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Exploring the Impact of Increased Opportunities to Respond  
on the Behavior of Middle School Students with  
Emotional and Behavior Disorders

A dissertation submitted in partial satisfaction of the  
requirements for the degree Doctor of Philosophy  
in Special Education

by

Elizabeth Raquel GarciaDubon

2018

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## ABSTRACT OF THE DISSERTATION

Exploring the Impact of Increased Opportunities to Respond  
on the Behavior of Middle School Students with  
Emotional and Behavior Disorders

by

Elizabeth Raquel GarciaDubon

Doctor of Philosophy in Special Education

University of California, Los Angeles, 2018

Professor Jeffery J. Wood, Co-Chair

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Research on improving the academic and behavioral outcomes of students with emotional and behavioral disorders (EBD) have identified evidence-based strategies to help ameliorate behavior problems and address academic needs in school such as Multi-Tiered Systems of Support (MTSS) and School-Wide Positive Behavior Support (SW-PBS). However, MTSS and SW-PBS are comprehensive systems that require extensive planning, commitment and resources, and many schools do not implement these programs with fidelity or at all. Therefore, evidence-based practices that can be implemented with little effort or funds are invaluable to the students with EBD and their teachers. A systematic analysis of the research on Opportunities to Respond (OTR) for improving behavioral and/or academic outcomes with students with EBD determined; 1) that increasing OTR to improve behavioral outcomes of students with EBD is a *potentially-evidence based practice* while insufficient evidence exists to evaluate increased OTR to improve academic outcomes for students with EBD, and 2) Hispanic middle school students with EBD is

a potentially vulnerable population that is virtually absent from the current research. A single-subject ABAB research design was used to explore the impact of an increased OTR intervention. One teacher and five male participants (four Hispanic and one African American) in two separate special day class English language arts classes took part in the study. Each class period was divided into two parts; *opening-activity* (OA) and *remainder of class period* (RCP). Data were collected on two primary outcome measures (academic engaged time and disruptive behavior), and two secondary measures (teacher response and academic performance). The intervention was delivered during OA and consisted of a computer-based increased OTR activity. Data were collected all class period to explore possible impact of the intervention on the students' behavior during RCP. Results suggested that structured activities of increased OTR can be a useful strategy to increase academic engaged time while the impact on frequency of disruptive behavior was less clear. The impact of the intervention on student behavior for the remainder of the class period was inconclusive. The teachers most frequent response was *non-response* (73%), then *classroom management* (15%) and least common were *praise* (9%) and *corrective feedback* (3%). Practical implications, and future research directions are discussed.

*Keywords:* emotional and behavior disorders, emotional disturbance, opportunities to respond, academic engagement, quality indicators

The dissertation of Elizabeth Raquel GarciaDubon is approved.

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For Tyler, Ariel and Bella, the three of you are my inspiration and fuel my ambition. You are each unique and bring such joy to my life. I am so proud to be your mother and I look forward to watching each of you follow your passion, whatever it may be.

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To my mom and dad- thank you for your hard work and sacrifice in raising me and for letting me believe that I can do anything.

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## CHAPTER ONE: INTRODUCTION

Since the reauthorization of the Individuals with Disabilities Education Act (IDEA, 2004) general education classrooms have seen a steady increase of students who receive special education services under the eligibility of emotional disturbance (U.S. Department of Education, 2015). Emotional disturbance (ED) is one of 13 disability categories under IDEA and it describes, “a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child’s educational performance: (A) An inability to learn that cannot be explained by intellectual, sensory, or health factors, (B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers, (C) Inappropriate types of behavior or feelings under normal circumstances, (D) A general pervasive mood of unhappiness or depression, (E) A tendency to develop physical symptoms or fears associated with personal or school problems” (U.S. Government Publishing Office, 2017).

In addition to the students with a current Individualized Education Program (IEP) under the eligibility ED, there is a large group of students who demonstrate emotional and behavioral disorders (EBD) or are at-risk for EBD. Students with an IEP under the eligibility ED and students with or at-risk for EBD share similar characteristics such as poor school attendance, low motivation, low academic achievement, high rates of school drop-out and weak interpersonal skills (Kauffman & Landrum, 2009; Kauffman, Mock & Simpson, 2007; Wagner et al., 2006). Additionally, varying intensity and frequency of externalizing behaviors (e.g., aggression, non-compliance, property destruction) and internalizing behaviors (e.g., anxiety, depression withdraw) further impede the academic achievement. These behaviors are also part of a complex web of factors that contribute to often negative, avoidance based, student-teacher relationships (Sutherland & Morgan, 2003; Sutherland & Oswald, 2005). The pedagogy of Culturally

Responsive Teaching (CRT) identified the interaction between a student and the teacher as *the* critical tool to demonstrate care. Authentic caring is associated with the “Mexican American cultural concept of *educación*, which views sustained, trusting, respectful and reciprocal relationships between students and teachers as cornerstones of all learning” (Valenzuela, 1999, as cited in Gay, 2018, Chapter 3, Section 3, para. 2). As a consequence, these maladaptive behaviors lead to dismal post-secondary school outcomes such as high rates of unemployment and mental health problems (Kauffman & Landrum, 2006; Wagner et al., 2005).

The National Research Council (2009) estimated 12-20% of children ages 6-17 in the United States have a diagnosable mental disorder (i.e., anxiety disorders, attention deficit hyperactivity disorder [ADHD], bipolar disorder, depression, eating disorders, or schizophrenia). Five to nine percent of these children meet the criteria for classification as severely emotionally disturbed (Mattison & Blader, 2013; National Research Council, 2009). Alarming, the research indicates that students with behavioral and mental health needs are severely underserved in the clinics and the classroom (Satcher, 2001; Forness et al., 2012). More importantly, the needs of students with or at risk for EBD require interventions beyond those specifically targeting their emotional and behavioral needs. Many students with EBD have high rates of comorbid language deficits (Mattison, Hooper, & Carlson, 2006), processing deficits (Benner, Allor, & Mooney, 2008), and academic deficits (Ennis, Jolivette and Boden, 2013). The needs of minority students with or risk for EBD are compounded by disparities linked to poverty and oppression (Gay, 2000) and *cultural discontinuity*, described in the research as the misalignment between home and school cultures (Gay, 2018).

The academic, cognitive and social profiles of students with EBD have been found to be very similar to that of students with a learning disability (LD) with the difference emerging from

behavior (internalizing and externalizing; Anderson, Kutash, & Cuchnowski, 2001; Gornan & Gage, 2011). Effective behavior support is imperative in addition to culturally responsive, evidence-based academic interventions to improve outcomes for students with EBD (Ennis, et al., 2013; Gay, 2018). Unfortunately, research indicates many general education and special education teachers do not feel prepared to implement interventions that meet the complex needs of students with or at-risk for EBD (Burns, & Ysseldyke, 2009; Gable, Tonelson, Sheth, Wilson, & Park, 2012; Gagnon & Maccini, 2007; Greenwood & Abbott, 2013), let alone students of minority descent (Gay, 2018; Pas, Larson, Reinke, Herman, & Bradshaw, 2016). Consequently, students with challenging behavior are removed from the class at higher rates due to exclusionary behavior management practices (i.e., time-out, suspension) and lose out on instructional time (Brenner, Kutash, Nelson, & Fisher, 2013; Martella, Nelson, Marchand-Martella, and O'Reilly, 2012). Martella et al. (2012) found that addressing problem behavior (e.g., off-task, disruptions,) results in losing approximately 58% of classroom instructional time. In the case of minority students, when compared to their Caucasian counterparts, African American and Latino American students are disciplined more harshly, expelled or suspended for frequently and referred for special education at higher rates (Skiba et al. 2008, 2011). Furthermore, the opportunities for academic learning where youth are engaged is smaller for students with EBD given that teachers of these youth devote approximately 30% (less than 2 hours) of the school day to academic instruction (Wehby, Lane, & Falk, 2003).

Teachers of students with EBD benefit from a wealth of culturally-responsive evidence-based practices that can meet both the unique behavioral and academic needs of the population. The strategic practice of Opportunities to Respond (OTR) in the classroom has the potential to meet these needs but little research on OTR with students with EBD is available. To explore the



potential of OTR with students with EBD, this research study systematically analyzed the literature on the use of increased OTR with students with EBD and expanded the literature base with a single-case design-ABAB experiment. The current study attempted to address gaps and add the exploration of priming effects.

### **Relevant Theory, Research, and Practice**

In a review of the literature on closing the achievement gap for youth with emotional and behavioral disorders, Benner et al. (2013) discussed the importance of maximizing instructional time through the implementation of Multi-Tiered Systems of Support (MTSS) and replacing the behavioral mechanisms that contribute to unwanted behavior with positive behavior intervention and supports as part of school-wide positive behavior support (SW-PBS). MTSS is a systems approach based on a multi-tiered prevention logic and follows a three-tiered approach. Sugai, Simonsen, Freeman and La Salle (2016) describe the focus of each tier as follows: Tier 1 utilizes universal practices to support all students and staff members across all settings and focuses on directly teaching and positively reinforcing desired or expected social skills and behaviors, and their setting-specific variations; Tier 2 practices are small-group interventions oriented for students whose behaviors are less responsive to Tier 1 practices and require more frequent, intensive, and targeted intervention supports; and Tier 3 practices are the most individualized and specialized for students whose behaviors are unresponsive to Tiers 1 and 2 and have the highest risk of academic and/or behavioral failure. The effectiveness of MTSS is the commitment to research-based interventions, continuous data-driven decision making and academic progress monitoring at every tier which allows for early identification and intervention of students who are struggling and at-risk of academically falling behind their same grade peers.

SW-PBS is a school-wide system approach firmly linked to *behavioral theory* and *applied behavior analysis* intended to establish the social culture, and individualized behavior supports needed for a school to be a safe and effective learning environment for all students (Sugai & Horner, 2008). Like MTSS, SW-PBS is not a curriculum or intervention, but instead it is defined by data-driven decision making and leveled systems of support. Sugai and Horner (2002) operationally defined SW-PBS as the, systematic and formal consideration of (a) measurable academic and social behavior outcomes, (b) information or data to guide decision making and selection of effective behavioral interventions, (c) evidence-based interventions that support student academic and social behavior success, and (d) systems supports designed to increase the accuracy and durability of practice implementation.

Culturally responsive teaching is not a system or intervention but a culturally centered conceptual framework through which teachers integrate the students' experiences, perspectives, and histories into teaching practices (Gay, 2018). Culturally responsive teaching is not a supplement to MTSS or SW-PBS, it is the founding assumption that students' academic achievement can be improved when students are provided with knowledge, skills and support in a way that is consistent with their cultural frame of reference (Chun & Dickson, 2011, Gay, 2018). A culturally responsive teacher takes action to learn about each student as an individual and as a member of a cultural heritage. Research on CRT practices have even suggested that CRT may serve as psychological interventions that are associated with decreased psychological distress and increase psychological well-being (Cholewa, Goodman, West-Olatunji, & Amatea, 2014). Imbedding CRT practices throughout MTSS and SW-PBS would be an ideal method of universal support across grade levels.

Although, MTSS and SW-PBS require extensive planning and teamwork to coordinate, implement, and maintain, there are some principles of MTSS and SW-PBS that teachers can implement in their classroom with minimal effort, time or funds. Promising research indicates that students with EBD responded effectively to *explicit instruction* complimented with SW-PBS in the classroom with minimal teacher/student conflict (Benner et al., 2013). Explicit Instruction is a research-based direct approach to teaching with an emphasis on providing students with unambiguous statements about what is to be learned, instruction in small concrete steps with different examples, frequent checks for student understanding and high rates of active, meaningful student participation (Benner et al., 2013). Explicit instruction, when compared to cooperative learning and independent learning instruction, has been linked to higher rates of on-task behavior and lower rates of disruptive behavior (Nelson, 1996). Active engagement and positive feedback are critical components of explicit instruction frequently implemented within MTSS and SW-PBS. Increased levels of positive behavior, better emotion regulation and lower levels of aggression and disruptive behavior have resulted from these components (Bradshaw, Waasdorp, & Leaf, 2012). Positive interactions between a student and the teacher are essential, “interactions are the ultimate sites where teaching and learning happen—or do not happen” (Gay, 2018, Chapter 6, Section 2, para. 2). An effective way to increase student engagement and provide more positive feedback is to intentionally manipulate the environment to increase the number of opportunities a student must respond to a content-relevant prompt. For a student with EBD, increasing the number of possibilities for positive, meaningful academic engagement not only has the potential for positive academic outcomes but it has the potential for improving student-teacher relationships. Relationships often fueled by reactive disciplinary practices and avoidance behaviors on the part of both the teacher and student (Sutherland & Oswald, 2005).

## CHAPTER TWO: LITERATURE REVIEW

Opportunities to respond (OTR), simply put, are curriculum focused prompts provided to a group or individual student (Scott, Alter, & Hrin, 2011). Opportunities to respond generally follow the *antecedent-behavior-consequence* format (A-B-C) but vary widely in topography across classrooms and grades. The prompt (i.e., antecedent) can be delivered by the teacher, a peer or classroom aide and can take a variety of formats such as a direct question, a cue card, or a *fill-in-the-blank* activity sheet. The response (i.e., behavior) can take many forms as well such as written (e.g., response card, practice sheet), verbal, physical (e.g., using fingers to indicate a response, thumbs up/down), or, as classrooms access to technology increases, another option is technology-based student response systems (i.e., *clickers*, interactive website). Feedback (i.e., consequence) is usually but not always provided to the student which can take the form of praise or positive reinforcement (e.g., That's right!) or corrective feedback (e.g., good effort but six times seven is 42, not 56). Teacher praise contingent on appropriate student behavior, has a long-standing and reliable evidence base (Broden, 1970; Spilt, Leflot, Onghena, & Colpin, 2016; Sutherland, Wehby, & Copeland, 2000); hence rightfully so, teacher praise has been considered an essential component when using OTR to establish positive classroom climates (Martin, Robertson, Maggin, Oliver, & Wehby, 2010). However, quite counterintuitively, recent research comparing three OTR strategies with high school students with EBD suggests high school students with EBD may be reinforced by the *absence* of teacher feedback (Adamson & Lewis, 2017). In other words, a student *might* participate and respond to OTRs so that the teacher will *leave them alone*.

Previous research suggests teachers should elicit four to six responses per minute with 80% student accuracy when teaching new material and eight to twelve responses per minute,

with 90% student accuracy during review lessons (CEC, 1987 as cited in Sutherland and Wehby, 2001). However, two studies included in the current research review reached the rate of OTR suggested by CEC, and current research suggests students responding rates are lower than recommended (Gunter, Reffel, Barnett, Lee, & Patrick, 2004). Furthermore, in 2009 the Common Core State Standards (CCSS) were developed which focused on “developing the critical-thinking, problem-solving, and analytical skills students will need to be successful” (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010). Daily academic instruction that focuses on critical-thinking, problem-solving, and analytical skills are less likely to be successful when delivered at a rate suggested in 1987, this may be especially true for minority students who may be learning English as a second language. Notwithstanding, frequent responses from the class are critical and allow the teacher to make instant adjustments to the lesson, offer immediate feedback to the class, and increases attentiveness to the lesson. Strategic use of culturally-responsive OTR to present opportunities for students with EBD to practice critical thinking skills and provide a forum for instant feedback to both teacher and student could be an invaluable strategy.

Research has examined the impact of increased OTR on a variety of dependent variables (e.g., time-on-task, accuracy, and disruptive behavior) by a variety of methods. Some examples include manipulating the pace in which OTR are delivered (Carnine, 1976; Skinner, Smith & McLean, 1994), shaping the amount of OTR a student is exposed to through teacher prompting (Adamson & Lewis, 2017; Haydon, et al., 2010; Haydon & Hunter, 2011; Lambert, Cartledge, Heward, & Lo, 2006; Sutherland, Alder, and Gunter, 2003), utilizing a student response systems (i.e., clickers; Blood, 2010), and independent drill practice (Skinner, Belfiore, Mace, Williams-

Wilson, Johns, 1997; Skinner, Ford, & Younker, 1991; Skinner & Shapiro, 1998). West and Sloan (1986) manipulated both the pace of delivery and the amount of OTRs simultaneously.

A body of literature states OTRs can decrease problem behavior and increase academic accuracy (Kern & Clemens, 2007; Partin, Robertson, Maggin, Oliver, & Wehby, 2010); however, the actual studies on OTR are much more nuanced than the research implies. The results of these studies are frequently mixed which impacts generalizability. This is especially true when the research is focused strictly on OTR with students with or at risk for EBD (Blood, 2010; Haydon et al., 2010; Haydon, et al., 2011; Lambert et al., 2006; Skinner et al., 1997; 1991; Skinner & Shapiro, 2009; Sutherland, et al., 2003; West & Sloan, 1986). It is important to note that the body of research on OTR does not currently address the level of cultural responsiveness, although for the most part, it does identify the ethnicity of the participants.

### **Evidence Base of OTR**

To determine the best uses of OTR a literature review was conducted to systematically examine the evidence-base of OTR for improving behavioral and/or academic outcomes of students with EBD by applying Council for Exceptional Children (CEC) standards for evidence-based practices in special education Quality Indicators (QI; CEC, 2014) to the existing literature.

**Article selection and inclusion criteria.** To identify studies that explored the impact of increased OTR with students with EBD a set of inclusion criteria were developed to determine which articles were eligible to be included in the review and a systematic search followed. Each selected article was coded based on CEC QI (2014). Then, OTR with students with EBD was evaluated for evidence-based classification (i.e., evidence-based, potentially evidence-based, mixed evidence, insufficient evidence, or negative effects; for a complete description of the evidence-based classification criteria see CEC, 2014).

The systematic search for studies began with an electronic search of two computer databases, ERIC and PsycINFO, from 1970 to present day, with the descriptors, *emotional disturbance, emotional and behavioral disorders, academic interventions, opportunities to respond, and active engagement*. This initial search returned 4,712 items. The search was fine-tuned by only including the keywords *emotional and behavioral disorders* and *opportunities to respond* which yielded 25 returns. The abstracts of all 25 articles were analyzed and resulted in two qualified studies (Haydon et al., 2010; Sutherland, et al., 2003). Additionally, the reference list of two OTR review articles identified seven additional qualified studies; four from Sutherland and Wehby (2001; Skinner and Shapiro, 1989; Skinner et al., 1991; 1997; West and Sloan, 1986) and three from MacSuga-Gage and Simonsen, (2015; Blood, 2010; Haydon and Hunter, 2011; Lambert, et al., 2006). The hand search consisted of reviewing the table of contents for prominent journals (*Behavioral Disorders, Journal of Applied Behavior Analysis, Journal of Emotional and Behavioral Disorders*) for relevant articles for the past five years which yielded no additional studies. The ancestral search consisted of reviewing the *reference* lists of the articles that met the inclusion criteria which yielded no new studies. One additional study that met all the inclusion criteria was published while this review was in progress (Adamson & Lewis, 2017).

Ten articles were identified that met all four inclusion criteria: (a) participants were students with EBD, (b) the study measured the impact of increased OTR on student behavior and/or academic achievement, (c) used a single-subject design, and (d) published in a peer-reviewed journal. These inclusion criteria eliminated two studies that are frequently, but erroneously, cited in the literature as demonstrating positive outcomes from an increased OTR intervention, because neither article increased the number of OTR. Carnine (1976) has been

mentioned in numerous articles as evidence of the positive impact of OTR on academic performance, task-engagement, and disruptive behavior (Kern & Clemens, 2007; Sutherland & Wehby, 2001; Sutherland, Alder, & Gunter, 2003) however, the study manipulated the pace of OTR delivery, not the amount of OTR. Carnine (1976) concluded, “a faster rate might decrease the occurrence of students’ off-task behavior and increase the occurrence of answering correctly and participation” (1976, p. 203). Skinner et. al (1994) also manipulated the pace of OTR while maintaining the same number of OTR, by comparing an intervention without a delay between trials to an intervention with a five-second delay between trials and concluded that, “both interventions were effective in increasing students sight word accuracy” (p. 102). Arguably, the distinction between the pace of OTR and number of OTR may seem trivial, seeing as each is equated as the same in past literature reviews; however, treating these synonymously can influence how teachers interpret the results of a study and how they apply it to their classroom. However, as this review will discuss, preliminary analysis indicates the *pace* of OTR and *number* of OTR impact outcome measures differently. Ambiguous definitions of essential intervention components (i.e., *pace/number*) can significantly affect the integrity of an intervention resulting in frustration and disappointment.

