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## **A Case Study in Applied Behavior Analysis: Using Prevent-Teach-Reinforce Strategies to Decrease a Student's Task Refusal**

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A Case Study in Applied Behavior Analysis: Using Prevent-Teach-Reinforce Strategies to  
Decrease a Student's Task Refusal

by

Kiersten L. Whitaker

A thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Science Applied Behavior Analysis  
Department of Child and Family Studies  
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## **Dedication**

I dedicate this manuscript to my husband, Lane. Your support, love, and kindness throughout this entire journey has been unconditional. I could not have done it without you.

## **Acknowledgements**

I would like to acknowledge my thesis committee for their support and guidance throughout this journey. This would not have been possible without their knowledge and flexibility. Specifically, I want to acknowledge Dr. Catia Cividini-Motta for her consistent efforts and willingness to provide me with assistance and wisdom throughout this entire thesis process. She has also provided insight for other professional interests and passions, as well as being an open ear for personal endeavors and dilemmas. Thank you for your support and compassion.

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## **Abstract**

Task refusal might hinder academic performance (e.g., grades, test scores, etc.); however, one model that has been proven to help decrease problem behaviors is the Prevent-Teach-Reinforce (PTR) model. The purpose of this study was to evaluate the effects of the PTR model on the assessment and treatment of problem behavior for one high school student's task refusal. Results demonstrated the PTR model helped identify plausible functions of task refusal; furthermore, the PTR model led to the development of an effective intervention that was feasible, function-based, and resulted in decreasing task refusal.

## Introduction

In recent years, individualized behavior support plans for students have been identified as imperative (Barnes et al., 2020). Furthermore, students that engage in disruptive behaviors in classroom settings can potentially impact their academic development (Egyped & Short, 2006). Additionally, higher levels of student disruptive behavior can lead, per self-report, to low self-efficacy and increased burnout for teachers (Egyped & Short, 2006). One way to reduce students' behavioral challenges and improve their independence and participation in academic tasks is using individualized positive behavior support (PBS), such as the prevent-teach-reinforce (PTR) model (Hieneman, 2015; Iovannone et al., 2009), which is a Tier-3 intervention. Functional behavioral assessment (FBA) procedures, reinforcing appropriate functional alternative behaviors, developing/shaping new behaviors, fading reinforcement and prompt procedures, and managing contingencies are some of the various strategies used within the PTR model (Dunlap et al., 2010, Dunlap et al., 2018).

To continue, the PTR model includes three key components: prevent (e.g., antecedent strategies), teach (e.g., shaping functionally equivalent behaviors), and reinforce (e.g., consequence-based; Dunlap et al., 2010). There are five specific steps in designing an intervention using the PTR model: team development/goal setting, designing the *Individualized Behavior Rating Scale Tool (IBRST)*/collecting data, PTR-FBA review, PTR intervention implementation, and progress monitoring/data-based decision making (Dunlap et al., 2018). These steps take into consideration the individual needs of the student. Furthermore, behavioral

skills training (BST) can lead to high implementation fidelity with teachers, which can increase efficacy of interventions (Kirkpatrick et al., 2019; Miller et al., 2014).

