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Supporting Teachers' Professional Development: Investigating the Impact of a Targeted Intervention on Teachers' Presentation of Opportunities to Respond

Ashley S. MacSuga-Gage

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Supporting Teachers' Professional Development: Investigating the Impact of a Targeted Intervention on Teachers' Presentation of Opportunities to Respond

Ashley S. MacSuga-Gage, MA

University of Connecticut, 2013

This dissertation aimed to explore the effects of a targeted professional development package within the context of a multi-tiered system of support (MTSS) model for professional development (PD) on teachers' rates of presentation of opportunities to respond during teacher-directed phonics instruction. Research indicates that increased presentation of teacher-directed opportunities to respond (TD-OTR), an evidence-based classroom management strategy with demonstrated positive impacts on student academic and behavioral outcomes, may be one of the most critical classroom management practices available to teachers. I aimed to use an experimental single subject multiple baseline design across teachers, to examine the effects of a targeted professional development package (including self-management package and performance feedback) on increasing teachers' presentation of TD-OTRs and the resulting impacts of teacher behavior change on student academic and behavioral outcomes. Due to teachers' positive response to universal intervention, a functional relation between targeted PD and teacher behavior was not documented (i.e., experimental control was not achieved). Therefore, within this dissertation, I present five case studies. These case studies detail the increases in teachers' rates of presentation of TD-OTRs when the universal and, for one teacher, targeted PD was implemented and present outcomes for students' academic and social behavior. Results indicate that providing classroom management PD within an MTSS framework may be

an effective strategy for increasing teachers' rates of presentation of TD-OTRs. In addition, 3 low-risk and 3 moderate/high-risk students within each classroom demonstrated sustained or increased academic engagement and decreased disruptive behavior as teachers increased their rates of TD-OTR presentation. However, measures of students' oral reading fluency did not indicate growth during the intervention phase. Implications for policy makers, practitioners, and researchers are discussed in detail.

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Intervention on Teachers' Presentation of Opportunities to Respond

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B. S., University of Connecticut, 2005

M. A., University of Connecticut, 2006

A Dissertation

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Requirement for the Degree of Doctor of Philosophy at the

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2013

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2013

APPROVAL PAGE

Doctor of Philosophy Dissertation

**Supporting Teachers' Professional Development: Investigating the Impact of a Targeted
Intervention on Teachers' Presentation of Opportunities to Respond**

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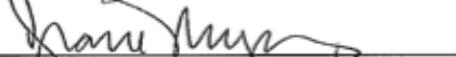
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Dedication

For Susan Jane (Kuduk) MacSuga

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Chapter I

Introduction and Review of Literature

Classroom management is a significant concern for pre-service and in-service teachers. High percentages of new teachers leave the profession within 5 years, and the majority of those teachers cite “classroom management” as one of the primary reasons for exiting (Martin, Shoho, Yin, Kaufman, & McLean, 2003). One reason for classroom management difficulties may be that teachers typically receive little training in classroom management, particularly in empirically-supported classroom management strategies (Begeny & Martens, 2006; Markow, Moessner, & Horowitz, 2006). In light of this concern, recent research has focused on identifying: (a) empirically-supported classwide positive behavior support (CWPBS) practices (Simonsen Fairbanks, Briesch, Myers, & Sugai, 2008), (b) salient characteristics of effective professional development (PD) to increase teachers’ use of CWPBS practices (Simonsen, MacSuga, Briere, Freeman, & Sugai, in preparation), and (c) a multi-tiered systems of support (MTSSS) framework to organize effective PD strategies (Myers, Simonsen, & Sugai, 2011; Simonsen, MacSuga-Gage, Briere, Freeman, Myers, Scott, & Sugai, in press; Simonsen, MacSuga, Fallon, & Sugai, 2011). One CWPBS strategy with a solid research foundation (Sutherland & Wehby, 2001), but limited evidence of sustained adoption and implementation fidelity (Sutherland, Lewis-Palmer, Stichter, & Morgan, 2008), is providing high rates of teacher-directed opportunities to respond (TD-OTR). TD-OTRs are an effective CWPBS practice and, as such, are ideal for examining how MTSS logic can be applied to increase teacher use of an important CWPBS strategy.

TD-OTRs, defined as teacher behaviors (i.e., antecedent stimuli) that occasion student responses, are linked with increased student active engagement (Simonsen et al., 2008). Research indicates that students, including students with disabilities, who received increased TD-OTRs demonstrated increased on-task behavior, improved academic achievement, decreased off-task behavior, and reduced disruptive behavior (Greenwood, 1991; Haydon, Mancil, & VanLoan, 2009; Haydon & Hunter, 2011; Kamps, Dugan, Leonard, & Daoust, 1994; Myers, Simonsen, & Sugai, 2011; Sutherland & Wehby, 2001). Unfortunately, research has not identified an efficient and effective PD model that results in sustained increases in teacher presentations of TD-OTRs.

Traditionally, PD models rely on a train and hope approach (Stokes & Baer, 1977), in which an expert delivers one-time instruction to teachers and then assumes implementation fidelity as an outcome of that training. Research and practical experience demonstrate that this PD approach is ineffective (Allan & Forman, 1984). Lack of teacher response to one-time PD dictates the need for more effective models of training. In contrast, researchers have documented the efficacy of intensive consultation models that provide individual teachers with intensive, multi-component supports, including direct skill instruction and performance feedback (e.g., Codding & Smyth, 2008; Myers et al., 2011; MacSuga & Simonsen, 2011; Reinke et al., 2008; Webster-Stratton, Reinke, Herman, & Newcomer, 2011). Although consultation models can be successful with research supports, they are often not feasible in school-based settings due to a lack of resources and time.

Given the ineffective outcomes for one-time professional development and the inefficiency of intensive individualized PD, it is necessary to explore efficient models of classroom management instruction that provide targeted support to teachers. Research has shown promising effects for self-monitoring and self-management, when used in conjunction

with explicit skill instruction, on teachers' use of behavior specific praise (Simonsen et al., 2011). Another component of empirically supported PD is the use of performance feedback to increase teachers' response to classroom management (Simonsen et al., in preparation). However, the use of a targeted intervention package (including a combination of self-management and performance feedback) to increase teachers' presentation of TD-OTRs had yet to be examined. Therefore, I explored a targeted PD intervention package (i.e., self-management paired with performance feedback) that provides more support than traditional PD (i.e., train and hope), but is less resource intensive than individualized interventions (i.e., consultation), to increase teachers' presentation of TD-OTRs. The study described within this dissertation is informed by the MTSS logic for teacher PD and outlines a study to examine the impact of targeted PD support on teachers' presentation of TD-OTRs.

Statement of the Problem

Effective teaching is a complex skill set. In addition to skillfully delivering academic instruction, effective teachers must engage in empirically supported class-wide classroom management strategies (Conroy, Sutherland, Snyder, & Marsh, 2008; MacSuga-Gage, Simonsen, & Briere, in press; Simonsen, et al., 2008). Unfortunately, in-service teachers receive little PD and support in adopting and implementing evidence-based classroom management strategies (Wei, Darling-Hammond, & Adamson, 2010) and the traditional PD models show little to no evidence of success. Together, our inability to bridge the research to practice gap and provide high-quality, effective PD keeps good teachers from implementing what we know works in classroom management.

To address this concern, researchers have proposed a multi-tiered support (MTSS) framework to support teachers' development of empirically supported CWPBS practices, using

response to intervention (RtI) logic (Simonsen, et al., in press). Research supports the benefit of increasing teachers' presentation of TD-OTRs on the behavior and academic performance of students. Yet, efficient and effective methods to increase teacher use of this critical CWPBS practice have yet to be examined. Therefore, sustainable methods of PD that provide adequate support for teacher behavior change need to be explored. This study will extend the literature by focusing on providing targeted PD supports (i.e., a package including self-management and performance feedback) within an MTSS framework (i.e., teachers receiving targeted intervention will be non-responders to universal training) to increase teachers' presentation of OTRs. Further, this project aims to link changes in teacher behavior with corresponding changes in student behavior and academic performance.

Review of Literature

Teacher Training & Classroom Management

As stated above, classroom management is a significant factor in the decision of teachers to exit the profession early (Martin et al, 2003). One hypothesized reason for this early career exodus is that teachers typically receive little training in classroom management (Begeny & Martens, 2006; Markow et al., 2006). At the pre-service level, not all teacher-training programs offer instruction in classroom management, and there is significant variation in the methods of instruction and content covered for those that do (Freeman, Simonsen, Briere, MacSuga-Gage, & Sugai, in press). Further, a review of state teacher certification policy requirements for pre-service training in classroom management reveals inconsistent and vague guidelines about what educators need to know (Freeman et al., in press). This information indicates that standardization and rigor may be absent from pre-service preparation in classroom management; thus, foundational knowledge of classroom management cannot be assumed for new teachers.

If pre-service teachers are not receiving standardized classroom management preparation, then it is necessary to examine the training provided to in-service educators. Recently, due to the nationwide push to adopt efficient and effective school reform practices, attention has been turned to the professional development of in-service teachers. Two recent technical reports, sponsored by the National Staff Development Council (NSDC; 2009, 2010), examined in-service teacher professional development as part of a larger longitudinal study on the status of professional development as a whole (i.e., across multiple facets of teaching including classroom management). In the 2010 report, *Professional Development in the United States: Trends and Challenges (Phase II of a Three-Phase Study)*, Wei, Darling-Hammond, & Adamson, utilize several data sets obtained from the National Center for Education Statistics (NCES), including the School and Staffing Survey (SASS), to examine professional learning opportunities for teachers. Findings indicate that, across the three points in time surveyed (2000, 2004, 2008), less than half of teachers (i.e., 45.7% or below) reported participation in any type of PD focusing on student discipline and classroom management. In contrast, 59.0-87.9% of teachers indicated they had received PD in the content areas they teach, the use of computers for instruction, and reading instruction. Further, of the teachers who did receive some form of student discipline or classroom management PD, less than 62% reported that the PD was useful or very useful. The most recent data (2008) indicates the lowest intensity of PD (i.e. the amount of PD time devoted to the topic is 8 hours or less) was focused on discipline and classroom management. When asked what the top three choices for additional professional development were, teachers surveyed consistently ranked student discipline and classroom management as their second greatest need (learning more about the content they teach was their first). Clearly, data support

the need for examination and exploration of ways to successfully support in-service educators' development of classroom management skills.

In their 2009 report, *Professional Learning in the Learning Profession: A Status Report on Teacher Development in the United States*, Wei and colleagues define "high quality" and "effective" PD as that which results in improvements in teachers' knowledge and instructional practice, as well as improved student learning (Wei, Darling-Hammond, Richardson, Andree, & Orphanos, 2009; Wei et al., 2010). In light of this information, the NSDC offers the following "new" definition of PD: "The term "professional development" means a comprehensive, sustained, and intensive approach to improving teachers' and principals' effectiveness in raising student achievement" (Wei et al., 2010). Therefore, high quality professional development needs to focus on providing teachers with the skills to engage in practices that maximize student academic and behavioral achievement.

To maximize student academic and behavioral achievement, topics of PD must include evidence-based practices. Recent technical reports highlight classroom management as a primary concern for teachers. Yet, information about specific classroom management topics teachers need assistance with or instruction on are lacking in the literature. In thinking about the selection of classroom management topics for teacher PD, it is necessary to select strategies and practices that are supported by empirical evidence. To that end, Simonsen et al., 2008 identified five empirically supported categories of CWPBS that have been shown to positively impact the academic and/or behavioral outcomes for students. Among these categories, "Actively Engaging Students" through teacher presentation of TD-OTR and similar methods has been shown to promote student achievement across behavior and various academic domains.

Teacher-Directed Opportunities to Respond

As stated in the introduction, TD-OTRs are defined as teacher behaviors (i.e., antecedent stimuli) that occasion student responses. Specifically, the teacher presents the student with a request to respond (i.e., the antecedent stimulus), the student has a chance to respond, and once a response is emitted, the student is given feedback (Ferkis, Belfiore, & Skinner, 1997). Skinner (1969) defined teaching as “the arrangement of contingencies of reinforcement which expedite learning” (p. 15). TD-OTRs are opportunities for students to respond (arrangement of contingencies) in order to receive positive praise or corrective feedback (consequences) to create an environment conducive to learning by accelerating the rate at which students’ acquire and apply academic knowledge (expedite learning). The more students receive opportunities to receive contingent feedback, the more likely they will be to continue to apply acquired academic knowledge (i.e., positive reinforcement for appropriate behavior).

There are two categories of TD-OTRs: (a) teacher-directed individual responses and (b) teacher-directed unison responses. Lambert, Cartledge, Heward, and Lo (2006) describe “traditional” teacher-directed individual response as “calling on only one student to answer the question while the rest of the class sits quietly and listens” (p. 89). Teacher-directed unison response occurs when a teacher presents a request to an entire group of students, who are all able to respond through either verbal communication (e.g., choral responding) or non-verbal communication (e.g., gestural responses such as hand raising or thumbs up/down; written responses, such as response cards; e.g., Carnine, 1976; Haydon, Conroy, Scott, Sindelar, Barber, & Orlando, 2010; Haydon & Hunter, 2011; Lambert, Cartledge, Heward, & Lo, 2006). Numerous positive academic and behavioral outcomes are associated with increasing TD-OTRs presented to students through faster presentation or unison response formats. Research indicates

that all students (including students with disabilities) who received increased TD-OTRs demonstrated positive outcomes related to both behavior (e.g., decreased off-task, increased on-task, increased academic engagement behaviors) and academic achievement (e.g., increased daily/weekly quiz scores; Mancil, & VanLoan, 2009; Haydon & Hunter, 2011; Kamps et al., 1994; Sutherland & Wehby, 2001).

