

Summer 2019

Peer-Mediated Tootling with a Standardized Form and a Mystery Motivator in High School Classrooms

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PEER-MEDIATED TOOTLING WITH A STANDARDIZED FORM AND A
MYSTERY MOTIVATOR IN HIGH SCHOOL CLASSROOMS

by

Sarah Joan Wright

A Dissertation
Submitted to the Graduate School,
the College of Education and Psychology,
and the Department of Psychology
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

August 2019

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MYSTERY MOTIVATOR IN HIGH SCHOOL CLASSROOMS

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2019

Published by the Graduate School



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ABSTRACT

PEER-MEDIATED TOOTLING WITH A STANDARDIZED FORM AND A MYSTERY MOTIVATOR IN HIGH SCHOOL CLASSROOMS

by Sarah Joan Wright

August 2019

Peer-mediated tootling with a standardized procedure was implemented along with a mystery motivator component to determine the effects on academically engaged and disruptive behavior in three general education high school classrooms. The intervention used an A/B/A/B design across all classrooms. The goal of the study was to determine if these components would increase academically engaged behavior and decrease disruptive behavior. Students were trained on tootling procedures with a standardized format, which included reporting on peers' positive, prosocial behavior on a premade tootling slip with various behaviors that they could select as being observed, reading five random slips aloud, totaling the number of slips to determine if the class reached its goal, and then drawing out of the chance envelope to determine if the class earned the reward for the day. As opposed to traditional tootling where a teacher facilitates the components of the intervention, a student appointed interventionist fulfilled the role instead. The results indicated that increases in academically engaged behavior and decreases in disruptive behavior were evident in two of the classrooms, while the third classroom had inconclusive data during the withdrawal and re-implementation phases. Social validity measures indicated acceptability in effectiveness and utility by the teachers and acceptability by the students. Overall, this study provides evidence for the use of peer-mediated standardized tootling in conjunction with a mystery motivator in

high school classrooms; however, more research is needed to determine which, if any, of these additional components are necessary for future tooling studies.

ACKNOWLEDGMENTS

My biggest thanks to Dr. Tingstrom for the supervision of a successful proposal, data collection, and defense of this document prior to my internship year. I could not have asked for a better supervisor during my graduate school training. Thank you for always turning around drafts so quickly, your strict attention to detail, and support throughout the entire process. This project would not have been the same without you, thank you.

I also would like to thank my committee members, Drs. Dart, Dufrene, and Radley for their guidance specifically during my proposal and defense. I am grateful for such supportive faculty that sought to grow me as a researcher.

I would also like to acknowledge John Lum, Morgan McCargo, Stefanie Schrieber, Kate Helbig, and Rob Derieux for their assistance in collecting data, providing their time, and encouragement throughout the implementation of the study. I am thankful for equally supportive colleagues.

DEDICATION

I want to thank my parents for their overflowing support, love, prayers, encouragement, grace, patience, and kindness throughout my four years at USM. I appreciate everything you all have done to help me through my doctorate degree and it would not have been possible without either of you. Thank you for pointing me to Jesus!

I additionally would like to thank other family members: John and Laura Wright, Kurt and Lori Uhen, and my grandpa. Thank you for your cards, prayers, checking in, and support throughout this project. I am grateful for each of you.

My sincere thanks to John Lum for his continual friendship throughout graduate school. Even after completing your own time at USM, your phone calls and text messages of encouragement meant so much. So thankful to have been guided by, and to walk in the steps of you during this time. I wouldn't have found tootling without you!

I would also like to dedicate this project to my graduate school best friend, Kayla Bates-Brantley that saw me through my highs and lows of this program and this project. Thank you for always listening, encouraging, challenging me, eating Cracker Barrel country dinner plates, and drinking Sonic limeades with me. You are a true gem.

Thankful for the provision of dear friendship during this time as well: Katy Flinn, Aubry Daman, Heather Whipple, Katie Holthouser, Lauren Tom, Beth Fortenbery, Jessica Moffett, and Leslye Burnam. I couldn't have done it without you all!

Finally, a very grateful dedication to James Harry. You are more to me than words can express in gratitude. Thank you for who you are and the role you have played in my life during this final year and final project of my doctorate degree. The Lord's provision of you in my life was timed to perfection. You are such a gift!

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LIST OF ABBREVIATIONS

<i>AEB</i>	Academically Engaged Behavior
<i>DB</i>	Disruptive Behavior
<i>BIRS</i>	Behavior Intervention Rating Scale
<i>CIRP</i>	Children Intervention Rating Profile
<i>PII</i>	Problem Identification Interview
<i>SPED</i>	Special Education

CHAPTER I - INTRODUCTION

Teachers are responsible for their students' acquisition of academic skills (e.g. reading, writing, math), effectively instructing their students, fostering their students' academic achievement, and managing class-wide behavior. Based on the amount of demand that is placed on a teacher, disruptive behaviors are found to be correlated with teacher burnout in the field (Aloe, Shisler, Norris, Nickerson, & Rinker, 2014).

Unfortunately, for the teachers that persist in the education field, despite the inappropriate behaviors, instruction time is lost. Teachers attempt to remediate those issues (Riley, McKevitt, Shriver, & Allen, 2011) can also create decreases in overall academic achievement (Najaka, Gottfredson, & Wilson, 2001). Robers, Kemp, Rathbun, and Morgan (2014) found that 40.7% of teachers in the United States public school system indicated that disruptive behaviors interrupted instruction time. Additionally, there is a positive correlation between students' disruptive behaviors and higher rates of negative outcomes later in life (Trentacosta, Hyde, Shaw, & Cheong 2009).

A variety of strategies have been attempted to combat these misbehaviors in the classroom. Pas, Cash, O'Brennan, Debnam, and Bradshaw (2015) found that teachers who had concerns with noncompliance utilized reactive and disapproving behavioral techniques to mitigate the problem; however, the use of reactive strategies is correlated with increases in stress level and decreases in student academically engaged behavior, which is the opposite of the desired outcome (Clunies-Ross, Little, & Kienhuis, 2008). Government efforts have been made to establish a shift in how behavioral issues are approached. Two educational mandates, the No Child Left Behind Act (2001) and the Individuals with Disabilities Education Improvement Act (2004), create a focus on the

need for implementation of empirically-based preventative strategies rather than the use of reactionary methods. Following these mandates, two primary evidence-based systems materialized, Response-to-Intervention (RtI; National Center on Response To Intervention, 2012) addressing academic concerns and Positive Behavior Interventions and Supports (PBIS; National Technical Assistance Center on Positive Behavioral Interventions and Supports, 2011) addressing behavioral concerns.

PBIS is a proactive school-wide intervention utilized to shift the focus from negative to positive behavioral expectations through systematic measures (Bradshaw, Koth, Bevans, Ialongo, & Leaf, 2008). Sugai and Horner (2000) reintroduced the concept which is largely based on principles of applied behavior analysis. PBIS emphasizes that schools clearly articulate the expectations and rules that students are to follow, and teachers and staff are to reinforce those appropriate behaviors (Horner et al., 2004). Additionally, with successful implementation of PBIS, teacher burnout rates were significantly lower than national norms (Ross, Romer, & Horner, 2012). Scott and Barrett (2004) found that time and money, an assumed value based on administrators being able to attend to other responsibilities and not as much on work surrounding an office discipline referral, were also saved through the use of PBIS. This research indicates the positive effects of a paradigm shift from reactive to proactive measures. The need for attention to be given to positive, appropriate behaviors can ultimately lead to a more conducive learning environment for all. One way to promote this positive change may be through peer-mediated interventions, reviewed in the following section. Peer-mediated interventions are beneficial because they are resource efficient, and allow for teachers to focus more on instruction than distractions with other efforts to manage student and

classroom disruptive and inappropriate behavior.

Peer-Mediated Interventions

Peer-mediated interventions can be a highly effective method to combat behavior problems in the classroom due to the abundant availability of resources (i.e. students) they have to implement the techniques while simultaneously reducing the role of the teacher (Dufrene, Noell, Gilbertson, & Duhon, 2005). Peer-mediated interventions allow teachers to focus on the content and instruction that they are providing and eliminates distraction to their responsibility within the classroom. Bowman-Perrott, David, Vannest, Williams, Greenwood, and Parker (2013) conducted a meta-analysis to determine the effects of peer-mediated efforts with academic improvement. The meta-analysis found a moderate effect for academic improvement, yet a major limitation in the literature base was that studies lacked treatment integrity data, thus it could not be investigated as a moderator for the outcomes of the peer-mediation. Skinner, Neddenriep, Robin, Ervin, and Jones (2002) also noted the difficulty a teacher has directly attending to each student's needs because of the multiple demands they are managing in a room full of students. Peer-mediated interventions have been found to be successful for academic purposes across populations from elementary school, students with ADHD, and high school students in special education (Dufrene et al., 2005; DuPaul, Ervin, Hook & McGoey, 1998; Fuchs, Fuchs, & Kazdan, 1999).

This specific type of intervention has also proven effective for behavioral concerns in the classroom. Ganz, Heath, Lund, Camgargo, Rispoli, Boles, and Plaisance (2012) investigated three communicative behaviors for one target student as mediated through a peer. The target student had rulings of autism, an intellectual impairment, and

speech-language impairment. The results indicated gains were made in communication with the trained peer, however the intervention did not generalize to other students, which is necessary that future research further assess. A meta-analysis conducted by Dart, Collins, Klingbeil, and McKinley (2014) suggested that peer-mediated interventions are moderately effective at influencing the behavior of other peers in a positive way. Another meta-analysis by Kaya, Blake, and Chan (2015) found positive results as well for peer-mediated interventions on individuals with emotional and behavioral disorders in elementary, middle, and high school students. Additionally, Christensen, Young, and Marchant (2004) found positive results with elementary school students implementing peers' positive behavior support plans as based on their functional behavior assessments with immediate gains in appropriate behavior that were maintained as the schedule of reinforcement was thinned. Jones, Young, and Friman (2000) provided evidence for increases in prosocial behaviors with high school students through the use of public praising with the positive peer reporting intervention. Harper, Symon, and Frea (2008) investigated how a typically developing peer could help improve social skills of two elementary school students. The target behaviors included turn taking and social initiations made during recess. Results from the study indicated that the peers were able to help improve the social skills of the two target students with autism. Hughes and colleagues (2013) conducted a study involving high school students with autism and typically developing peers who implemented a goal setting intervention. Three peers were selected to deliver the intervention with one individual diagnosed with autism. As with previous studies mentioned, it was evident that the peers were able to implement the intervention as taught and improvements were made in the target social behaviors for the

individual with autism. These studies all provide evidence for the use of student influence on their peers' behavior in the classroom. The tootling intervention, which is another example of an intervention that can be used to create a shift in behavior change through peers, is reviewed below. Based on the current literature base, it is evident that peer-mediated interventions are effective and can alleviate teacher's from the implementation of an intervention's procedures. Tootling is a peer-mediated intervention that allows for minimum teacher involvement and has shown to provide positive influences on classwide behavior (i.e. increases in appropriate and academically engaged behaviors and decreases in disruptive behaviors).

Tootling

Skinner, Skinner, and Cashwell (1998) developed tootling, a peer-based class-wide intervention in which students reported on other peers' positive, prosocial behaviors. The name of the intervention is based on a positive variation of tattling that often occurs in the classroom and is a derivation of the idiom, "tooting your own horn." The premise of the study was that students would anonymously write tootles on positive behaviors they witnessed their peers exhibiting. Each student in the classroom had access to note cards where they were able to record their tootles and then all tootles were collected in a container on the teacher's desk (Skinner et al., 1998). At the end of the day, the teacher would randomly choose five tootles to read aloud to the class.

This study by Skinner and colleagues (1998) was replicated by Skinner, Cashwell, and Skinner (2000) with the additional inclusion of a group goal. Skinner and colleagues (2000) utilized an interdependent group contingency to determine if the amount of tootles would increase. The researchers implemented an A/B/A/B withdrawal design in a fourth-

grade general education classroom. Before the intervention began a class-wide preference assessment was administered to determine a desired reinforcer if the class goal was met. Baseline consisted of the tootling procedures being introduced and the teacher explaining what tootling was and what constituted an appropriate tootle. During baseline there was no contingency in place nor a goal for the class to achieve. Each day the students had a note card on their desk that followed a “who,” “what,” and “for whom” format, which prompted their awareness of positive behaviors exhibited by their peers. The intervention phase officially began once there was a goal and contingency in place. An initial goal was randomly set at 100 class-wide tootles to earn access to their preferred activity (i.e. extra recess time). The students received performance feedback at the conclusion of each day as the teacher updated a poster board, which displayed their progress toward their goal. The withdrawal phase was implemented after the second class-wide goal was met, and tootling continued; however, no contingency was in place during this phase. Finally, the intervention was implemented for a second time and the goal increased to 150 tootles for access to a movie day.

