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## Teaching specials teachers to use behavior specific praise in elementary school

Elizabeth Rich

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Teaching Specials Teachers to Use Behavior Specific Praise in Elementary School

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A thesis submitted to the Graduate Faculty of

JAMES MADISON UNIVERSITY

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## Table of Contents

List of Tables.....	iii
List of Figures.....	iv
Abstract .....	v
I. Introduction.....	1
Behavior Specific Praise.....	1
Tactile Prompting.....	2
Purpose.....	3
II. Literature Review.....	5
Methodology for the Literature Review.....	5
Results.....	5
Discussion.....	6
III. Method.....	14
Setting and Participants .....	14
Dependent Variables.....	15
Experimental Design.....	16
Materials.....	16
Procedures.....	16
Interobserver Agreement.....	18
Adherence to Training Procedures.....	19
Social Validity.....	20
IV. Results.....	22
V. Discussion.....	28
Appendices.....	34
Appendix A: Data Sheet.....	34
Appendix B: Script for Training Second Observer for IOA.....	35
Appendix C: Social Validity Questionnaire.....	38
References.....	39

## List of Tables

Table 1: Social Validity Questionnaire Results .....	21
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## List of Figures

Figure 1: Standard Celeration Chart displaying data for Participant 1.....	26
Figure 2: Standard Celeration Chart displaying data for Participant 2.....	27

## **Abstract**

Behavior-specific praise (BSP) has been shown to be an effective intervention across age groups for improving behavior in the school setting, including increasing on-task behavior, increasing engaged behavior, and reducing disruptive behavior. Following a review of the literature, the researcher selected tactile prompting paired with a visual prompt to increase specials teachers' use of BSP. Using a multiple probe across participants design with an add-in component, this study investigated the effects of a visual prompt and a tactile prompt paired with a visual prompt to increase BSP use for two elementary school music teachers. Researchers also examined whether increasing BSP use affected the rate of corrective statement use. Results provide preliminary evidence that a tactile prompt paired with a visual prompt is more effective than a visual prompt alone for increasing BSP use.

## **Introduction**

Research studying behavior specific praise has been published in behavior analytic journals since the 1970s (e.g., Cossairt et al., 1973; Horton, 1975). The extensive volume of research related to the impacts of behavior specific praise on improving student behavior and classroom management demonstrate that it is an effective intervention for positive behavior change (Ennis et al., 2020). Unlike punishment procedures or in-depth behavior support plans, using behavior specific praise to modify student behavior is a low-risk intervention that does not require extensive supervision, making it an ideal intervention for classroom teachers who may not have access to a board certified behavior analyst.

### **Behavior Specific Praise**

Providing praise is a low-cost, low-effort way for teachers to impact student behavior. Praise can be provided through generic statements (e.g., “good work”) or more specific statements, known as behavior-specific praise. Behavior-specific praise (BSP) can be defined as praise statements that describe which behavior is being praised (Allday et al., 2012; LaBrot et al., 2020; Markelz et al., 2021; McDonald et al., 2014). BSP can be delivered to individual students (e.g., “Kaci, you’re doing a great job writing neatly”), a small group (e.g., “I love how table three is sitting and facing the board”), or the entire class (e.g., “The way you walked in a line quietly in the hall coming back from art was excellent”).

There are multiple benefits to using BSP. Increasing the use of praise statements has been shown to increase on-task behavior (Markelz et al., 2021) and increase appropriate and engaged behavior and decrease disruptive behavior (LaBrot et al., 2020). BSP has been proven to be effective at the pre-school (LaBrot et al., 2021), elementary

(Markelz et al., 2019), and secondary levels (O’Handley et al., 2020). Suggested rates of praise vary from one BSP statement every two minutes (LaBrot et al., 2020) to the 4:1 ratio of praise statements to corrective statements that is often heard in professional development sessions and team meetings. Despite the research proving the effectiveness of BSP, when Floress et al. (2018) conducted research to examine general education teachers’ natural rates of praise, they found that general praise was used far more often than BSP, and that rates of BSP declined as grade level increased. In other studies, researchers who collected data on teachers’ baseline rates of BSP found low levels, and interventions were needed to increase rates of BSP.

Implementing behavior specific praise does not require advanced training. In the literature documenting efforts to train teachers to use behavior specific praise, participants vary in age, background, and teaching experience. Researchers have used many interventions to increase teachers’ use of behavior specific praise, including behavior skills training, training with video feedback (e.g., Pinter et al., 2015) in situ coaching (e.g., Taber et al., 2020), self-monitoring (e.g., Kalis et al., 2007), performance feedback (e.g., Duchaine et al., 2011), and prompting (e.g., Dufrene et al., 2012). In the past decade, research has emerged on the use of tactile prompting to increase teachers’ use of behavior specific praise.

### **Tactile Prompting**

Prompting is commonly used in interventions aimed at teaching or changing behavior. Prompts can be verbal, visual, physical, or tactile. A tactile prompt occurs when a physical sensation such as vibration is used as the stimulus which indicates to the individual that a behavior should be performed (Markelz et al., 2020). Tactile prompts are found in everyday life: a vibration from a fitness watch prompts the wearer to get up and

walk around, a sharp pain on a bare foot prompts the individual to pick up the Lego that was sitting in the hallway, a vibrating cell phone prompts the user to check their text messages (Dubuque et al., 2021). In research and educational settings, tactile prompting has been shown to be effective in changing student behavior (Dubuque et al., 2021; Shabani et al., 2002; Taylor & Levin, 1998;) and teacher behavior.

Multiple tools can be used to provide tactile prompts. Interval timers such as the MotivAider or GymBoss can be programmed to vibrate at set intervals. Alarms and timers can also be set using wearable technology such as the FitBit or Apple Watch. As wearable technology becomes less expensive and more commonly used, opportunities for using tactile prompting to promote behavior change increase. Researchers should take advantage of the popularity of wearable technology to seek out opportunities to use tactile prompting in behavior change interventions.