To inform intervention research (i.e., the dissertation study) aimed at increasing teacher use of TD-OTRs, I conducted a comprehensive, systematic review of the literature on actively engaging students through teacher presentation of TD-OTRs (MacSuga-Gage & Simonsen, under review). Specifically, I used a multi-gating approach to select and review empirical articles on strategies to increase class-wide opportunities to respond. Inclusion criteria specified that studies must be published in peer reviewed journals, have employed experimental or quasi-experimental design procedures, utilized measures of student behavior, focused on class-wide or group (i.e, 2 or more students) presentation of opportunities, and studied a K-12 participant population. In total, 527 unique abstracts were screened as the result of an electronic search of five relevant databases (ERIC, PsychINFO, Academic Search Premier, Professional Development Collection, Psychological and Behavioral Sciences Collection) used in conjunction with forward and backward search procedures. Of the initial 527 unique abstracts evaluated, 33 articles met all abstract-screening criteria and passed to full coding. Of the final sample of abstracts, 18 articles focused on opportunities to respond between peers (e.g., Classwide Peer Tutoring, Cooperative Learning Groups, Total Peer Tutoring) and 15 focused on TD-OTRs (e.g., teacher directed individual opportunities to respond, unison response, choral responding, rates of OTRs presented). Of this final set of articles eligible for full coding based on meeting abstract criterion, the 18 articles focusing on peer provided opportunities to respond were eliminated

because the focus of this review (to inform the current study) is TD-OTRs. Therefore, a final group of 15 articles passed full coding and are included in the results of the review. For reference, Figure 1 provides a visual representation of the systematic review process.

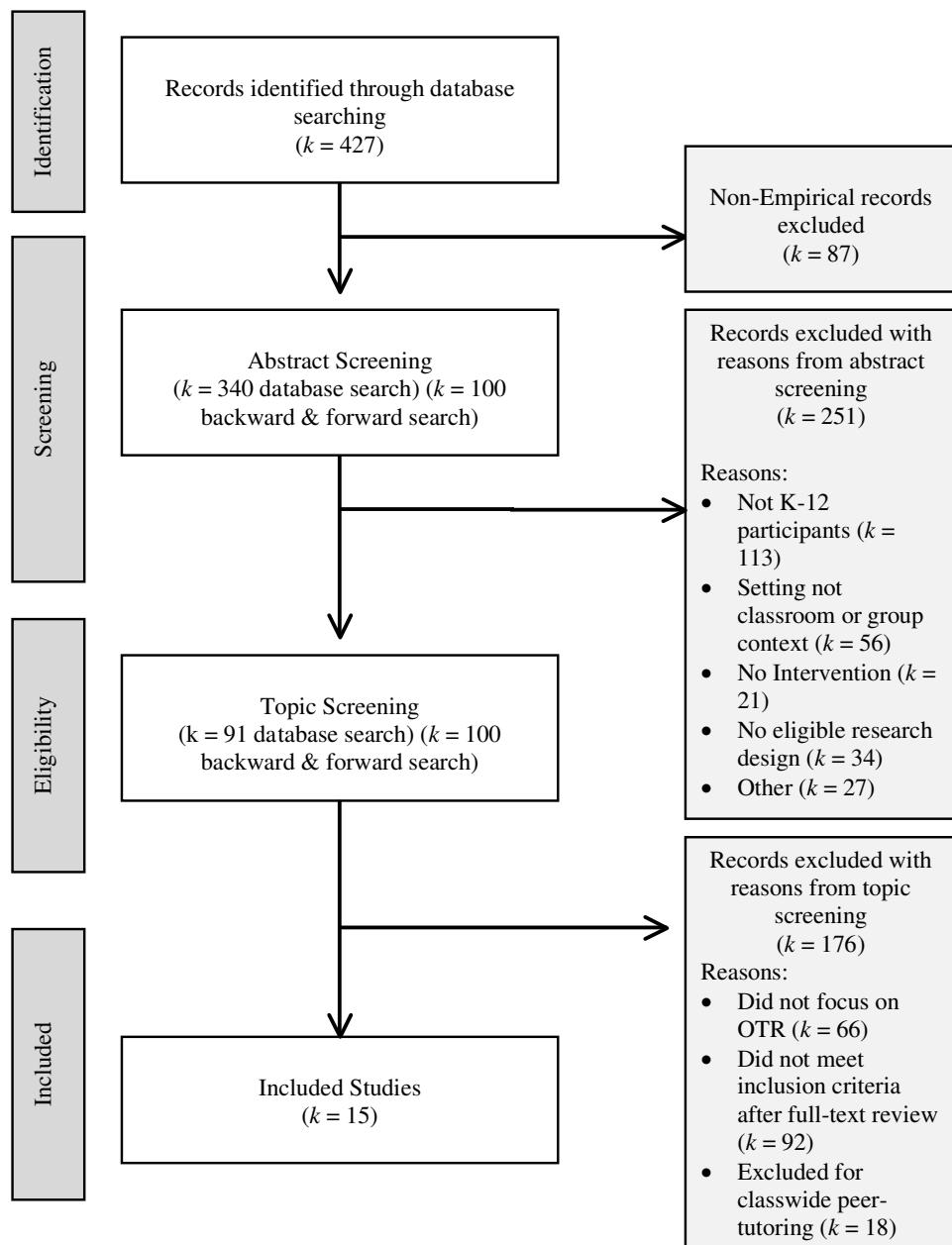


Figure 1. Systematic Review Flowchart

To date, only one review of the literature (i.e., Sutherland and Wehby, 2001) focuses solely on TD-OTRs. However, other reviews of empirically supported classroom management practices (Simonsen, et al., 2008) and practices to support students with Emotional and/or Behavioral Disorders (EBD; Lewis et al., 2004) both include TD-OTRs. All three of these reviews identify empirical support for positive academic and behavioral outcomes for students' receiving increased and varied TD-OTRs. Although providing students with high rates of TD-OTRs is an effective instructional management practice with a growing research base, no systematic review has solely examined characteristics and differential outcomes of TD-OTRs within the context of classroom management. The systematic review I conducted (MacSuga-Gage & Simonsen, under review), like previous reviews of literature (e.g., Sutherland and Wehby, 2001; Simonsen et al., 2008), highlighted the benefits of presenting students with multiple and varied TD-OTRs.

Across studies (e.g., Haydon & Hunter, 2011; Sutherland et al., 2008), researchers found clear benefits of increased TD-OTRs for students, including increased on-task behavior, decreased off-task behavior, improved academic outcomes, positive classroom perceptions, and increased teacher satisfaction. Increased rates of TD-OTR presentation (Carnine, 1976) as well as formats for responding that engage all students (e.g., choral responding) show favorable outcomes, such as increased correct responding, task engagement, and decreased disruptive behavior (Haydon & Hunter, 2011; Sindelar, Bursuck, & Halle, 1986; Sterling, Barbutta, Heward, & Heron, 1997; Sutherland, Alder, & Gunter, 2003; Szadokierski & Burns, 2008). For example, when the use of response cards (a type of teacher directed unison responding) was implemented, several studies noted the following benefits: reduction in disruptive behavior (Lambert, Cartledge, Heward, & Lo, 2006), increases in the rate and accuracy of academic

responding (Davis & O’Neil, 2004; Gardner, Heward, & Grossi, 1994; Narayan, Heward, & Gardner, 1990), increases in quiz/test scores (Davis & O’Neil, 2004; Gardner et al., 1994; Narayan et al., 1990). Also, Blood (2010) noted that when students were provided with TD-OTRs using a student response system (SRS), they demonstrated increased rates of response. For detailed information about each study included within the systematic review of the literature on the effects of classwide TD-OTRs please see Table 1 (*Participant Sample Characteristics, Inclusion Criteria, and Setting of All Included Studies*) and Table 2 (*Research Design and Results of All Included Studies*).

Table 1

Participant Sample Characteristics, Inclusion Criteria, and Settings of All Included Studies

Study	Student Sample Characteristics	Student Selection Criteria	Teacher Sample Characteristics	Setting
Blood, 2010	<p><i>n</i> = 5</p> <p>2 9th grade boys, 2 10th grade boys, and 1 11th grade girl</p> <p>2 students with EBD, 2 students with OHI, and 1 student with Autism</p>	<p>Teacher identified students who were:</p> <ul style="list-style-type: none"> • Frequently off-task • Frequently distracted during class • Generally low response rates during class • Generally low participation rates during class 	<p><i>n</i> = 1</p> <p>Teachers' years of experience not specified</p> <p>Certified in special education</p> <p>Teaching in a self-contained classroom for students with EBD</p>	<p>High school</p> <p>Special education self-contained classroom</p> <p>American History</p> <p>Note: Classroom contained 2 instructional assistants</p>
Carnine, 1976	<p><i>n</i> = 2</p> <p>1 boy and 1 girl, both in 1st grade</p>	<p>Teacher identified students who were:</p> <ul style="list-style-type: none"> • Off-task “too often” • Below grade-level in reading 	<p><i>n</i> = 2</p> <p>Teacher 1's years of experience not specified, Teacher 2 was a pre-service teacher</p> <p>Teacher 1 certified in special education</p>	<p>Elementary school</p> <p>General education</p> <p>Reading small-groups</p>
Davis & O’Neil, 2004	<p><i>n</i> = 4</p> <p>2 7th grade girls, 1 8th grade boy, 1 8th grade girl</p>	<p>Teacher identified students with:</p> <ul style="list-style-type: none"> • Low levels of active responding 	<p><i>n</i> = 1</p> <p>Teachers' years of experience not specified</p>	<p>Middle school</p> <p>Special education self-contained</p> <p>English class</p>

		<ul style="list-style-type: none"> • High levels of off-task behavior 	Certification not specified.	
2 ESL students, 3 students with LD, 1 student with TBI			Note: The first author was the classroom teacher.	
Gardner, Heward, & Grossi, 1994	<p><i>n</i> = 24</p> <p>13 boys and 11 girls in 5th grade</p>	<p>All students in the 5th grade classroom were included in the study. 2 students' data were excluded because of excess absences.</p> <p>5 were chosen by the teacher for direct observation because they represented the range classroom participation and academic performance.</p>	<p><i>n</i> = 1</p> <p>Teachers' years of experience not specified</p>	<p>Elementary school</p> <p>General education</p> <p>Science class</p>
Haydon & Hunter, 2011	<p><i>n</i> = 2</p> <p>2 boys in 7th grade</p>	<p>Teacher identified:</p> <ul style="list-style-type: none"> • 1 student with chronic off-task behavior • 1 typical peer 	<p><i>n</i> = 1</p> <p>4 years of teaching experience</p>	<p>Middle school</p> <p>General education</p> <p>English class</p>
Haydon, Conroy, Scott,	<p><i>n</i> = 6</p> <p>5 2nd grade boys and 1 2nd</p>	<p>Students were identified using the Systematic Screening for Behavior</p>	<p>Certified in English grades 5-9</p> <p>Completed undergraduate course in classroom management</p> <p><i>n</i> = 6</p> <p><i>M</i> of 3 years teaching</p>	<p>Elementary school</p> <p>General education</p> <p>Language Arts class</p>

Sindelar, Barbetta, & Orlando, 2010	grade girl	Disorders (SSBD).	experience
Kamps, Dugan, Leonard, & Daoust, 1994	n = 24 All students ages 5 to 12 12 (7 girls and 5 boys with mild ID) 12 (4 girls and 8 boys) with autism	Inclusion based on high rates of disruptive behavior for at least 1 month according to SSBD completed by the teacher.	Certification not specified All 6 completed undergraduate course in classroom management
Lambert, Cartledge, Heward, & Lo, 2006	n = 9 4 4 th grade boys and 5 4 th grade girls	Students selected were currently in self-contained programs and were served under the labels of ID or autism. Additionally, teachers were asked to complete the Autism Behavior Checklist for each student to determine behavior functioning levels.	n = 6 Teachers' years of experience not specified Certification not specified.
McKenzie & Henry, 1979	n = 52 All students in 3 rd grade	Teacher identified students that were: <ul style="list-style-type: none">• Most disruptive• Least attentive• Worst performing in math	n = 2 Both teachers had ~2 years of experience Both teachers certified in elementary education