The results of the Skinner and colleagues (2000) study yielded variable effects. During the baseline and initial intervention phase the amount of tootles collected was variable, whereas during the reversal phase the tootles collected were near zero levels throughout the phase. The final intervention phase produced a higher level of tootles than in the initial intervention phase, although variability was still present in this phase. A number of limitations need to be addressed when considering the implications of these results. First, the authors noted a potential confound in the study based on the principal making a school-wide announcement in regards to an issue with unreturned library books

and a consequence of no recess followed. The researchers hypothesized that this consequence may have resulted in decreased motivation to submit tootles since their preferred reward was no longer accessible. Second, the authors did not report any procedural or treatment integrity, suggesting the intervention may not have been trained or implemented as outlined by the protocol. Regardless, the study indicated that with a group contingency and performance feedback, students increased the number of tootles.

Cashwell, Skinner, and Smith (2001) investigated tootling with attempts to provide a clearer demonstration of the increase of tootles than those produced by Skinner and colleagues (2000). The researchers implemented an A/B/A/B design in a second-grade general education classroom with phases identical to Skinner and colleagues (2000). Again, variable results were concluded across phases; however, this study demonstrated a clear relationship during intervention. This suggested that with the use of an interdependent group contingency and performance feedback toward the class goal, behavior change was made evident comparable to when these components were not in place. This study established that tootling could increase with these components in place; however, it was still unknown what effects this specific procedure had on students' actual behavior in the classroom.

Following the Cashwell and colleagues (2001) study, the tootling literature had no additional contributions until Cihak, Kirk and Boon (2009). The researchers in this study investigated whether the tootling intervention had an effect on disruptive behavior rather than just increasing the number of tootles produced. The intervention was implemented in a third-grade general education classroom using an A/B/A/B design. Researchers defined the dependent variable, disruptive behavior, as talking out, out of seat, and any motor

behavior that interfered with the task demand. The behavior was measured through teacher observation. During baseline, the classroom teacher was given a bracelet with initials of all students and recorded the frequency of individual student disruptive behavior. Students were trained by the teacher following baseline data collection and were required to write three appropriate tootles to exhibit proficiency in the skill.

When the intervention began, note cards were distributed on students' desks each morning and the teacher reminded the students of the tootling procedure. The initial goal set was 75 tootles and, when reached, students earned access to extra recess time. All tootles were collected in a container on the teacher's desk in which students placed their tootles during transition times. At the end of the day, the teacher read aloud five randomly selected tootles and counted the total number received that day. Tootling was withdrawn after five sessions with a return to baseline for three sessions. The intervention was reintroduced until its completion five days later. Overall, data demonstrated a clear distinction between baseline and intervention phases with decreases in teacher-observed class-wide disruptive behaviors. A few limitations exist with this study. First, the teacher primarily recorded the disruptive behaviors, who may have been vulnerable to distractibility due to her focus on instruction and bias toward occurrence of disruptive behavior in specific students. Second, the study contained multiple components during the intervention phases, making it difficult to delineate the primary component contributing to the behavior change. Regardless, the researchers utilized the tootling intervention in a novel capacity through the investigation of its effects on actual class-wide disruptive behavior.

Lambert, Tingstrom, Sterling, Dufrene and Lynne (2015) extended Cihak and colleagues (2009) study through the evaluation of tootling's effects on disruptive and appropriately engaged behaviors as well as having independent observers collect the data. These alterations addressed one of the limitations in the previous study and contributed a novel investigation of tootling with regard to observing appropriate behaviors as well. Typical tootling procedures were implemented (i.e. interdependent contingency, performance feedback toward goal, note cards on student's desks, and container for collecting tootles) through an A/B/A/B design with a multiple baseline element and follow-up phase. The intervention was utilized in one fourth- and one fifth-grade general education classroom. Researchers set the initial tootling goal at 65 for each classroom and subsequently increased the goal each time it was met.

Behaviors were recorded by independent observers using a 10 second momentary time sampling recording procedure during 20-minute observations. The primary dependent variable, disruptive behavior, was defined as playing with objects, inappropriate vocalizations, and out of seat. The secondary dependent variable, appropriate behavior, was defined as attending to or engaging in the academic task presented. Similar to previous studies, the intervention was implemented for multiple sessions and withdrawn for a time to allow the researchers to determine if a functional relationship existed between the independent and dependent variables. During the withdrawal phases, all associated tootling materials were removed (e.g. container, notes cards on desks, etc.). Observations continued two weeks after the intervention for a follow up phase and both teachers were freely implementing the intervention. Results from the study revealed class-wide decreases in disruptive behavior and increases in

appropriate behaviors during the intervention phases when compared to baseline and withdrawal phases. Teachers rated the intervention highly acceptable and continued its usage during follow-up observations despite no obligation to do so. Because of the multiple components of the intervention, it was not possible to determine the specific component or components contributing to the behavior change.

Lambert (2014) extended Lambert et al. (2015) by including older elementary and middle school students and also focused on the effects of tootling on a specific target student in the classrooms. Previous studies investigated tootling in lower elementary school students and class-wide effects only. Again, typical tootling procedures were utilized during intervention phases, however, the classes' behavior as well as individual target student's behaviors were monitored in two sixth-grade and one seventh-grade classroom. A tootling goal was set during the first intervention phase and a decrease in class-wide disruptive and an increase in appropriate behavior was observed for the class as well as the target students. Teachers and target students rated the intervention highly acceptable. A primary limitation was that, due to inconsistent treatment integrity in one classroom, data were more variable. Continued research was needed to demonstrate the beneficial use of tootling in a variety of classrooms with different age groups of students.

Lum, Tingstrom, Dufrene, Radley, and Lynne (2017) implemented tootling in a high school setting using an A/B/A/B withdrawal design, which was the first peer-reviewed publication of its kind with high school students. This study focused on class-wide disruptive behavior (DB) as the primary dependent variable and academically engaged behavior (AEB) as a secondary variable. The results from this study corresponded with those of previous studies of tootling. Decreases in class-wide DB and

increases in AEB were evident when comparing baseline and intervention phases, and classroom teachers rated the intervention as a socially valid classroom intervention.

Lum (2016) replicated and expanded on Lum et al. (2017) with a modification to the contingency utilized. This study used a randomized independent group contingency, which allowed fewer individuals to earn reinforcement; however, there was a daily opportunity to earn reinforcement in the intervention phase. Students were given tootling slips on which half of the slip allowed the individual to tootle on another student, and the other portion of the paper allowed students to put their own name. Two separate containers were on the teacher's desk, one for half of the slip that contained the tootle, and another for the half of the slip that contained the student's name who wrote the tootle. Three names were drawn randomly from the tootle container and two names were drawn randomly containing the name of the student who wrote the tootle from the other container. Again, results from this study indicated that tootling was effective in decreasing class-wide DB and increasing AEB.

Most recently, Wright (2016) completed an additional tootling study in a high school setting with the novel use of a public posting condition. The primary researcher used an A/B/B+C multiple baseline design across four general education high school classrooms to determine the effects of traditional tootling alone and the effects of traditional tootling in combination with public posting on AEB. During the B+C phase, tootles were posted on a designated bulletin board in the classroom to allow students to see who was receiving tootles and for what reason. The results of this study suggested that traditional tootling and traditional tootling in combination with public posting increased class-wide levels of AEB and decreased DB across all four classrooms.

However, the additional use of public posting did not yield any substantially greater effects compared to traditional tootling alone, suggesting that the public posting of the tootles may not have been necessary. Teachers and students in all participating classrooms found the intervention acceptable and socially valid. Following this study, other alternatives to this intervention were considered based on previous studies and their limitations to determine how to best influence behavior change for students. A potential outlet for research was within the examination of what schedule of reinforcement was utilized as it had yet to be investigated. Based on previous research, it has been noted that implementing a mystery motivator within a group contingency mechanism is effective, (Rhodes, Jenson, & Reavis, 1992; Schanding and Sterling-Turner, 2010; Kowalewicz and Coffee 2014), which is discussed further in the following section. A mystery motivator provides a variable ratio schedule of reinforcement, which is historically known to increase rates of responding due to the unknown delivery of reinforcement. With the use of a mystery motivator, students may be more motivated to observe and report tootles in their classroom in pursuit of the classroom's collective reward.

Mystery Motivator

The Mystery Motivator (MM) intervention was first introduced in the literature by Rhodes, Jenson and Reavis (1992). The two main components of the MM strategy are performance feedback and an intermittent reinforcement schedule. Following the initial introduction of the intervention, Moore, Waguespack, Wickstrom, Witt and Gaydos (1994) applied the MM with nine students in two separate classrooms. The goal of this study was to determine the efficacy and social validity of the MM intervention. When implementing the MM intervention, the researchers used a weekly chart, erasable

markers, and reward menu. On the weekly chart a space was provided for each of the five days of the week. The erasable markers had two versions: colored and invisible ink, where the teacher randomly marked four of the five days with the MM symbol in the invisible ink and when colored ink was marked over the invisible ink the symbol would appear (if it was in the space). One day was chosen randomly which would not include the MM reinforcement. Finally, the teacher surveyed the class for the three items the students would most like to receive if they achieved their goal and a MM symbol was found on the corresponding day.

Once the teachers were trained on the MM intervention and how to engage with the necessary materials the intervention began. The researchers in this study focused on the use of the MM to increase homework completion and accuracy with nine students. In Classroom A, the teacher identified five target students who had a 64.9% (range= 45-82%) average of homework completion during baseline. The teacher then set a goal of 100% completion of homework to earn a chance to use the erasable marker for access to a reward. During the intervention phase, completion for all five students increased to an average of 89.4% (range= 78-98%). In Classroom B, the teacher identified four target students who had a 70.1% (range= 62-87%) average of homework completion during baseline. The teacher again set the goal at 100% completion to earn a chance to determine if they had access to a reward that day. During the intervention phase, homework completion for the four students increased to an average of 80.8% (range= 62-95%).

This intervention was successful in increasing homework completion and accuracy for only three of the four students in Classroom B, as one of the students showed a decrease in both completion and accuracy. The teachers did not set a goal for

accuracy of homework; however, accuracy increased as well. Integrity and acceptability of the intervention also were recorded. The Intervention Rating Profile (IRP-15) was given to the teachers to determine the social validity of the intervention and reported scores suggested high acceptability for both teachers. The Children's Intervention Rating Profile (CIRP) was given to the students to assess their acceptability of the intervention as well, which yielded high acceptability scores. Overall, the researchers provided evidence of the efficacy and utility of the MM intervention in a classroom setting focusing on academic outcomes.

Schanding and Sterling-Turner (2010) investigated the effects of the MM intervention as an interdependent group contingency in a high school setting. This study monitored class-wide, as well as, individual student behavior. Following a teacher interview, the dependent variable was identified as an aggregate of problem behavior, which included off-task, out-of-seat, and inappropriate vocalizations. The researchers used an ABABAB withdrawal design using behavioral observations to measure the level of problem behavior occurrence. Baseline data were collected, then a preference assessment was conducted to determine potential reinforcers if the goal was met. The teacher used two envelopes (one reward and one chance) in place of the weekly chart and erasable markers that were used in the Moore and colleagues (1994) study. If the class met their criterion for the day, a student was selected to draw a paper slip from the chance envelope, which had a random number of "M" and "X" slips. The "M" slip allowed access to the reward envelope, which stated what that day's reward would be. The "X" slip denied access to the reward envelope for that day, as it was not a randomly assigned day for access to reinforcement, however the teacher still provided praise for students

reaching their goal. The teacher told the students that they needed to abide by the classroom rules and have fewer than three violations as a class to be eligible for a drawing from the chance envelope.

Results from this study indicated that the MM intervention decreased problem behavior on a class-wide and individual basis. During baseline, the class engaged in problem behavior an average of 26.5% (range = 4-40%) of intervals. The initial implementation of the MM intervention decreased problem behavior to an average of 10% (range = 2-20%) of intervals. The final implementation of the MM decreased problem behavior either further to an average of 8% (range = 4-13%) of intervals. Teacher acceptability was not formally assessed, however they anecdotally reported the ease and high utility of the intervention.

Recently Kowalewicz and Coffee (2014) completed a study of the MM intervention across eight general education elementary school classrooms. The researchers implemented the intervention using an A/B/AB design with a changing criterion. Each of the classroom teachers were interviewed to identify problem behaviors and trained on how to record behavior using a tally counter. Teachers, along with the primary researcher, recorded disruptive behavior to determine if the class met their criterion to gain access to a mystery reward. The students were informed of the behavioral goals of the classroom and trained on the intervention by the teacher. Each classroom had a different criterion established for their goal, which was calculated based on 50% of disruptive behavior during baseline. The MM intervention was withdrawn once and re-implemented with a change of criterion for each of three sub-phases, which indicated a different goal to be met in each sub-phase.

