

*Use of Visual Performance Feedback to Increase Teacher Use of Behavior-Specific Praise among High School Students with Severe Disabilities*

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*Abstract*

Behavior-specific praise has been deemed an effective, evidence-based positive behavioral intervention and support practice for use among high school students with severe intellectual disabilities. However, teachers are not adequately trained to use such practices with fidelity. One way to address this shortcoming is by implementing a performance feedback approach characterized with observations and consultations that provide visual performance feedback. Using a changing criterion research design, the present study evaluated the effect of a performance feedback approach to increase a high school teacher's use of behavior-specific praise among students with severe disabilities. Results showed significant increases with the teacher-participant's use of behavior-specific praise and mixed trends with the student-participants' exhibition of challenging and replacement behaviors. A discussion of reported results was provided, along with implications for stakeholders in teacher preparation programs and high school contexts. Limitations and areas for future research were also addressed.

*Keywords:* behavior-specific praise, severe intellectual disabilities, high school students, challenging behaviors, replacement behaviors

*Introduction*

Students with severe intellectual disabilities have chronic and severe deficits in both adaptive behavior and cognitive functioning that manifest during early childhood and are likely to continue for life (Handleman, 1986). These deficits often lead to a range of challenging behaviors that significantly impede a student's ability to exhibit appropriate social functioning in school-based settings (Lane & Wehby, 2002; Medeiros, 2015). Challenging behaviors include noncompliance, stereotypy (e.g., intense fixations on objects or parts of objects, impulsivity, repetitive behavior patterns), and self-injury. Without appropriate interventions, challenging behaviors can interfere with how students with severe intellectual disabilities interact with others (Carter, Sisco, Chung, & Stanton-Chapman, 2010; Matsushima & Kato, 2015; Nijs & Maes, 2014) and have an impact on the academic learning environment (Räty, Kontu, & Pirttimaa, 2016). Thus, teachers who work among students with severe intellectual disabilities must use teaching strategies that emphasize curricular content and self-help skills, while also reducing any

challenging behaviors that impede the acquisition of critical academic and functional skills (Handleman, 1986).

Beginning in the 1960s, researchers have utilized applied behavior analysis as a systematic way to study individual functions of human behavior in an attempt to “reduce the frequency and severity of challenging behaviors and facilitate the acquisition of adaptive skills” (Dixon, Vogel, & Tarbox, 2012, p. 7). Initial theories posited that challenging behaviors could be managed by automatic reinforcement (Vaughan & Michael, 1982; Vollmer, 1994), positive reinforcement (Carr, 1977), and negative reinforcement (Carr, Newsom, & Binkoff, 1976; Iwata, 1987). Almost 20 years later, these theories became the foundation for functional analysis (Dixon et al., 2012), which provided a methodology to assess multiple behaviors and functions during a single experimental investigation in order to develop effective interventions for individuals who exhibit challenging behaviors (Hanley, Iwata, & McCord, 2003; Iwata, Dorsey, Slifer, Bauman, & Richman, 1982; Iwata et al., 2000). To date, federal legislation has mandated that schools use functional analysis in the form of functional behavioral assessments (FBA) when a student’s behavior impedes the learning process (Drasgow, Yell, Bradley, & Shriner, 1999; Zirkel, 2017). One of the goals of FBA is to determine the purpose of a student’s challenging behavior, identify environmental factors surrounding challenging behaviors and implement positive behavioral interventions and supports (PBIS) to promote alternate, replacement behaviors (Farmer, Lane, Lee, Hamm, & Lambert, 2012).

Behavior-specific praise has been deemed an effective, evidence-based PBIS practice for use among high school students (Duchaine, Jolivette, & Fredrick, 2011; Kennedy, Hirsch, Rodgers, Bruce, & Lloyd, 2017). Teachers should deliver behavior-specific praise to immediately reinforce a student’s desired behavior with a descriptive verbal statement. Unfortunately, teachers are not adequately prepared or trained to use PBIS practices with fidelity (Kennedy et al., 2017), particularly among high school students with severe intellectual disabilities (Bruhn et al., 2016). Stormont and Reinke (2014) recommended using a data-based performance feedback approach to address this need. Through this approach, a trained behaviorist serves as an instructional coach to the classroom teacher and conducts systematic, direct observations of the teacher in the classroom setting where the challenging behaviors occur. The instructional coach collects observational data and facilitates subsequent consultations with the teacher to share visual performance feedback by reviewing a graph that depicts the classroom teacher’s use of PBIS practices.