Narayan, Heward, & Gardner, 1990	$N = 20$ (achievement data collected) $n = 6$ (observational behavior data collected)	Teacher identified students in her class that represented the range of overall skill level	$n = 1$ Teacher's years of experience not specified	Elementary school General education Geography class
	All students in 4 th grade		Certification not specified	
Sindelar, Bursuck, & Halle, 1986	$n = 11$ 5 boys and 6 girls in 2 nd grade 8 with LD, 3 with mild ID	Students were divided into three homogenous groups based on their performance recognizing common sight words	$n = 2$ Both teachers were graduate students in special education	Elementary school Special education self- contained Small group, English class
Sterling, Barbetta, Heward, & Heron, 1997	$n = 5$ 3 boys and 2 girls in 4 th grade 1 with LD, 4 with DD	Students were included because they were mainstreamed in 4 th grade health class	$n = 2$ Teachers' years of experience not specified	Elementary school Special education self- contained Small group, Health class tutoring

Note: The first author was the classroom teacher

Certification not specified

Note: The first author was the classroom teacher

Sutherland, Alder, & Gunter, 2003	<i>n</i> = 9 8 boys and 1 girl, between 8 and 12 years old All 9 with EBD	Students were included because they were in the self-contained special education classroom for students with EBD	<i>n</i> = 1 2 years of teaching experience Certification not specified	Elementary school Special education self-contained Math class
West & Sloane, 1968	<i>n</i> = 9 2 boys and 1 girl, all in 1 st grade 4 with EBD, 1 with ID	Teachers identified students for summer session based on: <ul style="list-style-type: none">• Disruptive behaviors, such as out-of-seat behavior• Socially undesirable behaviors, such as physical aggression towards adults and peers	<i>n</i> = 1 Teacher's years of experience not specified Certification not specified	Elementary school Special education self-contained (summer session) Small group instruction in reading, math, spelling, and functional skills (e.g., money skills)
Wolery, Ault, Doyle, & Gast, 1992	<i>n</i> = 4 2 boys and 2 girls, between 10 and 13 years old All students with ID	Students were included if they could: <ul style="list-style-type: none">• Ability to see and hear stimuli presented• Sit and attend in small group for 15-min• Imitate expressive verbal models• Respond to teacher with 2-sec	<i>n</i> = 1 Teacher's years of experience not specified Certification not specified	Public school (level not specified) Special education self-contained Small group instruction in community sign words (e.g. post office, no diving)

- Differentially respond in an individual and choral condition
-

Table 2

Research Design and Results of All Included Studies

Study	Design	Independent Variable(s)	Dependent Variable(s)	Results
Blood, 2010	Single-subject design ABABC Reversal/withdrawal design	<i>Type of OTR:</i> Mode(s) of OTR Student Response System (SRS) SRS is a polling system that allows students to use small, handheld devices (clicker) to respond to multiple-choice and true-false questions. Student responses are immediately displayed as a graph depicting the percentage of responders who chose each possible <i>Continuum of reinforcement:</i> NA	<i>Student variables:</i> • On-task behavior (DO) • Academic achievement (PP) • Response rate (DO) <i>Teacher behaviors:</i> NA <i>Fidelity of implementation:</i> evaluated using DO <i>Social Validity:</i> NA	Increases in response rates: students responded more frequently to formal questions when the SRS was in use than in the baseline condition No functional relationship demonstrated for student on-task behavior & no functional relationship across phases on academic achievement permanent products (i.e. individual daily quiz or end-of-phase test scores)
Carnine, 1976	Single-subject design ABABAB Reversal/withdrawal design	<i>Type of OTR:</i> Rates of OTR Slow-rate presentation phase: the teacher presented a prompt and, after the final student response, she counted to five before delivering the next prompt. Fast-rate presentation phase: the teacher presented a prompt and, after the final student response, the	<i>Student behaviors:</i> • Off-task behavior (DO) • Student participation (DO) • Answering correctly (DO) <i>Teacher behaviors:</i> • Rates of OTR presented (DO)	Decreases in off-task behavior: both students demonstrated decreased off-task behavior during fast presentation Increases in answering correctly: subject one demonstrated more correct answers during fast presentation; subject two, slow and fast presentation were equal during the first AB phases but

		teacher immediately provided the next prompt.	<i>Fidelity of implementation:</i> NA	for the final two AB phases fast presentation yielded more correct responses.
		<i>Continuum of reinforcement:</i> specific and/or contingent praise	<i>Social Validity:</i> NA	
Davis & O'Neil, 2004	Single-subject design	<i>Type of OTR:</i> Mode(s) of OTR Response cards	<i>Student behaviors:</i> <ul style="list-style-type: none">• Off-task behavior (DO)• Academic achievement (PP)• Correct academic response (DO)• Hand raising (DO)	Mixed findings for off-task behavior: two of the four students demonstrated lower off-task behavior during RC conditions
	Combined Alternating treatments and ABAB Reversal/withdrawal design	RC condition: students used erasable white boards that they held up and received a bean for writing an answer regardless of accuracy. Hand-raising condition: students received one bean in a jar for raising their hands and an additional bean if they were called on and responded correctly.	<i>Teacher behaviors:</i> NA	Increases in academic achievement: students displayed higher average levels of correct academic responding during RC conditions ($M = 91\%$) compared to HR conditions ($M = 74\%$), and group average weekly quiz scores were higher during the RC conditions ($M = 88\%$) compared with the HR conditions ($M = 19\%$)
		<i>Continuum of reinforcement:</i> Individual and classwide group	<i>Fidelity of implementation:</i> NA	
			<i>Social Validity:</i> 2-item student completed	

	contingencies	measure	
Gardner, Heward, & Grossi, 1994	<p>Single-subject design</p> <p>ABAB Reversal/withdrawal design</p>	<p><i>Type of OTR:</i> Mode(s) of OTR Response cards</p> <p>RC condition: students were provided a white laminated particle board (22.9 cm by 30.5 cm) to write responses</p> <p>Hand-raising condition: a randomized list of student names was used to ensure all students were called</p> <p><i>Continuum of reinforcement:</i> Specific and/or contingent praise</p>	<p>Student behaviors:</p> <ul style="list-style-type: none"> • Academic achievement (PP) • Number of student responses (DO) • Accuracy of student responses (DO) <p>Teacher behaviors:</p> <ul style="list-style-type: none"> • Teacher OTR presentation rate (DO) <p>Fidelity of implementation: NA</p> <p>Social Validity: End-of-</p> <p>Increases in correct academic response: the RC condition resulted in higher levels of academic responses during both initial presentation and follow-up probes for all students</p> <p>Increases in hand raising: students exhibited moderate to high levels of hand raising during the hand raising conditions, with increasing trends apparent in some, but not all, phases</p> <p>Increases in academic achievement: overall mean score (next-day quizzes) for the entire class sessions was 57% correct during HR and 70% correct during the RC phase</p> <p>Increases in number of student responses: the number of academic responses during HR averaged 1.5 times per session, while responding averaged 21.8 times per session during RC</p> <p>Increases in accuracy of student responses: accuracy of student responses was higher during both</p>

			study interview with students	experimental methods, averaging 93% during the RC phase.
Haydon & Hunter, 2011	Single-subject design ABCBC Reversal/withdrawal design	<i>Type of OTR:</i> Mode(s) of OTR Single-student response (SR) condition: the teacher randomly called on students, Unison hand-raising (UR) condition: the teacher asked all students to simultaneously raise their hands <i>Continuum of reinforcement:</i> NA	<i>Student behaviors:</i> <ul style="list-style-type: none">• On-task behavior (DO)• Academic achievement (PP)• Correct responses (DO) <i>Teacher behaviors:</i> <ul style="list-style-type: none">• Rates of praise statements (DO)• Redirection (DO) <i>Fidelity of implementation:</i> evaluated using DO of presentation of OTR <i>Social Validity:</i> Teacher completed 9-item scale and student completed 9-item scale	Increases in on-task behavior: the target student's mean percentage of intervals on-task was higher during both increased OTR conditions, but slightly higher during the UR condition. Increases in academic achievement: positive results were evident in both UR and SR conditions No functional relationship demonstrated for correct responses because no baseline data was included
Haydon, Conroy, Scott, Sindelar, Barbetta, & Orlando, 2010	Single-subject design Alternating treatments design	<i>Type of OTR:</i> Mode(s) of OTR Individual responding condition: the teacher randomly called on individual students Choral responding condition: the	<i>Student behaviors:</i> <ul style="list-style-type: none">• Off-task behavior (DO)• Disruptive behaviors (DO)• Active student responding (DO)	Teachers increased their rates of OTR (fidelity) and praise statements and decreased redirections during both intervention conditions Decreased off-task behavior: the mean percentage of off-task behavior was less in the mixed responding condition Decreased disruptive behavior: the mean rate of disruptive

		teacher as all students to responds simultaneously	<i>Teacher behaviors:</i> NA	behavior per minute was less during the mixed responding condition
		Mixed model responding condition: the teacher called on individual students for some questions and asked all students to respond for different questions.	<i>Fidelity of implementation:</i> evaluated using direct observation of teacher behavior and teacher completed checklist	Increased active responding: the mean percentage of active student responding was higher in the mixed response condition
		<i>Continuum of reinforcement:</i> NA	<i>Social Validity:</i> Teacher completed 9-item scale	Fidelity measures indicated adherence to intervention procedures
Kamps, Dugan, Leonard, & Daoust, 1994	Single-subject design	<i>Type of OTR:</i> Mode(s) of OTR	<i>Student behaviors:</i> <ul style="list-style-type: none">• Academic achievement (PP)• Responses to teacher (DO) <i>Teacher behaviors:</i> <ul style="list-style-type: none">• Instructional statements	Increased academic achievement: all students showed higher gains on weekly assessments during experimental conditions.
	Counterbalanced classes with BABAB and ABABB Reversal/withdrawal design	The use of an “enhanced small group instruction” package using choral responding and student interaction. Package components included the following: Choral responding: simultaneous responding by all students in the group, with a minimum of 25 statements indicating group response per session Student-to-student responding: the teacher prompting a student to show another student an item, with a minimum of 25 student-to-	<i>Fidelity of implementation:</i> NA	Increased responses to teachers: all students increased levels of responding during experimental conditions. More correct responses were recorded during choral and student-to-student responses
			<i>Social Validity:</i> Teacher completed satisfaction survey	Teachers instructional statements did not increase the total number of statements to individuals, but did increase (a) the use of group statements and (b) the number of

		student trials per session	student-to-student interactions
Lambert, Cartledge, Heward, & Lo, 2006	Single-subject design ABAB Reversal/withdr awal design	<p>Frequent rotation of materials: Every 5-min, the teacher would rotate the materials being taught</p> <p>Random responding: teacher called on students at random (either individually or as a group)</p> <p><i>Continuum of reinforcement:</i> NA</p>	<p>student-to-student interactions</p>
		<p><i>Type of OTR:</i> Mode(s) of OTR Response cards</p> <p>RCs condition: students used erasable white boards that they held up in response to a teacher question</p> <p>Single student response: the teacher randomly called on individual students</p> <p><i>Continuum of reinforcement:</i> NA</p>	<p><i>Student behaviors:</i></p> <ul style="list-style-type: none"> • Disruptive behavior (DO) • Academic responses (DO) • Correct academic response (DO) <p><i>Teacher behaviors:</i> NA</p> <p><i>Fidelity of implementation:</i> evaluated using a checklist completed by the research team</p> <p><i>Social Validity:</i> 8-item open ended consumer satisfaction questionnaire</p>
			<p>Decreased disruptive behavior: immediate and sustained level changes during the RC condition</p> <p>Increased academic responses: the frequency of academic responses was higher during the RC condition</p> <p>No functional relationship was identified for correct academic responding; the accuracy of responses was variable in both the RC and the single-student response conditions</p> <p>Overall, the teacher implemented both conditions with fidelity</p>

McKenzie & Henry, 1979	Group experiment with post-test only and random assignment	<p><i>Type of OTR:</i> Mode(s) of OTR</p> <p>Individual responding condition: questions were presented to the whole class and then a single student was called on to answer.</p>	<p><i>Student behaviors:</i></p> <ul style="list-style-type: none"> On-task behavior (DO) Student academic achievement (PP) Test anxiety (RS) <p><i>Teacher behaviors:</i> NA</p> <p><i>Fidelity of implementation:</i> NA</p> <p><i>Social Validity:</i> NA</p>	Increases in on-task behavior: more students were on-task in the test-like condition than in the individual responding condition ($p = .05$)
Narayan, Heward, & Gardner, 1990	Single-subject design	<p><i>Type of OTR:</i> Mode(s) of OTR</p> <p>Response cards</p>	<p><i>Student behaviors:</i></p> <ul style="list-style-type: none"> Academic achievement (PP) Number of responses (DO) Accuracy of student responses (DO) <p><i>Teacher behaviors:</i></p> <ul style="list-style-type: none"> Rate of OTR presentation <p><i>Fidelity of implementation:</i> NA</p> <p><i>Social Validity:</i> NA</p>	Increases in academic achievement: A test was presented at the end of the unit, resulting in a significantly higher scores in the test-like events condition ($p = .01$)
	ABAB Reversal/withdrawal design	<p>RC condition: students used white laminated particleboard (9 in. by 12 in., 22.9 cm by 30.5 cm) to write responses to the teacher's questions with a dry-erase marker</p>	<p><i>Student behaviors:</i></p> <ul style="list-style-type: none"> Number of responses (DO) Accuracy of student responses (DO) <p><i>Teacher behaviors:</i></p> <ul style="list-style-type: none"> Rate of OTR presentation <p><i>Fidelity of implementation:</i> NA</p> <p><i>Social Validity:</i> NA</p>	No differences were found between the groups on the measure of test anxiety
		<p>Hand-raising condition: teacher waited 3-sec after prompting students before calling on an individual student</p> <p><i>Continuum of reinforcement:</i> Specific and/or contingent praise</p>	<p><i>Student behaviors:</i></p> <ul style="list-style-type: none"> Number of responses (DO) Accuracy of student responses (DO) <p><i>Teacher behaviors:</i></p> <ul style="list-style-type: none"> Rate of OTR presentation <p><i>Fidelity of implementation:</i> NA</p> <p><i>Social Validity:</i> NA</p>	<p>Increased academic achievement: the mean quiz score for 19 of the 20 students was higher during the RC condition than it was for the HR condition</p> <p>Increased number of responses: the number of responses (i.e., orally answering the teacher's question) averaged 0.9 response during the HR condition, and an average of 15.6 responses during the RC condition</p> <p>No functional relationship was</p>