### **Purpose**

Most of the behavior analytic teacher training described in published literature focuses on special education and general education teachers. Although it is important for those teachers to be highly trained, there are other education professionals who come into contact with students with disabilities and challenging behaviors who also need behavior management training. The increased push for inclusion of all students in general education settings means that specials teachers (e.g., physical education, art, and music teachers, and school librarians) are increasingly working with students with disabilities and challenging behaviors. Despite this, the literature on behavior management training continues to focus on general and special education teachers. The purpose of this study was to evaluate the effects on tactile prompting on specials teachers' use of behavior specific praise statements. This study aimed to answer the following questions:

1. When paired with a visual prompt, how effective is tactile prompting for increasing specials teachers' use of BSP?
2. How does an increase in the use of BSP affect the rate of corrective statements used by specials teachers?

Chapter two presents a literature review exploring the published literature to date on using tactile prompting to increase teachers' use of BSP. Avenues for future research are also discussed. Chapter three presents the methodology that was used in this research study. Chapter three also addresses inter-observer agreement (IOA), procedural fidelity, and social validity. Chapter four presents the results of the experiment, and chapter five will discuss the results and limitations, as well as discuss contributions to practice and areas for further research.

## Literature Review

### Methodology for the Literature Review

#### *Inclusion Criteria*

Inclusion criteria for articles contained in this literature review were as follows: (1) the article was published in a peer-reviewed journal, (2) the article contained an intervention procedure that targeted teachers' use of BSP using a tactile prompt, (3) the article was published in English, and (4) the article was accessible at no cost through the James Madison University Libraries databases.

#### *Search and Article Selection*

Articles for this literature review were accessed through the James Madison University Libraries website. The "quick search" function was used to search all the databases the Libraries have access to, including *PsycINFO* and *ERIC*. The search terms "behavior specific praise" AND "tactile prompt" produced 23 results. When the filter "peer reviewed journals" was applied 16 results remained. One result was excluded because it was the preface to a journal. Five results were excluded because they did not contain an intervention procedure and results; those results included systematic reviews and theoretical interventions. Five results were excluded because they outlined interventions not focused on changing teacher behavior related to BSP using tactile prompts. Five results remained that met the criteria for inclusion in this literature review. A review of the reference lists in the identified articles did not reveal any additional articles for inclusion.

### Results

All articles included in this literature review were published within the last decade in peer reviewed journals. Tactile prompting is a relatively new technology, so although date published was not an inclusion or exclusion criterion, there was a small range of publication dates: 2014 through 2021. Any potential articles published after August 2021 related to the topic were not included because they were not published at the time of the initial search. After identifying articles, each of the five identified articles was read in full to ensure it met the inclusion criteria. After reading each article, themes and topics were identified for each and compiled in a spreadsheet. The themes identified for discussion were: tactile prompting alone, tactile prompting and self-monitoring, tactile prompting with performance feedback, and tactile prompting for simultaneous behaviors. The need for generalization of the use of BSP will also be discussed.

## **Discussion**

### ***Tactile Prompting Alone***

Only one study explored the potential effect of tactile prompting on its own, as in not paired with any other intervention in the same condition or tier. In a tiered intervention, LaBrot et al. (2020) introduced tactile prompting as a Tier 3 intervention for a Head Start teacher who was not meeting the target number of BSP statements in less intensive tiers. The researchers were measuring rate of BSP statements during 10-minute observations and determined whether a participant needed a higher tier of intervention based on the rate observed. For the participant who received the tactile promoting intervention, Tier 1 and Tier 2 interventions produced inconsistent behavior change. When tactile prompting was introduced using the MotivAider, the teacher immediately and consistently met or exceeded her target number of at least one BSP statement every

two minutes (LaBrot et al., 2020). Despite the apparent success of the intervention, generalized conclusions cannot be drawn as the effect was not demonstrated across participants since only one teacher in the study needed Tier 3 intervention. Additionally, maintenance data were not collected due to the study ending, so there is no evidence for or against a lasting change after the use of tactile prompting.

*Avenues for Future Research.* More evidence is needed to demonstrate a functional relation between tactile prompting on its own and an increase in teacher use of BSP. The emerging evidence for tactile prompting as a single intervention to increase BSP use is promising, and worth investigating further. Future researchers should examine the effects of tactile prompting as a singular intervention to determine if tactile prompting alone is effective in increasing and maintaining rates of BSP statements. Including a maintenance phase after the use of tactile prompting alone should be considered to determine if tactile prompting alone is an effective intervention for long-term behavior change.

### ***Tactile Prompting and Self-Monitoring***

Self-monitoring is a behavior change intervention in which the individual sets goals and monitors their own behavior and progress towards that goal (Cooper et al., 2020). Two of the identified studies used self-monitoring with tactile prompting to increase teacher use of BSP. Both of the studies that paired tactile prompting with self-monitoring demonstrated favorable treatment effects. Given the limited time teachers have in their schedule, self-monitoring may be more appealing than an intervention which requires meeting with a researcher.

In a component analysis, Markelz et al. (2021) compared the effectiveness of self-monitoring alone and self-monitoring paired with a tactile prompt. Three early childhood education teachers participated in a multiple-probe single-case study with components added in systematically. An Apple Watch was used for self-monitoring and delivering the tactile prompt. Teachers used an app called Clicker to record instances of BSP. Tactile prompts were delivered via an Apple Watch app called Periodic Timer. Researchers measured the rate of BSP statements during 10-minute observation periods. They found that self-monitoring alone was only effective for one participant to meet her target number of BSP statements. The other two participants moved into a treatment package where tactile prompts were paired with self-monitoring. Both participants were most successful in meeting their target number of BSP statements when the treatment package of self-monitoring and tactile prompting was introduced.

In a treatment package focused on using wearable technology to implement behavior change procedures, Markelz et al. (2019) combined tactile prompting with self-monitoring to increase teachers' use of BSP statements. Four teachers participated in this multiple baseline across participants study. In the intervention phase, the researchers implemented a program they called "electronic tactile awareness prompting with self-monitoring (eTAPS)" (Markelz et al, 2019, p. 471). eTAPS combined two apps on the Apple Watch. First an interval timer was set, and then a clicker app was opened to run simultaneously. Teachers started both apps at the beginning of the session and used the clicker app to record instances of BSP statements. The results demonstrated that the intervention was effective and there was a functional relation between tactile prompting and the frequency of BSP statements. All three participants displayed immediate

increases in their use of BSP when the intervention was put in place, and two of the three maintained high levels of performance into the maintenance phase. The third participant's performance in the maintenance phase was variable, but still higher than their baseline. Unlike the component analysis done by Markelz et al. (2021), this intervention did not attempt to discern the effect of tactile prompting or self-monitoring alone before combining them. However, given the low effort required by teachers during this intervention, identifying which component of the treatment was most effective may not matter as much as the outcome: an effective, low-effort behavior change program that can be implemented in a classroom.

