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Training Observers in Class-Wide Behavior Data Collection Using Behavior Skills Training

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy in Curriculum and Instruction
with a concentration in School Psychology
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Keywords: analogue videos, behavior observation, classroom behavior, observation training

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Abstract

Training individuals to conduct classroom observations typically requires practice in an analogue setting using one or a combination of strategies, including behavior vignettes, role-play, or video clips of target behaviors (Cooper, Heron, & Heward, 2007; Hartmann & Wood, 1990; Bass, 1987). However, researchers have yet to determine if these strategies are effective and to develop a standard approach to training observers. This investigation was a part of a larger study that looked at the effectiveness of tiered teacher training to facilitate implementation of an interdependent group contingency in the classroom. For this study, I utilized a concurrent multiple-baseline design to help determine the effectiveness of behavior skills training to teach graduate students to take classroom behavior and teacher fidelity data. Students were trained in an analogue setting using videos of elementary classrooms. Interobserver agreement (IOA) data were collected in both the training and the generalization setting (i.e., live classroom). Effectiveness of BST was measured via visual analysis, percentage of all non-overlapping data to determine an effect size, and a within-case comparison model to determine significance. Results indicate the BST framework was an effective approach to quickly training classroom observers in an analogue setting and training gains maintained into the generalization setting.

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Chapter One: Introduction

The focus of this chapter is to provide an overview of the current literature regarding the high frequency use of classroom observations in the school setting by school psychologists and the varying observation training frameworks offered by leading researchers in the fields of School Psychology and Applied Behavior Analysis (ABA). Additionally, this chapter will briefly review the Behavior Skills Training framework as a standard approach to training adults in acquiring complex, active skills, as well as the popular use of videos as part of an observation training format despite the lack of evidence demonstrating the effectiveness of their use. Finally, the chapter will conclude with the proposed research questions and definitions of key terms.

Observations in the Schools

Assessing and evaluating behavior in the classroom setting is an important part of the school psychologists' role in the school setting. Specifically, school psychologists spend about an hour more of their time allocated to evaluating students suspected of school-based disabilities by assessing and disseminating data on student behavior than to evaluating data on student academics (Taub & Valentine, 2014). A school psychologist collects data on a student's behavior for multiple reasons including to measure program outcomes; to make data-based decisions regarding the student, their classroom, or their teacher; or to evaluate the student for a behavioral/emotional disability. Various methods of direct assessments are available such as behavior rating scales, behavioral interviews, and direct observations. Yet, researchers have found that these particular methods have their downfalls. For example, behavior rating scale outcomes tend to be influenced by rater biases (Whitcomb, 2018). Further, behavioral interviews

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tend to be lengthy and difficult to complete, and varying data from different informants may require further effort to interpret.

In addition to practicing school psychologists, researchers rely heavily on various direct data collection methods (Elliot & Witt, 2017). Of the differing methods, direct observation of behavior is considered not only an objective means of measurement, but also one of the foundational tools of assessing problem and challenging behaviors and emotional issues in the classroom (Riley-Tilman, Kalberer, & Chafouleas, 2005; Whitcomb, 2018). However, observing behavioral and emotional problems in the classroom is demanding and, has the potential to yield inaccurate and unreliable data due to barriers such as observer drift, inability to maintain adequate interobserver agreement (IOA), observation biases, or the Hawthorne Effect (i.e., when students alter their behaviors due to the awareness of being observed; Sideridis, 1998; Kalberer, & Chafouleas, 2005; Yoder, Symons, & Lloyd, 2018). One highly recommended approach to minimizing such inaccuracies is to implement high quality observation training (Cooper, Heron, & Heward, 2007). Obtaining a high level of accuracy when observing behaviors begins with implementing a rigorous training system allowing for trainers to have maximum control over the behaviors, environment, and population to be observed (Cooper, Heron, & Heward, 2007). This level of control allows trainers to develop a more complete picture of the trainees' understanding of the operational definitions and data collection.

Observation Training Frameworks

Observation Training Systems

After reviewing multiple approaches to observation training, researchers have determined there are no clear standards for training observers to take data in the classroom (Dempsey, Iwata, Fritz, & Rolider, 2012). Observation training systems as well as interobserver agreement (IOA)

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criterion have not been standardized. Inadequate observer training may result in the questionable reliability of the data collected. In fact, researchers argue that only an explicit and systematic training framework can produce dependable data (Cooper, Heron, & Heward, 2007). In past research, investigators have used various methods to train observers to conduct classroom observations, including practice in an analogue setting using (a) narratives of behavior vignettes; (b) role-plays; (c) video clips of target behaviors (Cooper, Heron, & Heward, 2013; Hartmann & Wood, 1990; Bass, 1987) or (d) in vivo or live training (Dempsey, Iwata, Fritz, & Rolider, 2012). However, there are no standards for the framework of these observation training systems. The literature on behavior observations offers merely suggestions for training frameworks which utilize one or more of the above methods.

Yoder, Symons, and Lloyd (2018) suggest exposing trainees to videos of individuals acting out specific scenes. These scenes are representative of the behaviors observers would encounter in the study. Researchers determine the type of coding to use (e.g., criterion-coding standards) and the method of coding (e.g., timed or event sampling). The trainers then explain the target behaviors and go over in detail a model of the criterion-coding standard with the trainees. At this time, trainees may discuss concerns or ask questions. Trainers determine the method of data collection or coding and teach it to the trainee, and it is expected that 100% accuracy is obtained before independent observations begin. Trainees then code partial sessions or scenes (e.g., 10 minutes of 30-minute long sessions) with feedback given by the trainers until the predetermined IOA is obtained. Trainees then code full sessions until a predetermined percentage of agreement is met for three consecutive coding sessions. When the training criterion is met, trainees may then observe in vivo.

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Cooper, Heron, and Heward (2007) suggest a different training system. Cooper and colleagues suggest that trainees are first exposed to the behavior definitions, data collection procedures and forms, and any required tools. Trainees then practice the data collection procedures through simple narrative descriptions of behavioral vignettes until 100% accuracy is obtained. Once the trainees have met this criterion, they begin to code more complex narrative descriptions of written behavioral vignettes until 100% accuracy is obtained. Trainees then code either videos or scenes role-played by trainers of the target behaviors. These vignettes are complex and presented as if the trainee were in the natural setting. Additionally, trainees recode the same sessions in order to assess their consistency of conducting the data collection procedures. Trainees are required to obtain a predetermined percentage of agreement before they are trained in the natural setting in which they will independently observe. Here, trainees code behaviors alongside a trainer until a predetermined agreement criterion is met between the trainee and trainer. When this training criterion is met, trainees may then observe in vivo.

These training systems are two examples of possible approaches to training observers documented in extant literature; however, neither of the systems' researchers provided evidence of the reliability of the use of narrative vignettes, videos, or role-playing as a means of training nor did they investigate the level of maintenance or carryover effect the training has from the training in an analogue setting to the in vivo setting. Additionally, a standardized IOA criterion was not offered nor was the suggested IOA justified.

IOA Criterion

IOA is a method used to determine one type of reliability of an observational system and is the primary method used in behavior observations (Watkins & Pacheco, 2000). Two observers' observation responses are compared to each other to determine a percentage of

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agreement. Calculating IOA allows trainers and observers to get a better understanding of the degree to which observers have reliably collected behavior data (Cooper, Heron, & Heward, 2007). Meeting or exceeding an IOA criterion is necessary to continue conducting observations in vivo as well as to correct observer drift. However, there is not a standard IOA criterion for behavior observations (Yoder, Symons, & Lloyd, 2018). Horner et al. (2005) suggest IOA criterion should be at least 80% or higher.

There are several methods for calculating IOA. Determining the type of IOA to use typically depends on the target behavior and behavior observation measurement method. For example, momentary time sampling is used to observe continuous behaviors such as task engagement and partial interval recording is used to observe high frequency problem behaviors such as disruptive behaviors (Cooper, Heron, & Heward, 2007). These measurement methods and target behaviors would require the interval reliability IOA method. For the purpose of this proposal, the interval reliability IOA procedure will be reviewed here as it is the method that will be used in the proposed study. This method is calculated by dividing the number of interval agreements between observers by the number of total number of intervals observed and multiplying the decimal by 100. For example, Observer A and Observer B coded 8 intervals for which they agreed behaviors either occurred or did not occur. If the observers coded 10 total intervals, the 8 agreements would be divided by the 10 total intervals observed, resulting in the two observers obtaining 80% IOA ($\frac{8}{10} = 0.8 \times 100 = 80\%$). Literature investigating varying IOA calculations demonstrates that interval reliability IOA produces result in high interobserver agreement due to less stringent definition of agreements in interval responses than in other types of data behavior observation metrics (e.g., frequency, duration; Rolider, Iwata, & Bullock, 2012).

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Behavior Skills Training and the Use of Videos

Behavior skills training (BST) is a standard and systematic procedure used to train active skills through instruction, rehearsal, role-play, and performance feedback (DiGennaro Reed et al., 2018; Ruppert et al., 2016). The goals of BST are for the trainee to develop adequate skills and maintain those skills over time (Miltenberger, 2016). In addition, skills may be generalized to a natural setting outside of the instructional or analogue setting with the use of simulations equivalent to the desired setting (e.g., videos of students in a classroom). Extant research in ABA includes the use of BST to teach a variety of skills, including discrete trial teaching (Sarokoff & Sturmey, 2004; Lafasakis & Sturmey, 2007), stimulus preference assessments (Lavie & Sturmey, 2002), and parenting skills in challenging behavior and naturally occurring problematic routines (Sawyer, Crosland, Miltenberger, & Rone, 2015). However, there is limited research investigating the efficacy of BST to train observers to accurately code instances of behavior during observations. Despite the lack of evidence specific to training observers to code behaviors, its high level of effectiveness in training adults to increase the occurrence of other desirable behaviors indicates that utilizing the BST framework in training classroom observers using videos of students in their classroom may result in increased accuracy (as measured by IOA) among observers.

Although the application of BST to training observers has not been extensively studied, many researchers have incorporated the use of videos to train observers to identify the presence or absence of target behaviors. Additionally, using videos of students in classrooms as a training system may increase the control trainers require to ensure this level of observer accuracy and minimize the level of observer drift (Yoder, Symons, & Lloyd, 2018). However, there are currently no standards for the field regarding the use of videos as a training system for

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identifying target behaviors during classroom observations. Currently, there are no studies that examine training observers using a video-based system followed by collecting observation IOA in the treatment setting. Current studies have examined video-based systems either as a means of direct observation systems (i.e., recording classroom students first followed by code the behaviors; Gridley, Bywater, & Hutchings, 2018) or as a means of training systems, but without investigating the trainees' skill generalization from the analogue to in vivo setting (Dempsey, Iwata, Fritz, & Rolider, 2012).

Purpose and Research Questions

Observation training utilizing the BST framework may serve as an effective approach to developing adequate skills and helping to generalize such skills from an analogue to an in vivo setting. Further, videos may serve as an effective and systematic method of training observers to conduct in vivo observations (Yoder, Symons, & Lloyd, 2018). Today, given the proliferation of technology and web-based content, accessing videos of students interacting in classrooms during instruction may be much easier than writing narratives or developing and acting out multiple vignettes. The purpose of this study was to understand the extent to which BST using videos results in reliable in-vivo observations and to understand whether high levels of IOA are maintained during in vivo observations. The research questions for this study include:

1. How effective is the use of the BST framework in conjunction with analogue videos in training graduate students to take accurate class-wide behavior data?
    a. To what extent does the use of the BST framework with analogue videos improve observers' interobserver reliability of data collection?