			Individual interviews with the students	identified for accuracy of student responding; the accuracy of responses was variable in both the RC and the HR conditions
Sindelar, Bursuck, & Halle, 1986	Single-subject design Alternating treatments design	<i>Type of OTR:</i> Mode(s) of OTR Ordered responding condition: students sat in semi-circles and the teacher called on them in order Unison responding condition: students responded simultaneously to each teacher presentation. <i>Continuum of reinforcement:</i> NA	<i>Student behaviors:</i> <ul style="list-style-type: none">• On-task behavior (DO)• Academic achievement (DO & PP) <i>Teacher behaviors:</i> NA <i>Fidelity of implementation:</i> evaluated by an independent observer checklist and personal judgment <i>Social Validity:</i> NA	Increase teacher's rate of OTR presentation: no evaluative data on teacher OTR rate; study just noted OTR presentation rate was 1.9-min for HR condition and 1.2-min for RC condition A functional relationship between conditions for on-task behavior was not documented Mixed findings for academic achievement: students learned the words taught with unison responding at a faster rate than the words taught with ordered responding, however, the difference was small
Sterling, Barbetta, Heward, &	Single-subject design	<i>Type of OTR:</i> Rates of OTR Active student responding	<i>Student behaviors:</i> <ul style="list-style-type: none">• Student academic achievement (PP)	Increases in academic achievement: students learned more health facts in the active

Heron, 1997	Alternating treatments design	<p>condition: the teacher modeled the correct response to a health question presented visually on a health fact card, and the students immediately repeated the correct response in unison (choral response) three times</p>	<p><i>Teacher behaviors:</i> NA</p> <p><i>Fidelity of implementation:</i> evaluated with direct observation</p>	<p>student responding condition compared to the on-task instruction condition; the active student response condition produced consistently higher mean scores from the first day of instruction</p>
		<p>On-task instruction condition: students attended visually to the health fact card as the teacher modeled the correct response, no response was required of the students</p>	<p><i>Social Validity:</i> NA</p>	
Sutherland, Alder, & Gunter, 2003	<p>Single-subject design</p> <p>ABAB Reversal/withdrawal design</p>	<p><i>Type of OTR:</i> Rates of OTR</p> <p>Intervention focused on increasing teachers' presentation of OTRs by providing teachers with daily performance feedback and asking teachers to graph their own OTR presentation daily. A goal of 3.00 OTRs per minute during intervention was set for all teachers.</p> <p><i>Continuum of reinforcement:</i> Specific and/or contingent praise</p>	<p><i>Student behaviors:</i></p> <ul style="list-style-type: none"> • On-task behavior (DO) • Disruptive behaviors (DO) • Correct responses (DO) <p><i>Teacher behaviors:</i></p> <ul style="list-style-type: none"> • Rate of OTR • Rate of Praise <p><i>Fidelity of implementation:</i> NA</p>	<p>Increases in on-task behavior: students' percentage of time on-task increased during the increased OTR condition</p> <p>Increases in correct responses: student mean rate and percentage of correct responses increased during the increased OTR condition</p> <p>Decreases in disruptive behavior: the rate of disruptive behaviors slightly decreased during the increase OTR condition</p>

West & Sloane, 1968	Single-subject design	<i>Type of OTR:</i> Rates of OTR Four combinations of fast/slow rates of OTR presentation paired with high and low reinforcement points were compared. Fast presentation consisted of new tasks presented every 20-sec and slow presentation was every 60-sec. The four conditions included: Fast presentation/high points Fast presentation/low points condition Slow presentation/high points condition Slow presentation/low points <i>Continuum of reinforcement:</i> Token economy and contingent and/or specific praise statements	<i>Student behaviors:</i> • Disruptive behaviors (DO) • Correct responding (DO) • Performance accuracy (PP) <i>Teacher behaviors:</i> NA <i>Fidelity of implementation:</i> evaluated using direct observation <i>Social Validity:</i> NA	Increases in rates of OTR: teachers mean rate of OTR per min during baseline was 1.68 and increased to a mean rate of 3.5 during the increased OTR condition Teacher praise rates did not show a functional relationship
	Multielement design			Mixed findings for disruptive behavior: decreases in disruptive behavior were evident during fast presentation sessions but point delivery (i.e., fast vs. slow) appeared not to have a functional effect Mixed findings for correct responding: slight increase in correct responding per min were noted during fast presentation vs. slow; correct responses per min were not functionally related to point delivery No functional relationship was found for performance accuracy: percentage correct data indicated slight differences in performance accuracy between presentation rate, not consistent within or across subjects; no difference in

				percentage correct related to point delivery rate
Wolery, Ault, Doyle, & Gast, 1992	3 experiments: all single-subject design Alternating treatments design	<i>Type of OTR:</i> Mode(s) of OTR Choral responding condition: all students responded to the presentation of a prompt Individual responding condition: a specific prompt was given and the request for response was delivered to one student <i>Continuum of reinforcement:</i> NA	<i>Student behaviors:</i> <ul style="list-style-type: none">• Correct responses (DO)• Incorrect responses (DO)• No Response (DO) <i>Teacher behaviors:</i> NA <i>Fidelity of implementation:</i> NA <i>Social Validity:</i> NA	Across all three experiments, a functional or causal relationship was not documented for correct responses. The amount of learning by students appeared equivalent across both conditions

Unfortunately, research shows that students who engage in disruptive behavior or students with disabilities (i.e., Emotional/Behavioral Disorders) typically receive fewer and lower quality TD-OTRs (Haydon, et al., *in press*; Sutherland & Wheby, 2001). Given that common educational practice is to fully include all students for at least part of the school day and that TD-OTR presentation has positive impacts on both students and staff, providing all educators with support in increasing TD-OTRs is essential.

Across studies ($n = 15$), researchers explored two main types of TD-OTRs: (1) teacher-directed individual responding and (2) teacher-directed unison responding. Studies examining the difference between teacher-directed individual and teacher-directed unison responding show increased effect for unison responding on positive student outcomes (Haydon & Hunter, 2011; McKenzie & Henry, 1979; Sindelar et al., 1986). In addition, Kamps, Dugan, Leonard, & Daoust (1994) note that student-to-student (i.e., peer responding) may be considered a type of teacher-directed group responding. Student-to-student responding uses the same underlying theory of CWPT and other peer tutoring methods but does not formalize the format into a tutoring activity. Instead, this type of responding occurs when the teacher asks students to answer a question or perform a brief activity with a peer (e.g., “Turn and you’re your partner what sound the letter ‘N’ makes.”). Since the aim of this dissertation study was to change teacher behavior (i.e., the primary DV) and to note the corresponding impacts on student behavior including achievement and social behavior (i.e., the secondary DVs), PD focused on increasing teachers’ presentation of TD-OTRs (i.e., teacher-directed individual and teacher directed unison responding). Results of this dissertation study report overall number of TD-OTRs presented by each teacher participant and information about the type of TD-OTRs

presented (i.e., teacher-directed individual, teacher-directed group, and teacher-directed student-to-student).

The systematic review of literature documented the efficacy of providing all students (with and without disabilities) with increased individual and unison TD-OTRs, and researchers have collected various types of data to support this. All 15 studies presented data on student behavior (e.g., on-task, disruptive, academically engaged, and active responding behavior); in addition, some studies also presented information about student academic achievement (e.g., Blood, 2010; Haydon & Hunter, 2011; Kamps et al., 1994). When researchers did include measures of academic achievement, they used teacher- or researcher-created measures (e.g., daily quiz scores, completion of basic multiplication facts) rather than standardized general outcome measures such as DIBELS Oral Reading Fluency (DORF) or AIMSweb. Prior research has examined student achievement in the areas of: math daily quiz scores (Narayan et al., 1990; Sterling et al. 1997), sight word acquisition (Sindelar et al., 1986), health science fact quizzes (Haydon & Hunter, 2011), unspecified curriculum assessments (Kamps et al., 1994), and American history quiz scores (Blood, 2010). Prior research relied on non-standardized measures of student achievement rather than standardized general outcome measures, which presents a gap in the understanding of the impact of TD-OTRs on student achievement. In this dissertation study, I utilized the DIBELS Oral Reading Fluency (DORF), a standardized general outcome measure.

In addition to the impact of increased teacher presentation of TD-OTRs on student achievement, there are two other areas that necessitate further study: the optimal rate of TD-OTRs per minute/hour and differential effects of varied rates. The optimal rate of TD-OTR presentation has not yet been determined in the literature: no studies have conclusively examined

differential effects of specific rates of TD-OTRs or the possibility of ceiling effects (i.e., saturation). Sutherland, Alder, and Gunter (2003) detail the guidelines presented by the Council for Exceptional Children (CEC) in their 1987 report dictating best practice for teachers of students with high incidence disabilities:

During instruction of new material, teachers should elicit four to six responses per minute from students, who should in turn respond with 80% accuracy. During independent practice, students should make 8-12 responses per minute, with 90% accuracy (CEC, 1987). Eliciting frequent responses from students allows the teacher to adjust the lesson based on student feedback, increase the quality of the lesson, and increase the attentiveness of students (CEC, 1987)." (p. 240)

These guidelines suggest a rate of approximately 4 to 6 TD-OTRs per minute, but it is important to note that this recommendation refers to teachers of students with high incidence disabilities (e.g. learning disabilities) using direct instruction to teach new concepts (e.g., teaching students to identify changes in the pronunciation of a word when the word ends in e). As described in the guidelines, this rate is suggested for students with high incidence disabilities and therefore it is unclear if the same rate should apply to students without disabilities or students in co-taught contexts. Therefore, this rate may be too high for teachers providing direct instruction to more diverse groups of students. Although research has not definitively established the ideal rate of TD-OTRs per minute, Stichter, Lewis, Richter, Johnson, and Bradley (2006) suggest an optimal rate of 3.50 OTRs per minute during active direct instruction based on prior research.

Descriptive information about the TD-OTR rates associated with positive student outcomes in the 15 studies from my systematic review indicate that teachers delivered approximately 3.00 to 5.00 TD-OTRs per minute (during the conditions where rate of OTR presentation was

increased). Thus, I used the rate of 3.00 TD-OTRs per min as the criterion for successful TD-OTR presentation in my study. However, this rate has not been fully tested in different classrooms.

In conclusion, students experience desirable academic and behavioral outcomes when they are provided with increased TD-OTR. To bridge the gap between what is known from research about the benefits of providing students with increased TD-OTRs (i.e., evidence-based classroom management) and implementation of this practice in the classroom, it is imperative that PD efforts meet the NSDC's "new" definition by providing comprehensive, sustained, and intensive approach to increasing teachers' use of TD-OTRs. What is needed is a successful model of PD that increases teacher use of TD-OTRs.

Conceptual Framework for Professional Development

Multi-Tiered System of Support Framework for Professional Development

Overall, state policy and teacher preparation program requirements provide vague and varied details about specific classroom management training or proficiency benchmarks pre-service educators must meet to obtain certification (Freeman et al., *in press*). Further, nationally representative data suggest that in-service professional development in classroom management occurs intermittently, lacks comprehensive instruction, and fails to provide adequate support (Wei et al., 2009; Wei et al., 2010). Typical PD for teachers already in-service often follows a train and hope approach, which fails to promote skill maintenance or generalization (Stokes & Baer, 1977). This model involves an isolated training, often conducted by an outside expert, followed by the hope of independent teacher implementation with fidelity. Teachers may not be responsive to the training because of an over-reliance on reactive management practices involving aversive consequences (e.g., time-out, sending student to the office), which are

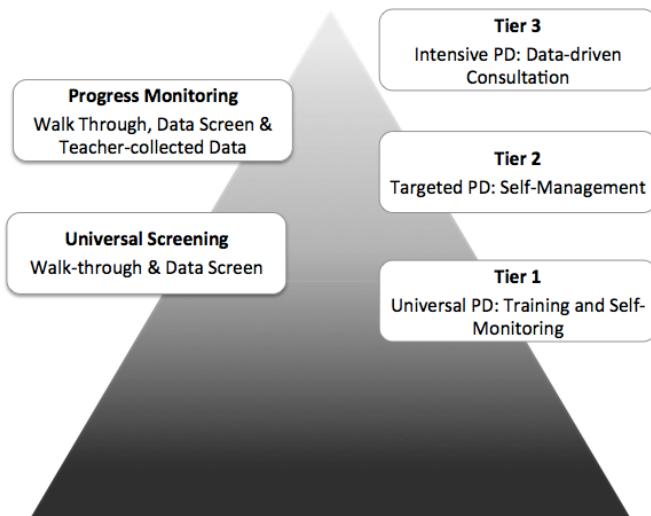
negatively reinforcing for the teacher (i.e., teacher experiences immediate reduction and relief from student problem behavior by removing student thereby increasing the likelihood of continuing to remove student from classroom), therefore increasing the likelihood of their use. However, research suggests that aversive consequences are less effective for students with severe behavior problems and do not decrease the likelihood of problem behavior, therefore creating a coercive cycle. Therefore, PD should (a) focus on proactive, preventative approaches to classroom management (CWPBS) and (b) seek to eliminate the behaviors that maintain the coercive teacher-student behavior cycle.