*Avenues for Future Research.* Although wearable technology such as the Apple Watch is becoming more common, future researchers may want to explore the effectiveness of low-tech self-monitoring on rates of BSP. In both studies, participants completed a social validity questionnaire and rated the interventions as highly favorable. However, one participant commented, "There were moments when it took away from the lesson (primarily when reading a book). I would have to stop the book to give BSP, and flip my hand, and the book, around to tap the watch" (Markelz et al, 2021, p. 110). Future researchers should examine whether there are ways to make the self-monitoring procedure require a minimal amount of effort to increase social validity and acceptability.

### ***Tactile Prompting with Performance Feedback***

Providing performance feedback during an intervention can have a therapeutically significant effect on a participant's behavior. Performance feedback can be provided vocally, visually through graphs and charts, or in written form. In a multiple baseline across participants study, O'Handley et al. (2018) paired weekly performance feedback

with tactile prompting to increase three elementary school teachers' use of BSP statements. Performance feedback included a graph and written positive or corrective feedback. Before intervention, participants averaged a rate of 0 to .5 BSP statements per minute. Once the tactile prompt was introduced using the MotivAider and weekly performance feedback was paired with it, all participants increased their rate of BSP statements to above the target of .5 per minute. Results indicated a functional relation between the intervention and the increased rate of responding, demonstrating that their low-intensity intervention can have significant impacts on teacher performance. The researchers did not specify how long after the intervention the maintenance phase occurred, therefore the intervention's effect on long-term behavior change cannot be determined.

*Avenues for Future Research.* Practitioners working in schools often need low-intensity, low-effort interventions. Future researchers can expand O'Handley et al.'s (2018) results by including a procedure to fade out the prompts and performance feedback instead of merely a maintenance phase. If prompts can be faded while the behavior remains at a stable rate, the teacher's behavior can be shown to be under the control of a naturally occurring stimulus, student behavior, instead of the tactile prompt. A component analysis could determine if the tactile prompt or the performance feedback are effective on their own, or if the combined treatment package remains the most effective option.

### ***Tactile Prompting for Simultaneous Behaviors***

One study used tactile prompting to increase the teachers' use of two behaviors simultaneously. In McDonald et al. (2014), the teacher participants were trained in a

differential reinforcement procedure that required two behaviors, a BSP statement and token delivery, at the same time. When teachers received the tactile prompt via a prompting device called The Gentle Reminder, they were expected to display both behaviors: deliver a BSP statement and give a token. A low rate of prompting was used; The Gentle Reminder was programmed to vibrate once every 10 minutes during a 30-minute session. During the intervention phase, the use of the differential reinforcement procedure, including the BSP statement, increased. The authors attribute this increase to the use of the tactile prompt. Although graphed data show an increase in use of differential reinforcement across participants, the effectiveness of the tactile prompt cannot be proven. The fact remains that the participants frequently delivered reinforcement even when no prompt was given, therefore the experiment does not demonstrate a functional relation. The high rate of behavior compared to the low rate of stimulus delivery does not demonstrate stimulus control over the behavior. It is unclear whether the tactile prompt was truly causing the behavior change, or if a reactivity effect occurred. The participants may have changed their behavior solely because they were participating in a research study, rather than changing their behavior because they were receiving the tactile prompt.

*Avenues for Future Research.* The McDonald et al. (2014) study using tactile prompting to increase the use of two simultaneous behaviors does not provide strong evidence that it is an effective procedure. Future researchers wanting to explore whether tactile prompting can increase two behaviors simultaneously should consider making several changes to the experimental design: a withdrawal design may be considered to determine if the tactile prompt or the participation in a research study actually affected

the behavior change, the tactile prompt should be delivered more frequently to determine a correlation between tactile prompting and use of the desired behaviors, data on the use of BSP and the other behavior should be examined separately to determine if the tactile prompting is affecting both behaviors, and a maintenance phase should be included to determine if long-term behavior change occurred.

### **Generalization**

In the early years of behavior analysis, generalization was assumed to occur naturally over time. After Stokes and Baer (1977) published their seminal paper identifying the various ways generalization could occur or be programmed to occur, generalization received more attention from practitioners and researchers. An intervention to teach a skill is not enough to ensure that generalization of the new skill happens: “Generalization does not automatically occur simply because a behavior change is accomplished” (Stokes and Baer, 1977, p. 350). Generalization should be planned for as part of an intervention.

Only one study of the five discussed here planned for generalization. Markelz et al. (2019) used stimulus fading to fade tactile prompts and move stimulus control away from the tactile prompt and towards the more natural prompt: the students’ behavior. Teachers were expected to recognize and praise student behavior in the absence of a tactile prompt: "In other words, by increasing the duration between tactile prompts yet keeping the same daily goals with self-monitoring, participants needed to recognize the naturally occurring stimulus (i.e., student on-task behavior) to prompt delivery of behavior-specific praise" (Markelz et al., 2019, p. 479). Although interventions such as tactile prompting or a treatment package including tactile prompting are effective for

increasing teachers' use of BSP, the interventions should be able to be faded out without a significant regression in rate of responding. Planning for generalization is essential to the intervention having lasting effects.

## Method

### Setting and Participants

This study took place in an elementary school in a small city in the southeastern United States. The school was located in a district that served approximately 6,000 students, with approximately 500 students in grades pre-k through grade five attending the target school. In 2017, the most recent year for which data is available, 41% of students at the target school were identified as English Language Learners (ELL). However, this estimate is likely lower than the actual number of students who spoke a language other than English at home because many of those students test out of ELL status. All students at the school receive free breakfast and lunch regardless of family socioeconomic status.