Overall, the results indicated substantial reductions in disruptive behavior across all eight classrooms. Subsequent to baseline, the classrooms met their individual classroom criterion 67-100% of the time during sub-phase 1, 19-100% of the time during sub-phase 2, and 17-100% during sub-phase 3. Regardless of the criteria being met, substantial decreases were evident through visual analysis from baseline to follow-up averages of instances of disruptive behavior. Seven of the eight participating teachers indicated the MM intervention was acceptable. This study provided further evidence for the feasibility and efficacy of the MM intervention.

High School Classroom Interventions

A majority of the literature involving group contingencies in school settings have targeted elementary school populations rather than high school (Little, Akin-Little, & O'Neill, 2015). Minimal research has focused on settings beyond elementary school-aged children; however, the literature that does exist for upper elementary and lower middle school settings does suggest effectiveness (Maggin, Johnson, Chafouleas, Ruberto, & Berggren 2012).

Christ and Christ (2006) investigated the effectiveness of a digital scoreboard on the occurrence of appropriate behaviors exhibited in a high school classroom. This study suggested that a decrease in disruptive behavior occurred following this intervention's implementation in high school inclusion classrooms. Additionally, although originally targeted for a younger population, the Good Behavior Game (Barrish, Saunders, & Wolf, 1969) has been implemented successfully and repeatedly in a high school setting, (Flower, McKenna, Muething, Bryant, & Bryant, 2014; Kleinman & Saigh, 2011; Mitchell, 2014; Mitchell, Tingstrom, Dufrene, Ford, and Sterling-Turner, 2015).

Recently, other studies have been utilized in a high school such as self-monitoring strategies with random reinforcement (Trevino-Maack, Kamps, & Wills, 2015) and interdependent group contingencies to decrease transition and class start times (Hawkins, Haydon, Denune, Larkin, & Fite, 2015). Ample evidence has been demonstrated that interventions at the high school level are effective; however, more are needed to determine the extent to which interventions can be altered or modified to best serve this older population.

Lum and colleagues (2017) demonstrated the successful effects of tootling in a high school setting for the first time. The researchers provided evidence through an A/B/A/B design across three general education high school classrooms that tootling had a functional relationship with decreasing class-wide DB and increasing AEB. Lum (2016) expanded the study on tootling in high school classrooms with a randomized group contingency for individuals who provided tootles and individuals for whom tootles were written. Again, similar results were found with decreases in class-wide DB and increases in AEB across three general education classrooms when the intervention was implemented. Wright (2016) investigated the effects of tootling in combination with public posting of individual tootles in a high school setting and found increases in overall class-wide AEB and decreases in DB, thus providing additional evidence for the success and utility of tootling with high school students.

When increasing peer support in a high school setting, it has been found that individuals had a greater value for membership within the school (Isakson and Jarvis, 1999); however, one of the difficulties with intervening with an older age group is the risk of losing students to their elective decision to drop out. Jimerson, Egeland, Sroufe,

and Carlson (2000) suggested that teacher report of a student's competency level with peers (e.g. interpersonal skills with other peers and popularity among the school) was highly related to behavioral problems. Another study by LeBlanc, Swisher, and Trembley (2008) found teacher report of student antisocial behavior was associated with more problem behaviors in the classroom. The alternative to antisocial behavior would be a focus on those prosocial behaviors, which has been found to decrease aggression and increase academic achievement (Caprara et al., 2014).

It is also known that the susceptibility of peer influence during high school produces a greater likelihood for undesired behaviors (e.g. deviant behavior as well as low academic achievement; Fuligni, Barber, & Clements, 2001). Monahan, Steinberg, and Cauffman (2009) determined that antisocial behavior is largely related to an individual's socialization with their peers, which may be the impetus for certain problems. Peer pressure also was found to be one of the difficult barriers to overcome while in high school (Brown 1982). Additionally, these types of behaviors have a significant impact on the climate within a classroom. Byrne (1994) investigated teachers' susceptibility to burnout and suggested that a majority were related to the variety of stressors associated with their job, specifically negative classroom environments. Gregory, Allen, Mikami, Hafen, and Pianta (2014) noted the need for school psychologists to educate and train teachers (i.e. middle and high school) on classroom interventions to promote effective behavior change considering the literature base for these populations is sparse, although the need is still present.

Purpose of the Present Study

The purpose of the present study is based on the literature described above. There is a need for evidence-based interventions in high school settings to combat misbehavior that is often addressed with reactionary methods, with a shift to those that are more positive and proactive. The present study will incorporate a peer-mediated intervention (i.e. tootling) in which students will be trained as interventionists on the tootling procedures by the primary researcher and will ultimately be responsible for its implementation. The use of a student interventionist will further decrease the teacher's role in the procedure and provide autonomy for this upper adolescent population through the tootling intervention. The teacher(s) will also be trained by the primary researcher and will provide student interventionists a treatment integrity checklist to complete daily to ensure that all necessary steps are being completed. This allows the teacher to maintain teaching as their priority within the classroom and the students to take more responsibility within the intervention by counting the tootles, reading five aloud randomly, and determining that day's mystery motivator.

Additionally, through the modifications made in the intervention (i.e. tootling cards with a standardized format), the teacher's role will be reduced during the procedural training of the class since the teacher will not have to train students on traditional steps of learning to write tootles and successfully observing a peer's behavior. Traditionally these steps in the training are costly with regard to time taken away from instruction and may result in training for 30 minutes or more. The primary researcher's goal in this study will be to decrease teachers' response effort and allow training of the class to be as efficient as possible to avoid interfering with classroom content. With this

modification, the training should take considerably less time and ideally be a more ecologically valid intervention for the future. The additional component of the tootling card with a standardized format will also allow for the student interventionist to be able to quickly sort and count tootles collected during the day. In the past, teachers had to read through and determine which tootles were appropriate to contribute to the group total, which is not fully known due to some lack of treatment fidelity and monitoring of appropriateness of tootles (Lum 2016; Wright 2016). The tootling cards with the standardized format will contain approximately 7 to 9 categories and specific appropriate behaviors from which students will select, thereby avoiding submission and tracking of appropriate versus inappropriate tootles. Finally, the mystery motivator component was chosen to see if the variable schedule of reinforcement would have implications for student behavior.

This study encapsulates a number of unique components with the use of a mystery motivator, standardization of the tootling slip, the implementation of the intervention facilitated through a student interventionist in each class, and the further investigation of a class-wide intervention's effects within a high school setting. The mystery motivator has been previously found to be a successful intervention component and provides an element of uncertainty and challenge as to whether the goal is met and what specifically the reward is for the day. It allows for further investigation of this kind of contingency and its effects on class-wide behavior. The tootling cards with the standardized format eliminates the need for quality control on the types of tootles/behaviors written by students. In the past, no specific data have focused on whether the teacher has specifically read and discarded tootles that are inappropriate with the desired format. This may have

led to goals met with undesired tootles contributing to the goal, yet still resulting in reinforcement. The tootling slip with a standardized format eliminates this potential problem as only one of the predetermined behavior boxes can be marked and selected. The use of a student interventionist is also novel within a high school setting and this may have significant influence on high school interventions utilized in the future if integrity is maintained by student interventionists.

The goal of tootling is to increase the amount of positive, appropriate behavior occurring within a classroom while concomitantly decreasing disruptive behavior through the use of these additional components (e.g. tootling slip with a standardized format, student interventionist, etc.). The following research questions will be investigated:

Research Questions

1. Will tootling cards with a standardized format and a mystery motivator implemented by student interventionists increase class-wide academically engaged behavior in high school general education classrooms?
2. Will tootling cards with a standardized format and a mystery motivator implemented by student interventionists decrease class-wide disruptive behavior in high school general education classrooms?
3. Will student interventionists implement the tootling intervention with integrity?
4. Will tootling cards with a standardized format and a mystery motivator implemented by student interventionists be regarded as a socially valid intervention by classroom teachers and students?

CHAPTER II - METHOD

Participants and Settings

This study included three general education high classrooms from a southeastern state in a rural community based on teacher referral for classroom management support. The high school consists of nearly 600 students, 65% Caucasian, 31% Black, 51% male, 49% female, and roughly 70% of students eligible to receive free or reduced lunch. The high school operates on a block schedule, meaning every 90-minutes students rotate to one of their four classes. Teachers typically teach three blocks, with one block for preparation and planning. Due to the block schedule, students receive content that is traditionally instructed throughout a year long pace (e.g. a 7-period curriculum with 45-minute classes) during a single semester.

Prior to the study, the primary researcher obtained permission from the university's institutional review board (Appendix A) and school administration to implement the intervention (Appendix B). Participating teachers and student interventionists' parents provided informed consent prior to the implementation of the intervention (Appendix C; Appendix D). Students in the classroom did not need to have parents complete consent forms due to the intent of the study following routine classroom practice for class-wide problem behavior. Parents also provided consent for their child to complete the intervention's acceptability form (Appendix E). Classroom teachers provided basic demographic information about their class (e.g. gender, grade, age, etc.; Appendix F) and only specific data were collected on the teacher for pertinent information (e.g. number of years teaching, level of education, etc.). The Problem Identification Interview (PII; Appendix G) was used to determine appropriate operational

definitions for problem behavior occurring in the classroom with each of the participating teachers. Following this interview, the researcher conducted a screen-in observation to determine if the classes met the criterion for the study, which was academically engaged behavior occurring in less than 70% of intervals during a 20-minute observation. All three classrooms met the inclusion criterion. Additionally, prior to the implementation of the intervention, the researcher discussed with all participating classroom teachers appropriate times for daily observations.

Classroom A was a general education Geometry course taught by a Caucasian male in his second year of teaching at the high school. He was enrolled in a Master's program in education during the implementation of this study. This course was taught during 1st block with observations that occurred following the morning announcements. Classroom A consisted of 21 students, 7 females and 14 males. Seventeen of the students identified as Caucasian and 4 as African American. Three of the students were in 9th grade, 14 students were in 10th grade, and 4 students were in 11th grade. Three students in Classroom A received individual supports through the school's Special Education Department (SPED) under the category of Specific Learning Disability (SLD).

Classroom B was a general education Geometry course taught by the same teacher as Classroom A. This course was taught during 2nd block with observations occurring at the beginning of the class. Classroom B consisted of 23 students, 7 females and 16 males. Seventeen of the students identified as Caucasian, 3 as African American, 2 as Hispanic, and 1 as Native American. Twenty students were in 10th grade and 3 students were in 12th grade. Four students in Classroom B received SPED services under categories of SLD and Other Health Impairment (OHI).

Classroom C was a general education English course taught by a Caucasian female in her third year of teaching; however, this was her first year at this high school. She has a Master's in Arts and Teaching. This course occurred during 1st block and observations were conducted during the middle of the course, roughly 30 minutes into the block. Classroom C consisted of 18 students, 4 females and 14 males. Thirteen of the students identified as Caucasian and 5 as African American. Seventeen of the students were in the 12th grade and 1 student was in 11th grade. Additionally, eight students in Classroom B received SPED services under SLD, OHI, and Visual Impairment.

Materials

The researcher provided each classroom teacher with a tootling script during procedural training to discuss the necessary steps of the intervention (Appendix H). Each day the students were provided tootling slips with the standardized format on their desks in an attempt to prompt them to observe their peers positive behaviors (Appendix I). Completed tootling slips were placed in a decorated container on the teacher's desk. Each classroom had a poster in the front of the classroom indicating their goal for that day as a reminder. The teacher conducted a preference assessment with the group, where ideas were voted upon by the students, to determine potential rewards to include in the mystery motivator envelopes. Potential rewards that were voted on included chips, candy, bonus points, and free time. The intervention also required small slips of paper that indicated either an "R" or an "X," as well as two envelopes presented in front of the class. The students had an opportunity to draw from the chance envelope if they met the criterion for the day. The chance envelope contained a 2:1 ratio of "R" slips to "X" slips, providing twice as many opportunities to earn a reward. The mystery motivator envelope

contained the day's reward contingent upon the tootling goal being met for that day and drawing an "R" slip from the chance envelope. These materials and methods were consistent with those used in the study conducted by Schanding and Sterling-Turner (2010).

