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Increasing Teachers' Use of Behavior Specific Praise Via a Smart Watch

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INCREASING TEACHERS' USE OF BEHAVIOR SPECIFIC PRAISE VIA A SMART

WATCH

by

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ABSTRACT

This study evaluated the effects of a teacher prompting procedure to increase teacher behavior specific praise using a Smart Watch. Participants included three Head Start general education teachers. An ABAB design across participants was used to examine the effects of Smart Watch-based prompts on teachers' praise rate. The study consisted of four phases: a) baseline, b) teacher praise training and intervention, c) withdrawal from intervention, and d) intervention reinstated. Implementation of the intervention resulted in increases of average behavior specific praise rates and general praise rates for all three participants. Although, averages fail to reach criterion set by the researcher of one statement per minute, these findings suggest that the Smart Watch prompting procedure may be an effective method for increasing Head Start teachers' rates of BSP and GP.

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DEDICATION

This project is dedicated to my dear husband, Jason and my soon to be born daughter Harper. My drive to make you both proud of me as your mother and wife pushed me to the achievement of this document. Jason, I will always be thankful for the sacrifices you have made so that I could pursue this goal. Thank you for your patience, support and your love. Harper, my sweet girl, even though you are not born yet I hope that one day you will see this and realize I wrote this while pregnant with you. I hope that you become inspired to one day pursue your educational dreams like I did and realize that nothing in this world can hold you back.

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LIST OF ABBREVIATIONS

AEB	Academically Engaged Behavior
BCT	Baseline Corrected Tau
BIRS	Behavior Intervention Rating Scale
BSP	Behavior Specific Praise
DB	Disruptive Behavior
DBC	Direct Behavioral Consultation
GP	General Praise
IOA	Interobserver Agreement
USM	The University of Southern Mississippi
WCU	William Carey University

CHAPTER I - INTRODUCTION

Management of students' disruptive behavior in the classroom can be very time consuming for teachers and can impede on the amount of time spent on instruction (Elford, 2013; Musti-Rao & Haydon, 2011). Teachers' ability to manage student behaviors is widely agreed upon by the educational community to be an important component in generating desired educational outcomes (Emmer & Stough, 2010). In classrooms with high rates of disruptive behavior, teachers most often reprimand students for inappropriate behavior as a means of immediately eliminating misbehavior. However, teachers' strategy of reprimanding students has been found to constantly worsen the situation and alienate students. Although many research-validated classroom management strategies exist, teachers are more likely to use the strategy that is the least time consuming and involves minimum teacher preparation (Musti-Rao & Haydon, 2011).

Teacher praise is an evidence-based simple, effective and free classroom management strategy that can provide encouragement and support to students, help build self-esteem, and help build a close teacher-student relationship (Brophy, 1981). Teacher praise is natural, readily available, and nonintrusive (Beaman & Wheldall, 2000; Richardson & Shupe, 2003; Sutherland, Wehby, & Copeland, 2000) as well as an effective way to decrease disruptive behaviors and increase academic engagement of students in the classroom, thus allowing for more teacher engagement time (Espin & Yell, 1994; Hall, Lund, & Jackson, 1968). Therefore, is it imperative that school-based personnel are knowledgeable about techniques and interventions for increasing teachers'

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use of praise within the classroom. This study sought to examine a technique that will facilitate teachers' use of praise in the classrooms.

Teacher praise has been defined as "an affirmative statement delivered by the teacher immediately following the completion of a specified academic or social behavior." (Musti-Rao & Haydon, 2011) Praise statements can be broadly categorized as behavior specific praise (BSP) and general praise (GP). In a BSP statement, a teacher specifies the desired behavior the student is being praised. In a general praise (GP) statement, a teacher does not describe the behavior for which the student is praised (Musti-Rao & Haydon, 2011).

Effects of Praise

Teacher praise has been a topic of empirical research since the 1970s (Jenkins, Flores, & Reinke, 2015) and has historically been shown to be an effective classroom management strategy. A long history of functional relationships between teacher praise and effects on factors such as students' disruptive behaviors has been established in the literature (Sutherland, Wehby, & Copeland, 2000). An example of the historical effects of praise is discussed by reviewing the findings from a meta-analysis conducted by Kennedy and Willcutt (1964). The researchers examined articles from over 50 years of research on the effects of praise and blame on student performance. Studies conducted before the 1930s showed substantial variability of differences in findings, and none of these studies used the same age levels to show replication of findings. During the decade from 1930 to 1940, findings either found no differences between praise and reprimand or found instances of reprimand as being more effective. Within this meta-analysis, the decade of 1940 to 1950 only added three studies to the research on the effects of praise and blame

by examining the test performance of students. Findings from this decade concluded that instances to reprimand had small effects on test performance when the age was higher, no differences were found between receiving money or praise as a reward, more prominent effects of verbal incentives were found with introverts and extraverts and increased test performance was found with repeated praise for introverted participants. Lastly this decade concluded that third graders decreased in test performance, six graders increased in test performance and ninth and twelfth graders had small effects on test performance when examining reprimands on student test performance.

The decade 1950 to 1960 doubled the number of studies on the effects of praise and investigated different variable such as variations with blind children, "mental defectives" (p. 329), experimental incentives administered to participants, massed versus spaced praise, and teachers' use of praise and instances to reprimand in the classroom. Despite the importance of research variation from this decade, little new information was found however, results were consistent with previous research. From 1960 to 1964, 11 studies demonstrated differing findings about the effectiveness of praise and blame with students. These findings included: anxiety was found to be unrelated to the effectiveness of verbal incentives; socioeconomic, school, and examiner variables seemed to not be significantly related. Blame was found to have a negative effect on the performance of students, and praise was found to have a positive and facilitating effect on performance of students. In summarizing their findings, Kennedy and Willcutt (1964) concluded that praise is a stable incentive and contributed to positive effects on the performance and learning of students.

Stage and Quiroz (1997) conducted a meta-analysis of interventions such as teacher praise, designed to reduce disruptive classroom behavior within public education settings. Researchers examined 99 studies that included interventions that were behavioral (i.e., teacher praise, differential reinforcement), cognitive-behavioral interventions (i.e., anger control programs, anger control and relaxation training), individual counseling, parent training and multimodal interventions (i.e. positive practice and self-management). Findings suggested that the interventions examined were successful in reducing disruptive classroom behavior for 78% of students within the public education setting compared to non-treated students. Results indicated that group contingencies, self-management strategies, and differential reinforcement techniques were more effective than the cognitive-behavioral interventions. Token economies, multimodal interventions, stimulus cue, peer management, teacher behavior and exercise program all yielded effect sizes of -.72 or greater. The teacher behavior intervention category included interventions such as teacher reprimand, teacher ignore, teacher disapproval, teacher attention and teacher praise. This intervention category of teacher behavior yielded an average effect size of -.77. The researchers concluded that the interventions examined are effective options for the classroom and demonstrated that interventions to decrease disruptive behavior do work in public schools (Stage & Quiroz, 2000).

Rates of Praise

Despite the abundant existing empirical studies on teacher praise, the literature is limited in regard to what the typical rates of praise are in classrooms. White (1975) was the first researcher to contribute to this literature (Jenkins, Floress, & Reinke, 2015) and

addressed the lack in research predating 1975 on reported rates of naturally occurring teacher praise within the classroom of 1st through 12th grades. Researchers used a teacher approval and disapproval observation record within sixteen classrooms to determine the natural and existing rates of teachers' use of verbal approval or disapproval. This method of recording required researchers to record all of the teacher's use of verbal approval and disapproval statements. The researchers defined teacher approval as "verbal praise or encouragement" and defined teacher disapproval as "verbal criticism, reproach, or a statement that indicated that the student's behavior should change from what was unacceptable to acceptable to the teacher" (White, 1975, p. 368). Results indicated the highest teacher approval rates observed was 1.3 approvals per minute. First and second grades showed the highest use of approval rates by teachers with sharp declines in approval use and increases in teacher disapproval after second grade until high school. Rates of one approval for every 5 or 10 minutes was observed after 1st and 2nd grades and rates of one or two approvals for every 3 or 5 minutes was observed after 3rd and 4th grades.

Beaman and Wheldall (2000) reviewed past research literature on teachers' use of praise, approval and reprimand in the classroom to determine at what extent teachers typically use praise in classrooms. They found that in early studies conducted in the 1970s, teachers were engaging in more reprimands than praise statements in response to their students' overall behavior. One study reviewed reported that the highest teacher approval rate was 1.3 verbal approval statements per minute. Although the studies examined in this decade employed different observational techniques by only recording teachers' verbal approval responses contingent on the on-task behavior of the student

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being observed, the results were broadly similar to past researchers such as White (1975). The findings indicated that most teachers had higher rates of disapproval than of approval. Disapproval rates within these studies were at least three times greater than the approvals for seven of the ten teachers. In each study completed in the 1970s, the disapproval rates per minute for seventh grade students were the same at 0.58. Approval rates ranged in the studies examined, from 0.20 approvals per minute to 0.34. However, in studies conducted since the mid-1980s, teachers used more praise and approval statements than reprimands and disapproval statements (Beaman & Wheldall, 2000).

Jenkins, Flores, Reinke (2015) reviewed the existing literature on teacher praise, rates and types of praise, and the link between student behavior and praise to aid in clarifying the role and benefits of praise to teachers. They conducted a systematic literature search within online databases (i.e., PsycINFO, Google Scholar) as well manual searches using search terms such as praise, teacher praise, type of praise and etc. Results indicated that there is limited literature on typical rates of praise in general education classrooms and special education teachers. Their review also shed light on the need for more research with both general and behavior specific praise across different grade level and different instructional activities. They also concluded from their review that behavior specific praise was related to less behavior problems and could potentially be a more powerful reinforcer and future researchers should clarify this relationship between behavior specific praise and behavior problems that are class-wide instead the behavior problems of a few preselected students like much of the already existing literature.