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b. To what extent does IOA generalize to and maintain in live, direct classroom observation after behavior observation training utilizing the BST framework and analogue videos?

Hypotheses

Research Question 1a

The researcher hypothesized that each participant in the baseline phase would consistently demonstrate a low level of IOA with a flat trend. Additionally, there would be little to no variability among data points. When entering the intervention phase of the observation training utilizing the BST framework with analogue videos, each participant would demonstrate significant immediacy in increased IOA. Each would have a high level of IOA with either a positive or flat trend meeting the mastery criterion of 80% or higher for three consecutive sessions. Data points would reveal little to no variability and no overlap with the previous phase.

Research Question 1b

The researcher hypothesized that when entering the live observation phase, each participant would generalize their observation skills by obtaining an 80% or higher in the first observation session. Further, it was hypothesized that each participant would maintain high levels of IOA with flat trends and continue to meet the mastery criterion of 80% or higher for the remaining live observation sessions. A graph of the hypothesized momentary time sampling and partial interval recording IOA scores is shown as Figure 1.

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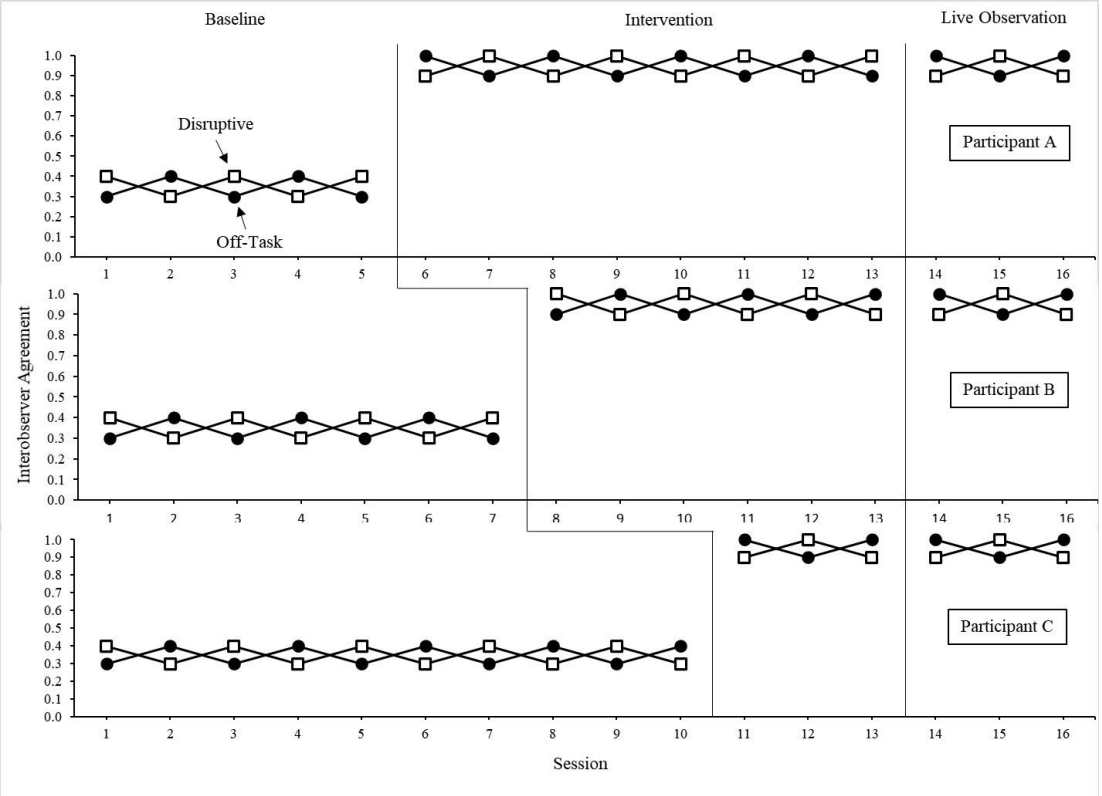

Figure 1. Hypothesized IOA for disruptive and off-task behaviors.

Definitions of Key Terminology

Analogue setting. Treatment setting designed to imitate the setting where a behavioral intervention or newly acquired skill would occur (Gillum et al., 2003).

Behavior Skills Training. A systematic and empirically supported training package designed to develop complex and active skills in trainees. BST is broken into four sequential steps: instruction, modeling, rehearsal, and performance feedback (DiGennaro Reed et al., 2018).

Generalization. "The extent to which a learner emits untrained responses that are functionally equivalent to the trained target behavior" (Cooper, Heron, & Heward, 2007, p. 703).

In vivo (or in situ). "Live coding; coding without the benefit of an audio or video recording" (Yoder, Symons, & Lloyd, 2018, p. 258).

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Inter-observer agreement. "The degree to which two or more independent observers report the same observed values after measuring the same events" (Cooper, Heron, & Heward, 2007, p. 698).

Maintenance. "The extent to which a learner continues to perform the target behavior after a portion or all of the intervention responsible for the behavior's initial appearance in the learner's repertoire has been terminated" (Cooper, Heron, & Heward, 2007, p. 703).

Momentary time sampling. "A measurement method in which the presence or absence of behaviors are recorded at precisely specified time intervals" (Cooper, Heron, & Heward, 2007, p. 699).

Multiple-baseline across subjects design. "A multiple-baseline design in which the treatment variable is applied to the same behavior of two or more subjects in the same setting" (Cooper, Heron, & Heward, 2007, p. 699).

Partial-interval recording. "A time sampling method for measuring behavior in which the observation period is divided into a series of brief time intervals. The observer records whether the target behavior occurred at any time during the interval" (Cooper, Heron, & Heward, 2007, p. 701).

Reliability. "The degree to which a measure is consistent with another measure of the same thing" (Yoder, Symons, & Lloyd, 2018, p. 262).

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Chapter Two: Literature Review

Currently there are no empirical investigations of the effectiveness of BST as a training framework for classroom observers. The focus of this chapter is to review the literature on the importance and role of behavioral assessment in schools, the need for school psychologists to have adequate classroom observation skills, the use of videos as part of an observer training format, and the use of BST as an explicit and systematic training framework demonstrating generalization and maintenance of newly acquired skills from a training setting to a natural setting.

Behavioral Assessments and the Need for Observation Skills

Since the reauthorization of the Individuals with Disabilities Education Act (IDEA) in 1997, a new focus on supporting students who engage in problem behaviors which impede one's or other's learning rose to a higher priority (OSEP Center on Positive Behavioral Interventions et al., 2000). For example, in the current IDEA statute, section 300.324 (a) (2) (i) states that the school-based individualized education program (IEP) team must consider special factors "in the case of a child whose behavior impedes the child's learning or that of others, consider the use of positive behavioral interventions and supports, and other strategies, to address that behavior."

With the emphasis on behavior assessment and intervention in IDEA, a need for conducting functional behavior assessments (FBAs) in the schools followed. An FBA is an "applied behavior-analytic, hypothesis-testing procedure used to reveal the exact circumstances controlling discrete behavioral events" (Sailor et al., 2009 p. 8). A prominent component of conducting FBAs is the collection of various assessment data including direct observation data,

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interviews, behavior ratings, and archival file reviews that supports the need for the development of behavioral intervention plans (Sugai, Lewis-Palmer, & Hagan, 1998; Sugai, Lewis-Palmer, & Hagan-Burke, 2000). Surveys of the practices of school psychologists demonstrate that 46% of their time is allocated to conducting student-level assessments (Bramlett et al., 2002). Specifically, 76% of school psychologists have reported an increase in conducting behavioral assessments (Shapiro & Heick, 2004). Although a majority of school psychologists utilize student interviews (53%) and behavior ratings (76%) in a majority of their behavioral cases, just under half (47%) reported utilizing direct observations. School psychologists may spend more of their time assessing and evaluating students with behavioral and emotional concerns (Taub & Valentine, 2014), and conduct observations on a regular basis (Benson et al., 2019), however, the literature on the training, use, and acceptability of and experience in behavioral assessment procedures demonstrates a need for the development of observational skills in school psychologists (O'Neill, Bundock, Kladis, & Hawken, 2015; Riley-Tillman, Chafouleas, Briesch, & Eckert, 2008).

Riley-Tilman and colleagues (2008) surveyed 500 randomly selected National Association of School Psychologists (NASP) members in order to investigate school psychologists' level of training in a behavioral intervention titled daily behavior report cards as well as in direct observation. Of the 191 respondents of the survey, between 84 and 89% were placed in public schools. The findings of the study demonstrate that roughly a quarter (22 to 25%) of the school psychologists have received minimal to no training in direct observations. Further, roughly a third (27 to 37%) of the school psychologists seldom or never conduct direct observations.

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O'Neill and colleagues (2015) investigated the acceptability of FBA procedures among Special Education teachers and school psychologists. The researchers surveyed both groups with a 33% response rate (263 total surveys returned). Each participant received a written vignette of either a student exhibiting mild problem behavior or a student exhibiting severe problem behavior. The survey required the participants to rate the specific FBA procedures (i.e., administering rating scales, conducting informant interviews, conducting systematic direct observations, and administering functional analysis manipulations) based on their willingness to use and experience with those procedures using a 6-point Likert scale ranging from strongly disagree to strongly agree. Additionally, participants were asked to rate their past use of the FBA procedures. It was found that school psychologists rated the procedures of FBA significantly lower ratings of acceptability. Further, school psychologists reported that the FBA takes too much time and that they prefer other methods to collect behavioral data. Regarding direct observations, school psychologists rated willingness to conduct, usefulness, and feasibility between neutral and agree; however, experience conducting direct observations was rated as occasionally. Based on these findings, the researchers suggested school psychologists require more adequate training on behavioral assessments throughout their preservice programs. Moreover, the researchers indicated that school psychologists require more time in their daily schedule in the schools to conduct behavioral assessments. This study provides evidence of the need for school psychologists to have adequate classroom behavior observation training to develop the skills to reliably collect behavior data.

Current Literature Investigating Video-Based Observations and Trainings

The literature on using conducting video-based observations in training is sparse. Moreover, the authors of the literature that exists in the use of videos in classroom observation

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have only investigated this method as an alternative to direct observations in vivo. Despite the lack of literature in this area, the studies discussed below do shed light on the positive and negative aspects of using videos in behavior observation training rather than training observers in vivo. Additionally, each study describes varying approaches to training observers that should be considered when identifying potentially efficacious models to increase observer reliability.

Tiger and colleagues (2013) examined the effectiveness of direct observation in the classroom of three students with problem-behavior. Researchers collected data by directly observing the students in their classrooms for the entire 5-hour school day using 10-minute sessions with 10-second intervals with roughly one-minute breaks in between each session for four consecutive school days. In addition to calculating the overall daily occurrence of problem behaviors, the researchers split the data from these observations into 10-minute, 20-minute, 30-minute, and 60-minute observations. The researchers collected IOA data for 22% of the sessions. Researchers determined accuracy was affected by the variability of behavioral occurrences. Specifically, low variability or high consistency of behaviors yielded accurate estimates, whereas high variability or low consistency of behaviors yielded inaccurate estimates. The results from this study indicated that the ability to accurately capture the true levels of the occurrence of target behaviors in vivo declines as the variability and occurrence of these behaviors increase. This study provides evidence of how difficult it is for classroom observers to reliably collect variable data when observing in vivo, thereby, indicating that rigorous observation training in an analogue setting should be explored as an alternative to training observers in vivo.