Available studies that examined the use of visual performance feedback to enhance teacher performance with PBIS practices primarily focused upon young children and adolescents in the elementary and middle school grade levels (Allday et al., 2012; Fabiano, Reddy, & Dudek, 2018; Gage, Grasley-Boy, & MacSuga-Gage, 2018; Gage, MacSuga-Gage, & Crews, 2017; Mesa, Lewis-Palmer, & Reinke, 2005; Reinke, Lewis-Palmer, & Merrell, 2008; Sweigart, Landrum, & Pennington, 2015). There were a limited number of studies that specifically focused on teacher performance with PBIS practices among older adolescents in the high school grade levels (Bruhn et al., 2016; Hawkins & Heflin, 2011; Kalis, Vannest, & Parker, 2007). The purpose of the present study was to address this research gap and evaluate the effect of visual performance feedback on the frequency of (a) behavior-specific praise statements given by a high school

special education teacher and (b) challenging and replacement behaviors exhibited by high school students with severe intellectual disabilities.

## *Methods*

### **Participants**

Information provided about participants relates to the time that the present study was conducted. There was one teacher-participant, Ms. George (all names are pseudonyms). Ms. George was a high school special education math and science life skills teacher with more than 10 years of teaching experiences in special education settings. There were also three student-participants who were high school students that met IDEA eligibility criteria for a severe intellectual disability. Kara was a Caucasian female classified as a sophomore-level student, Chris was a Caucasian male classified as a junior-level student, and Cody was a Caucasian male classified as a senior-level student. The identified adaptive behavior deficits for Kara, Chris, and Cody were of such significance that their access to the general education instructional environment and daily functioning were severely limited. Therefore, Kara, Chris, and Cody received instruction for more than 80% of the school day in a self-contained life skills classroom, as well as frequent monitoring and supervision during meal times, transition periods, and toileting.

### **Role of Researchers**

Two individuals collected data for the present study. Both of these individuals had previously received specialized training in behavior management techniques. The first individual was the primary researcher for the present study (i.e., the first author) and was a direct observer who completed study session observations, recorded data measurements, facilitated consultations with the teacher-participant, and performed all data analyses. The second individual was a Licensed Specialist in School Psychology (LSSP) employed by the school district and assigned to the high school campus where the present study was conducted. The second individual served as an inter-observer who completed observations and recorded data measurements with the primary researcher during the intervention phase. Other members of the research team (i.e., the second, third, and fourth authors) contributed expertise once data analyses were completed.

### **Setting**

The present study was conducted in a public high school located in a rural area of the South Central United States that served students in grades 9-12. The high school had a student enrollment of approximately 1,500 students who resided in several surrounding rural communities. The high school used a self-contained model for the life skills classroom, which was led by a state-certified special education teacher. One teaching assistant was also assigned to the life skills classroom and provided the teacher and students with additional support during the school day.

At any given time throughout the school day, there were typically six to eight students in the life skills classroom. The life skills classroom used a paired classroom seating arrangement with two individual student desks facing one another. A large electronic display was affixed to a wall at the front of the classroom. For the majority of observed instructional delivery, Ms. George used the electronic display, along with an iPad. Additionally, Ms. George was unaware of who the

student-participants were and knew them as Student 1 (i.e., Kara), Student 2 (i.e., Chris), and Student 3 (i.e., Cody).

### **Research Design**

The present study employed a changing criterion research design. This research design is a variant of the multiple-baseline research design and characterized by two major phases (Hartmann & Hall, 1976). The first phase, the baseline phase, includes initial observations for a single target behavior. The second phase, the intervention phase, implements a treatment for the target behavior in a series of sub-phases. During the first intervention sub-phase, an interim criterion for desired level of performance is established (Johnson & Christensen, 2014). Once the interim criterion is achieved, it is gradually increased to establish a functional relationship between behaviors and the treatment continues. Successive intervention sub-phases continue incremental criterion progression and intervention delivery throughout the duration of the study.

The goal of the present study was to increase Ms. George's use of behavior-specific praise (i.e., the independent variable) with challenging and replacement behaviors (i.e., the dependent variables) exhibited among Kara, Chris, and Cody. To achieve this goal, the treatment delivery included weekly visual performance feedback consultations between the teacher-participant and primary researcher after each intervention sub-phase. Following baseline phase observations, interim criterion calculations for intervention sub-phases were made using frequency counts of the independent variable. It was determined that the mean rate of behavior-specific praise for each intervention sub-phase must be greater than or equal to the mean of the baseline phase plus the mean of the preceding intervention sub-phase.

### **Materials**

An event recording data collection sheet was used to record the frequency of independent and dependent variables during intervention sub-phases for Kara, Chris, and Cody (Alberto & Troutman, 2009). The event recording data collection sheet was a table consisting of four blank rows and five columns with the following labels: Date of Observation, Time Start, Time Stop, Notation of Occurrence, and Total Frequency of Occurrence. From this data, graphic displays were created to visually depict trends in Ms. George's levels of delivery of behavior-specific praise during baseline and intervention sub-phase observations for Kara, Chris, and Cody (Johnson & Christensen, 2014).