Despite the considerable amount of literature supporting the effectiveness of teacher praise, research suggests that the use of teacher praise especially teacher behavior

specific praise is only rarely observed and used at very low rates (Beaman & Wheldall, 2000; Jenkins, Flores, & Reinke, 2015). Therefore, it is apparent that strategies are needed to increase teacher praise within the classroom. There are many strategies to increase teachers' use of praise rates such as peer coaching, self-evaluation, and self-monitoring (Sutherland,Wehby, Kalis, Vannest, & Parker, 2007).

Improving Rates of Praise

Given the effectiveness of praise in modifying student behavior, a variety of procedures have been investigated to promote teacher use of praise. One method that has been frequently evaluated involves the use of coaching and feedback. A study that examined the effects of an observation-feedback intervention for increasing rates of teachers' use of BSP was conducted by Sutherland, Wehby and Copeland (2000). The second purpose was to examine the effects of students on task behaviors. Participants included a male teacher with 3 years of teaching experience and his classroom of nine students, ages ranging from 10 to 11 years old. The study was conducted in a fifth-grade self-contained classroom for students with emotional and behavioral disorders. An ABAB withdrawal design was used to examine the effects of the intervention on the teacher's use of BSP on students' on-task behaviors. The intervention phase consisted of the teacher being provided with verbal feedback on the observed rate of behavior-specific praise by the observer. The teacher was provided with BSP examples and recorded rates of baseline BSP by the observer prior to the first day of intervention data collection. The teacher was told the benefits of using BSP on students on-task behaviors. An agreed upon criterion level by the teacher and observer of six BSP per observation session was set as the goal due to recorded baseline rate of BSP. The observer met with the teacher before

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each observation session to remind him of the criterion and to provide examples of a BSP. Feedback of the teacher's use of BSP was provided after each session. The observer would praise the teacher for use of BSP, and examples of his use of them were provided. The results of this study indicated the percentage of on-task behavior of students increased when the rate of BSP increased and decreased when the rate of BSP decreased. BSP during baseline was low and variable with a mean rate of 1.3, then increased to 6.7 after implementation of intervention. BSP immediately decreased to 1.7 in the withdrawal phase and increased with variability to 7.8 during the reintroduction of intervention phase. The mean percentage for students on task was 48.7% during baseline, then increased to 85.6% during intervention. Mean percentage of on task behaviors decreased to 62.2% during withdrawal from intervention and increased to similar intervention levels of 83.3%. Several limitations were discussed by the researchers in this study. First, a minor increase in GP statements occurred from baseline to intervention and contributed to an overall increase in praise. Therefore, researchers cannot credit the increase of on task behavior solely to the increased rate of BSP. The second limitation questions the validity of the rates of teacher praise and task engagement of students due to the low number of observation opportunities per session. Specifically, within the withdrawal from intervention phase, researchers only conducted three observation sessions compared to 6-10 within the other phases. The third limitation discussed the limited generalization due to researchers' use of only one self-contained classroom, one teacher and observations conducted during a single instructional period. Due to these limitations, researchers were unable to attribute increases in the teacher's rates of BSP statements to the observation-feedback intervention (Sutherland et al., 2000).

Another method that has been evaluated to promote teachers use of praise is by Pinter, East, and Thrush (2015). They examined the effects of a video-feedback intervention method on the use of teacher praise. The intended recipient of each teacher praise statement as well as a distinction between specific and general statements by teachers was examined and coded into one of the following categories: general group praise, general individual praise, specific group praise, and specific individual praise. Participants included four certified special education teachers in four special education classrooms within three schools. In all phases of the study, teachers video recorded 20-25 minute portions of a target class period, recording at least 3 class sessions from different days each week. The study consisted of three phases: a baseline phase, initial training phase, and video feedback intervention phase. The intervention phase consisted of a teacher independently watching video recordings of themselves teaching and coding with a tally on a provided recording sheet their use of praise and negative comments. A researcher would then meet with the teachers weekly to review the recordings and answer any questions. After teachers coded their statements and met with the researcher for feedback, researchers watched all the video recordings and reported all teacher comments.

Results from this study demonstrated that all participants increased their mean number of praise statements during the intervention phase for each type of praise. The mean frequency of general individual type of praise displayed the largest increase for all participants in the video feedback phase. All participants stated that they felt the intervention increased their awareness of their use of praise. Although Pinter and colleagues successfully increased teachers' use of praise, the study is not without

limitations. First, the population observed was limited and consisted of only special education classrooms with special education teachers. Second, teachers were instructed to not watch the videos prior to the intervention phase, but it is a possibility that teachers gained access to the videos earlier than intended, observed themselves and altered their teaching behaviors in the classroom before the start of the study (Pinter et al., 2015).

The use of performance feedback to increase teachers' use of classroom management practices and praise has been employed by many researchers (Pinter, East, & Thrush, 2015), but evidence shows that self-management strategies may be an efficient alternative (Simonsen, MacSuga, Fallon, & Sugai; 2013). For example, self-monitoring of praise statements is a strategy that may be used to increase teacher praise rates, promote desirable behaviors of students, and promote a positive learning environment (Musti-Rao & Haydon, 2011). Kalis, Vannest, and Parker (2007) examined the effects of self-monitoring on rates of teacher praise statements. The study was conducted in a self-contained high school classroom for students with emotional and behavioral disorders. Observations were conducted during a basic math class for five students. The participant was a female teacher in her first year of teaching. She was selected based on documented low rates of praise after preliminary observations. An AB withdrawal design over 15 days and lasting 14 sessions was used in the study. Direct instruction lessons were timed, and controlled so that researcher could maintain consistency throughout all phases. The teacher was required to undergo a training in which daily feedback was given. In training, the participant was tested on 10 examples of praise as well as BSP, and she was required to correctly identify these examples as GP or BSP. Intervention occurred after training, and the participant started self-monitoring her rates of praise during direct math

instruction. The participant received a verbal prompt from the researcher on the BSP goal for that day before the start of each session. Examples of praise and BSP were provided to the participant by the researchers during each training session. The teacher monitored her rates of praise while teaching a scripted math lesson. After each session, the participant and the researcher examined the accuracy of the scripted direct instruction lesson led by the teacher, the number of praise statements, the total number of BSP statements, and performance on the curriculum-based measurement and assignment. The results of the study indicated that self-monitoring increased the rates of GP and BSP statements (Kalis, et al., 2007).

The previous study by Kalis et al., (2007) showed that self-monitoring is an effective method for improving teacher use of praise; however, the study lacked in generalizability due to the use of one participant whom was only in her first year of teaching. Simonsen, MacSuga, Fallon, and Sugai (2013) compared the effects of four different self-monitoring conditions (tally, count, and rate) and no self-monitoring on five teachers' rate of specific praise. Participants of this study included five female middle school teachers who volunteered to participate. An alternating treatment design with baseline, alternating treatments, optimal treatment, and follow up phases was employed to assess the effectiveness of different self-monitoring strategies on teachers' use of specific praise during teacher-directed instruction. Researchers observed each teacher's rate of specific praise prior to any training for baseline. During baseline, each teacher received a brief scripted training on the use of specific praise after a stable pattern of specific praise rate was recorded. After the brief training, teachers' use of specific praise was collected during four self-monitoring conditions. In the tally of specific praise

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statements condition, teachers were instructed to record or tally each instance they gave

specific praise to one or more students. In the count of specific praise statements

condition, teachers pressed a button to advance a small yellow golf counter for every time

they used specific praise to one or more students. In the rating of specific praise

statements condition, teachers rated their use of praise by estimating the number of

specific praise statements delivered per minute on a 0-4 times per minute scale. The day

off condition was used to assess the effects of the three prior conditions compared to the

absence of self-monitoring. Each condition was implemented during the same 15-minute

period once per day. The order of conditions was scheduled by a random drawing so that

each condition was used once every four days. Teachers implemented the self-

management strategy that they performed best during the optimal treatment phase.

Results of Simonsen and colleagues (2013) study indicated that all teachers

engaged in low and stable rates of specific praise during baseline. Following the

introduction of the three self-monitoring strategies, all teachers showed an increase in

level, trend or both, except for Teacher 3 in the rating strategy condition. The count and

tally condition had the highest levels of specific praise. Despite positive findings, the

study is not without limitations. First, due to the participants volunteering for this study,

they may have responded differently than other teachers. Second, variability in

instructional practices took place despite the researchers scheduling direct observations

during the times each teacher identified as teacher directed instruction times. Third, the

researchers might have not recorded all instances of specific praise delivered by teachers

due to the variability in instruction. This variability might have led researchers to

difficulty hearing the specific praise statements if for instance the teacher was not the

only one speaking or if teachers delivered the specific praise statement quietly to a student at their desk.

The aforementioned studies evaluated self-monitoring procedures to increase teachers' use of praise, finding that it is highly effective in changing behaviors (Kalis et al., 2007). Several studies in the past have suggested that self-monitoring programs with a combined prompt may be an effective and efficient strategy for increasing desired behaviors (Moore, Anderson, Glassenbury, Lang, & Didden, 2013). Musti-Rao and Haydon (2011) discussed the use of external cueing systems to prompt teachers to deliver praise via electronic devices programmed to give a visual, auditory or vibratory cue. A MotivAider, iPhone, iPad, Apple Watch are just a few examples of devices that can provide users with a vibratory or auditory prompt (Musti-Rao & Haydon, 2011).