**Coding procedures for quality indicators.** CEC comprised a workgroup of prominent special education researchers who developed, vetted and piloted the new standards. The QIs were published in the Standards of Evidence-Based Practices in Special Education (2014) as an “approach for categorizing the evidence base of practices in special education” (p. 1). In consideration of the mixed and/or misleading information coming from the research on OTR with students with EBD, it would be beneficial to the research community and individuals that work in close collaboration with students with EBD to systematically evaluate each study on the



impact of increased OTR on academic and/or behavioral outcomes according to a set of accepted guidelines put forth by the research community that serves the target population.

The author of this review applied the coding system utilized by other researchers who conducted a similar analysis with a different intervention and with an earlier draft of the QIs (Sreckovic, Common, Knowles, & Lane, 2014). First, each component of the indicator was given a binary score of met or not met. The number of components within each QI varied between one and six. If all components were met, the absolute score for the QI was one, indicated by a "Yes" in table 1. If one or more components were not met, the absolute indicator score was zero, indicated by a "No." Next, weighted scores were calculated for each study by taking the number of components met for each indicator and dividing it by the total number of components for the indicator. Each component contributed an equal proportion to the QI. For example, QI-2: *Participants* included two components; therefore, each component added .50 to the overall weighted QI-2 score. A description of the coding results for each QI follows.

***Quality indicator one: Context and setting.*** All ten studies met QI-1 which required that study provide sufficient information on critical features of the context or setting. Interventions were administered in four different settings; four in a general education classroom, two in a self-contained classroom, three in a residential school for students with EBD, and one took place during a summer program for students with EBD. The context of intervention varied by type of interaction, the location of interaction, subject, and duration of treatment. There were three different kinds of interactions: 1:1, small group, and whole class. One-to-one occurred when the subject received treatment by the examiner, and no other peers or staff participated (Skinner, et al., 1997; Skinner et al., 1991; Skinner et al., 1989). Small group interaction included groups of

Table 1

*Coding of Quality Indicators for Studies of Increased OTR with Students with EBD*

Quality Indicator	Adamson & Lewis (2017)	Blood (2010)	Haydon et al. (2010)	Haydon & Hunter (2011)	Lambert et al. (2006)	Skinner et al. (1997)	Skinner et al. (1991)	Skinner & Shapiro (1989)	Sutherland et al. (2003)	West & Sloane (1986)
<b>1.0 Context and setting</b>	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)
1.1. Critical features of the context or setting	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
<b>2.0. Participants.</b>	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)
2.1. Participant demographics	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
2.2. Disability and method for determining status	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
<b>3.0. Intervention agent.</b>	Yes (1.00)	Yes (1.00)	Yes (1.00)	No (0.50)	Yes (1.00)	No (0.0)	No (0.0)	No (0.0)	Yes (1.00)	Yes (1.00)
3.1. Intervention agent and background	0.50	0.50	0.50	0.50	0.50	0.0	0.0	0.0	0.50	0.50
3.2. Specific or qualifications	0.50	0.50	0.50	0.0	0.50	0.0	0.0	0.0	0.50	0.50
<b>4.0. Description of practice.</b>	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)
4.1. Intervention and intervention agents' actions	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
4.2. When relevant, the study describes materials	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
<b>5.0. Implementation fidelity.</b>	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	No (0.66)	No (0.66)	Yes (1.00)	Yes (1.00)	No (0.66)
5.1. implementation fidelity/ adherence	0.33	0.33	0.33	0.33	0.33	0.0	0.0	0.33	0.33	0.0
5.2. implementation fidelity/ dosage or exposure	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
5.3. Reports implementation fidelity	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
<b>6.0. Internal validity.</b>	Yes (1.00)	Yes (1.00)	Yes (1.00)	No (.83)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)
6.1. Controls and manipulates the IV	.166	.166	0.25	.166	0.25	0.25	0.25	0.25	.166	0.25
6.2. Baseline conditions	.166	.166	NA	.166	NA	NA	NA	NA	.166	NA
6.3. No treatment overlap	.166	.166	0.25	.166	0.25	0.25	0.25	0.25	.166	0.25
6.5. Three demons. of experimental effects(X's3)	.166	.166	0.25	0.0	0.25	0.25	0.25	0.25	.166	0.25
6.6. All baseline phases include 3 data points	.166	.166	NA	.166	NA	NA	NA	NA	.166	NA
6.7. Controls for common threats to internal valid	.166	.166	0.25	.166	0.25	0.25	0.25	0.25	.166	0.25
<b>7.0. Outcome measures/dependent variables.</b>	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)	Yes (1.00)
7.1. Outcomes are socially important	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
7.2. Defines and describes DV and measurement	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
7.3. Reports all outcome measures	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
7.4. Appropriate freq. and timing of DV measures	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
7.5. Adequate internal reliability (IOA ≥ 80%)	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
<b>8.0. Data Analysis.</b>	Yes (1.00)	No (0.0)	Yes (1.00)	No (0.0)	No (0.0)	Yes (1.00)	No (0.0)	Yes (1.00)	No (0.0)	No (0.0)
8.2. Graph clearly representing outcome data	1.00	0.0	1.00	0.0	0.0	1.00	0.0	1.00	0.0	0.0
Number of indicators: Absolute coding	8	7	8	6	7	6	5	7	7	6
Number of indicators: Weighted coding	8	7	8	6.5	7	6.66	5.66	7	7	6.66

Note: Numbers in () are weighted scores; Absolute coding = the total number of indicators fully met, 8 possible; Weighted coding = the number of components met for each indicator divided by the total number of components for the indicator as relevant to the study

10 or less, (Blood, 2010; Sutherland et al., 2003; West and Sloan, 1986). Whole-class interaction included groups of 11 students or more (Adamson and Lewis, 2017; Haydon et al., 2010; Haydon & Hunter, 2011; Lambert et al., 2006)

Skills taught in the intervention varied by subject and quantity. West and Sloan (1986) was the only study that included intervention in multiple subjects by addressing reading, math, spelling and functional skills. Blood (2010) conducted data collection during an American History class, and the study by Haydon & Hunter (2011) took place during health science class. Two studies focused solely on reading skills (Haydon et al., 2010; Skinner & Shapiro; 1989) and five focused only on math skills (Adamson & Lewis, 2017; Lambert, et al., 2006; Skinner, et al., 1997; Skinner, et al., 1991; Sutherland, et al., 2003).

The duration of each intervention did not vary significantly; all the studies were 20 minutes or less. Blood (2010) administered the intervention during a 45-minute class period but collected data only the first 20 minutes of class. Adamson & Lewis (2017) delivered three different methods of OTR for 10-minutes each within a single 90-minute class period. Four studies' intervention took 10 minutes or less to administer (Haydon, et al., 2010; Haydon et al., 2011; Lambert et al., 2006; Skinner & Shapiro et al., 1989). West and Sloan (1986) and Sutherland et al., (2003) each administered 15 minutes of intervention while Skinner et al., (1997) conducted a 20-minute intervention.

***Quality indicator two: Participants.*** All ten studies met QI-2 comprised of two components, *demographics* and *method for determining disability*. Across the ten studies, 46 participants were included. Nine studies identified the participant's gender; 31 participants were male, and 11 were female. Skinner & Shapiro (1989) did not indicate the gender of four participants. Four studies did not include information on the participant's ethnicity (Skinner et

al., 1997; Skinner et al., 1991, Skinner & Shapiro, 1989; West & Sloan, 1986), which accounted for 13 participants. The remaining six studies accounted for 16 African American participants, nine White, and two participants were from multiple ethnicities. Six studies were conducted with elementary students (n= 33), one was a single middle school student, and three studies focused on high school students (n=12).

Determination of disability varied from teacher nomination, researcher observation, documentation of disability (i.e., IEP or accommodation plan) and/or evaluation scores. Adamson and Lewis (2017), Sutherland et al. (2003) and West and Sloan (1986) included participants with an IEP (n = 16), 13 were identified with ED, two were eligible under other health impairment (OHI) for a diagnosis of ADHD, and one was eligible under intellectual disability (ID). Adamson and Lewis (2017) also included a participant with an accommodation plan due to a diagnosis of ADHD. Haydon et al. (2010) included six elementary students that scored 25 or higher on the Systematic Screener for Behavior Disorders (SSBD). The SSBD is a school-wide screening tool for children in grades first thru sixth that screens for externalizing and internalizing behaviors (Walker and Severson, 1992). Blood (2010) utilized teacher nomination to identify five participants: two students with EBD, one student with ADHD, one with autism and one with multiple health impairments. An observation was then completed to confirm that the students were indeed *low-responders* in class. Haydon & Hunter (2011) identified its' participant by teacher nomination based on off-task behavior while Skinner et al. (1991) identified two participants by teacher nomination based on academic and behavioral needs. Skinner and Shapiro (1989) chose participants according to teacher-reported vocabulary reading rates. Two studies utilized teacher nomination to identify participants and then the second method to confirm participant eligibility: Lambert et al. (2006) used teacher nomination,

and psychiatrist evaluations and Skinner, et al. (1997) used observation to confirm the teacher's nomination

**Quality indicator three: Intervention agent.** Six studies met QI-3 (Adamson & Lewis, 2017; Blood, 2010; Haydon et a., 2010; Lambert et al., 2006; Sutherland et al., 2003; West & Sloan, 1986) and four studies did not (Haydon & Hunter, 2011; Skinner et al., 1997; 1991; Skinner & Shapiro, 1989). A common characteristic of Skinner et al., (1997; 1991) and Skinner and Shapiro (1989) was the use of the *experimenter* as the intervention agent without providing any background information about the experimenter or any qualifications or training that the experimenter has regarding the intervention. Haydon and Hunter (2011) described the intervention agent but failed to give any details about background, training or qualifications. Of the six studies that met QI-3, all utilized a teacher as the intervention agent. This included 12 teachers in total. , and all had a background in teaching, and one teacher was identified as having experience working with students with EBD. Experience in teaching ranged from less than one year to six years.

**Quality indicator four: Description of practice.** All studies met both components of QI-4. Blood (2010) and Sutherland et al., (2003) intervened directly with the classroom teacher during the intervention phase to increase the number of direct questions (i.e., OTR) delivered to the students. Blood (2010) first four cycles of baseline and intervention did not vary by the amount of OTR, baseline averaged 5.6 OTR per session, and the intervention phases included an average of 5.8 OTR per session. The last intervention phase included 15-20 OTR per session. Sutherland et al. (2003) utilized an ABAB design to compare the first baseline average, 1.68 OTR per minute to the first intervention phase, 3.52 OTR per minute. During the reversal phase, the teacher averaged 2.44 OTR per minute, and during the reintroduction of the intervention, the

teacher increased to 3.49 OTR per minute. Sutherland et al. (2003) and Adamson and Lewis (2017) did not directly identify the number of OTRs each target participant responded to, instead only the average number of OTRs provided by the teacher were discussed. Lastly, West and Sloan (1986) delivered a 15-minute fast-presentation treatment condition which resulted in 45 OTR and a 15-minute slow-presentation treatment condition which resulted in 15 OTR.

Four studies (Adamson & Lewis, 2017; Haydon et al., 2010; Haydon & Hunter, 2011; Lambert et al., 2006) utilized the classroom teacher as the intervention agent and delivered the treatment to the class. Adamson and Lewis (2017) employed an alternating treatment design; therefore, the teacher implement three different types of OTR strategies (i.e., guided notes [GN], class-wide peer tutoring [CWPT], and response cards [RC]) for 10 minutes each within a single 90-minute class period during the intervention phase. Although the actual number of OTR per treatment was not specified, the average number of OTR per 10-minute session is as follows; GN, 5.6 OTR; CWPT, 3.6 OTR; and RC, 4.6 OTR. The interventions of the remaining three studies ranged from 8-10 minutes of treatment delivered to the class. During this time, the teacher followed a 4-step procedure to provide a predetermined number of OTR per minute in the form of questions or cue cards. The difference between treatment conditions was the number of times the *target student* had the opportunity to respond to the OTR directly. For example, Haydon et al. (2010) exposed the class to five OTR per minute across all three conditions: 1) *individual response*, the target student responded three times, 2) *choral response*, the target student responded 40 times, and 3) *mixed response* conditions was 70% choral and 30% individual, so the target student responded 31 times. The remaining two studies compared a similar delivery method but with different amounts of OTR. Hayden and Hunter (2011) provided three OTR per minute across two treatment conditions; 1) *single student response*, with two

OTR, and 2) *unison response*, with 30 OTR. Lambert et al. (2006) provided 1.2 OTR per minute and compared 1) *single student response*, 1-2 OTR, and 2) *response card response*, with 12 OTR. Even the studies that implemented similar types of interventions varied across dosages and exposure. Additionally, intervention delivered by the teacher was more practical, therefore, more likely to be adopted by the consumer.

Three studies utilized the experimenter as the intervention agent and delivered the treatment in a one-on-one setting (Skinner et al., 1991; 1997; Skinner & Shapiro, 1989). Skinner et al. (1991; 1997) compared the strategy *cover, copy, compare* (CCC) with different response topography, verbal (VCCC) and written (WCCC). The nature of the differing response topography resulted in a high amount of OTR (VCCC) compared with a small amount of OTR (WCCC; i.e., a verbal response was faster than written responses).

All studies clearly described the materials required to implement the intervention. Three studies had to utilize a pretreatment phase to develop the tasks that would be used during the intervention. For example, Skinner et al. (1997) used three pretreatment sessions to test each participant and created three mutually exclusive, sets of 12 multiplication worksheets that would be applied to two treatment conditions and one *no-treatment* condition. The studies that utilized direct teacher questions provided at least one example of a question and what constituted a correct response and an incorrect response. Lastly, Adamson and Lewis (2017) trained the teachers to implement each of the three OTR methods using the *Center for Adolescent Research in School (CARS) Classroom Procedures Manual*.

**Quality indicator five: Implementation fidelity.** Seven studies met all three components within QI-5, and three studies did not. The first component addresses implementation fidelity as it concerns adherence to the intervention procedures. This is where Skinner et al. (1997; 1991)

and West and Sloan (1986) failed to meet the QI because neither provided a measure of treatment integrity. From the remaining seven studies, two mentioned that treatment integrity observations were completed for 100% of the sessions but did not provide a reliable measure (Blood, 2010; Sutherland et al., 2003). Five studies utilized a treatment integrity checklist although the percent of coded sessions varied by study and ranged between 15% and 33% of sessions. Adamson and Lewis (2017) utilized an integrity checklist for each of the three methods of OTR for the first three days of intervention to reach 80% integrity, then once weekly for the remainder of the study which totaled 33% of sessions. Interobserver agreement (IOA) mean during the intervention was 96.2% (range 88-100%). Haydon et al. (2010) used a treatment integrity checklist for 15% of the sessions and generated an IOA of 100%, and Haydon & Hunter (2011) conducted a fidelity check using a checklist of the 4-step intervention procedure for 33% of the sessions but did not report an IOA. Thirty percent of sessions for each condition were coded in Lambert et al. (2006) with an IOA of 95% for both intervention phases (single student response and response card). Skinner and Shapiro (1989) used a treatment integrity checklist for 17% of intervention sessions with an IOA of 100%. Although CEC (2014) requires "the study assesses and reports implementation fidelity" it does not specify a required percent of sessions that should be observed. On the other hand, an IOA of 80% or greater is required, which all studies met.

The second component addresses implementation fidelity as it concerns dosage of treatment or exposure to treatment. All studies met this component, and all but two studies had strict dosage requirements. Blood (2010) had a predetermined amount of formal questions prepared before implementation. Similarly, Haydon et al. (2010), Haydon and Hunter (2011), Lambert et al. (2006), Skinner and Shapiro (1989) and West and Sloan (1986) also had specific



procedures that controlled the dosages and demonstrated a consistency of dosage. Skinner et al. (1991; 1997) did not control a specific number of OTR per treatment, rather, the topography of the treatments automatically resulted in a *high OTR* and *low OTR* condition. Sutherland et al. (2003) applied an OTR goal of three per minute but did not implement strict procedural guidelines. Finally, Adamson and Lewis (2017) did not strictly control the dosage of OTR but maintained regular exposure to OTR by alternating three OTR methods (i.e., GN, CWPT, RC).

The last component in implementation fidelity addresses the appropriateness of the frequency that the study reported the measures of the previous two components. Due to the nature of single-case design, dosage was recorded after each session in all ten studies.

**Quality indicator six: Internal validity.** Nine studies met every component within QI-6 that was pertinent to the study. Haydon and Hunter (2011) failed to meet component 6.5 which required three demonstrations of experimental effects on three occasions. Component one evaluates the researchers' control and systematic manipulation of the independent variable (i.e., intervention). All studies met this component with high variability in the way that the independent variable was manipulated. The differences occurred in the number of OTR in each phase of the intervention, the presentation method of OTR, the rate in which OTR was delivered (i.e., OTR per minute), and the way the participants indicated their responses. Three studies included a treatment delivery procedure that maintained the same rate of OTR for each intervention phase with the only difference occurring in the manner that the OTR was presented to the target student(s) and the number of opportunities the target student had to respond (Haydon et al., 2010; Haydon & Hunter, 2010; Lambert et al., 2006).

Haydon et al. (2010) utilized the same four-step procedure in each phase to deliver the OTR but varied in how the participant responded; in the *individual* phase the target student was

exposed to 40 OTR but only responded to three, in the *choral* phase, the participant was given 40 OTR directed to the entire second grade class, the *mixed* phase included 70% choral and 30% individual, so the target student was given 31 OTR. The same four-step procedure was utilized in Haydon & Hunter (2011) in which the first treatment phase provided the participant with two OTR in a direct *single student response* manner with exposure to 30 OTR. The second intervention phase provided 30 OTR in a *unison* response manner where each student raised one, two, or three fingers to indicate their answer. Similarly, Lambert et al. (2006) maintained a rate of 1.2 OTR per minute in both intervention phases; *single student response* phase provided 1-2 OTR to the participant with exposure to 12 OTR and the *response card* phase— the participant wrote a response on a personal dry erase board and showed it, in unison to the teacher— granted 12 OTR.

West and Sloan (1986) was the only study that systematically manipulated the rate and amount of OTR per phase in a *group* delivery method. The participants were expected to respond to every OTR provided across all phases. The *fast pace* phase provided three OTR pre-minute (45 OTR per session), and the *slow pace* phase provided one OTR per minute (15 OTR per session). A unique feature of West and Sloan (1986) was the method by which the participants provided their responses which varied across conditions depending on the subject and activity. For example, during the intervention session that covered *spelling*, the participant had to write or circle a word or letter, but while covering *functional skills*, the student had to draw clock hands or write the time in response to the teachers' prompt. The variability in response method had the potential to impact internal validity significantly and was briefly discussed as a limitation to the study.

Blood (2010) systematically manipulated a number of formal questions that were presented during American History class in a group setting. The *baseline* phase included a predetermined number of *formal questions* the teacher would ask without the use of any visuals or response systems. Blood (2010) described *formal questions* as questions that were developed before class. The first intervention phase also included a predetermined amount of formal questions accompanied by a slide with the question and four choice answers that the student indicated with their *clicker* (responses were posted to the slide as students responded). An important difference between baseline and intervention phases was the presence of visuals and choice answers which were not controlled for. Researchers included a second intervention phase in which they increased the number of formal OTR 3 times (i.e., increased from 5-7 formal questions to 20-21). In Skinner et al. (1997; 1991) students practiced multiplication facts using the CCC strategy with two different methods of response; VCCC and WCCC. Skinner and Shapiro (1989) systematically manipulated the presentation of unfamiliar vocabulary words and the amount of OTR across four phases.

Sutherland et al. (2003) implemented an intervention that was less systematic while resembling a more natural occurrence in a classroom setting. During intervention phases, the classroom teacher was counseled daily by the researcher on ideal OTR rates and given a goal of three OTR per minute. The teacher was free to choose how he provided the OTR while the observer took a frequency count of OTR. In this study, the manipulation of the amount of OTR was not systematic, but it was manipulated to increase, nonetheless, as the teacher provided an average of 3.5 OTR per minute during intervention phases and 1.6 OTR during baseline.