Problem Identification Interview (PII)

The researcher used a modified version of the Problem Identification Interview (PII; Kratochwill & Bergan, 1990; Appendix G) when meeting with participating teachers to assess the three primary disruptive behaviors of concern. This form included questions also pertaining to what steps the teacher had taken to alleviate problem behavior, data that may have been collected, and when the specific behaviors were most likely to occur. Although no formal psychometric properties have been evaluated, the PII is widely known and accepted within the behavioral consultation literature (Zuckerman, 2005). This interview allowed for the researcher to operationally define disruptive behavior as an aggregate variable.

Behavior Intervention Rating Scale (BIRS)

Following the completion of the intervention, teachers completed the Behavior Intervention Rating Scale (BIRS) to determine their perception of the intervention and its social validity within the classroom (Appendix J; Von Brock & Elliott, 1987). The BIRS consists of 24 items on a 6-point Likert scale (e.g. 1 = strongly disagree to 6 = strongly agree). This rating scale measures acceptability, effectiveness, and time to effectiveness with higher scores indicating greater approval of the intervention. The total scale demonstrates overall high internal consistency ($\alpha = .97$), with alphas of .97, .92, and .87 for the individual factors of acceptability, effectiveness, and time to effectiveness,

respectively. Elliott and Von Brock Treuting (1991) have also reported content and construct validity for the scale using factor analysis. Modifications were made to the phrasing of words (i.e. changed the word ‘intervention’ to ‘tootling + mystery motivator’) included on the BIRS; however, literature indicates that such minor alterations do not significantly impact the overall psychometric properties of the scale (Sheridan & Steck, 1995; Sheridan, Eagle, Cowan, & Mickelson, 2001).

Children Intervention Rating Profile (CIRP)

Also following the completion of the intervention, students completed the Children Intervention Rating Profile (CIRP) to determine their acceptability of the intervention (Appendix K; Witt & Elliott, 1985). The CIRP consists of 7 items on a 6-point Likert scale (e.g. 1 = strongly disagree to 6 = strongly agree). Similar to the BIRS, higher scores indicate greater approval of the intervention by the students. The CIRP contains high internal reliability with a Cronbach’s alpha of .89 (Witt & Elliott, 1985). Only students in class for whom parent permission was obtained were able to complete this questionnaire (Appendix D). Again, modifications were made on slight word changes on CIRP.

Dependent Measures

Two dependent measures were assessed: academically engaged behavior (AEB) and disruptive behavior (DB). AEB was the primary dependent variable due to the nature of the intervention, seeking to make students observe more of the positive behaviors occurring around them, providing the implication that the need for AEB was most relevant. AEB was defined as any behavior in which the student was actively (e.g. reading out loud, raising their hand, or asking the teacher a question) or passively

engaged (e.g. reading silently, writing, or listening to the teacher lecture) with the task demand required by the teacher. DB was operationally defined following interviews with classroom teachers using the PII. The three most common disruptive behaviors in all three classrooms were inappropriate vocalizations, playing with objects, and out of seat behaviors. Inappropriate vocalizations were defined as any form of communication (to peer, teacher, or self) that was unrelated to the task demand (e.g. talking to student sitting next to them, answering a question without raising their hand, or singing to themselves). Playing with objects was operationally defined as the individual manipulating any stimuli that was unrelated to the task demand (e.g. texting on their phone, playing with a piece of paper, or tapping their pencil). Out of seat behavior was operationally defined as any instance that a student's buttocks were not in contact with their assigned seat without teacher permission (i.e. standing up while the teacher is teaching, walking over to a friend's desk, or throwing something in the trash).

Data Collection

Data were collected everyday (unless there was a substitute teacher present, test administered or holiday) during 20 minute observations using a 10-second momentary time sampling procedure (Appendix L) with observers located in an unobtrusive area of the classroom. Momentary time sampling has been shown to provide the best representation of behavior relative to other interval recording procedures (i.e. partial or whole) as it corresponds highly with duration and is the most accurate while concomitantly reducing observer error (Green, McCoy, Burns, & Smith, 1982; Radley, O'Handley, & LaBrot, 2015). Other time sampling methods (i.e. partial and whole interval) succumb to issues of overestimating or underestimating the true level of a

behavior (Cooper et al., 2007). The observer predetermined a pattern in which the observation would occur across the classroom observing one individual student momentarily per interval via an individual fixed method (Briesch, Hemphill, Volpe, & Daniels, 2015). The observer determined if the student was exhibiting an academically engaged or disruptive behavior and indicated accordingly on their observation sheet and proceed to the next student in a fixed pattern. When all of the students had been observed in the class, the observer began the pattern again with the first student until the observation period had expired. Data were collected by adding the total number (aggregated for the entire class) of intervals each individual dependent measure occurred in the observed period divided by the total number of intervals present and multiplying by 100. This allowed the researcher to report the classwide percentage of intervals of AEB and DB.

Design

The independent variable was assessed via an A/B/A/B withdrawal design (Cooper et al., 2007). The A phase was a baseline measure of classroom behavior and allowed the researcher to assess the dependent variables prior to any intervention procedures. When academically engaged behavior exhibited a stable or decreasing trend, a phase change occurred with the implementation of phase B. The B phase was the introduction of the intervention of tooling with a standardized format and a mystery motivator by a student interventionist. When academically engaged behavior stabilized, the first B phase ended. The second A phase was a withdrawal phase, with no intervention in place nor its necessary components present in the classroom (e.g. envelopes on front board or tooling slips on student desks). This withdrawal phase

provided internal validity for the effect that may be present due to the intervention when the intervention was reimplemented. Finally, the second B phase occurred with the reimplementation of the intervention with all materials as in the initial intervention phase.

The A/B/A/B design gives strong evidence that the independent variable is responsible for a change in behavior when baseline and treatment are repeated. The A/B/A/B withdrawal design also gives demonstration of experimental effects through prediction, verification, and replication (Cooper et al., 2007). Each phase consisted of at least five data points and phase changes were based on visual analysis of the level and trend of the data across similar phases for AEB (Kratochwill et al., 2010).

Procedures

Screening

Following an interview with the classroom teachers, the primary researcher conducted an observation to determine if the classrooms met a screen-in criterion. There were no intervention procedures in place during the observation and classrooms had to have AEB less than 70% of intervals to qualify for the study. This was based on the assumption that classrooms below this percentage typically have need for intervention. All three classrooms met the screen-in criterion and this observation served as the first baseline datum.

Baseline

During baseline, teachers followed their normal classroom routine and behavior management strategies. Classroom observations occurred for at least five sessions before the intervention was implemented. This criterion was based on guidelines determined by Kratochwill and colleagues (2010).

Teacher Training

The researcher trained the classroom teacher on the procedures following the collection of the last data point in baseline. The researcher provided the teacher with a script that they read through as they explained the intervention to their class. This training occurred at a predetermined time with the teacher, during their planning period or before school for approximately 20 minutes. Procedural integrity was paramount for the internal validity of the study and ensuring that the teacher trained their students appropriately. Teachers were provided an opportunity to ask questions and role play the script if desired. Following the training of the teacher, the class was trained by the teacher with the primary and secondary researcher also observing to confirm all necessary steps were articulated. The classroom training allowed for the students to determine what kind of rewards they were willing to work toward, voted on the name of the intervention, and nominated three students to act as interventionist (Appendix F).

Student Interventionist Training

Each teacher informed the primary researcher of the top three students who were nominated for student interventionist and were trained by the researcher on how to implement the intervention each day. This training occurred at the end of the class period for all student interventionists. The students were taught the necessary steps they needed to complete during the B phases of the study and were provided with the checklist to complete each day as well. Although three students were trained in each class, not all the students functioned as an interventionist. Classroom A had three students, Classroom B had two students, and Classroom C had two students. The primary researcher wanted to ensure that if any absences or field trips occurred in other classes that there were multiple

students who were trained and able to execute the procedures of the intervention. One student in each classroom functioned as the main interventionist, with substitute options available.

Tootling Cards with a Standardized Format and a Mystery Motivator

Following the training of the student interventionists, the intervention began the next day. The student interventionist distributed two tootling slips with the standardized format on each desk at the beginning of class. Two slips were allocated to eliminate the need for interruptions during classroom instruction time. The student interventionist announced to the class the tootling goal, also posted in front of the class, needed to be reached in order to be eligible for a drawing from the chance envelope. Both envelopes were placed in the front of the classroom next to the goal for the day on a poster. The students were encouraged as well to observe their peers' positive behaviors during the block. Classroom routine proceeded as normal for the teacher. Students were encouraged to stay seated and distribute their tootles in the container during transitional periods or towards the end of the block to eliminate any distraction with instruction. Students were alerted at the end of the block that the intervention was finished for the day and the interventionist counted the number that were collected. Five random tootles were read aloud by the interventionist after the total had been counted. If the students did not reach their goal for the day, they were encouraged to observe more behaviors the following day. If the students did reach their goal for the day, the student interventionist then drew a paper slip from the chance envelope, which contained a 2:1 ratio of "R" to "X" slips. If an "X" was drawn, the interventionist praised the class for reaching the goal and encouraged the class to do the same the following day in hopes of receiving a reward. If

an “R” was drawn, the interventionist then opened the reward envelope, which contained the class’s reward for that day and thus distributed by the interventionist.

The primary researcher conducted observations to determine the effects of the intervention on class-wide behavior as well as to assess the level of integrity followed by the student interventionist. Approximately once a week, a secondary observer observed the classroom’s behavior as well for IOA. If treatment integrity fell below 90% (failure to complete every necessary component) the primary researcher would retrain the student interventionist. Corrective feedback was provided for the student interventionists in Classroom A and Classroom C before the re-implementation of the intervention based on observation of the treatment steps missed during the 20 minute period by the researcher.

Withdrawal Phase

During the withdrawal phase, all intervention components were removed from the classroom (e.g. envelopes, daily goal poster, container, etc.) and routine classroom functioning occurred in the absence of the intervention. When AEB was stable or decreasing, the intervention was reintroduced.

Reimplementation of Tootling with a Standardized Format and a Mystery Motivator

This was the final phase of the study with all intervention components and procedures reimplemented by the student interventionist. The structure of this phase was identical to the initial intervention phase.

Interobserver Agreement (IOA)

Interobserver agreement (IOA) provided a level of observation reliability of the dependent variables with a secondary observer simultaneously, yet independently observing with the primary researcher. IOA was assessed for a minimum of 30% of

observations per phase with a secondary observer who previously had been trained to 90% agreement in a separate graduate school training. Secondary observers had to maintain 80% agreement with the primary researcher or retraining would occur, however this was never necessary. IOA was calculated by determining the total number of intervals of agreement between both observers divided by total intervals observed and multiplying by 100. This method for calculating IOA was done for both AEB and DB collectively as well as separately as occurring or nonoccurring (Lambert et al., 2015). This is considered interval-by-interval IOA because it considers the occurrence (or nonoccurrence) of an agreement for each separate interval.

For Classroom A, IOA occurred during 36% of all observations. IOA was collected for 38% of baseline sessions, 40% of the first implementation of the intervention sessions, 33% of the withdrawal sessions, and 33% of the re-implementation sessions. IOA for AEB across all phases averaged 97.13% (range = 92.5-100%) and 97.69% (range = 94.17-100%) for DB. The overall IOA for both dependent variables across all phases averaged 97.13% (range = 93.89-99.44%).

For Classroom B, IOA occurred during 41% of all observations. IOA was collected for 43% of baseline sessions, 38% of the first implementation of the intervention sessions, 38% of the withdrawal sessions, and 44% of the re-implementation sessions. IOA averaged 96.79% (range = 87.50-100%) for AEB across all phases and 96.15% (range = 90-100%) for DB. The overall IOA for both dependent variables across all phases averaged 97.12% (93.33-100%).

For Classroom C, IOA occurred during 34% of all observations. IOA was collected for 40% of baseline sessions, 33% of the first implementation of the

intervention sessions, 33% of the withdrawal sessions, and 30% of the re-implementation session. IOA averaged 95.09% (range = 88.33-98.33%) for AEB across all phases and 95.93% (range = 92.50-99.17%) for DB. The overall IOA for both dependent variables across all phases averaged 96.11% (range = 91.67-98.33%).

Procedural Integrity (Researcher, Teacher, and Student Interventionist)

Procedural integrity checks occurred on three separate occasions for this study following baseline. All individuals (researcher, teacher, and student interventionist) engaged in the intervention process were trained properly on the necessary procedures. Procedural integrity was collected during the primary researcher's training of the classroom teacher using a checklist (Appendix M). Following this training, the primary researcher collected procedural integrity on the classroom teacher's training of the intervention to the class (Appendix N) also using a checklist. Procedures discussed in these trainings included where to place a completed tootling slip and what the separate envelopes indicated on the board. In the event the classroom teacher fell below 90% integrity during training to their classroom, the researcher would have provided the teacher with feedback and another session would have been needed to ensure the students understood the intervention procedures; however, this did not occur. Procedural integrity data were also collected for the student interventionists that were trained by the primary researcher using the checklist they completed each day (Appendix O). The procedures were comparable to what the classroom teacher trained the class on, however this didactic measure was utilized to ensure the researcher trained interventionists properly. Integrity was measured by the number of steps completed divided by the total number of steps and multiplying by 100.