Moore, Anderson, Glassenbury, Lang and Didden (2013) sought to evaluate the effects of a self-monitoring intervention with tactile prompts provided by the MotivAider and graphic self-recording of on-task behavior with typically developing high school students. Students were selected based on a history of high levels of engagement in off-task behavior during classroom instruction. Three male students and two teachers served as the participants of the study. Observations were conducted during regularly scheduled humanities classes. A MotivAider was used to provide a tactile stimulus by vibrating at predetermined intervals. A multiple baseline across subjects design was used. The intervention phase consisted of instruction to the three student participants on use of the MotivAider and recording sheet for self-recording on-task or off-task behavior. Prior to each lesson, the teacher gave the MotivAider and self-monitoring sheet to the student. The MotivAider was set to vibrate every 3 minutes, and the student would record with a

tick for yes or a cross for no whether he/she was on-task or off-task. The students were instructed to score their on task or off task behavior at the exact moment the MotivAider vibrated. Results indicated that during baseline all three students demonstrated low and stable levels of on-task behavior. Behavior during the intervention phase, however, demonstrated a substantial increase for all three students and remained high during the follow up phase. On-task behavior was maintained within the follow-up phase for up to four weeks after the interventions, but the authors suggest absence of long term maintenance data is a limitation worth noting. The study also did not generalization data across settings, resulting in unknown generalization effects. The last limitation discussed in this study was the nonexistent data collection for academic performance, and the potential effects the intervention had on academic performance.

Elford (2013) explored the effects of the Bug-in-Ear device on the rate of BSP of secondary teachers in an augmented reality simulation environment called TeachLivE KU. Participants included five teachers with secondary teaching experience. The study took place in the TeachLivE KU Lab, where the teachers faced a large projection screen and interacted with ethnically diverse student avatars. To detect teachers' movements and statements around the classroom, a motion-sensing camera with a microphone was placed on the ceiling of the lab. Teachers spent ten-minute interactive play sessions in the lab in which they taught a mini-lesson and practiced classroom management skills, such as BSP. Teachers role-played with five student-avatars that had similar characteristics of children observed in middle school classrooms. These avatars responded to the teachers' behaviors similar to how middle school students would respond. An alternating treatment design across participants, in which participants were either coached or not coached was

used in this study. The intervention phase consisted of a researcher providing immediate teacher feedback using a Bug-In-Ear device. The results of the study indicated that for three of the four participants, use of BSP increased when they received immediate feedback though Bug-in-Ear device. The BSP increased from an average of 13% of intervals in baseline to an average of 64% of intervals during intervention for those three participants. Limitations include the augmented reality learning environment with the same five student-avatars does not compare to a physical classroom or actual students; thereby limiting the generalizability of findings.

Dufrene, Lestremau, and Zoder-Martell (2014) examined the effectiveness of using a Bug-in-Ear combined with direct behavioral consultation (DBC) to promote teacher praise. Participants included two Caucasian teachers that taught in different alternative school classrooms within one elementary school. All sessions were conducted during math instruction due to this activity being identified by teachers as the most problematic. The dependent variables were teachers' rate of praise and students' rate of disruptive classroom behavior. A multiple baseline across participants was used with a baseline phase, indirect training phase, DBC phase, and a follow up phase. The indirect training phase consisted of a one-on-one didactic teacher training for each teacher. In this phase, an experimenter provided each teacher with instructions for BSP and a handout detailing the use of BSP. Feedback was provided within the indirect training phase if, during practice, teachers used non-examples of BSP. After indirect training, DBC was implemented. The DBC phase consisted of an experimenter providing the teacher with a real-time prompt via a bug-in-the-ear for use of BSP. After each teacher was given the bug-in-the-ear device, the experimenter prompted the teacher to provide one BSP

statement to a student who was meeting classroom expectations. The teacher was expected to repeat in exact words of the provided prompt given by the experimenter. Prompts for teacher's use of BSP was provided once per minute, unless the teacher previously delivered a BSP during the prior 1 minute interval. Following the DBC phase, one participant did not maintain increases in rate of BSP; therefore, a DBC plus performance feedback phase was provided. During this phase, the participant was provided with a visual graph of the data from the prior day's session as well as an explanation of the data. Corrective feedback for the previous day's use of praise was provided within this phase. The 1- and 2-month follow-up phases included data collection by experimenters without any prompts or feedback given to the teacher.

Results indicated that as teachers increase use of BSP, student disruptive behaviors decreased. DBC resulted in a maintained increased rate of praise for one of the two participants. The participant that did not maintain increased rates of praise following the use of DBC required more intense consultation. The primary limitation of this study was the possibility that teachers would have increased BSP during the DBC phase only and without first being exposed to indirect training. The second limitation is related to the teachers' selection to participate in the study; selection was due to program evaluation data via classroom observations that showed failure to implement particular program procedures such as BSP. Therefore, participants may have been more sensitive to being observed by others causing them to be more subject to reactivity to observation. The third limitation was lack of acceptability data collected from teachers regarding the use of DBC procedures in their classrooms. A fourth limitation is the cost of the Bug-in-ear

technology and potential unavailability in many applied settings. Finally, generalization is limited due to the study only including 2 teachers from one setting.

The primary purpose of LaBrot, Pasqua, Dufrene, Brewer, and Goff (2016) was to replicate the findings and address the limitations within the Dufrene et al. (2014) study. Labrot et al. (2016) sought to examine the effects of a direct behavioral consultation in situ training procedure for increasing Head Start teachers' praise using a real time verbal prompt procedure during free-play activity. This study sought to address the primary limitation of Dufrene and colleagues (2014; 2016) sequencing effect of direct training always preceding in situ training. Also, Dufrene and colleagues (2014; 2016) did not collect data on social validity for DBC procedures therefore, it is unknown if teachers considered DBC to be acceptable or feasible. The researchers aimed to address these limitations in use of prompting of teacher praise via Bug-in-ear technology. The study was conducted with four Head Start teachers during an after-school program. A multiple baseline design across participants was used with a baseline phase, in situ training phase, maintenance phase, and a follow up. During the baseline phase, researchers did not provide any instructions or feedback to teachers. The direct training phase consisted of a researcher provided the teacher with real-time verbal prompts for teacher praise statements at a rate of one praise statement per minute. Researchers delivered the verbal prompt via a Bug-in-ear device. In this phase, the teacher was expected to repeat verbatim the verbal prompt provided by the researcher. Single students as well as a group of students engaging in appropriate behavior could receive prompts for praise. A week after the training phase researchers observed for maintenance. During the maintenance phase, teachers' behaviors were observed one week after the final training session and

without the researcher providing training or feedback to the teacher. A one month follow up observations occurred one month after the final maintenance phase and was conducted in the same way as the maintenance phase.

The results of the aforementioned study indicated that during the in-situ phase, all participants immediately and substantially increased their rates of praise per minute compared to baseline. Results also indicated that three of the four teachers' maintained rates of praise greater than baseline when in situ training was terminated. The follow-up phase showed greater rates of praise for three of the four teachers compared to baseline. Although teacher frequency of praise substantially increased, the study is not without limitations. The five consecutive in-vivo trainings used in the study, although for only 10 min per training session, may not be reasonable for researchers with time limitations due to full caseloads. Intervening with Head Start teachers during an after-school program presents a limited participant sample and does not account for a regular classroom day.

Scherl and Haley (2000) discussed the problems associated with the use of Bug-in-ear device, such as a robot-like arrangement with the participant continuously repeating verbatim the researcher. The study also claimed that this innovation could interfere with empathy due to the therapist simultaneously attending to both the receiver of the device and the student receiving the praise. Due to the limitations of Bug-in-ear discussed, other prompting intervention methods that are less intrusive may be worth further examination. Tactile prompts delivered via MotivAider or vibrating timer on mobile phone may be less intrusive; however, these would fail to provide the teacher with real-time verbatim prompts. For these reasons, other alternative technologies should be investigated.

Purpose of Present Study

The purpose of this study was to extend the research on devices used for prompting as a means to increase BSP by teachers. This study examined the effects of a Smart Watch device on increasing teachers' use of behaviors specific praise in the classroom. Specifically, the timer application on the Smart Watch served as the real-time verbatim prompt as well as the vibration from the application.

Consistent with findings of the studies reviewed here, it was expected that the use of a Smart Watch used as a teacher prompt will elicit teachers to increase their use of praise in the classroom. The second prediction was that if teachers' increase frequency of praise, students' disruptive behaviors (e.g., off task, out of seat, inappropriate vocalizations, and playing with objects) in the classroom will decrease. The last prediction was that after teacher praise training, teachers will use more BSP statements than GP statements.

Research Questions

1. Does use of Smart Watch technology as a prompt increase Head Start teachers' use of BSP statements?

2. Does use of Smart Watch technology as a prompt for increasing Head Start teachers' use of BSP result in a collateral decrease of students' disruptive behaviors?

3. Does use of Smart Watch technology as a prompt result in higher increases in use of BSP or higher increases in GP?

4. Do Head Start teachers rate Smart Watch technology as a prompt to praise as a socially valid intervention?

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CHAPTER II - METHODS

Participants and Setting

The research participants in this study included three Head Start teachers. The researcher obtained human subjects research approval from University of Southern Mississippi prior to classroom selection. Classrooms were identified by referral from the school district. Consent from the teachers was obtained prior to beginning data collection (See Appendix A). To be included in the study, teachers were required to meet an inclusion criterion discussed further below based on their BSP statements delivered during a screening observation. Student behavior was not considered as part of screening criteria. During the study, participants were required to wear a Smart Watch device on their wrist to receive real-time feedback, while they interact with students. Participants were not compensated for participation in the study.

