

POSITIVELY REINFORCING PARENT COMMUNICATION WITH STUDENTS IN  
SPECIAL EDUCATION CLASSROOMS FOR THE REDUCTION OF ATTENTION  
MAINTAINED MALADAPTIVE BEHAVIORS IN A SCHOOL SETTING

by

Jennifer Harmon

Liberty University

A Dissertation Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

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## ABSTRACT

A mixed-method multiple-baseline experimental design explored the relationship of frequency of attention-maintained maladaptive behaviors and positive parent communication in a fourth through sixth grade special education classroom using visual analysis and a Wampold-Warsham (Wampold & Brown, 2005) statistical design. The obtained result of -11.021 was found to be the 6<sup>th</sup> highest mean difference across all 24 possible outcomes, resulting in a p-value of  $6/24 = 0.25$ , which is not statistically significant with  $\alpha = .05$  (one-tailed). However, when looking at the visual analysis of the multiple baseline design graphs, one can see a clear decrease in each of the participants behaviors from baseline. This study adds to the current literature regarding the powerful impacts of positive reinforcement for behavior change in special education classes as well as advocating for more positive and biblically aligned parenting practices in regard to challenging behaviors.

### **Dedication**

This dissertation would not have been possible without the love and support from my family and friends. To my parents, for their love, words of wisdom and encouragement each day. To my partner, words cannot express all that you do for me and how supportive and loving you have been through this journey; I am forever grateful to have you by my side. And to my furry best friend, whose companionship I could never repay with a lifetime of squeaker toys and chimkin flavored treats (but I will try anyways).

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## CHAPTER 1: INTRODUCTION TO THE STUDY

### **Introduction**

This study aimed to address a gap in the literature of utilizing the positive reinforcement through parent communication with teachers and parents of students with attention-maintained maladaptive behaviors in the school setting. This research study assessed if a functional relationship existed between the frequency of attention-maintained maladaptive behaviors in the classroom and an increased frequency of parent communication regarding behaviors happening at school. Current research shows that communication from school to home regarding behaviors is predominantly negative and often aims to resolve and discipline or punishment to the student who engaged in the behavior (Fefer et al., 2020; Finn, 2020; Scaletta & Hughes, 2021). This study aimed to explore how positive interventions and positive reinforcement could be used to create a more supportive and pro-social environment for students with disabilities who engage in attention-maintained maladaptive behaviors within the classroom setting.

### **Background**

#### **Maladaptive Behaviors in Schools**

Maladaptive behaviors in the school setting can be displayed by students in a variety of forms, from less severe behaviors such as disruptive behaviors, defiance, and non-compliance with schoolwork to more egregious behaviors such as aggression towards staff and peers, property destruction, and self-injurious behaviors (Alremawi & Arabiyat, 2022; Andersen et al., 2021). Often, these behaviors serve a function for the learner and can result in them receiving access

to items, getting out of work demands, or receiving attention from adults and other students in the classroom (Scaletta & Hughes, 2021; Toro et al., 2001). Students in special education have more frequently reported behaviors than those students in general education (Downs et al., 2019; Young-Hwee, 2020). These behaviors often contribute to their diagnosed disability and can be a common symptom of many developmental conditions (Offermans et al., 2022; Young-Hwee, 2020). Often, these behaviors are elicited to meet a student's wants and needs who might not have learned or have the capability of meeting those needs independently or to seek help in a more socially appropriate manner (Goldman et al., 2019; Wei et al., 2014). While much research demonstrates that these behaviors are a part of the larger picture of students in special education (Brett et al., 2016; Goldman et al., 2019; Wei et al., 2014), there is a need for schools to work with and support these students and their behavioral challenges (Boonen et al., 2014; O'Donnell et al., 2012; Young-Hwee, 2020).

### **Behavioral Functions**

Attention-maintained behaviors are emitted as a way of gaining access to attention from an adult or peer (Houston et al., 2021; Reetzke et al., 2020; Schieltz et al., 2019). This function is common in the school setting as the ratio between students and teachers has increased over the past decade (Schieltz et al., 2019). If students are not able to access positive attention from their teacher or their peers, these maladaptive behaviors can be used to gain that attention. While often this attention is in the form of reprimands or redirects from adults (Downs et al., 2019), or laughter and frustration from peers, it does meet the need of having

all eyes on the student at the moment. To help support these students with attention-maintained behavior challenges, it is critical to ensure that they are being given positive attention when they are engaging in appropriate behavior, as well as addressing the maladaptive behavior in a way that minimizes attention to that misbehavior (Gettinger et al., 2021; Schieltz et al., 2019; Young-Hwee, 2020).

### **Positive Reinforcement**

The utilization of positive reinforcement is a technique that has been used in a variety of settings to help support behavior change (Fefer et al., 2020; Finn, 2020; Scaletta & Hughes, 2021; Weeingarten et al., 2020). This is a common strategy also implemented in the school setting with various learners including those who engage in maladaptive behaviors (Gettinger et al., 2021; Lohmann et al., 2021; Weeingarten et al., 2020). Most commonly, the “good behavior game” can be used to help encourage and reinforce positive and desirable behaviors from students. This is when the teacher or another adult in the classroom can praise a specific behavior and give the child attention for positive behaviors (Lohmann et al., 2021; Senn et al., 2020; Stuckey, 2019; Weeingarten et al., 2020). Over time, this teaches individuals to obtain positive attention through positive actions rather than receiving attention for negative behaviors (Houston et al., 2021; Schieltz et al., 2019). Although a powerful tool, some teachers find taking these extra measures daunting and adding extra work to their already full schedules (Downs et al., 2019; Finn, 2020; Lohmann et al., 2021; McLennan et al., 2020). Teachers already have a long list of job expectations, and individualizing praise and

interventions for each student would require extra time and effort, which contributes to the lack of support for this intervention in mainstream classrooms (Downs et al., 2019; Finn, 2020; Scaletta & Hughes, 2021; Senn et al., 2020). However, teacher interest would likely increase if they experienced results of behavior reduction for the students who engage in disruptive and unsafe behaviors within their classrooms.

### **Power of Praise**

The power of positive praise is vast within the scientific community, but scripture also echoes this sentiment as well. Psalm chapter 8:2 (NIV) tells us, “Through the praise of children and infants you have established a stronghold against your enemies, to silence the foe and the avenger.” Praise alone can make noticeable differences in a child’s behavior (Johnson, 2010; Schieltz et al., 2019; Senn et al., 2020; Stuckey, 2019; Weeingarten et al., 2020), and we are called to raise our children in the vision of scripture so that they may go on and model this behavior to other children and develop a sense of security with themselves. This same principle applies to students in the school setting.

### **Parent Communication**

Parent and caregiver involvement has been shown to increase attendance and student grades within the school setting (Barg, 2019; Fefer et al., 2020; Hourii et al., 2019; Kaminski & Claussen, 2017; Meng, 2020; Roopnarine et al., 2006). The average rate of home contact depends on the age of the child, with most elementary teachers contacting home about once a month, even less for middle school and high school (Meng, 2020; Seitsinger et al., 2008). Limited parent

involvement is a risk factor for behavioral concerns across all students (Boonen et al., 2014; Willoughby & Hamza, 2011). However, parent communication in the school setting often centers around scheduled events such as parent-teacher conferences within the school or contact home to discuss misbehaviors (Debeljih et al., 2019; Fletcher et al., 2004; Kraft & Dougherty, 2013; Lin et al., 2019; Yang & Sharkey, 2019). Parent involvement in the school setting is impacted by a variety of different factors, for example, differences in language, socioeconomic factors, and time availability (Barg, 2019; Debeljih et al., 2019; Levkovich & Eyal, 2021; Sheridan et al., 2014). There is also an increase in demand from schools for parents to be more involved, which can further highlight these gaps in school districts from lower socioeconomic (Barg, 2019; Roopnarine et al., 2006; Seitsinger et al., 2008).

While positive reinforcement has been demonstrated to show significant results in the literature (Fefer et al., 2020; Goldman et al., 2019; Kronfli et al., 2021; Schieltz et al., 2019), there is little research on parents being the focal point of positive reinforcement for their child's behaviors in school. Many times, parents are only contacted when a child is misbehaving in school, and the school is informing them of the details of a particular negative occurrence (Bordalba & Bochaca, 2019; Downs et al., 2019; Menzies et al., 2021). Teachers often initiate this conversation in hopes that parents will punish or have a discussion regarding their child's choices at home and that this interaction leads to long-term behavior change (Caladarella et al., 2019; Strickland-Cohen et al., 2021). With special education students, the current research is not supportive of this punitive

intervention for long-term behavior success (Caladarella et al., 2019; Fefer et al., 2020; Kraft & Dougherty, 2013; Young-Hwee, 2020).

### **Special Education**

School districts and teachers often utilize special education as a way of supporting students who engage in maladaptive behaviors in the classroom setting (Brett et al., 2016; Chericoni et al., 2021; Fefer et al., 2020). Special education is reserved for students who meet eligibility criteria and have an identified area of need for accessing their education and learning (Goldman et al., 2019; Wei et al., 2014). While behavior alone is not an eligibility criterion, many developmental conditions can have symptoms that contribute to the maladaptive behavior seen in the classroom (Georgiades & Duncan, 2018; Wei et al., 2014). Once a student becomes eligible for special education, additional resources such as occupational therapy, speech therapy, behavioral therapy, and specialized academic instruction become available as an assessment team determines necessary to help support a student's learning and help support a student's family with navigating the educational success of their student.

### **Problem Statement**

Students in special education classrooms often display maladaptive behaviors such as aggression, property destruction, and eloping within the classroom and school day (Boonen et al., 2014; O'Donnell et al., 2012; Young-Hwee, 2020). Research has shown that the parents of students in special education are often contacted when negative behaviors occur to be informed about the disruptive behavior (Fletcher et al., 2004; Kraft & Dougherty, 2013; Lin et al.,



2019; Yang & Sharkey, 2019). These conversations often surround negative feedback and, at times, do not include positive about the individual but only a recount of the specific incident of behavior (Debeljih et al., 2019; Fletcher et al., 2004; Kraft & Dougherty, 2013; Lin et al., 2019; Yang & Sharkey, 2019).

Students with developmental disabilities can engage in externalizing maladaptive behaviors to gain attention from adults and peers in their class (Fefer et al., 2020; Finn, 2020; Scaletta & Hughes, 2021; Weeingarten et al., 2020).

One common strategy recommended from the current research to support students with attention-maintained behaviors is to provide positive reinforcement for preferred behaviors while withholding positive praise and positive attention for the maladaptive behaviors (Gettinger et al., 2021; Lohmann et al., 2021; Weeingarten et al., 2020). It has been shown that positive reinforcement is a powerful tool for reducing behaviors that are attention-maintained with students over time (Fefer et al., 2020; Goldman et al., 2019; Kronfli et al., 2021; Schieltz et al., 2019). However, research has failed to address how positive reinforcement and communication with parents and school can reduce behaviors and develop a more positive communication dynamic with families when students engage in maladaptive behaviors in the classroom. Given what is known about attention-maintained maladaptive behaviors in students (Caladarella et al., 2019; Strickland-Cohen et al., 2021), it is likely that some of the benefits of positive reinforcement can be used with families to support the reduction of these behaviors further. The problem is that literature fails to address how positive communication can be utilized with parent communication to support student

behavior needs in the classroom. This study examined the utilization of positive reinforcement of student behavior by way of positive communication to parents to further reduce maladaptive attention-maintained behaviors in special education classrooms.

### **Purpose of the Study**

The purpose of this mixed-methods multiple baseline case study experimental design was to explore the relationship of positive reinforcement with parent communication between teachers and parents of students who engage in attention-maintained maladaptive behaviors in the school setting. Furthermore, the study assessed if increasing parent communication surrounding positive behaviors in the school setting had any impact on the frequency of attention-maintained maladaptive behaviors in the classroom setting over time.

### **Research Question(s) and Hypotheses**

#### **Research Questions**

RQ1: Does using positive reinforcement in parent communication between teachers and parents of students who engage in attention-maintained maladaptive behaviors in the school setting change between pre-intervention and post-intervention?

RQ 2: Is there a more significant reduction in attention-maintained maladaptive behaviors seen with the participants who are in the experimental condition for only one week compared to the participant in the experimental condition for three weeks?

RQ 3: Do the participating teachers believe that frequent communication with parents regarding the positive behaviors during the school day is a strategy that they would be likely to implement in the future for the reduction of attention-maintained maladaptive behaviors in their classroom?

### **Hypotheses**

*H<sub>a</sub>*: The use of positive reinforcement in parent communication between teachers and parents of students will demonstrate a difference between pre-intervention and post-intervention.

*H<sub>0</sub>*: The use of positive reinforcement in parent communication between teachers and parents of students will not demonstrate a difference between pre-intervention and post-intervention.

*H<sub>a</sub>*: The parents who are in the experimental condition for at least three weeks will have students who demonstrate a more significant reduction in attention-maintained maladaptive behaviors.

*H<sub>0</sub>*: The parents who are in the experimental condition for one week will not have students who demonstrate a more significant reduction in attention-maintained maladaptive behaviors.

### **Assumptions and Limitations of the Study**

One of the main limitations of this study is the small sample size of four student participants. While utilizing a multiple baselines and multiple case study designs allows for the researcher to sample a new research area to assess future value in this area, it does limit the generalizability of the concept and minimize the global impact of a functional relationship, should one be determined from this

study (Busse et al., 2015; Chen et al., 2015; Ferron et al., 2017; Ferron and Jones 2006; Levin, Ferron & Gafurov, 2020; Manolov and Moeyaert 2017; Wolfe et al., 2019). The small sample size was due to the availability of the participant recruitment pool as well as from a narrow inclusion criterion set by the researcher. Additionally, student absences were also a foreseeable challenge with this study. If students had been absent during the data collection period, the data could have been skewed or prolonged the intervention phases.

An additional limitation to the study was the duration of the data collection period since students were anticipated to be in school for the entire school day (average of 6 hours) and at school during each day, and the data collection period for each participant is set for eight hours per week, there was a chance that the data recorded may not have been reflective of the students' behaviors throughout the entire week (Schermer & Fosker, 2018). The limitation of the data collection period could also be non-reflective of the frequency of the behavior on non-data collection days.

The population differences between those in general education and special education are also a potential limitation. Currently, about 14% of the population is identified as meeting eligibility for special education in the United States (United States Department of Education, 2021). This significantly reduced the population pool for the research project and was a limitation for gathering participants. The focus of this research group was aimed at students in 4th through 6th grade. Limiting the grade level for student participants also contributed to the limited potential sample population to recruit from for this study. Additionally, research

has demonstrated that parents of students in middle school have fewer expectations for communication between home and the school setting (Levokovich & Eyal, 2021; Lin et al., 2019). The difference in expectations from middle school parents to those in younger elementary grades could have been a potential construct for this study since any form of communication, let alone three times a week, could be seen as an intervention in and of itself (Meter et al., 2021).

### **Theoretical Foundations of the Study**

#### **Foundational Theory**

This study was guided under the foundations of operant conditioning, which describes how behavior can be manipulated and changed based on what occurs in response to a behavior. Operant conditioning can be both viewed as positive and negative and was originally described by B. F. Skinner (Skinner, 1981). Operant conditioning is also referred to as Skinnerian conditioning; Skinner described patterns of behavior based on consequences during lab experiments and generalized these findings to human behavior that was observable and measurable (Skinner, 1981). The Law of Effect, influenced by the work of Edward Thorndyke, also described similar constructs detailing that the events that followed a behavior manipulated the likelihood of that behavior being repeated in the future (Davison & McCarthy, 1988; Horner & Day, 1991). The use of positive reinforcement falls under the umbrella of operant behavior and is under the same law of effect described by Thorndyke (Davison & McCarthy, 1988; Horner & Day, 1991). Positive reinforcement is adding something to the environment which increases the likelihood of a behavior occurring again in the

future. For this study, positive reinforcement in the form of praise was used and manipulated to determine outcomes of student behavior.

### **Maladaptive Behaviors in School**

With an increase in the number of students enrolling in special education across America, there has been an increase in reported behaviors occurring within the school setting (Caldarella et al., 2019; El Nokali et al., 2010; Strickland-Cohen et al., 2021). These maladaptive behaviors can range from mild behaviors such as disruptions and other minor inconveniences during the school day to severe behaviors such as aggression, self-injurious behavior as well as property destruction (Down et al., 2019; Duncan et al., 2018; Henriksen et al., 2020). Identifying how to support students in the school setting is critical for them to access their educational environment as well as meet the community obligation to provide services to all students within this school district.

The classroom and environment have also changed significantly over the past few years. An increase in demands being placed on students can create stressful environments and increase the likelihood that maladaptive behaviors will occur (McLennan et al., 2020; Menzies et al., 2021). Students with disabilities that qualify for individual educational plans (IEPs) can also have a medical diagnosis that can be a contributing factor to the behavior seen within the school environment (Caldarella et al., 2019; El Nokali et al., 2010; Strickland-Cohen et al., 2021).

### **Behavior Functions**

Within the field of behavior analysis, there are four common functions that behavior is identified as attention-maintained, escape-maintained, tangible (access), or sensory behaviors (Baer et al., 1968; Ferman & Lepper, 2018; Pennington, 2022). This study primarily focused on attention-maintained behaviors within the school setting. Attention-maintained behaviors are those that are a way for a student to gain access to peer or adult attention by engaging in maladaptive behaviors (Furman & Lepper, 2018; Pitts et al., 2019; Vollmer et al., 2020). Oftentimes in the school setting, these behaviors look like calling out during instruction time, banging, or making loud noises become any other behavior that makes those around the student attend to them instead of what they were priorly attending. Attention maintained behaviors often occur because a student hasn't yet learned more appropriate ways to access that same attention from their peers and from adults, and oftentimes maladaptive behaviors get an immediate response of attention that is desired by the student engaging in the behaviors (Furman & Lepper, 2018; Pitts et al.).

### **Positive Reinforcement**

Current literature describes the ways in which positive reinforcement can be utilized to increase the likelihood of behavior change in the future (Cooper et al., 2007; Crawford et al., 2021). The manipulation of the environment has been demonstrated to be a powerful way to directly impact the behaviors of others to increase safety, teach new skills, as well as help improve a student's academic journey (Fefer et al., 2020; Goldman et al., 2019). The frequency in which reinforcement is given to a person is also highly influenced based on the

behavioral contingency. The more often a behavior is reinforced, the more likely that the same behavior will continue in the future (Cooper et al., 2007; Crawford et al., 2021). Additionally, if a behavior is not reinforced frequently enough or in a magnitude great enough to create a change of behavior, then the reinforcement will be less effective (Marcus & Vollmer, 1996; Slocum et al., 2018).