The target population for participants in this study were specials (e.g., art, music, library, physical education) teachers. Participants for this study were recruited by the researcher. After Institutional Review Board approval, a flyer was brought to each specials teacher individually, and the researcher informed the teachers they were being invited to participate in a study on teacher responses to student behavior. Five teachers who taught specials to preschool through fifth grade students were invited to participate. The Spanish teacher was excluded because her class is taught mainly in Spanish and the researcher does not speak Spanish and would be unable to collect data. Two music teachers agreed to participate in this study. Participant 1 was a female who has been teaching elementary school music for 16 years and has a Masters-level education. Participant 2 was a female who was student teaching with Participant 1 as her

cooperating teacher. This was her first year teaching music, and she was completing her undergraduate education.

### **Dependent Variables**

The primary dependent variable in this study was the teachers' rates of BSP statements. BSP statements were defined as praise statements that described which behavior is being praised (e.g., "Great job keeping your eye on the ball while dribbling," "I love how you're being gentle with your instruments," "Thanks for stopping and looking at me when I rang the bell"). BSP statements applied to behavioral expectations in the classroom or during an activity, and excluded compliments (e.g., "Your drawing of a cat is very pretty").

The secondary variable was the teachers' rates of corrective statements. Corrective statements were defined as statements directed towards a student in which the student was told to stop a behavior or statements which addressed or brought attention to an inappropriate or disruptive behavior. Corrective statements applied to routine behavior expectations within the classroom or activity (e.g., "Stop throwing crayons at your classmates"). Instructions on new techniques or strategies did not count as corrective statements (e.g., "Line your fingers up with the threads on the football to get a better throw").

Each session was audio recorded. A session was defined as the first 20 minutes of the second grade specials period for Participant 1, and a 20-minute kindergarten class period for Participant 2. The researcher brought the audio recorder to the music room every morning and returned at the end of the school day to pick it up. The researcher listened to the recording and recorded on a spreadsheet the number of BSP statements

and the number of corrective statements used by the participant during the session, as well as the timestamp and specific wording of each statement.

### **Experimental Design**

This study used a multiple probe across participants design with an add-in component. Three phases were included: baseline, visual prompt, and visual prompt + tactile prompt. A training on using BSP was given to participants at the end of the baseline session, and the visual prompt was introduced during the training. The visual prompt + tactile prompt phase did not include additional training on BSP use, only on responding to the tactile prompt. Maintenance probes were unable to be conducted due to the time period for data collection ending. Data for each participant were graphed using a standard celeration chart and displayed as rate per minute. Throughout all phases participants were not given performance feedback other than thanking them for their participation.

### **Materials**

During data collection, each participant wore a Sony audio recording device around their neck. The researcher provided instructions and a demonstration on how to use the audio recording device. During the first intervention phase, a visual cue card was provided. Visual cue cards measured three by five inches, and were laminated yellow index cards with the phrase, "Be specific!" written on them in black ink. During the second intervention phase, the visual cue card remained in place, and a GymBoss interval timer that emitted a tactile prompt was provided.

### **Procedures**

Before the baseline condition began, teachers were asked to select the grade they felt would benefit from a behavioral intervention. Although this is a subjective measure and not scientifically indicative of the actual behavior of the grade, the researchers anticipated more buy-in from the teachers if the teachers were given opportunities for choice. The grade the teacher felt they had the most difficulty with or was most in need of behavioral intervention was the grade level selected for that teacher's intervention sessions.

### ***Baseline***

During the baseline phase, participants did not know the exact purpose of the study. They were given instructions on how to operate the recording device and told to conduct their class as usual. Participants were asked to verbally indicate the start of class while recording; this indicated to the researcher when the 20-minute session began. Each participant was asked what they usually said to gain the class's attention and indicate the start of class and was instructed to use that exact phrasing each session. Participants indicated the start of class by telling the class, "Come on in!" Baseline data was collected for a week and a half.

### ***Training and Visual Prompt Phase***

Before beginning the visual prompt phase, participants met with the researcher together for a training session. Participants received the training together because they taught together in the same room and providing the intervention to one teacher could have unintentionally influenced the other's behavior. The researcher first explained the purpose of the study and informed the participants that data was being collected on the number of BSP statements provided by the teacher per session. The participants then

received training on using BSP. Training consisted of a description of BSP and its effects, examples of BSP, and a role-play scenario in which the participant practiced using BSP statements and received feedback from the researcher. The participants were given a visual cue card that read “Be specific!” and were instructed to place the visual cue card in a place where it would be visible to them while they were teaching. During the visual prompt phase, participants continued recording their sessions and used BSP statements while teaching. No performance feedback other than thanking them for their participation was provided.

### ***Visual Prompt + Tactile Prompt Phase***

Participant 1 received the tactile prompt addition to the intervention. After two weeks in the visual prompt phase, data for Participant 1 did not show a consistently increasing trend and the researcher determined a more intensive level of intervention was necessary to increase BSP use. The visual cue card remained in place, and a tactile prompt was added using the GymBoss interval timer. The researcher met with Participant 1 and informed her that the next phase of the study was beginning but did not give any performance feedback. The researcher then demonstrated how to operate the prompting device. The researcher preset the GymBoss timer to vibrate at 1-minute intervals for 20 minutes. Participant 1 practiced turning on and starting the timer and delivering a BSP statement when the tactile prompt was provided. Participant 1 was told, “Try to deliver a BSP statement on as many prompts as you can, but I know that if the timer buzzes while you’re in the middle of a song you won’t be able to stop the song to provide praise at that moment.” She was not given a target number or rate.

### **Inter-Observer Agreement (IOA)**

The researcher trained a second observer to conduct IOA by providing definitions and examples of BSP and corrective statements. The second observer was then given a mock transcription of a class and asked to identify the BSP and corrective statements by circling the BSP statements and putting an X on corrective statements. When the second observer identified the BSP and corrective statements with 90% accuracy they were ready to conduct IOA. This criteria was met in one training session.

IOA was calculated for at least 15% of sessions across conditions using total count IOA. The recommended minimum of 20% of sessions (Cooper et al., 2020) could not be reached due to the second observer being unavailable unexpectedly. The researcher and second observer independently listened to the recording and recorded the timestamp and wording of each BSP or corrective statement. For Participant 1, IOA for BSP statements averaged 60.3% (range: 50%-66.6%). After a discussion between the researcher and the second observer regarding the session with 50% IOA where the researcher provided further explanation to the second observer on what counts as behavior-specific, 100% IOA was reached for that session. The adjusted average IOA for Participant 1 is 76.9% (range: 64.2%-100%). IOA for corrective statements was 75.1% (range: 55.5%-88.8%). For Participant 2, IOA for BSP statements averaged 77.5% (range: 71.4%-85.7%). IOA for corrective statements averaged 70.1% (range: 30.7%-92.3%).

