number of steps competed: \(\frac{1}{4}\)

Percentage of steps completed: _______
APPENDIX N – Treatment Integrity for Experimenter Observations

Classroom: _____________

Date: _______________  Observer: ____________________

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<tr>
<td>1 Paper slips visible on the students’ desks</td>
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<tr>
<td>2 Both tootling collection containers visible</td>
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Number of steps competed: 1/2

Percentage of steps completed: _______
APPENDIX O – Withdrawal Integrity for Experimenter Observations

Classroom: ________________

Date: ________________ Observer: ____________________

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<tr>
<td>Paper slips NOT visible on the students’ desks</td>
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<tr>
<td>Tootling collection containers are NOT visible</td>
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</table>

Number of steps competed:  /2

Percentage of steps completed: ______
REFERENCES

_Educational Research Review, 12_, 30-44.


Bradshaw, C. P., Mitchell, M. M., & Leaf, P. J. (2010). Examining the effects of schoolwide positive behavioral interventions and supports on student outcomes
results from a randomized controlled effectiveness trial in elementary schools.


Cashwell, T. H., Skinner, C. H., & Smith, E. S. (2001). Increasing second-grade students’ reports of peers prosocial behaviors via direct instruction, group reinforcement,