Although the use of analogue videos to train observers warrants exploration, Derry and colleagues (2010) offer several ethical concerns in video recording students in classrooms and using such videos as part of data collection, observer training, and/or classroom-based research

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projects. Institutional Review Boards (IRB) conduct reviews of research proposals prior to researchers beginning any data collection. This review is completed to ensure various codes of ethics are being followed, especially when human subjects apply to the proposed research. Specifically, IRBs review the processes and procedures the researchers will enact in order to protect the identity of the subjects within the study. Regarding the video recording of students in their classrooms, researchers cannot ensure the identities of such a vulnerable population will be protected. Because of this risk, IRBs will require that informed consent is obtained from all minor subjects in the recording. IRBs may also require the researcher to obtain new consents for each time the recoding is edited and reused outside it original intention of use. Depending on the project funding (i.e., public versus private), the data from the video recording may be publicly disseminated and used in ways unintended by the researchers. Approval from the IRB becomes more difficult to obtain when the researchers are unable to ensure that recordings of students will not be distributed beyond the expected contexts of use. Contexts include the research group, graduate training, professional conference presentations, and the public Internet. Overall, conducting video recordings of students in the classroom requires a stringent review by IRBs focusing on the researcher's ability to protect the identity of the students.

Despite the ethical considerations, a few studies exist that incorporate analogue videos and allow for comparison to in vivo observation. In fact, studies that involve collecting data from an analogue setting and in vivo illustrate the differences between the two observation methods. Gridley, Bywater, and Hutchings (2018) compared IOA data of video-based observations and in vivo observations of child-parent interactions for 30-minute periods. One of six different observers visited the homes of the participating families to observe the interactions between the parent and their child. These observations were videotaped for the second half of the study. The

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researchers collected IOA data for 20% of the observations. Following the observations in vivo, the researchers randomly selected 40 videotapes of the collection of 192 videotapes depicting the parents interacting with their children. Two different observers from the six who had originally observed in vivo independently observed and coded all 40 videos. The researchers then calculated IOA between the two observers. Data from the original in vivo observations were compared to the data from the video observations. They found that the video observations produced an 89.75 IOA percentage, whereas in vivo observations produced a 73.67 IOA percentage. These findings indicated that levels of IOA were more consistent through video observation. Thus, this study provided evidence that obtaining observation data on behavior may be more accurate when using video recording.

Although the aforementioned study provided evidence that video-based observations may result in higher levels of IOA than in vivo observations, a major gap in the literature regarding the use of video-based observation training involves very few studies examining its effectiveness as a training procedure. One study by Dempsey, Iwata, Fritz, and Rolider (2012) compared the effects of in vivo observation training and video-based observation training. The researchers assigned 59 undergraduate students to the two training methods. These students were previously trained to take observation data as a class requirement; however, reliability did not factor into the requirement. In vivo observation training consisted of having trainees observe a therapist and a child for 10-minute sessions along with another highly experienced observer. In vivo training was completed when the trainee obtained 90% IOA in one of two ways: (a) in three consecutive observation sessions depicting two clients or (b) in six consecutive or nonconsecutive sessions with any number of depicted clients. Trainees in the video-based observation training reviewed a description of the therapy session before observing the video. Trainees then viewed six 10-

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minute videos with each video containing more students and more target behaviors than the previous. The number of role-played clients varied from one to more than one. When trainees completed their observations, their data were scored against the data record of a trained observer who previously obtained 100% agreement. Video-based training was completed when participants obtained 90% IOA in a single observation (not averaged across all attempts per video) for each of the six videos. If the IOA criterion was not met for one of the six videos, the participant would watch and code that video over again until 90% IOA was obtained. No additional feedback was given to the trainee. Once the IOA criterion was met, the trainee was able to watch and code the following new and more complex video.

Following the completion of either in vivo or video-based training, participants completed a posttest observation of three 10-minute video recordings with an IOA observer. It was found that there was not a significant difference in training IOA data for both in vivo and video-based training (85% and 86%, respectively). Moreover, participants of both training methods produced IOA data from the posttest that indicated improvement (98.9% and 96.%, respectively). However, participants within the in vivo observation training took nearly twice as long to meet the completion criterion (a mean of 22 sessions for the more stringent criterion and a mean of 13 sessions for the less stringent criterion) when compared to participants within the video-based observation training (a mean of 8 sessions). The authors discussed the implications of this study which provided evidence that not only is observation training using videos efficient in maintaining the IOA criterion post training, but also "video training allows precise control over session content, which can be manipulated to introduce complexity gradually and depict all relevant variables during practice" (p. 831).

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Although this study provided useful procedures and methods in the realm of examining various observation training methods, it only examined the carryover of IOA of participants within the in vivo observation training to video-based observation, not vice versa. Additionally, neither method of training observers used a previously researched or validated framework, such as BST. Thus, it may be difficult to consider the observation training frameworks used in these studies as contributing components to the reliability of the data that were collected, although researchers are still unsure how to consistently reach high level of IOA in the most effective and efficient manner.

Behavior Skills Training as a Standard Training Framework

BST, although not formally named as such at the time, is a training package consisting of four components which originated from various training approaches used to teach and facilitate generalization of skills in providing feedback and parenting by mothers with developmental disorders (Haffey & Levant, 1984; Feldman et al., 1986; Feldman et al., 1989). These training approaches ranged from four to eight steps. It was not until Gordon and Davidson's chapter on behavioral parent training in the Handbook of Family Therapy that the term "behavioral skills training" was used to reference the below training framework (Haffey & Levant, 1984). The BST framework is structured into four steps:

1. Instruction - this step involves providing trainees with a detailed description of the skills and ensuring trainees understand the importance of the skills. This step also involves knowing when the skills are to be used.
2. Modeling - this step involves the trainer correctly demonstrating how to perform the skill to the trainees

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3. Rehearsal - this step involves allowing the trainees to practice the skill multiple times. Data should be collected on the trainees' accuracy of the skills to determine the occurrence of acquisition of the skill.
4. Feedback - this step involves providing the trainees some form of performance feedback. This task is typically done with positive praise coinciding with corrective feedback and using data previously collected (DiGennaro Reed et al., 2018).

Effectiveness of BST

BST has been studied and found to be an effective framework for training adults in new active skills and effectively generalizing those skills into the natural setting (DiGennaro Reed et al., 2018). Sarokoff and Sturmey (2004) used the behavioral skills training framework to train five special education teachers to implement a complex discrete trial training intervention. Training took place in an analogue setting defined as a small room within the child's home. The baseline phase of this study consisted of providing the teachers with the operational definitions of the components of discrete-trial teaching and asking teachers to conduct discrete-trial teaching to the best of their ability for ten 5-minute trials. The training of the teachers utilized the BST framework as described above. This included reviewing component operational definitions, reviewing individual baseline scores and their corresponding graphic representations, and providing performance feedback regarding the outcomes. Following these steps, the teachers were allowed to rehearse the components with students. Performance feedback and researchers modeling the components with students followed. This training procedure continued for three trials at a time for no more than ten minutes. In order to complete the training, teachers were required to obtain 90% or more correct responses for three or more consecutive trials out of ten total trials. Once teachers completed training, they were asked to conduct discrete-trial teaching

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without any additional training. Results of this study revealed three of the five teachers increased implementation fidelity from an average of 46% before being trained (in baseline) to an average of 98% implementation accuracy following the completion of BST. Thus, BST appeared to be an effective procedure used to train the adults in the complex skills required in discrete trial teaching in a short period of time.

Lafasakis and Sturmey (2007) also used BST to train adults to implement discrete-trial training; however, three parents of children with varying severities of problem behaviors were participants. Training took place in a room at a special education preschool. The baseline phase of this study included providing the parents with the operational definitions of the components of discrete-trial teaching. Following their review, parents were asked to conduct discrete-trial training to the best of their ability. Each parent conducted ten 5-minute trials. The parents were then trained utilizing the BST framework. This included providing additional descriptions of the component operational definitions, reviewing the baseline scores and their corresponding graphic representations, and providing performance feedback. The researcher then modeled the components of discrete-trial teaching with the parent's child. Following the modeling, parents rehearsed skills with their child while the researcher provided in-the-moment performance feedback. The researcher then modeled the components that were performed correctly and incorrectly. These rehearsal and modeling steps continued for three trials at a time for no more than ten minutes. In order to complete the training, parents were required to obtain 90% or more correct responses for three or more consecutive trials out of ten total. Once each parent completed their training, they were asked to conduct discrete-trial teaching with their child without any additional training. The researchers found that all three participating parents

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increased implementation accuracy of discrete-trial teaching by an average of 37% from baseline (parents given basic outline of discrete-trial teaching instructions) to post completion of BST.

Lavie and Sturmey (2002) explored the effectiveness of the BST framework when training three assistant teachers in conducting paired-stimulus preference assessments with children with autism spectrum disorders between the ages of 3 and 5. For the baseline phase, the assistant teachers were given minimal materials (i.e., a pen and a piece of paper) and were given no instructions. A child and various stimuli were available in the room. Following baseline, the assistant teachers were trained to conduct paired-stimulus preference assessments utilizing the BST framework. The tasks of the assessment were described with a checklist of skills, which were then modeled utilizing a video recording of someone performing each skill. Following instruction and modeling, each assistant teacher rehearsed the skills with a child and various stimuli while the researcher provided performance feedback. Modeling, rehearsal, and performance feedback were repeated until the assistant teacher correctly performed 85% of the steps in two consecutive sessions (mastery of skills). Sessions were 30 to 40 minutes in length. It was found that the participants averaged 20% steps completed accurately in the baseline phase. Throughout training, assistant teachers required two sessions to average 99% steps completed accurately.

Recently, Drifke, Tiger, and Wierzba (2017) conducted a component analysis by investigating the four components of BST as a framework for training adults in a three-step prompting and differential reinforcement of compliance intervention. Additionally, the researchers assessed generalization of these skills across various settings. Three parents and their children took part in this training. BST training took place in the children's bedrooms and moved to other rooms of the house following the completion of training. Baseline consisted of the

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researchers asking the parents to present 20 instructions to their child as part of the intervention without prior instruction, modeling, or feedback. Following the 20 trials of presenting instruction, parents entered the training phase. Training consisted of introducing the components of BST in the sequential order, allowing for rehearsal and generalization after each component, and collecting and analyzing data on implementation accuracy following each component session. The first set of session included only written instructions. The second set of sessions included the written instructions alongside the researcher modeling implementation of the interventions. The third and final set of sessions included both the written instructions and modeling of implementation alongside performance feedback regarding what components were implemented correctly and incorrectly. Mastery criterion for this training was set at 19 out of 20 trials demonstrating correct responding. In terms of outcomes, at baseline, all parents obtained low fidelity percentages; however, after the introduction of each component, fidelity rose significantly. It was not until the introduction of performance feedback along with written instruction and modeling that parents met the mastery criterion. Additionally, it was found that as fidelity percentages increased so did the parents' ability to generalize their skills in a natural setting with discontinued training components.

Generalization and Maintenance of Skills

Important features of the BST framework include not only training participants to master new active skills, but to generalize the newly acquired skills from a training setting to a natural setting. Sawyer and colleagues (2015) investigated the effectiveness of BST on training parents in skills in managing challenging behavior in their children. Additionally, the researchers investigated the generalization of the newly acquired skills to the occurrence of naturally problematic routines. At baseline, the three single participant parents were observed interacting

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with their children when they were engaging in the routines where target behaviors were most prevalent without training. Following the baseline session and before beginning BST, parents were assessed in implementing specific skills in multiple role-play scenarios of the routine with the researcher playing the part of the child.