### **Procedure**

The present study was conducted during a six-week time frame that implemented procedures for five different conditions that occurred during the baseline and intervention phases. These conditions were: (1) baseline phase observations, (2) teacher consultations, (3) intervention sub-phase observations, (4) inter-observer agreement checks, and (5) social validity questionnaires. Following is a detailed description of the specific procedures and conditions for each phase.

**Baseline phase.** Baseline phase observations were conducted during the first week to determine the frequency of behavior-specific praise offered by Ms. George, as well as the frequency of challenging and replacement behaviors exhibited by Kara, Chris, and Cody. For each student-participant, the primary researcher completed three separate 20-minute observation sessions and used event recording data sheets to notate the frequency of occurrence of independent and

dependent variables. An audio recording of each baseline observation session was made, and the primary researcher kept anecdotal notes in a journal. During baseline phase observation sessions, no changes were made to the environment and no treatment was applied.

**Intervention phase.** On the Monday of the second week, the primary researcher conducted a 20-minute initial teacher consultation with Ms. George to provide visual performance feedback. Visual performance feedback consisted of the following instructional coaching strategies. The primary researcher noted and reinforced specific examples of Ms. George’s behavior specific praise delivery using graphic displays. The primary researcher also identified and discussed occurrences when Ms. George used non-specific praise, reprimands, or other non-PBIS responses toward student behaviors. During these occurrences, the primary researcher encouraged Ms. George to provide examples of PBIS strategies that could have been used with students instead of the aforelisted behavioral approaches. In addition, the primary researcher delivered a brief training on behavior-specific praise to Ms. George. This training included an overview of evidence-based practices, examples of behavior-specific statements (see Table 1), and opportunities for Ms. George to practice using behavior-specific praise. At the conclusion of the initial teacher consultation, the primary researcher communicated the mean rate of behavior-specific praise from baseline observation sessions for Kara, Chris, and Cody to Ms. George.

Table 1  
*Examples of Behavior-specific Praise Statements*

Observed Behavior	Behavior-specific Praise Statements
Kara verbally responds to a question posed during class.	“Way to go, Kara! Thank you for giving an answer to that question.”
Cody gets his blue binder out to begin an assignment.	“Good job! Thank you for getting your binder out, Cody!”
Chris remains in his seat and raises his hand to get the teacher’s attention.	“I like that you raised your hand to get my attention, Chris.”
Chris sits quietly while the teacher gives instructions.	“Chris, I noticed you listened while I was giving instructions for that assignment. Well done!”
Cody refrains from hand movements or gestures that create inappropriate noise.	“Wow, thank you for keeping your hands quiet, Cody! You made it easy for your classmates and me to hear!”
Kara states, “Ms. George” to request help from the teacher.	“Thank you, Kara, for using my name to get my attention. That was helpful!”

Following the initial teacher consultation, the primary researcher and inter-observer conducted joint intervention sub-phase observations of Kara for three weeks and Chris and Cody for five weeks. Each week, the primary researcher and inter-observer conducted three 20-minute observation sessions of each student-participant simultaneously, yet independently of one another. The primary researcher and inter-observer used event recording data sheets to record data, kept anecdotal notes in a journal, and made audio recordings of each observation session. After each observation session, inter-observer agreement checks were made by calculating a Cohen’s Kappa statistic (Bryington, Palmer, & Watkins, 2002). For each variable, the number of agreements was divided by the number of agreements plus disagreements. Resulting Kappa

values were interpreted as poor (below 0.40), fair (between 0.40 and 0.59), good (between 0.60 and 0.74), and excellent (between 0.75 and 1.00). As shown in Table 2, the majority of Kappa values reflected good inter-observer agreement with independent and dependent variables ( $K = 0.67$ ), although there were two instances that showed poor inter-observer agreement ( $K = 0.33$ ).

Table 2

*Kappa Values for Inter-Observer Agreement Checks*

	Behavior-specific Praise	Challenging Behaviors	Replacement Behaviors
Kara	.67	.33	.67
Chris	.67	.67	.67
Cody	.67	.67	.33

Every Monday, the primary researcher held a 20-minute teacher consultation with Ms. George regarding the previous week of intervention sub-phase observations. During teacher consultations, the primary researcher provided visual performance feedback and facilitated dialogue concerning Ms. George's use of behavior-specific praise with Kara, Chris, and Cody. The primary researcher concluded each teacher consultation by sharing information related to expected levels of behavior-specific praise for the forthcoming week. Once intervention sub-phase observations concluded, Ms. George completed separate social validity questionnaires for Kara, Cody, and Chris. The social validity questionnaire consisted of 13 Likert-type statements for which Ms. George used a five-point scale (i.e., 5 = Strongly Agree, 4 = Agree, 3 = Uncertain, 2 = Disagree, 1 = Strongly Disagree) to rate her personal viewpoints toward behavior-specific praise (see Figure 1).