### **Adherence to Training Procedures**

During training sessions, the researcher read from a script to ensure all aspects of the intervention were included as described. The researcher followed the script for 100%

of training sessions. Daily tasks required of the researcher were completed with 100% accuracy.

### **Social Validity**

At the end of the study, participants were asked to complete a social validity questionnaire. The Modified Intervention Rating Scale (IRP-15) used by Markelz et al. (2019) was used. Nine items were scored on a 6-point Likert scale, with one being “strongly disagree” and six being “strongly agree.” Only one participant was available at the end of the study to complete the social validity questionnaire. Results are displayed in Table 1, with the “Rating” column showing the rating selected by the participant. Overall, the intervention was rated favorably. The participant “agreed” or “strongly agreed” that the intervention was effective in changing their behavior, would be appropriate for a variety of teachers, and the time and effort required for this intervention was reasonable

Table 1: Social Validity Questionnaire Results

Social Validity Questionnaire Modified Intervention Rating Profile (IRP-15) (Markelz et al., 2019)	
1 = strongly disagree, 2 = disagree, 3 = somewhat disagree 4 = somewhat agree, 5 = agree, 6 = strongly agree	
Item	Rating
This intervention was effective in changing my behavior.	5
I would suggest the use of this intervention to other teachers.	5
I would be willing to continue to use this intervention in the classroom setting.	5
This intervention would not result in negative side effects for children.	6
This intervention would be appropriate for a variety of teachers.	6
This intervention improved student behavior.	4
The time and effort required to participate in this intervention is reasonable.	5
I liked the procedures used in this intervention.	5
Overall, this intervention was good for my students.	5

## Results

This section describes the results of the study. Results are described for each participant and will be discussed in depth in the next chapter.

### Participant 1

Figure 1 presented the graphed data for Participant 1.

#### *Baseline*

**BSP Statements.** Baseline data was collected for six sessions on six school days. Baseline rates of BSP statements per minute were: 0.3, 0.1, 0.0, 0.1, 0.15, and 0.25. Due to time limits, the baseline phase was unable to be extended until steady state responding was reached. Although a slowly increasing trend was observed in sessions 4, 5, and 6, the researcher determined that the low rates of BSP statements still warranted intervention.

**Corrective Statements.** Baseline rates of corrective statements per minute were: 0.85, 0.45, 1.8, 1.05, 0.7, and 0.3. During baseline, rates of corrective statements per minute were variable, but were consistently higher than rates of BSP statements per minute.

#### *Visual Prompt*

**BSP Statements.** Data for the Visual Prompt phase was collected for eight sessions over the course of three school weeks. The large gap between session 13 and session 14 occurred due to the schools being closed for spring break. After receiving the training and implementing the visual prompt phase, Participant 1's rates of BSP statements increased compared to baseline levels. During this phase, rates of BSP statements per minute were: 0.7, 0.55, 0.35, 0.5, 0.263, 0.4, 0.624, and 0.35. All data

points with the exception of session 11 were higher than baseline rates of BSP statements. The data shows a variable trend that did not stabilize.

**Corrective Statements.** During the Visual Prompt phase, rates of corrective statements per minute were: 0.45, 1.45, 0.35, 0.35, 1.263, 1.05, 1.3, and 1.25. Rates of corrective statements were variable but were similar to rates observed during baseline. Rates of corrective statements during phase I all fell between the range of rates observed during baseline. With the exception of session 10, rates of corrective statements remained higher than rates of BSP statements.

### ***Visual Prompt + Tactile Prompt***

**BSP Statements.** Data for the Visual Prompt + Tactile Prompt phase was collected for five sessions on five school days. It is important to note that this phase began right after the school returned from spring break, and an extended break in the research study had occurred. Rates of BSP statements per minute were: 0.25, 0.75, 0.45, 0.55, and 1.133. During this phase, rates of BSP statements per minute were higher than baseline with the exception of session 15, but responses occurred at similar levels to those seen in the Visual Prompt phase. The highest rate, 1.133 BSP statements per minute, occurred during this phase.

**Corrective Statements.** Rates of corrective statements for Participant 1 during the Tactile Prompt phase were: 1.2, 0.8, 1.8, .75, and 1.014. Rates of corrective statements remained variable in this phase but maintained similar levels to those seen in baseline and the Visual Prompt phase. Rates of corrective statements remained higher than rates of BSP statements with the exception of the final session.

### **Participant 2**

Graphed data for Participant 2 is represented in figure 2.

### ***Baseline***

**BSP Statements.** Baseline data was collected for Participant 2 for five sessions on five school days. Baseline rates of BSP statements per minute for Participant 2 were: 0.35, 0.303, 0.35, 0.1, and 0.35. Baseline rates of BSP statements per minute showed low variability with the exception of session four. Due to time limits the baseline phase was unable to be extended past session five to determine if rates of BSP held steady.

**Corrective Statements.** Baseline rates of corrective statements per minute for Participant 2 were: 0.8, 0.404, 0.95, 0.65, and 0.8. Rates of corrective statements during baseline showed low variability. Baseline was unable to be extended to determine if there was a trend due to time limits. During baseline, rates of corrective statements per minute were consistently higher than rates of BSP statements per minute.

### ***Visual Prompt***

**BSP Statements.** Data for the Visual Prompt phase was collected for Participant 2 for six sessions on six school days. Rates of BSP statements per minute were: 0.435, 0.418, 0.554, 0.591, 0.050, and 0.2. The data shows an upward trend with low variability until session 10. This session will be addressed further in the discussion. Steady state responding was not achieved before Participant 2's student teaching placement ended.

**Corrective Statements.** During the Visual Prompt phase, Participant 2's rates of corrective statements per minute were: 0.326, 1.003, 0.720, 0.215, 0.200, and 0.6. Corrective statements showed an overall downward trend with moderate variability. Sessions six and eight showed rates of corrective statements lower than rates of BSP statements. In other sessions of this phase, rates of corrective statements remained higher

than rates of BSP statements. Rates of corrective statements fell within a wider range than rates observed during baseline.