Using positive reinforcement within the school setting has been identified as a successful strategy in current literature for addressing and reducing the frequency of these behaviors (Liddon et al., 2018). Current literature also supports using positive reinforcement in the form of praise would students directly to not only reduce maladaptive behaviors but as a strategy that can prevent the occurrence of maladaptive behaviors from occurring (Cooper et al., 2007; Crawford et al., 2021).

### **Parents and Schools**

The parent relationship within the school district is important to the success of a student academically and behaviorally (Fefer et al., 2020; Goldman et al., 2019). Current literature demonstrates that parent involvement with students in their school environment has been shown to increase attendance, grades as well as increase the relationship in the home between family members (Fefer et al., 2020; Goldman et al., 2019; Kronfli et al., 2021; Schieltz et al., 2019). Literature also shows that communication surrounding behavior concerns in the school is overwhelmingly negative and often documents in detail maladaptive behavioral events when they occur and the negative impacts of that student's behavior (Caladarella et al., 2019; Cooper et al., 2007; Downs et al., 2019; Menzies et al.,



2021; Nieto & Bode, 2012). While detailing a behavior crisis, it is important for data collection; oftentimes, this is the only communication that a parent receives about their child. The frequency in which communication occurs it's also highly surrounded by the frequency of the maladaptive behaviors, where many parents with students with an IEP describe only receiving communication from school districts and teachers when these maladaptive behaviors occur in the home and hope that a consequence or other punishing factor will be given at home consequently (Menzies et al., 2021; Nieto & Bode, 2012).

### **Student Impact**

Being able to identify ways in which parent support can be brought into the school environment to help support students with disabilities and their maladaptive behaviors is important. Current literature demonstrates that school districts often resort to the use of punitive measures for addressing maladaptive behaviors in the form of detention and suspension from school (Menzies et al., 2021; Nieto & Bode, 2012). Being able to support students in a proactive and positive manner can provide a more enriching environment in the school setting as well as create a more positive relationship with parents in the community and supporting their students with disabilities (Fefer et al., 2020; Henderson & Mapp, 2002; Sheridan et al., 2017). Identifying ways in which parents and community support can help decrease maladaptive behaviors in the classroom setting can not only support a student's individual learning but also support the idea of inclusion and reinforcement of parent involvement within the school.

### **Biblical Foundation**

The Bible talks in detail about the power of praise and how praise should be given freely and openly (NIV, 2011). Applying the same construct to our students and children is also important so that our students and youth around us feel loved and supported by those working closely with them. Scripture also talks about parenting and the roles that parents have in disciplining and guiding their children through life (Proverbs 22:6; Psalm 127:3). It is the obligation of the parents to ensure that students are behaving in a way that glorifies God and supporting their spiritual journey as well as our physical journey on this earth. Ensuring that students and children have access to their educational curriculum so that they can be successful members of the community is critical to their development and should be supported by parents. One similarity within the bible is the continuous reference to all people being God's children (Hebrews 10:24-25). It is important to understand and be able to lean on the spiritual community for guidance with child rearing but also applying this same understanding to supporting students as one community focused on the betterment of youth.

### **Definition of Terms**

The following is a list of definitions of terms that are used in this study.

**Attention Maintained Behaviors** –A behavior that results in positive or negative social acknowledgment being given to the person or persons engaging in that behavior (Cooper et al., 2007).

**Maladaptive Behavior:** Any behavior that interferes with a student or individuals' ability to participate in a particular setting. (Gray, 2013).

**Parent–Home Communication:** Correspondence initiated from either home or school to the other (Goldman et al., 2019).

**Positive Reinforcement** –The introduction of a desirable stimulus after a behavior occurs, making it more likely that the behavior will occur again in the future (Cooper et al., 2007).

**School Setting:** All locations on a school campus including the classroom, hallways, offices, recess/playground, etc.

**Special Education Students:** Students identified as having an Individual Education Plan (IEP)

**Student Behaviors** – Observable actions that are atypical of peers occurring within the school setting (Skinner, 1981).

### **Significance of the Study**

One significance of this study is that if a functional relationship was demonstrated and that staff members are able to utilize positive reinforcement with parent communication could lead to a positive impact on reducing attention-maintained behaviors in the classroom. This can help support students with attention-maintained maladaptive behaviors and being able to spend more time accessing the educational curriculum (Finn, 2020; Gage et al., 2018; Lohmann, Randolph & Oh, 2021; Schiefele, 2017). Maladaptive behaviors in the school setting can be displayed by students in a variety of forms, from those behaviors that are less severe like disruptive behaviors, defiance, and non-compliance with schoolwork to more egregious behaviors such as aggression towards staff and peers, property destruction, and self-injurious behaviors (Alremawi & Arabiyat,

2022; Andersen et al., 2021), these behaviors can create unsafe environments for the student as well as peers and the staff members in the classroom (Boonen et al., 2014; O'Donnell et al., 2012; Young-Hwee, 2020).

Additionally, when these maladaptive behaviors happen, staff members must respond to those behaviors, which take away time from that student, as well as the classroom from accessing their curriculum (Boonen et al., 2014; Young-Hwee, 2020). Arguably so, if increasing positive communication between parents and teachers can decrease some of these behaviors, this could be a strategy that would be easier for teachers to be approving of and therefore implement more consistently to help support their classroom environment. Because teachers have many responsibilities and many roles (Downs et al., 2019; Levkovich & Eyal, 202; McLennan et al., 2020), it is crucial to think about the additional workload being placed when training and implementing strategies with students.

This research brings more awareness to the impact of not only using positive reinforcement within the school setting but influencing how we are able to work with children who engage in challenging behaviors (Carnett et al., 2021; El Nokali et al., 2010; Kyzar & Garza-Fraire, 2021; Menzies et al., 2021; Strickland-Cohen). If there is a functional relationship between positive reinforcement and behavior, we would have data to advocate for making more of an effort to identify and speak out about the positive behaviors occurring in the classroom. This, in turn, could help decrease the rate of utilizing outdated punishment procedures for those with developmental disabilities with maladaptive

behaviors such as time-outs and denied access and isolation from peers (Fefer et al., 2020; Finn, 2020; Scaletta & Hughes, 2021).

### **Summary**

There is a growing need for supporting students and special education with attention-maintained behaviors in the school setting (Downs et al., 2019; Georgiades, Duncan, et al., 2018; McLennan et al., 2020;). As research demonstrates, attention-maintained behaviors are very responsive to positive reinforcement interventions and being able to utilize this strategy and intervention with students' parents can be an added layer of support provided to students with special needs (Barg, 2019; Finn, 2020; Meng, 2020). Involving families in the integration of strategies used within the classroom setting will not only build a functional relationship between home and school settings (Barg, 2019; Hourii, Thayer & Cook, 2019) but also ensure that parents are informed of both the maladaptive behaviors occurring in the classroom as well as positive interactions and learning successes that take place.

In this study, the researcher assessed if a functional relationship exists between positive reinforcement through parent communication between teachers and parents of students who engage in attention-maintained maladaptive behaviors in the school setting. This study will add to the current literature regarding the powerful impacts of positive reinforcement for behavior change. The value of understanding how parents can be more positively involved within the school setting can increase parent participation with school administration as

well as encourage a reciprocal relationship between classroom teachers and staff and the parents of the students they serve.

## CHAPTER 2: LITERATURE REVIEW

### **Overview**

The purpose of this study was to explore the relationship of positive reinforcement in parent communication with the parents of students in special education classrooms who engage in attention-maintained maladaptive behaviors in the school setting – the researcher utilized a mixed-methods approach using multiple baselines multiple case study designs to measure the frequency of maladaptive behaviors in special education classrooms across pre-intervention and post-intervention conditions.

This research study explored the use of positive reinforcement as an intervention in the family unit. Positive reinforcement has been demonstrated to be an effective and powerful strategy and intervention for addressing behaviors in classroom settings that are attention maintained (Boelter et al., 2007; Call et al., 2004; Cooper et al., 1990; Cooper et al., 2007; Gardner et al., 2009; Schieltz et al., 2017; Senn, Bayles & Bruzek, 2020; Weyman & Sy, 2018). Exploring the relationship of how this strategy, when applied with parent communication in the school setting can help provide an integrated support system for student learning as well as address maladaptive behaviors that occur in special education classrooms.

### **Description of Search Strategy**

The researcher utilized resources such as Liberty University Library (Liberty University, 2022) and Google Scholar (Google Inc.) to develop a large pool of articles relevant to this research project. Information and statistics were

also pulled from national databases for special education enrollment in the United States and California, where this study was conducted (California Department of Education- Special Education, 2021). The researcher limited the articles to those that had been peer-reviewed and published within the last five calendar years from the date of search. The researcher also read and reviewed foundational articles that had been published outside of the five-year limitation, helped set standards, and set the groundwork for future research conducted. The researcher used various online libraries to find relevant resources. Keywords such as *maladaptive behaviors, positive reinforcement, public school, special education, parent communication, and school communication*. The researcher also explored the biblical principles related to this research topic. Themes such as child-rearing, parent involvement with teaching children, and praise are explored. These passages were reviewed using online resources such as BibleGateway (Zondervan, 2016) and Blue Letter Bible (BLB, 2017).

## **Review of Literature**

### **Special Education**

#### ***Prevalence***

In the United States, about 14% percent of students in K through 12<sup>th</sup> grade are identified as needing additional support in the classroom through an Individualized Education Plan (IEP) (National Center for Education Statistics, 2022). The purpose of an IEP is to provide students with modifications and accommodations to have them be more successful in the school setting (United States Department of Education, 2019). IEPs can help address many concerns,



including academic delays, medical diagnosis, as well as behavioral concerns. The IEP is a binding document and the agreement between students' families and the school district to ensure that these services are provided and allow for the student to access their right to free and public education (United States Department of Education, 2020). Over the years, an increase in the number of students being determined eligible and qualifying for special education services, particularly those referred for assessments and with the primary concern being behavior in the school setting (Brett et al., 2016; Chericoni et al., 2021; Offermans et al., 2022).

While specific statistics regarding the prevalence are difficult to quantify, studies have demonstrated a large range of different problem behaviors occurring in the school setting; aggressive behaviors in both general education students and students in special education can range from 10% (Domenech-Llaberiia et al., 2008, Newman, 2015; Ruddick et al., 2015) of the population to almost 63% (Griffin et al., 2003; Pavlovic et al., 2013). A study conducted by Simo-Pinatella, and colleagues showed some form of disruptive behavior occurring across 70% of students, stereotypical behaviors at 56%, aggressive behaviors at 56%, non-compliance behaviors at 52%, and self-injurious behaviors at 35% across students within special education classrooms (Simo-Pinatella et al., 2018).

### ***IDEA***

With the increase in the prevalence of students qualifying for special education, several laws have been enacted to address this growing need. The first is the Individuals with Disabilities Education Act, more commonly referred to as

IDEA (United States Department of Education, 2015). The Individuals with Disabilities Education Act includes several parts to ensure that students with disabilities receive access to education; one of the main foundational items in this act is that students have a right to be fully evaluated and assessed in all areas where there is a suspected disability (United States Department of Education, 2015).

Furthermore, school districts are required to set up appropriate interventions and support to address these units in the least restrictive environment (Individuals with Disabilities Education Act, 2017). The least restrictive environment is one that allows for a student with a disability to access as much of the general education curriculum as their general education peers while still receiving all the support needed to access that education (Individuals with Disabilities Education Act, 2017). One of the other main areas of the IDEA act is putting the responsibility on school districts to assess for disability as soon as one identifies concern for that student (United States Department of Education, 2015).

While the IDEA act has been in place for several decades, there are continuous modifications being made as the field of special education and student disabilities is continuously changing to ensure that students are identified appropriately and receive the support needed for them to be successful in public schools.

### ***Special Education Eligibility***

For a student to receive special education, they must first be assessed and determined eligible for these additional services (United States Department of Education, 2015). Special education eligibility is determined by the Individuals with Disabilities Education Act which identifies several eligibility categories for students to qualify for special education. Those disability categories for California include autism, deaf-blindness, deafness, hearing impairment, emotional disturbance, intellectual disability, multiple disabilities, orthopedic impairment, other health impairment, specific learning disability, feature language impairment, traumatic brain injury, visual impairment (including blindness), and developmental delay (United States Department of Education, 2015). Each of these categories has a specific criterion that a student must meet to be determined eligible for that specific educational diagnosis. Students may be found eligible for special education under multiple of the above-mentioned eligibility categories (United States Department of Education, 2015).

However, once the student is determined eligible for special education, their individual needs are assessed, and services and accommodations are put in place to support that student's individual needs, and those supports are not limited based on the eligibility criteria (Individuals with Disabilities Education Act, 2017). It is important to note that educational eligibility and special education are different from a medical diagnosis of a disorder or condition; for example, educational eligibility of autism for a student does not mean they meet the medical definition for autism spectrum disorder (Individuals with Disabilities Education Act, 2017, Rubenstein, et al., 2018). Similarly, a medical diagnosis of

autism spectrum disorder does not mean a student will be found eligible for special education under the category of autism.

Maladaptive behaviors in the school setting can be present under a variety of different special education eligibility categories, and it's not limited or expected in any one category (Boonen et al., 2014; O'Donnell et al., 2012; Young-Hwee, 2020). In addition to the educational eligibility, the assessment team must determine if the student in question is consistently below the benchmarks of their peers, and because of their disability, they are impacting their educational performance either academically, socially, or in both of those areas. (Brett et al., 2016; Offermans et al., 2022)

### **Maladaptive Behaviors in School**

#### **Severity**

Behavior severity can range from mild to severe in the school setting (Down et al., 2019; Duncan et al., 2018; Henrikens et al., 2020). Mild behaviors are those which are often characterized as disruptive, potentially impeding the learning of others and self, as well as non-compliance (Meng, 2020; Young-Hwee, 2020). While these behaviors are important for staff to support and address, they are not directly harmful to others within the school setting (Strickland-Cohen et al., 2021). Moderate behaviors are those which are often characterized as having the potential to cause harm to self or to others; these behaviors could be property destructions such as throwing items across the room, verbal and gestural threats of physical violence, and even eloping behaviors or

those behaviors of a student leaving the area without permission (Downs et al., 2019).

These levels of behaviors have the possibility to become significantly more dangerous if staff are not able to interject or deescalate a student. The most severe behaviors that can occur within the school setting are those that have a likely potential to cause physical harm to self or to others (Downs et al., 2019; McLennan et al., 2020). The most severe behaviors are those of aggression towards staff, throwing items at others, eloping off-campus, or engaging in behaviors that are self-injurious such as suicide attempts, headbanging, etc. (Downs et al., 2019; Schieltz et al., 2020).

### **School Activities and Demands**

Certain activities and academic demands can increase the likelihood that a student will engage in maladaptive behaviors (McLennan et al., 2020; Menzies et al., 2021). These are often referred to as antecedents or triggers (Cooper et al., 2007). These precursors are important for identifying environmental events that increase the likelihood of a behavioral episode. Identifying these triggers allow staff members to intervene prior to behavior occurring or to prepare the environment to minimize the impact of a behavioral episode (Sato, 2021). Common antecedent triggers in a school setting surround academic work or a non-preferred demand placed on the student (Strickland-Cohen et al., 2021).

Additionally, with attention-maintained behaviors, when a teacher is providing feedback or one-on-one attention to another student or communicating with another adult, behaviors can occur that would redirect the teacher's attention

to the student misbehaving (Dickman-Burnett & Geaman, 2020). These misbehaviors are very effective in getting a teacher's attention, in that the disruption not only interrupts the teacher but also invites peers to attend to the student as well. With both a teacher and a student response, the student engaging in the attention maintain maladaptive behavior has now succeeded in having the entire class focus on them instead of their individual work. Behaviors in the school setting also frequently occur around transitions, especially within the special education community (Caldarella et al., 2019; El Nokali et al., 2010; Strickland-Cohen et al., 2021).

Occasionally, individuals with developmental disabilities or that qualifies for special education struggle with change in routine or transitioning from a preferred activity such as recess and lunch to a non-preferred activity such as adult-led instruction time or academic demands (Caldarella et al., 2019; El Nokali et al., 2010). Students who engage in maladaptive behaviors do so to serve as a way of meeting their wants and needs at that moment, for example, to get out of doing an assignment, to have attention brought to them, or to get access to a preferred item or activity (Goldman et al., 2019, Young-Hwee, 2020). Identifying and intervening to the triggers for misbehavior can help support and potentially avoid misbehaviors from occurring in the classroom.

### **Home Life**

Occasionally misbehaviors occurring in the school setting can be a result of triggers or situations that occur within the home (Henderson & Mapp, 2002; Sheridan et al., 2017). Students can engage in maladaptive behaviors for a variety

of reasons; for example, if they are coming to school tired after not sleeping at home, they are unable to eat breakfast or access to food is a concern in the home, and even social interactions with those in their families such as a fight with parents or siblings can impact student behavior and the classroom (Henderson & Mapp, 2002; Tyson, 2008; Jeynes, 2012).

Being aware and being able to identify these concerns can help support interventions in the classroom setting to mitigate behaviors that might occur (Menzies et al., 2021; Reinke et al., 2008; Turnbull et al., 2021; Tyler et al., 2006). Students in special education classrooms may also exhibit behaviors surrounding their disability or conditions and medications they may be taking or changes in medications they have been taking (Young-Hwee, 2020). Non-verbal students or students who are not able to functionally communicate their wants and needs may also engage in misbehaviors in the school setting because they are not feeling well or have another need that is not being met at home and are unable to communicate to get that need fulfilled (Offermans et al., 2022; Young-Hwee, 2020). Identifying the potential triggers that can occur before a student arrives in the classroom is important when developing a well-rounded and integrated support system for students with attention-maintained behaviors within the classroom setting and help support family involvement and communication (Goldman et al., 2019; Tucker & Schwartz, 2013).

## **Behavioral Functions**

### **Four Functions**

Functions of behavior are better known as the reason *why* people engage in the behaviors that they do. Behavior often refers to both the positive and the negative behaviors that humans engage in (Furman & Lepper, 2018; Pitts et al., 2019; Vollmer et al., 2020). In the field of applied behavior analysis, there are four main recognized functions across the field, Escape, sensory, attention, and tangible (Baer et al., 1968; Furman & Lepper, 2018; Pennington, 2022).

### ***Escape***

The escape function of behavior is those behaviors that are used to get out of an activity, leave an area, or move away from a nonpreferred person or location (Baer et al., 1968, Crawford et al., 2021; Hernandez et al., 2018). In the school setting, these behaviors can commonly be seen to get out of completing an academic assignment (Baer et al., 1968; Wilder et al., 2019); for example, a student who may engage in property destruction behavior every time math is presented because it allows them to not participate in the math assignment.