Although Ms. George completed a social validity questionnaire for Kara, Chris, and Cody separately, her ratings for each statement were identical. Ms. George gave the highest rating (i.e., Strongly Agree) to every questionnaire statement except Statement 4 and Statement 8 (see Figure 1). For these two questionnaire statements, Ms. George gave the second-highest rating (i.e., Agree).

1. I understand the term "behavior-specific praise."
2. I can identify behavior-specific praise statements.
3. I can develop behavior-specific praise statements.
4. Behavior-specific praise statements are easy to deliver during my typical classroom instruction.
5. Behavior-specific praise is an effective behavior intervention strategy for this student.
6. The use of behavior-specific praise has improved my delivery of educational services to this student.
7. The use of behavior-specific praise has increased this student's access to instructional opportunities.
8. The use of behavior-specific praise is time-sensitive.
9. The use of behavior-specific praise is cost free.
10. I will continue to use behavior-specific praise as a behavior intervention strategy for this student.
11. Behavior-specific praise is an age-appropriate behavior strategy for this student.
12. I feel comfortable using behavior-specific praise in a classroom setting.
13. I believe behavior-specific praise addressed the attention-seeking behavior needs presented by this student.

*Figure 1. Likert-type statements included on social validity questionnaire.*

## **Results**

Analyses of baseline phase observations revealed a variety of challenging behaviors exhibited by Kara, Chris, and Cody. Kara frequently uttered inappropriate words or sounds and used gestures

to gain the attention of the teacher or a peer. Inappropriate utterances included giggling, making kissing noises, excessive audible yawning, and yelling off-topic words. Kara would also touch Ms. George’s arm, wave a piece of paper in the air, or stand up while Ms. George was talking. Chris often yelled inappropriately, repeated or mimicked Ms. George’s words, or shouted off-topic words or phrases. Chris would also create loud sounds using random objects and by slamming his hands on surfaces, such as desktops and the floor. Cody regularly uttered inappropriate words or sounds, snorted, yelled off-topic responses out of turn, or used random objects to create drumming sounds. Cody would also continually enter Ms. George’s personal space, lay his head on her shoulders or arms, or wave objects in her face.

Analyses of baseline observations for Ms. George revealed that she typically responded to challenging behaviors by avoiding eye contact with the student, ignoring the behavior, issuing a verbal correction or reprimand, stating the student’s name, or taking away sound-making objects. There were two occurrences where Ms. George provided verbal praise for replacement behaviors. However, the praise she provided was generic and not specific to the desired behavior (i.e., “good job,” “thank you”).

**Independent Variable Data**

The number of behavior-specific praise statements given by Ms. George to Kara, Chris, and Cody are shown in Figures 2, 3, and 4, respectively. With Kara, the mean rate of behavior-specific praise during the baseline phase was 0.3 and had increased to 1.6 after the first intervention sub-phase (see Figure 2). This increasing trend continued through the second (2.0) and third (3.0) intervention sub-phases and exceeded the established interim criterion for both sub-phases (1.9 and 2.3, respectively).