Mrs. Stark, Tyrell and Lannister were all provided with a full-time classroom assistant teacher. Mrs. Stark was a 50-year-old African American woman with 23 years of experience teaching in a Head Start setting. Mrs. Stark obtained a bachelor's degree in child care and family education. Her classroom consisted of 20 students, 6 girls and 14 boys. Of the 20 students, 10 identified as Caucasian, 9 African American, and 1 as Hispanic. During the course of the study, 4 students received outside behavioral support through the local public school and 5 students received pullout service for speech. All 9 of these students had an "individualized evaluation plan". Mrs. Stark identified a 20-minute period called carpet time and transition to carpet time for intervention implementation. Carpet time for Mrs. Stark consisted of students sitting within a large

rectangle carpet on a previously assigned carpet shape while the teacher either read a book or taught that day's lesson and briefly went over the previous day discussion or lesson with the students.

Mrs. Tyrell was a 27-year old African American woman with 7 years of teaching experience in Head Start. Mrs. Tyrell obtained a bachelor's degree in child care and family education. Her classroom consisted of 16 students, 12 girls and 4 boys. Of the 16 students, 5 identified as Caucasian, 7 as African American, and 4 as Hispanic. During the course of the study, none of her students were identified as receiving behavioral supports. A 20-minute period was identified by Mrs. Tyrell for intervention implementation in the morning during breakfast and student arrival.

Mrs. Lannister was a 26-year old African American woman in her fourth month of teaching Head Start. Mrs. Lannister obtained a bachelor's degree in Early Childhood Education. Her classroom consisted of 14 students, 5 girls and 9 boys. Of the 14 students, 4 identified as Caucasian, 6 as African American, 2 as Asian and 2 as Hispanic. During the course of the study 2 students received pullout services for speech. Mrs. Lannister identified a 20-minute period called centers time for intervention implementation. Center time consisted of each student choosing between areas to play within predesignated sections of the room such as a kitchen area which contained a wooden toy kitchen and plastic kitchenware, blocks or cars on the carpet, 2 tables with the teacher on lessons for the day (e.g., writing or matching), or a table that contained play foam.

Materials

Several items were utilized during the course of the study, including a training script, Smart Watch, observation sheets, BIRS, treatment integrity data sheet, and procedural integrity checklist. The materials are described below

Training Script

One training script (Appendix H) was provided to each teacher prior to the start of intervention phases. The script included an example of a BSP statement and a simplified BSP definition. The script did not have to be read verbatim, but instead provided a clear example of a BSP statement to be sure the teacher described the appropriate behavior for which the student was praised. The purpose of BSP use and possible effects of BSP use was also provided verbally by the primary researcher to the teacher along with the training script.

Smart Watch

An Apple Watch Series 2 by Apple Inc. was utilized to provide real-time, visual prompts, and tactile prompts (i.e., vibration) to teachers during intervention phases. The Smart Watch device included a 42-mm large square face that closely resembles a wristband watch. This device allowed for the researcher to provide unobtrusive prompting to teachers via an application that was controlled from the researcher's cell phone. Teachers' received one tactile and visual prompt via the Smart Watch to deliver one BSP statement per minute.

Observation Sheet

Observation sheets (Appendix I) were given to the primary data collector and the IOA collector to record the number of times GP, BSP, AEB or DB occurred within the

20-minute observation. These sheets contained empty cells with columns labeled AEB, DB, GP and BSP and rows labeled with the intervals. Each instructor was instructed to record an instance of AEB or DB within each interval and record all the occurrences of GP and BSP by teachers. An observation sheet was utilized in every classroom for all phases. Once the observations ended observers calculated their recorded marks.

The Behavior Intervention Rating Scale (BIRS)

At the conclusion of the study, the Behavior Intervention Rating Scale (BIRS; Appendix B) was administered to teachers to assess the social validity of Smart Watch prompting of BSP. This rating scale consists of a 24-item questionnaire, with each item rated from 1 (strongly disagree) to 6 (strongly agree). The BIRS measures individuals' perceptions of treatment acceptability, effectiveness, and time of intervention implementation (Elliot & Treuting, 1991). Higher scores on the BIRS indicate favorable perceptions of the social validity of an intervention. A factor analysis conducted by Elliot and Treuting (1991) yielded coefficients of .97, .92, and .87 for the Acceptability, Effectiveness, and Time of Effectiveness factors. High overall internal consistency, with an alpha level of .97, has also been found for the BIRS.

Mrs. Stark endorsed high ratings on the Acceptability (M = 5.01), Effectiveness (M = 5.57), and Time of Effectiveness (M = 6) factors. Mrs. Tyrell endorsed similar ratings for intervention Acceptability (M = 5), Effectiveness (M = 4.43), and Time of Effectiveness (M = 4.5). Mrs. Lannister indicated high ratings on the Acceptability (M = 6) Effectiveness (M = 6), and the Time of Effectiveness (M = 6) factors. Overall, these results suggest that all participants found the intervention used to be socially valid.

Procedural Integrity Checklist

Procedural integrity data were collected using one checklist per phases. The baseline phase checklist (See Appendix C) included yes or no items to statements indicating the observer sat in an unobtrusive location within the classroom, and teachers were not given any instruction of feedback regarding use of praise statement or students' behaviors. The checklist for the intervention and teacher feedback phase (See Appendix D) included items that indicated the Smart Watch device was provided to the teacher by the researcher, the researcher confirmed the Smart Watch device was functioning properly, the researcher prompted the teacher to deliver one BSP statement to a student engaged in appropriate behavior and not disruptive behavior every minute, and the researcher gave performance feedback following the session. The withdrawal phase checklist (See Appendix E) included the same items as the baseline phase. The reinstated intervention phase included the same items as the intervention phase (See Appendix D). The teacher training phase checklist (See Appendix G) included items that indicated the researcher consulted with the teacher to review the previous collected baseline data, the researcher provided the teacher with examples of BSP and explained the use of this type of praise using the training script, the researcher explained the advantages of increased use of BSP, and the Smart Watch device was thoroughly introduced and explained to the teacher by the researcher. The use and capabilities of the Smart Watch were explained to the teacher. Finally, the teacher was instructed to present a praise statement after every prompt via the Smart Watch. The procedural integrity for each session was calculated by dividing the number of steps completed accurately by the total number of steps on the checklist and multiply that quotient by 100. Procedural integrity was collected for all sessions and was 100% across all phases. IOA for procedural integrity was calculated by

the steps listed above for procedural integrity. IOA for Procedural integrity were calculated for 60%, 54.5%, and 55% of observations for Mrs. Stark, Tyrell, and Lannister and was 100% across all phases.

Treatment Integrity Checklist

Treatment integrity data was collected for 100% of the intervention sessions. The treatment integrity checklist (See Appendix F) included items indicating the teacher wore the Smart Watch device and provided BSP statements to students within every minute, prompted by the researcher. Treatment integrity was calculated by dividing the number of steps implemented correctly by the number of steps possible and then multiplying by 100. Average treatment integrity was 60% (range 9.52% - 85.7%) for Mrs. Stark, 50.5% (range 28.6% - 66.7%) for Mrs. Tyrell and 49.5% (range 14.3% - 71.4%) for Mrs. Lannister. The IOA data calculation for treatment integrity consisted of dividing the number of agreed upon steps by the number of total steps and multiplying the quotient by 100. IOA was calculated for 60%, 50%, and 40% of observations for Mrs. Stark, Tyrell, Lannister, respectively, and was 100% across teachers.

<center>Dependent Measures</center>

Teacher Praise

The primary dependent variables for this study were the rate of BSP delivered by the teacher and the teachers' GP statements. The frequency of teachers' BSP statements was recorded using an event recording procedure. Frequency count of praise statements within 10 second intervals was recorded. The number of BSP or GP statements was reported separately as frequency per minute during 20-minute observation sessions. The rate of praise was calculated by dividing the total frequency of each praise type by the

total number of minutes of the observation. Researchers used an auditory prompt via headphones to signal a new interval every 10 seconds throughout the 20-minute observation period.

Student Behavior

Academically engaged behaviors of students served as the secondary dependent variable. Students' academic engagement included both passive and active engagement (Radley, Dart, & O'Handley, 2016) Passive engagement was defined as anytime a student's eyes were oriented towards the teacher or the task (e.g., looking at the board during carpet time or attending to teacher when necessary). Active engagement was defined as anytime a student is actively engaged in an academic task (e.g., writing letters, singing the alphabet song, name spelling). In data collection active and passive engagement were both coded under student AEB rather than coded separately.

Students' academically engaged behaviors were recorded using a 20-minute momentary time sampling method. Momentary time sampling procedure has been found to provide a more accurate measure of duration-based behaviors than partial interval recording procedure and whole interval recording procedure (e.g., Green, McCoy, Burns, & Smith, 1982; Radley, O'Handley, & LaBrot, 2015). An individual-fixed method observation of every student was employed. This method involved the observation of one student during each interval. Following observation of the first student, the remaining students in the classroom were observed in a predetermined order (Dart, Radley, Briesch, Furlow & Cavell, 2016). Once all students in the classroom were observed, the observer again observed the first student, with this pattern repeating throughout the entire

observation period. As with teacher praise data collection, researchers used the same auditory prompt via headphones to signal a new interval every 10 seconds.

<div align="center">Design and Analysis</div>

An ABAB design was used to evaluate the effect of a Smart Watch on teachers BSP and students' disruptive behaviors. During baseline, researchers recorded teacher and student behavior without providing teachers with the Smart Watch, and without any feedback or training related to their performance. Researchers sat in an unobtrusive location in the classroom for all phases. Following baseline, teacher training was provided to teachers by researchers using the teacher training checklist. Researchers provide examples of BSP and an explanation using the teacher training script. Following the teacher training phase and the teacher training script, the intervention phase included a prompt, via a Smart Watch device. The withdrawal phase followed the intervention phase and mimicked procedures (e.g., removal of the Smart Watch and any prompts) within the baseline phase. Immediately following withdrawal, the previous intervention was reinstated. All phases consisted of a minimum of five data points to conform to single case design standards developed by Kratochwill and colleagues (2010).