Following the pre-assessment role-play, parents entered BST. When parents completed BST, they again were assessed in implementing specific skills in multiple role-play scenarios of the routine with the researcher playing the part of the child to ensure mastery of skills. Researchers then gave each parent individualized recommendations modifying the targeted routine and completed video recordings of occurrences of routines in the natural environment. The researchers collected data on skill implementation during the target routines. It was found that each parent participant completed between 0% and 30% steps accurately during the pre BST assessment and met mastery level of 100% in the post BST assessment. The researchers also found that participants were able to significantly increase their skill accuracy from baseline to a natural setting with their own child.

Additional studies utilizing the BST framework in order to develop skills in a variety of types of participants (i.e., football players, blackjack players, and children and students with Autism Spectrum Disorder) have demonstrated or measured the generalizing of those skills into different settings (Ledbetter-Cho et al., 2016; Morgan & Wine, 2018; Speelman, Whiting, & Dixon, 2015; Tai & Miltenberger, 2017). Although generalization was not the main outcome of these studies, participants were able to generalize their newly acquired skills into novel settings. The findings of these studies suggest that the BST framework is not only effective in the development and implementation of newly acquired skills, but also in the successful generalization of skills from a training setting to a natural setting. This study further informs the

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use of BST as a standardized approach to training observers and generalizing newly acquired observations skills into the classroom.

Conclusion

Over the last two decades, there have been significant changes with regard to working with youth and adolescents with problem behaviors in school settings. The shift to focus on prevention and intervention noted in IDEA resulted in mandates for IEP teams to consider special factors when a student's behavior impedes their learning or the learning of others (OSEP Center on Positive Behavioral Interventions et al., 2000). Since this shift, school psychologists have allocated more of their time to assessing student behavior; however, research has demonstrated a need for enhanced training in direct observations of classroom behavior (O'Neill, Bundock, Kladis, & Hawken, 2015; Riley-Tillman, Chafouleas, Briesch, & Eckert, 2008).

Much of what is known about observation training frameworks in the academic literature is that there is no standardized approach, but only an explicit and systematic training framework can produce reliable IOA and behavior data (Dempsey, Iwata, Fritz, & Rolider, 2012; Cooper, Heron, & Heward, 2007). Further, although videos of classroom behaviors appear to be a feasible and easily controlled component to training observers, researchers have yet to determine if these strategies are effective. To better understand the impact a standardized training framework and use of video-based strategies have on increasing IOA in observation trainees, researchers should investigate the systematic and empirically supported training approach known as BST alongside the use of videos of classroom behaviors. Exploring the generalization and maintenance of newly acquired observation skills from an analogue training setting to a live classroom setting may also provide evidence for the validity of BST as a standardized framework to adequately train classroom behavior observers.

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Chapter Three: Method

Design

The proposed study is part of a larger study in which graduate student observers were trained to conduct behavior observations in elementary school classrooms. The study was focused on using tiered teacher training to increase fidelity to the Good Behavior Game in self-contained classrooms serving students with Emotional/Behavioral Disabilities. The larger study utilized a staggered introduction of the behavior observation training (independent variable) across time which controlled for any likelihood that changes in IOA (dependent variable) were due to uncontrolled variables or events within or outside of the study, therefore increasing internal validity (Horner & Odom, 2014; Kratochwill & Levin, 2010). In the current study, participants completed behavior observation training in an analogue setting, which involved watching videos in a classroom on the USF campus in the College of Education building. Participants who completed the behavior observation training were then permitted to continue observations in an in vivo setting, or a live classroom setting as an observer in the larger study. The in vivo setting was in two self-contained behavior support classrooms which included a majority of student eligible for Emotional/Behavior Disability (E/BD). These classrooms were based in a school in the Pasco County School District.

A concurrent multiple baseline with random assignment design was used to analyze the effects of the behavior observation training conducted as part of the larger study on interrater reliability. The researcher examined the performance within and across participants during baseline, treatment, generalization, and maintenance phases. What follows is a description of the

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settings and participants, followed by study variables, study procedures, and the data analytic plan.

Settings and Participants

After obtaining approval from USF IRB, the IOA data of three School Psychology graduate students from the University of South Florida who participated as graduate student observers was analyzed in the current study. Each of the three participants were female and between the ages of 24 and 27. At the start of the larger study, Participant 3 was a first-year graduate student and Participant 1 and 2 were second-year graduate students. These three students participated in trainings on conducting behavior observations as part of the larger study. Notably, the graduate students were receiving training in behavior observation as part of the School Psychology program's required coursework. Although there were initially 12 graduate students who participated in the behavior observation training, only data from the three graduate students who conducted behavior observations throughout the duration of the larger project were analyzed in the current study.

Each participant self-selected to participate in this study based on their interest in continuing to conduct observations on classroom behaviors in the live classroom setting as part of the larger research project. Each participant agreed to complete the observer training as a routine part of training for the larger study and to allow the use of such training data as part of the current study by completing a consent form. Each participant was randomly assigned a dyad or triad of other students interested in the larger study at the time of behavior observation training. In single-case design, each subject serves as their own control (Cooper, Heron, & Heward, 2007).

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Study Variables

Independent Variable

BST served as the study's independent variable. This framework was organized into four steps: *instruction* on the operationally defined target behaviors (i.e., off-task and disruptive behaviors) and on completing the observation coding sheet, *modeling* completing the observation coding sheet and examples of the target behaviors, *rehearsal* of coding target behaviors via videos of students in a classroom setting, and *performance feedback* from the trainer regarding trainee IOA scores and approaches to increasing reliably (DiGennaro Reed et al., 2018). See Intervention Procedures for additional details regarding how the BST steps were incorporated into behavior observation training. These components were implemented sequentially. Each training group participated in BST.

Dependent Variable

IOA to expert criterion was used to determine participants' accuracy of collecting behavior data after BST using YouTubes videos of students in classrooms. Expert criterion was established prior to the start of baseline. This process is described in the intervention procedures. The larger study used momentary time sampling procedures to record off-task behaviors and partial interval recording procedures to record disruptive behaviors. These were the two target behaviors observed during Dr. Diana Ginns' Good Behavior Game teacher fidelity study. Additionally, these behaviors are typical in classroom observations and in applied behavior studies. *Disruptive behaviors* were operationally defined as any instance in which a student was out of seat without prior approval; any instance in which any of the four legs of a student's seat were not in contact with the floor for 3 consecutive seconds; any instance in which a student emitted an audible noise either with mouth, hands, feet, or object without prior teacher approval;

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any instance in which a student had direct contact with another individual without prior approval; and any instance in which a student had direct contact with an object without prior approval. *Off-task behaviors* were operationally defined as they are in the Behavior Observation System of Students (BOSS; Shapiro, 2004) and served as a proxy for academic engagement. Off-task behaviors included any instance of motor activity that were not directly associated with an assigned academic task; any instance of non-academic verbal activity that were not permitted and/or related to an assigned academic task; and any instance of a student passively not attending to an assigned academic activity. Included are those times when a student was quietly waiting after the completion of an assigned task but was not engaged in an activity authorized by the teacher. Based on these behavior definitions, IOA data were analyzed using interval reliability IOA in the larger study. Measuring IOA using interval reliability IOA rather than total count IOA was thought to produce more accurate and consistent outcomes based on these types of behaviors (Cooper, Heron, & Heward, 2007).

Intervention Procedures

Specific to the proposed study focused on BST training to promote observation accuracy, classroom videos were used to train observers to record target behaviors. An exhaustive search for videos for training observers in classroom observations was previously conducted and the researchers were unable to find accessible videos explicitly for training purposes. Due to the lack of available training videos, the videos that were used in this study were assessed and collected from the video website YouTube. Videos included real elementary students in their classroom being taught by their instructor. In order for a video to be a part of training, it must have been at least five minutes long (in order to be segmented into 5-minute session videos), have had a stable camera facing the students, have had most students in frame, and the instruction must have

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occurred throughout the video. Videos used in this training were coded after the four trainers of this study met an IOA criterion of 80% for three consecutive video observation sessions. The four trainers included the researcher of this study, Dr. Ginns, the current researcher, and two additional School Psychology graduate students studying positive behavior supports and ABA. The researcher, who served as the primary trainer in the training sessions, then watched and coded each video ahead of time in order to compare each rater's observation data with the primary researcher.

Baseline Phase

In order to address the relationship between the implementation of behavior observation training utilizing classroom videos and the observer's rating accuracy, the researchers collected five points of baseline data of participant IOA before training began (Kratochwill & Levin, 2010). Before the participants viewed and coded videos of students in classrooms, they reviewed hard copies of the data collection procedures and forms, and the operational definitions of the target behaviors (see Appendices A, B, and C). Trainers requested that all questions be held by the trainees until their group entered the intervention phase. Following this review, participants observed and coded 5-minute videos of students in classrooms as a large group. Trainers then collected trainees' data collection forms after each observation session and calculated IOA for each video.

Training Phase

The training phase of this study utilized the BST framework to standardize the training framework as described in the previous chapter. The training phase began after the completion of the first five video observation sessions. Participants entered the training step of the study with

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their randomly selected groups in the randomly selected order. Participants who were not in the training phase continued to watch sessions and record behavior during the baseline phase.

The trainer engaged in the instruction phase of BST by reviewing the operational definitions with the trainees and answered any questions the trainees had regarding the operational definitions. Following the behavioral definitions, the trainer reviewed the components of the data sheet and the procedures of partial interval and momentary time sampling with the trainees and answered any questions the trainees had. Following the instruction step, the trainer engaged in the modeling step by modeling both disruptive and off-task behaviors as a means to provide a visual. The trainer focused on modeling behaviors that were brought up by the trainees as ambiguous. Additionally, the trainer modeled how to conduct partial interval and momentary time sampling, as described below, and how to adequately complete the coding sheet.

Following the modeling phase, the trainer engaged in the rehearsal step. The trainer provided 2 five-minute videos edited with prompts for partial interval and momentary time sampling as well as cues for behaviors that the observer should mark on the data sheet. While watching each video, trainees completed one coding sheet for data collection of student behavior. When a trainee had a question regarding the behaviors exhibited in the video or the data collection procedure during the video, the trainer stopped the video and answered the question thoroughly. After the videos were over and the data collection forms were completed, the trainer calculated IOA to ensure trainees had met the minimum inter-rater agreement quotient of 80%. These percentages were reviewed with each trainee in the form of performance feedback.

In the performance feedback step, the trainer provided performance feedback and allowed time for additional questions regarding the operational definitions and data collection procedures.

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Performance feedback began with trainees reflecting upon what they believed went well throughout their observation and what did not go well. Following this reflection, the trainer reviewed each trainee's IOA percentages alongside the corresponding video. The trainer paused the video during intervals with disagreements between the trainee and trainer and reviewed the occurrence or nonoccurrence of the behavior. The trainer and trainees then deliberated possible solutions to avoid disagreements during future observations (e.g., review definitions before each observation).

Immediately following the conclusion of the training session (i.e., the removal of training), the trainees returned to the large group of trainees still in baseline to continue to take observational data on videos. Researchers continued to calculate the trainee's IOA to ensure continued mastery. Once the first group completed BST, the next group entered the training phase. This process was repeated for each group until all groups had completed BST on the data collection procedures for the larger study.