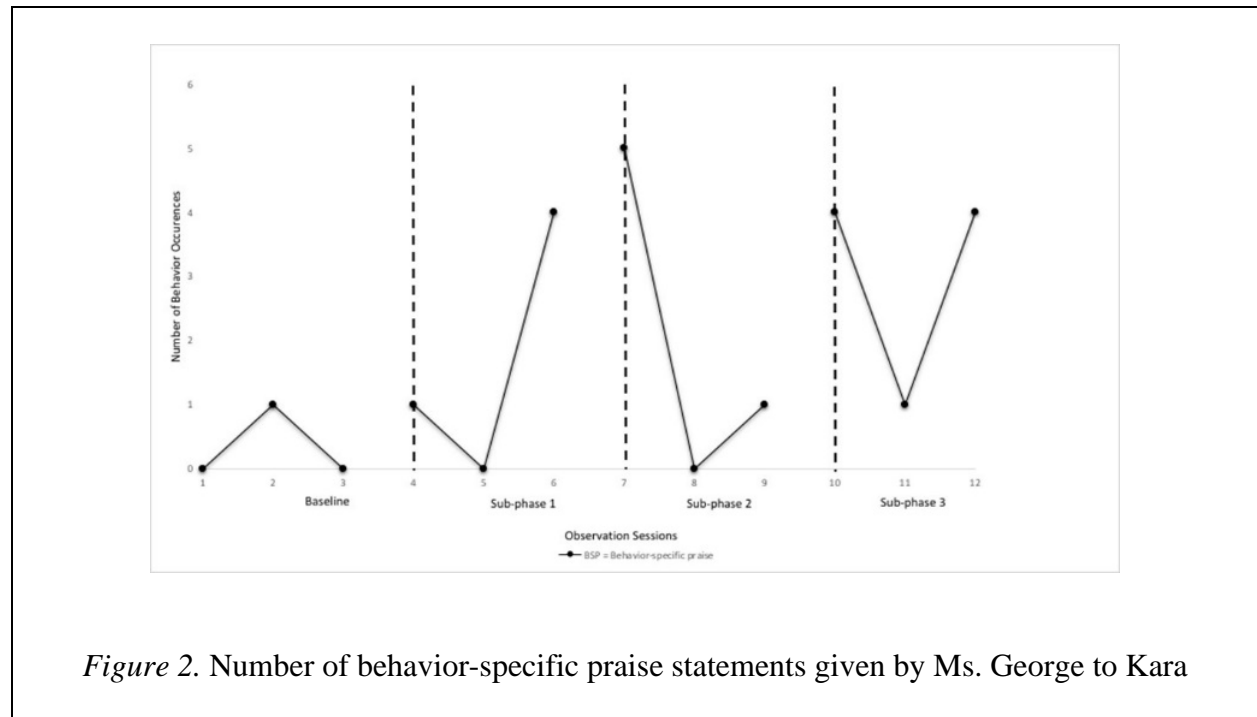


Figure 2. Number of behavior-specific praise statements given by Ms. George to Kara

With Chris, the mean rate of behavior-specific praise during the baseline phase was zero and increased to 3.6 after the first intervention sub-phase (see Figure 3). During the second intervention sub-phase, the mean rate of behavior-specific praise decreased to 1.9 and failed to meet the established interim criterion of 3.6. The mean of behavior-specific praise continued to be calculated for subsequent sub-phase observations during the next three weeks and reflected the same trend.

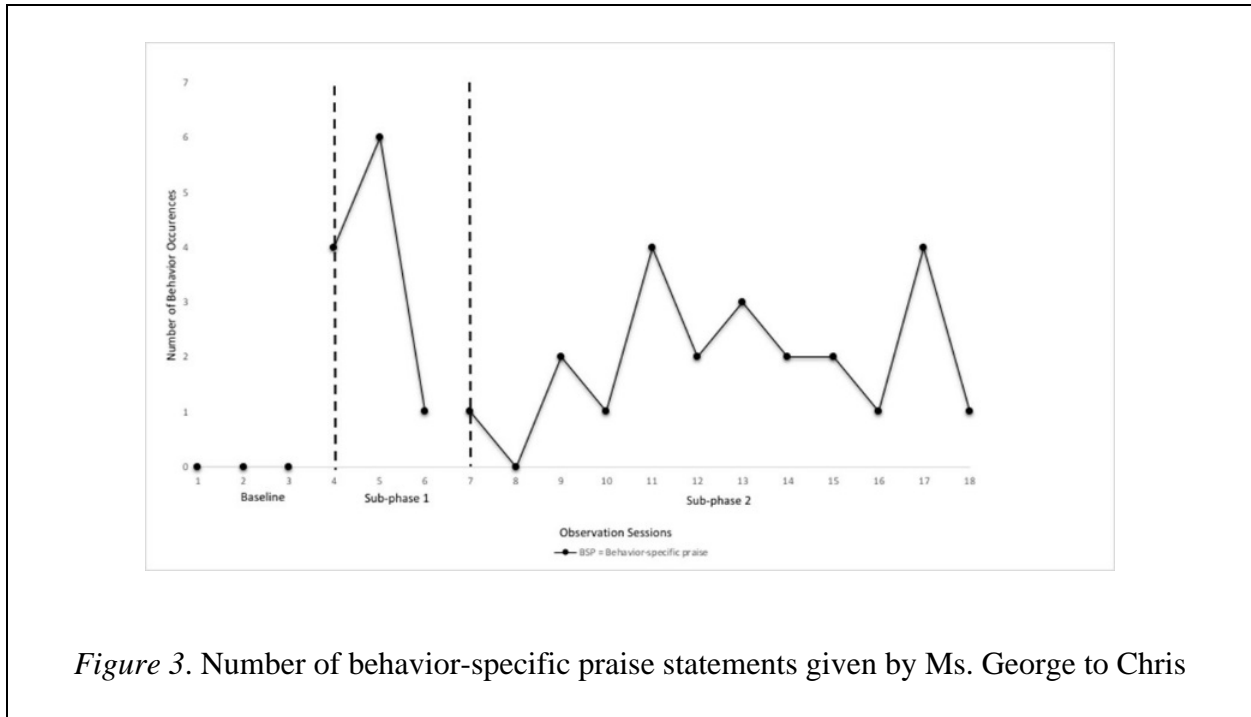


Figure 3. Number of behavior-specific praise statements given by Ms. George to Chris