Another example of the escape function could be that if there is an unpleasant noise or smell in the classroom, a student might engage in a behavior that will allow them to leave that area, for example, asking to use the restroom or take a break outside of the classroom. Additionally, the escape function can also be attributed to someone engaging in behaviors that will allow them to get away or escape from a non-preferred person (Baer et al., 1968; Crawford et al., 2021; Wilder et al., 2019); an example of this could be a student seeing their principal on campus and walking the other way as to avoid and interaction with them.

### ***Sensory***



Sensory functions are those behaviors that are done for no other reason except for internal pleasure from the person engaging in the behaviors (Baer et al., 1968; Muething et al., 2021). These are oftentimes referred to as automatic behaviors (Baer et al., 1968; Virues-Ortega et al., 2022), as they are often done without much thought and intention. Oftentimes sensory functions are not related to a specific activity, person, or situation that makes these behaviors more likely (Baer et al., 1968; Muething et al., 2021).

An example of a potential sensory function would be something like hand flapping, or more common examples could be people who click a pen while they are working on an assignment or someone who twirls their hair while reading a book. These behaviors occur because the person engaging in the behaviors often feels comforted by these actions or receives some other input that is pleasurable to them when engaging in these behaviors (Baer et al., 1968; Virues-Ortega et al., 2022).

### ***Tangible***

Tangible or access behaviors are often those that are done to gain an item or access to an activity or person (Baer et al., 1968; Critchfield, 2002). In the school setting, these behaviors often are displayed when a student is being denied access to an item; for example, they are asking to go to a recess early, and they are being told “no,” which might result in a behavior arise from a denial of access (Beavers, Iwata, & Lerman, 2013). This function also covers when a student already has access to a preferred item and it is time to transition from that preferred item; for example, when the bell rings to dismiss recess and the students

are expected to transition back to class. Access behaviors can also be related to physical items (Baer et al., 1968; Beavers, Iwata, & Lerman, 2013), such as not getting their preferred color of crayon that another student has, and can also include access to people, for example, if a preferred partner or teacher is busy and unable to assist a student, behaviors can occur.

### ***Attention Maintained Function***

The attention-maintained function is those behaviors that occur to have another person attend and give attention to another person (Baer et al., 1968). With the attention function in the school setting, a student is often trying to get the teachers, other adults, or other students in the classes' attention. Attention-maintained behaviors are often reinforced even when the attention provided to the behavior is punitive or negative attention from a staff member (Baer et al., 1968). This could look like a student interrupting or making a joke during a lecture and the teacher giving a reprimand; with some students, the attention of the reprimand is still reinforcing because it gives positive attention from their classmates as they laugh at the interruption.

### ***School Settings***

Attention and escape-maintained behaviors are the most common behaviors that occur in a school setting (Baer et al., 1968; El Nokali et al., 2010; Strickland-Cohen et al., 2021). These behaviors are ways in which students can gain immediate attention or access to their teacher or to their peers in the classroom (Beavers, Iwata & Lerman, 2013; Fahmine et al., 2020). This often looks like students yelling out during adult lead activities, making inappropriate

noises or jokes, ensuring that the classroom laughs during inappropriate times, and engaging in behaviors that will allow them to have direct time with their teacher or an aide in the classroom (Caladarella et al., 2019; Strickland-Cohen et al., 2021), where all attention is on them at the moment. Attention-maintained behaviors also appear in a positive light in the school setting; these behaviors include raising their hands so that their teacher calls their name to answer a question.

### **Common interventions**

While attention-maintained behaviors are relatively common (Caladarella et al., 2019; Strickland-Cohen et al., 2021), there are many strategies that can be used to help reduce or eliminate maladaptive behaviors in the school setting; one common strategy is planned ignoring (Cooper et al., 1990; Schieltz et al., 2017; Senn, Bayles & Bruzek, 2020). This is when a staff member or adult does not respond to inappropriate behaviors (when it is safe to do so) and only provides attention when the student or child engages in a preferred behavior (Cooper et al., 1990; Schieltz et al., 2017; Senn, Bayles & Bruzek, 2020).

For example, if a student is used to interrupting and calling out in the middle of a lecture to get the teacher's attention, a teacher could ignore this until the student raises their hand or says, "excuse me," and only then provide them with the attention they are desiring. This is teaching a functional communication skill to the student as well and helping develop the idea that they will get the attention they desire only after engaging in the more preferred method of gaining that attention (Cooper et al., 1990; Schieltz et al., 2020).

A token economy can also be used to help implement behavior change and is often paired with the planned ignoring strategy (Altus, 2009; Cooper et al., 1990; Cooper et al., 2007). Teachers or adults would provide a token or sticker to signal a preferred behavior, and students would be able to exchange these tokens for larger reinforcers after they have earned a designated amount, such as additional time at recess, a snack, or other tangible items.

### **Reactive Strategies**

Reactive strategies that are commonly used in the school setting when attention-seeking behaviors occur are verbal reprimands, yelling, or even using timeouts (Downs et al., 2019; Floress et al., 2018). Timeouts in the school setting are intended to be a punishment for students as it does remove them from their peers and often minimize the amount of attention they are given for that behavior (Lohman et al., 2021). Timeouts can be negatively impacting students as it does require seclusion from their peers and often results in students missing instructional time with the teacher. Threats of phone calls home, detention, removal of access to recess, and other preferred activities being removed are another reactive and punishing procedures that some utilize for these behaviors.

While punishing procedures can be effective for modifying behavior, they are often controversial to use, especially within the school setting (Caladarella et al., 2019; Cooper et al., 2007; Downs et al., 2019; Menzies et al., 2021; Nieto & Bode, 2012). Recent research demonstrates that using punishment procedures for minor maladaptive behaviors can make behavior change in the long-term less impactful than utilizing positive behavior modification strategies (Cooper et al.,

2007; Schieltz et al., 2020; Senn, Bayles & Bruzek, 2020). Additionally, there are ethical debates regarding the appropriateness of using punishment practices within this setting and with students who are young and may not fully understand their behaviors (Finn, 2020; Young-Hwee, 2020). More specifically, utilizing these punishing procedures with students or individuals with developmental disabilities or cognitive differences leads to continued debates on the appropriateness and the ethical liability of clinicians working with these individuals (Caladarella et al., 2019; Cooper et al., 2007; Downs et al., 2019; Menzies et al., 2021; Nieto & Bode, 2012).

### **Determining Function**

Understanding why students and individuals engage in maladaptive behaviors is a critical component in being able to appropriately address and identify strategies that can support positive behavior change (Cooper et al., 2007; Senn, Bayles & Bruzek, 2020). Being able to understand why behavior happens is a complex process without being able to identify another person's intent unless they specifically tell you why they engage in the behavior (McComas et al., 2000; Schieltz et al., 2020).

Oftentimes, when trying to determine a function, the person is cognitively unable to elaborate on the intended consequence of their behavior, or they may have a different understanding of the responses they get to their behaviors (Young-Hwee, 2020). As detailed previously, there are four common functions of behavior within the field of applied behavior analysis, and each of these functions has unique sets of criteria that allow for trained professionals to hypothesize the

function or functions of an individual's behavior (Boelter et al., 2007; Call et al., 2004; Cooper et al., 1990; Cooper et al., 2007; Gardner et al., 2009; Schieltz et al., 2017).

### ***ABC Data***

One common strategy that can be used to help identify an individual's function of a behavior is by collecting antecedent, behavior, and consequence (ABC) data (Liddon et al., 2018; Oliver, Pratt, and Norman, 2015). This is when an individual who was trained in behavior analytics can observe a student and detail the events surrounding a particular behavioral episode (Liddon et al., 2018; Oliver, Pratt, and Norman, 2015). The antecedent is recording the events that led up to that behavior oftentimes; this can be that a student is asked to do something, a person entering the room or anything that "triggered" the maladaptive behavior that comes next. The behavior is a detailed objective description of the behaviors that are occurring for that individual (Altus, 2009; Cooper et al., 2007).

Frequently, this is the behavior that the team wishes to change or reduce in intensity. It's important that when the behavior is being recorded that they are using objective measures to describe what is happening because the intent of anyone's behavior is unknown unless it is explicitly said (Cooper et al., 2007; Liddon et al., 2018). The consequence is whatever happens after the behavior; the consequence of a behavioral episode is often the reason why behavior continues to occur (Liddon et al., 2018; Oliver, Pratt, and Norman, 2015).

For example, if a student throws their math assignment on the floor and they no longer must do that assignment, the consequence would be them not

having to do their assignment. That student has also learned that when they engage in the behavior of throwing their assignment onto the floor, their math assignment is no longer presented, and they are not expected to complete that assignment making it more likely that they will throw their assignment to the ground in the future when they do not want to complete their assignment.

### ***Functional Behavioral Assessment***

A more formal and structured way of determining a hypothesized function for a behavior is to complete a functional behavior assessment (Fefer et al., 2020; McComas et al., 2000; Sugai et al., 2000). A functional behavior assessment includes observations of a student where ABC data is recorded, as well as structured interviews with individuals working with a student, reviewing medical records as well as educational records, or any other documents that pertain to an individual's behavior (Fefer et al., 2020; McComas et al., 2000; Sugai et al., 2000). A functional behavior assessment will also look at common identifiers for things that may trigger or cause a behavior to occur and detail things in the environment that may need to be manipulated to help support behavior modification (Fefer et al., 2020; McComas et al., 2000).

### ***Measurement Scales***

Measurement skills are another tool that can be used to help an assessor to hypothesize a function of a behavior (Gerow et al., 2021). These measurements and questionnaires have been shown to provide a hypothesis for the function of a behavior when a familiar person responds regarding the behaviors that they have seen (Gerow et al., 2021; Rose & Beaulieu, 2019).

A common measurement scale used to help determine function is the Functional Analysis Screening Tool (FAST). This screening tool is used to help identify environmental factors surrounding a behavior episode to verify hypothesized functions as well as guide a clinician in two recommending function-based strategies for interventions (Horner et al., 2013). The screening tool consists of 16 ‘yes’ or ‘no’ questions to pose to a familiar adult with whom these behaviors have occurred frequently (Horner et al., 2013). There are four specific questions regarding each of the four potential functions for the respondent to answer. The more ‘yes’ answers given under a specific function, the higher the likelihood that the behavior in question may be influenced by that function.

### **Reinforcement**

Positive and negative reinforcements are types of operant learning and operant conditioning (Liddon et al., 2018; Marcus & Vollmer, 1996; Slocum et al., 2018). In short, operant conditioning is categorized as a way of learning based on the outcome of behavior (Liddon et al., 2018; Marcus & Vollmer, 1996; Slocum et al., 2018). Whatever happens after an action will either increase or decrease the likelihood of that behavior occurring again (Cooper et al., 2007; Crawford et al., 2021); for example, if you touch a hot stove and burn your hand, you are going to be less likely to do that again in the future by way of having learned that touching the stove causes pain and should be avoided. Operant conditioning is a natural part of human development as people, and children



navigate their environment and learn cause and effect (Liddon et al., 2018; Marcus & Vollmer, 1996).

B.F. Skinner was one of the founding behaviorists who looked at how we can use this cause-and-effect upfront relationship to modify and change individuals' behaviors over time (Skinner, 1981). In the field of behavior, Skinner noted that this type of behavior modification would best be suited for only external and observable human behaviors. This definition excluded behaviors such as feelings, emotions, thoughts, and other unseeable phenomena (Skinner, 1981).

## **Types of Reinforcement**

### ***Negative reinforcement***

There are two types of reinforcement when discussing behavior change, negative and positive reinforcement (Cooper et al., 2004). Negative reinforcement is when something in the environment is removed that makes a behavior more likely to occur in the future (Cooper et al., 2007; Rogalski et al., 2020). One common example of this is taking medication when you are not feeling well; if the medication removes some of your symptoms, then the likelihood of you taking that medication again in the future when feeling similar symptoms is increased. Removal of something in the environment, in this case, the symptoms associated with not feeling well, created a behavior that is more likely to occur again because of the desired outcome (Cooper et al., 2007; Rogalski et al., 2020; Zangrillo et al., 2020).

### ***Positive Reinforcement***

Positive reinforcement is when something is added to the environment that increases the likelihood of a behavior occurring again in the future (Cooper et al., 2007; Downs et al., 2019; Senn, Bayles & Bruzek, 2020). One common example of this is working for a paycheck. Employees come to work every day and complete their jobs with the expectation that they will have a paycheck at the end of the week. That paycheck reinforces their behavior of coming to work, and it increases the likelihood that they will continue to come to work to receive a paycheck. Another example of positive reinforcement is providing a high-five to a child when they brush their teeth in the morning. If that physical affection increases their likelihood of brushing their teeth again in the morning, that behavior will be positively reinforced by the social contact with one of their parents (Boelter et al., 2007; Call et al., 2004; Cooper et al., 1990; Gardner et al., 2009; Schieltz et al., 2017).

Positive reinforcement impacts behavior changes by making whatever behavior occurred before the reinforcement more likely to occur again (Cooper et al., 2007; Crawford et al., 2021). If the outcome of the reinforcement does not increase the likelihood of that behavior occurring again in the future, positive reinforcement has not been used; something is only positively reinforced if the behavior occurs more likely again in the future because of that outcome (Cooper et al., 2007; Downs et al., 2019; Senn, Bayles & Bruzek, 2020).

### ***Positive Reinforcement in School***

Positive reinforcement is a strategy that is very commonly used in public school settings because it can be used very naturally in the form of verbal praise

or social interactions such as a high five or a thumbs up from a staff member (Gage et al., 2018; Lohman et al., 2021; Schiefele, 2017). For students who require more support than the general education population positive reinforcement is often used in the form of token boards or more structured ways of earning more tangible items such as access to a toy or preferred activity (Caldarella et al., 2019; Downs et al., 2018). This type of intervention is often built into a regular school day as a role of a teacher is to provide feedback and corrections to students; verbal praise often comes naturally and is second nature to staff members when working with children.

However, it is important to understand how impactful these small, natural interactions can have on creating behavior change with maladaptive behaviors within the school setting (Boelter et al., 2007; Call et al., 2004; Cooper et al., 1990; Gardner et al., 2009; Schieltz et al., 2017; Schieltz et al., 2020). Research has demonstrated that using positive reinforcement intentionally with students can demonstrate positive changes in behavior alone (Fefer et al., 2020; Goldman et al., 2019; Kronfli et al., 2021; Schieltz et al., 2019). While oftentimes positive reinforcement systems are paired with other behavior modification systems, research does suggest that using positive reinforcement alone can demonstrate statistically significant levels of change in attending to school activities and attendance in class, as well as increase positive behaviors within the classroom (Cooper et al., 2007; Schieltz et al., 2020; Senn, Bayles & Bruzek, 2020; Weyman & Sy, 2018).

### **Matching Law**

The matching law is a behavioral principle that details that there is a proportional effect of reinforcement to behavior change (Davison and McCarthy, 1988; Horner & Day, 1991). The greater amount, intensity, or duration of reinforcement will have an impact on the level of change in the desired behavior (Davison and McCarthy, 1988; Horner & Day, 1991).

For example, if a small amount of money is given for a good deed, then the likelihood that behavior will occur again in the future is smaller than it would be had a person received a large sum of money for the same behavior; had they received a large sum of money for that same behavior, the likelihood of that same behavior occurring again would be proportionally greater to the likelihood of the person who received only the small amount of money. This is important to keep in mind when talking about behavior change in the classroom; when receiving positive reinforcement, a student's behavior change will reflect the level of intentionality, genuineness, and frequency that they are being reinforced (Downs et al., 2019; Stuckey & McKewon, 2019; Weyman & Sy, 2018).

Research has also shown that using behavior-specific praise and describing what behaviors are being reinforced to students and to adults increases the likelihood of that behavior more than a general statement of praise or general reinforcement (Downs et al., 2018; Rathel et al., 2014; Stormont & Reinke, 2009). For example, saying "nice job completing your math assignment" would have more of an impact on the behavior of completing math assignments in the future than a statement of just "good job" given to the student (Caladerlla et al., 2019; Flores et al., 2018; Sabey et al., 2018).

Specifically, with attention-maintained behaviors, students seek one-on-one attention and positive interactions with other peers and adults in the classroom (Rubow et al., 2019; Young, 2020). If a student is not receiving an appropriate level, intensity, duration of attention, or reinforcement that does not equal the same level of attention they receive for the misbehavior, they are unlikely to demonstrate behavior change due to the matching law (Davison and McCarthy, 1988; Horner & Day, 1991). When we are identifying positive reinforcement interventions, it is important to match the level of reinforcement misbehavior is given to a student with the level of positive reinforcement staff members are providing to the alternative behavior that serves that same function.

## **Parent Communication**

### **Communication in School**

School and teacher communication with parents often centers around mass communication to all parents within schools relating to events, parent-teacher conferences, or other large districtwide happenings (Lin et al., 2019). When communication is done on a more individualized basis, it is most frequently done regarding reporting negative behaviors occurring in the school setting or other formal notice with negative connotations such as attendance, grades, or other important information for parents to know regarding their students' actions in school settings (McLennan et al., 2020).

Rarely do teachers or school staff members initiate parent communication regarding positive events individually with a specific student in their class (Levkovich & Eyal, 2021; McLennan et al., 2020). This communication goes both

ways, and oftentimes parents are only reaching out to schools and teachers when they are communicating changes in a school schedule, family event, or concerns regarding behaviors or academics within the school setting.

## **Expectations**

### ***Parents and Caregivers***

There are different expectations surrounding how parents communicate with their schools. Recent studies have demonstrated that parents use communication with schools to solve a problem with their child or to express concerns regarding academics, behaviors, or a social issue involving their child (Carnett et al., 2021; Shin et al., 2020). Oftentimes this communication is channeled through the student's classroom teacher; however, occasionally, the site administration is involved when needed (Menziez et al., 2021; Scaletta & Huges, 2021). Parents do not frequently contact the school site or teachers outside of a specific reason, and most frequently, this reason is to express a direct concern or ask clarifying questions regarding school events (Henderson & Mapp, 2002; Sheridan et al., 2017).

### ***School***

School communication with parents occurs on a few different levels. The first type of communication is those that are broadcast and sent to the entire school population, often referring to campus-wide events, parent-teacher conferences, and other important dates for all students to be mindful of (Bordalba & Bochaca, 2019). Oftentimes, this communication is used via emails, or the teacher communicates to students by sending notes in the student's backpack or

using other forms of technology provided by the district (Arnold et al., 2008; Bordalaba & Bochaca, 2019). The second form of communication is more individualized based on student behavior, grades, and other concerns stemming from the teacher or the classroom perspective (Bordalaba & Bochaca, 2019; Tucker & Schwartz, 2013). Similar to the communication from parents, most teacher communication references a concern or a negative situation that parents or caregivers must be informed of (Levkovich & Eyal, 2021; Turnbull et al., 2010).