Adamson and Lewis (2017) also omitted strict dosage requirements for a more practical treatment application. In this case, experimenters systematically controlled the randomly

established order in which the method of OTR would be delivered. The methods of OTR included GN, CWPT, and RC and the experimenters helped the teacher develop sample lesson plans using each method; teachers were then directed to continue to develop lesson plans using these methods for the remainder of the study. It is this flexibility in lesson (i.e., treatment) implementation on the part of the intervening agent that highlights the practical nature of said treatment. In other words, although the teachers were instructed to use a particular method of OTR at a certain point in the class period, they still had the freedom to tailor the method to fit their classroom needs best.

The next component in QI-6 focuses on the description of baseline conditions. Six studies did not have a baseline phase so component 6.2 *baseline*, and 6.6 *three baseline points*, did not apply (Haydon et al., 2010; Lambert et al., 2006; Skinner et al., 1997; 1991; Skinner & Shapiro, 1989; West & Sloan, 1986). Of the four studies that implemented a baseline phase, Adamson and Lewis (2017), Sutherland et al. (2003) and Haydon and Hunter (2011) described a *true* baseline condition, in that, data were collected “when no intervention is in effect” (Kazdin, 2011, p. 128). Blood (2010) described a *modified* baseline in which data were collected after a portion of the intervention (predetermined formal questions) were already in effect.

Component 6.6 examines the integrity of the baseline phase by specifying if it included "at least three data points, except when fewer are justified" and established "a pattern that predicts undesirable future performance" (CEC, 2014). Adamson and Lewis (2017) included seven baseline points for two participants and six for the third participant due to truancy. Despite baseline variability, all three participants maintained small percentages of the dependent variable (academic engaged time [AET]) with mean rates between 12-20%. Therefore, the study proceeded to the *intervention phase*. Blood (2010) included nine baseline data points in the first

baseline phase and six data points in the second baseline phase (i.e., reversal) but three out of the five participants demonstrated a pattern of behavior that predicts *desirable* performance for both dependent variables (time on task and response rate). In other words, three participants' behavior was improving before implementing the intervention which could be problematic because "it may be difficult to evaluate the effects of the subsequent intervention" (Kazdin, 2011, p. 126). One participant reached 100% response rate and 90% intervals on-task the session before implementing treatment. Haydon and Hunter (2011) included eight baseline data points and the participant's behavior predicted a pattern of undesirable performance for one dependent variable (time-on-task) while the other outcome measure (accuracy) was only provided as a *phase mean* so trend and prediction could not be determined.

Sutherland et al. (2003) included 11 data points in the first baseline and four in the reversal phase. Unfortunately, the study did not contain a graph for each of the nine participants on all the outcomes measures (correct responses, time-on-task, disruptive behavior) so the integrity of baseline could not be determined and more importantly, classifying the effects of the study is compromised. For a single-subject design study to be considered to have positive effects, a functional relationship must be established between the independent variable and dependent variables for at least three-fourths of the cases in the study (CEC, 2014, p. 7) which cannot be determined in this case. Although, a graph was provided with the *performance means* per session for each outcome measure. Performance means during baseline predicted an increase in disruptive behavior, a steady upward trend of correct responses, and stability for time-on-task (between 40 and 70%), the withdrawal phase demonstrated an increase in disruptive behavior and decreases of correct responses and time-on-task. It is essential in single-case design research to analyze the *trend* because as stated earlier it affects the researchers' interpretation of the

impact of the intervention on the dependent variable. In this case, the dependent variable *correct response* was already on an upward trend during baseline, and it followed that same upward *trend* into the first intervention phase—nonetheless exceeding predicted performance.

Performance means during the intervention phase and the reintroduction phase demonstrated a decrease in disruptive behavior and increases of correct responses and time-on-task. Ultimately, in the case of Sutherland et al. (2003), a functional relationship can be established between the independent and most of the dependent variables, so the component is considered met. Presently, it is mixed data like this, among others, that make interpretations, generalizations and recommendations *tricky*.

Component 6.5 requires “the design provides at least three demonstrations of experimental effects at three different times” (CEC, 2014). The experimental effect in single-case design is determined by visual inspection of graphed data on the outcome measures across phases. Visual inspection of the graphs looks at the data to predict what future performance will *probably* be and compares that prediction with the actual performance. If the actual performance is different from the predicted performance, then this leaves room to infer that the intervention may be responsible for the change (Kazdin, 2011). Each time the actual performance improves over the predicted performance the researcher considers this an *experimental effect*. All but one study (Haydon & Hunter, 2011) met this component for at least one outcome measure, as described in table 2. Haydon & Hunter (2011) collected data on two students, but only one had EBD and increasing OTR increased on-task behavior for at least three experimental effects, but this was not repeated the necessary three times, so the component was not met.

Adamson and Lewis (2017) included one *primary* dependent variable, AET, operationally defined as “interacting with the academic instruction and not exhibiting any range

Table 2

*Experimental Effects of Increased OTR on Outcome Measures (QI-6.5)*

Outcome Measure	Adamson & Lewis (2017)	Blood (2010)	Haydon et al. (2010)	Haydon & Hunter (2011)	Lambert et al. (2006)	Skinner et al. (1997)	Skinner et al. (1991)	Skinner & Shapiro (1989)	Sutherland et al. (2003)	West & Sloane (1986)
Academic										
Quiz Scores	---	Not Met	---	CBD	---	---	---	---	---	---
Accuracy	---	---	---	CBD	NEG. 12/18	3x3	Not Met	---	3x3	NEG.
Digits correct	---	---	---	---	---	THC/VCCC 3x3	3x3	---	---	---
No. words read correct	---	---	---	---	---	THC/VCCC	---	3x3	---	---
<b>Behavior</b>								<i>drill &amp; tape</i>		
Time on/off task	3x3 GN, RC, CWPT	Not Met	3x3 <i>mixed</i>	Not Met	---	---	---	---	3x3	---
Disruptive behavior	---	---	3x3 <i>mixed and choral</i>	---	3x3	---	---	---	3x3	3x3 <i>Fast Present.</i>
Response Rate	---	3x3 <i>intervention</i>	3x3 <i>mixed and choral</i>	---	3x3 <i>response card</i>	---	---	---	---	3x3 <i>Fast Present.</i>
Hand Raising	---	---	---	---	<i>response card</i> CBD	---	---	---	---	---
<b>Teacher Behavior</b>										
Praise	---	---	---	Not Met	---	---	---	---	Not Met	---
Redirection	---	---	---	Not Met	---	---	---	---	---	---

Note: *Italics* indicates the condition under which the three experimental effects at least three times was obtained, "intervention" indicates there was only one treatment condition; 3x3 = three experimental effects at least three times were achieved; CBD = could not be determined if the DV met QI-6.2; NEG. = independent variable had negative impact on DV; 3x3 = DV met QI-6.2 (design provided at least three experimental effects at three different times); MTS = Momentary time sampling; PI = Partial Interval time sampling; THC = time held constant condition; GN = guided notes; CWPT = class wide peer tutoring; RC = response card;

*off-task* behavior." Component 6.5 was met across all three treatment conditions (i.e., GN, CWPT, RC) for three participants. Blood (2010) included three outcomes measures and met this component for one, *response rate*. Haydon et al. (2010) had three treatment conditions with differing OTR; 1) individual, 1-2- OTR, 2) mixed, 31 OTR, and 3) choral, 40 OTR. Of which, the *mixed* treatment condition met his component for *time-on-task*, *disruptive behavior*, and *response rate*. The *choral* condition met his component for *disruptive behavior* and *response rate* but maintained neutral effects on *time-on-task*. Lambert et al. (2006) *response card* treatment condition (12 OTR) met this component for *disruptive behavior* and *response rate*. Although, the increased OTR of the *response card* condition had a negative effect on the outcome measure, *accuracy*. The last outcome measure, *hand raising*, did not have enough data to make an evaluation.

Skinner and Shapiro (1989) focused on one outcome measure, *the number of words read correct*, across four treatment conditions (two with 80 OTR each and two with 40 OTR each). The increased OTR conditions met this component. Skinner et al. (1991) failed to meet his component for the outcome measure *accuracy* but did reach it for *digits correct per minute* in the VCCC condition which provided double the OTR as the WCCC condition. The WCCC and no treatment (NT) condition had very similar performance patterns for both participants. Skinner et al. (1997) met this component for both outcome measures, *accuracy* and *digits correct per minute* in the *time-held-constant VCCC* condition (the condition with the highest number of OTR).

West and Sloan (1986) evaluated four treatment conditions made of *fast* (3 OTR/min) or *slow* (1 OTR/min) rate of OTR delivery combined with a high or low point delivery system. The point distribution was found to have zero impact across conditions on any outcome measures.



The *fast* rate condition (i.e., increased OTR) confirmed three experimental effects for 80% of the participants in decreasing *disruptive behavior*. However, the *fast* rate condition also had an adverse impact on *percent correct* for 60% of the participants. The negative impact of increased OTR on task accuracy was also found in Lambert et al. (2006) for 75% of cases. The third outcome measure, *response rate*, was only provided in the form of *means* and produced a distinct improvement over the *slow OTR* condition.

Another study also reported only the performance averages of the nine participants for four outcome measures. Sutherland et al. (2003) suggest increasing OTR to a mean of three per minute improves *accuracy*, increases *time-on-task*, decreases *disruptive behavior*, and steadily increases teacher praise across conditions (i.e., did not return to baseline at reversal).

Interpreting the data with caution is especially important when only means are provided because the mean may indicate one outcome but the individual data on each participant can tell a slightly different story. For example, Lambert et al. (2006), from treatment phase one (*single student response*) to treatment phase two (*response card*), the mean accuracy score for the nine participants increased from 88% to 90%. However, when analyzed case by case three participants increased accuracy, four participants decreased in accuracy, one participant was at 100% before the change of conditions, and one participant did not have a phase one accuracy score for comparison. Basing outcomes solely on means can be misleading.

Component 6.7 addresses how well the study design controls for common threats to internal validity “so plausible alternative explanations for findings can be reasonably ruled out” (CEC, 2014, p. 5). Commonly accepted single-case designs (i.e., ABAB-reversal, multiple-baseline, changing criterion and alternating treatment) control for internal validity when properly executed. Collecting data in a baseline condition is an essential feature of ABAB design, and

without it, internal validity may be weakened. Blood (2010) utilized an ABABC design without a *true* baseline, but rather, a portion of the intervention was already implemented (i.e., predetermined formal questions) which could impact the behavior of the intervening agent (i.e., the teacher) and the behavior of the participants who might quickly catch on to the difference in their environment and possibly prime them for the future intervention. In this case *diffusion of treatment* (when the intervention is inadvertently provided during times when it should not be) could be considered a threat to internal validity. However, this conclusion is debatable and for the sake of this review, the benefit of the doubt and the fact that an essential component of the intervention (i.e., student response system clicker) was not included in the *baseline*, the component was considered *met*.

Two additional studies utilized the ABAB design; one with a baseline phase (Sutherland et al., 2003) and one without a baseline phase (Lambert et al., 2006). Lambert et al. (2006) stated, “an ABAB design was used to demonstrate the different effects of the two teacher presentation techniques” (p. 92). Sutherland et al. (2003) implemented the traditional ABAB-reversal design. Both studies controlled for internal validity with their research designs. Multi-element designs consist of implementation of two or more interventions in the same phase (Kazdin, 2011, p. 193). Haydon et al. (2010) and West and Sloan (1986) each implemented a multi-element design to control for internal validity. The remaining four studies utilized an *alternating treatment* design which is like a multi-element except the interventions are purposely balanced across phases. Haydon and Hunter (2011), Skinner et al. (1997; 1991) and Skinner and Shapiro (1989) met this component by properly executing this research design. Adamson and Lewis (2017) delivered three methods of OTR within a single class period in an established random order to combat carry-over and sequencing effects; both are possible threats to internal

validity. Each OTR method (GN, CWPT, RC) was delivered every class period during the intervention phase, in such cases, the risk of the first intervention (e.g., GN) *lingering* after it is no longer in effect could impact the intervention that follows (e.g., CWPT; Kazdin, 2011). Delivering the treatments in *established* random order so that each intervention proceeds and is followed by each other intervention help combat this *carryover* and *sequencing* effect.

***Quality indicator seven: Outcome measures/ dependent variables.*** Quality Indicator seven includes five components that focus on dependent variables (DV). It explores the *social validity* of the dependent variables and ensures that the dependent variables and its measurement are clearly defined. Social validity is a measure of whether interventions consider the concerns of society and the consumers of the intervention (Kazdin, 2011). Guiding questions that address social validity ask if the goals of the intervention are relevant to everyday life if the procedures are acceptable to consumers and the community at large or if the outcome of the intervention makes a difference in the lives of the individuals (2011). The first component examines the social importance of the DVs such as constituting improved quality of life and/or an important developmental or learning outcome (CEC, 2014). All studies met this component, and each DV is described below. The next component required that the study clearly "define and describe the measurement of the DV" (p.5). The DVs did not vary significantly across studies while the method of measurement for DV that addressed behavior varied some between studies.

There was a total of eleven different DVs included— AET, on-task and off-task behavior were grouped as one DV— which were grouped into one of three categories listed in table 2; (a) *academic outcomes*, (b) *behavioral outcomes*, or (c) *teacher behavior*. Academic DVs included: *quiz scores*, measured in percentage (Blood, 2010; Haydon & Hunter, 2011); *accuracy*, measured in percentage (Haydon & Hunter, 2011; Lambert et al., 2006; Skinner et al., 1997;

1991; Sutherland et al., 2003; West & Sloan, 1986); *digits correct*, measured as a rate per minute (Skinner et al., 1997; 1991); and *number of words read correct*, measured as a rate per min (Skinner & Shapiro, 1989).

Behavior outcome measures included more variability of measurement. Adamson and Lewis (2017) collected data on AET (time-on-task) with *duration recording* with the Multi-Option Observation System for Experimental Studies (MOOSES). This study was the only one that used duration as the data collection method. Duration recording is more accurate than the

Table 3  
*List of Dependent Variables from Literature Review*

	Measurement method	Studies in which included
<b>Academic</b>		
Quiz Scores	percentage	Blood, 2010; Haydon & Hunter, 2011
Accuracy	percentage	Haydon & Hunter, 2011; Lambert et al., 2006; Skinner et al., 1997; 1991; Sutherland et al., 2003; West & Sloan, 1986
Digits correct	rate	Skinner et al., 1997; 1991
Number of words read correct	rate	Skinner & Shapiro, 1989
<b>Behavior</b>		
Time on/off task (AET)	duration 10s-MTS; 20 min 20s-MTS; 10 min 20s-MTS; 8 min 1min-MTS; 15 min	Adamson and Lewis, 2017 Blood, 2010 Haydon and Hunter, 2011 Haydon et al., 2010 Sutherland et al., 2003*
Disruptive behavior	frequency 10s-PI +5s log time 10s-PI	Hayden et al., 2010 Sutherland et al., 2003 Lambert et al., 2006 West and Sloan, 1986
Response Rate	rate	Blood, 2010; Lambert et al., 2006; Sutherland, 2003
Hand Raising	percentage	Hayden et al., 2010; West & Sloan, 1986
	frequency	Lambert et al., 2006
<b>Teacher Behavior</b>		
Praise	rate	Haydon et al., 2010; Sutherland et al., 2003
Redirection	rate	Haydon et al., 2010

Note: \* observed by *quadrants* (group of four students); *AET* = academic engaged time; *MTS* = momentary time sampling; *PI* = partial interval;

other data collection methods used. Blood (2010) measured *time-on-task* for each participant (N = 5) using 10-second momentary-time sampling (MTS) for the duration of the observation (20 minutes) by repeated viewing of session recordings. This method resulted in 120 observations for on-task behavior per participant, per session (2010). Haydon and Hunter (2011) implemented a 20-second MTS data collection method for 10-minute observation, resulting in 30 observations of the participant for time-on-task (N = 1). Haydon et al. (2010) asserted a similar data collection method for *time off-task* with 20-second MTS for each eight-minute observation, resulting in 24 observations for off-task behavior, per participant, per session (N = 6). Sutherland et al. (2003) collected data on time-on-task differently than the previous studies. Participants (N = 9) sat in four rows called *quadrants*, and a one-minute MTS method was expended for a 15-minute observation. In this case, the entire row had to be on-task for it to be counted and each row was observed three or four times per session. In summary, the two studies that used MTS on *on-task* behavior did not demonstrate experimental effects, the study that used MTS for *off-task* behavior did reach experimental effect. Lastly, the study that utilized duration and MTS with quadrants also reached experimental effect.

The differences between the data collection methods warrant discussion. When observing behavior, event recording (i.e., frequency count) or duration are the most accurate but not always feasible therefore, the next standard data collection method is *interval recording* (next in accuracy) or *time sampling* (least accurate of the three options) which provide approximations of the actual number of times a behavior occurs (Alberto & Troutman, 2013). Interval recording can be further distinguished by *partial interval* (PI) or *whole interval* (WI) and is like MTS in that it requires the observer to break up the observation period into equal intervals then observe and mark if the behavior occurred at any point within the interval for PI or if the behavior occurred

the entire duration of the interval for WI. Although interval recording is more accurate than time sampling, time sampling is easier because the observer only must pay attention to the subject at the exact second that the interval ends. This method lends itself well to simultaneously teaching and collecting data as well as longer data collection (e.g., 90-minutes, all day). However, interval recording requires the observer to consistently observe a single subject to identify if the behavior occurred at all during the interval, not only at the end. Further, teacher education on applied behavior analysis suggests interval recording is used for short observations (15 minutes or less) whereas MTS is used for longer periods. Moreover, MTS risks under- or overestimating the occurrence of the behavior. How and if the data collection method impacted the overall outcomes of the studies included in this review cannot be determined with the available data; still, understanding how these data collection systems work help in understanding and interpreting published research (Alberto & Troutman, 2013).

Ensuring that all outcome measures are reported, and not only the ones with favorable outcomes were the focus of component 7.3. All studies met this component by reporting outcomes, in the text, with a graph, or both. The next component addresses the appropriateness of the frequency and timing of outcome measures. All studies met this component by maintaining at least three data points per phase and at least four repetitions in the case of alternating treatment designs.

Component 7.5 explored the evidence of adequate internal reliability by examining a minimum IOA score of 80%. All ten studies met this component. Two studies, however, did not specify the percent of sessions that were coded by a secondary observer. Although, Haydon and Hunter (2011) did indicate IOA data were collected for “each phase”, and West and Sloan (1989) collected IOA data for “numerous sessions” across all conditions and participants. The remaining

eight studies utilized a second observer for an average of 33% of sessions (range 20-50%) with a mean IOA score of 95% (range 86% - 99%). Skinner and Shapiro (1989) was excluded from the mean IOA score calculation because it did not provide a mean score for the study, only a range.

**Quality indicator eight: Data analysis.** The last QI includes only one component that is relevant to single-case design, the graph. “Single-case designs have relied heavily on visual inspection of the data to evaluate the extent to which the intervention has led to and accounted for change” (Kazdin, 2011, p. 22). Component 8.2 requires that the study provides a single-subject graph representing outcome data across all study phases for each unit of analysis. Traditional single-subject design visual analysis techniques such as analysis of mean, level, trend, overlap, and consistency of patterns across phases are necessary for readers to draw basic conclusions about experimental control (CEC, 2014). Four studies included a graph for every DV (Adamson & Lewis, 2107; Haydon et al., 2010; Skinner et al., 1997; Skinner & Shapiro, 1989); the rest failed to do so. Eight outcome measures across six studies lacked a graph. Five were academic outcomes, a graph for *quiz scores* was missing from Blood (2010) and Haydon and Hunter (2011), and an *accuracy* graph was not available in Haydon and Hunter (2011), Lambert et al. (2006) or Skinner et al. (1991). Two outcome measures were behavior outcomes, a graph for *response rate* was not found in West and Sloan (1986) while a *hand raising* graph was missing from Lambert et al. (2006). Lastly, Sutherland et al. (2003) did not provide a graph for *teacher praise*.