Decisions for changing phases were based on visual analysis of level, trend, and stability of data (Reinke, Lewis-Palmer, & Merrell; 2008). The transition into intervention phase was determined based on the low and stable rates of BSP statements during baseline. The intervention phases included a minimum of five sessions and resumed until the teachers exhibited a rate of BSP higher than baseline for five successive sessions. The withdrawal phase and the second intervention phase included a minimum of five sessions and were terminated after evidence of stable data.

Visual analysis was used to evaluate the effect of the intervention. More specifically, trend, level, variability, immediacy of effect, consistency, and nonoverlap of the data (Kratochwill et al., 2010) were evaluated. Additionally, Baseline Corrected Tau (BCT) was calculated to quantify the intervention effect. BCT is an improved nonparametric approach for evaluating effect size measurement within single case design research (Tarlow, 2017). BCT allows for more interpretation to "in bounds" (p.443) effect sizes and controls for baseline trend more effectively compared to the Tau-U approach. To measure phase independence and control for statistical significance within baseline, BCT uses Theil-Sen robust regression and Kendall's rank correlation coefficient (Tarlow, 2017). BCT effect sizes scores that range below 0.20 are considered small, 0.20 to 0.60 are considered moderate, 0.60 to 0.80 are considered large, and above 0.80 are considered a very large change (Vannest & Ninci, 2015). For the purpose of this study BCT was calculated across all phases (i.e., baseline to intervention, intervention to withdrawal and withdrawal to reinstate intervention) to evaluate the effect sizes of each individual phase and to evaluate the overall effects on teachers' use of BSP statements. Finally, an omnibus effect was calculated across all participating teachers

<div align="center">Procedures</div>

Screening

After referral from administration, a routine program evaluation was conducted in which researchers directly observed teachers' rate of BSP. All three teachers included in the study demonstrated praise rates lower than 0.5 BSP statements per minute.

Baseline

In the baseline condition, teachers were not provided with any feedback or direction in classroom management or praise statements. Researchers used a procedural integrity checklist (Appendix C) to ensure that no components of the intervention were being implemented.

Teacher Training

Following the baseline phase, the researcher consulted with the teacher to review the previously collected baseline data. The researcher provided the teacher with examples of BSP and explained the use of this type of praise using the teacher training script (See Appendix H). A researcher explained that increased use of BSP may result in improved student behavior and decreases in student disruptive behaviors. The Smart Watch device was introduced and described in full detail to the teacher. The use and capabilities of the Smart Watch were also explained to the teacher. The training took approximately 10-15 minutes to conduct for each teacher.

Intervention

During the intervention phase, a Smart Watch device was utilized to prompt the teacher to deliver one BSP statement every minute. A researcher provided the teacher with the Smart Watch and then sat in an unobtrusive location within the classroom. Based on Dufrene and colleagues (2014) study, approximately once per minute, the teacher received a prompt from the Smart Watch via the timer application, the teacher then surveyed the classroom to identify a student engaged in academically engaged target behaviors and not currently engaged in any of the disruptive target behaviors and delivered a BSP statement to that identified student. If a teacher failed to praise an appropriately behaved student or reprimanded a student, the researcher provided brief

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feedback at the conclusion of the observational period. Observational procedures were identical to the baseline phase. An integrity checklist was used at the end of each session to ensure all components of the intervention were implemented as described. If teachers did not meet the criterion of delivering one BSP per minute the researcher ensured the watch was functioning properly halfway through data collection by asking the teacher if she was feeling the watch vibrate continuously. Researchers also went over the results with each teacher after the data collection for that day. The next day the researcher would remind teachers of the intended goal of one BSP per minute, provide a brief retraining on BSP, and provide feedback by repeating the results from the previous day to each teacher before data collection.

Withdrawal from Intervention

The withdrawal phase began on the day after the first intervention phase concluded. During the withdrawal phase, teachers were not provided with the Smart Watch or with any prompting or instruction regardless of performance. Trained observers sat in an unobtrusive location within the classroom to conduct the observations. Teacher and student behaviors were both observed in the same manner as the previous phase. Treatment integrity data were gathered to ensure no aspects of the treatment were in place.

Reinstate Intervention

To follow guidelines of an ABAB design, the previous intervention was reinstated for the final phase of the study. The purpose of this phase was to asses if the effects on the target behavior were verified following withdrawal and reimplementation (Rizvi & Ferraioli, 2012).

Interobserver Agreement

Graduate students that had been trained to code child and teacher behaviors assisted in conducting observations. All researchers involved in this study were trained on the operational definitions (Appendix I) and schedules of coding used in this study. Graduate students met with the primary researcher prior to data collection to discuss the operational definitions and the coding involved within the study with the primary researcher addressing any concerns and questions at this time. During practice observations, observers met an interobserver agreement (IOA) criterion of at least 90% agreement with the primary researcher before data collection. If the observers did not meet the IOA requirements for an observation, retraining took place for the observer until the criterion of at least 90% IOA was achieved. Retraining was only necessary once, after the first intervention observation for Mrs. Stark's classroom.

Interobserver agreement was collected for 60%, 54.5%, and 55% of all observation sessions for all dependent measures. This data collection involved a primary and secondary observer sitting in an unobtrusive area within the classroom and simultaneously yet independently collecting data of teacher and students' behaviors. IOA was calculated by independently dividing the number of each agreed upon BSP and GP statements within intervals by the number of agreed and disagreed intervals and then multiplying the quotient by 100. IOA calculation of the students' behavior was similar; by dividing the number of agreed intervals with disruptive behavior or academically engaged behavior present by the total number of intervals (agreed and disagreed) and multiplying the quotient by 100. Mean IOA for Mrs. Stark's BSP statements was 99.4% (range, 93.3%-100%), mean agreement for GP statements was 97.5% (range 93.3%-

100%), mean IOA for AEB in Mrs. Stark's classroom was 99.6% (range 98.2%-100%) and mean IOA for DB was 98% (range 81.8%-100%), Mean IOA for Mrs. Tyrell's BSP statements was 99.6% (range 96.7%-100%), mean agreement for GP statements was 99.4% (range 96.7%-100%), mean IOA for AEB in Mrs. Tyrell's classroom was 99.6% (range 96.7%-100%), and mean agreement for DB was 99.8% (range 98.3%-100%). Mean IOA for Mrs. Lannister's BSP statements was 99.9% (range 99.2%-100%), mean agreement for GP statements was 99.3% (range 98.3%-100%), mean agreement for AEB in Mrs. Lannister' classroom was 99.8% (range 99.2%-100%) and mean agreement for DB was 99.7% (range 98.3%-100%).

A secondary measurement of IOA was calculated using Cohen's kappa (k), a measure that reflects accounts for chance agreement between observers. Kappa values are considered moderate if they fall between 0.40 and 0.75, and excellent if the values fall between 0.75 and 1.00 (Nimon, Zientek, & Henson, 2012). The mean kappa value for the students' behaviors was 0.98 (95% CI = 0.970 - .997) in Mrs. Stark's classroom, indicating there was very good agreement between observers. The mean kappa value for Mrs. Stark's behaviors was 0.99 (95% CI = 0.98-1.00), suggesting there was very good agreement. The kappa value for Mrs. Tyrell's student behaviors was 0.97 (95% CI = 0.94 - 0.99), indicating that there was very good agreement between observers. The mean kappa value for Mrs. Tyrell's behaviors was 0.98 (95% CI = 0.95 – 1.00), indicating there was very good agreement between observers. In Mrs. Lannister's classroom, the student behaviors had a mean kappa value of 0.97 (95% CI = 0.94 – 1.00) indicating that there was very good agreement between observers. Mrs. Lannister's behaviors had a mean

kappa value of 0.99 (95% CI = 0.95 – 1.00), suggesting very good agreement between

observers.

CHAPTER III - RESULTS

Teacher Praise Rates

Rates of both GP and BSP are depicted in Figure 1. During baseline, Mrs. Stark's rate of GP ($M = 0.03$ per minute) and BSP ($M = 0.01$ per minute) was low and stable. During the intervention phase, there was an immediate increase in GP ($M = 1.75$ per minute) and a stable increase for BSP ($M = 0.91$ per minute). Mrs. Stark's rate of GP ($M = 0.10$ per minute) and BSP ($M = 0.09$ per minute) substantially decreased during the withdrawal phase to levels similar to baseline. After the intervention was reinstated, rates substantially and immediately increased for GP ($M = 1.39$ per minute) and steadily increased showing an upward trend and level for BSP ($M = 1.36$ per minute).

Baseline levels of GP (M = 0.09 per minute) and BSP ($M = 0.0$ per minute) for Mrs. Tyrell were low and stable. After introduction of the intervention, an immediate increase was observed in level and trend of both GP ($M = 0.55$ per minute) and BSP ($M = 0.79$ per minute). During the withdrawal phase, an immediate decrease in level of GP ($M = 0.08$ per minute) and BSP (M = 0.14 per minute) was observed. Reimplementation of intervention resulted in an increase in level and a decreasing trend for GP ($M = 0.27$ per minute) with Mrs. Tyrell and an increasing stable trend for BSP ($M = 0.81$ per minute).

Baseline levels for Mrs. Lannister's use of BSP and GP showed GP ($M = 0.72$ per minute) to be variable, and BSP ($M = 0.0$ per minute) to be low and stable. After introduction of the intervention, an increasing trend and level was observed in GP ($M = 1.49$ per minute) with variability and an increase in trend and level in BSP ($M = 0.70$ per minute) with variability. Withdrawal of the intervention resulted in immediate reductions of both GP ($M = 0.26$ per minute) and BSP ($M=0.01$ per minute). Reimplementation of

the intervention produced increases in level with variability in GP ($M = 0.79$ per minute) and BSP ($M = 0.64$ per minute).