Interventions developed using the PTR model have been shown to decrease disruptive behaviors and increase appropriate behaviors (Deenihan, 2019; Iovannone et al., 2009). For example, Deenihan (2019) evaluated the effects of PTR strategies, including School-Wide Positive Behavioral Interventions (SW-PBIS), on a personalized Tier-3 intervention with three dyads (student-teacher) in three high school classrooms. This study observed the classroom staff's treatment fidelity when implementing the PTR intervention plan and the impact of PTR strategies on the students' disruptive and replacement behaviors. Results showed that the PTR model-based interventions were effective at decreasing problem behaviors and increasing functionally equivalent replacement behaviors. Also, staff reported that the intervention was suitable to the classroom (Deenihan, 2019). To continue, in a study conducted by Iovannone et al. (2009), a randomized control trial was used to determine if PTR strategies, when implemented by school personnel, were more effective than other interventions frequently used in school settings. This study included 245 students in grades Kindergarten through 8<sup>th</sup> grade who were classified with emotional behavioral disorder (EBD). Results demonstrated that students who received interventions developed with the PTR model had improved levels of academic engagement and social skills, and significantly lower levels of problem behavior when compared to students who received normal services (Iovannone et al., 2009). Furthermore, Barnes et al. (2020) studied the effects of the PTR model on problem and replacement behaviors for three first grade students—6- to 7-years-old—who were neurotypically developed and engaged in high rates of problem behaviors. Researchers and teachers collaborated and taught appropriate replacement behaviors to the student. Results showed that the function-based

interventions developed using the PTR model were effective at reducing problem behaviors and increasing appropriate behaviors for all three participants. Lastly, data collection via the IBRST were scored by all teachers to have high social validity scores (Barnes et al., 2020).

However, findings of previous studies indicate that other aspects of intervention development (e.g., who designs the interventions) may impact treatment fidelity (Bennazi et al., 2006). For instance, Bennazi et al. (2006) determined that technical adequacy of interventions was higher if a behavior specialist and/or teams including a behavior specialist designed interventions. Additionally, team members ranked plans developed by the team alone and/or teams with a behavior specialist as more preferred for intervention implementation over plans developed by a behavior specialist alone. Thus, in schools, providing interventions that include team building can increase effectiveness of procedures (Bennazi et al., 2006). PTR is a model that leads staff through goal setting, team building, FBA review, behavior plan development, implementation, data collection, and evaluation (Dunlap et al., 2018).

Overall, function-based interventions based off the PTR model have been proven to be effective at decreasing disruptive behaviors and increasing appropriate behaviors (Deenihan, 2019; Iovannone et al., 2009). Additionally, the PTR model received high scores in social validity questionnaires (Barnes et al., 2020) and were associated with high accuracy of intervention implementation (Iovannone et al., 2009). However, previous research on PTR has primarily included elementary and middle school children (Barnes et al., 2019; Iovannone et al., 2009). Therefore, the purpose of this study was to evaluate the effects of a function-based intervention developed using the PTR model on a 16-year-old male's task refusal behavior and replacement behaviors (i.e., asking for attention; task completion).

## **Method**

### **Participant and Setting**

This study included one white (non-Hispanic) male, 16-year-old student diagnosed with an intellectual and developmental disability (IDD). Mike was in an EBD unit with four peers, one IA, and one teacher. Mike engaged in task refusal throughout the school day, causing decreases in academic performance (i.e., grades, test scores, etc.). This resulted in staff requesting assistance from the researcher to increase his task completion. This study was completed in Mike's EBD classroom, and observations were mostly conducted following lunch during the afternoons; however, sometimes observations occurred in the morning because task refusal occurred across the day.

### **Dependent Measures and Design**

Task refusal was defined as any attempt or instance of Mike not following a teacher directed task within 30 s of a prompt being delivered, stating "no," "I am not doing the work," etc., beginning worksheets but not completing them, getting out of his seat, handing the paperwork back to his teacher, and/or shaking his head no with an immediate onset and 2 s offset of these behaviors. Task completion was defined as any instance of Mike beginning work within 30 s of a prompt, fully completing the task, and/or responding to the teacher when questions were directed at him with a 2 s onset and immediate offset. Data were collected during 30-min observations conducted during afternoon classes. During these sessions the researcher recorded whether Mike complied or refused to complete a task each time a task was presented to him by the teacher. Data on the occurrence of task refusal were also collected by the teacher using the

IBRST scoring system (see intervention section below for a description of the IBRST scale). An AB research design was used to determine the impact of the function-based PTR strategies on Mike's task refusal.