Examples of these communications could be concerns regarding turning in an assignment or their current grade, a negative interaction during free time with a peer or another staff member, or any behaviors that occur in the classroom that were disruptive to the learning environment (El Nokali et al., 2010; Strickland-Cohen et al., 2021; Young-Hwee, 2020). When teachers reach out to parents or caregivers regarding these concerns, it is often the hope that parents will partner with their teacher or the school in hopes of instituting behavior change through consequences at home for the student's behaviors within the classroom setting (Goldman et al., 2019; Tucker & Schwartz, 2013).

### **Barriers for Communication**

There are several barriers to effective communication between parents and school. One of the main barriers is a lack of awareness of the means for communicating with the schools and teachers (Lin et al., 2019). Parents can have little face-to-face contact with teachers and might not feel that they are able to communicate as freely as they may desire (Bordalaba & Bochaca, 2019).

Additionally, many parents work during school hours and may be hesitant to leave a message or other forms of passive communication such as voice mails and emails. Another barrier facing more diverse communities is access to translations and language services (Barg, 2019; Hourii, Thayer & Cook, 2019). Many immigrant families may not speak English or may use their child to translate in the school setting; however, specific details or other important information may be missed in translation or omitted altogether without using a certified representative to translate into the designated language (Barg, 2019; Lareau 2002,2003). This extra step for some families may be a deterrent for communicating with schools and teachers unless the issue is egregious enough (Baker et al., 2016; Barg, 2019).

Access to technology and other socioeconomic concerns may contribute to the barriers to communication with schools (Barg, 2019; Lareau, 2002,2003). If a parent financially is unable to afford internet access or a cell phone, then communication with the school could be limited to in-person interactions and using the letters sent through the mail. This type of communication often can take multiple days to receive, and families may look at the increased time span as a deterrent for more frequent communication. Another option for parents who do not have access to technology is to physically go to the school and meet in person with the relative staff members. However, concerns such as childcare, transportation, and time off work need to be taken into consideration as well (Fefer et al., 2020; Sheridan et al., 2014).



From the school district perspective, teachers can feel unsupported from parents when concerns are brought to their attention, reducing the frequency in which they actively seek out parental consultation and involvement when things arise in the classroom (Bordalba & Bochaca, 2019; Levkovich & Eyal, 2021). The current caseloads for teachers have been higher than in years past due to increased enrollment and a decrease in available teachers to fill vacancies leaving their classroom rosters full or over their normal class limits (Fowler et al., 2019; Ronney-Kron & Dymon, 2021). The additional students in the classroom can create a barrier for teachers for increased communication with parents given the increase in workload with working with a larger than normal classroom size (Fowler et al., 2019; Ronney-Kron & Dymon, 2021).

Similar concerns regarding language can also be a deterrent for teachers communicating with parents (Barg, 2019; Lareau 2002,2003). If staff members need to take the extra step of securing a translator or translation services for written communication, they may be less likely to communicate as frequently due to the extra effort required because of language barriers (Barg, 2019; Lareau 2002,2003).

### **Communication about Behaviors**

Communication regarding behaviors in schools can be challenging. Parents are often only communicated regarding misbehaviors in the classroom, and rarely when positive interactions occur (Freund et al., 2018; Meter et al., 2021). Because the communication is heavily skewed on the negative side parents and caregivers can become burnt out when access to communication is provided

regarding the negative characteristics or behaviors involved with their child (Levkovich & Eyal, 2021; Shin et al., 2021).

Likewise, teachers also face similar burnout when navigating and managing these behaviors occurring in the classroom (Levkovich & Eyal 2021). Communicating these concerns is an obligation that teachers have to parents, but since these communications are not always received positively by parents (Freund et al., 2018; Mahmoud, 2013), it can be negatively reinforcing for teachers to omit details or not engage in communication at all with parents regarding misbehaviors (Menzies et al., 2021).

Often, behaviors that occur within the school setting are built up over time, and not having regular check-ins with parents and families and an ongoing flow of communication can lead to a longer learned history of these behaviors and make them more difficult to address within the school setting (Bergstrom et al., 2018; Levkovich & Eyal, 2021; Mahoney et al., 2015).

### **Biblical Foundations of the Study**

#### **Power of Praise**

The power of praise within the scripture is demonstrated throughout the Bible. Scripture tells us that we should praise God for his kindness, his blessings, his mercy, and all that he has sacrificed for us (NIV, 2011). Scripture also talks about how sometimes this can be difficult; it can be difficult to give praise when bad days occur or when we are struggling with something or feel as though our faith this week (NIV, 2011). However, in times when our faith is being tested or feels weak, it is critical that we sing praises during those times as well. Similarly,

for students who engage in maladaptive behaviors in the school setting, it can be hard to find positive things in those moments to share with the children, but it is important that even in trying times that we are lifting our students up by providing them with a source of positivity. James 4:10 Tells us to humble ourselves in the sight of the Lord, and he will lift us up.

### **Child rearing**

The Bible talks in detail about parenting and child-rearing. Scripture stresses a parent's role and responsibilities in raising their child and how to teach them about the world around them. Proverbs 22:6 shares, "train up a child in the way he should go; even when he is old, he will not depart from it" (NIV, 2011); this first stresses the importance I've redirecting and showing children how to behave and navigate the world around them.

The Bible also talks about the glorious gift that children are "Behold, children are a heritage from the Lord, the fruit of the womb of a reward (Psalm 127:3) (NIV, 2011). Not only is child-rearing important from a biblical perspective of guiding your children, but it is also important to ensure that the wisdom and guidance provided to children is echoed and followed through within the school setting. Having parental involvement and understanding of the behaviors and occurrences within this full setting can help parents so still their application as a parent and ensure their child is falling within the guidelines provided in scripture (NIV, 2011).

### **Community Support**

Coming together as one single community in Christ is instructed within scripture. Hebrews 10:24-25 says, “and let us consider how to stir up one another to love and good works, not neglecting to meet together, as is the habit of some, but encouraging one another” (NIV, 2011). Applying the same messaging to keeping a continuum of support for students at home as well as in the school setting can aid in students feeling supported in all environments. Additionally, scripture discusses how followers in Christ are called to support each other in times of happiness as well as in times of discomfort and burden. Supporting students with disabilities and students who engage in maladaptive behaviors can be difficult and being able to support one another in the home and in this school supports the community as well as the individual. Galatians 6: 2 tells us to “Bear one another's burdens, and so fulfill the law of Christ” (NIV, 2011).

### **Summary**

#### **Communication**

Increasing the communication between parents of special education students and their classroom and school districts can help all parties support student success within the classroom (Flores et al., 2018; Lin et al., 2019; Schieltz et al., 2020; Senn, Bayles & Bruzek, 2020; Shin et al., 2021). Creating an emphasis on positive communication regarding student behaviors and positively reinforcing parents regarding their students' positive interactions within the classroom can continue to support an integrated system for working with students within special education (Caldarella et al., 2019; Floress et al., 2018; Lin et al., 2019; Menzies et al., 2021; Sabey et al., 2018). It is important that the supports

for a student are consistent across all environments and settings, and supporting continuous communication can ensure that all service providers are interacting and responding to a student with disabilities in the same fashion to ensure the greatest level of support possible (Arnold et al., 2008; Epstein, 2005; Goldman et al., 2019; Henderson & Mapp, 2002; Keynes, 2015; Park & Holloway, 2017; Wilder, 2014).

### **Decrease Behaviors**

Positive reinforcement has been demonstrated over time to decrease maladaptive behaviors (Boelter et al., 2007; Call et al., 2004; Cooper et al., 1990; Cooper et al., 2007; Gardner et al., 2009; Schieltz et al., 2017; Senn, Bayles & Bruzek, 2020; Weyman & Sy, 2018). Expanding this principle into special education through communication with parents of students within special education can provide a unique opportunity for teachers to support students in the classroom and to further facilitate an integrated system of support for their students. Positive reinforcement is a proven intervention for decreasing attention-maintained behaviors in children (Boelter et al., 2007; Call et al., 2004; Cooper et al., 1990; Gardner et al., 2009; Schieltz et al., 2017). Combining this intervention with parents and students can help support a positive learning environment within the classroom and then, in turn, decrease the misbehaviors occurring in the school setting.

### **Global Benefit**

#### ***Reduce Punishment***

The use of punishment procedures for students with disabilities and in special education is a continued ethical debate regarding the appropriateness of use as well as the effectiveness of these interventions (Cooper et al., 2007; McLennan et al., 2020; Nieto & Bode, 2012; Trump et al., 2018). Positive reinforcement should be utilized as the first level of intervention to decrease maladaptive behaviors before punishment procedures should be introduced (Boelter et al., 2007; Call et al., 2004; Cooper et al., 1990; Gardner et al., 2009; Schieltz et al., 2017). If increasing the communication with parents of students with disabilities and special education can help support the decrease of maladaptive attention-maintained behaviors within the classroom setting, this strategy could be used in place of other more restrictive and punishing procedures within the school setting. This will further help build a positive and supportive environment within the school setting for students with disabilities and help eliminate the stigma that punishment and negative consequences are the only appropriate way to help support and manage attention-maintained behaviors at school.

### ***Improved Relationship with Families***

Supporting and creating a positive environment at school is supported by most families with students and public education (Finn, 2020; Gage et al., 2018; Schiefele, 2017; Zoder-Martell et al., 2019). The value added to the community by increasing positive interventions in public schools can benefit those families directly impacted (Fefer et al., 2020; Kaminski & Claussen, 2017; Meng, 2020). Increasing the positive communication with families surrounding behaviors

within the school setting can increase the relationship between families and teachers and school settings by allowing a more open discussion regarding supporting students with special needs as well as a safer environment for parents and schools to share their concerns as well as the successes of students in the classroom (Barg, 2019; Hourii, Thayer & Cook, 2019).

Utilizing positive reinforcement with parents with students in special education who engage in attention-maintained maladaptive behaviors can be a positive intervention for supporting not only the student who engages in maladaptive behaviors but the entire family unit.

## CHAPTER 3: RESEARCH METHOD

### Overview

The purpose of this multiple baseline case study was to explore the relationship of using positive reinforcement with parents of students and special education and their teachers for the reduction of attention-maintained behaviors within the school setting. Furthermore, this study focused on demonstrating if a functional relationship was shown between positive communication with parents and a reduction in maladaptive behaviors. Current research demonstrates the impact that positive reinforcement has on reducing maladaptive behaviors when implemented directly with the student engaging in those behaviors (Fefer et al., 2020; Goldman et al., 2019; Kronfli et al., 2021; Schieltz et al., 2019).

Additionally, research also shows how positive parent involvement is to a student and their success in the classroom and the improved outcomes this demonstrates (Barg, 2019; Fefer et al., 2020; Hourii et al., 2019; Kaminski & Claussen, 2017; Meng, 2020; Roopnarine et al., 2006). However, literature has failed to address how this strategy can be used in the communication between teachers and parents of students with disabilities. For this study, a mixed-methods approach using correlational analysis was conducted to determine if there was a functional relationship as well as an open-ended questionnaire for a qualitative analysis with the classroom teacher. The open-ended questionnaire was utilized to understand the teacher's perspective on using this intervention within the classroom.

### Research Questions and Hypotheses

#### Quantitative Research Questions



RQ1: Does using positive reinforcement in parent communication between teachers and parents of students who engage in attention-maintained maladaptive behaviors in the school setting change between pre-intervention and post-intervention?

RQ 2: Is there a more significant reduction in attention-maintained maladaptive behaviors seen with the participants who are in the experimental condition for only one week compared to the participant in the experimental condition for three weeks?

### **Qualitative Research Question**

RQ 3: Do the participating teachers believe that frequent communication with parents regarding the positive behaviors during the school day is a strategy that they would be likely to implement in the future for the reduction of attention-maintained maladaptive behaviors in their classroom?

### **Hypotheses**

**$H_a$** : The use of positive reinforcement in parent communication between teachers and parents of students will demonstrate a difference between pre-intervention and post-intervention.

**$H_0$** : The use of positive reinforcement in parent communication between teachers and parents of students will not demonstrate a difference between pre-intervention and post-intervention.

**$H_a$** : The parents who are in the experimental condition for three weeks will demonstrate a more significant reduction in attention-maintained maladaptive behaviors than those parents who are in the experimental condition for one week.

$H_0$ : The parents who are in the experimental condition for three weeks will not demonstrate a more significant reduction in attention-maintained maladaptive behaviors than those parents who are in the experimental condition for one week.

## **Research Design**

### **Multiple Baseline Design**

This study utilized a mixed-methods multiple baseline case study design. This is a popular research design for using single case study research as it allows for staggered intervention start points between each of the participants (Levin & Gafurov, 2019). The multiple baseline design has the intervention noted by staggering start points; these interventions led to a staircase like graph where baseline data appears on the left side, with the post intervention data being displayed on the other side. The staggered design allowed for clear visual analysis of the impacts of the intervention from baseline (Levin & Gafurov, 2019). There is vast research detailing the credibility of this design to assess the impact of an intervention on case outcomes (Levin & Gafurov, 2019; Wampold & Brown, 2005); more specifically, the Wampold and Warsham single case study with randomization tests procedures will be used for the study. This type of design allowed for randomization of the intervention across participants as well as yielding statistical  $p$ -values for studies utilizing more than four participants (Wampold & Brown, 2005). The Wampold and Warsham single case study multiple baseline design was the most appropriate to use for the statistical analysis of this study.

### **Case Study Design**

The case study design allowed for a researcher to explore an area of research that has been previously limited (Lobo et al., 2017). Since there is minimal research on using parent involvement through positive reinforcement communication within the school setting to reduce attention-maintained maladaptive behaviors in the school setting, a case study allowed the researcher to assess the validity of the intervention to determine if further research in this area should be explored (Lobo et al., 2017). While there are limits to the generalizability of a case study, the benefits of sampling an intervention prior to a large-scale operation was most beneficial for this study. Additionally, a case study allowed for the researcher to provide a more detailed and intimate assessment of this specific population (Lobo et al., 2017).

### **Mixed Methods Studies**

This study used both qualitative and quantitative designs. The functional relationship was assessed using visual analysis (Horner et al., 2005; Wolfe et al., 2019), and behavior frequencies were assessed using correlational measures. The Functional Assessment Screening Tool was used to determine behavioral function for each of the student's behaviors. The FAST (Iwata & DeLeon, 1996) is a 16-question survey which asks a series of 'yes' and 'no' questions regarding potential behavioral functions (Iwata & DeLeon, 1996) (See Appendix A). Students who had 75% or more of the questions pertaining to the attention-maintained function were eligible to be included in the study. Additionally, an open-ended interview was conducted with the teacher participating in the study to assess the ease of use

of this intervention as well as the likelihood for future use to reduce attention-maintained maladaptive behaviors in the school setting. Since this study used a case study design, the interview allowed for an individual understanding of the use from the teacher implementing the intervention. The information provided insight to the future directions of research in this area from the teacher's perspective.

## **Participants**

### **Student Participants**

The researcher enrolled four pairs of student/parent participants to the study. Four student participants were the minimum needed for statistical significance for a Wampold and Warsham single case study with randomization tests procedure analysis (Wampold & Brown, 2005); student participants were enrolled in a fourth through eighth grade school and were in a fourth through sixth grade special education classroom with one teacher and one paraeducator. All student participants are eligible special education and have an active Individual Education Plan (IEP). Students who meet the above criteria were screened for maladaptive behaviors and were assessed based on the FAST assessment (Iwata & DeLeon, 1996) (See Appendix A) to determine behavioral function. The FAST posed 16 'yes' or 'no' questions that determine when a behavior is most likely to happen to assess potential functions for that behavior. Students who scored at least 75% of the questions under the attention-maintained function were identified as attention seeking behaviors for the purposes of this study. Additionally, those students whose maladaptive behaviors were determined to be attention seeking

continued to remain in the study and those participants who do not meet the attention-maintained function were dropped from the study.

### **Parent participants**

Parent or guardian participants were the legal guardian for a student enrolled in the fourth through eighth-grade school who meet the criteria detailed under student participant. Parents or guardians had their legal status confirmed with the listed guardians on their student's IEPs. Parents were also asked to receive and read the information being sent by the teacher.

### **Recruitment**

#### ***Teacher Participants***

A teacher was identified who teaches special education and was provided a verbal description of the study for recruitment (See Appendix B). The teacher expressed interest in participating in the study and was emailed a formal consent form (See Appendix C) and were enrolled in the study. Once enrolled the researcher scheduled the introduction training detailed in Appendix D. The enrolled teacher was compensated for their time and participation in the study in the form of a \$200 Target gift card.

#### ***Parent/ Student Participants***

The researcher identified one classroom within the school site that had exclusively special education students who engage in maladaptive behaviors. The researcher shared details of the study with parents via a flyer sent home (See Appendix E); following a phone conversation where parents expressed verbal interest, parents were then sent an email consent form (See Appendix F) and

provided consent to the research study. Students whose parents signed consent were presented with an assent form (See Appendix G) and the study was explained to them in terms equivalent to their cognitive functioning. Student participants then signed assent for their participation in the study.

### **Study Procedures**

The proposal was approved by the IRB (See appendix H) and the researcher worked with school district leaders in San Jose, CA, to identify a single school site that met the inclusion criteria for the study and received permission for the study to be conducted on a school campus within the school district as well as utilizing student records (See Appendix I).

The teacher was recruited from the guidelines listed above and provided with a one-hour training with the researcher (See Appendix D) where the teacher learned about positive reinforcement and was presented with examples and non-examples of family communication that met the criteria for the study. The teacher was also provided training on behavior-specific praise and was provided example scripts of communication that met the criteria of the study to reference throughout the duration of the study (See Appendix D).

The researcher sent recruitment fliers home with each student (See Appendix E). Those parents who expressed interest were sent the consent (See Appendix F) and assent forms (See Appendix G) via email. Once consent for the study was received by the researcher, the researcher administered the FAST assessment (See Appendix A) based on the maladaptive behaviors observed in the classroom from each of the student participants. Students who met the eligibility

criteria of the behaviors being determined to be attention maintained as designated by the Functional Analysis Screening Tool (FAST) assessment. The FAST assessment was administered for each student participant and those who had at least 75% of their responses be “yes” for the attention-maintained behaviors remained in the study. Those student’s whose behaviors scored less than 75% of “yes” responses on the FAST questionnaire (Horner et al., 2013) were dropped from the study. The researcher concluded the recruitment for this study once four students were identified as having met the inclusionary criteria for the study. Parent participants were notified that the study would begin the following week via email.

The researcher added all participants to a randomize assignment webpage, Research Randomizer (Urbaniak & Plous, 2013) to establish the order in which the intervention phases would begin for each student. Baseline data collection began the following week where the researcher observed each of the student’s enrolled twice during the week for a duration of one hour during each observation. The researcher collected partial interval data for the student’s behaviors noting a positive indication if the identified maladaptive behavior occurred at any point during each of the 60-second intervals for one hour.