With Cody, the mean rate of behavior-specific praise during the baseline phase was 0.3 and increased to 2.6 after the first intervention sub-phase (see Figure 4). During the second intervention sub-phase, the mean rate of behavior-specific praise decreased to 2.5 and failed to meet the established interim criterion of 2.9. Similar to Chris, the mean rate of behavior-specific praise given to Cody continued to be calculated for subsequent sub-phase observations during the next three weeks and reflected the same trend.



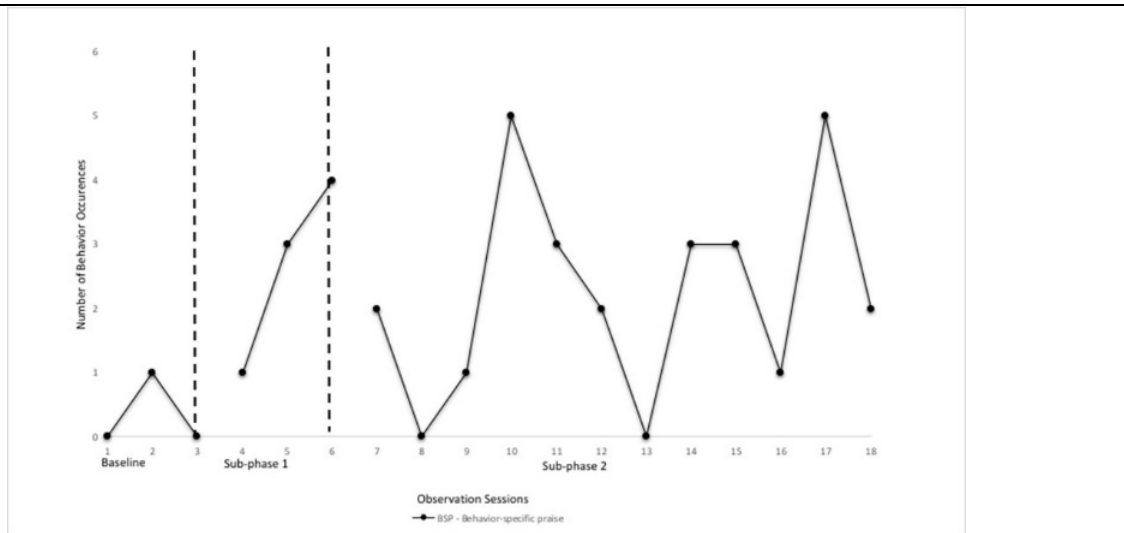


Figure 4. Number of behavior-specific praise statements given by Ms. George to Cody

**Dependent Variable Data**

The number of challenging and replacement behaviors exhibited by Kara, Chris, and Cody are shown in Figures 5, 6, and 7, respectively. With Kara, the mean rates for challenging behaviors was 2.0 and zero for replacement behaviors during the baseline phase (see Figure 5). During the first intervention sub-phase, there were increases in the mean rates of Kara’s challenging (4.7) and replacement (3.0) behaviors. However, this trend was reversed during the second intervention sub-phase (challenging behaviors = 2.6, replacement behaviors = 1.3). During the third intervention sub-phase, the mean rate of Kara’s challenging behaviors remained the same, yet increased dramatically for her replacement behaviors (5.3).