The researcher had 100% procedural integrity when training Classroom A's teacher. IOA also yielded a score of 100% for training by a secondary observer. The training occurred during the teacher's planning period. The researcher went through the ten steps of the intervention using a script and allowed for questions and role play for a total of 12 steps needed for 100% accuracy in training. When Classroom A's teacher trained his students on the intervention using the script, 100% integrity was observed by both the researcher and a secondary observer. Finally, when the researcher trained the nominated student interventionists, 100% integrity was reported for the researcher as the seven steps of their role was outlined at the end of class time.

The researcher had 100% procedural integrity when training Classroom B's teacher. IOA also yielded a score of 100% for training by a secondary observer. The training occurred during the teacher's planning period. When Classroom B's teacher trained his students on the intervention using the script provided, 100% integrity was observed by both the researcher and a secondary observer. Finally, when the researcher trained the nominated student interventionists 100% integrity was reported for the researcher as the seven steps of their role was outlined at the end of class time.

The researcher had 100% procedural integrity when training Classroom C's teacher. IOA also yielded a score of 100% for training by a secondary observer. The training occurred during the teacher's planning period. When Classroom C's teacher trained her students on the intervention using the script provided, 100% integrity was observed by both the researcher and a secondary observer. Finally, when the researcher trained the nominated student interventionists, 100% integrity was reported for the researcher as the seven steps of their role was outlined at the end of class time.

Treatment Integrity (Researcher and Student Interventionists)

The researcher evaluated treatment integrity each day that the intervention occurred in the classroom (Appendix P). This integrity focused on salient materials that needed to be absent or present depending on the phase being evaluated. IOA was completed for at least 30% of treatment integrity observations, which averaged between two to three days per week depending upon the number of data points necessary for a phase. When the primary researcher was unable to observe a classroom, the intervention was not implemented. The student interventionist also evaluated their own treatment integrity each day to prompt their completion of all necessary steps during implementation (Appendix M). This checklist prompted the interventionist and provided accountability for their role in the intervention. In the unlikely event that none of the student trained interventionists were present, the classroom teacher would have implemented the procedure for the class; however, this never occurred. Integrity checklists were calculated by dividing the number of steps completed by the total number of steps and multiplying by 100.

The researcher, and IOA collected by a secondary researcher, yielded 100% treatment integrity for the four necessary steps. Classroom A had three student interventionists that rotated throughout the week. Classroom A's student interventionists self-reported an average of 89.28% (range = 75-100%) for treatment integrity during the first intervention phase and an average of 94.28% (range = 85.7-100%) during the second intervention phase. The primary researcher spoke with the two main student interventionists to remind them of the necessary steps prior to the second intervention phase. The student interventionists completed a form that had seven possible steps and

since the researcher was not in the classroom during the last three steps this may be why there was a discrepancy in the integrity between the two.

The researcher and IOA collected by a secondary researcher yielded 100% treatment integrity for the four necessary steps. Classroom B had two student interventionists who rotated throughout the week. Classroom B's student interventionists self-reported an average of 100% for treatment integrity during the first intervention phase and an average of 98.4% (range = 85.7-100%) during the re-implementation phase. The researcher provided feedback following the day that integrity fell below 90% since the student interventionist missed the step of reminding the class what their goal was for the day. The researcher was able to provide more immediate feedback due to observing the missed step, whereas in Classrooms A and C, the researcher was unaware of missed steps until viewing the treatment forms at the end of the phase because the steps they did not complete occurred outside the 20-minute observation period of the researcher. Following this reminder, the student interventionists maintained high levels of integrity.

The researcher and IOA collected by a secondary researcher yielded 100% treatment integrity for the four necessary steps. Classroom C had two student interventionists during the first week of the study and subsequently, one student who functioned as the primary interventionist for the rest of the study. Classroom C's student interventionists self-reported an average of 83.9% (range = 71.4-100%) for treatment integrity during the first intervention phase and an average of 81.42% (range = 75-100%) during the re-implementation phase. The primary researcher spoke with the main student interventionist to remind him of the necessary steps prior to the second intervention

phase. However, the student interventionist consistently failed to read aloud five random tootles at the end of the class period.

Data Analysis

Data were evaluated using visual analysis of level, trend, variability, immediacy of effects, overlap, and consistency of data patterns across similar phases to determine treatment effects (Horner et al., 2005; Kratochwill et al., 2010). Based on the nature of single case design, a quantitative effect size, Tau-U, was also calculated to further help determine the effectiveness of the intervention (Parker et al. 2011). Tau-U was used because it corrects for trend in baseline and combines nonoverlap between phases. It is also considered to be a more conservative effect size. According to Vannest and Ninci (2015), Tau-U scores between 0.00-0.20 are considered small effects, 0.20-.60 are considered moderate effects, 0.60-.80 are considered large effects and 0.80-1.00 are considered large to very large effects. Effect size calculations were made for each classroom by comparing baseline with the first intervention's implementation and withdrawal with the re-implementation of the intervention. A weighted average was also calculated for AEB and DB in each classroom as well as an omnibus effect size for AEB and DB across all classrooms.

CHAPTER III - RESULTS

Classroom Data

Classroom A

During baseline, AEB for Classroom A (see Figure 1) averaged 63.44% of intervals (range = 45.83–79.17%) with a decreasing trend near the end of the phase. When intervention began, there was an immediate increase and stable level of AEB averaging 78.17% of intervals (range =75.00-80.83%). When the intervention was withdrawn, a slight decrease in level of AEB occurred, followed by more variability, averaging 62.08% of intervals (range = 51.57- 73.33%). The final implementation of the intervention once again reflected another immediate increase in level of AEB with stability, averaging 77.08% of intervals (range =71.67-84.17%).

During baseline, DB for Classroom A averaged 17.7% of intervals (range = 9.17-30.83%) with initial stability, but with an increasing trend near the end of the phase. When the intervention was implemented, a decrease in level was evident with intervals of DB averaging 15.17% (range=10.00-20.83%) with a slight increasing trend. DB reflected no immediate change in level when intervention was withdrawn, although, exhibited a steady increasing trend with variability at the end of the phase averaging 26.11% of intervals (range =9.17-42.50%). The final implementation of the intervention showed an immediate decrease in DB with greater stability, averaging 14.72% of intervals (range = 10.00-21.67%).

Classroom B

During baseline, AEB for Classroom B averaged 61.19% of intervals (range = 51.67–79.17%) with variability. When intervention began, there was an immediate

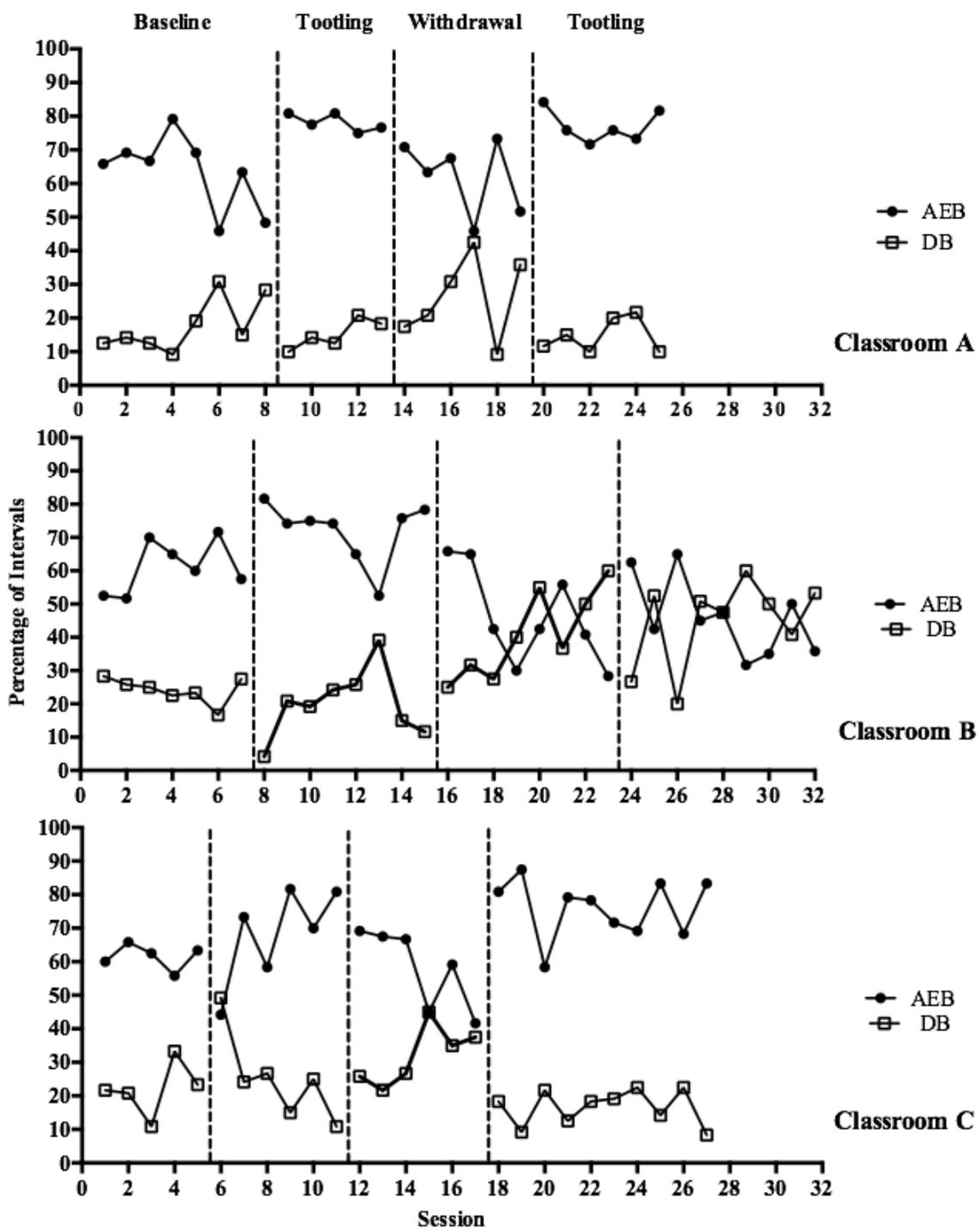


Figure 1. Percentage of intervals of classwide AEB and DB in each classroom

increase in overall level of AEB averaging 72.08% of intervals (range =52.50-81.67%). AEB was stable for the first four data points, decreased during the next two sessions, then recovered and remained high for the final two sessions of the phase. When the intervention was withdrawn, a decrease in level occurred, followed by variable levels of AEB, averaging 46.35% of intervals (range = 28.33- 65.83%). The final implementation of the intervention showed another immediate increase in level of AEB, however significant variability was demonstrated averaging 46.11% of intervals (range =35.00-65.00%).

During baseline, DB for Classroom B averaged 24.17% of intervals (range = 16.67-28.33%) with stability, although a slight increasing trend was evident at the end of the phase. When the intervention was implemented, an immediate decrease in level of DB was present with intervals averaging 20.00% (range=4.17-39.17%) with variability, although decreased near the end of the phase. During withdrawal, DB had an immediate increase in level (mean = 40.73% of intervals; range =25.00-60.00%) with variability and an increasing trend across the phase. The final implementation of the intervention showed an immediate decrease in disruptive behaviors, averaging 44.63% of intervals (range = 20.00-60.00%) with significant variability throughout the phase and overall levels similar to the withdrawal phase.

Classroom C

During baseline, AEB for Classroom C averaged 61.50% of intervals (range = 55.83–65.83%) with relative stability. When intervention began, there was an immediate decrease initially, and despite variability, increased in trend across the phase (68.06% of intervals; range = 44.17-81.67%). When the intervention was withdrawn, AEB decreased

slightly, followed by further decreases with variability and a decreasing trend at the end of the phase averaging 58.19% of intervals (range = 41.67- 69.17%). The final implementation of the intervention showed an immediate increase in overall level AEB, averaging 76.00% of intervals (range =58.33-87.50%).

During baseline, DB for Classroom C averaged 22.00% of intervals (range = 10.83-33.33%) with variability. When intervention was implemented, an immediate increase in overall level was evident, followed by a continuously decreasing trend with DB averaging 25.14% of intervals (range=10.83-49.17%). DB intervals averaged 31.94% (range =21.67-45.00%) during the withdrawal phase with an increasing trend. The final implementation of the intervention showed an immediate decrease in DB with stability, averaging 16.67% of intervals (range = 8.33-22.50%).