Recent research has focused on ways to increase teacher use of one or more of the CWPBS strategies identified by Simonsen et al. (2008). Simonsen et al. (in preparation) systematically reviewed the literature on teacher training and CWPBS practices. Similar to Allen and Forman (1984),

Simonsen and colleagues identified the following PD practices as present (in various combinations) in studies demonstrating desired teacher behavior change: (a)

didactic training (i.e., direct and explicit instruction in the target

skill/behavior), (b) outside/expert coaching, and (c) performance feedback (Simonsen et al., in preparation). This finding echoes prior research findings stating that comprehensive and multi-component training packages may result in improved classroom management (e.g., Slider, Noell, & Williams, 2006). Given the research indicating traditional PD (i.e., train & hope) is



ineffective (Fixen, Naoom, Blase, Friedman, & Wallace, 2005) and the body of evidence supporting that teacher behavior change results from multi-component intervention, it is necessary to examine alternative forms of teacher PD. One alternative proposed framework (organizational system) for delivering PD for teachers that can (a) efficiently organize what we know about effective professional development and CWPBS strategies and (b) differentiate levels of support based on teacher performance is a multi-tiered system of support (MTSS) framework for teacher professional development (Simonsen et al., *in press*; depicted in the inlaid figure above). An MTSS framework is a systematic organizational approach using data-based decision-making to deliver evidence-based PD. MTSS is based on the tiered prevention logic that originated in the public health literature (e.g., Caplan, 1964) and has been prominent in the education research literature since the mid-to-late 1990's (e.g., Walker et al., 1996). In tier 1, or universal support, all teachers participate in universal PD for each critical classroom management skill (e.g., OTR) and self-monitor their use of each skill immediately after training. In tier 2, or targeted support, school-based coaches use data to identify teachers who are not responsive to the universal PD (e.g., universal screening identifies teachers who are not delivering high rates of OTRs) and targeted PD is provided (e.g., self-management). Tier 3, or intensive individualized support, is developed for the few teachers with chronic or significant classroom management challenges (Simonsen et al., *in press*). Interventions should include the use of an external behavior support person (i.e., a coach or consultant) to support teachers in action planning, goal setting, and providing brief performance feedback (Simonsen et al., *in press*). Results of recent research suggests that two specific professional development approaches including two or more of these components, self-management and consultation, may

increase teacher use of proactive strategies, like providing increased rates of OTRs to students (MacSuga & Simonsen, 2011; Myers et al., 2011; Simonsen et al., 2012).

TD-OTR and Professional Development

To date, several research studies focused on increasing teachers' use of TD-OTRs or on comparing types of TD-OTRs feature an outside consultant (e.g., the researcher) who provides the teacher with direct instruction on the target skill and then guides him or her with performance feedback to inform practice (Haydon et al., 2009; Haydon & Hunter, 2011). MacSuga and Simonsen (2011) published a preliminary case study detailing a model for intensive individual consultation to increase teachers' overall use of CWPBS strategies. Haydon, Mancil, and Van Loan (2009) published a case study in which they provided teachers with daily performance feedback post-observation that included visual displays (i.e., graphs) of TD-OTR rates and student rates of correct responses, on-task, and disruptive behavior. The approaches applied by MacSuga, Simonsen, Haydon and colleagues may be effective, but they are also resource intensive making it difficult to implement for all teachers who require classroom management support across a school. Thus, given the empirical support confirming practical observations that isolated PD is not effective at changing teacher behavior (i.e., the failure of the train and hope model) and the lack of evidence supporting the feasibility of resource intensive individual intensive consultation, it is necessary to explore alternative PD options. One promising avenue to provide in-service teachers with comprehensive PD is the use of comprehensive targeted intervention package (similar to the one proposed in the MTSS framework). Several studies support the components of the targeted PD proposed for this study including self-monitoring, self-management, and performance feedback (e.g., Myers et al., 2011; Simonsen et al., 2010; Simonsen et al., 2011).

Focus on Targeted PD

Targeted PD within the Conceptual Framework. As described above, targeted PD fits within the MTSS framework by adding additional training (i.e., a review of the concepts taught in universal training), based on data indicating nonresponse to universal PD, coupled with more intensive self-managed supports (Simonsen et al., *in press*) for teachers whose data indicates they are non-responsive or minimally responsive to universal PD. Targeted PD is aligned with the prevention-logic by developing antecedent supports to increase the likelihood teachers will engage in the desired behavior. At the targeted level, data obtained from self-monitoring are used to inform the self-driven intervention components to change ones own behavior known as self-management. Simonsen et al. (*in press*) describe the self-management process:

Self-management occurs when one manipulates “the variables of which behavior is a function” (Skinner, 1953, p. 228), including antecedents (e.g., self-delivered prompts or self-arranged changes to environment), behaviors (e.g., self-recording, monitoring, and evaluation), and consequences (e.g., self-delivered feedback or reinforcers). (p. 11)

Consistent with universal PD procedures, the teacher continues to self-monitor his or her own skill use and to self-report data. Tier two support is marked by a shift to self-management that requires teachers to set a specific (i.e., observable and measurable) goal for the selected CWPBS skill. This goal informs a targeted action plan, which the teacher then implements. Simultaneously, the teacher is continuing to collect data through self-monitoring. The self-collected data provides performance feedback to the teacher through daily graphing Teachers then use this data to self-evaluate and based on this information, the teacher is able to assess progress and to continue practice as-is, adjust, or terminate efforts. If the teacher meets the pre-established goal, then he or she provides previously determined self-reinforcement (e.g., a cup of

coffee or a yoga class; Simonsen et al., 2012). The self-management program consists of two responses: the controlling response and the controlled response (Skinner, 1953). In targeted PD within an MTSS framework, the controlled response is the targeted CWPBS skill (e.g., frequency of TD-OTRs) and the controlling response is the collection, graphing, and reviewing of the frequency of the targeted CWPBS skill. The self-management program is designed to control the target skill, with the eventual goal of transferring control to natural contingencies in the environment (e.g., increased student engagement resulting from increased TD-OTRs becomes a natural reinforce increasing the likelihood that teachers will present more frequent TD-OTRs).

At the targeted level teachers are primarily responsible for managing their own behavior change, but are also supported by outside behavior support (i.e., a coach or consultant) who assists in monitoring individual progress. The role of this support person is to offer antecedent coaching (e.g., email prompts) based on teacher self-report data and to complete brief weekly observations to objectively monitor teacher progress (Simonsen et al., in press). Again, teacher performance of the target skill dictates either reducing support (i.e., if the teacher is meeting proficiency) or increasing support (i.e., if the teacher is not progressing with the addition of self-management intervention).

Targeted PD within this Dissertation Study. This dissertation study focused on empirically testing the impacts, on teacher and student behavior, of providing teachers with a targeted intervention package that includes self-management and performance feedback within an MTSS framework. To provide PD within an MTSS framework, I provided all teachers with a scripted universal training at the same time (i.e., in a group) that consisted of direct instruction of the target skill (i.e., increasing TD-OTRs). This training included a behavioral definition of TD-

OTRs, observable and measurable examples of ways to present all types of TD-OTRs (i.e., individual, group, and peer), information on optimal rates associated with positive student outcomes, and space for teachers to generate a list of ideas about how they would increase TD-OTRs within their classroom. In addition to the content on TD-OTRs, I presented teachers with direct instruction about what self-monitoring is and provided each with a golf counter (i.e., clicker) to take their own data. I provided teachers with an excel spreadsheet via a Dropbox account, allowing them to enter their daily rate which automatically graphed performance with a minimum target goal line represented.

Then, I designed the targeted intervention package to follow the universal intervention for teachers who did not respond to universal intervention. The targeted intervention package contained elements found within the universal intervention, and added additional components including goal setting, self-reinforcement, and performance feedback. Specifically, when a teacher's data indicated that he or she was eligible for targeted intervention (i.e., the teacher did not meet the criterion for success with an average of 3.00 TD-OTRs presented per minute and/or demonstrated a decreasing trend), I scheduled a one-on-one meeting with that teacher. During the individual meeting, I used a script to briefly review the behavioral definition of TD-OTRs, the three types of TD-OTRs, and examples of each TD-OTR in practice (similar to the direct instruction that occurred in the universal training). I again reviewed the process of self-monitoring and the teacher examined his/her own data from the excel spreadsheet on Dropbox. Using these data, I worked with the teacher to create a plan for self-management. The self-management plan contained an action plan that set a specific and measurable goal for performance (e.g., increase the average rate of TD-OTRs presented from 2.93 per minute to 3.20), steps for achieving that goal (e.g., increase peer response opportunities), a plan to assess if

the goal was met (e.g., look at the graph in the excel spreadsheet), and a plan for providing self-reinforcement when the goal was met (e.g., choosing a self-reinforcer such as a latte and identifying a method of delivery such as stopping at the coffee shop one mile from school on the way home from work if the goal was met and the self-reinforcer earned).

In addition to the self-management process, I provided performance feedback in the form of behavior specific emails to teachers informing them of their progress (via information collected from the teacher's self-monitoring graph) following the first observation post-introduction of targeted intervention and then again on a weekly basis. The addition of intermittent observer-driven performance feedback represents a variation on the model for PD described by Simonsen et al. (in press), but is consistent with research informing the components of effective PD (Allan & Forman, 1984; Simonsen et al., in preparation).

The targeted intervention package was designed to function within a behavioral framework. Following training, teachers (a) implemented antecedent strategies (i.e., used a golf counter which may have served as a discriminative stimuli and manipulated the environment in accordance with the action plan), (b) engaged in self-monitoring behavior (i.e., tracked TD-OTRs presented), (c) self-evaluated (i.e., reviewed data and determined if s/he met the specified goal), and (d) self-reinforced (i.e., provided self with reinforcement contingent upon reaching a specified goal). In addition, I provided contingent consequences (i.e., intermittent observer emails stating goal progress and fidelity of implementation). Figure 2 represents a breakdown of each intervention component within this three-term contingency (i.e., antecedent, behavior, and consequence) and briefly describes the function of the component.

Figure 2.

Behavioral Definition of Targeted Intervention by Component

	Intervention Components	Function of the Component
Antecedent	Golf-counter (i.e., clicker)	May serve as (a) a prompt for TD-OTRs and (b) a discriminative stimulus (S^D) that occasions the teachers' self-monitoring behavior.
	Specific antecedent strategies specified in action plan	The implementation of action plan items designed to increase the likelihood teachers' would present more TD-OTRs (e.g., the teacher pre-plans to call on each student at least one time during the lesson thus the presence of all of the students on the carpet during the lesson serves as a prompt to engage in the target response).
Behavior	Self-Monitoring	The teacher records the number of TD-OTRs he/she is presenting during the specified instructional period.
Consequences	Self-delivered Feedback Based on Self-Evaluation	<p>Self-delivered feedback may occur in two ways:</p> <ol style="list-style-type: none"> When the teacher clicks he/she provides him/herself with immediate performance feedback that may increase the likelihood of presenting more TD-OTRs in the future. When the teacher enters his/her daily TD-OTR rate into the excel spreadsheet, the teacher can immediately view the rate (as calculated by the spreadsheet) and a visual representation of the data is provided by the automatic graph with the goal line. S/he will use this visual feedback to self-evaluate (determine whether goal was met) and self-deliver feedback, which may increase the likelihood of presenting more TD-OTRs in the future.
	Performance Feedback (Delivered by Trainer)	Intermittent performance feedback delivered by the trainer with respect to fidelity of self-monitoring behavior and progress on goal achievement may increase the future likelihood of the teacher engaging in the desired behavior.
	Self-Reinforcement	The self-delivery of a chosen "reinforcer" may function to increase (i.e., reinforce) teachers' use of high-rate TD-OTRs

The use of a targeted intervention package within an MTSS framework to support teachers' increased presentation of TD-OTRs fits the NSDC's definition for "high quality" PD by providing a comprehensive, sustained, and intensive (yet feasible) approach to supporting teacher use of a practice to increase student achievement.

Purpose of the Study

The purpose of this dissertation study was to test the application of targeted PD package (i.e., self-management plus performance feedback) to increase teachers' presentation of TD-OTRs. This study extended the current research base on supporting teachers' use of CWPBS by (a) applying a MTSS framework to PD focused on CWPBS; (b) focusing on changing teacher behavior to positively impact students' active engagement, (c) utilizing a general outcome measure to assess student academic achievement, and (d) applying an experimental research design (to examine the effects of targeted PD package (i.e., self-management plus performance feedback) intervention with in-service teachers who did not respond to universal training.