**Determining evidence base.** The criteria for determining evidence-based classifications use the study as the unit of analysis. However, the study must be methodologically sound, which CEC (2014) defines as, “meeting all the quality indicators relevant to their research design” (p. 6). Based on the findings of the methodologically sound studies, the practice (i.e., OTR with

students with EBD) is classified in one of five categories (i.e., evidence-based, potentially evidence-based, mixed evidence, insufficient evidence, or negative effects). Ten articles were coded against the CEC QIs (2014) and two studies (Adamson & Lewis, 2017; Haydon et al., 2010) received an absolute score of eight which indicates every QI was met. Four studies (Blood, 2010; Lambert et al., 2006; Skinner & Shapiro, 1989; Sutherland et al., 2003) received an absolute score of seven which indicated all but one QI was met. The remaining studies received an absolute score of six or less which shows that three or more QIs were not met.

In determining evidence base of OTR with students with EBD, Adamson and Lewis (2017) and Haydon et al. (2010) were the two studies from this review to be deemed methodologically sound. Three additional studies could have been considered methodologically sound if they had included all the proper graphs (Blood, 2010; Lambert et al. 2006; Sutherland et al., 2003). Additionally, Skinner and Shapiro (1989) would have met all the QIs if QI-3, intervention agent and a description of qualification or training, had been addressed.

Based on the findings of the two methodologically sound studies (Adamson & Lewis, 2017; Haydon et al., 2010), the practice of increased OTR with students with EBD to improve *behavioral outcomes* is a *potentially evidence-based practice* (P-EBP). This evidence base is determined according to the criteria set forth by CEC (2014) that indicates for a strategy to be considered a P-EBP it "must be supported by two to four methodologically sound single-subject studies with positive effects" (CEC, 2014, p. 9). However, increased OTR with students with EBD to improve *academic outcomes* has *insufficient evidence*. The distinction between *behavioral* EBP and *academic* EBP occurs because the two studies that were deemed methodologically sound only focused on behavioral outcomes with no academic measure included. This outcome could be interpreted to mean increasing OTR in class could likely



improve classroom behavior (i.e., increased time-on-task and decreased disruptive behavior) but should not be assumed to increase academic accuracy as well. High-quality instruction alone or in combination with research-based academic interventions should be used in conjunction with increased OTR in order to improve academic performance.

### **Moving Forward with OTR**

Establishing an evidence base for OTR is important because a significant portion of students struggle with EBD (National Research Council, 2009) while a large portion of teachers feel unprepared to meet their needs (Gable, et al., 2012). Applying OTR to a context not yet well explored in the current literature base such as middle school may add valuable reference and information. Extrapolating the current mixed results found throughout the literature, identifying the gaps and building off what works can aid teachers in deciding what type of OTR system would best fit their teaching style and students' needs, while simultaneously guiding future research to address the current gaps in the literature.

Analysis of outcomes identified significant patterns and omissions in the literature. First, all six studies that included a behavioral outcome measure showed improved performance, even if the study did not meet the QI standard. Next, of the eight studies that included an academic measure, six did not demonstrate positive effects, of which, two studies demonstrated a negative effect. The intertwining of OTR and academic performance was illustrated well in Adamson and Lewis (2017). Adamson and Lewis (2017) increased AET over baseline conditions of all three participants across all three OTR conditions (i.e., GN, RC, CWPT). Instead of measuring academic performance by *accuracy*, researchers examined "collateral effects". Researchers collected data on secondary outcome measures in the form of permanent products (e.g., scores on homework, classwork, quizzes, and tests). These collateral effects data in the form of classroom

performance scores revealed improvements in homework and classwork for all three participants and improvements in quiz scores for one participant during the alternating treatment intervention. None of the participants showed improvement in test scores during treatment over baseline. Performance during the week of *best treatment* condition (i.e., the OTR that showed definite improvement and was considered the most socially accepted by the teacher and participants which were RC for all three participants) varied across measures (i.e., homework, classwork, quizzes, tests) and participants. Utilization of only RC during the best treatment condition resulted in the highest classwork scores for all three participants, while the remaining scores across homework, quizzes and tests had great variability. Of course, scores of permanent products are subjective, and many other extraneous variables may impact a students' performance on each measure. Nonetheless, academic outcome measures such as these may be more useful than a single accuracy measure on OTRs during the intervention. Accuracy measures from studies included in this review looked at the correct response of the participant to each OTR and while two studies demonstrated a positive effect on accuracy (Skinner et al., 1997; Sutherland et al., 2003), two intervention studies resulted in decreased accuracy scores when OTR was increased (Lambert et al., 2006; West and Sloan, 1986).

Third, studies that implemented similar types of interventions still varied across dosage and exposure. The duration of the intervention ranged from eight to 20 minutes and the rate of OTR ranged from one to six per minute. A *most effective dosage* is not apparent and would likely vary according to the subject and teacher. Although CEC QI analyzes whether the dependent variables are socially important, it does not measure the participants' views on the usefulness of the intervention. Nonetheless, two studies positively specified response cards as the most socially

accepted by the teacher and participants (Adamson and Lewis, 2017) and increasing academic behavior (Lambert et al., 2006)

Fourth, Hispanic, Asian, and Native American students were absent from the existing literature despite representing a combined 31% of the public-school population (NCES, 2016) and 16.8% of students served under IDEA for ED (U.S. Department of Education, 2015). Furthermore, although the studies covered a variety of content areas, there exists a dearth of research on OTR with middle school students with EBD. Little can be concluded regarding the impact of OTR with middle school students as only one study could be found in the current literature. Emotional and behavioral disorders are a manifestation of mental and behavioral health (Kauffman, Brigham, & Mock, 2004) which despite being viewed through a cultural lens (Gay, 2018; Hough et al. 2002), evidence indicates that majority of chronic behavior problems emanate from behavior patterns established during early childhood years (Conroy, Hendrickson & Hester, 2004) while referrals for EBD identification peak in the 14- to 15-year range (Walker, Nishhioka, Zeller, Severson, & Feil, 2000). Currently, the Hispanic population constitutes 17.8% of the nation's total population (U.S. Census Bureau, 2017) and accounts for more than half the nation's growth in the past decade (Passel, Cohn, & Lopez, 2011). Combining two of the aforementioned gaps in the literature a unique, potentially vulnerable population is identified, Latino middle school students.

Research of Latino adolescents and cultural centered developmental models by Raffealli, Carlo, Carranza, and Gonzalez-Kruger (2005) state that Latino youth differ from other ethnic groups on ways that may affect “socialization, and life experiences, ultimately influencing their development and well-being” (p. 24). Raffaelli et al. included Latino youths are more likely to be foreign-born than Caucasian and African American youths and are more likely to have at least

one parent who is not a high school graduate (2011). A separate risk factor that may be more relevant for youth with EBD is that the Hispanic population is more likely to be uninsured than other ethnic groups (Barnett and Berchick, 2017). Although mental health care of children is lacking across all ethnicities, Hispanic children ages 6-17 years old estimated to have a need, were less likely to receive care than their Caucasian counterparts (Hough, et al., 2002; Kataoka, Zhang, & Wells, 2002).

Fifth, more than half of the participants did not have an IEP. This is significant because there exists a common conception that labeling a student with EBD is stigmatizing (Harry & Klingner, 2006) which no doubt contributes to the severe under service of the EBD population (Kauffman, Mock, & Simpson, 2007). The fact that 29 of the 46 participants were general education students and the majority were in elementary school, in addition to the growing minority population, highlights the importance of culturally responsive universal screening in the primary grades, early intervention, and identification, as well as embedded social, emotional and behavior supports across grade levels.

### **Current Study**

After evaluating the literature against CEC QIs to identify methodologically sound studies, it was determined that increasing OTR to improve behavioral outcomes of students with EBD is a potentially-evidence based practice (i.e., there exist two or four methodologically sound single-subject studies with positive effects CEC, 2014). However, insufficient evidence exists to evaluate increased OTR as a means to improve academic outcomes (measured as task accuracy) for students with EBD. Additionally, the experience of middle school Latino students were not represented in the research despite the growing population and possible risk factors.

Students with EBD and their teachers have a history of ineffective relationships accompanied by inconsistent performance which can be compounded by cultural discontinuity for minority students. Although the literature has identified successful interventions for students with EBD such as MTSS and SW-PBIS, these require time, money and staff to implement and maintain so not every school utilizes these models. Still, building on key concepts embedded in MTSS and SW-PBS to identify strategies that a teacher could implement independently with all students across all grades and content with minimal effort or funds could make the difference between a student making progress or staying stagnant. More importantly, increasing the opportunities for positive interactions between a teacher and a minority student with EBD could begin to mend that relationship and foster future positive interactions.

### **Purpose**

The purpose of this research is to expand the current literature on OTR with students with EBD by addressing gaps and exploring possible priming effects. Specific aims of this research study were to, (1) evaluate the impact of increased OTR on the behavior of middle school minority students receiving special education services, (2) examine the impact of OTR on academic performance outside of "prompt accuracy" (e.g., changes in test performance, quiz scores), (3) examine the teacher response in OTR activities, and (4) explore potential *priming effect* of increased OTR such as whether the intervention has an impact on the participants' behavior for the remainder of the class period (i.e., from the end of the intervention to the end of class period). The following research questions will guide data collection:

1. How will a class *opening-activity* of increased OTR impact the behavior of middle school students with EBD?

2. What is the typography of teacher response during increased OTR activity in a middle school class with students with EBD?
3. Will an opening activity with increased OTR impact performance on regular class assignments (i.e., class assignment, quizzes, tests)?
4. Will an opening-activity with increased OTR have an impact on the behavior of middle school students with EBD the remainder of the class period?

### **CHAPTER THREE: METHODS**

School site selection and participant recruitment followed the following procedures. First, the research department of the selected district granted permission. The selected school district was chosen because the population was majority Latino American (88%) with 8% of the population and the district had recently adopted a culturally responsive computer-based curriculum for the four middle schools. Next, the middle school principals (n=4) and assistant principals (n=4) within the district received an email from the researcher to assess interest (see appendix A). Two principals responded, one was interested. The school principal recruited two teachers that she believed would be interested and were likely to have students who met the eligibility criteria. Both of the teachers taught diploma-track special day classes. Interested teachers' participation in the actual intervention phases of the study was contingent on having students who meet eligibility criteria and who received parental permission. All teachers who demonstrated interest received more information on the study and a description of OTR (see Appendix B and C).

The principal and two teachers (one male and one female) attended a meeting with the researchers where they received an outline of the study phases and duration as well as expected activities they would partake in for each phase of the study (e.g., pre-intervention, baseline, introduction of intervention, withdrawal and reintroduction; see Appendix D). Teachers who participated in the intervention phases would receive a \$50 gift card to Amazon.com at the closing of the study, and the card would be gifted even if they had to withdraw from the study before its completion.

## Classroom Observations

Both teachers wished to continue to the next step and signed a *consent to participate* form (see Appendix E). After the consent to participate was signed, the researcher completed a structured *Class-wide Observation* for each class period with students who might meet eligibility. The male teacher was observed for one class period and the female for two class periods. The Class-wide Observation was taken from the *Center for Adolescent Research in Schools Classroom-Based Intervention Manual* (CARS, 2014) and consisted of a 10-minute observation using momentary time sampling method in 1-minute increments. The researcher listened to a preset timer through earbuds that *dinged* every 60 seconds for the duration of the 10-minutes. At the 1-minute mark, the number of students engaged was counted, then subtracted from the total number of students in the class to get the number of students not engaged. A *class-wide engagement percentage* was calculated at the end of the 10-minutes by adding the total number of students engaged at the end of each minute, dividing by 10 and then multiplying by 100 to obtain a percentage. Also, for the duration of the 10-minute observation, frequency data were used to collect the number of times the teacher provided an opportunity for the class or individual student to respond to a prompt. The total number of OTR were divided by the total number of minutes to calculate the rate of OTR per minute.

The male teacher's class-wide observation resulted in 95% class-wide engagement and .5 OTR per minute. Due to the high degree of class-wide engagement, he was withdrawn as a potential participant. The female teacher, Ms. Trish (pseudonym) was observed during second period which resulted in 70% class-wide engagement and .2 OTR per min and third period which resulted in 59% class-wide engagement and .3 OTR per minute. She was selected to continue to the next step of student recruitment.



**Student recruitment.** Ms. Trish introduced the study to her second and third-period English Language Arts class then distributed a recruitment flyer to all students (see Appendix F and G). Parents who granted permission for their child to participate in the study (i.e., be video recorded) signed and returned the flyer. Second period had 10 students enrolled and all 10 students received parent permission to be recorded. Third period had 12 students on which nine received parent permission to be recorded. Ms. Trish reviewed the returned flyers and identified to the researcher potential target participants (i.e., students who are likely to meet the eligibility criteria). Three students were identified in the second period class and four students were identified in the third period class. Parent permission slips were sent home with potential target participants to obtain permission to determine student eligibility (i.e., review student records, conducted student behavior observation; see Appendix H). All three students in second period and two students from third period received parent permission. Five students whose parents granted authorization were evaluated against participant eligibility criteria.

### **Participants**

A student was considered eligible for the study based on the following criteria: a) receives services in special education, b) demonstrates high levels of disruptive behavior in the classroom as indicated by behavioral goals in the IEP, documented history in most recent psychoeducational report and/or teacher observation, c) scores nine or higher on the *Student Externalizing Behavior Screener* (SEBS) indicating *high-risk*, d) demonstrates low rates of academic engagement (i.e., 70% or less), and e) African American or Latino American. It is important to note that students with emotional and behavioral disorders are severely underserved (Kauffman et al., 2007). One indicator of this underserve in school is that .7% of school age children are served in special education under the eligibility of ED (US Department

of Education, 2015). For this reason, students are not required to have an eligibility of ED in order to meet eligibility for this study. Students only must demonstrate a history of emotional or behavioral difficulties as documented by previous reports and records, and a current need of behavioral intervention as indicated by eligibility criteria c and d.

Each potential participant's special education file was reviewed to confirm eligibility. Reviewed documents included Individual Education Program (IEP), Multidisciplinary Reports (MDR), Behavior Support Plan and Functional Behavior Assessment (FBA). Information gathered from the document review included disability eligibility (i.e., ED, SLD, OHI), present levels of performance, and presence of behavior goals (see Appendix I).

For each potential participant, Ms. Trish completed a combined behavior screener called Student Internalizing Behavior Screener (SIBS) and Student Externalizing Behavior Screener (SEBS). The SIBS/SEBS is a 14-question screener that rates seven internalizing behaviors and seven externalizing behaviors on a four-point Likert scale with assigned points for each rank on the scale (i.e., *never*- 0 points, *rarely/seldom*- 1 point, *occasionally/moderately*- 2 points, *frequently/almost always*- 3 points). The seven questions regarding externalizing behaviors were scored, 0-3 points indicated *low risk*, 4-8 points indicated *moderate risk*, and 9-21 points indicated a *high risk* for behavior problems. Only the students SEBS (not the SIBS) score was used to confirm eligibility.

Last, in order to confirm that each potential participant currently demonstrated low rates of academic engagement and high rates of disruptive behavior (DB), each participant was solely observed on three separate occasions. Each observation was 10-minutes long and utilized momentary time sampling with 1-minute increments to measure AET and frequency to measure DB. Similar to the class-wide observations, the researcher listened to a pre-recorded timer that

dinged every 60 seconds upon which the researcher would note if the target student was engaged or not engaged, in addition to tallying the number of times the target student demonstrated DB. At the end of each 10-minute observation two calculations were made; the percent of engaged time was calculated by dividing the number of intervals the student was engaged by the total number of intervals and then multiplying by 100, and the rate of DB per minute was calculated by dividing the total number of times the target student demonstrated disruptive behavior by the total number of minutes observed. After the three observations for the target student were completed a *mean engagement percentage* and *mean rate of DB* were calculated. The five participants characteristics and results of the eligibility screening are described in table 4, pseudonyms have been used. Five participants then each signed an *Assent to Participate form* (see Appendix J).

Table 4  
*Participant Characteristics and Eligibility Data Outcomes*

<b>Name</b>	<b>Ethnicity</b>	<b>Age</b>	<b>Eligibility</b>	<b>Mean Rate of Engagement</b>	<b>Mean rate of DB</b>	<b>SEBS Score</b>
Brad	African American	13	ED	16 %	1.2	18
Jacob	Hispanic	13	SLD	70 %	1.0	12
Joseph	Hispanic	11	AUT	63 %	1.1	14
Matt	Hispanic	12	SLD	57 %	1.5	10
Darren	Hispanic	12	SLD	43 %	0.6	9

ED = Emotional Disturbance; SLD = Specific Learning Disability; AUT = Autism; DB = Disruptive Behavior

Five male students participated in the study, one was African American and four were Hispanic. Three participants were together during second period of which two were in eighth grade and 13 years old while the third student was in sixth grade and 11 years old. The other two participants were together during third period, both students were in the seventh grade and 12 years old. One student’s IEP identified him as having emotional disturbance (ED), one student

was eligible under Autism (AUT) and three were identified as having a specific learning disability (SLD).

### **Setting and Measurement**

**Setting.** The context was a public middle school in an urban city in Southern California. There were two target classes (i.e., second and third period), both English Language Arts, mild/moderate, special day class (SDC). Ninety-two percent of students qualify for free or reduce lunch (Ed Data, 2017). The second period class population was comprised of 90% Latino (n = 9) and 10% African American (n = 1). The third period class population was 100% Latino.

The classroom teacher, Ms. Trish, delivered the intervention. Ms. Trish is a 47-year old, female, Asian/American, with 20 years of teaching experience with diverse population of students. She has her mild/moderate special education teaching credential and a Master of Science in Reading. All but one year of her time as a teacher has been in a special day class setting with students whose disability ranged from mild to severe. She has as much experience with diploma track students as she does with non-diploma track. Each class period had an instructional aide and during the last two phases of the study a student teacher was also in both class periods. The classroom consisted of three rows of four tables, facing the front of the classroom. There was a walkway going down the middle. The teacher had a table at the back of the rows with a projector, laptop, and other supplies. Behind the teacher was her teacher's desk where a student was regularly seated during both periods. The classroom curriculum was entirely computer-based, so each student was assigned a Google Chrome book which they used every class period for every assignment and test.

### **Measures**

To determine the impact of an increased OTR activity on the behavior and academic performance of minority middle school students with EBD two direct dependent variables were analyzed and two secondary outcome measures were evaluated. The mixed results in academic performance, when measured as accuracy, in the current literature vary greatly with weak reliability. Academic accuracy gains may not be apparent during the intervention itself, but more general overall academic performance in the form of classroom assignments may demonstrate improvement. Adamson and Lewis (2017) utilized secondary data collection of classroom performance through a collection of permanent product data (e.g., homework, class assignments, quizzes, and test). Permanent products allowed researchers to gain a better understanding of the collateral impact of relatively short interventions on the overall academic performance of participants. Adamson and Lewis' (2017) data were highly variable; nonetheless, they produced evidence to support the use of increased OTR, with further research needed.

### **Dependent Variables**

**Primary dependent variables.** Academic engaged time (AET) and disruptive behavior (DB) are the primary dependent variables. In reviewing the literature, a present standard form of observation could not be found as there exists considerable variability in the amount of data collected during observations. Majority of the current research literature used either momentary time-sampling method or a form of interval data collection (i.e., full-interval or partial interval) and varied in length of observation which reduces the reliability and generalizability of findings. To address this inconsistency, the current research plan utilized a more reliable observation method.

***Academic engaged time.*** The primary dependent variable, AET, was defined as it is in Anderson and Lewis (2017) and "calculated based on the observers recording of mutually

exclusive student behavior of active engagement and off-task behavior" (Anderson & Lewis, 2017, p. 45). The student was academically engaged when he was interacting with the academic instruction and not exhibiting any of the range of "off-task" behaviors (i.e., attention on something unrelated, talking with a peer not about the task, wandering the classroom).

Duration recording was used to code AET data for the entire length of the class period. Although the whole class period is recorded and coded, the class is broken up into two parts: *opening-activity* (OA) and the *remainder of the class period* (RCP). Data collected during OA is compared across phases to determine the impact of the intervention on student AET. Data collected during RCP is analyzed across phases to address research question four and determine if the intervention during OA had any effect on the percent of AET for the RCP.