Figure 1

Standard Celeration Chart displaying data for Participant 1, with black circles representing rate of BSP statements per minute and black Xs representing rates of corrective statements per minute.

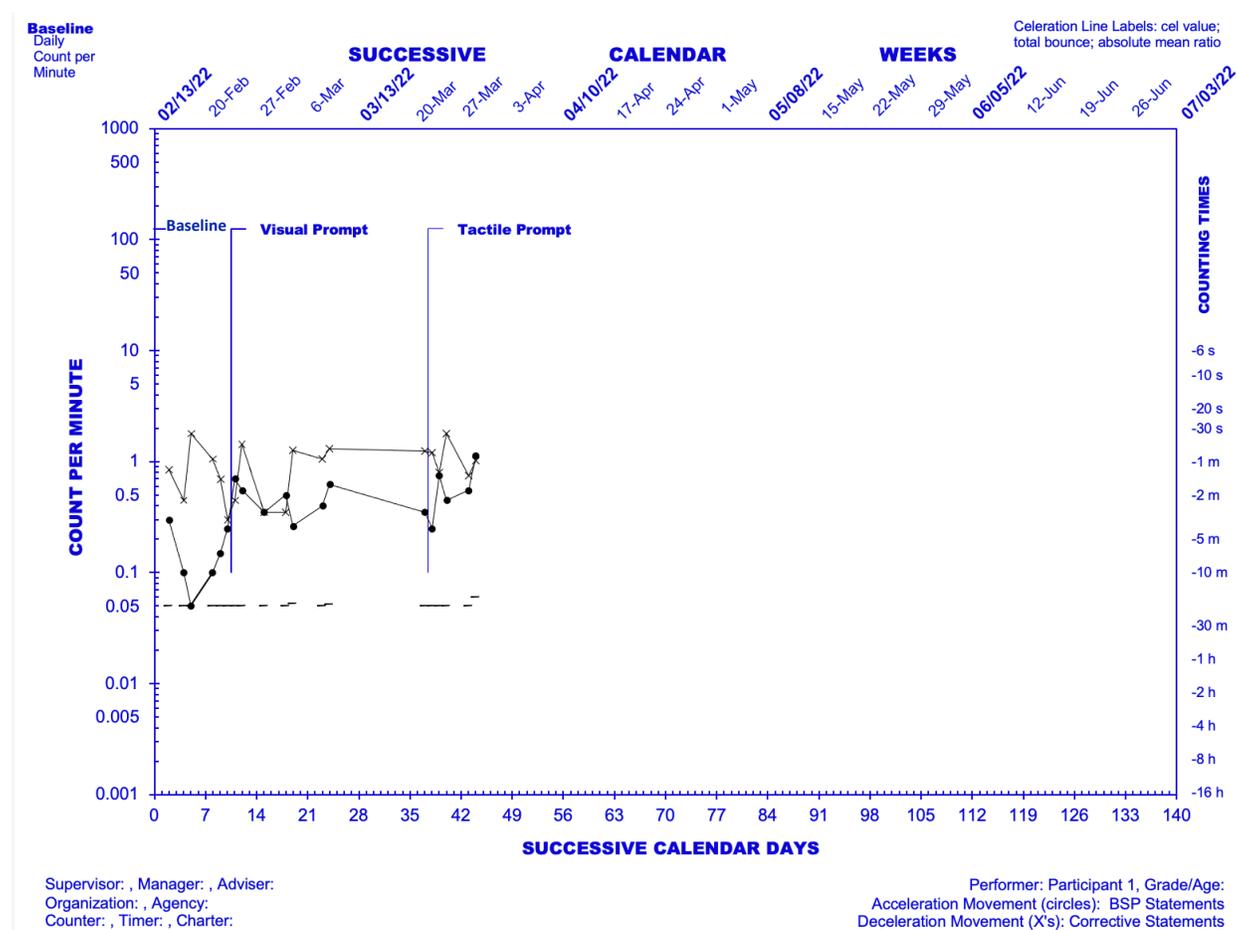
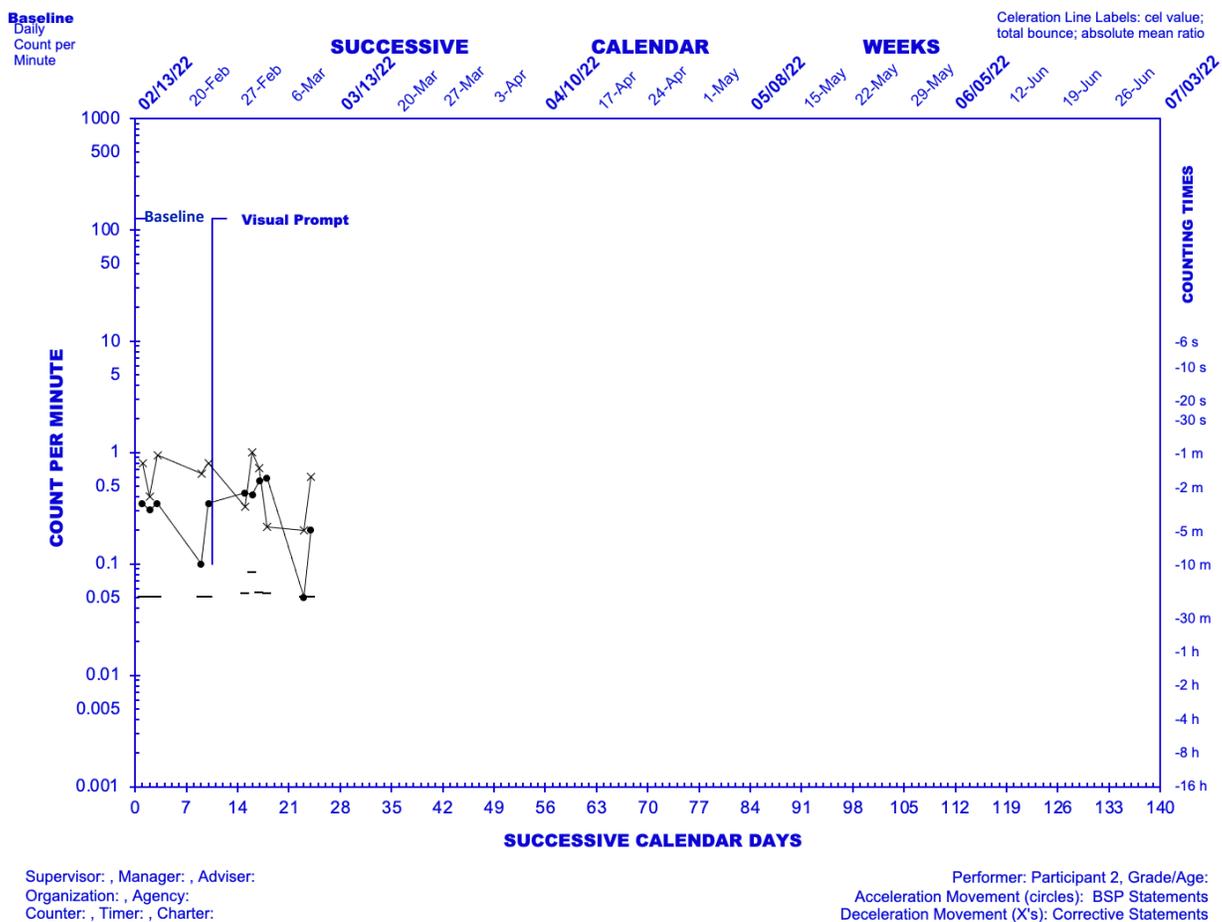