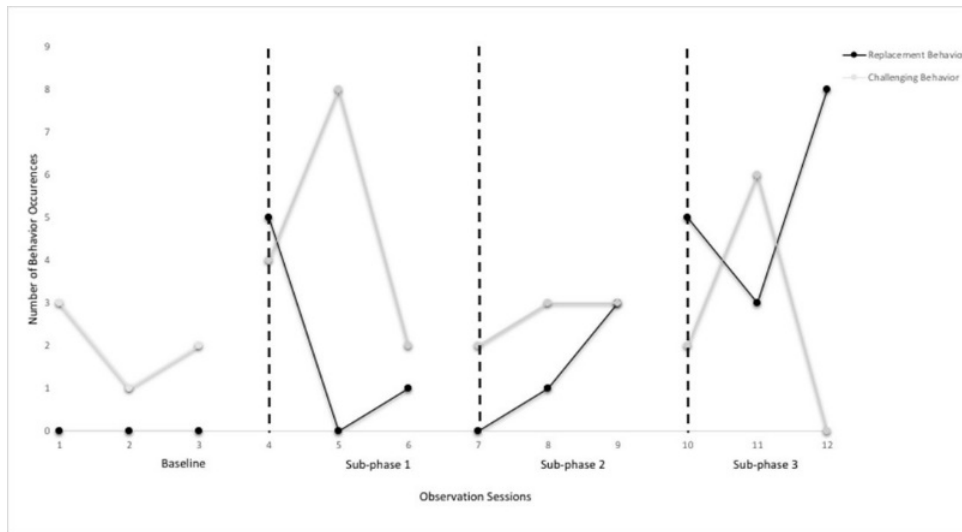


Figure 5. Number of challenging and replacement behaviors exhibited by Kara

With Chris, the mean rates for challenging behaviors was 4.6 and zero for replacement behaviors during the baseline phase (see Figure 6). The mean rates for Chris’s challenging behaviors decreased to 3.3 during the first intervention sub-phase and then increased back to 4.6 during the second intervention sub-phase. Data also revealed that Chris’s replacement behaviors increased to 2.3 during the first intervention sub-phase with no change during the second intervention sub-phase.

With Cody, the mean rates for challenging behaviors was 4.6 and 0.3 for replacement behaviors during the baseline phase (see Figure 7). The mean rates for Cody’s challenging behaviors decreased to 3.6 during the first intervention sub-phase and then increased back to 4.2 during the second intervention sub-phase. Data also revealed that Cody’s replacement behaviors increased to 1.6 during the first intervention sub-phase and then decreased slightly to 1.3 during the second intervention sub-phase.