### **Social Validity**

Due to the teacher quitting their position at the school after the last data point was obtained, social validity from the teacher was not attainable. However, the IA was given a 10-question social validity questionnaire regarding the effectiveness, preference, and willingness to conduct—again—the PTR model, function-based intervention strategies used with Mike. Using a Likert Scale, questions ranged from a one (i.e., strongly disagree) to a five (i.e., strongly agree). Responses indicated a high social validity score (i.e., nine out of ten questions scored a 5, and one questions scored a 4). This replicates social validity scores of previous studies (Barnes et al., 2020; Deenihan, 2019).

### **Interobserver Agreement (IOA)**

For the data collected by the researcher, which consisted of opportunities to comply with tasks presented by the teacher, IOA would have been calculated in a similar manner as the trial-by-trial method: data collected by the researcher for each opportunity would have been compared to the data collected by a secondary observed. IOA would have been calculated by dividing the number of opportunities (i.e., trials) with agreements by the number of opportunities per session, multiplied by 100. For the data collected by the teacher, which consisted of IBRST scores, IOA would have been calculated by comparing the score from the teacher to the score of the researcher. Trials that are scored the same between the teacher and researcher equate to 100% agreement, while scores that differ between the teacher and researcher equate to 0%.

The exact-count-per-interval method takes the number of intervals of 100% IOA (exact agreement) divided by the total number of intervals, multiplied by 100.

## **Procedure**

### **Baseline**

During baseline, the teacher and IA managed the classroom and delivered instructions as normal. For example, when task refusal occurred, staff would immediately approach Mike and begin talking to him (i.e., providing attention) and attempt to redirect him back to the task. Furthermore, staff would inconsistently use timers and tokens (e.g., not providing tokens once timer went off, giving tokens randomly throughout the day when task completion did not occur, etc.). Tasks during sessions varied, but consisted of reading comprehension, math (e.g., addition/subtraction worksheets), and writing sentences, which was the case in both baseline and intervention. No additional intervention procedures or consequences were provided to the student during baseline.

### ***Team Development and Goal Setting***

To design appropriate interventions strategies for the classroom and develop the IBRST, the researcher met with the teacher and IA to form the intervention protocol. The researcher discussed with the teacher and IA the various PTR intervention strategies that would likely be effective at decreasing Mike's task refusal behavior. The researcher provided the teacher and IA with a list of intervention strategies, reviewed, and discussed these with staff, and allowed them to select their preferred strategies (see Table 1). After reviewing different PTR model strategies, the teacher and IA selected their preferred strategies that best fit their classroom and could be individualized for the student. The teacher and IA requested that Mike's task refusal decrease to 45% or below following intervention implementation.