***Disruptive behavior.*** The objective definition of disruptive behavior was behaviors that could distract the teacher or classmates from their tasks. Also modeled after Anderson & Lewis (2017) *disruptive behavior* includes both low-intensity behaviors (i.e., talking to a neighbor, refusal to comply with directions) and high-intensity behaviors (i.e., shouting, destroying property). Non-examples include behaviors that are not related to the task but are unlikely to distract teacher or peers (i.e., sleeping, staring out the window, getting up to grab necessary material such as pencil or tissue). Frequency recording was used to document student disruptive behaviors for the entire duration of the class period. At the end of each session, two rates of DB were calculated, the total number of DB during OA was divided by the number of minutes of the OA to yield a rate of DB per minute for OA and the same was done for RCP.

**Secondary data collection.** In addition to the primary dependent variables, AET and DB, data on secondary measures were collected to explore the other aspects of increasing OTR in daily lessons.

***Teacher response.*** Teacher response refers to the type of response Ms. Trish provided after each OTR. The use of corrective feedback has been demonstrated as a vital part of classroom engagement (Chan, Konrad, Gonzalez, Peters, & Ressa, 2014) and although the correct answer is embedded in the intervention activity, Ms. Trish was encouraged to provide feedback. After each prompt, the correct answer is indicated when the class responses are shown. Nonetheless, data on the type of teacher response (i.e., feedback, praise, extra credit) was collected for evaluation. The anticipated teacher response included praise, corrective feedback, reinforcement, and non-response. Praise was defined as a verbal or physical prompt acknowledging the students' effort (e.g., "Good thinking, I like your effort" or thumbs up). Corrective feedback occurred when the teacher acknowledged the target students' incorrect response and then delivered the correct response (e.g., rock is not a state of matter but gas, liquid and solid are). Reinforcement included giving tangible or intangible rewards (i.e., issuing table points, extra credit points, or another form of non-tangible gain that is intended to benefit the student in the classroom setting). Non-response or "*pace of instruction*," is identified in Anderson and Lewis (2017), as a common consequence of OTR. This occurred when the teacher did not give a consequence to the students' response for the sake of maintaining the pace of instruction such as moving on to the next prompt which resulted in extinguishing the current OTR.

***Academic performance.*** To gain a better understanding of the impact of the intervention on academics, besides accuracy during the intervention, data on the participant's academic performance was gathered. Due to the virtual nature of the class curriculum, the student's completed assignments at an individual pace resulting in a percentage of work completed for the week instead of a score on assignments.

## **Procedures**

**Teacher training.** The researcher trained Ms. Trish during the week of the eligibility observations. Training consisted of one and a half hours divided into two training sessions during Ms. Trish's usual preparation time designated by the school. Brief weekly meetings accrued for five out of seven weeks to address questions and gather student performance data. During the first training session (one hour) Ms. Trish was trained in the evidence base behind increasing OTR's in class and the multiple approaches (i.e., response cards, clickers) modeled after CARS (2014; see Appendix K). Ms. Trish was encouraged to reinforce the students with verbal praise or tangible items during the intervention. Ms. Trish regularly reinforced her students with edible items (i.e., goldfish, crackers) so she was given a supply of 30 individual-sized bags of chips that she could use as reinforcement. The curriculum adopted by the school is computer-based and implement many culturally responsive practices including designated English Language Development (ELD) instruction, multimedia options in Spanish, culturally diverse literature and problem-solving activities, engaging videos and imagery to enhance meaning, in addition to personalization of assignments and grades. Since the classroom used a computer-based curriculum and virtually all instruction and assignments were completed using the students' assigned Google Chrome book Ms. Trish desired to use an OTR method that incorporated the classroom technology. The website Kahoot.com was chosen to implement the OTR intervention.

Kahoot.com is a website which allows students to use their internet connected device (i.e., Google Chrome Book) to respond to a teacher provided prompt. The website provides students with corrective feedback after each prompt, and students are individually reinforced with points disseminated by the program based on how fast the individual answered and on how



accurate. The facilitator of the activity (i.e., teacher) has the option to display a screen with the top five performing students after each OTR. While some students may be encouraged by the public display of performance, this is not the case for all. Some students may become discouraged if their name does not appear in the top five and teasing may occur. Ms. Trish and the researcher discussed what topic to cover, and since Ms. Trish typically assigned students to engage in a vocabulary activity on the Chromebook at the start of the class period, she decided that vocabulary would be the best subject to cover for the intervention.

The next training session (30 minutes) was held the week before the intervention was to be introduced. A set of sample prompts derived from the vocabulary curriculum, and the steps on how to navigate and implement OTR with Kahoot.com was provided to Ms. Trish. The three fidelity measures were discussed as well; 1) Each student has his or her own response device, 2) Correct answers were provided after each trial, and 3) The teacher provided corrective feedback to students who were not actively engaged (CARS, 2014).

### **Experimental Design**

A single-case research design (SCRD) ABAB was used to analyze the impact of incorporating an OA with an increased rate of OTR on the students' AET and rate of DB. Exploratory analyses were also completed on the AET and DB data collected for the RCP. When the target population is found in small numbers, SCRD is commonly used and is the conventional method in the current literature. In SCRD the participant acts as his own control, so there is no need for a control group (as in other group experimental studies). ABAB is a type of SCRD and consists of four phases; baseline, the introduction of the intervention, withdrawal (i.e., return to baseline), and reintroduction of the intervention.

**Data collection.** All sessions were video recorded with a *GoPro HERO 5-Session* for data collection and coding. Data collection occurred in Spring, for three days a week for seven weeks. Ms. Trish's class was segmented into two parts to address the research questions, *opening-activity* (OA; i.e., the first 10-20 minutes of class) and the *remainder of the class period* (RCP; i.e., end of the opening activity to the end of class period). Opening activity was the only time frame manipulated during the intervention phases. The RCP always consisted of activities that Ms. Trish had already planned and did not incorporate any aspect of the intervention. Typical activities during RCP were reading comprehension, writing strategies and individual seat work. The GoPro was placed in the back of the classroom on a bulletin board ledge by the researcher each day. The GoPro's view could easily see each of the student's computer screens. Video recording occurred the entire length of Ms. Trish's second-period and third-period classes. Collection of data on academic performance from Ms. Trish occurred once a week. Teacher response data were coded from the recordings.

**Baseline(A1).** During baseline, no part of the intervention was introduced. Opening activities typically consisted of students independently working on a vocabulary activity provided through the computer-based curriculum or a typing application where the students practiced typing. Since this was independent work, there were no OTR provided. The duration OA during baseline was between eight to 17 minutes.

**Intervention (B1).** Ms. Trish introduced the intervention OTR with Kahoot.com as the OA during the intervention phase. As the students walked into class, Ms. Trish had her computer screen projected on the whiteboard. Each student used the Google Chromebook to log on to the website *Kahoot.it.com* where they were prompted to input a 6-digit number projected on the whiteboard, then they were prompted to input their name. Students' names appeared on Ms.

Trish's screen as they logged in. After everyone has logged in Ms. Trish would begin with the prompts.

The Kahoot prompts aligned with the typical OA which was vocabulary. The classroom curriculum core vocabulary served as the source of the selected vocabulary in the intervention which provided engaging imagery and reflected a wide variety of interests, concepts, and cultures. Students were required to use context clues to determine the meaning of a word. Each OTR trial would go as follows. An opening prompt would show up on all computer screens for a few seconds. Next, all computers would show a short paragraph and three response options displayed within colored bars (red, blue, yellow). An on-screen timer would count down 30-seconds while Ms. Trish read the paragraph and response options aloud. The students used their devices to indicate their responses. Description of sample prompts are provided in table 5. When the 30 seconds ended a bar graph would appear on Ms. Trish's screen, which was still projected, indicating how many students chose each response and a star would appear over the correct answer. Each students' computer screen turned either red to indicate an incorrect response or green to show a correct response. Before the next opening prompt appeared, a screen with the top five performing students would appear. Students earned points for accuracy and speed. The intervention would continue for at least ten minutes. Ms. Trish was not given a specific number of OTR to provide, only that she continues providing OTR for at least ten minutes. The amount of OTR provided was an organic outcome of the desire to maintain a natural classroom environment and create meaningful OTR prompts which required students to analyze and think critically as opposed to recalling rote memory facts. Additionally, since baseline consisted of zero OTR, the intervention was naturally going to be well above baseline. The rate of OTR per session in each class period is indicated in figure 1.

Table 5

*Sample Intervention Prompts*

<b>Opening Prompt</b>	<b>Paragraph</b>	<b>Response Options</b>
Which hashtag describes <b>accurate*</b> in this status?	We're having so much fun on our trip! Sorry, there's just no way for us to give an accurate time of when we'll be home. It could be next week or a month from now!	<ol style="list-style-type: none"> <li>1. #plain</li> <li>2. #simple</li> <li>3. #exact</li> </ol>
What does <b>urban</b> - based environment mean in this post?	<p>This dish was a real winner! I enjoyed it while sitting outside in an urban environment.</p> <p>Watching many kinds of people walk by on the crowded streets made this dish so much better. I really liked having this meal downtown!</p>	<ol style="list-style-type: none"> <li>1. <b>city-based</b> environment</li> <li>2. <b>mall-based</b> environment</li> <li>3. <b>sports-based</b> environment.</li> </ol>
Choose the options that best completes this message.	<p>From: A party guest</p> <p>To: The party host</p> <p>You're such a civil host. Even though we'd never met, you made sure I was comfortable. You offered me refreshments and introduced me to other guests. You were well mannered and pleasant!</p> <p>Thanks for being...</p>	<ol style="list-style-type: none"> <li>1. so polite</li> <li>2. so fake</li> <li>3. so happy</li> </ol>

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\* the vocabulary word was bolded when it appeared in the opening prompt

**Withdrawal (A2).** The intervention was withdrawn, and the class activities returned to baseline. Recording and data collection continued.

**Reintroduction (B2).** During this phase of the study, the intervention was reintroduced, and all activities proceeded as they did during phase two when the intervention was introduced. Ms. Trish created prompts that followed the same manner and duration (i.e., 30-seconds to respond) as the previous intervention phase.



## Analysis

Single case research design analysis methods rely entirely on visual inspection of graphed data. Data evaluation focuses on whether the change is likely to be reliable and not likely due to chance fluctuations in performance (Kazdin, 2011). In SCRD the experimental criterion is met by examining the effects of the intervention at different points in time and replicated at various points. Elements targeted for visual inspections and analysis to determine experimental control include *the magnitude of change*, the *rate of change* and *non-overlapping data across phases* (NDP).

Characteristics of the magnitude of change are evaluated by changes in *mean* and *level* across phases. Change in mean is such that shifts in the average rate of performance change

from one phase to the next. Changes in level across phases are noted by the discontinuity of performance one phase to the next. For example, a level change is indicated if a participant ended baseline phase on 30% AET then began the intervention phase with 80% AET.

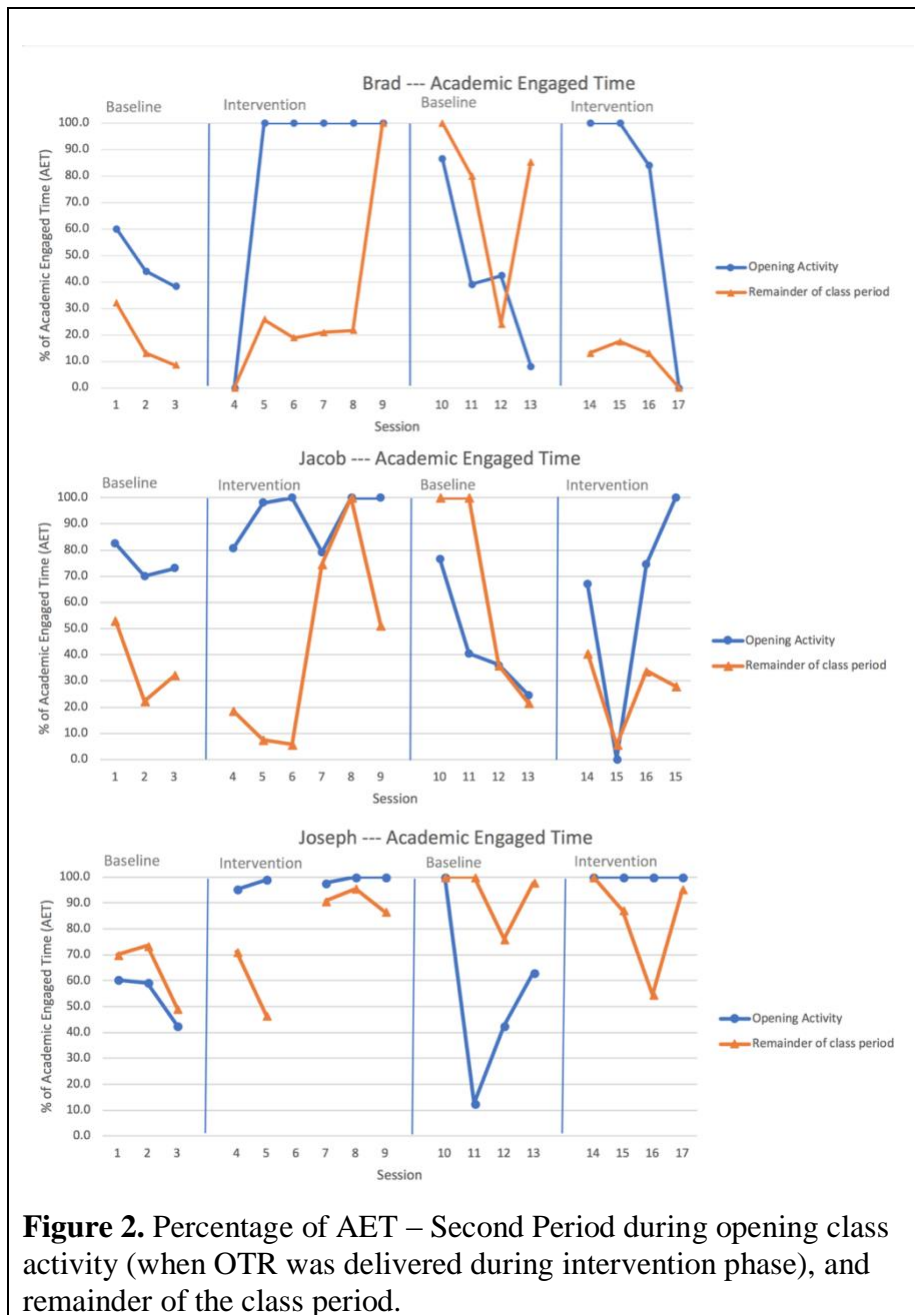
Characteristics related to the rate of change are evaluated by changes in *trend* or *slope* and *latency*. Researchers evaluate that the trend or slope that characterizes the data in one phase is different from the previous and following phases. The latency of the change refers to the amount of time from the onset of the phase to the changes in performance. Short latency change (i.e., immediate change) between phases contributes to inferring that the condition was responsible for the change (Kazdin, 2011). Lastly, NDP is a combined criterion involving some or all of the above criterion and involves determining that the data in baseline phases do not overlap with data in intervention phases. There are no strict rules when evaluating SCRD graphs, rather the three elements described above are used in combination to gauge whether experimental control was demonstrated.

## CHAPTER FOUR: RESULTS

### Primary Dependent Variables

Results for the primary dependent variables, percent of AET and rate of DB, are described. Observation data were graphed and visually analyzed for comparisons across phases (see Figure 2 thru 5). Results showed moderate to high levels of improvement in AET with three participants demonstrating experimental control and one more participant nearing experimental control except for absence for last three sessions. In the case of the rate of DB, results were less impressive. Overall, four participants' mean, level, and trend showed notable improvement from baseline to intervention; a functional relationship could not be established as the rate of DB did not respond to withdrawal and reintroduction conditions.

**Brad.** During the first baseline, Brad's mean percentage of AET was 47% (range 38%-60%). Brad had three sessions of baseline data, and his AET was occurring at a decreasing trend. When the intervention was introduced, Brad's mean AET increased to 83% (range 0% - 100%). Upon return to baseline, Brad's mean percentage AET was 44% (range 8% - 86%), and his AET was occurring at a decreasing trend. When the intervention was reintroduced Brad's mean percentage AET increased to 71% (range 0% -100%). Experimental control was demonstrated as Brad's AET increased upon introduction of the intervention, decreased upon withdrawal and increased with reintroduction. Brad's mean rate of DB during baseline was 1.4 (range 1.0 – 1.9) and dropped to .03 (range 0 – 0.2) during the intervention. When the intervention was withdrawn his mean rate of DB increased to .17 (range 0 - .4) and remained the same when the intervention was reintroduced (range 0. - 0.7). Although the initial introduction of the intervention resulted in a drastic decrease in the rate of DB, a functional relationship could not be determined because the rate of DB did not return to baseline upon withdrawal.

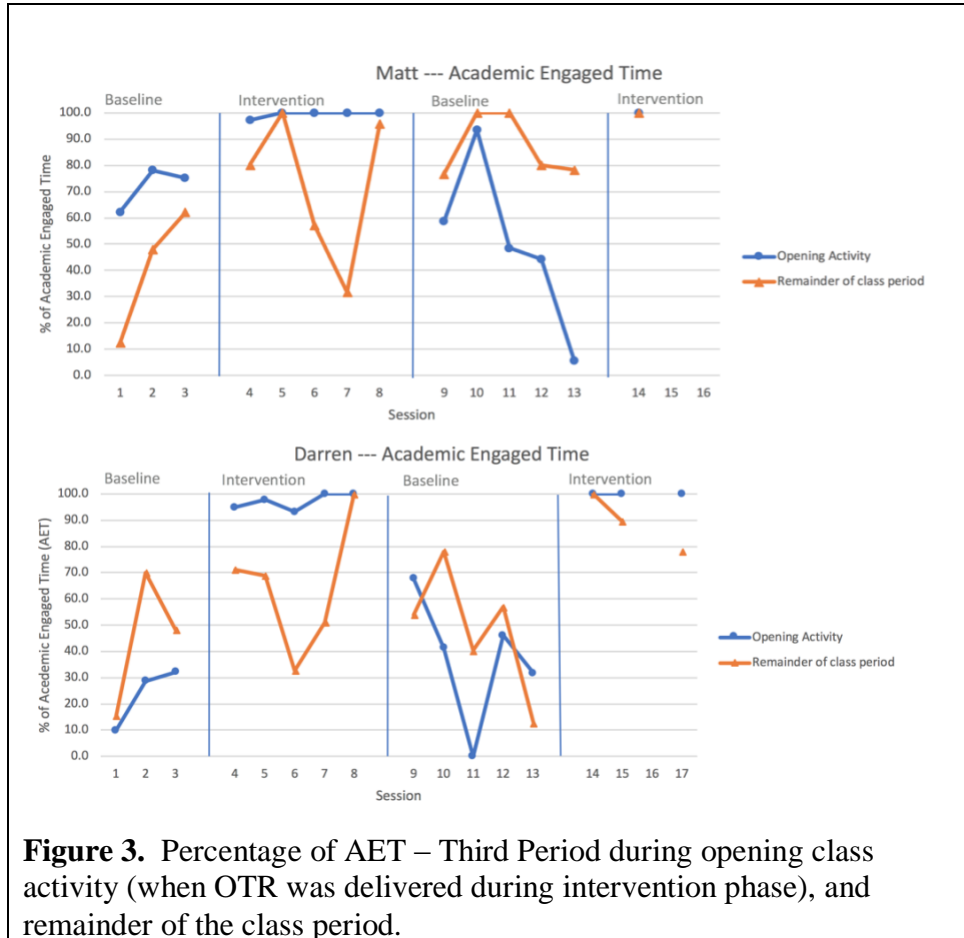


**Figure 2.** Percentage of AET – Second Period during opening class activity (when OTR was delivered during intervention phase), and remainder of the class period.

**Jacob.** Mean percentage of AET during baseline was 75% (range 70% - 82%) and occurring at a decreasing trend, increased to 93% (range 79% - 100%) when the intervention was introduced. Short latency level change occurred when the intervention was withdrawn and mean percentage of AET decreased to 44% (range 24% - 76%) with a descending trend. When the intervention was reintroduced the mean percentage of AET increased to 60% (range 0% - 100%).



Jacob's mean rate of disruptive behaviors did not vary significantly between phases. During baseline, it was 0.8 (range 0.5 – 1.3), decreased to 0.4 (range 0.0 – 0.8) during the intervention, slightly reduced to 0.3 (range 0.0 – 0.7) when the intervention was withdrawn and stayed the same at 0.3 (range 0.0 – 0.8) when the intervention was reinstated. The intervention did not seem to have any significant impact on Jacob's rate of DB.