Research Questions and Hypotheses

This research study builds on and extends prior research by testing the effects of applying targeted PD support (i.e., a targeted intervention package including didactic training, self-management, and performance feedback) aimed at increasing teachers' presentation of TD-OTRs for all students within the classroom setting. The following questions were addressed:

- 1. Research Question #1.** Is there a functional relationship between (a) teachers' response to targeted PD support (i.e., a targeted intervention package including didactic training, self-management, and performance feedback; Tier 2), following didactic training and self-monitoring of TD-OTRs (Tier 1), and (b) teacher behavior (i.e., the rate of TD-OTRs) for

teachers whose rate of TD-OTRs was below the criterion level (3.00 per min) after Tier 1 training?

Research Hypothesis # 1. Teachers,’ whose rates of TD-OTRs were below the criterion level after Tier 1 training, will increase their presentation of opportunities to respond during and after engaging in tier 2 (i.e., a targeted intervention package).

2. **Research Question #2.** Is there a corresponding relationship between teacher behavior change (increases in TD-OTR rates) and students’ level of academic engagement and disruptive behavior (measured by Direct Behavior Rating; DBR) and achievement (measured by DORF)?

Research Hypothesis 2. Teachers’ increased presentation of TD-OTRs will increase student active engagement, and decrease disruptive behavior as measured by DBR, and student academic achievement, as measured by DORF.

Chapter II

Method

This dissertation explored the implementation of a targeted intervention package, following universal training, to increase teachers' presentation of teacher-directed opportunities to respond (TD-OTRs). Specifically, I used systematic, graduated levels of professional development (PD) to train in-service elementary teachers to increase their presentation of opportunities to respond. First, I trained all teachers using a scripted universal PD followed by independent self-monitoring. Next, I intended to stagger training and implementation of a targeted intervention package (Tier 2) across eligible teachers based on their baseline data and response to universal training (Tier 1) using a multiple baseline across participants (i.e., teachers) design (Kazdin, 2011). This design was selected for use to determine if: (a) there was a functional relationship between teachers' response to targeted PD support (Tier 2), following didactic training and self-monitoring of TD-OTRs (Tier 1), and teacher behavior (i.e., the rate of TD-OTRs) for teachers whose rate of TD-OTRs was below the criterion level (3.00 per min) after Tier 1 training (primary research question), and (b) there was a corresponding relationship between teacher behavior change (increases in TD-OTR rates) and their students' level of academic engagement (secondary research question). This chapter summarizes the methods planned to address these research questions.

Setting

This study took place in a suburban public elementary school (grades prek-5) in New England. The school was selected based on two pre-specified criteria: (a) the school was implementing School-wide Positive Behavior Interventions and Supports (SWPBIS) with fidelity as evidenced by a score of 80/80 (i.e., overall implementation/the subscale for teaching behavioral expectations) or greater on the School-wide Evaluation Tool (SET; note a score of 80/80 is considered the minimum standard for schools implementing SWPBIS with fidelity) and (b) the school/district utilized a literacy curriculum that documented providing direct phonics and fluency instruction. Dr. Susannah Everett, a research associate employed at the Center for Behavioral Education and Research (CBER), and I conducted the SET at the school site in November of 2012 to determine fidelity of SWPBIS implementation. SET results of 90/85 indicated that the school site was implementing SWPBIS with fidelity.

School literacy curriculum was assessed using principal report and district curriculum blueprints (accessed via the district website). I reviewed this curriculum to ensure that it directly addressed word study and fluency across all grades to ensure that the DIBELS measure of Oral Reading Fluency (DORF) would be appropriate. Additionally, Dr. Michael Coyne also reviewed all materials from the district website to ensure that the school site met selection criterion. All elementary schools within the district implemented a balanced literacy curriculum in grades k-5 that included direct phonics and fluency instruction. According to the strategic school profile (located on the state's Department of Education website), the selected school enrolled 663 students (grades prek-5) and had an average class size of 21 students. Less than seven percent (6.5%) of the student population was eligible for free or reduced lunch and 97.6% of students' primary home language was English, with 99.7% of students fluent in English. The student

population was 84.6% white, 5% Hispanic, 4.5% Asian American, 2.9% Black, 0% American Indian, 0% Pacific Islander, and 3% two or more races.

Participants and Recruitment Procedures

The participant pool for this study was based on in-service teachers' current grade level (i.e., teachers in grades 1-3 were targeted for recruitment in order to facilitate DORF comparisons between students) and their interest expressed in developing classroom management skills. Further, all teachers participating in the study were required to provide daily direct instruction in the phonics/spelling components of reading to allow for examination of intervention impact on student achievement on the general outcome measure (DORF). Due to the district and school curriculum, all teachers in the school were responsible for providing this instruction and thus met inclusion criteria with respect to direct reading instruction.

Prior to obtaining school and participant consent, I completed appropriate Institutional Review Board (IRB) documentation to gain permission to conduct this investigation. Once permission was granted from the IRB, I first identified and recruited a target district that met my two pre-established criteria (i.e., contained schools implementing SWPBIS and schools utilizing a literacy curriculum that included direct phonics and fluency instruction). Once the district had been identified, I communicated with the district's assistant superintendent to gain permission to conduct research within the district. During this communication, we discussed study procedures, timelines, study goals, and potential school sites.

After obtaining consent from the superintendent, I contacted the administrator of the school site identified by the assistant superintendent to explain the proposed study and schedule a face-to-face follow-up meeting. During the follow-up, in-person meeting with the building principal, I explained study procedures and steps of the investigation. Specifically, I detailed

participant criteria for SWPBIS and literacy instruction described previously as well as procedures for obtaining teacher and parent informed consent, student assent, and for notifying parents of all students within participating teachers' classrooms. The principal provided me with a copy of the school's SET evaluations for the past two years and agreed to allow me to conduct my own SET this school year prior to baseline. Additionally, she directed me to the district website to download the literacy curriculum and confirmed that teachers were required to implement direct literacy instruction in all classrooms.

Once permission from the district and school was obtained, I asked the school principal to allow me to attend a regularly scheduled faculty meeting to conduct an initial informational session with all staff. I attended an all staff meeting after school and provided all teachers with an overview of the study including the purpose of the study, a general description of study procedures, and benefits as well as potential inconveniences of participation. I then gave all teachers the opportunity to volunteer to learn more about the study via an in-person meeting with me. To do this I provided all teachers at the faculty meeting with an individual sheet of paper containing space for contact information and two check boxes indicating they either **did** wish to be contacted to learn more about the study or **did not** wish to be contacted. (If teachers did not wish to learn more, they were not required to provide contact information.) A total of 10 teachers initially indicated they would like to learn more about study participation. I contacted all 10 teachers to schedule individual meetings to provide further details about the study and obtain signed informed consent. Three of the 10 teacher who initially volunteered to be contacted later retracted their offer to meet due to concerns about time commitments within and outside of school, and another teacher was unable to participate because she was scheduled to take a leave of absence during the study. In total, I conducted six individual teacher meetings

and five teachers consented to participate (after learning about the study procedures one teacher declined to participate due to concerns about existing time commitments).

I asked each teacher that provided consent to identify a 15-min block of direct literacy instruction (i.e., instructional time when the teacher is actively and explicitly directly teaching literacy content to students) during which time the daily observation occurred. I gave each teacher a video camera and taught him or her how to turn the video camera (used for daily observations of teachers only) on and off, record, stop recording, and plug in to charge. To satisfy teacher training and study requirements, teachers were given a handout detailing directions for the completion of the Direct Behavior Rating (DBR) instructional module (<http://www.directbehaviorratings.com/training/>) and to download Dropbox (<https://www.dropbox.com/install>). Following this initial meeting, all teachers sent home informational sheets to parents of all students participating in the selected 15-min literacy block, informing parents/guardians that a study will be conducted in their child's classroom that will involve a video recording of teacher behavior and an observer being present in the room. Table 3 presents a summary of individual teacher demographic information.

Table 3

Teacher Demographic Data

Teacher	Gender	Current Grade Level	Total Years of Teaching Experience	Highest Degree Held	Area of Certification	Prior Behavior Management or Classroom Management Training	Prior PBIS or SWPBIS Training
Teacher 1	M	2 nd	9	MA	Reading & Language Arts	½ Day training in Responsive Classroom	School-wide training in: -Classroom expectations -Tiered behavior levels and interventions -District-wide bullying prevention -Implementation of behavior lessons
Teacher 2	F	3 rd	16	MA + 30	Education	None	School-wide training via in-service staff meeting
Teacher 3	F	1 st	11	MA + 30	K-3 Education	PMT (protective holds) training	School-wide training via in-service staff meeting SWPBIS team member
Teacher 4	F	3 rd	14	MA	Elementary & Elementary Childhood Special Education	Sporadic professional development	None
Teacher 5	F	2 nd	< 1	BA	Elementary k-6	None	None

Note: Teachers self-reported their prior behavior management/classroom management and training/experience with PBIS/SWPBIS

In addition to the teacher participants, I recruited six students from each participating teacher's classroom in order to examine student-level intervention effects. Specifically, during the individual meeting, teachers completed the Student Risk Screening Scale (SRSS; Drummond, 1994; see Appendix A) for all students in their classroom. They were also asked to confirm whether each student displayed disruptive behavior and to note if students' had acceptable attendance (i.e., present for 80% of school days or more). Using this tool, teachers identified (a) three students rated as high-risk for problem behaviors during teacher directed instruction (i.e., the time the teacher was to be observed and asked to implement increased OTRs) and (b) three low-risk, or typically performing, students with acceptable attendance from the same classroom. High-risk students were included to assess OTR effects on high-risk students and low-risk students to assess OTRs effects on typical students. Including typical, low-risk, peers also allowed for social comparison between the high-risk and low-risk students (Kazdin, 1977). In some classrooms teachers were unable to identify three students at high-risk who also met the attendance criteria and whose parents consented for their student to participate in the study; therefore, moderate-risk students who also met the disruptive behavior and attendance criteria were selected as substitutes.

For each selected student, the teacher provided parents with an informed parental permission form. Parental permission was obtained for all students chosen. If a parent did not provide permission, then I worked with the teacher to select an alternate student with similar SRSS scores meeting the attendance and respective low-risk or moderate- or high-risk criteria. Once parental permission was obtained for all students, I asked each student to verbally provide assent for participation. Overall, 30 students participated in this study. Individual student

demographic information was not collected (to protect student confidentiality), but a summary of student participants' grade levels, SRSS scores, and gender is provided in Table 4 below.

Table 4

Student Characteristics Table

Teacher	Student ID	Student Grade Level	Student Gender	SRSS Score	SRSS Risk Level	DORF Assessment Grade Level
Teacher 1	1	Second	Male	4	Moderate	Fifth
	2	Second	Male	9	High	Second
	3	Second	Female	5	Moderate	Second
	4	Second	Female	0	Low	Fourth
	5	Second	Male	0	Low	Second
	6	Second	Male	0	Low	Third
Teacher 2	1	Third	Male	10	High	Fourth
	2	Third	Male	10	High	Fourth
	3	Third	Male	5	Moderate	Fourth
	4	Third	Female	2	Low	Third
	5	Third	Male	3	Low	Third
	6	Third	Female	0	Low	Fourth
Teacher 3	1	First	Male	8	Moderate	First
	2	First	Male	10	High	First
	3	First	Male	12	High	First
	4	First	Male	0	Low	First
	5	First	Female	0	Low	Fourth
	6	First	Female	0	Low	Second
Teacher 4	1	Third	Female	9	High	Fourth
	2	Third	Female	7	Moderate	Fifth
	3	Third	Male	8	Moderate	Fourth
	4	Third	Female	2	Low	Third
	5	Third	Male	1	Low	Fourth
	6	Third	Male	2	Low	Fourth
Teacher 5	1	Second	Female	16	High	Third

2	Second	Female	7	Moderate	Second
3	Second	Female	8	Moderate	Second
4	Second	Female	1	Low	Fifth
5	Second	Male	2	Low	Fifth
6	Second	Female	2	Low	Fourth

Instrumentation

As stated above, prior to the start of the study, I asked teachers to screen students for inclusion using the SRSS (see description below) and informal observations related to disruptive behavior and consistent attendance (i.e., 80% or greater). This study utilized direct observation of teacher behavior as the primary measure of teacher presentation of TD-OTRs, and both Direct Behavior Rating (DBR; Chafouleas, Riley-Tillman, & Christ, 2009) and a general outcome measure (DORF) to assess student behavior and academic achievement, respectively. Direct observation of teachers' presentation of TD-OTRs was the proximal effect (i.e., the primary DV) in this study, and student behaviors and academic achievement were the distal effects (i.e., the secondary DVs) assessing student-level impact of increased OTRs. In addition to the screening, teacher, and student measures, I assessed social validity and fidelity of implementation of the universal and targeted PD interventions to increase teachers' use of OTRs.