Effect Sizes

Classroom A (Table 1) demonstrated a very large effect size for the overall weighted average of AEB, with a very large effect during the comparison of baseline to the initial implementation of the intervention and a very large effect for the second comparison of withdrawal and reimplementation. An overall moderate effect was demonstrated for DB with a weighted average of .31. A small effect was found for the first comparison of baseline to the initial implementation of the intervention and a moderate effect for the second comparison of withdrawal and reimplementation.

Classroom B (Table 1) demonstrated a moderate effect size for the overall weighted average of AEB. During the first comparison of baseline to the initial implementation of the intervention, a large effect was found for AEB, whereas a moderate effect for AEB was found during the second comparison of withdrawal and

Table 1

Tau-U values for AEB and DB across classrooms

Participants	Tau-U	Effect
Classroom A		
AEB		
Baseline x Intervention	.85	Very Large
Withdrawal x Reimplementation	.92	Very Large
Weighted Average	.88	Very Large
DB		
Baseline x Intervention	.13	Small
Withdrawal x Reimplementation	.50	Moderate
Weighted Average	.31	Moderate
Classroom B		
AEB		
Baseline x Intervention	.71	Large
Withdrawal x Reimplementation	.28	Moderate
Weighted Average	.48	Moderate
DB		
Baseline x Intervention	.41	Moderate
Withdrawal x Reimplementation	.11	Small
Weighted Average	.25	Moderate
Classroom C		
AEB		
Baseline x Intervention	.40	Moderate
Withdrawal x Reimplementation	1.00	Very Large
Weighted Average	.77	Large
DB		
Baseline x Intervention	-.23	None
Withdrawal x Reimplementation	1.00	Very Large
Weighted Average	.53	Moderate
Overall Weighted AEB Average	.70	Large
Overall Weighted DB Average	.36	Moderate

reimplementation. A moderate effect was demonstrated for DB overall in Classroom B.

During the first comparison of baseline to the initial implementation of the intervention, a

moderate effect was found, whereas a small effect was found during the second comparison of withdrawal and reimplementation. This demonstrates the minimal effects the intervention had in Classroom B during its reimplementation.

Classroom C (Table 1) demonstrated a large effect size for the overall weighted average of AEB. During the first comparison of baseline to the initial implementation of the intervention, a moderate effect was found and a very large effect was demonstrated during the second comparison of withdrawal and reimplementation. A moderate effect in Classroom C was demonstrated for DB with the overall weighted average of .53. During the first comparison of baseline to the initial implementation of the intervention, no effect was found as DB was trending in an unintended direction, whereas a very large effect was demonstrated during the second comparison of withdrawal and reimplementation. This further demonstrates the effects the intervention had during the reimplementation phase for DB in Classroom C.

An omnibus effect size was also calculated across classrooms for AEB and DB (Table 1). The overall weighted average for AEB across classrooms was .70, which is considered a large effect size. The overall weighted average for DB across classrooms was .36, which is considered to be a moderate effect size.

Social Validity

The researcher also collected data on the social validity of the intervention at the conclusion of the study to measure how the participants perceived the intervention. Each teacher in the study was given the BIRS to assess their opinions on acceptability, effectiveness, and time of effect. As shown in Table 4, all of the classroom teachers reported scores in the “Agree” range for finding the intervention to be acceptable,

effective, and the timeliness of the effect. These data suggest that teachers found the intervention to be socially valid. Classroom A and Classroom B had the same teacher, thus needs to be considered when evaluating the results. Additionally, this teacher anecdotally did not enjoy the intervention as much as Classroom C’s teacher, who reported slightly higher scores for the intervention.

Table 2

Mean teacher rating on the Behavior Intervention Rating Scale

Factor	Classroom	
	A/B	C
Acceptability	4.07	4.93
Effectiveness	4.00	4.83
Time of Effect	4.00	4.00
Overall Mean (Social Validity)	4.04	4.83

Each student in the study had an opportunity to complete the CIRP so the researcher could assess their perceptions of the intervention, however only the students who returned parent permission were able to complete the form. If a student did not turn in their parent permission form they engaged in another classroom activity while the other students completed the CIRP. The students were asked six questions on a 1 to 6 scale, with higher scores again suggesting higher levels of acceptability.

Across the three classrooms, a total of 28 students completed the CIRP. Four of the students were in Classroom A, 9 were in Classroom B, and 15 were in Classroom C. Scores are shown in Table 5. The results from the student data suggest that a majority of

students found the intervention to be acceptable and effective at impacting classroom behaviors. Anecdotally students in Classroom A reported the most disappointment to the termination of the study in comparison to Classroom B and Classroom C and demonstrated the highest ratings on the CIRP. Student interventionists completed the CIRP anonymously with the rest of the class and thus could not be identified nor could their perceptions be isolated.

Table 3

Mean student rating on the Children's Intervention Rating Profile

Mean	Classroom		
	A	B	C
All Items	5.46	4.48	4.37
Overall Score	32.75	26.89	26.20

CHAPTER IV – DISCUSSION

Research Questions

Tootling, since its establishment by Skinner, Skinner, and Cashwell (1998), has been shown to be consistently effective in the literature. The intervention's primary dependent variable has been manipulated through a variety of methods from total number of tootles submitted (Skinner et al., 2000), to decreases in DB (Cihak et al., 2009; Lambert, 2014; Lambert et al., 2015, Lum 2016 et al., Lum 2017, Wright 2016), and increases in appropriate behavior or AEB (Lambert, 2014; Lambert et al., 2015, Lum 2016 et al., Wright 2016, and Lum 2017). In addition, the intervention's primary components have also changed from the use of a target student (Lambert, 2014), to the implementation of a daily reward (McHugh et al., 2016), to the use of public posting of tootles (Wright, 2016). Throughout all of these modification, improvements have been found in each specific study's dependent variable(s). The present study incorporated a variety of new components (i.e. peer-mediated implementation, tootling slips with a standardized format, and a mystery motivator) to determine if their inclusion could further increase the effectiveness of the intervention. Wright (2016) observed the added responsibility the intervention placed on the classroom teacher and sought to delegate that role to appointed students, thus becoming the primary rationale for incorporating the peer-mediated component. It was also evident that there was no quality control for tootles submitted which led to the opportunity of standardizing the tootling slip to make it consistent across students in regard to behaviors that they could report and observe by their classmates. Finally, utilizing a variable schedule of reinforcement as opposed to a fixed schedule of reinforcement was considered due to the nature of the high rates of

responding a variable schedule tends to produce (Cooper et al., 2007). The researcher was interested in observing whether changing the schedule of reinforcement would further alter the magnitude of behavior change associated with the implementation of the tootling. The following paragraphs outline the assessment of initial research questions and discuss the implications of the results.

Question 1

The first research question asked if tootling with a standardized format and a mystery motivator implemented by student interventionists would increase class-wide AEB in high school general education classrooms. Results through visual analysis indicated increases in AEB during intervention and re-implementation, when compared to baseline and withdrawal phases, in two of the three participating classrooms (A and C). These results are consistent with that of other tootling literature that show a functional relationship was present between the intervention and AEB in a majority of the participating classrooms (Lambert, 2014; Lambert et al., 2015; Lum, 2016; Lum et al., 2017; McHugh et al., 2016; Wright, 2016). In Classroom B results through visual analysis indicated an increase in AEB from baseline to the first intervention, however comparing the withdrawal and the re-implementation the data do not support a relationship between the intervention and AEB. In two of the classrooms (A and C), Tau-U effect sizes demonstrated very large and large effect sizes when the intervention was implemented for weighted averages of AEB. The other classroom (B) demonstrated Tau-U effect sizes in the moderate range for weighted averaged of AEB. Although previous studies have sometimes noted stronger effect sizes across all participants (i.e. Lum et al., 2017; Wright, 2016), this study still provides evidence for an increase in AEB in two of

the classrooms when utilizing the current modifications of the tootling procedures in high school classrooms.

Question 2

The second research questions asked if tootling with a standardized format and a mystery motivator implemented by student interventionists would decrease class-wide DB in a high school general education classroom setting. Results indicated that decreases in DB during intervention and re-implementation, when compared to baseline and withdrawal phases, were not consistently found across classrooms. Classrooms A and C had lower and more stable rates of DB during the intervention phases, however overlap is still present with baseline and withdrawal phases for both. Classroom B had a relatively stable trend for DB in baseline and an immediate decrease was visible when the intervention was first implemented with a significant reduction in DB, however the variability and magnitude of overlap of the data do not provide sufficient evidence for a functional relationship. Previous tootling research has shown clear demonstrations of a decrease in DB when the tootling intervention was implemented (Cihak et al., 2009; Lambert, 2014; Lambert et al., 2015; Lum, 2016; Lum et al., 2017; McHugh et al., 2016; Wright, 2016). Two classrooms (A and B) had a small Tau-U effect size at some point in the study (either during the initial implementation or in the re-implementation phase), and when weighted averages were calculated, all three classrooms had moderate effect sizes for DB. This specific study may therefore imply that the intervention may address increases in AEB more so than decreases in DB as noted by the visual analysis and effect sizes calculated.

Question 3

The third research question asked if student interventionists would be able to implement the tootling intervention with integrity. Results for this question implied that students were able to implement the intervention's steps with moderate to high levels of integrity. In two of the classrooms (Classrooms A and C), the student interventionists were retrained on the intervention's components after the first intervention phase was completed, which resulted in increased integrity for one of the interventionists (A) and decreased integrity for the other (C). The other classroom's interventionists (Classroom B) maintained high levels of treatment integrity throughout the study (although they were reminded of a missed step early in the first intervention phase as indicated on p. 37), however, interestingly enough, it was this classroom (Classroom B) that had the most inconsistent and inconclusive outcomes. This suggests that even though an intervention is self-reported to be implemented with high integrity, there may be other variables involved that are interfering with an intervention's full effects. Regardless, all student interventionists were able to maintain 80% integrity or above during the tootling phases, which is supported by previous research (Dart et al., 2015; Dufrene, Noell, Gilbertson, & Duhon, 2005).

Questions 4

The final research question asked if tootling with a standardized format and a mystery motivator implemented by student interventionists would be regarded as a socially valid intervention by classroom teachers and students within the participating classrooms. The results indicated that teachers, using a modified BIRS, reported agreeableness to the intervention across domains: acceptability, effectiveness, time of effectiveness, and overall acceptability. Unfortunately, none of the classroom teachers

chose to continue to use of the intervention following the primary researcher's termination of the project. These results appear to be comparable with the teachers in previous tooling studies that utilized the IRP-15 (Lambert, 2014; Lambert et al., 2015; McHugh et al., 2016). Results indicated that students, using a modified CIRP, reported acceptability in the "slightly agree" range for two classrooms (B and C) and in the "agree" range for the other classroom (A). The one classroom with the "agree" average (highest rating by all classrooms) also anecdotally expressed their disappointment in the completion of the study. The classroom with the lowest average, was the senior English class (Classroom C).

Limitations

Although evidence was found for effectiveness in the intervention in two of the three classrooms, the present study is not without its limitations. The first limitation is that this study failed to establish a functional relationship across all three classrooms. For Classroom A and Classroom C, a functional relationship was evident because there was an immediate change in AEB's level. Additionally, this functional relationship was replicated in these two classrooms in the second intervention phase. However, Classroom B had inconsistent data following the re-implementation of the intervention. During baseline and intervention phases, a demonstration of some improvement in AEB was noted, however during withdrawal and re-implementation the data were variable throughout. Typically, a researcher would re-examine treatment integrity data to determine if lower levels had any implications on the decrease in desirable behavior, yet the treatment integrity in Classroom B, as reported by the student interventionist, was consistently high, especially in comparison to the other two classrooms. The researcher

spoke with the classroom's teacher on a variety of occasions attempting to troubleshoot the behavior, and it was stated that the students in this classroom were on one of two ends of the academic spectrum. Several of the students were repeat takers and had been previously exposed to the material at least once, whereas several other students were high achieving students that were "bored" with the content, as reported by the teacher. This may have contributed to the ineffectiveness of the intervention. Anecdotally, differences in the use and allowance of cell phones during class may have also influenced student behavior across classrooms. The classroom teacher was advised by the researcher to encourage cell phone usage only during free time or following the completion of an assignment to best maximize class time, as it was apparent that most students used the block as they saw fit. This suggests that the intervention may have been more effective if the classroom teacher had better management or enforcement of classroom rules. Ultimately, this intervention's procedures would need further replication to provide greater confidence in the functional control it may possess.