**Table 1. PTR Intervention Components for Staff.**

P-T-R Model Intervention Components		
Prevent	Teach	Reinforce
<p><i>Review Expectations:</i></p> <ol style="list-style-type: none"> <li>1. Explain the daily expectations to Mike.</li> <li>2. Review the visual schedule/expectations for behavior and academic tasks with Mike.</li> <li>3. Ask Mike if he understood the expectations.</li> </ol> <p><i>Provide Choices:</i></p> <ol style="list-style-type: none"> <li>1. Provide Mike with the choice of academic tasks he wants to do throughout the day.</li> <li>2. Provide Mike with the choice of reinforcer he would like to earn after collecting all five tokens.</li> <li>3. Provide the choices that were made.</li> </ol> <p><i>Noncontingent Reinforcement:</i></p> <ol style="list-style-type: none"> <li>1. Provide attention to Mike throughout the day, approximately every 3 minutes.</li> </ol>	<p><i>Appropriately Gaining Attention</i></p> <ol style="list-style-type: none"> <li>1. Provide Mike practice opportunities to raise his hand and receive attention.</li> <li>2. Did not provide attention when Mike was engaging in task refusal.</li> <li>3. Immediately responded to Mike when he appropriately requested attention.</li> <li>4. Delivered behavior specific praise.</li> </ol> <p><i>Appropriately Request Time with Staff</i></p> <ol style="list-style-type: none"> <li>1. Provide Mike practice opportunities to ask for time with staff using hand raising.</li> <li>2. Did not provide Mike attention when engaging in task refusal without asking for time with staff via hand raising.</li> <li>3. Immediately responded to Mike when he asked for time with staff by raising his hand.</li> <li>4. Delivered behavior specific praise.</li> </ol> <p><i>Increased Time with Academic Tasks</i></p> <ol style="list-style-type: none"> <li>1. Provide Mike with a 10-minute timer per task.</li> <li>2. Remind Mike he has 10 minutes to complete the task.</li> <li>3. Prompt Mike when a few minutes (2- or 3-minutes) remain on the timer.</li> <li>4. Provide behavior specific praise when Mike finishes the task within 10 minutes.</li> </ol>	<p><i>Reinforce Appropriately Asking for Attention/Time with Staff</i></p> <ol style="list-style-type: none"> <li>1. Provide behavior specific praise when Mike appropriately asks for attention and/or time with staff.</li> <li>2. Provide Mike with immediate access to the item requested.</li> </ol> <p><i>Discontinue Reinforcement of Task Refusal Behaviors</i></p> <ol style="list-style-type: none"> <li>1. Did not provide attention and/or escape from the task being refused.</li> <li>2. Waited for problem behavior to stop for 10 seconds.</li> <li>3. Prompted Mike to appropriately request time with staff/attention.</li> <li>4. Delivered behavior specific praise and immediate access to requested item when Mike engaged in the appropriate behavior.</li> </ol> <p><i>Provide Tokens Contingent on Task Completion</i></p> <ol style="list-style-type: none"> <li>1. When Mike completes a task within 10 minutes, immediately provide him a token.</li> <li>2. If Mike does not complete the task, remind him what he is working for, provide the task again, and another 10 minute timer.</li> <li>3. Repeat step one.</li> <li>4. When all five tokens are achieved, allow Mike immediate access to the chosen reinforcer.</li> </ol> <p><i>Home to School Reinforcement</i></p> <ol style="list-style-type: none"> <li>1. A note was written and placed in Mike's go-home folder regarding his completion of tasks for the day.</li> </ol>

***Individualized Behavior Rating Scale Tool (IBRST) and Collecting Data***

The researcher and teacher created the IBRST together. For task refusal, a score of 5 was the worst day and it indicated that task refusal occurred for 80% or more of opportunities. A score of 4 was a not-so-great day at 60-80% of opportunities with task refusal. A score of 3 was an okay day when task refusal occurred for 50-60% of opportunities. A score of 2 was a great day with 40-50% of opportunities with task refusal. Lastly, a score of 1 was the best day when task refusal occurred on 20-40% of opportunities or fewer. Task completion included the inverse scoring system. Once IBRST scores were defined, data collection began.

### ***PTR-Functional Behavioral Assessment Review***

The researcher, teacher, and IA met and conducted the PTR-FBA together. The PTR-FBA indicated that the function of Mike's task refusal was attention (i.e., from adults). After identifying attention as the function of Mike's behavior using the PTR-FBA, the team again reviewed the strategies selected to confirm they would fit the function (i.e., attention) of task refusal.

### ***Staff Training and Intervention Implementation***

The researcher used BST (instruction, modeling, rehearsal, and feedback) to train the teacher and IA to correctly implement the PTR intervention strategies. Training continued until both the teacher and IA implemented the intervention with 100% accuracy across three consecutive rehearsal sessions completed with the researcher. Then staff began implementation of the intervention strategies selected for Mike.

### ***Progress Monitoring and Data-Based Decision Making***

As intervention implementation began, the progress of Mike's task refusal was monitored. Decisions were based on the data to continue the intervention strategies selected.