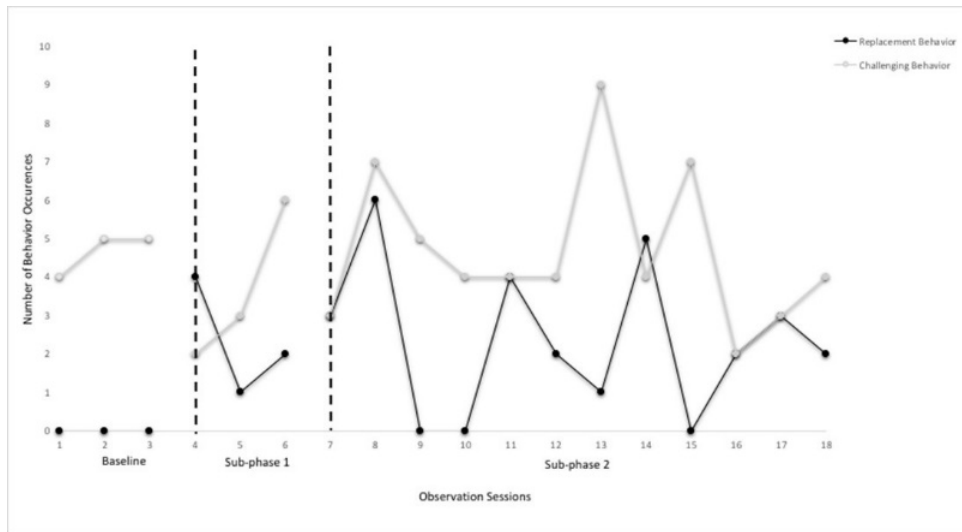


Figure 6. Number of challenging and replacement behaviors exhibited by Chris

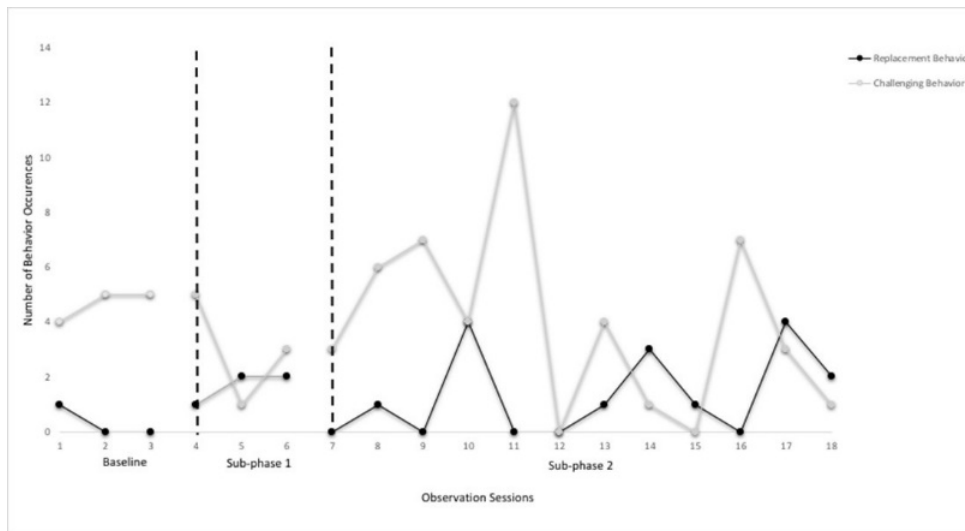


Figure 7. Number of challenging and replacement behaviors exhibited by Cody

### ***Limitations and Areas for Future Research***

There were three major limitations in the present study that impact generalizability of reported results. First, extraneous variables occurred during observation sessions that were beyond the control of the primary researcher. All observation sessions were conducted in a high school life skills classroom where other students and school personnel were present. As a result, there may have been distractions that impacted the teacher's use of behavior-specific praise or factors that provoked challenging behaviors among students. Future studies should attempt to create a more controlled classroom setting to reduce distractions and instigating factors as much as possible.

Second, the teacher-participant had several years of professional teaching experiences among students with disabilities. Additionally, the three student-participants were individuals with severe intellectual disabilities who each exhibited individualized challenging behaviors. Future studies should include teacher-participants with varying professional teaching experiences so that teachers in different teaching assignments (e.g., special education classrooms, content area classrooms) and at various stages of their teaching career may be evaluated. Future studies should also involve a greater number of student-participants with other types of disabilities who exhibit different forms, frequencies, and intensities of challenging behaviors.

Lastly, the present study used inter-observer agreement checks to establish reliability with intervention sub-phase observations. For each observation session, Kappa values were calculated and demonstrated good inter-observer agreement with all but two observation sessions. Future studies should incorporate ways to improve the degree to which multiple observers conduct consistent interpretations of events during the same observation session.

### ***Conclusion and Recommendations***

Among students with severe intellectual disabilities teachers can use PBIS practices, such as behavior-specific praise, to reduce the occurrence of challenging behaviors and promote alternate, replacement behaviors (Farmer et al., 2012). Since teachers are not adequately prepared or trained to use PBIS practices with fidelity (Kennedy et al., 2017), Stormont and Reinke (2014) recommended using a data-based performance feedback approach characterized with observations and consultations to provide teachers with visual performance feedback. The goal of the present study was to address an under-researched area and evaluate the effect of visual performance feedback on the frequency of (a) behavior-specific praise statements given by a high school special education teacher and (b) challenging and replacement behaviors exhibited by high school students with severe intellectual disabilities.

Results in the present study have shown that use of a data-based performance feedback approach enabled Ms. George to significantly increase the frequency of behavior-specific praise given to Kara, Chris, and Cody. By providing Ms. George with initial training and weekly consultations that included visual performance feedback, she was empowered to implement behavior-specific praise with fidelity. Results also revealed decreases in challenging behaviors and increases in replacement behaviors exhibited by student participants, especially with Kara. Reducing challenging behaviors in high school students with severe intellectual disabilities can be

problematic because their behaviors have become deeply ingrained over time (Bruhn et al., 2016). This was evident in findings reported for Chris and Cody after the first intervention sub-phase. Despite this phenomenon, findings from the social validity questionnaire showed that Ms. George viewed behavior-specific praise as an effective PBIS practice that increased access to instructional opportunities for Kara, Cody, and Chris. Furthermore, Ms. George indicated that she planned to continue using behavior-specific praise with high school students who have severe intellectual disabilities.

Results from the present study have implications for stakeholders in teacher preparation programs and high school contexts. High school teachers who work among students with severe intellectual disabilities must know how to address challenging behaviors appropriately. Therefore, preservice and practicing teachers must learn how to conduct FBAs to determine the function of challenging behaviors and create function-based behavior improvement plans that implement PBIS practices as interventions (Erbas, Tekin-Iftar, & Yucesoy, 2006; Westing, 2015). Trainings should include frequent opportunities to observe experienced teachers and practice related skills in authentic high school settings (Mastropieri, 2001) using a visual performance feedback approach (Jenkins, Floress, & Reinke, 2015; Reddy, Dudek, & Lekwa, 2017; Stormont & Reinke, 2014). While implementing a data-based performance feedback approach, stakeholders in teacher preparation programs and high school contexts may also consider different variations with procedures. For example, video self-modeling enables teachers to view themselves performing PBIS practices successfully (Hawkins & Heflin, 2011). Additionally, teachers may be provided with performance feedback through email (Allday et al., 2012; Gage et al., 2018) or via real-time means using wireless technology devices (Sweigart et al., 2015).

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