Figure 2

Standard Celeration Chart displaying data for Participant 2, with black circles representing rate of BSP statements per minute and black Xs representing rates of corrective statements per minute.



## Discussion

The purpose of this study was to evaluate the effects of a tactile prompt on specials teachers' use of BSP statements. The first research question asked how effective tactile prompting was compared to a visual prompt for increasing use of BSP statements. During the visual prompt phase, both participants showed an increase in BSP use over baseline levels. Participant 1's data remained variable, suggesting that the visual prompt was not a salient enough S<sup>D</sup> to lead to consistent behavior change for this participant. Participant 2 showed an increasing trend up until session 10 when there was a significant decrease. Sessions 10 and 11 showed rates of responding similar to those observed during baseline. During session 10, the researcher noted many generic praise statements, and several responses of "thanks for being ready," however "being ready" was not considered BSP because "ready" is not a distinct behavior that is observable and measurable. Sessions 10 and 11 occurred on Participant 2's last two days of her student teaching placement, and Participant 1 had resumed responsibility for the majority of the teaching during those classes.

Only Participant 1 received the tactile prompting intervention. During the first session of the Visual Prompt + Tactile Prompt phase, session 15, rates of BSP decreased from the previous session. The decrease in BSP use may have been influenced by the extended break in the intervention period due to spring break. Data remained variable but showed an increasing trend. The increasing trend suggests that the tactile prompt may have served as a more salient S<sup>D</sup> than the visual prompt, but the intervention ended after only five sessions with the tactile prompt. During the final session, session 19, the highest rate of BSP statements per minute, 1.133, was observed. During session 19, Participant 1

began the recording later in the class instead of at the start. In addition, this recording took place during an activity where students were required to give individual responses for assessment purposes. Participant 1 provided BSP statements to many of the students after their responses. The researcher had observed similar assessments occurring before the intervention began and did not observe BSP being provided during the assessment. The intervention may have influenced Participant 1's responses to student performance during assessment, but further research is needed to determine if this is the case.

The second research question asked how an increase in rates of BSP statements would affect rates of corrective statements. During this study, participants were unaware that rates of corrective statements were also being measured, and were given no directions, training, or feedback in regard to corrective statements. Participant 1's data showed variable rates of corrective statements across phases. Corrective statements did not appear to be impacted by the use of BSP statements. Changes in rates of corrective statements appeared to be more influenced by which class was attending music and which students were present that day. Participant 2's data show variable rates of corrective statements with an overall downward trend. Several sessions show higher rates of BSP than corrective statements, indicating that an increase in BSP use may have impacted rates of corrective statements for Participant 2, however these results were not replicated across participants. The results suggest that increasing BSP use and decreasing corrective statements are two separate behaviors that require separate interventions.

### **Limitations**

The researcher identified several limitations to this study. As is common in applied research, this study had several things that did not go according to plan and

extraneous variables may have impacted participant performance. The two participants were teaching in the same room, meaning their behavior may have been influenced by their co-teacher's behavior rather than solely from the intervention. Both participants were music teachers, meaning the results cannot be generalized to other specials such as art, physical education, or library. Only one participant was available for the tactile prompt phase, so the results of the tactile prompt were unable to be replicated across participants. While the participant who was available for the social validity questionnaire rated it as favorable, these results could be biased because the participant had a previous relationship with the researcher as colleagues at the school.

The participants were responsible for recording their own sessions. Several sessions did not have a 20-minute duration due to the participants forgetting to start the recording. Participant 1 stated on several occasions, "I forgot to start the recorder until halfway through class but I think I got 20 minutes." This also led to the sessions not being the same 20 minutes of the class period each time. There were a few days when no sessions were recorded because the participants forgot. Because the participants were responsible for recording their own sessions, the process of setting up the recorder and wearing the recorder could have served as an S<sup>D</sup> for using the behavior.

The participants were recorded teaching different classes each day. Specials schedules are on a five day rotation. The different students present during each session may have impacted the data. For example, Participant 1 recorded during second grade. There is an inclusive second grade class that has several students with disabilities who display frequent off-task behavior or are uncooperative with teacher demands. Rates of corrective statements for Participant 1 were higher on sessions 3, 8, 11, and 17 when the

inclusive class was attending music. Finally, time limitations impacted data collection procedures. Participant 2 was only present at the school for eight weeks, and her student teaching placement ended before the visual prompt + tactile prompt phase could be implemented. Phases could not be continued until steady state responding was reached, and the visual prompt + tactile prompt phase only lasted for five sessions due to the study ending.

Some factors contributing to low IOA were identified by the researcher. Whether a statement was a corrective statement or a direction given to the class was not easily differentiated in some cases without being able to visually observe what was happening in the classroom. This could be improved by tightening the definition of corrective statement. In some sessions, responses occurred at very low levels. A difference in count of just one or two would lead to a low percentage of agreement (for example, when one observer counts five responses and the other counts seven, IOA is only 71%). Finally, due to extenuating personal circumstances, the second observer was unavailable to meet with the researcher to review and discuss sessions with low IOA.