### ***Intervention***

The prevent strategies used were setting/reviewing expectations for the day, providing choices of academic activities/reinforcers prior to delivering task demands, and providing Mike with noncontingent reinforcement (i.e., attention) on a variable interval schedule of 3 min. The teaching strategies selected were gaining attention from adults appropriately (i.e., raising hand), problem solving strategies (i.e., Mike asking for time with staff), and increasing time engaged with the academic tasks. Lastly, the reinforcement strategies implemented were reinforcing demands for attention and time with staff with immediate access to the activity (e.g., attention)

requested, providing behavior specific praise and tokens for task completion, discontinuing reinforcement for problem behavior (i.e., teacher provided minimal attention when Mike engaged in task refusal), and having the teacher send a note home informing Mike's guardian of his work for the day, which presumably resulted in access to a preferred movie of Mike's choice when home (i.e., home to school reinforcement).

### **Treatment Fidelity**

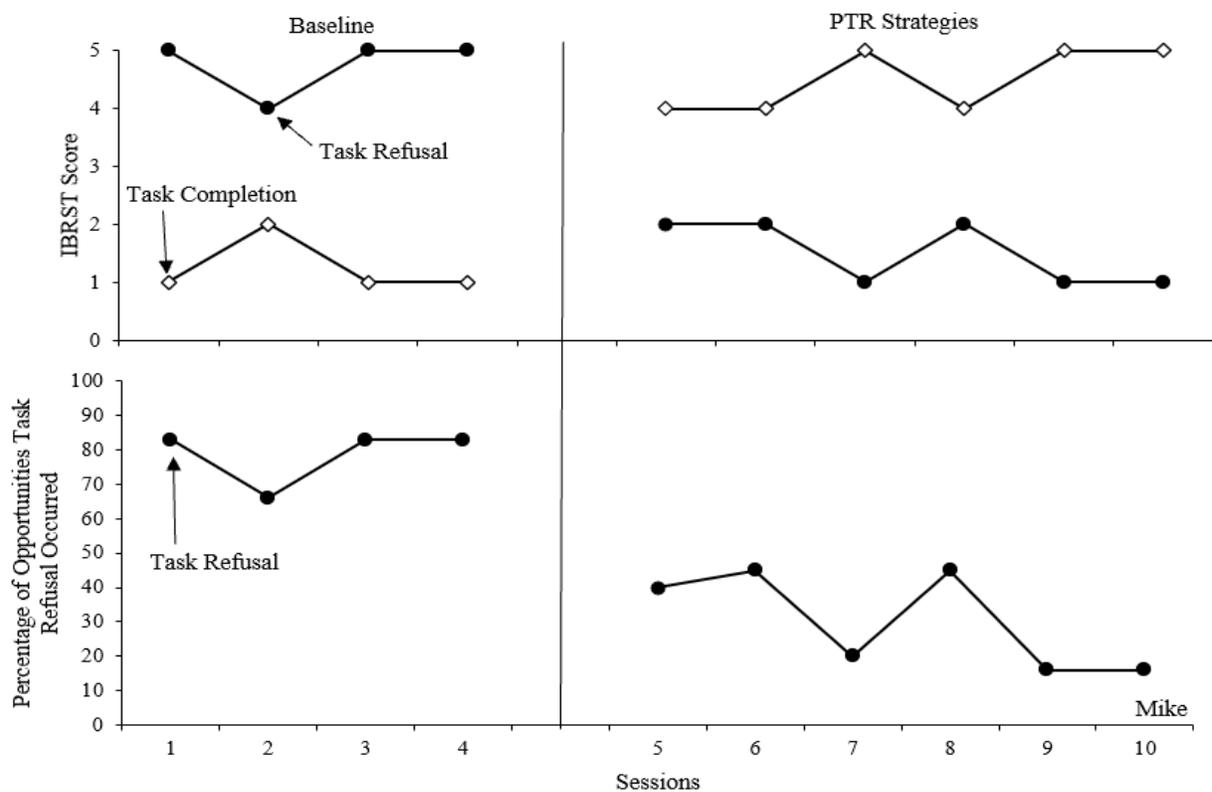
The researcher reviewed and completed the teacher implementation fidelity checklist to determine if the intervention strategies selected were being implemented appropriately. All strategies listed above were included on the treatment fidelity checklist. Treatment fidelity for the teacher was assessed for 33% of sessions during intervention and was 100%.