Video Modification Phase

An additional phase was added due to the observed difficulty trainees experienced obtaining the mastery criterion of 80% IOA for three consecutive observation sessions following the termination of training. The researchers determined that the quality of the observation videos hindered trainee reliability. As a result, the researchers replaced videos of elementary students in classroom with videos of adults acting as students engaging in problem behaviors in classroom settings. The researchers hypothesized that the trainees had obtained skills to adequately take partial interval and momentary time sampling data; however, video quality impacted the researchers' ability to determine whether trainees were reliable. Trainees observed and coded three modified videos in this phase.

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In Vivo Phase

After the three participants obtained the IOA criterion of 80% or higher for three consecutive video observation sessions using the new analogue videos following the termination of training, each was cleared to observe in one of two behavior support classrooms independently as a part of the larger study. Each of the three participants independently conducted 10-minute observations using partial interval recording and momentary time sampling procedures throughout a two-month period.

Data Collection

Data Collection Procedures for the Larger Study

Observation data were collected using two procedures: momentary time sampling for off-task behaviors and partial interval sampling for disruptive behaviors. In momentary time sampling, specifically planned activity check (PLACHECK), the observer quickly scanned (i.e., 3 to 5 seconds) from left to right to record the occurrence of off-task behaviors within that single moment (Dart et al., 2016). Momentary time sampling began at the onset of the observation session (i.e., at 0:00) and continued on a fixed-time one-minute schedule. Momentary time sampling is an appropriate data collection procedure for short intervals and behaviors occurring throughout continuous activities. Momentary time sampling produces provide an accurate estimate of the occurrence of these behaviors and does not require the undivided attention of the observer (Cooper, Heron, & Heward, 2007; Rojahn & Kanoy, 1985). This allowed participants of this study to conduct partial interval sampling concurrently.

When conducting partial interval sampling, observers recorded whether any instance of disruptive behaviors occurred during 30-second intervals (Cooper, Heron, & Heward, 2007). Similar to the PLA procedure, this data collection procedure did not require observers to collect

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the frequency or duration of the occurrence of the behavior. Rather, if the behavior occurred at all during the interval, the observer marked that specific interval.

IOA to expert criterion was collected for 100% of the observation sessions for each participant in all phases (i.e., baseline, observation training, video modification, and in vivo). IOA data were analyzed using interval reliability IOA. Although there are several other approaches to collecting and calculating IOA data, interval reliability IOA produces more accurate and consistent outcomes based on the study's target behaviors (Cooper, Heron, & Heward, 2007). Further, interval IOA is considered feasible and easy to calculate. For example, if a trainee and the study's IOA observer each observed six occurrences of disruptive behavior throughout ten intervals, according to total count IOA they have produced 100 percent IOA. However, if the trainee observes such behaviors occurring in different intervals than does the study's IOA observer, it is difficult to conclude that the behaviors being measured between the two observers are measured with consistency. Implementing interval reliability IOA alleviates these concerns. For the proposed study, the researcher will analyze interval reliability IOA from analogue videos of classroom behavior, from initial in vivo observations, and from observations completed following the termination of BST.

Treatment Integrity

Treatment integrity measures the accuracy with which the independent variable, or in the case of this study the BST framework, was being implemented (Gresham, 2009). Treatment integrity was measured through a self-monitoring checklist of the steps of the training process. The trainer completed a checklist at the end of each training session to ensure that the training was implemented correctly and according to the training protocol. Results of the treatment

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integrity checklist demonstrated 100% of the steps were completed per the training framework protocol.

Data Analysis

To determine the effectiveness of behavior observation training utilizing classroom videos, the researcher conducted multiple analyses of the data. For the visual analysis, the researcher utilized the features examined in visual analysis of the What Works Clearinghouse (WWC; 2017) Standards Handbook. The researcher analyzed and interpreted the level, trend, variability, overlap, immediacy, and consistency of each participant's IOA data points to determine the relationship between the phases of the study both within and across participants. This approach included a review of data from baseline, training, generalization and maintenance phases. Horner and colleagues (2005) define *level* as the mean performance within the intervention or condition phase, *trend* as the rate of increase or decrease of the dependent variable within the intervention or condition phase as depicted by a best-fitting straight line, and *variability* as the fluctuation of the performance during the intervention or condition phase around the mean. To determine any *overlap* of the data, a percentage of all non-overlapping data (PAND; Parker et al., 2007) effect size was calculated. As described by Parker, Vannest, and Davis (2014), "PAND is the percentage of data remaining after determining the fewest data points that must be removed to eliminate all between-phase overlap" (p. 139). PAND was calculated by subtracting the number of data points needed to remove overlap from the total number of data points between phases, dividing the outcome by the total number of data points between phases, and subtracting the dividend from 1 ($1 - \frac{\#data\ points\ btw\ phases - \#data\ points\ removed}{\#data\ points\ btw\ phases}$). PAND was interpreted using the range 0.00 to 1.00, where 0.00 to 0.50 was considered chance or a large amount of overlap (Parker, Vannest, &

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Davis, 2014). PAND of 0.51 to 0.75 was interpreted as a moderate amount of overlap and 0.76 to 1.00 was a small amount of overlap. Additionally, *immediacy* is defined by how immediate a significant change of performance occurs when the intervention or condition phase is introduced and *consistency* is defined as how the patterns of effect are consistent or irregular across various phases (Horner et al., 2005).

In addition to a visual analysis, the single-case data-analysis program Excel Package of Randomization Tests (ExPRT; Gafurov & Levin, 2019) was utilized to compute a statistical within-case effect sizes (Levin, Evmenova, & Gafurov, 2014). This is a free-to-download program developed through Microsoft Office 2010 Excel program. Due to this study being a multiple-baseline design, ExPRT used a within-case comparison model (Koehler & Levin, 1998), which calculated phase means, standard deviations, and Busk and Serlin's (1992) *d* effect size for each subject as well as an average across all subjects. The *d* effect-size was calculated by subtracting the intervention phase mean from the baseline phase mean and dividing the outcome by the baseline phase standard deviation ($\frac{\bar{x}(baseline)-\bar{x}(intervention)}{\sigma(baseline)}$). The closer phase means are to each other and the larger the standard deviation, the smaller the effect size will be. However, larger gaps between phase means and smaller standard deviations demonstrate larger effect sizes. It is important to note that these effect sizes typically yield larger effect size and are more difficult to interpret than typical Cohen's *d* effect sizes. NAP indices in the ExPRT program are rescaled to range from 0.00 to 1.00 in order to produce zero-chance indices. Weak effects are defined as indices ranging from 0.00 to 0.31, medium effects range from 0.32 to 0.84, and large or strong effects range from 0.85 to 1.00 (Parker & Vannest, 2009).

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Ethical Considerations

The data for this study are part of a larger research project led by Dr. Diana Ginns. The research project titled "Tiered Training for the Good Behavior Game in Self-Contained Classrooms for Students with Emotional and Behavioral Disorder" was approved by the Institutional Review Board of Pasco County Schools and the University of South Florida on December 13, 2018. Dr. Ginns has access to all data to ensure reliability of the classroom observations. Further, in order to protect the identity of the graduate students from public exposure, any identifying information (i.e., graduate students' names) were replaced with a pseudonym (e.g., Participant A).

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Chapter Four: Results

Below is a review of data from baseline, intervention (including a video modification phase), and generalization and maintenance (live observation) phases for each participant. A graph displaying each participant's IOA to expert criterion is shown as Figure 2. Additionally, within phase means, baseline phase standard deviations, between phases Busk and Serlin's (1992) *d* effect-size, and Parker and Vannest's (2009) non-overlap of all pairs (NAP) index are included for all participants. These outcomes are provided in Tables 1-4.

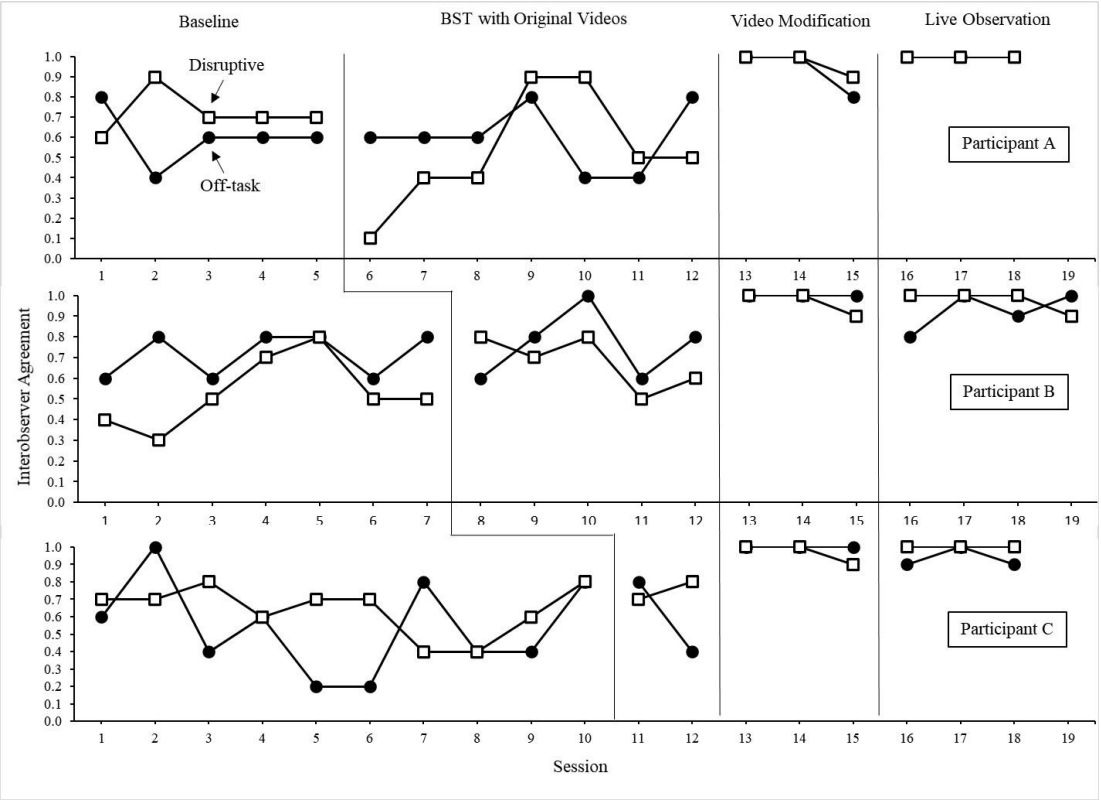

Figure 2. IOA for disruptive and off-task behaviors.

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Table 1. Means and Standard Deviations of IOA for Off-Task Behaviors.

	Baseline		BST with Original Videos		Video Modification		Live Observation	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Participant A	0.60	0.14	0.60	0.16	0.93	0.12	1.00	0.00
Participant B	0.71	0.11	0.76	0.17	1.00	0.00	0.93	0.10
Participant C	0.54	0.27	0.60	0.28	1.00	0.00	0.93	0.06

Table 2. Effect Sizes and NAP of IOA for Off-Task Behaviors.

	Baseline to BST with Original Videos		BST with Original Videos to Video Modification	
	Effect Size	NAP	Effect Size	NAP
Participant A	0.00	0.00	2.04	0.90
Participant B	0.43	0.14	1.43	0.80
Participant C	0.22	0.15	1.41	1.00

Table 3. Means and Standard Deviations of IOA for Disruptive Behaviors.