The following week, the first student participant was entered into the intervention phase of the study where the teacher emailed parent three times during the week of only positive interactions and positive occurrences of the student’s behaviors. The other student participants continued to have baseline data collected utilizing the 60-second partial interval recording notating occurrences

and non-occurrences of the target behavior. This continued each week with another student entering the intervention phase of the study and the remaining continuing with a prolonged baseline until every student was in the intervention phase for at least one week.

After all participants had at least one week of intervention and data collection; the researcher concluded the student data collection portion of this research study. Parent participants were notified of the conclusion of their role in the study by phone call from the researcher and identify a date and time to pick up their \$25 gift card for their participation. The teacher participant met with the researcher the following week and answered open-ended questions (See Appendix J) regarding the ease of administration of this intervention, as well as their thoughts and feedback on the continued use of the interventions proposed. The teacher interview was recorded for accuracy in reporting and analysis by the researcher, common themes and repetitive statements will be discussed and documented. After the interview, the teacher received a \$200 gift card for their participation.

### **Instrumentation and Measurement**

#### **FAST**

The Functional Analysis Screening Tool (FAST) (Horner et al., 2013) (See Appendix A) was used to confirm the behavioral function of the student participants to ensure that attention-maintained behaviors were the target of the study. The screening tool consists of 16 'yes' or 'no' questions to pose to a familiar adult with whom these behaviors have occurred frequently (Horner et al.,



2013; Iwata & DeLeon, 1996). Copyright clearance was obtained through John Wiley and Sons, licensed content publisher and the researcher for use of the FAST-screening tool (Horner et al., 2013) for this study (See Appendix K).

### **Questionnaire**

Teacher participant was interviewed with an open-ended questionnaire interview (See Appendix J) that was recorded and used to answer the research question regarding ease of instruction and the likelihood of utilizing this intervention in the future for attention-seeking student behaviors. The interview was recorded using a voice recorder and was transcribed for analysis at the conclusion of the study.

### **Operationalization of Variables**

**Student Behavior**– This variable is a ratio variable and was measured by a total observed occurrence based on researcher observation and data collection. Student behavior was defined individually based on each student participant.

### **Data Analysis**

#### **Quantitative Analysis**

This research used visual analysis to assess the data results. In case study designs and within the field of applied behavior analysis, visual analysis is often used to evaluate the effectiveness of interventions (Horner et al., 2005; Wolfe et al., 2019). Visual analyses were conducted by graphing the data and evaluating the presence of a potential functional relationship and the impact that the intervention had on the student's identified maladaptive behavior. All participant data was graphed in multiple baselines staggered design format and analyzed by

the researcher. Additionally, standardized mean differences were assessed across each participant from baseline to post-intervention averages across behavior frequencies utilizing the Wampold and Warsham (Wampold & Brown, 2005) statistical analysis.

### **Qualitative Analysis**

The researcher conducted an open-ended questionnaire with the teacher participants in the study (See Appendix J). The questions served to determine the ease of use of positive communication with parents and behavior change in the classroom. The interview took place in person and was recorded with a voice recorder and transcribed for accuracy in reporting during the data collection. Additionally, the interview was transcribed to identify repetitive words and themes for analysis. Since this was a case study design, individual experiences with the study were shared and explored for ease of use and likelihood of future use within the classroom.

### **Delimitations, Assumptions, and Limitations**

#### **Delimitations**

One of the delineations of this study was limiting the maladaptive behaviors to those that are attention seeking only as defined by the Functional Analysis Screening Tool (FAST) assessment (Horner et al., 2013). While multiple behaviors occur within the school setting, attention-seeking behaviors are only one of the potential functions that a student could engage in maladaptive behaviors, and this study intentionally limited its intervention to attention-seeking behaviors only as this function had the highest likelihood of being impacted based

on positive reinforcement of parent communication with school and teachers. One additional delimitation noted is limiting the teacher participants to only one teacher; this is done to account for differences in teaching styles and communication with parents, however, it did limit the potential student and parent participation pool.

### **Assumptions**

One assumption from the study was that when parents received the e-mail or other communication from the teacher that they read that information within 24 hours of it being received. Another assumption of this study is that student attendance would be regular and that a student participant would not be absent for a prolonged period during the data collection phase of this research study.

### **Limitations**

#### **Sample Size**

One limitation of this study is that the sample size is anticipated to be small; while a multiple baseline design allows for small research samples to explore a new area of research and to assess the future value of research in this area, the small sample does limit the generalizability and minimizes the global impact within this one study of a functional relationship. The small recruitment sample size is due to the limited availability of the recruitment pool as well as the inclusionary criteria laid out above.

#### **Student Absences**

Student absences are also a foreseeable limitation for this study. Student illness, vacations, and other events that occur may cause a student enrolled in the

study to be absent from school during the scheduled observation times from the researcher. While the researcher will attempt to make up observations during the week, there is a chance that a student may be absent during those times and impact the data collected and assessed for this research.

### **Data Collection**

Another limitation of this study is the total duration of data collection for each student. The researcher will observe each student enrolled in the study for one hour per week in their classroom environment; however, there is a chance that behaviors will not occur during that time frame or will be an inaccurate representation of the behaviors that occurred throughout the entire day if they do not occur within the observation window.

### **Teacher Participants**

One potential limitation for this study is seeking only one to two teachers to participate. This is due to the limited pool of potential recruits and the nature of the study. While the teacher participants will be compensated for the time with the researcher during the training and the interview as well as for their time sending emails when students are in the intervention phase, it is adding to their roles and responsibilities each day. Additionally, honest reporting can be skewed when the sample size is smaller due to the intimate nature of the case study design (Bourdage et al., 2018).

### **Researcher Conflict**

This research study is limited to only one researcher. This could be a potential limitation with data collection during the week and accounting for

potential student absences. Additionally, the researcher conducting this study is an employee of the school district in which the study is being conducted. While the researcher is taking steps to avoid any potential conflict of interest by conducting the study at a school site where they do not work and have no management over, there is a potential for the data to be skewed for that reason.

### **Summary**

With special education being a continuously growing area of public education, it is critical that the students in those individualized classrooms receive a positive and supportive environment from their home and their teachers. Students with disabilities and those who are in special education are a vulnerable population, and interventions that are positive and enriching in nature should be prioritized before using punishing procedures such as detentions and suspensions in school. Unfortunately, punitive measures are often used to manage student behavior in the classroom which can lead to more serious and prolonged maladaptive behaviors occurring throughout the student's educational history (Strickland-Cohen et al., 2021).

This mixed methods multiple baseline case study design will help identify if communication with parents of students enrolled in a special education classroom can have a positive impact on maladaptive behaviors through positive communication from home and school. This multiple case study design will set the foundational groundwork for additional research, and larger scales in this area should a functional relationship be determined.

## CHAPTER 4: RESULTS

### Overview

The purpose of this multiple baseline case study was to explore the relationship of positive reinforcement with parents of students and special education and their teacher for the reduction of attention-maintained behaviors within the school setting. Additionally, this study also focused on seeking to find a functional relationship between positive communication with parents and a reduction in maladaptive behaviors.

The researcher observed each student participant in the classroom for a total duration of two hours per week across two separate observations. Data was collected using a partial interval recording for each of the individual students previously defined attention-seeking behaviors and notated if a behavioral occurrence was observed during any portion of the one-minute interval for the duration of the observation. At the conclusion of each observation, the total number of intervals in which the target behavior was observed for each student was tallied and was used for the Wampold and Warsham (Wampold & Brown, 2005) statistical calculations and the multiple baseline design graphing and visual analysis. In the event of a student absence the researcher would have reschedule the observation for a day later in the week to meet the studies criteria for two observations per week per student enrolled in the study.

Once student data was collected, the researcher met with the participating teacher and conducted an interview regarding their experience with the

implementation of the study, the behavior implications they observed, and the ease of intervention with parent communication.

## **Research Questions and Hypotheses**

### **Quantitative Research Questions**

RQ1: Does using positive reinforcement in parent communication between teachers and parents of students who engage in attention-maintained maladaptive behaviors in the school setting change between pre-intervention and post-intervention?

RQ 2: Is there a more significant reduction in attention-maintained maladaptive behaviors seen with the participants who are in the experimental condition for only one week compared to the participant in the experimental condition for three weeks?

### **Qualitative Research Question**

RQ 3: Do the participating teachers believe that frequent communication with parents regarding the positive behaviors during the school day is a strategy that they would be likely to implement in the future for the reduction of attention-maintained maladaptive behaviors in their classroom?

### **Hypotheses**

$H_a$ : The use of positive reinforcement in parent communication between teachers and parents of students will demonstrate a difference between pre-intervention and post-intervention.

$H_0$ : The use of positive reinforcement in parent communication between teachers and parents of students will not demonstrate a difference between pre-intervention and post-intervention.

$H_a$ : The parents who are in the experimental condition for three weeks will demonstrate a more significant reduction in attention-maintained maladaptive behaviors than those parents who are in the experimental condition for one week.

$H_0$ : The parents who are in the experimental condition for three weeks will not demonstrate a more significant reduction in attention-maintained maladaptive behaviors than those parents who are in the experimental condition for one-week.

## **Descriptive Results**

### **Student Participant Demographics**

#### ***Student A***

Student A is a fifth-grade female student who is ten years old. This student has been eligible for special education for six years under the category of intellectual disability. Student A engages in attention-seeking maladaptive behaviors including disruptive noises (banging on the desk, yelling out song lyrics, blurring out answers without permission, etc.), leaving her seat and walking around the classroom during adult led instruction. When the FAST (Horner et al., 2013) (See Appendix A) was applied to her behaviors, she received a score of 100% on the attention-maintained screening questionnaires.

#### ***Student B***



Student B is a fifth-grade male student who is 11 years old. Student B has been eligible for special education for five years under the primary eligibility of other health impairment for ADHD and a secondary eligibility under speech and language impairment. This student engages attention-maintained maladaptive behaviors including inappropriately touching others (pushing others, rough housing, poking and lightly hitting other students. When the FAST (Horner et al., 2013) was applied to his behaviors, he received a score of 75% on the attention-maintained screening questionnaire.

***Student C***

Student C is a fourth-grade male student who is 9 years old. Student C has been eligible for special education for four years under the primary eligibility of other health impairment for ADD and a secondary eligibility under speech and language impairment. This student engages attention-maintained maladaptive behaviors including interrupting others with inappropriate words and phrases and asking repetitive questions during adult led instruction. When the FAST (Horner et al., 2013) was applied to his behaviors, he received a score of 100% on the attention-maintained screening questionnaire.

***Student D***

Student D is a fifth-grade female student who is ten years old. This student has been eligible for special education for three years under the primary category of intellectual disability and a secondary eligibility of speech and language impairment. Student D engages in attention-seeking maladaptive behaviors including laughing during adult led instructions and when others are speaking,

walking around the classroom during structured time and rolling on the floor during adult led time. When the FAST (Horner et al., 2013) was applied to her behaviors, she received a score of 75% on the attention-maintained screening questionnaires.

### **Classroom and Teacher Participant Demographics**

The classroom in which this study took place was a special day class serving 4th through 6th grade students in a non-categorical classroom. A non-categorically classroom is one that has a variety of educational eligibility across all peers in the class and is not exclusionary to only one profile of student. This classroom had 10 students at the beginning of this study and one student joined during the duration of this research study, totaling 11 students enrolled in the classroom at the conclusion of the study.

The classroom teacher was a second-year teacher with a mild - moderate teaching credential in the state of California who had taught in the same classroom the year previous; however, none of the students enrolled to participate in the study were prior students of this teacher. All students who were enrolled to participate in this study have not had prior experience with the teacher participant and the teacher participant had not previously worked with them before they were enrolled in their classroom. The classroom teacher is 24 years old and has an undergraduate degree in psychology and brain sciences and is a master's degree student who will graduate with a degree in special education in 2023.

### **Study Findings**

#### **Quantitative Research Questions**

The quantitative research questions were analyzed using a Wampold and Warsham (Wampold & Brown, 2005) statistical comparison of mean scores to determine statistical significance between pre-intervention and post-intervention phases, as well as a comparison of means across student participants to determine if the duration of enrollment in the experimental condition impacted the reduction of behaviors observed. The actual research results as well as several of the hypothetical research groupings used for the Wampold and Warsham (Wampold & Brown, 2005) statistical comparison are seen in Table 1. The entire statistical calculations for all possible research groupings can be found in Appendix L. Additionally, a visual analysis was conducted on the multiple baseline design graph comparing the pre-intervention and post-intervention phases and is detailed below in Figure 1.

RQ1: Does using positive reinforcement in parent communication between teachers and parents of students who engage in attention-maintained maladaptive behaviors in the school setting change between pre-intervention and post-intervention?

RQ 2: Is there a more significant reduction in attention-maintained maladaptive behaviors seen with the participants who are in the experimental condition for only one week compared to the participant in the experimental condition for three weeks?

This study explored two quantitative research questions to explore the impacts of positive reinforcement and parent communication between teachers and parents of students who engaged in attention-maintained maladaptive

behaviors in the school setting across pre-intervention and post-interventions as well as if the duration of enrollment in the intervention of the study had a statistically significant impact on behavior improvement. When the data was examined with respect to all possible in the randomized distribution, the obtained result of -11.021 was found to be the 6<sup>th</sup> highest mean difference across all 24 possible outcomes, resulting in a p-value of  $6/24 = 0.25$ , which is not statistically significant with  $\alpha = .05$  (one-tailed).

For R1 it was found that there was no statistically significant difference between the pre-and post-intervention phases across the participants when the Wampold and Warsham (Wampold & Brown, 2005) statistical analysis was conducted. However, when looking at the visual analysis of the multiple baseline design graphs, one can see a clear decrease in each of the participants behaviors from baseline, suggesting a relationship. When the visual analysis is conducted, Student A, Student B, and Student C all demonstrated a decreasing trend in the intervention phase of the experiment. Student D did demonstrate an increase in maladaptive behaviors from the first observation post-intervention to the second observation, post-intervention, however, both observations demonstrated a decreased in levels of attention-seeking behavior when compared to the baseline data. Student A and Student B demonstrated a few occurrences of increase of behavior from the previous data collection day in the post-intervention phase, however, continue to demonstrate an overall decreasing trend in post intervention. Student C demonstrated a continuous decrease in attention seeking maladaptive behavior each day of the post-intervention observation.

**Figure 1**

*Maladaptive Behavior of Student Participants in Baseline and Intervention*

*Phases*



*Note:* Multiple-baseline design depicting the frequency of occurrence (total number of partial intervals where the target behavior occurred out of 60) of four student participants who received a sequentially introduce intervention prior to observations 3, 5, 7, and 9 for Students A, B, C, and D, respectively.

**Table 1**

*Data and Wampold-Warsham partial calculations for the student intervention (all calculations can be found in Appendix L. Four students across 10 observation periods subdivided into baseline and intervention phases.*

Actual Intervention Order (Student A, B, C, D)													
	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student A	30	35 <sup>o</sup>	30	23	23	33	20	10	13	20	32.500	21.500	-11.000
Student B	35	30	30	50 <sup>o</sup>	38	25	29	30	33	29	36.250	30.667	-5.583
Student C	30	32	46	28	44	36 <sup>o</sup>	44	26	12	10	36.000	23.000	-13.000
Student D	42	34	44	41	40	31	42	38 <sup>o</sup>	21	28	39.000	24.500	-14.500
Across Students											35.938	24.917	-11.021
One Possible Alternative Intervention Order (Student A, D, C, B)													
	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student A	30	35 <sup>o</sup>	30	23	23	33	20	10	13	20	32.500	21.500	-11.000
Student D	42	34	44	41	40	31	42	38 <sup>o</sup>	21	28	40.250	33.333	-6.917
Student C	30	32	46	28	44	36 <sup>o</sup>	44	26	12	10	36.000	23.000	-13.000
Student B	35	30	30	50 <sup>o</sup>	38	25	29	30	33	29	33.375	31.000	-2.375
Across Students											35.531	27.208	-8.323
One Possible Alternative Intervention Order (Student C, A, B, D)													
	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student C	30	32	46	28	44	36 <sup>o</sup>	44	26	12	10	31.000	30.750	-0.250
Student A	30	35 <sup>o</sup>	30	23	23	33	20	10	13	20	29.500	19.833	-9.667
Student B	35	30	30	50 <sup>o</sup>	38	25	29	30	33	29	34.667	30.250	-4.417
Student D	42	34	44	41	40	31	42	38 <sup>o</sup>	21	28	39.000	24.500	-14.500
Across Students											33.542	26.333	-7.208
One Possible Alternative Intervention Order (Student B, A, D, C)													
	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student B	35	30	30	50 <sup>o</sup>	38	25	29	30	33	29	32.500	33.000	0.500
Student A	30	35 <sup>o</sup>	30	23	23	33	20	10	13	20	29.500	19.833	-9.667

Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	42	38 °	21	28	38.667	24.000	-14.667
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	<b>44</b>	<b>36</b> °	<b>44</b>	<b>26</b>	12	10	35.750	11.000	-24.750
Across Students											34.104	21.958	-12.146

*Note:* Students have been randomly assigned to the rows of the design. The “ ° ” depict the actual intervention start point for each student. The bold numbers represent the alternative intervention start-point interval that was specified for each student for the Wampold and Warsham calculations.

### Qualitative Research Question

RQ 3: Does the participating teacher believe that frequent communication with parents regarding the positive behaviors during the school day is a strategy that they would be likely to implement in the future for the reduction of attention-maintained maladaptive behaviors in their classroom?

The qualitative research question in this study aimed to address the participating teacher’s viewpoint on the intervention success with student behavior as well as the likelihood of implementation in the future for reducing maladaptive behaviors in the classroom setting. The interview with the teacher was conducted at the conclusion of the data collection with the teacher participant in a classroom with only the researcher and the teacher present. The interview was conducted after students had left campus and the classroom door was locked so that the interview would not be disrupted nor overheard by any student participants or parent participants. The teacher participant was asked open-ended interview questions (See Appendix J) regarding their experience with this research experiment. The interview was recorded on a cell phone owned by the researcher and transcribed and analyze for themes. Since this is a case study



which recruited only one teacher participant, themes were identified across the different questions responded.

### **Ease of Intervention**

When the teacher participant was asked about the ease of intervention and communication with the parent participants, they shared it was a feasible amount of effort and that even the last week of the study where all participants were receiving communication from the teacher would have been doable for the duration of the entire study,

*“I think it was a good amount [of work] I also would have been happy to do all of them for the three times a week, not like as we built up to it, like, I felt like the frequency was fine it wasn't like a huge time commitment”*  
(Teacher Participant, Personal communication, December 15, 2022).

Additionally, the teacher participant made comment regarding that the communication was made easier by utilizing the district wide communication platform that was already widely accepted and used by parents and teachers,  
*“...especially doing it through like the platform we already have I thought the frequency was good”* (Teacher Participant, Personal communication, December 15, 2022).