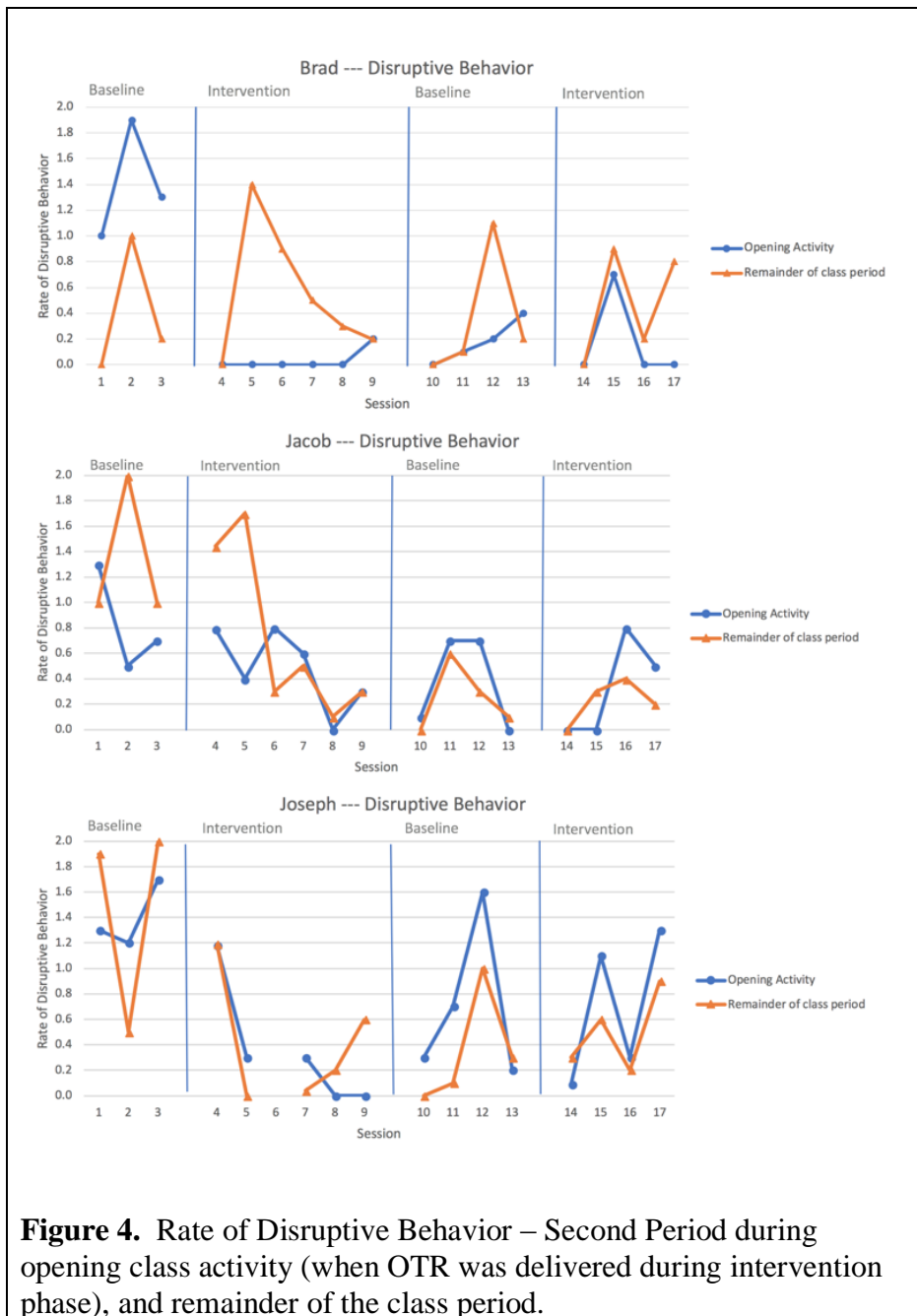
**Figure 3.** Percentage of AET – Third Period during opening class activity (when OTR was delivered during intervention phase), and remainder of the class period.

**Joseph.** During baseline, Joseph's mean percentage of AET was 54% (range 42% - 60%) occurring at a decreasing trend. During intervention, the mean percentage of AET was 98% (range 95% - 100%) with short latency and occurring at an ascending trend. When the intervention was withdrawn the mean percentage AET decreased to 54% (range 12% - 100%), however, it was occurring at an upward trend. During the final phase of the intervention Joseph's

percent of AET was 100% for each session. A functional relationship was established between the intervention and Joseph's percent of AET, notwithstanding, a single overlapping data point during the withdrawal phase. Mean rate of DB during baseline was 1.4 (range 1.2 – 1.7) and decreased to 0.3 (range 0.0 -1.2) when the intervention was introduced. The last two phases of Joseph's mean rate of DB remained the same 0.7 with a range of 0.2 – 1.6 during baseline and a range of 0.3 – 1.3 upon reintroduction. The initial introduction of the intervention resulted in significant decrease in the rate of DB, but a functional relationship could not be determined because the rate of DB did not return to baseline upon withdrawal and was maintained into reintroduction.

**Matt.** Matt's mean percentage of AET was 72% (range 62% - 78%) during baseline. His AET was 100% for four out of the five intervention sessions when the intervention was introduced with a mean of 99% (range 97% - 100%). During second baseline his mean percentage of AET dropped to 50% (range 5% - 94%). The last phase when the intervention was reintroduced Joseph was only in attendance for one session where he received 100% AET. He was absent for the remaining three sessions. Mean rate of DB for baseline was 1.7 (range 1.0 – 2.5) then decreased significantly when the intervention was introduced to .2 (range 0.0 – 0.7). Return to baseline conditions resulted in a slight increase of the mean rate of DB to 0.5 (range 0.2 – 0.7) and then a slight decrease to .4 for the one day he was accounted for during the final intervention phase. A functional relationship could not be determined between the intervention and rate of DB.

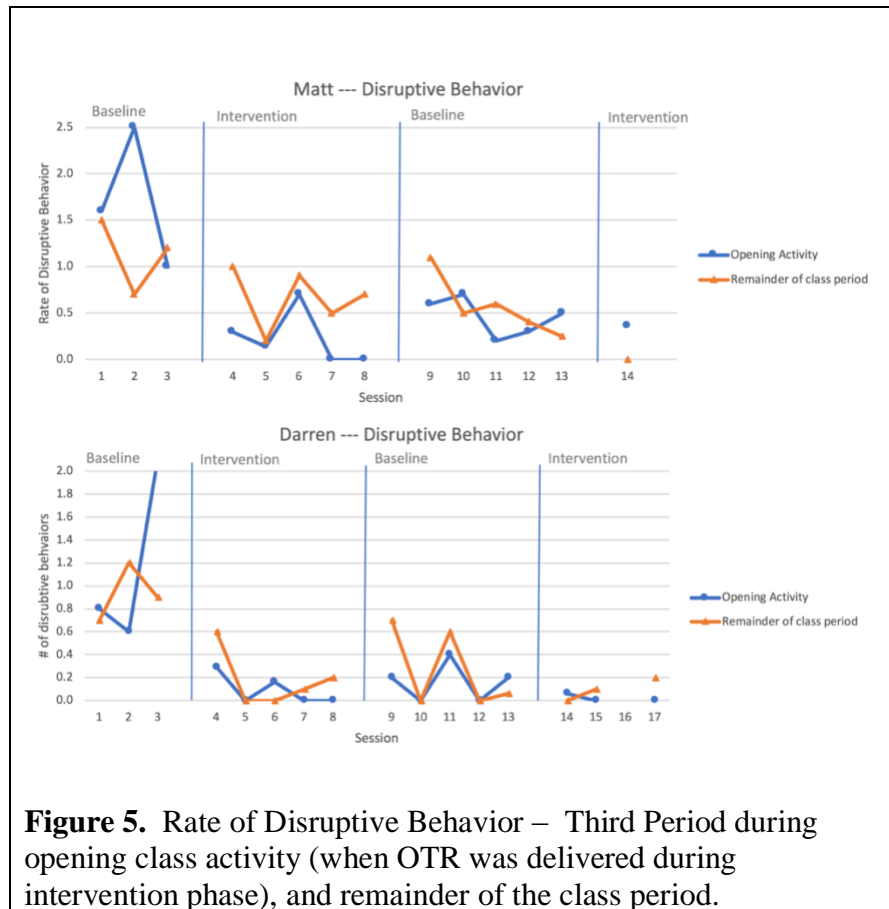
**Darren.** Darren's baseline mean percentage of AET was 24% (range 10% - 32%) and increased to 97% (range 93% - 100%) during the intervention phase. When the intervention was withdrawn, his mean percentage of AET dropped to 37% (range 0% - 68%). During the last



**Figure 4.** Rate of Disruptive Behavior – Second Period during opening class activity (when OTR was delivered during intervention phase), and remainder of the class period.

phase of the intervention, Darren was absent for one of the four sessions. The three sessions he did attend resulted in 100% AET. A solid functional relationship was demonstrated between the intervention and Darren's percent of AET. Experimental control was not evident in the case of the rate of DB. Darren's mean rate of DB for baseline was 1.7 (range 0.8 – 2.1) then decreased

significantly when the intervention was introduced to 0.1 (range 0.0 – 0.3). Return to baseline conditions resulted in a slight increase of mean rate of DB to 0.2 (range 0.0 – 0.4) and decreased to 0 (range 0.0 – 0.1) during reintroduction. Despite the desired changes in means, the overall evaluation would indicate no experimental control.



### Remainder of Class Period

Data on AET and DB was coded for the RCP across all sessions to explore whether opening the class with an increased OTR activity could impact the behavior of students with EBD during the RCP. Figures 2 - 5 describe the outcome for each participant during each phase while table 6 and table 7 compares the means. Overall, a functional relationship between the

intervention and outcome measures (student's percent of AET and rate of DB) for the remainder of class was not established.

**Table 6**

*Mean Student Percentage of AET During Opening Activity (OA) and Remainder of Class Period (RCP) Across Phases*

	<b>Baseline</b>	<b>Intervention</b>	<b>Baseline</b>	<b>Intervention</b>
<b>Brad</b>				
OA	47.4	83.3	44.0	71.0
RCP	15.0	31.2	72.2	10.85
<b>Jacob</b>				
OA	75.1	92.9	44.4	60.4
RCP	25.2	42.9	64.3	27.0
<b>Joseph</b>				
OA	54.0	82.0	54.5	100
RCP	47.8	65.1	93.4	84.2
<b>Matt</b>				
OA	71.8	99.4	50.2	100*
RCP	20.1	72.9	87.0	100
<b>Darren</b>				
OA	23.5	97.2	37.4	100
RCP	28.4	64.7	48.4	89.1

\*student was in attendance for only one session during the last phase

**Table 7**

*Mean Student Rate of Disruptive Behavior (DB) During Opening Activity (OA) and Remainder of Class Period (RCP) Across Phases*

	<b>Baseline</b>	<b>Intervention</b>	<b>Baseline</b>	<b>Intervention</b>
<b>Brad</b>				
OA	1.40	0.03	0.18	0.18
RCP	0.40	0.55	0.35	0.48
<b>Jacob</b>				
OA	0.83	0.48	0.38	0.33
RCP	1.33	0.72	0.25	0.23
<b>Joseph</b>				
OA	1.40	0.30	0.70	0.70
RCP	1.47	0.34	0.35	0.50
<b>Matt</b>				
OA	1.70	0.23	0.46	0.36
RCP	1.13	0.66	0.57	0.00
<b>Darren</b>				
OA	1.17	0.09	0.16	0.02
RCP	0.93	0.18	0.27	0.08

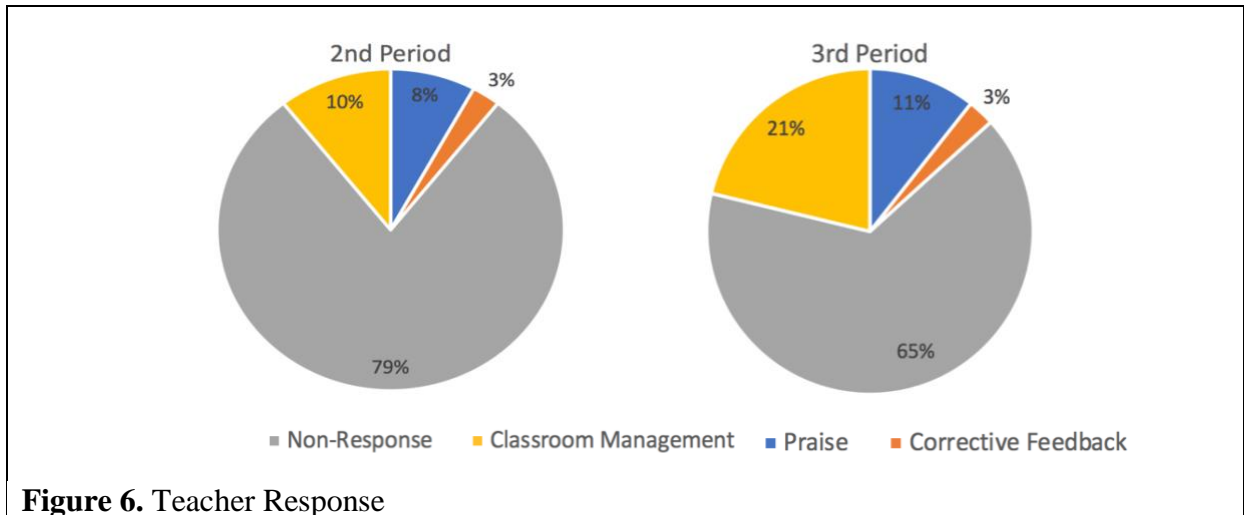
***Academic Engaged Time:*** Each participants' change in the mean rate of AET during the remainder of class period across phases was analyzed to determine if there was an improvement. Brad's mean percent of AET improved from baseline to intervention and improved more upon withdrawal but dropped significantly during the last phase. Jacob and Joseph followed the same pattern but did not decrease as significantly during the last phase. Matt's mean percentage of AET increased a little more with each passing phase. Darren increased in mean percent of AET from baseline to intervention, then decreased upon withdrawal and increased during reintroduction. Despite some initial improvements, behavior during the RCP was highly variable across phases and students did not appear to follow any predictable pattern.

***Disruptive Behavior.*** Mean rates of disruptive behavior were analyzed in a similar fashion. Brad's mean rate of DB during the RCP increased from baseline to intervention, decreased upon withdrawal and increased during the last phase of the intervention. Jacob and Matt's mean rate of DB decreased a little bit with each passing phase. Joseph's mean rate of DB decreased from baseline to intervention then stayed about the same into the return to baseline condition and slightly increased during the reintroduction of the intervention. Darren decreased from baseline to intervention, slightly increased during the next phase, and then decreased again for the last phase.

**Secondary Variables.** Results are described for the secondary variables, teacher response, and academic outcomes.

***Teacher response.*** Ms. Trish's response to students after each OTR during the intervention activity is graphed in figure 6. Overall, similar to previous research, Ms. Trish most often did not provide a response (non-response) and went on to the next prompt, combining the two periods; this occurred after 73% of the OTR. The next most frequent response that occurred

a combined 15% of the time was *class management*. Lastly, she responded with praise a combined 9% and corrective feedback a combined 3% of the OTR.



**Academic Outcome.** Student academic performance was highly variable in that the students did not all have the same due date for assignments. The class completed one and a half units from the curriculum during the data collection phases. Within each unit, there were 13-15 *tasks* to complete and students were given varying degrees of time to complete each task. Rarely, were assignments completed at the same time (i.e., as a class) and students worked independently on their assignments most of the time. The objective was that everyone would have everything completed by the end of the unit. Students did not have strict deadlines, besides the end of the unit, so the researcher was unable to determine if their performance improved across phases. One test was administered halfway through the study; therefore, it could not be compared with any other time in the study. Percentage of work completed could be collected but did not have analytical value since students were going at their own pace. This type of computer-based curriculum with highly individualized expectations resulted in unusable data.

**Design Outcome Measures**

**Integrity.** Ms. Trish was observed the first three days of the intervention phase and every third session afterward (total 50% of sessions) to ensure the integrity of OTR was following the model after the CARS (2011) manual and adapted for the integration of technology (see Appendix L):

1. Each student has his or her own response device
2. Correct answers were provided after each trial
3. The teacher provided corrective feedback to students who were not actively engaged

If Ms. Trish fell below 90% integrity, the researcher would meet with the teacher to review fidelity measures and assist where needed. Ms. Trish maintained 100% for all integrity measures.

**Interobserver agreement (IOA).** A third-year doctoral student was trained on how to code for AET, DB, teacher response and integrity by the researcher during a 1-hour training session in order to ensure interobserver agreement. The IOA for AET and DB was calculated starting with the second session and then every third session after that which resulted in 33% of sessions. On the occasion that the IOA fell below 80% the data was discussed and reviewed by the primary researcher and the second coder in order to reach an agreement. An example of a resolved discrepancy was acknowledging that the student was on the incorrect website. Percent of agreement for AET were calculated by dividing the smaller percent of AET by the larger percent of AET, then multiplying by 100. Mean IOA for AET was 93% (range 84% - 100%). Percent of agreement for DB was calculated by dividing the smaller frequency count of DB by the larger frequency count of DB, then multiplying by 100. Mean IOA for DB was 94% (range 87% - 99%). Fifteen percent of intervention sessions were double coded for teacher response. Agreement for teacher response was calculated by dividing the number of agreements by the total number of agreements plus disagreements, then multiplying by 100. The average percent of



agreement for teacher response was 97% (range 88% - 100%). Every other integrity observation was also double coded resulting in 15% of sessions. Integrity measures IAO was 100%.

**Social Validity.** A social validity measure was completed by Ms. Trish and the five target students. The measure utilized a Likert scale to inquire about the interventions usefulness, perceived benefit, and willingness to use with future lessons (see Appendix M and N). Points were attributed to each Likert scale as follows; 1 point- *strongly disagree*, 2 points- *disagree*, 3- points- *neither agree or disagree*, 4 points- *agree*, and 5 points- *strongly agree*. The participants' responses are summarized in table 8. Ms. Trish was asked the same questions regarding her experience with the intervention; she scored all three questions with *strongly agree*. Social validity measures indicated the participant felt the intervention activity helped them in class and expressed a high degree of willingness to use OTR in the future.

Table 8.  
*Student Mean Social Validity Scores*

Survey Question	Mean (range)	Standard deviation
1. Kahoot was easy to use	3.8 (1-5)	1.5
2. Kahoot helped me in class.	4.6 (4-5)	0.5
3. I would like to use Kahoot again in class	4.6 (4-5)	0.5

## CHAPTER FIVE: DISCUSSION

This study examined the effects of an opening class activity with increased OTR on the behavior of minority middle school students with EBD. Results suggested that students with EBD demonstrated increased percent of AET for the duration of the OA with increased OTR during the intervention phases when compared to baseline and withdrawal. Effects of the intervention on the rate of DB was less clear as, despite the decreased rate of DB upon introduction of the intervention the participants behavior did not return to baseline levels upon withdrawal and improvement was not replicated upon reintroduction. Exploratory analysis of the priming effects of the intervention on behavior for the remainder of the class period was inconclusive.

Analysis of the participants *means percentage of AET* during the OA demonstrated an improvement (i.e., increased percent of AET) when the intervention was introduced, followed by a decrease in the mean percentage of AET when the intervention was withdrawn. The reintroduction of the intervention resulted in the mean percentage of AET to increase. While *means* were used in some current research studies to form conclusions, SCRD analysis focuses on changes in mean, trend and level to determine experimental control (i.e., the intervention had an effect on the outcome measure). Close scrutiny of changes in level, mean and trend in the SCRD graphs determined there was a functional relationship established between the intervention and the AET for three participants, Brad, Joseph, Darren. Regarding AET, Jacob's high rate of overlapping data and small changes in level and mean prevented a functional relationship from being established. Matt was near a functional relationship except he was absent for three sessions during the last phase resulting in too few data points for comparison. Regarding percent of AET, the effects of this study, according to CEC (2014), are *mixed/neutral*.

If a functional relationship was established for one more participant, the study could have been classified as having *positive effects*. The high rates of overlapping data across all phases and participants would classify the effects of the intervention on DB as *mixed/neutral* as well.