Table 1 lists the BCT calculations for all GP and BSP phase comparisons. The following calculations indicate that the intervention had a large effect overall for increasing teachers' use of BSP statements.

Academically Engaged Behavior

Figure 2 and 3 depict the percentage of AEB across classrooms. During baseline Mrs. Stark's classroom showed stable levels of AEB ($M = 75.7\%$). After implementation of the intervention, an immediate and stable increase of AEB was observed ($M = 94.8\%$). After withdrawal of the intervention AEB declined to rates similar to initial baseline with the exception of a high final data point ($M = 82.3\%$). An immediate and stable increase in level of AEB ($M = 92.1\%$) was observed after reinstatement of the intervention within Mrs. Stark's classroom.

Prior to intervention, Mrs. Tyrell's classroom showed variability in AEB with a decreasing trend ($M = 73.7\%$). Following introduction of the intervention, an increasing trend in AEB ($M = 95.3\%$) was observed with the exception of the final data point. A stable decrease was observed in AEB ($M = 88.0\%$) within the withdrawal from intervention phase. Upon reinstatement of the intervention, AEB ($M = 94.2\%$) showed an immediate increase in trend and level for Mrs. Tyrell's classroom.

Baseline levels of AEB in Mrs. Lannister's classroom showed a slight increase in trend until a substantial decrease for the final data point ($M = 88.3\%$). Following implementation of the intervention, AEB immediately increased in level and showed

Mrs. Stark

Mrs. Tyrell
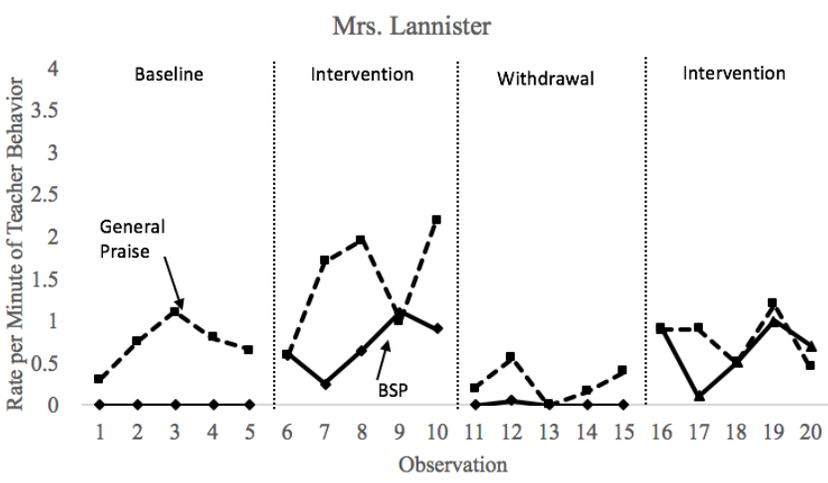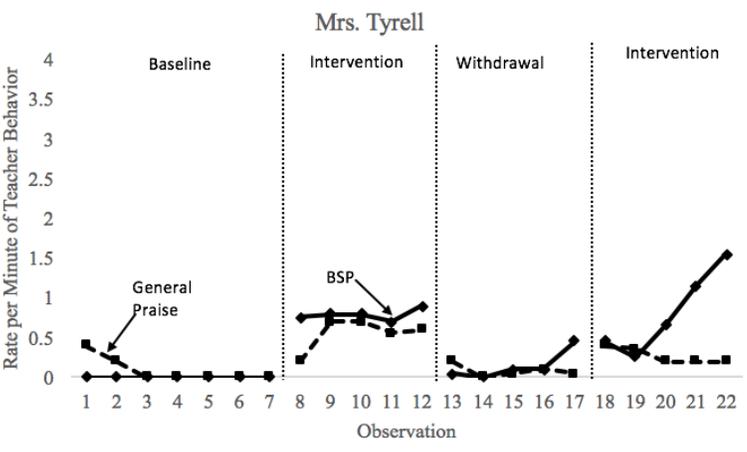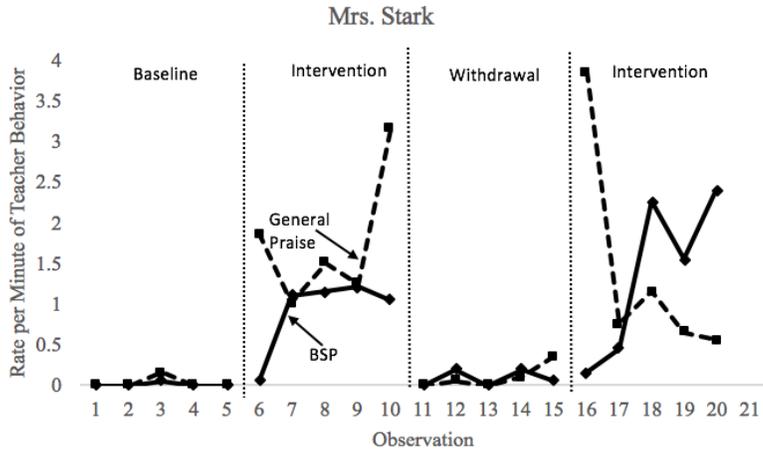
Mrs. Lannister

Figure 1. Mrs., Stark's, Tyrell's, and Lannister's behavior specific and general praise statements.

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Table 1

Effect Sizes for Teacher Praise

	Mrs. Stark		Mrs. Tyrell		Mrs. Lannister	
	Tau-U	Effect	Tau-U	Effect	Tau-U	Effect
General Praise						
Baseline/Intervention	0.80	Large	0.74	Large	0.45	Moderate
Intervention/Withdrawal	-0.75	Large	-0.74	Large	-0.75	Large
Withdrawal/Reinstate	0.75	Large	0.71	Large	0.63	Large
Behavior Specific Praise						
Baseline/Intervention	0.78	Large	0.89	Large	0.85	Large
Intervention/Withdrawal	-0.62	Large	-0.76	Large	-0.80	Large
Withdrawal/Reinstate	0.64	Large	0.67	Large	0.80	Large

slight variability (*M* = 96%). During the withdrawal phase, AEB of Mrs. Lannister'

classroom showed a gradual decreasing trend and level (*M* = 94.5%). Reinstatement of

the intervention showed a slight mean increased level to 96.5% and an immediate trend

and level increase.

Table 2 lists the BCT calculations for all AEB and DB phase comparisons.

Overall, the effect of the intervention on student behavior may be categorized as

moderate to large.

Table 2

Effect Sizes for Student Behaviors

	Mrs. Stark		Mrs. Tyrell		Mrs. Lannister	
	Tau-U	Effect	Tau-U	Effect	Tau-U	Effect
Academically Engaged Behavior						
Baseline/Intervention	0.75	Large	0.66	Large	0.51	Moderate
Intervention/Withdrawal	-0.76	Large	-0.75	Large	-0.21	Moderate
Withdrawal/Reinstate	0.66	Large	0.77	Large	0.21	Moderate
Disruptive Behavior						
Baseline/Intervention	0.75	Large	0.66	Large	0.51	Moderate
Intervention/Withdrawal	-0.76	Large	-0.61	Large	-0.21	Moderate
Withdrawal/Reinstate	0.66	Large	0.65	Large	0.21	Moderate
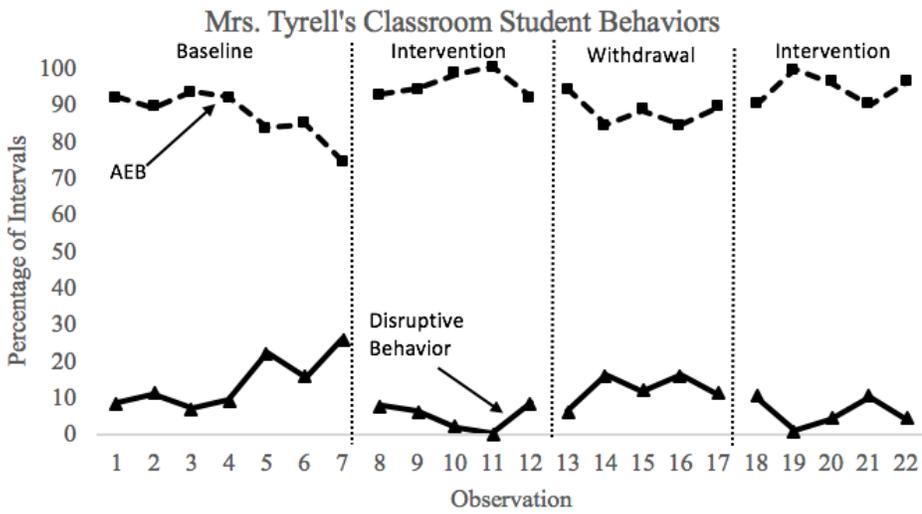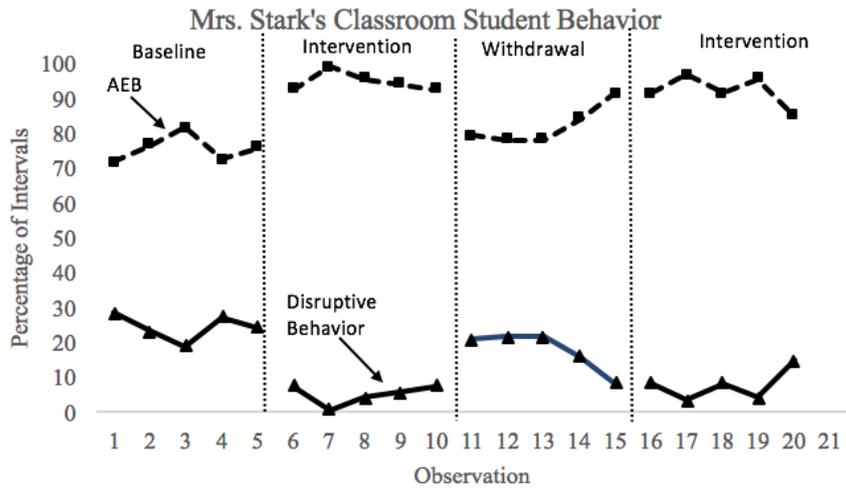
Figure 2. Student DB and AEB behaviors in Mrs. Stark's and Tyrell's classroom.
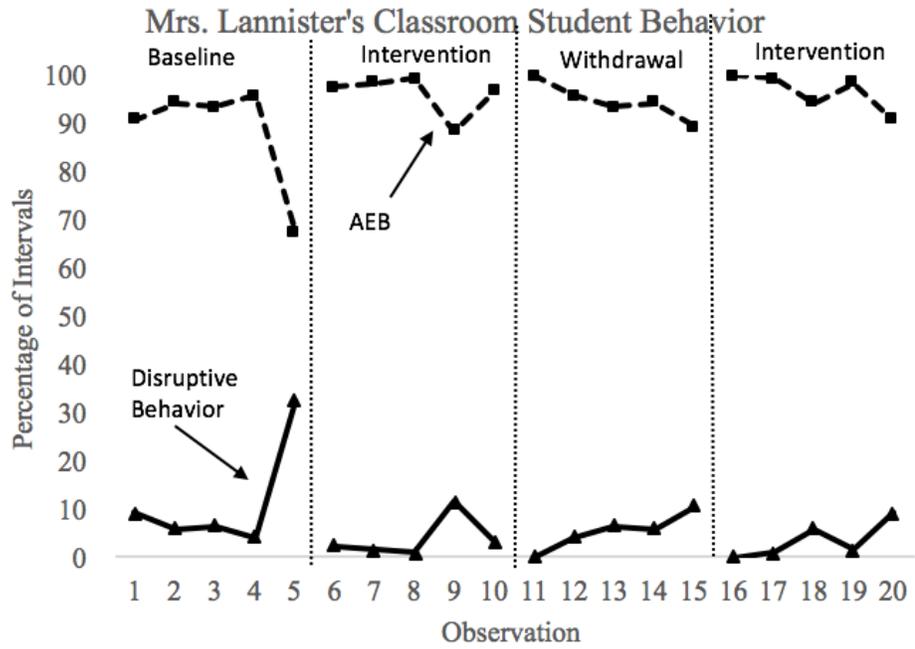
Figure 3. Student DB and AEB behaviors in Mrs. Lannisters's classroom