The second limitation to this study was the inconsistency in treatment integrity feedback from the researcher. Every day the intervention was implemented, the researcher also collected treatment integrity of the student interventionist. Due to the length of the observation and the nature of the intervention (tootles counted and envelope drawings occurring at the end of the class period), the researcher was not present during all the steps listed on the student interventionist checklist. Student interventionists stored their self evaluation of integrity in a draw in the teacher's desk and the researcher did not review the treatment data after they left for the day or upon the return on the next day. In the event that the researcher did witness a missed step, corrective feedback was provided

that same day, however most of the steps that were repeatedly missed in the first phase (across classrooms) were not during the presence of the researcher in the classroom. Although no classroom fell below 80%, it is unclear how crucial all steps were to the implementation of the intervention. Regardless, without immediate feedback and consequence to missing a step in the checklist by the researcher, student interventionists were able to continue in the pattern of skipping steps until the end of the phase, which is not desired to confirm internal validity was maintained. Classroom C had a primary interventionist that consistently failed to read five tootles randomly aloud. After being retrained and reminded to complete all steps on the integrity form prior to re-implementation, the student still consistently failed to mark that step as being complete. This leads to an important question of the necessity of reading five tootles aloud. Historically the intervention has included this in the integrity form for the teachers (Lum, 2016; Lum et al., 2017; Wright, 2016). This raises the question of the necessity of this step to the effectiveness of the intervention. Discussed below, a component analysis might elucidate the necessity of this step. Classroom C still maintained increases in AEB during intervention phases when compared to baseline and withdrawal phases, even though tootles were not read aloud, suggesting that this may not be a critical component of tootling. Additionally, due to the anonymity of the CIRP, a true measure of the student interventionists' perception of the intervention failed to be identified. This is a limitation due to the novelty of students facilitating the intervention and no social validity measure of their perception of the intervention. More research is needed to further explore the significance of this component.

The third limitation is the reinforcement that was provided. An ideal study uses resources and tangibles for reinforcement that are easily accessible and low cost. The present study, through the preference assessment completed in each classroom, found candy bars and individual bags of chips to be the most desired form of reinforcement. Although this may be feasible in a study that had a long-term goal or smaller class sizes, this study had neither. The reward, if met by their class goal and drawn from the chance envelope, was provided daily and all classrooms had 20 or more students. The efforts of a teacher providing reinforcement, specifically full size candy bars of this magnitude daily would be costly and unrealistic, which would ultimately reduce the external validity of the study. This additionally is a limitation as the social validity of the study may be compromised based on parents or guardians not perceiving these edibles (i.e. candy bars and chips) as an acceptable reward due to their high fat and sugar content. As school psychologists, the goal is to find acceptable interventions with highly motivating rewards to the students to create behavior change. Although this study contained both, an acceptable intervention and a highly motivating reward, it would be unfeasible for a classroom teacher to maintain this intervention without the researcher's involvement and provision of rewards or provision of resources from elsewhere (e.g., school budget). Therefore, a better conceptualization of the variable schedule of reinforcement provided would be necessary for a replication study, at the very least the magnitude of the reinforcement would need to be decreased.

The fourth limitation is that with a standardized format for the tootling slip, it is unknown if all behaviors were outlined in the standardized form as observed in the class. Additionally, it is unknown whether students were simply seeking out specific behaviors

so that a checkmark could be made on the slip of paper. The standardized format was added due to a previous study (Wright, 20016) finding many tootles containing the same content everyday (e.g. “Sally let me borrow a pencil) and those tootles, although perhaps true, did not allow for students to observe behaviors beyond an example provided to them during the initial training by their teacher. The benefit of the standardized format allowed for inappropriate or inaccurate tootles to be counted towards the accumulating class goal. Wright (2016) discovered a number of early submitted tootles contained compliments or general comments about a student in class. Without proper inspection of the tootles, these could have easily been added toward the group goal. It ultimately is not clear the effects of the standardized format of the tootling slips, let alone all of the other components due to the methodological nature of this study.

The final limitation is that the study investigated the implementation of several new components in combination rather than in isolation and, thus, a number of questions remain as to the most important or critical component(s) contributing to the effectiveness of the intervention. The goal of an intervention is parsimony; determining what is the simplest process that can be implemented for maximum effectiveness. This study utilized three new components (peer-mediated, standardized tootling format, and a mystery motivator) to assess if there was a more efficient means for utilizing tootling. The drawback to the implementation of all three components at once is the unknown effects of each component individually or in combination. Along with this limitation, is how the teacher of Classroom A and B was asked to evaluate all of these components in the BIRS. The teacher completed the same BIRS for both classrooms, as opposed to evaluating each classroom separately based on the intervention’s independent effects using two BIRS. As

evidenced by the data (Figure 1), it is clear that a functional relationship was present in A whereas one was not present in B. Regardless, the classroom teacher completed the BIRS in response to how he perceived the two classes were influenced from the intervention collectively. Thus, the BIRS data collected for Classrooms A/B (Table 5) need to be evaluated as an aggregate view of social validity across two settings. Further research is needed to elucidate the component(s) responsible for the increased AEB in two of the classrooms.

Future Research

This study, along with previous tootling studies (Lambert, 2014; Lambert et al., 2015; Lum et al., 2017; McHugh et al., 2016), provides evidence for the success of the tootling intervention, even across multiple manipulations (e.g. how often reinforcement is provided, use of a target student, etc.). The current study continues to demonstrate the effectiveness of the intervention, although it was seen in only two of the three classrooms rather than across all participants. Based on the methods used in this study (i.e. student interventionist, daily reward, tootling cards with a standardized format, and a mystery motivator), it is difficult to delineate the necessary components needed to evoke behavior change. Future research might include the completion of a component analysis to determine which components are necessary for the intervention to be successful. Another suggested area for continued research is an investigation on the efficaciousness versus effectiveness of tootling to determine how beneficial it is in the naturalistic setting. Also future research could observe the use of a tootling card in a standardized format in an early elementary or pre-kindergarten population. The tootling card could contain pictures of students helping others, working on an assignment, or sitting quietly while the teacher

taught class to further teach and model appropriate classroom behaviors. In regards to the treatment components, a determination of the quality indicators of integrity for tootling may be helpful to confirm the internal validity of the intervention in its purist sense (Sanetti and Fallon, 2011). Finally, an additional dependent variable, such as academic performance would help determine if tootling has any effects on work completion or participation in class. The tootling literature has investigated behaviors associated with academics, however there are no studies that directly assess behavior with academic performance. Most of the behaviors that are described on tootles include positive, academic behaviors that should ideally be positively correlated with academic performance. A true comparison of academic performance at baseline to the completion of a tootling study may provide more information as to the academic performance benefits of the intervention, beyond social behavior change.

Implications for Practice

Overall the researcher found that peer-mediated tootling with a standardized format in three high school classrooms was effective at increasing academically engaged behaviors in two classrooms and effective at decreasing disruptive behaviors in one classroom. These conclusions are made from the effect size calculations representing moderate to large effect sizes. It is difficult to determine which components of the study were contributing to the behavior change and it may be suggested that the traditional version of tootling be utilized more often than the one presented here simply from a parsimonious perspective. Although favorable results were found in two of the classrooms, it does not seem necessary to add to the traditional version of tootling as comparable, if not better results have been found (Lambert, 2014; Lambert et al., 2015;

Lum et al., 2017; etc.). The findings additionally demonstrated that high school students are able to implement the intervention following training with relatively high integrity (students never fell below 80%). This corroborates previous literature with peer-mediated interventions and reminds practitioners that students, especially older students, are valuable resources to utilize when implementing interventions (Dart, Collins, Klingbeil, and Mckliney, 2015; Dufrene, Noell, Gilbertson, & Duhon, 2005).

This study showed the effectiveness of the tootling intervention and the benefits it can provide to a teacher through its peer-mediated nature. As students lead and become more aware of their peers' positive, prosocial behaviors, increases can be found in AEB as well as decreases in DB.

APPENDIX A – IRB Approval



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: 16121303

PROJECT TITLE: Standardized Tootling with a Mystery Motivator in a High School

PROJECT TYPE: New Project

RESEARCHER(S): Sarah Wright

COLLEGE/DIVISION: College of Education and Psychology

DEPARTMENT: Psychology

FUNDING AGENCY/SPONSOR: N/A

IRB COMMITTEE ACTION: Expedited Review Approval

PERIOD OF APPROVAL: 12/14/2016 to 12/13/2017

Lawrence A. Hosman, Ph.D.

Institutional Review Board

APPENDIX B - School Approval Form



Forrest County Agricultural High School

215 Old Highway 49 East, Brooklyn, MS 39425

Phone: (601) 582-4102

Fax: (601) 545-9483

Suzanne Kelly
CTE Director

Charles Johnson
Principal

Austin Alexander
Athletic Director

December 8, 2016

Dear Institutional Review Board of the University of Southern Mississippi,

Sarah Wright has approached me with a research project idea that she would like to implement on campus at Forrest County Agricultural High School. I have met with Ms. Wright and given approval of the project with details to be determined as target classrooms are identified.

If you have any questions or concerns about my support of Ms. Wrights research project, please contact me at the school.

Sincerely,

Charles Johnson
Principal

Forrest County Agricultural High School

APPENDIX C - Teacher Consent Form

Title of Study: Tootling with a Standardized Format and a Mystery Motivator in a High School

Purpose of Study: Your permission is requested for participation in a study that is investigating the effects of an intervention called Tootling for increasing appropriate behaviors along with the incorporation of a mystery motivator.

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

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 less than 70% class-wide academically engaged behavior *is* met, a student interventionist will be asked and trained to implement the Tootling intervention. You will also be given instructions and all necessary materials to train the class on the Tootling intervention, while the primary researcher will train student interventionists to implement the intervention daily. In Tootling, the students will privately indicate if a classmate is engaging in an appropriate behavior on standardized paper slip throughout the day and place them in a designated box for collection. In consultation with the primary researcher, you will select the target behaviors and the Tootling implementation time. During intervention, each start of the class period student interventionists will provide their peers with the tootling slips with a standardized format and remind them to complete their tootles. Student interventionists will remind the class that the number of tootles will be counted daily and posted to the class for feedback. Students will have a daily goal set to determine if they will be eligible for a reward. Two envelopes will be placed in front of the classroom, one with paper slips with an "X" or "R," and the other will contain the reward of the day in the event an "R" is drawn. 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 academically engaged 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 for student interventionists to implement Tootling in your classroom. The primary investigator will also be available to answer any questions you may have. Throughout the experiment, your students' behavior will be monitored. In the event that undesired and unanticipated effects arise (i.e., increase in disruptive behaviors), 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 publications and/or presentations.

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 Sarah Wright or Dr. Daniel Tingstrom (Phone: XXX-XXX-XXXX; Email:XXXXXXXX@usm.edu; XXXXXXXX@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, (XXX) XXX-XXXX.

Sincerely,

Sarah J. Wright, M.A.
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

THIS SECTION TO BE COMPLETED BY TEACHER

Please Read and Sign the Following:

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 student interventionists 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, train the class on the intervention as instructed by the primary researcher, and to complete a structured questionnaire to assess my satisfaction with the intervention. 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 D - Parental Consent Form for Student Interventionist Participation

Dear Parent:

Your child's class has been selected to participate in a research study titled: "Tootling with a Standardized Format with a Mystery Motivator in a High School" that is being conducted by researchers at The University of Southern Mississippi. Your student will be trained on how to implement the necessary steps of the procedure by the primary researcher as they will function as a student interventionist within the study. Additionally, the primary researcher will be available for any questions or concerns that arise. Your student's participation is completely voluntary and they have the ability to withdraw from their role as interventionist at any point in the study. All procedures have been approved by the University of Southern Mississippi's Institutional Review Board. Please sign and return to your child's classroom teacher if you desire to give voluntary consent for your child to fill this role in the classroom study. For any questions you may have, feel free to contact the primary researcher, Sarah Wright at (XXX) XXX-XXXX.

Student's name: _____

Parent's signature: _____

Date: _____

Adapted from Evan Dart's passive consent form for the study "A Comparison of In-vivo and Digital Systematic Direct Observation" (in press).

APPENDIX E - Parental Consent Form to Complete CIRP

Dear Parent:

Your child's class has been selected to participate in a research study titled: "Tootling with Standardized Format and a Mystery Motivator in a High School" that is being conducted by researchers at The University of Southern Mississippi. The study will not interfere with instructional time and will fall within normal classroom activity and procedures. To assess the effectiveness and acceptability of this intervention your child is being asked to complete a short rating scale of the intervention. There will be no identifying information collected by the researchers and there will be no record that could be used to identify your child as a participant. Finally, all procedures have been approved by the University of Southern Mississippi's Institutional Review Board. Please sign and return to your child's classroom teacher by _____ if you desire to give voluntary consent for your child to fill out the rating scale.