Student Screening Measures. I used the Student Risk Screening Scale (SRSS; Drummond, 1994) as the primary screening measure in this study. The SRSS contains eight-items related to student behavior (e.g., steal, aggressive behavior, peer rejection). Teachers rate all of their students in their classroom on a four point Likert scale, with "0" as "Never" and "3" as "Frequently." Each students' ratings are then summed across all items. Students with total scores ranging from 9 to 21 are considered "high risk," while students with total scores ranging from 0 to 3 are considered "low risk." The SRSS has been found to be a psychometrically sound classroom-screening tool for identifying elementary students at risk for problem behaviors (Lane et al., 2009). SRSS scores are predictive of negative academic and behavior outcomes for 1.5 to 10 years after initial assessment (Drummond, Eddy, Reid, & Bank, 1994), are positively correlated with the Aggressive Behavior Scale of the *Child Behavior Checklist* (Achenbach,

1991), and have strong internal consistency ($\alpha > .80$) and test-retest stability ($r \sim .68 - .74$; Lane, Kalberg, Lambert, Crnobori, & Bruhn, 2010; Lane, Little, Casey, Lambert, Wehby, Weisenbach, & Phillips, 2009; Lane, Oakes, Harris, Menzies, Cox, & Lambert, 2012). Research has also confirmed the sensitivity and specificity of the SRSS predicting externalizing behavior problems using Receiver Operator Characteristic (ROC) curves, finding accuracy levels above 90%, 45-46% above chance (Lane, et al., 2009). The use of a universal class-wide behavior screening measure to identify high-risk students for study participation is consistent with the student identification used by Haydon, Conroy, Scott, Sindelar, Barber, and Orlando (2009), who used the results from school-collected Systematic Screen for Behavior Disorders (SSBD).

Teacher behaviors. Teacher behaviors were measured to assess the impact of the intervention and will be used to determine whether or not teachers need additional supports (i.e., a targeted intervention package PD). Teachers' increased presentation of TD-OTRs was the primary dependent variable (DV) in this study. Direct observation is standard in single-subject design (Kazdin, 2011) and used extensively in applied behavior analysis research (Baer, Wolf, & Risely, 1987). I collected direct observations of teachers' presentation of TD-OTRs via videotaped direct instruction sessions. The videotaping of observation sessions is consistent with procedures used by Blood (2010) to study increased TD-OTRs through the use of a student response system (SRS). I set up a video camera in an optimum classroom location to capture the teachers' direct instruction behaviors. The video camera was placed in the classroom a week prior to the baseline data collection, so that the teacher and the students become acclimated to the camera's presence to reduce reactivity (Alberto & Troutman, 2009). The University of Connecticut IRB approved all documented video camera procedures, and teacher and parent consent forms clearly described these procedures. I used the videotapes to assess teacher

behavior only and made efforts to ensure students were not recorded. To ensure confidentiality during the study, I stored teacher footage on a single password protected laptop that was disconnected from the Internet. Data collectors viewed teacher videos from this laptop and coded data on a separate iPad device (see description of data collection with the SCoA application below). After the study, I transferred all videos transferred onto an external hard-drive, which I stored in a locked cabinet in the office of the Principal Investigator (PI) Dr. Brandi Simonsen.

Two trained data collectors coded the videotapes for teacher behaviors using the Student/Classroom Observation and Analysis (SCOA) application developed for assessment of classroom management direct observation. The SCoA is compatible with iPads and inexpensive (~\$2.99 per device). Although new to the direct observation application market, the SCoA was developed by Dr. Terrance Scott and his colleagues at the University of Louisville and the coding definitions have been widely field-tested in their large-scale assessments of teacher and student interactions in classrooms (Scott, Alter, & Hirn, 2011). Trained data collectors (one data collector was a licensed teacher, but currently a stay-at-home parent, and the other was a graduate student in school psychology) measured TD-OTRs via direct observation of teachers. The data collectors measured the frequency with which teachers presented each type of TD-OTR (i.e., TD-OTR individual response, TD-OTR group response, TD-OTR peer response) across each 15-min observation. Then, an overall rate of TD-OTRs per minute was calculated by dividing the total number of TD-OTRs recorded per session by the total minutes observed (typically 15). To ensure accuracy of TD-OTR measurement, data collectors used the operational definitions presented in Table 5 for each of the variables.

Table 5

Operational Definitions of Teacher Observation Variables

Dependent Variable (Teacher)	Operational Definition
TD-OTR Individual*	<p><i>Definition:</i></p> <p>“Teacher provides an opportunity to respond that is curriculum relevant toward a specific individual. OTR must be instruction related and not a social question, a question within the context of negative feedback, or a direction to perform a non-academic task. This question is not rhetorical.” (SCOA Application)</p> <p><i>Example:</i></p> <p>The teacher says the name of an individual student paired with an opportunity to respond (e.g., “Jimmy, what sounds can the letter ‘C’ make?”) or presents an opportunity to respond to the class but selects only one student to respond (e.g., the teacher holds up a letter card containing /ch/ and says, “Someone raise your hand and tell me what sound this makes.”)</p> <p><i>Non-Example:</i></p> <p>The teacher presents a rhetorical question to an individual student then answers that question him or herself (e.g., “Bobby, what sound does short ‘a’ make? Short ‘a’ says /ă/ as in bat.”)</p>
TD-OTR Group*	<p><i>Definition:</i></p> <p>“Teacher provides an opportunity to respond that is curriculum relevant and that is directed at whole class or small group. OTR must be instruction related and not a social question, a question within the context of negative feedback, or a direction to perform a task. This question is not rhetorical.” (SCOA Application)</p> <p><i>Example:</i></p> <p>The teacher presents the entire class with an opportunity to respond. For example, the teacher says, “Class, on your white board write the letter that makes the /h/ sound.”</p> <p><i>Non-Example:</i></p> <p>The teacher directs the whole class to follow a direction to perform a task. For example, “Class, put away your white boards and get ready for silent reading.”</p> <p><i>Definition:</i></p> <p>Teacher provides an opportunity to respond that is curriculum relevant and that is directed at whole class or a small group and the response expectation is that students must communicate with a peer to demonstrate knowledge.</p>

created category not a variable original to the application)

OTR must be instruction related and not a social question, a question within the context of negative feedback, or a direction to perform a task. This question is not rhetorical.

Example:

The teacher presents all students within the class with an opportunity to respond that involves responding to a peer. For example, “Students, turn and tell your partner how to sound out the word on the board.”

Non-Example:

The teacher tells students to engage in a social conversation while he or she attends to an issue outside the classroom. For example, the teacher asks students to “turn and tell a friend about your weekend” while he or she answers the classroom phone.

Note. *Source: Directions to Use the SCOA Application,
louisville.edu/education/srp/abri/assessment/scoa-application.pdf

Observer training. I took the following steps to ensure the reliability of the videotaped direct observation data. First, I trained both data collectors using the SCOA electronic data collection application. Specifically, training consisted of (a) one meeting to introduce the tool and discuss operational definitions of the behaviors included on the tool, (b) practice using the tool while watching sample videos of classrooms, and (c) two or more test sessions (i.e., observing video of teachers and children in the classroom with an independent second data collector) with the direct observation software. As a result of training, both data collectors exceeded the predetermined criterion (i.e., 90%) of inter-observer agreement (IOA) reaching 97% and 98%. IOA of the teacher direct observation data was calculated using the agree/disagree formula (Cooper, Heron, & Heward, 2007), which is calculated as follows: agreements divided by agreements plus disagreements multiplied by one hundred percent, which equals the percentage of IOA.

IOA observations. Each data collector independently observed the video recordings; the data collectors never met nor did they observe together. Throughout the project, IOA was

computed for greater than 30% of the teacher behavior observations overall and greater than 30% of the observations within each condition (e.g., Baseline, Intervention) for each teacher to exceed the level recommended by What Work Clearinghouse (WWC) Single Case Design Standards (i.e., 20%; Kratochwill et al., 2010). To ensure the integrity of the reliability checks, I scheduled checks throughout the duration of the study, across all conditions and participants. If inter-rater reliability decreased below 90%, I planned to provide a brief retraining for observers during which time they recoded the video until the 90% criterion for agreement was reached. However, IOA of teacher behavior never fell below 90% so retraining was not necessary. The 90% criterion is in excess of the recommendations forwarded by Hartmann et al. (2004) and supported by the WWC standards, as well as other single-subject design standards (e.g., Horner et al. 2005). IOA across phases and teachers is provided in Tables 6 and 7 below.

Table 6

Inter-observer Agreement Across Phases for Observations

	Percentage of IOA per phase			IOA results (IOA Range)		
	Baseline	Universal	No self-monitoring	Baseline	Universal	No self-monitoring
Teacher 1	40.00%	41.18%	60.00%	92.62% (90.00- 95.24)	96.01% (92.86- 100)	93.51% (91.49- 94.92)
Teacher 2	40.00%	41.67%	33.33%	93.45% (91.67- 95.24)	96.68% (94.44- 98.53)	89.50% (82.26- 94.05)
Teacher 3	40.00%	46.67%	33.33%	92.86% (90.48- 95.24)	94.58% (90.48- 96.36)	98.04% (96.08- 100)
Teacher 4	40.00%	41.67%	44.44%	94.33% (92.00- 96.67)	93.78% (90.00- 98.41)	99.15% (98.31- 100)
Overall	40.00%	43.33%	42.78%	93.32%	95.26%	95.05%

Note. IOA is Inter-observer agreement

Table 7

IOA for Teacher 5

Teacher	Percentage of IOA Per Phase					IOA Results (IOA Range)				
	Baseline		Targeted		Universal	Follow-		Baseline		Follow-
	2 nd	Universal	Up	Up	Universal	Targeted	Universal	Up	Universal	Up
Teacher 5	40.00%	45.45%	50.00%	40.00%	50.00%	93.12%	95.86%	94.42%	97.50%	95.27%
						(91.89- 94.34)	(91.67- 100)	(90.77- 98.08)	(96.67- 98.33)	(94.12- 96.43%)

Note. IOA is Inter-observer agreement

Student behaviors. I included two measures of student behavior in this study: Direct Behavior Rating Single Item Scales (DBR-SIS) and a standardized general outcome measure of oral reading fluency (i.e., DORF).

Direct Behavior Rating Single Item Scales. DBR-SIS is a brief, customizable, teacher-completed assessment of observable and measurable student behavior (see Appendix B for the teacher overview of DBR-SIS, directions for use, and a sample fill-in-the-blank evaluation sheet). A large body of evidence has examined the reliability and validity of the DBR-SIS (Chafouleas, 2011) and found, overall, the measure is psychometrically sound. In their recent article, Chafouleas, Sanetti, Kilgus, and Maggin (2012) briefly summarize the following psychometric evidence supporting the efficacy of DBR-SIS:

Chafouleas and colleagues (2010) reported strong levels of interrater agreement. In another study, DBR-SIS data were moderately to highly correlated with behavior rating scales completed by a teacher (Chafouleas, Kilgus, & Hernandez, 2009) as well as with [systematic direct observation] (Riley-Tillman et al., 2008). In the latter study, DBR-SIS was significantly correlated with [systematic direct observation] of on-task behavior ($r=.811$, $p<.01$) and disruptive behavior ($r=.874$, $p<.01$; Riley-Tillman et al., 2008). (p. 495)

The choice of DBR-SIS to measure target student behaviors was based on the compelling psychometric support for the instrument and the feasibility of the instrument in applied school settings. DBR-SIS is a freely available, customizable, and can be easily used by teachers. Specifically, two operationally defined student behaviors (see Table 8 below)

Table 8.

Operational Definitions of Student Observation Variables

Dependent Variable (Student)	Operational Definition
Academic Engagement	<p><i>Definition:</i> “Actively engaged is actively or passively participating in the classroom activity. For example: writing, raising hand, answering a question, talking about a lesson, listening to the teacher, reading silently, or looking at instructional materials.” (Definition from the Direct Behavior Rating Standard Form)</p> <p><i>Example:</i> When presented with an opportunity to respond from the teacher the student engages in the desired target response. For example, the teacher asks students to clap the syllables in the word ‘caterpillar’ and the student claps each syllable.</p> <p><i>Non-Example:</i> The student engages in non-academic peer conversation during direct instruction. For example, as the teacher is explaining how to sound out a word, Gabe turns and tells Scout about his new puppy.</p>
Disruptive	<p><i>Definition:</i> “Disruptive is student action that interrupts regular school or classroom activity. For example: out of seat, fidgeting, playing with objects, acting aggressively, talking/yelling about things that are unrelated to classroom instruction.” (Definition from the Direct Behavior Rating Standard Form)</p> <p><i>Example:</i> As the teacher is reading a sentence out loud to demonstrate oral reading fluency, one student calls out asking the teacher if he can use the bathroom.</p> <p><i>Non-Example:</i> The teacher instructs students to all read the sentence on the board out loud in unison. The student loudly reads the sentence posted on the board with her peers.</p>

were assessed for all six of the identified students in each teacher’s classroom daily across all phases of the study.

The DBR-SIS daily observation form was structured using the same format as the fill-in the blank online DBR form (i.e., a subdivided line with 10 equal intervals including qualitative

anchors at 0% (never), 50% (sometimes), and 100% (always). When using the DBR form, teachers were asked to mark along the line to indicate the proportion of time that the target behavior was observed during the specified observation period. The DBR-SIS was used as the measure of student behavior (i.e., academic engagement and disruptive behavior).