## Results

Figure 1 contains Mike's IBRST scores during baseline and intervention. During baseline, Mike engaged in high levels of task refusal, as denoted by the high IBRST scores. Once the intervention was introduced, Mike's task refusal decreased. Furthermore, the bottom graph depicts percentage of opportunities with task refusal. During baseline, Mike engaged in high levels of task refusal. Once intervention implementation occurred, task refusal decreased to low levels.

**Figure 1.**

IBRST Scores and Percentage of Opportunities with Task Refusal



## **Discussion**

This study evaluated a function-based intervention developed using the PTR model on the task refusal behaviors of one male student diagnosed with IDD. The function-based intervention was effective at decreasing task refusal. Therefore, this study replicated findings of previous studies evaluating the PTR model, which demonstrated that interventions developed using the PTR model were effective at decreasing disruptive behavior (Bennazi et al., 2020; Deenihan, 2019; Iovannone et al., 2009). This study also replicated previous research in demonstrating that BST was effective in teaching school staff to implement the intervention (Deenihan, 2009). This study further extends and replicates Deenihan (2019) by focusing on PTR model strategies that are effective for the determined function of the behaviors.

However, this study differs from Deenihan (2019) in that the main function of this study was attention, as to where Deenihan (2019) had multiple functions (i.e., attention and escape), which required various strategies for both functions. Additionally, this study is different from Barnes et al. (2020) because the intervention implemented in this case study included multiple strategies from each component of PTR: three prevent (providing choices, reviewing expectations, and noncontingent reinforcement), three teach (appropriately asking for attention and asking for time with staff and increasing time with academic tasks), and four reinforce (reinforce appropriately asking for attention/time with staff, discontinue reinforcement of task refusal behaviors, provide tokens contingent on task completion, and home to school reinforcement), whereas in Barnes et al. (2020) study, only one to two strategies per component of the PTR model were selected and implemented by the staff: one prevent (i.e., opportunity for

pro-social behaviors), two teach (i.e., replacement behavior and self-management), and two reinforce strategies (i.e., reinforce self-management strategies and discontinue reinforcement of problem behavior; Barnes et al., 2020). Furthermore, this study differs from Iovannone et al. (2009) research by focusing on one individual, instead of comparing results of the effectiveness of PTR model-based interventions to the effectiveness of other frequently used interventions in schools. To continue, majority of PTR studies are primarily conducted with younger participants (e.g., elementary school), and this study focused on a high school student (Barnes et al., 2020; Iovannone et al., 2009). Lastly, this study also differs from Bennazi et al. (2020) due to its focus on team intervention development with all relevant stakeholders (i.e., researcher, teacher, and instructional assistant [IA]), compared to how Bennazi et al. (2020) examined how the configuration (e.g., types of team members) of a behavior support team can impact the development of behavior support plans.

Some of the limitations to this study included the use of an AB design, thus experimental control is limited because of lack of replication. Additionally, the teacher and IA were able to provide Mike with immediate attention and time with Mike when requested; however, this may not be feasible for classrooms that have a greater student-to-teacher ratio. Regarding future research, studies should assess the effectiveness of interventions developed using the PTR model with students in classrooms that contain larger student-teacher ratios and for longer periods of time (e.g., throughout entire school year). In summary, the PTR-based intervention strategies are effective, individualized for students, and can be provided to more school staff as feasible intervention strategies to implement with students in a classroom setting (Dunlap et al., 2010).

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