	Baseline		BST with Original Videos		Video Modification		Live Observation	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Participant A	0.72	0.11	0.53	0.29	0.97	0.06	1.00	0.00
Participant B	0.53	0.17	0.68	0.13	0.97	0.06	0.98	0.04
Participant C	0.64	0.14	0.75	0.07	0.97	0.06	1.00	0.00

Table 4. Effect Sizes and NAP of IOA for Disruptive Behaviors.

	Baseline to BST with Original Videos		BST with Original Videos to Video Modification	
	Effect Size	NAP	Effect Size	NAP
Participant A	-1.75	0.49	1.53	0.90
Participant B	0.89	0.54	2.20	1.00
Participant C	0.77	0.50	3.06	1.00

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Participant A

Off-Task Behaviors

IOA for Participant A reveals a level trend in baseline with the last three data points being the same (0.60). These data points remained below the mastery criterion of 80% (0.80) IOA for three consecutive sessions. Entering the BST with original videos phase, initial data points remained stable; however, variability existed with a slight increase after the 3rd data point in this phase (0.80) followed by a rapid decrease in IOA (0.40) and an additional increase after the 6th data point (0.80). Between the baseline phase and the BST with original videos phase, there was no immediate change in level nor a large change in trend. Further, a moderate amount of overlap existed between phases (PAND = 0.58). The data points in the BST with original videos phase remained below the mastery criterion. After modifying the videos, there was an immediate change in level of IOA (1.00). Although there was a decrease in IOA at the end of the phase (0.80), Participant A met the mastery criterion. As Participant A entered the live observations phase, IOA returned to 100% (1.00) and remained at that level for three consecutive sessions.

Overall, the baseline phase data path (avg: 0.60 and stability (range: 0.40-0.80) was equivalent to the BST with original videos phase, which was moderate (avg: 0.60) and variable with a slightly positive trend (range:0.40-0.80). There was no immediacy of effect between the last data point of baseline (0.60) and the first data point of BST with original videos (0.60). However, the video modification phase data path was high (avg: 0.93) with little variability and a flat trend (range: 0.80-1.00). An immediacy of effect was evident between the last data point of BST with original videos (0.80) and the first data point of video modification (1.00). The live

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observation phase data path remained high and stable (avg: 1.00) with no variability and a flat trend.

Regarding the results of the effect size analysis, between the baseline phase and the BST with original videos phase, Participant A (baseline: $M = 0.60$, $SD = 0.14$; BST with original videos: $M = 0.60$, $SD = 0.16$; $d = 0.00$) remained under the mastery criterion of 80% (0.80) for three consecutive observation sessions and no effect was present. In the video modification phase, Participant A ($M = 0.93$, $SD = 0.06$) was able to meet the mastery criterion. Between the BST with original videos phase and the video modification phase, the BST framework alongside modified analogue videos demonstrated a large effect for Participant A ($d = 2.04$). In the live observation phase, Participant A ($M = 1.00$, $SD = 0.00$) generalized and maintained their behavior observation skills.

Disruptive Behaviors

IOA for Participant A revealed a level trend in baseline with the last three data points being the same (0.70). These data points remained below the mastery criterion of 80% (0.80) IOA for three consecutive sessions. Moving into the BST with original videos phase, variability increased as indicated by two data points – a large increase after the 3rd data point (0.90) followed by a decrease after the 5th data point (0.50). A large amount of overlap existed between phases (PAND = 0.33); however, a majority of data points were below the baseline level. After modifying the videos, there was an immediate change in level of IOA (1.00). Although there was a decrease in IOA at the end of the phase (0.90), Participant A met the mastery criterion. As Participant A entered the live observations phase, IOA returned to 100% (1.00) and remained at that level for three consecutive sessions.

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Overall, the baseline phase data path was moderately high (avg: 0.72) and stable (range: 0.60-0.90) with a flat trend compared to the BST with original videos phase, which was moderate (avg: 0.53) and variable (range:0.10-0.90) with a sharp, positive trend. There was an immediacy of effect between the last data point of baseline (0.50) and the first data point of BST with original videos (1.00), but in an unexpected direction. However, the video modification phase data path was high (avg: 9.70) with little variability (range: 0.90-1.00) and a relatively flat trend. An immediacy of effect is evident between the last data point of BST using original videos (0.50) and the first data point of video modification (1.00). The live observation phase data path remained high and stable (avg: 1.00) with no variability and a flat trend.

Regarding the results of the effect size analysis, between the baseline phase and the BST with original videos phase, Participant A (baseline: $M = 0.72$, $SD = 0.11$; BST with original videos: $M = 0.53$, $SD = 0.29$; $d = -1.75$) remained under the mastery criterion of 80% (0.80) for three consecutive observation sessions and no effect was present. In the video modification phase, Participant A ($M = 0.97$, $SD = 0.06$) was able to meet the mastery criterion. Between the BST with original videos phase and the video modification phase, the BST framework alongside modified analogue videos demonstrated a large effect for Participant A ($d = 1.53$). In the live observation phase, Participant A ($M = 1.00$, $SD = 0.00$) generalized and maintained their behavior observation skills.

Participant B

Off-Task Behaviors

IOA for Participant B revealed a level trend in baseline with some variability between data points. These data points remained below the mastery criterion. As Participant B entered the BST with original videos phase, no immediate change occurred, and the level and trend remained

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similar to baseline throughout the phase resulting in a large amount of overlap (PAND = 0.33). Although Participant B obtained a 100% (1.00) IOA in the 10th session, the mastery criterion of three consecutive sessions above 80% (0.80) was not met. After modifying the videos, there was an immediate change in level of IOA, which remained at 100% (1.00) throughout the entire phase. As Participant B entered live observations, the 1st data point dropped but not below 80% (0.80). The remaining data points, although variable, remained above the mastery criterion and reflected the previous phase's level.

Overall, the baseline phase data path (avg: 0.71) and stability (range: 0.60-0.80) was relatively equivalent to the BST with original videos phase, which was moderately high (avg: 0.76) and variable with a flat trend (range:0.60-1.00). There was a slight immediacy of effect between the last data point of baseline (0.80) and the first data point of BST with original videos (0.60), but in an unexpected direction. However, the video modification phase data path was high (avg: 1.00) with no variability and a flat trend. An immediacy of effect was evident between the last data point of BST using original videos (0.80) and the first data point of video modification (1.00). The live observation phase data path remained high (avg: 0.93) and stable (range: 0.80-1.00) with no variability and a flat trend.

Regarding the results of the effect size analysis, between the baseline phase and the BST with original videos phase, Participant B (baseline: $M = 0.71$, $SD = 0.11$; BST with original videos: $M = 0.76$, $SD = 0.17$; $d = 0.43$) remained under the mastery criterion of 80% (0.80) for three consecutive observation sessions and a small effect was present. In the video modification phase, Participant B ($M = 1.00$, $SD = 0.00$) was able to meet the mastery criterion. Between the BST with original videos phase and the video modification phase, the BST framework alongside modified analogue videos demonstrated a large effect for Participant B ($d = 1.43$). In the live

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observation phase, Participant B (*M* = 0.93, *SD* = 0.10) generalized and maintained their behavior observation skills.

Disruptive Behaviors

IOA for Participant B revealed a baseline with a positive trend to 80% (0.80) IOA; however, a decrease in IOA after the 5th data point (0.50) kept Participant B below the mastery criterion in this phase. As Participant B entered the BST with original videos phase, IOA increased (0.80), but gradually decreased throughout the phase. A large amount of overlap existed between baseline and BST with original videos phases as the level of each phase remained consistent (PAND = 0.42). After modifying the videos, there was an immediate change in level of IOA, which remained at 100% (1.00) for the first two data points but decreased slightly during the last data point of the phase (0.90). As Participant B entered live observations, IOA remained at 100% (1.00) for the 1st three data points and decreased after the 3rd data point (0.90). Despite the decrease, Participant B maintained mastery criterion throughout the phase.

Overall, the baseline phase data path was moderate (avg: 0.53) and variable (range: 0.30-0.80) with a sharp, positive trend compared to the BST with original videos phase, which was moderately high (avg: 0.68) and variable (range:0.50-0.80) with a sharp, negative trend. Although there was an immediacy of effect between the last data point of baseline (0.70) and the first data point of BST with original videos (0.10), the negative trend indicated an ineffective intervention. However, the video modification phase data path was high (avg: 9.70) with little variability and a relatively flat trend (range: 0.90-1.00). An immediacy of effect was evident between the last data point of BST using original videos (0.60) and the first data point of video modification (1.00). The live observation phase data path remained high and stable (avg: 0.98) with little variability (range: 0.90-1.00) and a flat trend.

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Regarding the results of the effect size analysis, between the baseline phase and the BST with original videos phase, Participant B (baseline: $M = 0.53$, $SD = 0.17$; BST with original videos: $M = 0.68$, $SD = 0.13$; $d = 0.89$) remained under the mastery criterion of 80% (0.80) for three consecutive observation sessions and no effect was present. In the video modification phase, Participant B ($M = 0.97$, $SD = 0.06$) was able to meet the mastery criterion. Between the BST with original videos phase and the video modification phase, the BST framework alongside modified analogue videos demonstrated a large effect for Participant B ($d = 2.20$). In the live observation phase, Participant B ($M = 0.98$, $SD = 0.04$) generalized and maintained their behavior observation skills.

Participant C

Off-Task Behaviors

IOA for Participant C revealed a baseline with a slight negative trend consisting of a large amount of variability between data points. Specifically, IOA increased after the 1st data point of this phase (1.00) but decreased after the 2nd data point (0.40) and again after the 4th data point (0.20). IOA again increased after the 6th data point (0.80) but decreased after the 7th data point (0.40). This phase ended with the 10th data point at 80% (0.80). These data points remained below the mastery criterion. As Participant C entered the BST with original videos phase, no immediate change in IOA occurred; however, the 2nd data point decreased (0.40). Additionally, a moderate proportion of overlap existed between baseline and BST with original videos phases (PAND = 0.58). Although there were only two data points in the BST with original videos phase, based on the consistency of the previous participants' BST with original videos phases, the researchers were confident that interpretations would remain consistent. After modifying the videos, there was an immediate change in level of IOA, which remained at 100% (1.00)

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throughout the entire phase. As Participant C enters live observation, IOA decreased (0.90). IOA increased after the first data point (1.00) only to decrease again after the 2nd data point (0.90). Participant C maintained mastery criterion throughout the phase.

Overall, the baseline phase data path (avg: 0.54) and stability (range: 0.20-1.00) was relatively equivalent to the BST with original videos phase, which was moderate (avg: 0.60) and variable with a flat trend (range:0.40-0.80). There was no immediacy of effect between the last data point of baseline (0.80) and the first phase of BST with original videos (0.80). However, the video modification phase data path was high (avg: 1.00) with no variability and a flat trend. An immediacy of effect was evident between the last data point of BST using original videos (0.40) and the first data point of video modification (1.00). The live observation phase data path remained high (avg: 0.93) and stable with little variability (range: 0.90-1.00) and a flat trend.