### **Behavior Change**

When the teacher participant was asked about noticeable impact on attention-seeking maladaptive behavior change with the students enrolled in the study the teacher noted that overall ,there was not a significant impact noticed with three out of four of the participants; however, with one student, Student A,

there was enough noticeable change to have been observed from the teacher participant.

*“I think that it was not that impactful overall.” and, “I think with a specific student [Student’s name] [Student A], I definitely saw an increase in on-task behavior, I thought she followed directions a lot more frequently and I also think that there was definitely, like, a reduced amount of redirection with her so even if she were still, you know, constantly out of seat or like speaking out of turn, that there was less redirection was needed with her to get her back on task or like to sit down” (Teacher Participant, Personal communication, December 15, 2022).*

When the teacher participant was asked if this was a strategy that they would use again in the future to help navigate attention-maintained maladaptive behaviors in the classroom they shared,

*“I definitely would use it in the future, I feel like usually I’m only communicating with parents when my students are having like behavioral challenges or they’re not completing work, or I’m seeing, like, a new behavior in class positive or negative so I felt like it was nice to communicate with parents simply to just share something really small that had happened in the day as positive, and I think my parents probably were quite surprised every time I message them which means that they probably have never, like, received positive praise from school very often or at least*

*not this frequently”* (Teacher Participant, Personal communication, December 15, 2022).

### **Parent Communication**

Teacher participants were also asked regarding the parent’s impact of receiving the positive messages on the student, and if student participants shared with the teacher participant any positive messaging or reinforcement provided from the messages. The teacher participant shared with the researcher that none of the students had directly relayed to her that they had received any special message or other positive impact at home, however, she shared that parents would communicate via response to her message about the communication having an impact on the student directly.

*“I had parents reply and be like, ‘oh that’s amazing, like, I’m going to tell them you told me that later today’ or like, ‘oh that’s amazing, I’m going to let them do something like, I’m going to take them to target or something’ but, I never had a student say so to me”* (Teacher Participant, Personal communication, December 15, 2022).

### **Positive Reinforcement**

The focus of this research was the impact on using positive reinforcement and the impacts of positive communication on behavior. Included in this research study was a training on positive reinforcement with the teacher, and at the conclusion of the study teacher participants were asked about identifying positive behaviors in their students after completing the research study.

*“I was, like, remembering to keep looking out, and I think being more conscious and more aware of looking for positive things, because I knew I needed to message them. I was definitely looking for positive behaviors rather than focusing on remembering like, ‘oh you need to direct them, oh they need to like remind them to keep hands and feet to themselves’ yeah, I was definitely more so looking for positive behaviors throughout the day which I do think had a positive impact on communicating with students”* (Teacher Participant, Personal communication, December 15, 2022).

### **Summary**

While the research study did not yield statistically significant results when analyzed through the Wampold and Warsham (Wampold & Brown, 2005) statistical analysis ( $p=0.25$ ;  $\alpha = .05$  (one-tailed)) the visual analysis of the data does suggest a promising trend towards the decrease of attention-maintained maladaptive behaviors in the classroom. Additionally, the longer that participants were enrolled in the intervention phase of the study suggests a continued decrease overall from the data presented. The qualitative research question demonstrated that the communication with parents, in the opinion of the teacher participant, would be an easy strategy to continue to implement with students in their class. The teacher participant also believed that a noticeable impact on attention maintained maladaptive behaviors in the classroom was demonstrated with one of

the students enrolled, who was also the student enrolled in the study for the longest period.

## CHAPTER 5: DISCUSSION

### **Overview**

The purpose of this multiple baseline multiple case study was to explore the relationship of using positive reinforcement with parents of students in special education and their teachers for the reduction of attention-maintained behaviors within the school setting. Furthermore, this study focused on demonstrating if a functional relationship was shown between positive communication with parents and a reduction in maladaptive behaviors.

### **Summary of Findings**

While the Wampold and Warsham (Wampold & Brown, 2005) statistical analysis did not yield statistically significant results when comparing the actual comparison of means to hypothetical and equally possible randomize assortment from the participants and their intervention group, the visual analysis of the data did suggest a promising downward trend across all participants from their baseline data.

The teacher participant interview shared an ease of intervention with communication to parents with an already established communication portal. They also noted a noticeable improvement in maladaptive attention-seeking behavior across one of the student participants who was in the intervention phase for the longest duration. Additionally, the teacher shared the impact of being more conscious of positive behaviors in their students and being able to see positive behaviors from their students more frequently than they had previously.

### **Discussion of Findings**

## **Behavior change**

Current literature is vast on the impacts of positive reinforcement when directly placed on the individual seeking behavior change (Fefer et al., 2020; Goldman et al., 2019; Kronfli et al., 2021; Schieltz et al., 2019). However, research was limited on how this positive reinforcement system could be utilized in a school setting directly with parent communication as opposed to praising or providing the positive reinforcement directly to the student. This research study demonstrated a decrease in attention seeking maladaptive behaviors from the baseline observations to the intervention phase across all participants. While the results did not reach a level of statistical significance when analyzed with Wampold and Warsham (Wampold & Brown, 2005) statistical analysis, research also demonstrated that behavior change can take a long time (Cooper et al., 2007; Crawford et al., 2021); this study only spanned a duration of five weeks which would be a short time to see lasting behavior change as well as reaching a level of statistical significance (Cooper et al., 2007; Downs et al., 2007 Senn, Bayles & Bruzek, 2020).

Additionally, research shows that positive reinforcement and, reinforcement in general, needs to be immediate to have the most significant payoff in terms of behavior change (Cooper et al., 2007; Crawford et al., 2021). In this study the researcher explored a delayed version of positive reinforcement, in that the teacher participant was communicating with the parents of the positive behaviors that their child engaged in, instead of directly providing that praise to the student. This study also did not place an expectation on the parents to provide

praise at home or have any contact with the student regarding the information that was being shared, which would further demonstrate an impact of a delay in the reinforcement if the reinforcement was never directly provided to the child from the parent.

### **Implementation**

The implementation of the research was described by the participating teacher as “...*especially doing it through like the platform we already have I thought the frequency was good*”. The teacher described that the intervention was only considered easy because of a previously established communication portal between teachers and parents. This has been previously explored in literature as a barrier for parent and school communication (Arnold et al., 2008; Bordalaba & Bochaca, 2019). Some schools do not have established portals and teachers are sometimes giving out personal cell phones, emails, which can be intimidating and decrease the likelihood of teachers sharing personal information with parents for the sake of communication regarding school related matters (Carnett et al., 2021; Shin et al., 202). Additionally, research has shown that parents sometimes are unaware of frequent communication between teachers and the school because it is not an established norm in many areas in public education (Barg, 2019; Lareau 2002, 2003). With an established portal for communication, there is an expectation from the school as well as the parents to utilize that resource to communicate as well as to receive communications from one another (Arnold et al., 2008; Bordalaba & Bochaca, 2019.)



The teacher participant also shared that once they had received training on the impacts of positive reinforcement, they personally found it easier to identify positive behaviors in students in their class. Research has previously demonstrated that more frequent communication with parents from teachers surrounds negative behaviors in the school setting or wrongdoings of a student (Levkovich & Eyal, 2021; McLennan et al., 2020). Having a way for teachers to become more self-aware of positive behaviors and being intentional about notating positive behaviors in the class, can help support students who engage in challenging behaviors (Boelter et al., 2007; Call et al., 2004).

### **Integration of Intervention**

This study demonstrates additional tools that are available to teachers to help support attention-maintained maladaptive behaviors in the school setting. Teachers frequently report feeling overwhelmed when working with students who engage in frequent maladaptive behaviors in the classroom (Bordalba & Bochaca, 2019; Chericoni et al., 2021; Levkovich & Eyal, 2021; Offermans et al., 2022). If the mindset has an ability to shift in a more positive direction, teachers may feel less overwhelmed when facing challenging behaviors in the classroom as well as seeing students who engage in challenging behavior in a more positive lens (Teacher Participant, Personal communication, December 15, 2022).

Additionally, the data from this research suggests that increasing the positive communication with parents of students who engage in maladaptive behaviors in the classroom setting can help teachers facilitate a more productive classroom setting with a reduction in behaviors. With less behaviors occurring in

the classroom, teachers will be able to focus their time and efforts into presenting academic lessons to their students, instead of managing maladaptive behaviors.

### **Parents of Students with Disabilities**

Parents of students with disabilities and behavioral challenges frequently receive communication regarding wrongdoing and negative impact behaviors in the classroom setting (Menzies et al., 2021; Reinke et al., 2008; Turnbull et al., 2021; Tyler et al., 2006). This negative communication has become so frequent where many parents anticipate the communication to be negative before they are able to receive details of a phone call or letter from the school (Freund et al., 2018; Meter et al., 2021). The purpose of this study was to not only change the mindset of teacher participants but also to parents of children who engage in challenging behaviors in school to understand that their students also engage in positives in the classroom as well. During the teacher interview portion of this study one parent had shared with the teacher participant that it was exciting and unexpected to hear positives that their student had engaged in during the day because that was something that they had not experienced in the school setting prior; this parent's experience aligns with previous literature regarding parent communication with students with disabilities and behavior concerns (Menzies et al., 2021; Reinke et al., 200). At least two parent participants in this study specifically reached out or responded to the communication from the teacher participant to share their excitement and pleasure with the message that was sent home by the teacher.

This positive messaging and overall tone when talking about students with disabilities, and students who engage in challenging behaviors, is also an unfortunate stigma of special education and with students with disabilities (Brett et al., 2016; Chericoni et al., 2021; Domenech-Llaberiia et al., 2008, Newman, 2015). This study also aimed to bring more awareness of the positive qualities of students with disabilities and those that engage in challenging behaviors that even though they may have some difficulties, they are not bad children, and that positive characteristics and achievements can be found and are often found in students who engage in challenging behaviors. This is often true of parents who have students in special education that the expectations of the academics and behavior in the school setting are to be set lower than their general education counterparts (Domenech-Llaberiia et al., 2008, Newman, 2015), and that students with behavioral concerns may not meet the same benchmarks as other peers in the same grade or same age level (McLennan et al., 2020; Menzies et al., 2021). This research demonstrates that even on a small multiple case study design that impacts can be made not only on student behavior, but also on parent interaction with their students who engage in attention seeking maladaptive behaviors in classroom settings.

### **Biblical Foundations**

This research leans heavily into the positive impacts that love and praise can have on children. While only a small-scale research study, the data demonstrated a downward trend and maladaptive behaviors implying that positive parenting and praise not only align with the word of God but a meaningful way to

navigate around challenging behaviors. Scripture commands us too be giving praise openly and freely (NIV, 2011), especially during difficult times and when facing challenging behaviors. All children are God's children and are loved regardless of any challenging behaviors or difficult times they may face, and so are their parents, Philippians 4:19 states “And my God will meet all your needs according to the riches of his glory in Christ Jesus”. This research supports that increasing the positive relationship between children and parent can create a more healthy and functional system with dealing with challenging behaviors in the home and can help strengthen a family dynamic and allow families to be aligned with scriptural values.

Being a part of a supportive community is another value that's commonly referenced throughout scripture; Hebrews 10:24-25 says, “and let us consider how to stir up one another to love and good works, not neglecting to meet together, as is the habit of some, but encouraging one another” (NIV, 2011). This research study also demonstrates the impact of fostering a positive relationship with the community surrounding children in our public schools. Increasing the communication and overall contact with agencies that work with children outside of the home can help form a positive relationship across all stakeholders in child rearing.

## **Implications**

### **Behavior change**

Positive and impactful ways of changing behavior are often set aside for more punishing and negative behavior change modalities as often they produce

quicker results in behavior change (Caladarella et al., 2019; Cooper et al., 2007; Downs et al., 2019; Menzies et al., 2021; Nieto & Bode, 2012). However, the impact of this study demonstrates that even on a small scale focusing on positive traits and choosing to differentially reinforce those as opposed to using a punishment procedure can be a reliable and effective way of producing positive behavior change. There is vast research demonstrating the impacts of positive reinforcement (Fefer et al., 2020; Goldman et al., 2019; Kronfli et al., 2021; Schieltz et al., 2019), and this research study continues to add to that database of research; however, it also takes positive reinforcement one step further by separating the impact of the praise to instead of being directly to the recipient but to a third party and even with that distance, behavior change was still able to be observed in a meaningful way.

### **Parenting**

This research also can add to the field of literature surrounding parent communication with students, in that even though it wasn't a direct part of this study, at least two of the parent participants reported having had conversations or producing tangible rewards to their student for the positives they engaged in the school. If parents can transition these skills from school to home and are able to identify positive behaviors in their students in the home setting, positive behavior change can be generalized across both the school and home settings.

Because positive reinforcement is not a subject that is talked about frequently outside of the fields of behavior and of behavioral psychology (Schieltz et al., 2020), many parents may not be aware of the impacts and

possibilities that utilizing positive reinforcement in the home can have. If parents had easier access to understanding the science of behavior, parenting practices could shift into a more positive and accepting tone to replace more punishing practices such as physical punishment, social punishment such as timeouts or withholding preferred activities, these could be replaced by differential reinforcement of positive characteristics and traits engaged in by children. These themes can also be incorporated into parenting classes or taught in the church setting for new parents that may be struggling with children who engage in challenging behaviors and maladaptive behaviors that can be a part of standard stages of development such as the toddler years and teenage years. This research demonstrates that even when positive reinforcement is done from an indirect perspective, there can still be behavior change observed and have a lasting impact on attention seeking behaviors.

### **Community Relationship**

Increasing overall parent involvement and communication with schools can help facilitate a sense of community and belonging among students, teachers, and families in the community (Fefer et al., 2020; Kaminski & Claussen, 2017; Meng, 202). Not only increasing the overall communication but increasing the positive messaging and tonality of what parents are receiving about their children can foster a more positive and supportive environment for students as well as encourage and promote positive parenting and positive engagement with school (Barg, 2019; Houry, Thayer & Cook, 2019). Previous studies have demonstrated the impacts of parental involvement in the school setting and have linked that to

many positive aspects in students' life such as increased grades and attendance, likelihood of going to college, participation in after school activities (Barg, 2019; Fefer et al., 2020; Houry et al., 2019; Kaminski & Claussen, 2017; Meng, 2020; Roopnarine et al., 2006), and continuing to encourage and promote communication between school and parent would have likely continue to foster and encourage these interactions.

### **Limitations**

#### **Duration**

One of the main limitations of this study was the total duration in which the study took place. This study took place over a period of five weeks with one week being baseline behavior and only four weeks of actual intervention. As previous studies have indicated, behavior change takes time (Josilowski-Max & Lambright, 2021; Moskowitz et al., 2017), and limiting this study to a four-week duration limited the total impact that the intervention could have on student behavior. As demonstrated in the data above, the most significant data change across all participants was the student who was enrolled in the study for the longest duration (See Figure 1). If the study had gone for longer periods of time, there would be an increase likelihood that the other participants would have demonstrated a continued decreasing trend.

#### **Number of participants**

One other limitation of this study is the total number of participants. While the intent of the study was to be a smaller scale case study, the minimal number of students needed to participate to be able to utilize a Wampold and Warsham

(Wampold & Brown, 2005) statistical analysis was four, which was the total number of participants who were enrolled in the study. Having the total number of student participants be increased to even six or eight could have had a large impact on the statistical measures increasing the likelihood that the results would have been statistically significant then when compared it to only a four-participant measure. Additionally, the number of teacher participants enrolled in the study was one; while having only one teacher did limit externalizing factors when comparing data, it also limited the generalizability of any possible impact of this intervention.

### **Communication with Parents**

The total number of communication days with parents could also be seen as a limitation. In this study, teacher participants were only required to connect to the parent participants three times during the week instead of contacting them daily or even multiple times a day. The limited contact was intentional in that the researcher wanted the intervention to be feasible for teacher participants, however, it did limit the statistical impact of the intervention by setting a limit to the number of communication touch points between the teacher participants and the parent participants in the study.

## **Recommendations for Future Research**

### **Replication Studies**

One area for future research could be a replication of this study with more student and parent participants or teacher participants included. Having a larger data pool would allow for additional statistical analysis to be conducted as well as



higher statistically significant power when calculating mean differences. Additionally, a replication study where the total duration is longer would be beneficial to determine long-term outcomes of this intervention with attention-maintained student behaviors. Replicating this study with increased contact points with parent participants and teacher participants could also provide insight on how the frequency of communication with parents impacts attention-maintained behaviors and classroom settings.

### **Teacher and Parent Communication**

Future research can also explore the communication styles between different school districts with established portals for parent communication and those that do not have a set, and widely utilized system for communicating with their students' parents. In this study the participating teacher shared that the intervention was easy for them to implement because of the already established portal for communicating information with students in their class. Further research could explore how the ease of communication can impact the use of a study on parent communication and the impacts it has on behaviors in the classroom.

One additional area for future research recommendations would be exploring how different teaching styles and teacher personalities can impact the communication with parents and students in the classroom. There are a variety of different types of teaching styles and ways that children learn, as well as communication styles when discussing maladaptive behaviors with parents. Exploring how these differences can impact and help parents receive the

information being shared by teachers regarding their students' behaviors in the classroom and at school could lead to further insight on more positive teaching styles and positive communication with families and communities.

### **Summary**

This study demonstrates that the use of positive reinforcement with parent communication in schools shows a promising lead into decreasing attention-maintained maladaptive behaviors. The visual analysis of the data for each student participant suggested a decrease in behaviors from the baseline and downward trends from the first week of the experiment. Additionally, the teacher participant shared that their experience with the intervention was easy to use and with at least one participant there was a noticeable difference in behavior observed. This research explored a gap in the current literature about involving parent communication as an intervention for maladaptive attention-maintained behaviors in the classroom. Future research can continue to expand on this promising area of research.

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## APPENDIX A: FUNCTIONAL ANALYSIS SCREENING TOOL (FAST)

<h1 style="margin: 0;">FAST</h1> <hr style="width: 10%; margin: 5px auto;"/> <p style="margin: 0;"><b>Functional Analysis Screening Tool</b></p>
--

Client: \_\_\_\_\_ Date: \_\_\_\_\_

Informant: \_\_\_\_\_ Interviewer: \_\_\_\_\_

**To the Interviewer:** The FAST identifies factors that may influence problem behaviors. Use it only for screening as part of a comprehensive functional analysis of the behavior. Administer the FAST to several individuals who interact with the client frequently. Then use the results to guide direct observation in several different situations to verify suspected behavioral functions and to identify other factors that may influence the problem behavior.

**To the Informant:** Complete the sections below. Then read each question carefully and answer it by circling "Yes" or "No." If you are uncertain about an answer, circle "N/A."