### **Academic Engaged Time**

Brad's experience in the class was fundamentally different seeing as he was the only African American student in a classroom where everyone else was Latino. Since the class sessions were recorded Brad's experience was clearly observed, however, within the context of this study, the Internal Review Board (IRB) provided permission for the researcher to report on the outcomes of structured interviews and specific outcome measures (i.e., AET, DB) and including more details breaches IRB approval and puts participants at risk of identification. Brad's percent of AET increased upon introduction of the intervention, decreased upon withdrawal and increased with reintroduction. On two occasions, Brad refused to participate whatsoever in any class activity or interaction with others. On one occasion the recording captured an inappropriate racial comment directed to Brad which resulted in a lower than score, making this data point less representative than some; nonetheless, it is included in the analyses to maintain an objective stance in data collection and presentation. Both of these occasions occurred during intervention phases and were traced back to events that occurred before class, and both occasions resulted in Brad meeting with the counselor to discuss the issue. Although Brad demonstrated a wide range of percent of AET (due to not participating) during the last phase, Brad demonstrated a stark change in level and mean from baseline to reintroduction. Brad's variability in performance may be attributed to his eligibility of ED. As discussed earlier, students with ED and students at risk for EBD share many characteristics but, as illustrated here, still harbor distinct qualities. The percent of AET of Joseph and Darren, both students with SLD,

each demonstrated a functional relationship. Darren's NDP was 100% indicating zero data points overlapped and Joseph's NDP was 94% because he had one baseline datum that overlapped with intervention data. Joseph and Darren demonstrated short latency of change in performance from baseline and introduction and again between withdraw and reintroduction. The short latency in change may infer the intervention had a quick impact on the participant's behavior.

Jacob receives special education services under the eligibility of autism and he refused to participate or interact with anyone during the last phase of the study. Desired changes in Jacob's percent of AET occurred from one phase to the next, that is, the percentage of AET improved with the introduction of the intervention, then decreased during baseline and improved with the reintroduction of the intervention. However, the amount of variability during the last phase would eliminate a functional relationship as measured by mean, level, and trend. Jacob refused to interact with others or participate in any activity during one session; this resulted in 0% AET and a rate of 0.0 DB. The cause and outcome of this behavior are unknown. If Jacob had chosen to participate, he still would have obtained a high amount of overlapping data.

Matthew's changes in percent of AET from baseline to introduction of the intervention improved with short latency and stark change in level. When conditions returned to baseline, Matthew's percent of AET decreased with short latency and occurred at a descending trend. When the intervention was reintroduced his percent of AET improved with sort latency. Matthew's performance was near experimental control as he demonstrated 100% AET during intervention sessions, except he was absent for the last three days of data collection. Therefore, the last phase only had data for one session. Although attendance was not part of the eligibility criteria, Matthew had a history of good attendance.

### **Disruptive Behavior**

The frequency of DB was not functionally related to the intervention. Due to the nature of ABAB designs, the dependent variable is expected to return to baseline performance upon withdrawal of the intervention, which did not occur in the case of DB. Participants in period three both demonstrated decreased mean rates of DB during intervention phases, however, slightly, and low NDP. Participants in period two all decreased in the mean rate of DB when the intervention was introduced but no discernable pattern could be identified for the last two phases. Although, the rates of DB did not return to baseline rates for the remainder of the study, in other words, the participants rates of DB decreased when the intervention was introduced and did not increase for the remainder of a study. Although this does not qualify as a functional relationship, it could be seen as a positive change in behavior.

### **Remainder of the Class Period**

All participants mean rate of AET during the remainder of the class period increased from baseline to introduction of the intervention. Participants in the second period class each had the highest mean percentage of AET during the withdrawal phase and decreased during the reintroduction phase. This would indicate the intervention did not have a positive functional relationship with the dependent variable during the RCP. Participants in third period had the highest mean percentage of AET during the last phase of the study. Although both participants increased the mean percentage of AET from baseline to intervention and again from withdrawal to reintroduction, the percent of NDP was less than 7% across all participants. The low percent of NDP indicated high variability of data and infers the intervention did not have a strong impact of the outcome measure. Amount of AET during RCP varied greatly depending on the type of activity in the class, for example, it was much higher while the class took a test as opposed to

when they were assigned independent seat work. Participants mean rate of DB was equally variable during the RCP.

### **Teacher Response**

Increasing OTR in class provides more opportunities for the teacher to engage with students in a meaningful, academic focused way and when the class is comprised of minority students, culturally responsive teaching “is a means for unleashing the higher learning potentials of ethnically diverse students by simultaneously cultivating their academic and psychosocial abilities” (Gay, 2000, p. 20). Systematically created opportunities for student-teacher interactions have the potential to cultivate a caring relationship if they are utilized in a culturally sensitive way. Researchers of CRT state, the point of culturally responsive teaching is to respond to students in ways that builds and sustains meaningful, positive relationships (Shevalier & McKenzie, 2012, p. 1091). Unfortunately, similar to the findings in Adamson and Lewis (2017), the most frequent response after each OTR from the teacher was a *non-response*. In the case of Adamson and Lewis (2017), it was hypothesized that the teacher did not provide a response in order to maintain a pace of three OTR per minute. In the case with this study, rate of OTR was not nearly as high and the teacher was given flexibility in the rate of OTR as long as the activity continued for a minimum of ten minutes. Though, corrective feedback was automatically provided by the intervention program, Kahoot.com, after each OTR, consequently, Ms. Trish may not have felt the need to provide corrective feedback since the correct answer was provided. The fidelity measure required that the *correct answers were provided after each trial*, which was met automatically. Although Ms. Trish was encouraged to provide praise and feedback, it was not included as a requirement of the intervention. In the case of this intervention with Kahoot.com, the teacher had the opportunity to provide praise for the students who were

performing in the top five (as indicated after each correct response was provided) or the teacher could provide praise to the class when the entire class got the response correct. Despite the conduciveness to these types of responses, the teacher demonstrated non-response more frequently (73% of all OTR) and the second most frequent was classroom management (15% of all OTR). Although, the rate of classroom management could be attributed to the fidelity measure which required *the teacher provided corrective feedback to students who were not actively engaged*.

Future research with a technology-based intervention that includes a function such as automatically providing correct answers would benefit from specifying that *teacher-provided* feedback is a requirement of the intervention. In hindsight, the *teacher provided* feedback should have been added to the fidelity measure. Seeing that an OTR is an important opportunity to build rapport between a student and teacher, it makes sense that the feedback comes straight from the teacher.

On the other hand, the cause for high rates of non-response could be explained by the research on the relationships between teachers and students with EBD which states that teachers are often negative, and “avoid interacting with students who exhibit the most problematic behavior” (Sutherland & Morgan, 2003, p.34; Sutherland & Oswald, 2005). Not surprising, Ms. Trish’s percentage of responses concerning classroom management occurred 21% of OTR trials in her third-period class which also had a lower mean class-wide engagement during the pre-intervention phase of the study.

### **Interaction through OTR**

The recommended rate of OTR in 1987 was four to six per minute for new information and six to eight for review content, however, how these rates were developed could not be

determined. Were these suggestions based on student accuracy, academic performance, student behavior, teacher report or a different combination of measures? What is the mechanism behind OTR that builds its foundation as an evidence base? The research on OTR as a means to improve academic performance in the form of task accuracy or overall permanent product evaluation is mixed and inconclusive. When working with minority students with EBD, the social interaction opportunities within each OTR may be where the real value lays because it is an opportunity to show one cares (Gay, 2000, 2018). Practicing a rate of consistent, meaningful, academic-based interactions presented in a non-threatening, low-risk manner with high rates of constructive positive feedback and encouragement appears to be a better focus. The aforementioned qualities of interactions are especially important for minority students with or at risk for EBD.

Teacher and student dynamics play a crucial role in the classroom environment and student success. On two occasions Brad refused to interact with others or participate in any class activity and once, on a separate day, Jacob refused. The cause was identified both days that Brad refused, and he was later provided services from the school counselor. The cause for Jacob's behavior was not apparent to the researcher and Ms. Trish did not address it. Students with challenging behavior are subjected to higher rates of exclusionary disciplinary practices (i.e., time-out, suspension) and lose out on instructional time (Brenner, et. al., 2013; Martella, et. al., 2012). However, Brad and Jacob, despite refusing to participate, were not excluded from the class by the teacher on any occasion. They were allowed to stay in the class and during this time data were collected as usual which resulted in 0% AET and 0 occasions of DB. Although Brad and Jacob did not participate as expected they also did not disrupt the class. These three occasions illustrate an important aspect of teaching students with EBD in a culturally responsive manner. Ms. Trish knew her students well enough to be able to identify when they were having



an *off-day* and she navigated the situation accordingly. She was observed offering support and space to the student when he needed it, and in Brad's case, she recruited additional support from the counselor. On the other hand, if Ms. Trish had insisted on Brad and Jacob partaking in the activity when they were demonstrating elevated behaviors it is likely that they would have escalated in behaviors and caused disruptions to the class, possibly requiring removal from the class. The student-centered treatment that the students received by being allowed to remain in the classroom while expected not to cause disruption is a cornerstone of culturally responsive teaching of *caring* and *high expectations* (Gay, 2018) that may often be overlooked when working with students with EBD for the sake of *control* under the guise of classroom management.

### **Future Research**

Latino students with EBD are a vulnerable population that was absent from the research on OTR with students with EBD. The outcomes of this research with four Latino and one African American participant suggested no functional relationship between increased OTR and DB, while previous research with Caucasian and African American participants resulted a positive functional relationship (Adamson and Lewis, 2017; Haydon et al., 2010). Future research should evaluate the cultural influence of behavior patterns of middle school Latino students with EBD and how CRT could better address the students' unique needs. There is growing research on the need for interdisciplinary collaboration to address the mental health needs of the vulnerable populations such as individuals who are uninsured and from minority backgrounds (Katoaka et al., 2002; Lopez, 2002). It may be beneficial for researchers to combine the research on culturally responsive educational practices as a means to decrease psychological distress (Cholewa et al., 2014) with the need for interdisciplinary collaboration. Future research

should explore interventions in the special education classes of minority students with and at risk for EBD as a means of collaboration with mental health providers for potential cultural adaption that go beyond *language* and *symbols* but gets to root of *ethics- and care-based approaches* (Shevalier and McKenzie, 2012).

### **Limitations**

Applied interventions in the classroom are essential to moving the science of educational instruction forward and in attempting to meet the quality indicators set forth by the educational science community. However, a limitation of the current study was the weak adaption of fidelity measures to the technology-based intervention which, in turn, impacted teacher training. When it was decided that Ms. Trish would use a web-based program to present the prompts, further research should have been conducted in modifying the fidelity measure and thoroughly specifying the role and action of the teacher. Although Ms. Trish was encouraged to reinforce her students, it was not a requirement of the intervention. Unlike classroom management, which was a requirement, data showed that Ms. Trish provided classroom management as the intervention intended. Perhaps, if Kahoot did not provide the correct response, Ms. Trish may have increased the number of times she provided *corrective feedback*. Although, corrective feedback and classroom management are different from *praise* which occurred nine percent of all OTR. Extending teacher training over multiple sessions to include thorough training on how to interact with the students and the purpose (i.e. demonstrate care) and importance of the interaction between teacher and student may have resulted in Ms. Trish responding more often. Well defined interactions such as *wise-feedback*-- described by Cohen, Steele and Ross (2012) as two-faceted feedback which combines the invocation of high standards with the assurance of student's capacity to reach those standards-- should have been included in the fidelity measure as

well. Wise-feedback is an approach for teachers, specifically teachers of students who may be at risk of negative stereotypes, to avoid negative feedback and empty praise while providing critical feedback, necessary for students to reach high expectations (2012). Future research should explore technology-based OTR activities with consistent teacher-made response (i.e., feedback, praise) compared to computer-based feedback.

### **Conclusion**

The effects of an increased OTR activity as an opening class activity on the percent of AET and rate of DB of minority middle school students with EBD was explored. A functional relationship between the intervention and percent of AET was established for three participants. The effect of the intervention on the rate of DB was mixed. The effects of the intervention did not continue once the intervention was over. Students percent of AET and rate of DB during the RCP were highly variable. While utilization of technology-based OTR is becoming a growing option for classes as technology becomes more accessible, the role of the teacher as a facilitator including teacher-provided feedback remains an essential component in developing a culturally responsive environment where students with EBD might experience success and thrive.

Appendix A  
Opportunities to Respond with Response Cards  
**Recruitment of School Principals**

Dear *school principal*,

My name is Elizabeth Dubon and I am a Paramount Unified District employee with 12 years teaching experience. I am currently working on my dissertation to obtain my Ph.D. in special education from UCLA.

I am contacting you because I would like your assistance in recruiting teachers and students from your campus to be potential participants in my intervention research study.

The focus of my study is on improving behavioral and academic outcomes of minority students with emotional or behavioral disorders (EBD) by increasing student's opportunities to respond in class.

Increasing opportunities to respond (OTR) is an inexpensive and flexible instructional strategy with a strong evidence base for improved academic performance and decreased disruptive behavior in elementary grades. With my dissertation study, I am attempting to fill in a gap in the current literature by delivering a type of OTR to minority middle school students with EBD.

I have attached my research plan, documents that describe what the participants, teacher and student, may expect if they agree to take part in the study, and the teacher training material on the intervention (see below).

If you are interested in supporting this study by assisting in recruiting teachers and allowing me to come to your campus to train staff and collect data, please contact me with a time you are available to meet.

Sincerely,

Elizabeth Dubon, M.A.  
Education Specialist, RSP  
[edubon@g.ucla.edu](mailto:edubon@g.ucla.edu)  
(562) 298-8009

Document included:

- ✓ Research Plan
- ✓ Teacher Participation Expectations
- ✓ Student Participation Expectations
- ✓ Teacher Training Material

Appendix B  
Opportunities to Respond with Response Cards  
**Teacher Introduction**

Opportunities to respond are a collection of instructional strategies which improve student engagement and classroom behavior by maximizing the effectiveness of teacher instruction.

Opportunities to respond are designed to engage students in academic content through planned instructional activities which elicit participation from all students simultaneously.

Rather than simply asking more questions of individuals, opportunities to respond set the occasion for all students to provide an answer.

Research has shown that these strategies increase student's active engagement and improve academic outcomes.

In addition, opportunities to respond are associated with higher rates of positive reinforcement for student appropriate behavior and few incidences of inappropriate behavior.

Increasing OTR results in more efficient use of instructional time, greater student participation and higher rates of learning.

Teachers should be encouraged to incorporate this intervention into their lesson planning at least weekly.

A collection of instructional strategies comprises the —Opportunities to Respond Intervention

Appendix C  
**Opportunities to Respond with Response Cards**  
**Description**

Response cards are cards, signs, or items simultaneously held up by all students to display their responses to a question or problem presented by the teacher.

Response cards are an easy-to-implement alternative to the traditional method of choosing individual students to answer questions posed by the teacher.

There are two basic types of response cards: preprinted and write-on.

Preprinted cards	Write-on response cards
<ul style="list-style-type: none"> <li>➤ Each student selects from a personal set of cards the one with the answer he wishes to display. Examples: yes/true, no/false, molecular structures, parts of speech, constitutional amendments, and mathematical properties</li> <li>➤ Colored clothespins/cards can also be used to indicate the answer.</li> </ul>	<ul style="list-style-type: none"> <li>➤ students mark their answers on blank cards that are erased between learning trials.</li> <li>➤ Distribute dry-erase markers for students to write their answer</li> </ul> <p>Sheet protectors with heavy card stock inside can serve as an inexpensive alternative to purchasing dry erase boards.</p>

Suggestions for implementation:

- ❖ Model several question and answer trials and give students practice on how to use response cards.
- ❖ Maintain a lively pace throughout the lesson; (3 prompts per minutes)
- ❖ keep intervals between trials short.
- ❖ Give clear cues when students are to hold up and put down their cards. (ex: raise hand and use fingers to count down 5 seconds) When your hand goes down, so does their cards.
- ❖ Students can learn from watching others; do not let them think it is cheating to look at classmates' cards.

Appendix D  
Opportunities to Respond with Response Cards  
**Teacher Participation Expectations**

As a teacher participant in this research study you:

- will assist with participant recruitment by distributing a recruitment flyer to go home with your class and collecting the flyers that are returned
- will receive training in evidence based practice increased opportunities to respond with response cards (OTR-RC)
- will deliver OTR-RC for 10 minutes in 1 class period (*target class*) for 3 days a week during the intervention phases **only**.
- will receive assistance with lesson planning and obtaining materials for implementation of intervention
- will record duration of the *target class* 3 days a week during phases 2, 3, 4 and 5
- share target student's grades on class assignments that are already in place (i.e., quiz, homework, test, in class assignments) with primary research (PR)
- will briefly meet with PR throughout the study to share information (i.e., student grades, phase transition)
- will complete a fidelity measure on the days you implement the intervention which indicates how much you kept to the protocols.
- Will complete a social validity survey at the end of the study indicating your thoughts on the usefulness and benefit on OTR-RC as well as the probability of using the intervention on the future.
- will receive \$50 amazon card for participation

Tentative calendar		
Phase	Approximant Duration/Dates	Activity
<b>Phase 1:</b> Pre-intervention	1 week Jan. 8-12	<ul style="list-style-type: none"> <li>• Distribute recruitment flyer to entire class and collect upon return</li> <li>• 1-hour training session on OTR with response cards from primary researcher, Elizabeth Dubon</li> <li>• assistance with lesson development and planning</li> <li>• Receive assistance with acquiring necessary material for implementation</li> </ul>
<b>Phase 2:</b> Baseline	1-2 weeks*; 3-6 days Jan. 16-26	<ul style="list-style-type: none"> <li>• Instruction as usual (Do not deliver intervention)</li> <li>• Record <i>target class</i>, 3 days a week</li> <li>• Share target student grades with PR</li> </ul>
<b>Phase 3:</b> Intervention	1-2 weeks*; 3-6 days Jan. 29-Feb. 9	<ul style="list-style-type: none"> <li>• Deliver intervention for 10 minutes, 3 days</li> <li>• Record <i>target class</i>, 3 days a week</li> <li>• Share target student grades with PR</li> <li>• Complete a fidelity measure for each day you deliver OTR-RC (2 minutes)</li> </ul>
<b>Phase 4:</b> Withdraw	1-2 weeks*; 3-6 days Feb. 13 - 23	<ul style="list-style-type: none"> <li>• Instruction as usual (Do not deliver intervention)</li> <li>• Record <i>target class</i>, 3 days a week</li> <li>• Share target student grades with PR</li> </ul>
<b>Phase 5:</b> Reintroduce Intervention	1-2 weeks*; 3-6 days Feb. 26 – Mar. 9	<ul style="list-style-type: none"> <li>• Deliver intervention for 10 minutes, 3 days</li> <li>• Record <i>target class</i>, 3 days a week</li> <li>• Share target student grades with PR</li> </ul>
<b>Phase 1:</b> Post-Intervention	1-2 days upon completion of phase 5	<ul style="list-style-type: none"> <li>• Complete a social validity measure on your thoughts about the response card activities (approximately 5 minutes)</li> </ul>

\*The duration of phase 2, 3, 4 and 5 are dependent on the performance of the target students, therefore, the exact duration of each phase cannot be determined now. You will be notified when it is time to move to the next phase by the PR. One thing for certain, however, is that each phase will be a minimum of 3 days and the total study will last no more than 12 weeks.



## **CONSENT TO PARTICIPATE IN RESEARCH**

### *Increased Opportunities to Respond in Middle School Classrooms*

Elizabeth Dubon, from the Human Development and Psychology Department at the University of California, Los Angeles (UCLA) is conducting a research study.

You were selected as a possible participant in this study because you are a teacher at Alondra Middle School and you expressed interest in learning a intervention aimed to improve student participation in class. Your participation in this research study is voluntary.