Regarding the results of the effect size analysis, between the baseline phase and the BST with original videos phase, Participant C (baseline: $M = 0.54$, $SD = 0.27$; BST with original videos: $M = 0.60$, $SD = 0.28$; $d = 0.22$) remained under the mastery criterion of 80% (0.80) for three consecutive observation sessions and a small effect was present. In the video modification phase, Participant C ($M = 1.00$, $SD = 0.00$) was able to meet the mastery criterion. Between the BST with original videos phase and the video modification phase, the BST framework alongside modified analogue videos demonstrated a large effect for Participant C ($d = 1.41$). In the live observation phase, Participant C ($M = 0.93$, $SD = 0.06$) generalized and maintained their behavior observation skills.

Disruptive Behaviors

IOA for Participant B revealed a gradual negative trend with an increase in IOA after the 8th data point (0.60 and 0.80, respectively). These data points remained under the mastery

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criterion. As Participant C enters the BST with original videos phase, IOA decreased (0.70), but returned to 80% (0.80) after the 1st data point. The two data points remained at a level trend. The data points between the baseline and BST with original videos phases had a moderate amount of overlap (PAND = 0.58). Again, although there were only two data points obtained in the BST with original videos phase, based on the consistency of the previous participants' BST with original videos phases, the researchers were confident that interpretations would remain consistent. After modifying the videos, there was an immediate change in level of IOA, which remained at 100% (1.00) for the first two sessions. The 3rd data point decreased (0.90) but remained above the mastery criterion. As Participant C enters live observation, IOA increased to and remained at 100% (1.00). The level remained consistent between phases with a flat trend. Participant C was able to maintain mastery criterion throughout the phase.

Overall, the baseline phase data path was moderate (avg: 0.64) and variable (range: 0.40-0.80) with a gradual, negative trend compared to the BST with original videos phase, which was moderately high (avg: 0.75) and variable (range:0.70-0.80) with a sharp, positive trend. There was an immediacy of effect between the last data point of baseline (0.80) and the first data point of BST with original videos (0.70), but in an unexpected direction. However, the video modification phase data path was high (avg: 9.70) with little variability and a relatively flat trend (range: 0.90-1.00). An immediacy of effect was evident between the last data point of BST using original videos (0.80) and the first data point of video modification (1.00). The live observation phase data path remained high and stable (avg: 1.00) with little variability and a flat trend.

Regarding the results of the effect size analysis, between the baseline phase and the BST with original videos phase, Participant C (baseline: $M = 0.64$, $SD = 0.14$; BST with original videos: $M = 0.75$, $SD = 0.07$; $d = 0.77$) remained under the mastery criterion of 80% (0.80) for

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three consecutive observation sessions and no effect was present. In the video modification phase, Participant C (M = 0.97, SD = 0.06) was able to meet the mastery criterion. Between the BST with original videos phase and the video modification phase, the BST framework alongside modified analogue videos demonstrated a large effect for Participant C (d = 3.06). In the live observation phase, Participant C (M = 1.00, SD = 0.00) generalized and maintained their behavior observation skills.

Consistency Across Participants

The baseline phase across all participants across both behaviors was consistent with moderate to moderately high levels, relatively flat trends aside from Participant B's IOA for disruptive behaviors, and variability. No participant met the mastery criterion. These outcomes were moderately consistent with the original hypothesis that all participants would demonstrate low levels, flat trends, and little to no variability in the baseline phase. Immediacy between the baseline phase and the BST with original videos phase was not consistent across all participants across both behaviors; however, each participant demonstrated large portions of overlap between phases for both behaviors. The BST with original videos phase across all participants across both behaviors was inconsistent with levels ranging from low to moderately high, trends ranging from negative to flat to positive, and varying ranges of variability. No participants met the mastery criterion. These outcomes were not consistent with original hypothesis: when entering the intervention phase of the observation training utilizing the BST framework with analogue videos, each participant would demonstrate significant immediacy in increased IOA. Each would have a high level of IOA with either a positive or flat trend meeting the mastery criterion of 80% or higher for three consecutive session. Data points would reveal little to no variability and no overlap with the baseline phase.

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Immediacy between the BST with original videos and the video modification phase was consistent with all participants immediately increasing IOA for both behaviors. Additionally, there was little to no overlap between phases. The video modification phase across all participants across both behaviors was consistent with high levels, flat trends, and little to no variability. All participants met the mastery criterion. Although it was not hypothesized there would be an additional intervention phase in the study, these outcomes are consistent with the hypothesis that before entering the live observation phase, each participant would have a high level of IOA with either a positive or flat trend meeting the mastery criterion of 80% or higher for three consecutive sessions and data points would reveal little to no variability and no overlap with the previous phase. The live observation phase across all participants across both behaviors was consistent with high levels, flat trends, and little to no variability. All participants maintained the mastery criterion. These outcomes were consistent to the researcher's hypothesis: when entering the live observation phase, each participant would maintain high levels of IOA with flat trends and continue to meet the mastery criterion of 80% or higher for the remaining live observation session

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Chapter Five: Discussion

Training individuals to conduct classroom observations requires training typically in an analogue setting using one or a combination of strategies, including behavior vignettes, role-play, or video clips of target behaviors (Cooper, Heron, & Heward, 2007; Hartmann & Wood, 1990; Bass, 1987). However, researchers have yet to determine if these strategies are effective. More importantly, the collection of literatures around behavior observation training is small and are not cohesive in what is standard in a training approach. As educators continue to rely heavily on classroom observations as an approach to assess student needs, specifically regarding challenging behaviors and emotional issues (Riley-Tilman, Kalberer, & Chafouleas, 2005; Whitcomb, 2018it may be difficult to ensure data collected is reliable without a standardized approach to training observers. This study utilized a concurrent multiple-baseline design to investigate the effectiveness of training graduate student observers using the behavior skills training framework. Specifically, the BST framework involved conducting observations using videos of elementary classrooms in an analogue setting and its impact on IOA. Additionally, the study examined skill generalization and maintenance in the live classroom setting by evaluating IOA levels.

The results of this study demonstrated an increased trainee IOA following training, which reflects the outcomes of years of research supporting the effectiveness of the BST framework (Drifke, Tiger, & Wierzba, 2017; Lafasakis & Sturmey, 2007; Lavie & Sturmey, 2002; Sarokoff & Sturmey, 2004). However, although research has demonstrated the effectiveness of BST, outcomes from the current study inform the limited research investigating the efficacy of BST to

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train observers to accurately code instances of behavior during observations. Visual and quantitative analyses indicated that the BST framework alongside modified videos of students engaging in disruptive and off-task behaviors was an effective training approach to quickly train observers in an analogue setting. All three participants were able to observe and code student behavior with over 80% IOA in three consecutive sessions following the modified videos being introduced. Moreover, the modified video phase resulted in large effect sizes and NAP indices that were considered strong.

It is important to note that the hypothesized effects for BST were not noted until after the researchers modified the initial video phase. After reviewing the data from the initial video phase, it was hypothesized that the videos used within the BST framework may have had a detrimental impact on determining when participants met mastery criterion. The quality of the videos used was in question. Although little literature around the use of videos to train observers exists (Dempsey, Iwata, Fritz, & Rolider, 2012; Gridley, Bywater, & Hutchings, 2018), what does exist attributes the success of observers obtaining adequate IOA to the researchers having more control over the quality of the videos used in observations (i.e., filming videos themselves). The researcher did not have access to the technology and time to film and edit videos of a controlled level of quality. As a result, in the initial video phase, YouTube videos were used that were typically created by teachers for performance evaluation purposes, which varied in level of quality (i.e., sound and display). It was hypothesized that modifications were required because participants were unable to adequately see and/or hear students engaging in the target behaviors due to poor video display and audio quality. Therefore, the original videos did not provide sufficient modeling and practice for participants to accurately code behavioral data. To address these issues, the researcher chose videos that would likely provide sufficient modeling and

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practice of their behavioral observation skills. This hypothesis was supported in the video modification phase – when high-quality videos clearly depicting students engaging disruptive and off-task behaviors were used, participants were able to meet the mastery criterion. Thus, it appears that BST was effective in training the participants in observing classroom behavior, but that, the use of low-quality videos may have hindered the participants' abilities to demonstrate their newly acquired skills accurately.

In addition to demonstrating the effectiveness of BST relative to training graduate students to show high levels of IOA in an analogue setting, this study investigated both the generalization and maintenance of skills in a natural setting. Regarding generalization, all participants generalized their observation skills in the live classroom setting as evidence by each participant scoring 80% or higher IOA in the initial live observation session. It is hypothesized that the modification of videos after the initial video phase impacted the participants' ability to generalize observation skills from the analogue setting to the live classroom setting. Because the modified videos were of higher quality in both visual display and audio, the simulation of observing student behavior in a classroom was enhanced in the analogue setting. Therefore, this adjustment likely contributed to participants' ability to accurately code behavioral data when entering the live classroom setting.

Regarding the maintenance of skills, all three participants maintained their behavior observation skills to a live classroom setting. All participants maintained an 80% or higher IOA for all live observation sessions. Participants' ability to maintain the mastery criterion in live observations also were supported by large effect sizes and NAP indices that were considered strong. The maintenance outcomes of this study reflect years of research supporting the effectiveness of the BST framework in facilitating participants being able to maintain complex

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skills in in vivo settings (Ledbetter-Cho et al., 2016; Morgan & Wine, 2018; Sawyer et al, 2015; Speelman, Whiting, & Dixon, 2015; Tai & Miltenberger, 2017).

Study Limitations and Future Research

Although the findings indicate that BST with analogue videos impacted IOA levels, the results should be evaluated in the context of the study's limitations. One set of limitations of this study include threats to generalization. Due to all participants being graduate students from the University of South Florida School Psychology program, it is difficult to generalize the results of this study across participants of different backgrounds and education. Further, regarding the participant type, the findings may not generalize to other populations that collect behavior data in the school setting via direct observation such as teachers and paraprofessionals. Future research should investigate BST across different disciplines (e.g., teacher, school counselor, social worker) and settings to determine if the findings from this study can be replicated with other populations.

Another threat to the study's external validity included the participants self-selecting. Each participant sought out the opportunity to participate initially and chose to continue their work with the larger study. This self-selection bias may have impacted the outcomes of the study as the participants may not represent the larger target population of school psychology graduate students (Orcher, 2016). In this study, participants may have had a genuine interest in behavior observations along with desires to enhance their skills. These drives may have impacted their IOA scores throughout the study's phases. Future research should investigate the BST framework in training participants utilizing randomized sampling procedures that eliminate such biases impacting external validity.

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Other limitations involve threats to internal validity. First, the randomization of the order participants entered the intervention phase (i.e., observation training) impacted the researcher's ability to definitively conclude that participants' skills were increased. Specifically, randomizing the start points did not allow for the researcher to wait for stable patterns at baseline before proceeding to intervention. It is plausible that having stable baseline trends across participants would have resulted in more clear effects across conditions.

The attrition of graduate students from the larger research project also represents a limitation. It is possible that those that did not continue participation may have differed from those that continued to participate. Moreover, because each participant in this study was considered a single unit of analysis, the researcher was unable to definitively state that the effects of the group training on a single subject could equate to the effects one would see if the subject engaged in individual or one-one-one training. Future research in training behavior observers should be conducted as a group comparison design to better understand the effectiveness of multiple modalities of training (e.g., group training) using BST across a diverse population in a single study.The limited access to videos of students engaging in problem behaviors in a classroom setting was also a threat to internal validity and revealed several limitations. First, for the researcher to obtain high quality videos, funding would have needed to be an available resource. Because this study was not funded, the number of low-quality videos were more abundant than videos with clear images and sound display. Second, the videos retrieved in this study were not intended to be used for behavior observation training – most videos were intended for teacher performance reviews. Lastly, although this study demonstrated effects for BST, the ad hoc decision to modify the video phase did not allow for a comparison between the baseline phase to the modified video phase. Comparisons to determine an effect were only made

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between the phase using the original videos and the modified video phase. Had there been access to higher quality videos, larger effects may have been calculated. Future research should investigate the quality of videos and their impact on IOA. Although this study focused primarily on the effectiveness of the BST framework as an approach to training classroom observers, the researcher demonstrated the need to further examine the use of analogue videos within the BST framework. The development and distribution of well-produced training videos of a variety of students engaging or not engaging in various behaviors commonly exhibited in the classroom setting could be compared with non-video and poor video conditions to provide more compelling evidence that the quality of videos impacts IOA.