**Informant-Client Relationship**

1. Indicate your relationship to the person:  Parent  Instructor  
 Therapist/Residential Staff \_\_\_\_\_ (Other)
2. How long have you known the person?  Years  Months
3. Do you interact with the person daily?  Yes  No
4. In what situations do you usually interact with the person?  
 Meals  Academic training  
 Leisure  Work or vocational training  
 Self-care \_\_\_\_\_ (Other)

**Problem Behavior Information**

1. Problem behavior (check and describe):  
 Aggression \_\_\_\_\_  
 Self-Injury \_\_\_\_\_  
 Stereotypy \_\_\_\_\_  
 Property destruction \_\_\_\_\_  
 Other \_\_\_\_\_
2. Frequency:  Hourly  Daily  Weekly  Less often
3. Severity:  Mild: Disruptive but little risk to property or health  
 Moderate: Property damage or minor injury  
 Severe: Significant threat to health or safety
4. Situations in which the problem behavior is **most** likely to occur:  
Days/Times \_\_\_\_\_  
Settings/Activities \_\_\_\_\_  
Persons present \_\_\_\_\_
5. Situations in which the problem behavior is **least** likely to occur:  
Days/Times \_\_\_\_\_  
Settings/Activities \_\_\_\_\_  
Persons present \_\_\_\_\_
6. What is usually happening to the person right **before** the problem behavior occurs?  
\_\_\_\_\_  
\_\_\_\_\_
7. What usually happens to the person right **after** the problem behavior occurs?  
\_\_\_\_\_  
\_\_\_\_\_
8. Current treatments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- |  |            |
|--|------------|
| 1. Does the problem behavior occur when the person is not receiving attention or when caregivers are paying attention to someone else?   | Yes No N/A |
| 2. Does the problem behavior occur when the person's requests for preferred items or activities are denied or when these are taken away? | Yes No N/A |
| 3. When the problem behavior occurs, do caregivers usually try to calm the person down or involve the person in preferred activities?    | Yes No N/A |
| 4. Is the person usually well behaved when (s)he is getting lots of attention or when preferred activities are freely available?         | Yes No N/A |
| 5. Does the person usually fuss or resist when (s)he is asked to perform a task or to participate in activities?                         | Yes No N/A |
| 6. Does the problem behavior occur when the person is asked to perform a task or to participate in activities?                           | Yes No N/A |
| 7. If the problem behavior occurs while tasks are being presented, is the person usually given a "break" from tasks?                     | Yes No N/A |
| 8. Is the person usually well behaved when (s)he is not required to do anything?   | Yes No N/A |
| 9. Does the problem behavior occur even when no one is nearby or watching?   | Yes No N/A |
| 10. Does the person engage in the problem behavior even when leisure activities are available?   | Yes No N/A |
| 11. Does the problem behavior appear to be a form of "self-stimulation?"   | Yes No N/A |
| 12. Is the problem behavior <b>less</b> likely to occur when sensory stimulating activities are presented?                               | Yes No N/A |
| 13. Is the problem behavior cyclical, occurring for several days and then stopping?  | Yes No N/A |
| 14. Does the person have recurring painful conditions such as ear infections or allergies? If so, list: _____                            | Yes No N/A |
| 15. Is the problem behavior <b>more</b> likely to occur when the person is ill?  | Yes No N/A |
| 16. If the person is experiencing physical problems, and these are treated, does the problem behavior usually go away?                   | Yes No N/A |

**Scoring Summary**

Circle the number of each question that was answered "Yes" and enter the number of items that were circled in the "Total" column.

Items Circled "Yes"	Total	Potential Source of Reinforcement
1 2 3 4	___	Social (attention/preferred items)
5 6 7 8	___	Social (escape from tasks/activities)
9 10 11 12	___	Automatic (sensory stimulation)
13 14 15 16	___	Automatic (pain attenuation)

From Iwata, B.A., DeLeon, I.G., & Roscoe, E.M. (2013). Reliability and validity of the Functional Analysis Screening Tool. *Journal of Applied Behavior Analysis, 46*, 271-284.

## APPENDIX B: TEACHER RECRUIT SCRIPT

Hello teacher,

As a doctoral student in the School of Psychology at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my research is to explore how increasing positive parent communication between school and home can impact attention-seeking behaviors in the classroom, and if you meet my participant criteria and are interested, I would like to invite you to join my study.

Participants must be 18 years of age or older and be a special education teacher. Participants, if willing, will be asked to communicate frequently with parents of students in your class who engage in attention-maintained maladaptive behaviors: Each student enrolled in the study will be randomly assigned a week to begin the intervention. Teachers will be asked to communicate via email, phone call or in-person, positive behaviors that occurred with parents three times a week for each student in the intervention phase. It should take approximately 5 minutes per contact to complete the communication. Additionally, participants will be asked to attend a 60-minute training with the researcher before the study begins and a recorded interview at the conclusion of the study for approximately 60 minutes. Names and other identifying information will be requested as part of this study, but the information will remain confidential.

Would you like to participate?

[Yes] Great, I will send you an email with further information and details.

[No] I understand. Thank you for your time.

A consent document will be emailed to you. The consent document contains additional information about my research. If you choose to participate, you will need to type your name and the date on the consent document and email it to me prior to participating in the study.

Participants will receive a \$200 Target gift card for their participation.

Thank you for your time. Do you have any questions?



## APPENDIX C: TEACHER CONSENT FORMS

### Teacher Consent

**Title of the Project:** Positively Reinforcing Parent Communication with Students in Special Education Classrooms for The Reduction of Attention Maintained Maladaptive Behaviors in A School Setting

**Principal Investigator:** Jennifer Harmon, MS, BCBA, PhD Candidate, Liberty University

#### Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be 18 years of age or older and a teacher in a special education classroom. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

#### What is the study about and why is it being done?

The purpose of this study is to explore how increasing positive parent communication between school and home can impact attention-seeking behaviors in the classroom.

#### What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following things:

1. Complete a training session on communication tactics taught by the researcher. The session will last approximately sixty minutes and will be conducted in person.
2. Communicate with parents by sending positive emails, making phone calls, or using other forms of communication about student behavior three times per week, per student in the intervention phase for four to seven weeks. This will take approximately 5 minutes to complete per student enrolled in the study.
3. Complete a sixty-minute interview with the researcher. The interview will be conducted in person and will be audio-recorded.

#### How could you or others benefit from this study?

Participants will receive a training on how positive reinforcement and positive communication can impact behavior change with students in their class. This skill can create more positive relationships with the students they serve and the families in the school community.

Benefits to society include increased research on positive interventions for supporting students with attention-maintained maladaptive behaviors within the school setting. The increase of positive communications can help support a more prosocial and positive classroom environment even during a challenging behavioral episode. This study also can increase the relationship between school and parents and create a supportive, wrap around environment for supporting those individuals with special needs.

#### What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

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The researcher is a mandated reporter and must report any information or suspicion regarding child abuse, child neglect, elder abuse, or intent to harm self or others as required by law.

#### **How will personal information be protected?**

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records. Data collected as part of this study may be shared for use in future research studies or with other researchers. If data collected from the participants is shared, any information that could identify them, if applicable, will be removed before the data is shared.

- Participant responses will be kept confidential through the use of code names. Interviews will be conducted in a location where others will not easily overhear the conversation.
- Data will be stored on a password-locked computer and in a locked cabinet. The data may be used in future presentations. After three years, all electronic records will be deleted, and all physical records will be shredded.
- Interviews will be recorded and transcribed. Recordings will be stored on a password-locked computer for three years and then erased. Only the researcher will have access to these recordings.

#### **How will you be compensated for being part of the study?**

Participants will be compensated for participating in this study. At the conclusion of the study, participants will receive a \$200 Target gift card. Participants must complete all of the procedures listed above to receive the compensation. Participants will be able to receive either a digital or physical gift card. The gift card will be emailed to participants or available for pick up 2 weeks after the completion of the study.

#### **Does the researcher have any conflicts of interest?**

The researcher serves as a Behavior Manager at [REDACTED]. To limit potential or perceived conflicts, the researcher will conduct the study at a school other than one she is assigned to. This disclosure is made so that you can decide if this relationship will affect your willingness to participate in this study. No action will be taken against an individual based on her or his decision to participate in this study.

#### **Is study participation voluntary?**

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

#### **What should you do if you decide to withdraw from the study?**

If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you will be destroyed immediately and will not be included in this study.

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**Whom do you contact if you have questions or concerns about the study?**

The researcher conducting this study is Jennifer Harmon. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at [REDACTED] or [REDACTED]. You may also contact the researcher's faculty sponsor, Dr. Kelly Gorbett, at [REDACTED].

**Whom do you contact if you have questions about your rights as a research participant?**

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at [irb@liberty.edu](mailto:irb@liberty.edu).

*Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.*

**Your Consent**

By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

*I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.*

The researcher has my permission to audio-record me as part of my participation in this study.

\_\_\_\_\_  
Printed Subject Name

\_\_\_\_\_  
Signature & Date

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## APPENDIX D: TEACHER TRAINING AND SCRIPTS

**Teacher Training and Example Scripts****POSITIVELY REINFORCING PARENT COMMUNICATION WITH STUDENTS IN SPECIAL EDUCATION CLASSROOMS FOR THE REDUCTION OF ATTENTION MAINTAINED MALADAPTIVE BEHAVIORS IN A SCHOOL SETTING**

**Principal Investigator:** Jennifer Harmon, MS, BCBA, Ph.D. Candidate, Liberty University

**Training**

1. Communication Expectations
  - a. Communication should include one specific example of a positive interaction the student had
  - b. No negative accounts/ behaviors should be mentioned within the communication for this study
    - i. Recounting the absence of a behavior is allowed for this research; for example, saying “student didn’t punch anyone today” is not acceptable. The teacher could share “student had a safe body,” which would be acceptable.
  - c. If providing communication via email, please BCC the researcher. If a note home is sent, please make a copy for the researcher. If a phone call home is done or a discussion is had in person, please document the date of the interaction for the record.
  - d. Three contact points are required for the duration of the intervention phase for each student. These contacts must occur on three separate days (i.e., one contact per day is the maximum allowed. Teachers cannot send three emails in one day for the weekly allotment. Teachers can select which days to contact parents as long as contact is made on three of the five school days.
2. When Behaviors occur
  - a. Respond to behaviors how you usually would in your classroom or how detailed in a student’s behavior intervention plan
  - b. NO intervention is being placed on a student; this research addresses intervention with parents only. The student participant should have no changes to their day, interventions, or interactions with teacher and staff.

**Example Scripts**

Example 1: The student had a great morning! They led the class to recess and shared a ball with another peer. When it was time to transition, student immediately returned to the classroom and began their assignment with the class. They did excellent work today!

Example 2: Student was observed to help another peer with their math assignment unprompted today. Seeing them work together and problem solve appropriately with the lesson was so nice. I am so proud of their effort and communication.

Example 3: Today, students independently told me that they needed a break before the classroom began their test. Student was given a 4-minute break, and when the timer went off, they immediately returned to their desk and began working on the test. Student was able to identify that a break was needed and advocated for themselves and had a great day!

## APPENDIX E: RECRUITMENT FLYER

## Research Participants Needed

Positively Reinforcing Parent Communication with Students in Special Education Classrooms for the Reduction of Attention Maintained Maladaptive Behaviors in a School Setting

- Is your student in the 4-6th grade and 9-12 years old?
- Is your student enrolled in a special education classroom who receives special education services through an Individual Education Plan (IEP)?
- Does your student engage in maladaptive behaviors, that are attention-maintained, in school?

If you answered **yes** to all of the questions listed above, your student may be eligible to participate in a research study.

The purpose of this study is to explore how increasing positive parent communication between school and home can impact attention-seeking behaviors in the classroom.

Participants will be asked to allow the researcher to observe them in the classroom. The observation will occur 2 times per week until the completion of the study. This could be anywhere from 4-7 weeks. The parents of participants will also receive communication, regarding their students' daily performance, from their students' teacher 3 times per week for the same duration of time. Benefits could include more frequent positive communication with your student's teacher and increased awareness of student behavior at school. Your student could experience increased positive interactions and communication with their classroom teachers. The parents of participants will receive a **\$25 Target Gift** card at the conclusion of the study. Names and other identifying information will be requested as part of this study, but participant identities will not be disclosed.

If you or your student would like to participate, contact the researcher using the information below.

A consent document will be emailed to you.

Jennifer Harmon, a doctoral candidate in the Developmental Psychology Department, School of Psychology at Liberty University, is conducting this study.

**Please contact Jennifer Harmon at [REDACTED] or [REDACTED] for more information.**

Liberty University IRB – 1971 University Blvd., Green Hall 2845, Lynchburg, VA 24515

## APPENDIX F: CONSENT FOR PARENT PARTICIPANTS

### Parental Consent

**Title of the Project:** Positively Reinforcing Parent Communication with Students in Special Education Classrooms for The Reduction of Attention Maintained Maladaptive Behaviors in A School Setting

**Principal Investigator:** Jennifer Harmon, MS, BCBA, PhD Candidate, Liberty University

#### Invitation to be Part of a Research Study

Your student is invited to participate in a research study. Participants must be in the 4-6th grade and 9-12 years old, must be enrolled in a special education classroom and receive special education services through an Individual Education Plan (IEP), and must engage in maladaptive behaviors, that are attention-maintained, in school. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether your student to take part in this research project.

#### What is the study about and why are we doing it?

The purpose of this study is to explore how increasing positive parent communication between school and home can impact attention-seeking behaviors in the classroom.

#### What will participants be asked to do in this study?

If you agree to allow your student to be in this study, I will ask him or her to do the following:

1. Allow the researcher to observe them in the classroom. The observation will occur 2 times per week until the completion of the study. This could be anywhere from 4-7 weeks.
2. The parents of participants will also receive communication regarding their students' daily performance from their students' teacher 3 times per week for the duration of the study.

#### How could participants or others benefit from this study?

The direct benefits parents should expect to receive from taking part in this study include more frequent communication with their students' classroom teacher and being made aware of the occurrences of the school day. This can lead to more positive and social interactions with their students. Another direct benefit could include support for the continuation of praise by being more knowledgeable of school happenings and this communication can lead to additional follow through from parents on educational and academic tasks assigned to their students. The possible benefits for students include having more positive communication home to parents, enabling teachers to share this feedback with them directly, and building a more positive relationship with their classroom staff.

Benefits to society include increased research on positive interventions for supporting students with attention-maintained maladaptive behaviors within the school setting. The increase of positive communications can help support a more prosocial and positive classroom environment even during a challenging behavioral episode. This study also can increase the relationship

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between school and parents and create a supportive, wrap around environment for supporting those individuals with special needs.

#### **What risks might participants experience from being in this study?**

The risks involved in this study are minimal, which means they are equal to the risks your student would encounter in everyday life.

The researcher is a mandated reporter and must report any information or suspicion regarding child abuse, child neglect, elder abuse or intent to harm self or others as required by law.

#### **How will personal information be protected?**

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records. Data collected as part of this study may be shared for use in future research studies or with other researchers. If data collected from the participants is shared, any information that could identify them, if applicable, will be removed before the data is shared.

- Participant responses will be kept confidential through the use of code names (e.g., Student A, Student B, etc.).
- Data will be stored on a password-locked computer and in a locked cabinet. The data may be used in future presentations. After three years, all electronic records will be deleted, and all physical records will be shredded.

#### **How will participants be compensated for being part of the study?**

The parents of participants will be compensated for participating in this study. At the conclusion of this study, the parents will receive one \$25 Target gift card. The parents of participants will be able to receive either a digital or physical gift card. The gift card will be emailed to the parents of participants or available for pick up 2 weeks after the completion of the study.

#### **What conflicts of interest exist in this study?**

The researcher serves as a Behavior Manager at [REDACTED]. To limit potential or perceived conflicts, the researcher will conduct the study at a school other than one she is assigned to. This disclosure is made so that you can decide if this relationship will affect your willingness to allow your student to participate in this study. No action will be taken against an individual based on her or his decision to participate in this study.

#### **Is study participation voluntary?**

Participation in this study is voluntary. Your decision whether or not to allow your student to participate will not affect your or his or her current or future relations with Liberty University. If you decide to allow your student to participate, she or he is free to not answer any question or withdraw at any time without affecting those relationships.

#### **What should be done if a participant wishes to withdraw from the study?**

If you choose to withdraw your student from the study or your student chooses to withdraw, please contact the researcher at the email address/phone number included in the next paragraph.



Should you choose to withdraw her or him, or should your student choose to withdraw, data collected from your student will be destroyed immediately and will not be included in this study.

**Whom do you contact if you have questions or concerns about the study?**

The researcher conducting this study is Jennifer Harmon. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at [REDACTED] or [REDACTED]. You may also contact the researcher's faculty sponsor, Dr. Kelly Gorbett, at [REDACTED].

**Whom do you contact if you have questions about rights as a research participant?**

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at [irb@liberty.edu](mailto:irb@liberty.edu).

*Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University*

**Your Consent**

By signing this document, you are agreeing to allow your student to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

*I have read and understood the above information. I have asked questions and have received answers. I consent to allow my student to participate in the study.*

\_\_\_\_\_  
Printed Child's/Student's Name

\_\_\_\_\_  
Parent's Name and Signature

\_\_\_\_\_  
Date

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## APPENDIX G : CHILD ASSENT FORM

**Child Assent to Participate in a Research Study*****What is the name of the study and who is doing the study?***

The name of the study is Positively Reinforcing Parent Communication with Students in Special Education Classrooms for the Reduction of Attention Maintained Maladaptive Behaviors in a School Setting, and the person doing the study is Jennifer Harmon.

***Why is Jennifer Harmon doing this study?***

Jennifer wants to know how parent communication can improve behavior in schools.

***Why am I being asked to be in this study?***

You are being asked to be in this study because you are in 4<sup>th</sup> through 6<sup>th</sup> grade, are between the ages of 9 and 12 years old, are enrolled in a special education classroom, receive special education services through an individual education plan, and engage in maladaptive behaviors that in school that are attention maintained.

***If I decide to be in the study, what will happen and how long will it take?***

If you decide to be in this study, you will continue to come to school as usual and be asked to allow Jennifer to observe you in class. Jennifer Harmon will be in the classroom two times per week and will be observing the class for four to seven weeks.

***Do I have to be in this study?***

No, you do not have to be in this study. If you want to be in this study, then tell the researcher. If you don't want to, it's OK to say no. The researcher will not be angry. You can say yes now and change your mind later. It's up to you.

***What if I have a question?***

You can ask questions any time. You can ask now. You can ask later. You can talk to the researcher. If you do not understand something, please ask the researcher to explain it to you again.

Signing your name below means that you want to be in the study.