CHAPTER IV – DISCUSSION

Praise is evidence-based, simple, effective, free, readily available, natural, nonintrusive, and has been shown to be an effective classroom management strategy since the 1970s (Beaman & Wheldall, 2000; Brophy, 1981; Jenkins, Flores, & Reinke, 2015; Richardson & Shupe, 2003; Sutherland, Wehby & Copeland, 2000). Despite these facts, the abundant existing literature on effectiveness and many effective procedures already examined, teacher praise is still only rarely used (Beaman & Wheldall, 2000; White, 1957). The purpose of the present study was to address low rates of teachers BSP and GP within three head start classrooms by using an Apple watch as a prompting procedure.

Research Questions

The first research question addresses the effectiveness of the Smart Watch technology for increasing teachers' use of BSP statements. Results indicated that average BSP for all three participants increased within the intervention phases relative to baseline and withdrawal phases. These results are similar to that of previous research (Dufrene et al., 2016; 2014; LaBrot et al., 2016) in which Head Start teachers increased their use of BSP within the classroom with the use of a prompting procedure. The current study failed to replicate similar studies in increasing Head Start teachers' use of BSP statements to 1 statement per minute; however, increases of BSP in the intervention phases from baseline and withdrawal were evident. Additionally, procedural integrity with Labrot et al. (2016) and Dufrene et al. (2014, 2016) were 100% across all training sessions, but required researchers to prompt the teacher verbally via Bug-in-ear every minute rather than the teacher relying on an electronic tactile and visual prompt via a Smart Watch in the

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current study. Effect sizes were evaluated using non-overlap pairs in LaBrot et al. (2016) with estimates ranging from moderate to strong for three of the four participants. Despite the fact that praise rates did not reach 1 per minute, the current study also resulted in moderate to large range for increasing all three teachers' use of BSP and GP.

The next research question addressed the effects the intervention had on decreasing students' disruptive behaviors. Visual analysis of the results suggested increases in student AEB within all three Head Start classrooms during intervention phases; therefore, decreases in DB were seen. These results are consistent with previous research that has found collateral decreases in student DB following increases in teachers use of praise (Durene et al., 2014; Jenkins et al., 2015) and findings that teacher praise interventions are effective within the public schools for decreasing student DB (Stage & Quiroz, 2000). Students' AEB increases were only a slight increase from baseline and withdrawal phases, potentially due to data collection occurring during highly preferred by students' activity times (e.g., eating and playtime) versus data collection occurring during non-preferred activities (e.g. seatwork and cleanup). BCT effect size calculations were considered moderate to large for students' DB and AEB.

The third research question addressed the relative effect the intervention had on increases of BSP compared to GP. Mrs. Stark results indicated greater increases from baseline and withdrawal phases for GP, while Mrs. Tyrell had greater increases for BSP, and Mrs. Lannister showed similar increases in both BSP and GP from baseline and withdrawal phases. Sutherland et al. (2000) examined GP and BSP and similarly found that BSP statements were lower within baseline and withdrawal compared to GB; however, rates increased more substantially for BSP statements within intervention

phases then GP statements. BCT effect sizes of both GP and BSP within this study were similar, with moderate to large effect sizes. Most research on praise have only examined the effects of the intervention on BSP or GP as a single variable (Dufrene et al. 2014; Elford, 2013; Pinter et al., 2015; Reinke et al., 2008), therefore the current study adds to the literature of comparing and contrasting the effects intervention on both types of praise.

The final research question focused on teachers' perception and acceptability of the intervention used. All three teachers rated the intervention used as acceptable on the BIRS. Additionally, all participants agreed that the intervention was acceptable, effective and had an adequate time of effectiveness. These results are consistent with previous research (LaBrot et al, 2016) in which Head Start teachers rated a prompting procedure to increase rates of praise as socially valid. In contrast to Labrot et al., whom used a Bug-in-ear device for the intervention, Mrs. Tyrell reported that she felt the Smart Watch device was one of the least intrusive interventions to be conducted in her classroom.

<div align="center">Limitations and Conclusion</div>

Although the results of this study are encouraging, they are not without limitations. One limitation was the study being conducted during the spring semester of the school year, thus no follow up or maintenance observations were conducted. School breaks, teacher absences and high student absences interfered with the days available for data collection. Therefore, it is unknown if the effects of the intervention would have continued for a prolonged period of time, or discontinued after the researchers were not present and assisting with the participants. It is also unclear if the effects of the current study would maintain due to data quickly returning to baseline levels within the

withdrawal phases. Future researchers could start the intervention earlier in the school year to allow for more data collection and should include a follow up or maintenance phase.

Finally, although the reimplementation allowed for a clearer visual of the intervention effect, the small sample size limits the generalizability and external validity of the study. All teachers lacked diversity in factors such as their race, gender and occupation. Future researchers should address this limitation by potentially including a larger sample size or a more diverse sample, which may also include diversity of grades taught.

Despite occasional lapses in treatment integrity on the part of teachers, the current study provides support for the use of prompting procedures to increase rates of praise within a Head Start setting. Results for all three participants showed an increase in the average GP and BSP during intervention. Furthermore, increases in average students' AEB can be seen within the intervention phases when compared to baseline and withdrawal. All participants rated the intervention procedures as socially valid. Future researchers should continue to assess the effects of prompting procedures for increasing teachers' rates of GP and BSP

Title of Study: Increasing Teachers' use of Behavior Specific Praise via Smart Watch Device

Study Site: Harrison County Head Start

Name of Researcher & University affiliation: Kristi Robbins, B.A.
                                   The University of Southern Mississippi

Dear Teacher,

We are conducting a research study to evaluate the effects of a Smart Watch device to improve the overall class behavior and teacher praise. Provided you qualify for the study, you will be trained to improve your use of classroom management techniques. The training procedure will involve wearing a Smart Watch device to deliver tactile prompts to help you implement effective behavior management strategies such as praise in the classroom. Observations of student behavior will be conducted by researchers to determine whether or not trained behavior management techniques result in concurrent improvement in student behavior. Procedures will last approximately 20 minutes a day, 3-4 times per week.

Benefits for participating in this research may include improvements in student behavior within the classroom and gaining skills to implement evidence-based behavior management techniques. Minimal risks are associated with participation in this study. You may experience some mild discomfort as a result of being prompted by the Smart Watch. The primary investigator has a Bachelors in Psychology and will be available to ameliorate any issues that may occur as a result of the training procedure. You may withdraw from participation at any time without penalty, prejudice, or loss of benefits.

Will this information be kept confidential?
Your name and behavior information will be kept confidential. To protect your privacy, you will be assigned a letter. This letter will be placed on all paper work. At no time will any paperwork contain your name. Please note that these records will be held by a state entity and therefore are subject to disclosure if required by law.

Who do I contact with research questions? Should you have any questions about this research project, please feel free to contact Kristi Robbins, B.A. at 601-266-5255 or Dr. Keith Radley at 601-266-6748. If you have any questions regarding

your rights as a research participant, please feel free to contact the USM Institutional Review Board at 601-255-5509.