### **Why is this study being done?**

*The study will look at useful strategies for teachers to use in classrooms to increase the participation and decreased disruptive behavior of students with emotional or behavior disorders.*

### **What will happen if I take part in this research study?**

If you volunteer to participate in this study, the researcher will ask you to do the following:

- assist with participant recruitment by distributing a recruitment flyer to go home with your class and collecting the flyers that are returned
- receive training in evidence based practice increased opportunities to respond with response cards (OTR-RC)
- deliver OTR-RC for 10 minutes in 1 class period (target class) for 3 days a week during the intervention phases only.
- receive assistance with lesson planning and obtaining materials for implementation of intervention
- record duration of the target class 3 days a week during phases 2, 3, 4 and 5
- share target student's grades on class assignments that are already in place (i.e., quiz, homework, test, in class assignments) with primary research (PR)
- briefly meet with PR throughout the study to share information (i.e., student grades, phase transition)
- complete a fidelity measure on the days you implement the intervention which indicates how much you kept to the protocols.
- complete a social validity survey at the end of the study indicating your thoughts on the usefulness and benefit on OTR-RC as well as the probability of using the intervention on the future.

### **How long will I be in the research study?**

Participation will take six to 12 weeks for three days each week. Data collection will occur three days each week for only one class period.

**Are there any potential risks or discomforts that I can expect from this study?**

- There are no anticipated risks or discomforts

**Are there any potential benefits if I participate?**

You may benefit from the study by learning how to implement an inexpensive and flexible instructional strategy with a strong evidence base to improve academic outcomes while decreasing disruptive behavior.

**Will I be paid for participating?**

- You will receive a \$50 gift card to Amazon.com at the close of the study.

**Will information about me and my participation be kept confidential?**

Any information that is obtained in connection with this study and that can identify you will remain confidential. It will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of using a fake name on any documents and keeping all data on computers with passcodes and encryption keys. Also, everything used for this study will be kept in a safe place in one location. Elizabeth Dubon will be the only person to have access to all the documents and video recordings.

**What are my rights if I take part in this study?**

- You can choose whether or not you want to be in this study, and you may withdraw your consent and discontinue participation at any time.
- Whatever decision you make, there will be no penalty to you, and no loss of benefits to which you were otherwise entitled.
- You may refuse to answer any questions that you do not want to answer and still remain in the study.

**Who can I contact if I have questions about this study?**

- **The research team:**  
If you have any questions, comments or concerns about the research, you can talk to the one of the researchers. Please contact:

Elizabeth Dubon  
edubon@g.ucla.edu  
(562) 298-8009

UCLA Faculty Sponsor:  
Jeffrey Wood, Ph.D.  
Jwood@gseis.ucla.edu  
(310) 825-7292

- **UCLA Office of the Human Research Protection Program (OHRPP):**

If you have questions about your rights as a research subject, or you have concerns or suggestions and you want to talk to someone other than the researchers, you may contact the UCLA OHRPP by phone: (310) 206-2040; by email: [participants@research.ucla.edu](mailto:participants@research.ucla.edu) or by mail: Box 951406, Los Angeles, CA 90095-1406.

***You will be given a copy of this information to keep for your records.***

**SIGNATURE OF STUDY PARTICIPANT**

\_\_\_\_\_  
Name of Participant

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

**SIGNATURE OF PERSON OBTAINING CONSENT**

\_\_\_\_\_  
Name of Person Obtaining Consent

\_\_\_\_\_  
Contact Number

\_\_\_\_\_  
Signature of Person Obtaining Consent

\_\_\_\_\_  
Date

Appendix F  
Opportunities to Respond with Response Cards  
**Recruitment Script, Teacher to Student**

Hello students,

- I have some exciting news for you.
- Our class was invited to participate in a UCLA research study on classroom instructional strategies.
- As part of the research study we will use a new strategy in class for a few days a week and we'll be observed through recordings.
- The study will last anywhere from 6 to 12 weeks.
- As with any research study you do not have to take part and your parents would need to give permission first.
- I am sending home a flyer with information on the study for your parents.
- This will include contact information for the person over-seeing the study in case they have more questions.
- If they are interested in letting you participate then they can indicate that on the form and return the form.
- Additional permission would be obtained before the actual study begins.
- Please return the form tomorrow, even if your parents are not interested.

## Appendix G

### Exploration of the Impact of Increased Opportunities to Respond on the Performance of Middle School Students with Emotional and Behavior Disorders

#### Parent Recruitment Flyer

Dear Parent(s)/Guardian(s),

Elizabeth Dubon, from the Human Development and Psychology Department at the University of California, Los Angeles (UCLA) is conducting a research study.

Your child's teacher, Ms./Mrs./Mr. \_\_\_\_\_, was selected as a possible participant in this study because she is interested in learning about ways to increase student participation in class.

As a student in Ms./Mrs./Mr. \_\_\_\_\_'s class, he/she may benefit from an intervention aimed to improve participation in class while decreasing disruptive behavior.

As a participant, your child would take part in a 10-minute intervention activity for 3 days out of the week while the intervention is in place. During the study, Ms./Mrs./Mr. \_\_\_\_\_'s class will be recorded for the researcher to collect information on how well the study worked.

The study will last for 6 to 12 weeks and data collection will occur 3 days a week. The results of this research may help other teachers learn strategies that work for many different students in the classroom.

There are no anticipated risks or discomforts expected from this study. Any information that is obtained in connection with this study will remain confidential.

If you are interested in allowing your student to participate in this study please return this form to Ms./Mrs./Mr. \_\_\_\_\_.

A permission form will be obtained from you before any data collection begins.

You may withdraw your permission and discontinue your child's participation at any time.

Whatever decision you make, there will be no penalty to you or your child, and no loss of benefits to which you or your child were otherwise entitled. Students who do not have permission to participate will be strategically seated in the classroom so they are not recorded during the intervention.

Your child may refuse to answer any questions that he/she does not want to answer and still remain in the study.

If you would like to hear more about the study or if you have any questions about the study, you can reach the researcher Elizabeth Dubon at edubon@g.ucla.edu or (562) 298-8009.

Thank you,

Please pick a response and return the form to Ms./Mrs./Mr. \_\_\_\_\_.

\_\_\_\_\_ **Yes**, I am interested in my child participating in this research study.

\_\_\_\_\_ **No**, I am not interested in my child participating in this research study.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Exploración del Impacto del Aumento de Oportunidades para Responder sobre el Rendimiento de Estudiantes de Secundaria con Trastornos Emocionales y de Conducta  
Folleto de reclutamiento de padres

Estimados padre (s) / tutor (es),

Elizabeth Dubon, del Departamento de Desarrollo Humano y Psicología de la Universidad de California, Los Ángeles (UCLA) está llevando a cabo un estudio erudito de investigación.

El maestro/a de su hijo, Ms./Mrs./Mr. \_\_\_\_\_, fue seleccionado/a como posible participante en este estudio porque está interesado/a en aprender sobre las formas de aumentar la participación de los estudiantes en clase.

Como estudiante en Ms./Mrs./Mr. \_\_\_\_\_, él / ella puede beneficiarse de una intervención dirigida a mejorar la participación en clase mientras disminuye la conducta disruptiva de los estudiantes..

Como participante, su hijo/a tomaría parte en una actividad de intervención de 10 minutos durante 3 días de la semana mientras la intervención está en su lugar. Durante el estudio, Ms./Mrs./Mr. \_\_\_\_\_ se grabará para que el investigador recopile información sobre el funcionamiento del estudio.

El estudio durará de 6 a 12 semanas y la recolección de datos se realizará 3 días a la semana. Los resultados de esta investigación pueden ayudar a otros maestros a aprender estrategias que funcionan para muchos estudiantes diferentes en el aula.

No se esperan riesgos o molestias anticipadas de este estudio. Cualquier información que se obtenga en relación con este estudio permanecerá confidencial.

Si está interesado en permitir que su estudiante participe y beneficie en este estudio, devuelva este formulario a Ms./Mrs./Mr. \_\_\_\_\_.

Se obtendrá un formulario de permiso de usted antes de que comience la recolección de datos.

Puede retirar su permiso y discontinuar la participación de su hijo en cualquier momento.

Cualquiera que sea la decisión que tome, no habrá ninguna sanción para usted o su hijo, ni la pérdida de beneficios a los que usted o su hijo tenían derecho. Los estudiantes que no tienen permiso para participar estarán sentados estratégicamente en el aula para que no se graben durante la intervención.

Su hijo puede negarse a contestar cualquier pregunta que no desee contestar y permanecer en el estudio.

Si desea obtener más información sobre el estudio o si tiene alguna pregunta sobre el estudio, puede comunicarse con la investigadora Elizabeth Dubon a edubon@g.ucla.edu o al (562) 298-8009.

Gracias,

Elija una respuesta y devuelva el formulario a Ms./Mrs./Mr. \_\_\_\_\_.

\_\_\_\_\_ Sí, estoy interesado en que mi hijo participe en este estudio de investigación.

\_\_\_\_\_ No, no estoy interesado en que mi hijo participe en este estudio de investigación.

Nombre: \_\_\_\_\_ fecha: \_\_\_\_\_

Firma: \_\_\_\_\_



Appendix H  
University of California, Los Angeles

**PARENT PERMISSION FOR MINOR TO PARTICIPATE IN RESEARCH**  
*Increased Opportunities to Respond in Middle School Classrooms*

Elizabeth Dubon, from the Human Development and Psychology Department at the University of California, Los Angeles (UCLA) is conducting a research study.

Your child was selected as a possible participant in this study because he/she is in (teacher name) class. (teacher name) will learn how to use response cards to increase student's opportunity to respond in class and your child may benefit from an intervention aimed to improve participation in class. Teacher and student will be video taped so the researcher can collect data on how the intervention is impacting the class. Your child's participation in this research study is voluntary.

**Why is this study being done?**

The study is designed to assess if and how well an intervention of increased opportunities to respond can improve a student's participation and attentiveness in class.

**What will happen if my child takes part in this research study?**

If you agree to allow your child to participate in this study, we would ask him/her to:

- Learn how to use response cards in the class
- Be video recorded while the teacher delivers regular lessons and uses different strategies
- Complete a survey at the end about what he or she thought of the strategies the teacher used
- Grant access of his/her school record for the researcher to review to confirm eligibility

**How long will my child be in the research study?**

Participation will take a total of about six to twelve weeks for three days each week.

**Are there any potential risks or discomforts that my child can expect from this study?**

- There are no anticipated risks or discomforts to expect from this study.

**Are there any potential benefits to my child if he or she participates?**

Your child may benefit from the study with increased participation in class and stronger understanding of the new material taught. Your student may gain more confidence in their abilities and may build a stronger relationship with the classroom teacher.

The results of the research may help other teachers learn strategies that work for many different students in the classroom.

**Will information about my child's participation be kept confidential?**

Any information that is obtained in connection with this study and that can identify your child will remain confidential. It will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of using a fake name on any documents and keeping all data on computers with passcodes and encryption keys. Also, everything used for this study will be kept in a safe place in one location. Elizabeth Dubon will be the only person to have access to all the documents and video recordings.

**What are my and my child’s rights if he or she takes part in this study?**

- You can choose whether or not you want your child to be in this study, and you may withdraw your permission and discontinue your child’s participation at any time.
- Whatever decision you make, there will be no penalty to you or your child, and no loss of benefits to which you or your child were otherwise entitled.
- Your child may refuse to answer any questions that he/she does not want to answer and still remain in the study.
- Not all students will meet eligibility
- Students who do not receive consent to participate in the study will still receive the intervention, however, will be strategically seated in the class so that they will not be captured on the data collection video recording.

**Who can I contact if I have questions about this study?**

- **The research team:**  
If you have any questions, comments or concerns about the research, you can talk to the researcher. Please contact:

Elizabeth Dubon, M.A.  
edubon@g.ucla.edu  
(562) 298-8009

- **UCLA Office of the Human Research Protection Program (OHRPP):**  
If you have questions about your rights as a research subject, or you have concerns or suggestions and you want to talk to someone other than the researchers, you may contact the UCLA OHRPP by phone: (310) 206-2040; by email: [participants@research.ucla.edu](mailto:participants@research.ucla.edu) or by mail: Box 951406, Los Angeles, CA 90095-1406.

***You will be given a copy of this information to keep for your records.***

**SIGNATURE OF PARENT OR LEGAL GUARDIAN**

\_\_\_\_\_  
Name of Child

\_\_\_\_\_  
Name of Parent or Legal Guardian

\_\_\_\_\_  
Signature of Parent or Legal Guardian

\_\_\_\_\_  
Date

Universidad de California, Los Angeles  
**PERMISO DE PADRES PARA MENORES DE PARTICIPAR EN LA INVESTIGACIÓN**  
*Increased Opportunities to Respond in Middle School Classrooms*  
*(Mayores oportunidades para responder en las aulas de la escuela media)*

Elizabeth Dubon, del Departamento de Desarrollo Humano y Psicología de la Universidad de California, Los Ángeles (UCLA) está llevando a cabo un estudio erudito.

Su hijo/a fue seleccionado como posible participante en este estudio porque él/ella está en la clase (nombre del maestro). (nombre del maestro) aprenderá cómo usar las tarjetas de respuesta para aumentar la oportunidad del estudiante de responder en clase y su hijo/a se puede beneficiar de una intervención dirigida a mejorar la participación en clase. El profesor y el alumno serán grabados en video para que el investigador pueda recopilar datos sobre cómo la intervención está impactando en la clase. La participación de su hijo en este estudio de investigación es voluntaria.

**¿Por qué se está haciendo este estudio?**

El estudio está diseñado para evaluar si una intervención con mayores oportunidades de respuesta puede mejorar la participación y la atención del alumno en clase.

**¿Qué sucederá si mi hijo participa en este estudio de investigación?**

Si acepta permitir que su hijo participe en este estudio, le pediremos a su hijo/a que:

- Aprenda cómo usar las tarjetas de respuesta en la clase
- Sea incluido en el video mientras el maestro brinda lecciones regulares y usa diferentes estrategias
- Completa un cuestionario al final sobre lo que él o ella pensó sobre las estrategias que el maestro usó
- Otorgar acceso a su expediente escolar para que el investigadora lo revise y confirme su elegibilidad

**¿Cuánto tiempo estará mi hijo en el estudio de investigación?**

La participación tomará un total de aproximadamente seis a doce semanas durante tres días cada semana.

**¿Hay algún riesgo potencial o incomodidades que mi hijo pueda esperar de este estudio?**

- No hay riesgos anticipados o incomodidades a esperar de este estudio.

**¿Hay algún beneficio potencial para mi hijo si él o ella participa?**

Su hijo puede beneficiarse del estudio con una mayor participación en clase y una comprensión más sólida del nuevo material enseñado. Su estudiante puede ganar más confianza en sus habilidades y puede construir una relación más fuerte con el maestro de la clase.

Los resultados de la investigación pueden ayudar a otros maestros a aprender estrategias que funcionan para muchos estudiantes diferentes en el aula.

**¿La información sobre la participación de mi hijo se mantendrá confidencial?**

Cualquier información que se obtenga en relación con este estudio y que pueda identificar a su hijo/a permanecerá confidencial. Se divulgará solo con su permiso o según lo exija la ley. La confidencialidad de el estudiante se mantendrá con el uso de un nombre falso en cualquier documento y manteniendo todos los datos en las computadoras con códigos de acceso y claves de encriptación. Además, todo lo utilizado para este estudio se mantendrá en un lugar seguro en un solo lugar. Elizabeth Dubon será la única persona que tendrá acceso a todos los documentos y grabaciones de video.

### **¿Cuáles son mis derechos y los de mi hijo si él o ella toman parte en este estudio?**

- Puede elegir si desea que su hijo participe o no en este estudio, y puede retirar su permiso y discontinuar la participación de su hijo/a en cualquier momento.
- Cualquiera que sea la decisión que tome, no habrá penalización para usted o su hijo, ni la pérdida de los beneficios a los que usted o su hijo tenían derecho.
- Su hijo/a puede negarse a responder cualquier pregunta que no desee contestar y permanecer en el estudio.
- No todos los estudiantes cumplirán con la elegibilidad para poder ser elegidos para participación.
- Los estudiantes que no reciban su consentimiento para participar en el estudio recibirán la intervención, sin embargo, estarán sentados estratégicamente en la clase para que no sean incluidos en la grabación del video de recopilación de datos.

### **¿A quién puedo contactar si tengo preguntas sobre este estudio?**

#### **• El equipo de investigación:**

Si tiene preguntas, comentarios o inquietudes sobre la investigación, puede hablar con la investigadora. Por favor no hesite para contactar:

Elizabeth Dubon, M.A.  
edubon@g.ucla.edu  
(562) 298-8009

#### **• UCLA Office of the Human Research Protection Program (OHRPP)**

##### **Oficina de UCLA del Programa de Protección de Investigación Humana:**

Si tiene preguntas sobre sus derechos como sujeto de investigación, o si tiene inquietudes o sugerencias y desea hablar con alguien que no sea la investigadora, puede comunicarse con la OHRPP de UCLA por teléfono: (310) 206-2040; por correo electrónico: [participantes@research.ucla.edu](mailto:participantes@research.ucla.edu) o por correo: Box 951406, Los Angeles, CA 90095-1406.

**Se le dará una copia de esta información para mantenerla en sus registros.**

**FIRMA DEL PADRE O TUTOR LEGAL**

\_\_\_\_\_  
Nombre del niño

\_\_\_\_\_  
Nombre del padre o tutor legal

\_\_\_\_\_  
Nombre del padre o tutor legal

\_\_\_\_\_  
Fecha

Appendix I

Opportunities to Respond with Response Cards  
**Participant Record Review**

Does the participant have a current IEP:	IEP eligibility:
Present Levels of Performance	
Behavior Goals?	Behavior Support plan?

Appendix J  
**UNIVERSITY OF CALIFORNIA LOS ANGELES**

**ASSENT TO PARTICIPATE IN RESEARCH**

*Increased Opportunities to Respond in Middle School Classrooms*

1. My name is Elizabeth Dubon
2. We are asking you to take part in a research study because we are trying to learn more about strategies teachers can use to may learning my engaging and keep students interested in responding to their questions.
3. If you agree to be in this study you will learn how to use response cards in class to participate. At the end of the study you would fill out a survey on your opinion about the strategy you teacher used.
4. There are no risks in this study.
5. You may benefit from the study with increased participation in class and stronger understanding of the new material you learn about. You may feel more confident in yourself and your answers in class. You also may feel a better relationship with the classroom teacher.
6. Please talk this over with your parents before you decide whether or not to participate. We will also ask your parents to give their permission for you to take part in this study. But even if your parents say “yes” you can still decide not to do this.
7. If you don’t want to be in this study, you don’t have to participate. Remember, being in this study is up to you and no one will be upset if you don’t want to participate or even if you change your mind later and want to stop.
8. You can ask any questions that you have about the study. If you have a question later that you didn’t think of now, you can call me (562) 298-8009 or ask me next time.
9. Signing your name at the bottom means that you agree to be in this study. You and your parents will be given a copy of this form after you have signed it.

---

Name of Subject

---

Date

Appendix K  
Opportunities to Respond with Response Cards  
**Implementation Plan**

A. What topic or subject area is most problematic for student engagement or retention of material? (example: English vocabulary, multiplication facts)
B. To implement OTR with Response Cards, what materials need to be acquired?
C. How will you introduce the strategy to the students?
D. How will you cue card UP?
E. How will you cue card DOWN?
F. How will you present the prompt? (ex: Power point slides, flash cards, white board, overhead projector, verbal, etc.)

Appendix L  
**Opportunities to Respond with Response Cards**

**Integrity Measure**

To be completed 30% of each phase for each participant

Date:	Phase:	Start:	End:
Observer:		Location:	

		yes	no
1	Each student has their own response device		
2	Correct answers were provided after each trial		
3	Teacher provided corrective feedback to students who were not actively engaged		

Percent Integrity \_\_\_\_\_



Appendix M

Opportunities to Respond with Response Cards

**Social Validity Measure-Teacher**

To be completed by each teacher at the end of the study

Date:		Teacher Social Validity Measure				
What level do you agree with the statement below?		<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither agree or disagree</i>	<i>Agree</i>	<i>Strongly Agree</i>
1	The computer response activity, Kahoot, was easy to use					
2	My students benefited from the intervention in a meaningful way.					
3	I would like to use Kahoot again.					

Appendix N  
 Opportunities to Respond with Response Cards  
**Social Validity Measure-Student**

To be completed by the teacher at the end of the study

Date:		<b>Student Social Validity Measure</b>				
What level do you agree with the statement below?		<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither agree or disagree</i>	<i>Agree</i>	<i>Strongly Agree</i>
1	The computer response activity, Kahoot, was easy to use					
2	Kahoot helped me in class					
3	I would like to use Kahoot again.					

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