---

 Signature of Child/Witness

Date

Jennifer Harmon

Dr. Kelly Gorbett

Liberty University Institutional Review Board  
1971 University Blvd, Green Hall 2845, Lynchburg, VA 24515  
irb@liberty.edu

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IRB-FY22-23-192  
Approved on 10-20-2022

## APPENDIX H: IRB APPROVAL LETTER

**LIBERTY UNIVERSITY**  
INSTITUTIONAL REVIEW BOARD

October 20, 2022

Jennifer Harmon  
Kelly Gorbett

Re: IRB Approval - IRB-FY22-23-192 POSITIVELY REINFORCING PARENT COMMUNICATION WITH STUDENTS IN SPECIAL EDUCATION CLASSROOMS FOR THE REDUCTION OF ATTENTION MAINTAINED MALADAPTIVE BEHAVIORS IN A SCHOOL SETTING

Dear Jennifer Harmon, Kelly Gorbett,

We are pleased to inform you that your study has been approved by the Liberty University Institutional Review Board (IRB). This approval is extended to you for one year from the following date: October 20, 2022. If you need to make changes to the methodology as it pertains to human subjects, you must submit a modification to the IRB. Modifications can be completed through your Cayuse IRB account.

Your study falls under the expedited review category (45 CFR 46.110), which is applicable to specific, minimal risk studies and minor changes to approved studies for the following reason(s):

7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

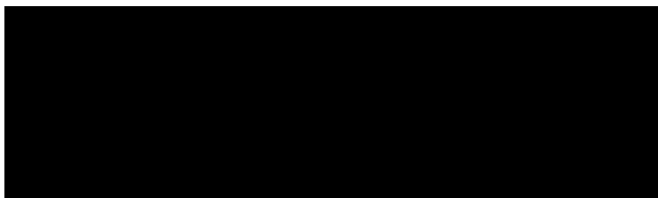
Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Thank you for your cooperation with the IRB, and we wish you well with your research project.

Sincerely,

**G. Michele Baker, MA, CIP**  
*Administrative Chair of Institutional Research*  
**Research Ethics Office**

APPENDIX I: PERMISSION LETTER FROM SCHOOL DISTRICT



October 2, 2022

Jennifer Harmon  
Ph.D. Candidate



Dear Jennifer Harmon,

After careful review of your research proposal entitled "Positively Reinforcing Parent Communication with Students in Special Education Classrooms for the Reduction of Attention-Maintained Maladaptive Behaviors in a School Setting", I have decided to grant you permission to:

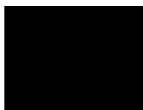
- Invite staff members to participate in your study
- Conduct your study at [redacted]

Check the following boxes, as applicable:

I grant permission for Jennifer Harmon to contact parents of students in Special Education classrooms at the identified school sites to invite them to participate in her research study.

I grant permission for Jennifer Harmon to Conduct her research study titled "Positively Reinforcing Parent Communication with Students in Special Education Classrooms for the Reduction of Attention-Maintained Maladaptive Behaviors in a School Setting" at [redacted]

Sincerely,



Superintendent



Board of Education



## APPENDIX J: TEACHER INTERVIEW QUESTIONS

**Teacher Post-Intervention Questionnaire****POSITIVELY REINFORCING PARENT COMMUNICATION WITH STUDENTS IN  
SPECIAL EDUCATION CLASSROOMS FOR THE REDUCTION OF ATTENTION  
MAINTAINED MALADAPTIVE BEHAVIORS IN A SCHOOL SETTING**

**Principal Investigator:** Jennifer Harmon, MS, BCBA, PhD Candidate, Liberty University

<b>Post Intervention</b>
--------------------------

1. How was the frequency of communication with families?
2. Do you feel there was a noticeable impact on behavior change with students in the classroom for the targeted attention-maintained behaviors?
3. Is this a strategy you would continue to use in the future? Why or why not?
4. Did your students mention the communication with their parents during the school day? If so, what was shared and their response?
5. Do you find it easier now to identify positive behaviors with your students than you did prior to the beginning of the study? Why or why not?

APPENDIX K: COPYRIGHT PERMISSIONS FOR FUNCTIONAL ANALYSIS  
SCREENING TOOL (FAST)

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Jul 18, 2022

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## APPENDIX L – WAMPOLD-WARSHAM FULL STATISTICAL ANALYSIS

Actual Intervention Order (Student A, B, C, D)													
	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student A	<b>30</b>	<b>35</b> °	30	23	23	33	20	10	13	20	32.500	21.500	-11.000
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50</b> °	38	25	29	30	33	29	36.250	30.667	-5.583
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	<b>44</b>	<b>36</b> °	44	26	12	10	36.000	23.000	-13.000
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	<b>42</b>	<b>38</b> °	21	28	39.000	24.500	-14.500
Across Students											35.938	24.917	-11.021

One Possible Alternative Intervention Order (Student B, A, D, C)													
	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student B	<b>35</b>	<b>30</b>	30	<b>50</b> °	38	25	29	30	33	29	32.500	33.000	0.500
Student A	<b>30</b>	<b>35</b> °	<b>30</b>	<b>23</b>	23	33	20	10	13	20	29.500	19.833	-9.667
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	<b>42</b>	<b>38</b> °	21	28	38.667	24.000	-14.667
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	<b>44</b>	<b>36</b> °	<b>44</b>	<b>26</b>	12	10	35.750	11.000	-24.750
Across Students											34.104	21.958	-12.146

One Possible Alternative Intervention Order (Student A, B, D, C)													
	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student A	<b>30</b>	<b>35</b> °	30	23	23	33	20	10	13	20	32.500	21.500	-11.000
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50</b> °	38	25	29	30	33	29	36.250	30.667	-5.583
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	<b>42</b>	<b>38</b> °	21	28	38.667	32.250	-6.417
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	<b>44</b>	<b>36</b> °	<b>44</b>	<b>26</b>	12	10	35.750	11.000	-24.750
Across Students											35.792	23.854	-11.938

One Possible Alternative Intervention Order (Student A, D, B, C)													
	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student A	<b>30</b>	<b>35</b> °	30	23	23	33	20	10	13	20	32.500	21.500	-11.000
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	<b>42</b>	<b>38</b> °	21	28	40.250	33.333	-6.917
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50</b> °	<b>38</b>	<b>25</b>	29	30	33	29	34.667	30.250	-4.417
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	<b>44</b>	<b>36</b> °	<b>44</b>	<b>26</b>	12	10	35.750	11.000	-24.750
Across Students											35.792	24.021	-11.771

One Possible Alternative Intervention Order (Student D, B, A, C)													
	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student D	<b>42</b>	<b>34</b>	44	41	40	31	42	<b>38</b> °	21	28	38.000	35.625	-2.375
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50</b> °	38	25	29	30	33	29	36.250	30.667	-5.583

Student A	<b>30</b>	<b>35</b> ◦	<b>30</b>	<b>23</b>	<b>23</b>	<b>33</b>	20	10	13	20	29.000	15.750	-13.250
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	<b>44</b>	<b>36</b> ◦	<b>44</b>	<b>26</b>	12	10	35.750	11.000	-24.750
Across Students											34.750	23.260	-11.490

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One Possible Alternative Intervention Order (Student B, D, A, C)

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	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student B	<b>35</b>	<b>30</b>	30	50 ◦	38	25	29	30	33	29	32.500	33.000	0.500
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	40	31	42	38 ◦	21	28	40.250	33.333	-6.917
Student A	<b>30</b>	<b>35</b> ◦	<b>30</b>	<b>23</b>	<b>23</b>	<b>33</b>	20	10	13	20	29.000	15.750	-13.250
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	<b>44</b>	<b>36</b> ◦	<b>44</b>	<b>26</b>	12	10	35.750	11.000	-24.750
Across Students											34.375	23.271	-11.104

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Actual Intervention Order (Student A, B, C, D)

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	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student A	<b>30</b>	<b>35</b> ◦	30	23	23	33	20	10	13	20	32.500	21.500	-11.000
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50</b> ◦	38	25	29	30	33	29	36.250	30.667	-5.583
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	<b>44</b>	<b>36</b> ◦	<b>44</b>	<b>26</b>	12	10	36.000	23.000	-13.000
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	<b>42</b>	<b>38</b> ◦	21	28	39.000	24.500	-14.500
Across Students											35.938	24.917	-11.021

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One Possible Alternative Intervention Order (Student D, A, B, C)

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	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student D	<b>42</b>	<b>34</b>	44	41	40	31	42	38 ◦	21	28	38.000	35.625	-2.375
Student A	<b>30</b>	<b>35</b> ◦	<b>30</b>	<b>23</b>	23	33	20	10	13	20	29.500	19.833	-9.667
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50</b> ◦	<b>38</b>	<b>25</b>	29	30	33	29	34.667	30.250	-4.417
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	<b>44</b>	<b>36</b> ◦	<b>44</b>	<b>26</b>	12	10	35.750	11.000	-24.750
Across Students											34.479	24.177	-10.302

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One Possible Alternative Intervention Order (Student B, A, C, D)

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	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student B	<b>35</b>	<b>30</b>	30	50 ◦	38	25	29	30	33	29	32.500	33.000	0.500
Student A	<b>30</b>	<b>35</b> ◦	<b>30</b>	<b>23</b>	23	33	20	10	13	20	29.500	19.833	-9.667
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	<b>44</b>	<b>36</b> ◦	<b>44</b>	<b>26</b>	12	10	36.000	23.000	-13.000
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	<b>42</b>	<b>38</b> ◦	21	28	39.000	24.500	-14.500
Across Students											34.250	25.083	-9.167

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One Possible Alternative Intervention Order (Student C, B, A, D)

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	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
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Student C	<b>30</b>	<b>32</b>	46	28	44	36°	44	26	12	10	31.000	30.750	-0.250
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50°</b>	38	25	29	30	33	29	36.250	30.667	-5.583
Student A	<b>30</b>	<b>35°</b>	<b>30</b>	<b>23</b>	<b>23</b>	<b>33</b>	20	10	13	20	29.000	15.750	-13.250
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	<b>42</b>	<b>38°</b>	21	28	39.000	24.500	-14.500
Across Students											33.813	25.417	-8.396

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One Possible Alternative Intervention Order (Student A, D, C, B)

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	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student A	<b>30</b>	<b>35°</b>	30	23	23	33	20	10	13	20	32.500	21.500	-11.000
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	40	31	42	38°	21	28	40.250	33.333	-6.917
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	<b>44</b>	<b>36°</b>	44	26	12	10	36.000	23.000	-13.000
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50°</b>	<b>38</b>	<b>25</b>	<b>29</b>	<b>30</b>	33	29	33.375	31.000	-2.375
Across Students											35.531	27.208	-8.323

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One Possible Alternative Intervention Order (Student B, C, A, D)

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	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student B	<b>35</b>	<b>30</b>	30	50°	38	25	29	30	33	29	32.500	33.000	0.500
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	44	36°	44	26	12	10	34.000	28.667	-5.333
Student A	<b>30</b>	<b>35°</b>	<b>30</b>	<b>23</b>	<b>23</b>	<b>33</b>	20	10	13	20	29.000	15.750	-13.250
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	<b>42</b>	<b>38°</b>	21	28	39.000	24.500	-14.500
Across Students											33.625	25.479	-8.146

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One Possible Alternative Intervention Order (Student A, C, B, D)

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	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student A	<b>30</b>	<b>35°</b>	30	23	23	33	20	10	13	20	32.500	21.500	-11.000
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	44	36°	44	26	12	10	34.000	28.667	-5.333
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50°</b>	<b>38</b>	<b>25</b>	29	30	33	29	34.667	30.250	-4.417
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	<b>42</b>	<b>38°</b>	21	28	36.188	24.500	-11.688
Across Students											34.339	26.229	-8.109

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One Possible Alternative Intervention Order (Student D, B, C, A)

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	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student D	<b>42</b>	<b>34</b>	44	41	40	31	42	38°	21	28	38.000	35.625	-2.375
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50°</b>	38	25	29	30	33	29	36.250	30.667	-5.583
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	<b>44</b>	<b>36°</b>	44	26	12	10	36.000	23.000	-13.000
Student A	<b>30</b>	<b>35°</b>	<b>30</b>	<b>23</b>	<b>23</b>	<b>33</b>	<b>20</b>	<b>10</b>	13	20	25.500	16.500	-9.000
Across Students											33.938	26.448	-7.490

## One Possible Alternative Intervention Order (Student C, A, B, D)

	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student C	<b>30</b>	<b>32</b>	46	28	44	36	44	26	12	10	31.000	30.750	-0.250
Student A	<b>30</b>	<b>35</b>	<b>30</b>	<b>23</b>	23	33	20	10	13	20	29.500	19.833	-9.667
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50</b>	<b>38</b>	<b>25</b>	29	30	33	29	34.667	30.250	-4.417
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	<b>42</b>	<b>38</b>	21	28	39.000	24.500	-14.500
Across Students											33.542	26.333	-7.208

## One Possible Alternative Intervention Order (Student B, D, C, A)

	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student B	<b>35</b>	<b>30</b>	30	50	38	25	29	30	33	29	32.500	33.000	0.500
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	40	31	42	38	21	28	40.250	33.333	-6.917
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	<b>44</b>	<b>36</b>	44	26	12	10	36.000	23.000	-13.000
Student A	<b>30</b>	<b>35</b>	<b>30</b>	<b>23</b>	<b>23</b>	<b>33</b>	<b>20</b>	<b>10</b>	13	20	25.500	16.500	-9.000
Across Students											33.563	26.458	-7.104

## One Possible Alternative Intervention Order (Student D, A, C, B)

	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student D	<b>42</b>	<b>34</b>	44	41	40	31	42	38	21	28	38.000	35.625	-2.375
Student A	<b>30</b>	<b>35</b>	<b>30</b>	<b>23</b>	23	33	20	10	13	20	29.500	19.833	-9.667
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	<b>44</b>	<b>36</b>	44	26	12	10	36.000	23.000	-13.000
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50</b>	<b>38</b>	<b>25</b>	<b>29</b>	<b>30</b>	33	29	33.375	31.000	-2.375
Across Students											34.219	27.365	-6.854

## One Possible Alternative Intervention Order (Student A, C, D, B)

	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student A	<b>30</b>	<b>35</b>	30	23	23	33	20	10	13	20	32.500	21.500	-11.000
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	44	36	44	26	12	10	34.000	28.667	-5.333
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	42	38	21	28	38.667	32.250	-6.417
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50</b>	<b>38</b>	<b>25</b>	<b>29</b>	<b>30</b>	33	29	33.375	31.000	-2.375
Across Students											34.635	28.354	-6.281

## One Possible Alternative Intervention Order (Student D, C, A, B)

	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student D	<b>42</b>	<b>34</b>	44	41	40	31	42	38	21	28	38.000	35.625	-2.375
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	44	36	44	26	12	10	34.000	28.667	-5.333
Student A	<b>30</b>	<b>35</b>	<b>30</b>	<b>23</b>	<b>23</b>	<b>33</b>	20	10	13	20	29.000	15.750	-13.250
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50</b>	<b>38</b>	<b>25</b>	<b>29</b>	<b>30</b>	33	29	33.375	31.000	-2.375

Across Students 33.594    27.760    -5.833

One Possible Alternative Intervention Order (Student C, D, A, B)

	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student C	<b>30</b>	<b>32</b>	46	28	44	36 °	44	26	12	10	31.000	30.750	-0.250
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	40	31	42	38 °	21	28	40.250	33.333	-6.917
Student A	<b>30</b>	<b>35 °</b>	<b>30</b>	<b>23</b>	<b>23</b>	<b>33</b>	20	10	13	20	29.000	15.750	-13.250
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50 °</b>	<b>38</b>	<b>25</b>	<b>29</b>	<b>30</b>	33	29	33.375	31.000	-2.375
Across Students											33.406	27.708	-5.698

One Possible Alternative Intervention Order (Student C, D, B, A)

	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student C	<b>30</b>	<b>32</b>	46	28	44	36 °	44	26	12	10	31.000	30.750	-0.250
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	40	31	42	38 °	21	28	40.250	33.333	-6.917
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50 °</b>	<b>38</b>	<b>25</b>	29	30	33	29	36.667	30.250	-6.417
Student A	<b>30</b>	<b>35 °</b>	<b>30</b>	<b>23</b>	<b>23</b>	<b>33</b>	<b>20</b>	<b>10</b>	13	20	25.500	16.500	-9.000
Across Students											33.354	27.708	-5.646

One Possible Alternative Intervention Order (Student C, B, D, A)

	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student C	<b>30</b>	<b>32</b>	46	28	44	36 °	44	26	12	10	31.000	30.750	-0.250
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50 °</b>	<b>38</b>	<b>25</b>	29	30	33	29	36.250	30.667	-5.583
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	42	38 °	21	28	38.667	32.250	-6.417
Student A	<b>30</b>	<b>35 °</b>	<b>30</b>	<b>23</b>	<b>23</b>	<b>33</b>	<b>20</b>	<b>10</b>	13	20	25.500	16.500	-9.000
Across Students											32.854	27.542	-5.313

One Possible Alternative Intervention Order (Student D, C, B, A)

	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student D	<b>42</b>	<b>34</b>	44	41	40	31	42	38 °	21	28	38.000	35.625	-2.375
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	44	36 °	44	26	12	10	34.000	28.667	-5.333
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50 °</b>	<b>38</b>	<b>25</b>	29	30	33	29	34.667	30.250	-4.417
Student A	<b>30</b>	<b>35 °</b>	<b>30</b>	<b>23</b>	<b>23</b>	<b>33</b>	<b>20</b>	<b>10</b>	13	20	25.500	16.500	-9.000
Across Students											33.042	27.760	-5.281

One Possible Alternative Intervention Order (Student B, C, D, A)

	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student B	<b>35</b>	<b>30</b>	30	50 °	38	25	29	30	33	29	32.500	33.000	0.500
Student C	<b>30</b>	<b>32</b>	<b>46</b>	<b>28</b>	44	36 °	44	26	12	10	34.000	28.667	-5.333



Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	42	38 °	21	28	38.667	32.250	-6.417
Student A	<b>30</b>	<b>35 °</b>	<b>30</b>	<b>23</b>	<b>23</b>	<b>33</b>	<b>20</b>	<b>10</b>	13	20	25.500	16.500	-9.000
Across Students											32.667	27.604	-5.063

One Possible Alternative Intervention Order (Student C, A, D, B)

	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	A Mean	B Mean	B-A Mean
Student C	<b>30</b>	<b>32</b>	46	28	44	36 °	44	26	12	10	31.000	30.750	-0.250
Student A	<b>30</b>	<b>35 °</b>	<b>30</b>	<b>23</b>	23	33	20	10	13	20	29.500	19.833	-9.667
Student D	<b>42</b>	<b>34</b>	<b>44</b>	<b>41</b>	<b>40</b>	<b>31</b>	42	38 °	21	28	33.833	32.250	-1.583
Student B	<b>35</b>	<b>30</b>	<b>30</b>	<b>50 °</b>	<b>38</b>	<b>25</b>	<b>29</b>	<b>30</b>	33	29	33.375	31.000	-2.375
Across Students											31.927	28.458	-3.469