### **Contributions to Current Research**

The results of this study contribute to the current body of published research on using tactile prompts to increase teachers' use of BSP statements. There is currently no published research comparing the effectiveness of a tactile prompt to a visual prompt for increasing BSP use. The results of this study provide preliminary evidence that a tactile prompt paired with a visual prompt is more effective than a visual prompt alone for increasing teachers' use of BSP. In addition, none of the current literature on using tactile prompts to increase BSP used specials teachers as their participants. This study indicates

that a tactile prompt may be an effective intervention for specials teachers in addition to general education and special education teachers.

### **Areas for Future Research**

This study could be expanded by future researchers in several ways. First, the study can be replicated with other specials teachers, such as physical education or art teachers or school librarians, to determine if this is an effective intervention for multiple subject areas. Future researchers should also explore the best ways to implement a visual or tactile prompt in a specials class compared to a general education or special education classroom, as specials teachers tend to be more mobile during their lessons, which would affect how the visual prompt needs to be displayed to be most effective. Participants in future studies should also receive more detailed instruction on what counts as BSP. During data collection, the researcher observed many instances of the participants providing praise statements such as, “Thank you for being ready,” “Good job showing me you’re ready,” or “I see that [student] is ready, that’s awesome,” but “being ready” was not counted as a specific behavior by the researcher so these statements did not count as BSP statements. During this study, no feedback was given to participants regarding corrective statements. Future researchers may wish to explore the impacts of providing instruction on how corrective statements can be paired with or replaced by BSP statements. Future researchers may want to replicate this study in a manner that does not require the participants to record their own sessions, eliminating the possibility of the recorder serving as an S<sup>D</sup> for using the target behavior and eliminating an extraneous variable.

Finally, future researchers can improve on the IOA process by providing a more detailed training. Stricter definitions of behavior, specifically corrective statements, as well as specifically stating what qualifies as a new response, will improve data collection for IOA purposes.

### **Recommendations for Practice**

Using tactile prompting to increase teachers' use of BSP is an emerging area of study in applied behavior analysis. Practitioners who want to implement tactile prompting for increasing BSP use should consult the current literature and discuss with their clients which intervention package will be most feasible in their setting. The intervention described in this study should be replicated with caution, as the results for the tactile prompting phase were limited to one participant and generalized conclusions cannot yet be drawn. Practitioners wanting to decrease use of corrective statements should implement a behavior reduction plan, as increasing BSP statements does not appear to reliably lead to a decrease in use of corrective statements. Finally, practitioners should do preliminary observations of their clients to determine if their definitions of the target behavior encompass all of the client's behavior before beginning their intervention.



## Appendix B

**Script for Training Second Observer for IOA**

*Directions: Read the following mock transcript of an art class. Circle all instances of behavior-specific praise. Place an X next to all instances of corrective statements.*

Teacher: 1, 2, 3 eyes on me!

Class: 1, 2, eyes on you!

Teacher: Excellent, let's get started. Today we will be--

Student 1: What are we doing today?

Teacher: Raise your hand, don't interrupt. Now as I was saying, oh, student 1, thank you for raising your hand. Do you have a question?

Student 1: When will we get to paint?

Teacher: Good question, I'll get to that in just a minute. Table 2, please stop talking.

Table 4, you're doing a great job looking and waiting for directions. Today we will get to use watercolor paints. Who remembers what we need? Student 2, I love that you raised your hand instead of calling out. Go ahead.

Student 2: We need a cup of water and a paper!

Teacher: Good, who else? Student 3, go ahead.

Student 3: We need a paper towel and a paper and a cup of water and some paints!

Teacher: Yes, you're right. Everyone go ahead and take a paper, there should be enough on your tables. Write your name on top while I pass out watercolors.

*(Teacher walks around room passing out materials)*

Teacher: Student 1, I like how you wrote your name and put your pencil back in the tray.

Teacher: Good job table 1, you all have your names on your papers and are ready to paint.

Teacher: Student 4, sit down, I'll come to you.

*(Students now all have their materials. Teacher continues walking around the room.)*

Student 5: Miss, look at my painting!

Teacher: Oh, a fish! That's very pretty.

Student 6: Look at mine!

Teacher: Very nice rainbow. I see you're being careful not to mix up the paints in the tray, great job.

Student 7: He's writing on my paper!

Teacher: Student 8, put the pencil away. Class, you have two more minutes to paint then we will clean up.

Teacher: Student 4, you're being very responsible, thanks for wiping up the water that spilled.

*(timer goes off)*

Teacher: Everyone put your brushes down. Thank you table 3, good job putting your brushes down and being ready to clean up. Will one person from each table bring the water cup to the sink?

Teacher: Student 5, don't run with the water cup! Student 3, thank you for carrying your water cup with two hands.

Teacher: When I call your table, come line up. Table 1. Student 8, I like how you pushed in your chair. Student 9, go back and push your chair in.

Teacher: Table 2, great job waiting quietly, come line up. Student 5, stop pushing.

Student 6, excellent job keeping your hands to yourself.

Teacher: Everyone else can come line up. I like how student 10 is walking to the line, I like how student 11 is walking to the line. Thank you to those of you who are waiting quietly.

Teacher: Everyone did a great job being responsible with their materials today. See you next week!

## Appendix C

**Social Validity Questionnaire**

Modified Intervention Rating Profile (IRP-15) (Markelz et al., 2019)

1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = somewhat agree, 5 = agree, 6 = strongly agree.

Item	Rating					
This intervention was effective in changing my behavior.	1	2	3	4	5	6
I would suggest the use of this intervention to other teachers.	1	2	3	4	5	6
I would be willing to continue to use this intervention in the classroom setting.	1	2	3	4	5	6
This intervention would not result in negative side effects for children.	1	2	3	4	5	6
This intervention would be appropriate for a variety of teachers.	1	2	3	4	5	6
This intervention improved student behavior.	1	2	3	4	5	6
The time and effort required to participate in this intervention is reasonable.	1	2	3	4	5	6
I liked the procedures used in this intervention.	1	2	3	4	5	6
Overall, this intervention was good for my students.	1	2	3	4	5	6

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