What if I do not want to participate?
Please understand that your refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled, and you may discontinue your participation at any time without penalty or loss of benefits.

Please sign the bottom of this sheet if you choose to participate. You may keep the second copy for your records.

_____   _____
Participant/Teacher Signature   Date

_____   _____
Investigator Signature   Date

APPENDIX B – Behavior Intervention Rating Scale (BIRS; Elliot & Treuting, 1991)

Please circle the number that best describes your agreement or disagreement with each statement.

Statement	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1. This would be an acceptable intervention for the child's problem behavior.	1	2	3	4	5	6
2. Most teachers would find this intervention appropriate for behavior problems in addition to the one described.	1	2	3	4	5	6
3. The intervention should prove effective in changing the child's problem behavior.	1	2	3	4	5	6
4. I would suggest the use of this intervention to other teachers.	1	2	3	4	5	6
5. The child's behavior problem is severe enough to warrant use of this intervention.	1	2	3	4	5	6
6. Most teachers would find this intervention suitable for the behavior problem described.	1	2	3	4	5	6
7. I would be willing to use this in the classroom setting.	1	2	3	4	5	6
8. The intervention would *not* result in negative side-effects for the child.	1	2	3	4	5	6
9. The intervention would be appropriate for a variety of children.	1	2	3	4	5	6
10. The intervention is consistent with those I have used in classroom settings.	1	2	3	4	5	6
11. The intervention was a fair way to handle the child's problem behavior.	1	2	3	4	5	6
12. The intervention is reasonable for the behavior problem described.	1	2	3	4	5	6

	1	2	3	4	5	6
13. I like the procedure used in the intervention.	1	2	3	4	5	6
14. The intervention was a good way to handle children's behavior problem.	1	2	3	4	5	6
15. Overall, the intervention would be beneficial for the children.	1	2	3	4	5	6
16. The intervention would quickly improve a child's behavior.	1	2	3	4	5	6
17. The intervention would produce a lasting improvement in a child's behavior.	1	2	3	4	5	6
18. The intervention would improve a child's behavior to the point that it would not noticeably deviate from other classmates' behavior.	1	2	3	4	5	6
19. Soon after using the intervention, the teacher would notice a positive change in problem behavior.	1	2	3	4	5	6
20. The child's behavior will remain at an improved level even after the intervention is discontinued.	1	2	3	4	5	6
21. Using the intervention should not only improve the child's behavior in the classroom, but also in other settings (e.g., other classrooms, home).	1	2	3	4	5	6
22. When comparing this child with a well-behaved peer before and after the use of the intervention, the child's and the peer's behavior would be more alike after using the intervention.	1	2	3	4	5	6
23. The intervention should produce enough improvement in the child's	1	2	3	4	5	6

behavior so the behavior no longer is a problem in the classroom.						
24. Other behaviors related to the problem behavior are likely to be improved by the intervention.	1	2	3	4	5	6

APPENDIX C - Procedural Integrity for Baseline

Teacher: _____   Date: _____

Observer: _____   Class Period: _____

	Steps	Yes	No
1	Observers sat in a nonobtrusive location in the classroom.		
2	No instructions, prompts, or feedback were provided to the teacher.		

	Number of steps completed:	/2
	Percentage of steps completed:	

APPENDIX D - Procedural Integrity for Intervention and Feedback Phase

Teacher: _____   Date: _____

Observer: _____   Class Period: _____

	Steps	Yes	No
1	Researcher ensured the Smart Watch device was functioning properly prior to beginning of session.		
2	The researcher provided the teacher with the Smart Watch device		
3	Researcher prompted the teacher to deliver one BSP statement to a student engaged in appropriate behavior not disruptive behavior every minute.		
4	Researcher provided performance feedback following the session.		

	Number of steps completed:	/4
	Percentage of steps completed:	

APPENDIX E - Procedural Integrity for Withdrawal

Teacher: _____   Date: _____

Observer: _____   Class Period: _____

	Steps	Yes	No
1	Observers sat in a nonobtrusive location in the classroom.		
2	No instructions, prompts, or feedback were provided to the teacher.		

	Number of steps completed:	/2
	Percentage of steps completed:	

APPENDIX F - Behavior Specific Praise Treatment Integrity

Teacher: _____   Date: _____

Observer: _____   Class Period: _____

	Steps	Yes	No
1	Teacher wore the Smart Watch device.		
2	Teacher provided one behavior specific praise statement for minute 1.		
3	Teacher provided one behavior specific praise statement for minute 2.		
4	Teacher provided one behavior specific praise statement for minute 3.		
5	Teacher provided one behavior specific praise statement for minute 4.		
6	Teacher provided one behavior specific praise statement for minute 5.		
7	Teacher provided one behavior specific praise statement for minute 6.		
8	Teacher provided one behavior specific praise statement for minute 7.		
9	Teacher provided one behavior specific praise statement for minute 8.		

10	Teacher provided one behavior specific praise statement for minute 9.		
11	Teacher provided one behavior specific praise statement for minute 10.		
12	Teacher provided one behavior specific praise statement for minute 11.		
13	Teacher provided one behavior specific praise statement for minute 12.		
14	Teacher provided one behavior specific praise statement for minute 13.		
15	Teacher provided one behavior specific praise statement for minute 14.		
16	Teacher provided one behavior specific praise statement for minute 15.		
17	Teacher provided one behavior specific praise statement for minute 16.		
18	Teacher provided one behavior specific praise statement for minute 17.		
19	Teacher provided one behavior specific praise statement for minute 18.		
20	Teacher provided one behavior specific praise statement for minute 19.		

21	Teacher provided one behavior specific praise statement for minute 20.		

	Number of steps completed:	/21
	Percentage of steps completed:	

APPENDIX G - Procedural Integrity for Teacher Training

Teacher: _____   Date: _____

Observer: _____   Class Period: _____

	Steps	Yes	No
1	Researcher reviewed previously collected baseline with teacher.		
2	The researcher provided the teacher with examples of use with BSP statements using the training script.		
3	Researcher explained results/advantages of increased use of BSP.		
4	Researcher thoroughly introduced the Smart Watch device's use and functions to the teacher.		
5	The researcher required teacher to vocally practice reading the praise statement delivered via the Smart Watch.		

Number of steps completed:	/5
Percentage of steps completed:	

APPENDIX H - Teacher Training Script

The following is an example of a BSP statement: _____ (Student's name), I *love the way you are waiting in the hallway so quietly.* Be sure the praise describes the behavior they are appropriately engaging.

APPENDIX I – Observation Sheet

Classroom:_____ Observer:_____ IOA:_____ Phase:_____

Interval	Student Behaviors		Teacher Behaviors			Interval	Student Behaviors		Teachers Behaviors			Interval	Student Behaviors		Teacher Behaviors	
	AEB	DB	GP	BSP			AEB	DB	GP	BSP			AEB	DB	GP	BSP
1.1						7.5						14.3				
1.2						7.6						14.4				
1.3						8.1						14.5				
1.4						8.2						14.6				
1.5						8.3						15.1				
1.6						8.4						15.2				
2.1						8.5						15.3				
2.2						8.6						15.4				
2.3						9.1						15.5				
2.4						9.2						15.6				
2.5						9.3						16.1				
2.6						9.4						16.2				
3.1						9.5						16.3				
3.2						9.6						16.4				
3.3						10.1						16.5				
3.4						10.2						16.6				
3.5						10.3						17.1				
3.6						10.4						17.2				
4.1						10.5						17.3				
4.2						10.6						17.4				
4.3						11.1						17.5				
4.4						11.2						17.6				
4.5						11.3						18.1				
4.6						11.4						18.2				
5.1						11.5						18.3				
5.2						11.6						18.4				
5.3						12.1						18.5				
5.4						12.2						18.6				
5.5						12.3						19.1				
5.6						12.4						19.2				
6.1						12.5						19.3				
6.2						12.6						19.4				
6.3						13.1						19.5				
6.4						13.2						19.6				
6.5						13.3						20.1				
6.6						13.4						20.2				
7.1						13.5						20.3				
7.2						13.6						20.4				
7.3						14.1						20.5				
7.4						14.2						20.6				

<u>AEB</u> will include passive and active engagement. Passive engagement will be defined as anytime a student's eyes are oriented towards the teacher or the task (e.g. looking at the board during carpet times, or attention to teacher when necessary). Active engagement will be defined as anytime a student is actively engaged in an academic task (e.g. writing letters, alphabet song, name spelling).

<u>Disruptive behaviors</u> will include noncompliance, inappropriate vocalizations, out-of-seat, and off-task. Noncompliance will be defined as failure to initiate compliance of a teacher directed instruction within 5 seconds of instruction delivery. Screaming will be defined as a student using an inappropriate voice that is above normal volume within the classroom. Out-of-seat will be defined as any instance a child's legs or buttocks are not in direct contact with their seat for more than a 3 second duration without teacher permission. Off-task will be defined as any time a student's eye contact is not directed to the assigned task, the teacher, or the required object for 3 seconds or more.

AEB: _____/120 = _____%   DB: _____/120 = _____%

GP:_____/20=_____%   BSP_____/20=_____%

THE UNIVERSITY OF SOUTHERN MISSISSIPPI.

INSTITUTIONAL REVIEW BOARD
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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: 18021502
PROJECT TITLE: Increasing Teachers' Use of Behavior Specific Praise via Smart Watch Technology
PROJECT TYPE: Master's Thesis
RESEARCHER(S): Kristi Robbins
COLLEGE/DIVISION: College of Education and Psychology
DEPARTMENT: School Psychology
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 02/23/2018 to 02/22/2019
Lawrence A. Hosman, Ph.D.
Institutional Review Board

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