Student's name: _____

Parent's signature: _____

Date: _____

Adapted from Evan Dart's passive consent form for the study "A Comparison of In-vivo and Digital Systematic Direct Observation" (in press).

APPENDIX F – Teacher Demographic Form

Teacher Demographics:

Number of years teaching: _____

Race: _____

Gender: _____

Highest degree earned: _____

Classroom Demographics:

Number of students in the class: _____

Number of: Males: _____ Females: _____

Number of: African Americans: _____ Asian: _____

Caucasian: _____ Hispanic: _____ Pacific Islander: _____

Circle one: General Education Self Contained

Number of SPED students in your classroom: _____

Please list the disability categories of each child in SPED (do not include names):

APPENDIX G - Problem Identification Interview Form

Class Block: _____ Teacher (s): _____

Age: _____ Sex: Male Female Date: _____

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

1. How manageable is the problem behavior?
2. In what settings does the problem behavior occur?
3. Goals for the problem behavior?
4. What happens before the behavior? After the behavior occurs?
5. Intervention attempts, degree of success, reasons for failure.
6. What procedures have you tried in the past to deal with this problem behavior?
7. What have you done to deal with similar behavior problems in the past?
8. What's worked? What hasn't?
9. Rules and typical procedures carried out in the classroom (constraints and assets).
10. What reinforcers are currently being used?
11. Any data collected presently?
12. Additional questions or comments about class?

Adapted from Lum, J.D.K. (2015). *Effects of tootling on class-wide disruptive and academically engaged behavior of general education high school students* (Master's Thesis). Retrieved from Proquest Dissertations and Theses.

APPENDIX H - 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 when you see another student doing something good or helpful. If the whole class is successful and does this enough, the whole class will be eligible for a reward. While I'm explaining this now, we will call it giving a 'tootle,' to a classmate when you see them engaging in helpful acts toward others, following rules, and being an example to others.

3. Explain the procedure.

Say: Every day two paper slip will be on your desk. Each time you see a classmate doing something good or helpful, I want you to check the box that corresponds with the behavior you observe and write down the individual's name.

4. Tell the class when they can put their paper slips in a marked container.

Say: You can put your paper slips in this box (hold up box) 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 group work to the start of the lesson, or until the game ends.

5. Explain that this is anonymous.

Say: This is completely anonymous, so do not write your own name down anywhere on the card.

6. Tell the class that the student interventionist will count the tootles and see if the goal is met for that day.

Say: At the end of each day, the tootles will be counted if the daily goal is met the class will have an opportunity to draw from this envelope (hold up the chance envelope).

7. Explain how the envelopes work.

Say: The chance envelope contains a random number of "X" and "R" slips. If the goal is met for the day, a student will draw from the chance envelope. If an "X" is pulled, no reward is earned for that day, however if an "R" is pulled, then the student will open the

reward envelope (hold up the reward envelope). The reward envelope will contain that day's reward, which the whole class will earn for meeting the goal.

8. Ask the class what kinds of rewards they would like. (e.g. chips, candy, baked good, etc.)

9. Vote on a name for the procedure.

Write on the board: Brags, Kudos, Shout Outs, Tootles, Snaps, Tootles

Say: We will now vote on what we're going to call this procedure. Here are 6 choices (Brags, Kudos, Shout Outs, Tootles, Snaps, Tootles), are there any other suggestions?

Have students put their heads down on their desks and vote. After tallying the results, announce the winning name.

10. Have class nominate 3 students to implement the intervention.

Say: This procedure is mainly conducted through your participation so I want to have everyone take ownership of it. I want you to write a name of a student in this class you think would be dependable for following the necessary steps of this game. The responsibilities of this person will include coming to class and handing out slips of paper on students' desks, counting the tootles at the end of the day, reading five randomly out loud, determining if the goal has been met, and drawing/opening from the appropriate envelopes. We will have 3 students trained by Miss Sarah, in the event of an absence or field trip, otherwise I will implement the intervention on that day if all trained students are absent.

Adapted from Lambert, A. M. (2012). *Effects of tootling on class-wide disruptive and appropriate behavior of upper-elementary students* (Master's Thesis). Retrieved from Proquest Dissertations and Theses.

APPENDIX I - Tootling Slip with Standardized Format

Name of peer: _____

Behavior observed (check one):

- Helping another student
- Working on assigned task
- Raises hand to answer a question
- Working quietly while seated
- Began work without reminder
- Attentively listens to teacher during lecture
- Follows directions for assignment
- Volunteers to help teacher
- Finds independent work to do after completing assignment

APPENDIX J - Behavior Intervention Rating Scale

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

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
Tootling + a mystery motivator was an acceptable intervention for the students' problem behavior(s).	1	2	3	4	5	6
Most teachers would find tootling + a mystery motivator appropriate for other classroom behavior problems.	1	2	3	4	5	6
Tootling + a mystery motivator proved effective in helping to change students' problem behavior(s).	1	2	3	4	5	6
I would suggest the use of tootling + a mystery motivator to other teachers.	1	2	3	4	5	6
The behavior problems were severe enough to warrant use of this intervention.	1	2	3	4	5	6
Most teachers would find tootling + a mystery motivator suitable for the classroom use described.	1	2	3	4	5	6
I would be willing to use tootling + a mystery motivator again in the classroom.	1	2	3	4	5	6
Tootling + a mystery motivator did <i>not</i> result in negative side effects for the students.	1	2	3	4	5	6
This intervention would be appropriate for a variety of students.	1	2	3	4	5	6
Tootling + a mystery motivator was consistent with interventions I have used in the classroom setting.	1	2	3	4	5	6
Tootling + a mystery motivator was a fair way to handle the students' problem behavior.	1	2	3	4	5	6
Tootling + a mystery motivator was reasonable for the problem behaviors described.	1	2	3	4	5	6
I liked the procedures used in tootling + a mystery motivator.	1	2	3	4	5	6

Tootling + a mystery motivator was a good way to handle the students' problem behavior.	1	2	3	4	5	6
Overall, tootling + a mystery motivator was beneficial to the students.	1	2	3	4	5	6
Tootling + a mystery motivator quickly improved the students' behavior.	1	2	3	4	5	6
Tootling + a mystery motivator produced a lasting improvement in the students' behavior.	1	2	3	4	5	6
Tootling + a mystery motivator improved the students' behavior to the point that it did not noticeably deviate from other classmates' behavior.	1	2	3	4	5	6
Soon after using Tootling + a mystery motivator , the teacher noticed a positive change in the problem behavior.	1	2	3	4	5	6
The students' behavior remained at an improved level even after Tootling + a mystery motivator was discontinued.	1	2	3	4	5	6
Using Tootling + a mystery motivator did not only improve the students' behavior in the classroom, but also in other settings (i.e., other classrooms, home).	1	2	3	4	5	6
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.	1	2	3	4	5	6
The intervention produced enough improvement in the students' behavior so the behavior was no longer a problem in the classroom.	1	2	3	4	5	6
Other behaviors related to the problem behavior were also likely improved by the intervention.	1	2	3	4	5	6

Adapted from Lum, J. D. K. (2015). *Effects of tootling on class-wide disruptive and academically engaged behavior of general education high school students* (Master's Thesis). Retrieved from Proquest Dissertations and Theses.

APPENDIX K - Children's Intervention Rating Profile

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
Tootling + a mystery motivator was fair.	1	2	3	4	5	6
I liked Tootling + a mystery motivator.	1	2	3	4	5	6
I think other students would like Tootling + a mystery motivator	1	2	3	4	5	6
Tootling + a mystery motivator helped me do better in school.	1	2	3	4	5	6
There are better ways to handle problem behaviors than using Tootling + a mystery motivator	1	2	3	4	5	6
Tootling + a mystery motivator caused problems for my friends	1	2	3	4	5	6

Adapted from Lambert, A. M. (2012). *Effects of tootling on class-wide disruptive and appropriate behavior of upper-elementary students* (Master's Thesis). Retrieved from Proquest Dissertations and Theses.

APPENDIX L – Observation Form

Date: _____ Classroom: _____ Observer: _____

Interval	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	2.4	2.5	2.6
AEB												
DB												
Interval	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6
AEB												
DB												
Interval	5.1	5.2	5.3	5.4	5.5	5.6	6.1	6.2	6.3	6.4	6.5	6.6
AEB												
DB												
Interval	7.1	7.2	7.3	7.4	7.5	7.6	8.1	8.2	8.3	8.4	8.5	8.6
AEB												
DB												
Interval	9.1	9.2	9.3	9.4	9.5	9.6	10.1	10.2	10.3	10.4	10.5	10.6
AEB												
DB												
Interval	11.1	11.2	11.3	11.4	11.5	11.6	12.1	12.2	12.3	12.4	12.5	12.6
AEB												
DB												

Interval	13.1	13.2	13.3	13.4	13.5	13.6	14.1	14.2	14.3	14.4	14.5	14.6
AEB												
DB												
Interval	15.1	15.2	15.3	15.4	15.5	15.6	16.1	16.2	16.3	16.4	16.5	16.6
AEB												
DB												
Interval	17.1	17.2	17.3	17.4	17.5	17.6	18.1	18.2	18.3	18.4	18.5	18.6
AEB												
DB												
Interval	19.1	19.2	19.3	19.4	19.5	19.6	20.1	20.2	20.3	20.4	20.5	20.6
AEB												
DB												

Dependent Variable	Percentage of Intervals	IOA: <i>Yes / No</i>
AEB:	_____ / 120 = _____%	_____ / 120 = _____%
DB:	_____ / 120 = _____%	_____ / 120 = _____%

APPENDIX M - Primary Researcher Teacher Training Procedural Integrity Checklist

1) Introduction of Tootling:

- Step 1 – Give the classroom teacher the “Script for Tootling Training Session”
- Step 2 – Explain what a “tootle” is/changing focus to positive behavior

2) Explanation of each step of the tootling procedure:

- Step 3 – How to define a tootle/introduce the intervention
- Step 4 – Explain the daily tootling procedure
- Step 5 – How to submit a tootle
- Step 6 – Explain that tootles are anonymous and voluntary
- Step 7 – Tootles will be counted at the end of the 20 minutes
- Step 8 – Explain what the envelopes mean
- Step 9 – Brainstorm rewards
- Step 10 – Name the intervention
- Step 11 – Vote on student interventionist

3) Questions & Answers:

- Step 12 – Ask the teacher if there are any questions regarding the procedure.

Number of steps completed: _____ / 12 = _____ %

Date: _____

Observer initials: _____

Adapted from Lynne, S. (2015). *Investigating the use of a positive variation of the good behavior game in a high school setting* (Master's thesis). Retrieved from Proquest Dissertations and Theses.

APPENDIX N - Procedural Integrity for Classroom Teacher Training of Intervention

Date: _____ Observer: _____

	Training Steps	Yes	No
1	Introduction indicating a shift to a 'positive' focus		
2	Defines Tootling		
3	Explain tootling procedures		
4	Explain where to put tootles and when they can do it		
5	Explain the tootles are anonymous		
6	Tootles counted each day		
7	Explain the envelopes		
8	Vote on desired rewards		
9	Vote on name for procedure		
10	Nominate 2 students to be classroom interventionist		

Number of steps completed: **/10**

Percentage of steps completed: _____

Adapted from Lambert, A. M. (2012). *Effects of tootling on class-wide disruptive and appropriate behavior of upper-elementary students* (Master's Thesis). Retrieved from Proquest Dissertations and Theses.

APPENDIX O - Student Interventionist Treatment Integrity

To be completed by student interventionist daily

Date: _____ Student: _____

	Tootling	Yes	No
Beginning of the Period/Class			
1	Provide tootling slips to students		
2	Remind students about tootling and the daily goal		
End of the Period			
3	Add up tootles for the day		
4	Read 5 randomly aloud to the class		
5	If goal is met, draw from chance envelope		
6	If "R" is drawn, open the reward envelope and announce		
7	Distribute reward to class		

Number of steps completed: _____

Percentage of steps completed: _____

Adapted from Lambert, A. M. (2012). *Effects of tootling on class-wide disruptive and appropriate behavior of upper-elementary students* (Master's Thesis). Retrieved from Proquest Dissertations and Theses.

APPENDIX P – Treatment Integrity for Researcher

Date: _____ Name: _____

	Tootling Steps	Yes	No
1	Envelopes posted on front board		
2	Daily goal posted on front board		
3	Paper slips visible on the students' desks		
4	Tootling collection container visible		

Number of steps completed: **/4**

Percentage of steps completed: _____

Adapted from Lambert, A. M. (2012). *Effects of tootling on class-wide disruptive and appropriate behavior of upper-elementary students* (Master's Thesis). Retrieved from Proquest Dissertations and Theses.

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