In addition to exploring the impact of high-quality training videos, future research should examine other commonly used means of training within the BST framework to train observers. For example, narratives of behavior vignettes, role-plays, (Cooper, Heron, & Heward, 2013; Hartmann & Wood, 1990; Bass, 1987) and in vivo or live training (Dempsey, Iwata, Fritz, & Rolider, 2012) are all commonly used to train observers. Because videos provide the simulation of observing student behavior in a classroom in the analogue setting and likely contributes to increased skill generalization, it would be beneficial to better understand the impact each of the above training components have on trainee skill generalization to the classroom setting, and compare them to videos. I hypothesize that components such as role-plays and vignettes do not allow for the trainee to rehearse their observation skills in the setting in which they will observe in vivo and therefore would likely be less impactful than videos when utilized within the BST framework. Such a study could be conducted as a single-case design focusing on one means of training within BST, as this study did, or as a group comparison design to better understand the effectiveness of multiple means of training within BST in a single study.

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The final limitation and area for future research involved the process used to measure the fidelity to the BST framework. Although a fidelity checklist was utilized to ensure adequate treatment integrity throughout the training process, this procedure was conducted as a self-assessment and did not include an external observer. It is common for those completing self-assessments around their performance to overestimate their skills and knowledge and to be overconfident in the outcomes (Dunning et al., 2004). To best combat these biases, it is suggested to incorporate peer evaluation in measuring treatment integrity into future research of the BST framework and analogue videos.

Implications for Practice

The findings of this study also provide implications for training observers to collect data reliably. The BST framework consists of a training package of four components to teach and facilitate generalization of behavior observation skills. The methods and results of this study provide procedures to effectively implement BST components using videos of students in classrooms as a training approach for training graduate students collecting behavioral data in a live classroom. Additionally, this study demonstrated specific elements of the use of videos as a training system that impact trainees' IOA.

The findings of this study demonstrate that researchers and university trainers in school psychology graduate programs may benefit from implementing the BST framework within their research groups, projects, or courses. Specifically, for faculty members whose research agenda focuses on student behavior in the school setting, BST using videos of students is an effective and efficient training approach. Together with analogue videos of students in classrooms, this approach has the potential to be used for providing effective professional learning to graduate students with a high level of control and reliability in data being collected. Additionally, NASP

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(2010) standards for the graduate preparation of school psychologists require students to demonstrate skills in various assessment and data collection methods to develop student interventions and supports. Faculty members teaching courses in assessment may benefit from incorporating this effective approach to train classroom observers in course syllabi.

Although this study focused on school psychology graduate students, given the long history BST has of being an effective model to train complex skills in adults, leaders in school-based settings could consider testing and using this model in their setting and with their population. Districts and schools that find it difficult to train teachers and staff in behavior observations may be able to utilize this framework to increase and maintain trainee IOA. However, as described in the study limitations and future research section, further research is required to definitively state that BST using videos of students in classrooms is an effective training approach for educators and other school staff.

In addition to the BST framework, the study investigated the use of analogue videos of students in classrooms within the BST framework. The researcher modified the training as a result of monitoring the IOA data and concluded the quality of the videos being used were impacting the trainees' abilities to obtain high levels of IOA. After modifying the videos to a higher display and audio quality and to include adults engaging in the typical disruptive and off-task behaviors, participants were able to meet the study's IOA mastery criterion. This modification demonstrates the difficulty of accessing quality training videos. University trainers and researchers training graduate student behavior observers should use caution when searching for and using free videos of students in classrooms. As Gridley and colleagues (2018) and Dempsey and colleagues (2012) suggested, the more control a trainer has over the training video content, the more precise they can be in manipulating the desired skills, observed behaviors, and

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settings. With limited video access, it may be difficult to acquire such a level of control. It may be beneficial for faculty members to reach out to other university trainers and researchers to inquire into any available training videos that meet the observation training requirements (e.g., specific behaviors, population age, setting) and/or procedures to planning, filming, and editing their own observation training videos.

Conclusion

This study sought out to examine the effectiveness of the BST framework using videos as a standardized training approach to training classroom observations. It was found that BST was an effective standardized framework for training graduate students in accurately observing classroom behavior. The results of this study indicate that all participants met the mastery criterion of rating accuracy once video quality was controlled. The visual analysis of the data points demonstrated each participant obtained 80% or higher IOA to expert criterion and generalized and maintained IOA levels in live classroom settings. Further, the large effect sizes calculated after modifying the videos support BST using videos as an effective behavior observation training approach. Researchers and university trainers should consider the effectiveness of the BST framework as a standard framework and approach to training graduate students in observing behavior in the classroom setting.

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Appendix A: Data Collection Protocol

1. Data will be collected utilizing a momentary time sampling (i.e., Planned Activity Check, PLA) and utilizing partial interval recording.
2. The PLA will be utilized for recording the number of students that exhibit off-task behavior according to the provided GBG operational definitions.
    a. The interval will be set at 60s.
    b. The PLA will scan from left to right.
    c. The PLA scan should take no longer than 3-5s to complete.
    d. The PLA will occur at the onset of each interval.
3. Partial interval recording will be utilized for the occurrence and non-occurrence of students exhibiting disruptive behavior according to the provided GBG operational definitions.
    a. The intervals will be set at 30s.
    b. Given the partial interval designation, the interval will be scored as occurrence in the event that student disruptive behavior is exhibited by any student, at any time during the interval, for any duration that meets the criterion set forth by the operational definitions.

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Appendix B: Data Collection Form

Name (number): ____

Five-Minute Direct Observation - Training Ph. 2

Momentary Time Sampling – off-task (60 second interval)									
0:00		1:00		2:00		3:00		4:00	
Partial Interval Recording – disruptive behaviors (30 second interval)									
:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00

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Appendix C: Document of Operational Definitions of Target Behaviors Given to Trainees

Disruptive Behavior (Partial)

Out of Seat

- Any instance in which student is out of seat without prior approval.
    - Student is considered out of seat when buttocks is not in full contact with the seat bottom or stool bottom for 3 consecutive seconds.
- Any instance in which any of the four legs of student seat are not in contact with the floor for 3 consecutive seconds (e.g., leaning back in chair to raise front two chair legs off of ground).

Noise

- Any instance in which a student emits an audible noise either with mouth, hands, feet, or object without prior teacher approval.
    - Instances are not scored when students emit noise as a result of coughing, sneezing, responding after being called upon, or during instances of choral responding.

Contact

- **Any instance** in which a student has direct contact with another individual without prior approval.
    - To include but not limited to, tapping another student, hitting others, kicking others, and playing with another student's hair or person.
- **Any instance** in which a student has direct contact with an object without prior approval.
    - To include but not limited to, touching materials on other student's desks, knocking over furniture, throwing items, hitting surfaces, kicking surfaces, and manipulating materials without prior approval.

Off-task (PLA)

Any instance in which the student is engaged in other activities outside of academic behavior.

Motor

- Any instance of motor activity that are not directly associated with an assigned academic task. (Unless student does not possess physical capabilities - prior determination required). Examples include:

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- engaging in any out-of-seat behavior (defined as buttocks not in contact with the seat)
- aimlessly flipping the pages of a book
- manipulating objects not related to the academic task
- physically touching another student when not related to academic task
- drawing or writing not related to an assigned academic activity
- turning around in seat, oriented away from the classroom instruction
- fidgeting in seat

Verbal

- Any instance of non-academic verbal activity that are not permitted and/or related to an assigned academic task. Examples include:
  - Making audible noises with mouth to include but not be limited to humming, whistling
  - Talking to others about topics unrelated to the academic activity
  - Talking to others about topics related to the academic activity during a time in which the teacher has prohibited talking aloud
  - Calling out answers to questions during times in which the teacher has not solicited answers

Passive

- Any instance of a student passively not attending to an assigned academic activity. Included are those times when a student is quietly waiting after the completion of an assigned task, but is not engaged in an activity authorized by the teacher. Examples include:
  - Sitting quietly in an unassigned activity
  - Looking around the room
  - Staring into space
  - Passively listening to other students talk about issues unrelated to the assigned academic activity

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Appendix D: Training Fidelity Checklist

Good Behavior Game Research Project: Training (Phase 2/B) Fidelity Checklist

Trainer Name: **Trainee Numbers:** **Date of Training:**

☐The trainer will review the operational definitions with the trainee.

☐The trainer will answer any questions the trainee has regarding the operational definitions.

☐The trainer will review the data sheet with the trainee.

☐The trainer will answer any questions the trainee has regarding the data sheet.

☐The trainer will review partial interval data collection procedures with the trainee.

☐The trainer will answer any questions the trainee has regarding data collection procedures.

☐The trainer will review momentary time sampling data collection procedures with the trainee.

☐The trainer will answer any questions the trainee has regarding data collection procedures.

☐The trainer will provide 2 five-minute videos edited with prompts for momentary time sampling and partial intervals as well as cues for behaviors that would be marked on the data.

☐Trainees will complete one data sheet for data collection of student behavior for each five-minute video.

☐The trainer will calculate IOA of the completed data sheets to ensure trainees have met minimal reliability quotient of 80%.

☐Immediately following the conclusion of the individual training session, the trainee will attempt to achieve mastery reliability scores with a novel set of 2-training videos.

☐Trainer will complete an Additional Training (Phase 2/B) Fidelity Checklist for each additional training.

__/13 steps completed

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Appendix E: STUDY000828 IRB Approval Letter

UNIVERSITY of SOUTH FLORIDA

EXEMPT DETERMINATION

May 29, 2020

Nicholas Scheel
16553 Lake Brigadoon Circle
Tampa, FL 33618

Dear Mr. Nicholas Scheel:

On 5/27/2020, the IRB reviewed and approved the following protocol:

Application Type:	Initial Study
IRB ID:	STUDY000828
Review Type:	Exempt 2, 4
Title:	Training Observers in Class-Wide Behavior Data Collection Using Behavior Skills Training
Protocol:	Study Protocol - Nicholas Scheel

The IRB determined that this protocol meets the criteria for exemption from IRB review.

In conducting this protocol, you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Please note, as per USF policy, once the exempt determination is made, the application is closed in BullsIRB. This does not limit your ability to conduct the research. Any proposed or anticipated change to the study design that was previously declared exempt from IRB oversight must be submitted to the IRB as a new study prior to initiation of the change. However, administrative changes, including changes in research personnel, do not warrant a modification or new application.

Ongoing IRB review and approval by this organization is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities impact the exempt determination, please submit a new request to the IRB for a determination.

Sincerely,

Jennifer Walker
IRB Research Compliance Administrator

Institutional Review Boards / Research Integrity & Compliance
FWA No. 00001669
University of South Florida / 3702 Spectrum Blvd., Suite 165 / Tampa, FL 33612 / 813-974-5638

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