Teacher training on the DBR-SIS. Chafouleas, Kilgus, Riley-Tilman, Jaffery, and Harrison (2012) conducted a rigorous generalizability study of training and accuracy of DBR-SIS, finding that training teachers enhanced accuracy, but that intense training did not add significantly to accuracy. Therefore, all teachers were required to complete the standardized online DBR-SIS training module, developed by Dr. Chafouleas and her research team, to train teachers in the use of DBR-SIS (<http://www.directbehaviorratings.com/training/>). All teachers obtained a certificate of completion for the DBR online module and provided a copy of that certificate to me.

IOA for the DBR-SIS. To calculate IOA on teacher completed DBR-SIS scores (i.e., the teacher is the first rater), I also completed DBR-SIS ratings on the six participating students across more than 30% of all observations. Specifically, I observed the students during the 15-min literacy block and I completed the DBR-SIS immediately after each observation. I formulated DBR-SIS IOA calculations by comparing the score from the first rater (teacher) with the corresponding score from the second rater (me) for the corresponding observations. I collapsed categories on the DBR scale into three categories: low (0-3), medium (4-7), and high (8-10) (recommended by Dr. Chafouleas, personal communication, July 2, 2012). Low was scored as a 1, medium as a 2, and high as a 3. Then, I calculated IOA using the point-by-point agreement method using the condensed scale and calculated as outlined by Briesch, Chafouleas, and Riley-Tilman (2010). Specifically, IOA was calculated by dividing the total number of

agreements by the total number of agreements plus disagreements multiplied by 100. Using the scaling procedure it was possible for scores differing by only a single point (e.g., a teacher score of 7 and my score of 8) to produce a lower agreement percentage. These types of discrepancies led to lower IOA in some phases/for some teachers. Percentage of IOA for DBR for all phases is reported below in Table 9.

Table 9

Percentage of Inter-observer agreement (IOA) for DBR

	Percentage of IOA Per Phase			
	Baseline	Universal	No self-monitoring	Targeted
Teacher 1	40.00%	41.18%	40.00%	
Teacher 2	32.50%	38.33%	55.56%	
Teacher 3	55.56%	47.78%	33.33%	
Teacher 4	35.00%	41.11%	47.14%	
Teacher 5	41.67%	47.92%	NA	44.50%
Overall	40.94%	43.85%	44.01%	44.50%

Overall, across teachers, student academic engagement baseline IOA was 74.17% (range 0.00%-100.00%) and disruptive behavior was 95.00% (range 50.00%-100.00%). During the universal PD phase academic engagmenet IOA was 90.57% (range 50.00%-100.00%) and disruptive behavior was 95.17% (range 57.14%-100.00%). In the second modified baseline phase (i.e., no self-monitoring) academic engagement IOA was 89.24% (range 50.00%-100.00%) and disruptive behavior was 95.49% (range 50.00%-100.00%). For Teacher 5 during the second universal phase and the follow-up phase IOA across both behaviors was 100% (range 100.00%-100.00%). Appendix C provides graphs of IOA for all 30 student's behaviors.

Standardized general outcome measure. I administered a standardized general outcome measure (i.e., the DIBELS measures of oral reading fluency; DORF) to all six selected students within each participating teachers' classroom one time per week across all study phases. For

equivalent comparison, the chosen standardized general outcome measure focused on a measure of reading achievement: oral reading fluency. This standardized general outcome measure (i.e., the DORF) was given weekly. General outcome measures have a long research tradition (Deno, 1985) and are widely recommended in response to intervention models for formative assessment (VanDerHeyden, 2011). DIBELS generally, and DORF specifically, was chosen because (a) it can accurately reflect growth based on weekly assessment, and (b) it is an appropriate and recommended general outcome measure for the grade-levels targeted for inclusion in this study (i.e., elementary literacy, grades 1-3; Coyne & Harn, 2006). The following is a brief description of the DORF including psychometric properties from Bellinger & Diperna (2011):

The DORF task is individually administered to children in first through sixth grade. For DORF, students have 1 minute to read a passage and the examiner records the number of words read correctly. In previous studies, DORF scores have criterion-related validity ranging from .52 to .91 (Good & Jefferson, 1998). Correlations between different passages within the same reading level, alternate form reliability, range from .89 to .94 (Good & Kaminski, 2002) (p. 419).

Social validity. The Intervention Rating Profile-15 (IRP-15; Martens, Witt, Elliott, & Darveaux, 1985) was adapted and used to collect descriptive data on the social validity of each tier of professional development intervention from the teachers' perspective. The IRP-15 (Martens, Witt, Elliott, & Darveaux, 1985) is a 15-item, "...empirically validated tool for assessing the significance of the intervention goals, the acceptability of the treatment procedures, and the social importance of the effects" (Lane et al., 2007, p. 132). The original IRP-15 prompts teachers to rate each item (e.g., "This would be an acceptable intervention for the child's problem behavior.") on a 6-point Likert-type scale ranging from 1 (strongly disagree) to 6

(strongly agree). Total scores range from 15 to 90, with higher scores suggesting higher acceptability. Internal consistency reliabilities range from $\alpha = .88$ to $.98$. The original IRP-15 is included in Appendix D for reference.

I adapted the IRP-15 for each intervention phase (i.e., universal, targeted, and individualized PD; Appendix D includes copies of each adapted measure). I asked each teacher to complete the social validity measure for each level of intervention they participated in (i.e., all teachers completed the universal, one teacher completed the targeted, and no teachers required individualized support so none completed the individualized IRP-15 adapted measure) once all data collection was completed.

Fidelity of implementation of intervention. I used multiple methods to assess fidelity across intervention components. Specifically, I used checklists to assess the fidelity of PD training, daily data collection to determine the accuracy of teachers' self-monitoring, and observation plus direct questioning to determine teacher implementation of/adherence to self-management components.

Fidelity of training. To ensure consistency across the PD sessions, I developed a script for the universal (i.e., tier one) training for all teachers participating in the study and a script for all additional consultation (i.e., tier two training and tier three PD; although due to the effectiveness of the universal and tier two PDs the tier 3 training materials were unnecessary). All teachers ($n = 5$) participating in the study received universal training and one teacher received targeted training. I delivered all trainings (i.e., universal and targeted), and developed corresponding fidelity checklists requiring initials signifying delivery of content. An independent data collector observed each training and monitored delivery of content for each component of the script to insure consistency of intervention across all participants.

The fidelity checklists contained the specific components of the intervention (e.g., if the script called for the review of the operational definition of TD-OTRs then the corresponding checklist stated “review of the operational definition of TD-OTRs” with a check box next to it), and the observer checked when/if the content was delivered. After training, the total number of components checked as completed was divided by the total number of possible components delivered to yield a fidelity score (i.e., the percentage of training steps implemented). Fidelity across all trainings sessions was calculated at 100%. A copy of the training scripts and fidelity measures is available in Appendix E.

Adherence to self-management. Additionally, fidelity of the teacher completed self-monitoring component of the intervention was assessed by the permanent product data collection that occurred as a result of teacher data entry into the Excel spreadsheet on Dropbox. Teachers received a score of 1 if data were entered and 0 if data were not entered. At the conclusion of the study the total number of data points entered by the teacher was divided by the total possible number of data points that could have been entered to yield a fidelity score (i.e., the percentage of self-monitoring data points entered). Teachers were asked to indicate how many days they met their self-monitoring goal and if they self-reinforced when goals were met to assess fidelity of the self-management intervention. I asked teachers this question at the final meeting and the number reported by each teacher who participated in the self-management component (i.e., those teachers who received targeted intervention; $n = 1$) was compared with the observational data of that individual. Thus, the total number of days teachers reported meeting their goal and self-reinforcing was divided by the total number of days they actually met their goal based on researcher observational data. Teacher adherence was examined for 100% of days self-monitoring occurred and teachers adherence was 100% for all opportunities. For the single

teacher who completed targeted intervention, it was reported that she self-reinforced seven times during the targeted intervention phase. This number was compared to her self-monitoring data sheet to determine the amount of opportunities for self-reinforcement that were available (i.e., the number of times her data demonstrated that she had met her goal). Overall, this teacher self-reinforced (when eligible as indicated by her data) on 87.5% of opportunities (i.e., 7 out of 8 opportunities).

Accuracy of self-monitoring. To assess the accuracy of teacher reported self-monitoring data, I collected daily teacher counts of TD-OTRs from the videotaped sessions and compared those counts with the teacher collected TD-OTR counts. Accuracy was calculated using the percentage of agreement formula, specifically, I divided the number of agreements between the teacher counts and observer counts by the total number of agreements plus disagreements, then multiplied by 100. I calculated the percentage daily and averaged across phases for an average accuracy within phase. Table 10 below reports accuracy by teacher:

Table 10

Accuracy of Teacher Self-Monitoring

Accuracy of Self-Monitoring		
	Universal (Range)	Targeted (Range)
Teacher 1	84.02% (51.02-100)	NA
Teacher 2	81.00% (50.90-100)	NA
Teacher 3	65.19% (42.90-94.30)	NA
Teacher 4	73.45% (63.90-84.4)	NA
Teacher 5	89.49% (60.00-100)	80.30% (59.32-96.08)

Study Design

In this study, I employed a single-subject, or single-case, design. Single-subject designs are an established experimental approach associated with high levels of internal validity and characterized by a high level of experimental control, repeated measurement of behavior across time, and within-participant comparison (i.e., each participant serves as his/her own control; Kazdin, 2011). Specifically, I planned to utilize a single-subject multiple-baseline design across teachers to examine the effects of targeted PD (i.e., a targeted intervention package that included self-management and performance feedback; tier 2) on teachers' rates of TD-OTRs for teachers unresponsive (i.e., not increasing TD-OTRs) to the initial universal training and self-monitoring (tier 1). That is, I intended to introduce the targeted PD intervention in a staggered format to demonstrate experimental control. The targeted PD package, delivered within an MTS framework, was intended to be the independent variable and teacher's presentation of TD-OTRs was the primary dependent variable. The corresponding impact on students' classroom behavior (i.e., academic engagement and disruptive behavior) and academic achievement (i.e., performance on the DORF) resulting from increased TD-OTRs were the secondary or distal dependent variables.

In total, five teachers enrolled in the study and each completed a baseline (A) and initial (tier 1) intervention (B) phase to ensure that all participants were exposed to universal PD intervention. Teachers were eligible for participation in the multiple baseline design if they did not increase or maintain their TD-OTR rate at or above 3.00 TD-OTRs per minute or show an increasing trend during baseline and initial training phases. Only one teacher met criterion to be considered eligible for the targeted PD intervention. If after receiving targeted PD support, a teacher had not demonstrated response to intervention (i.e., a teacher with a stable average rate of

OTRs below 3.00 presented per minute and a decreasing trend across a minimum of five data points), I would have introduced individualized supports. However, none of the study participants met this criterion or required tier 3 individualized supports.

Based on teachers' response to intervention (i.e., their data following universal PD), only one teacher met the criterion to receive targeted PD. Therefore, I revised my design and research questions to meet this finding. I present the design and procedural revisions, based on data, within the results section. The following section describes the procedures planned and approved by my dissertation committee to conduct the multiple baseline design.

Procedures

Baseline. I placed a video camera in each classroom for a minimum of 5 days prior to the start of baseline data collection (due to teacher absence some teachers placed the video camera 6 or 7 days prior to the start of baseline data collection) following completion of student identification by participating teachers and once all parents had received the notification that the study would be conducted in their child's classroom. Teachers were instructed in the use of DBR-SIS (via the online training module) during the first 5 days prior to baseline data collection (i.e., while the camera was placed in the classroom). All 5 teachers completed the training module and provided me with certificates of completion during this time.

Baseline data collection began on the sixth school day of the camera being in the classroom and continued for 5 school days. During baseline, teachers engaged in typical practice, which included direct instruction of spelling. During baseline data collection, I collected daily video recording of teachers (i.e., 15-min direct instruction segments), daily teacher DBR-SIS data collection for the six identified students, and weekly collection of standardized CBM. I administered the DORF in a quiet environment suggested by the school

principal (i.e., outside the classroom in the hallway using tables set up for individual intervention – individual intervention at these tables was typical school practice and therefore using these spaces fit into typical classroom/school activities) during a non-academic activity (e.g., enrichment block or transition).

Intervention phase one: Universal PD. I introduced universal training simultaneously to all teachers after 5 baseline data points were collected. Specifically, I provided initial universal PD training focusing on the presentation of TD-OTRs, the strategy of self-monitoring, the use of materials to self-monitor (i.e., how to use a golf counter to count TD-OTRs and how to access and use an Excel spreadsheet within a Dropbox folder to enter self-monitoring data) to all teachers participating in the study. The opportunity to participate in the universal training was extended to any of the teachers who attended the initial information session, but chose not to participate in the study; however, none chose to do so. I provided the universal (i.e., tier one) training to all teachers to ensure that each received a consistent foundation of instruction in TD-OTR and the use of self-monitoring. A trained data collector attended this training to conduct a fidelity check of the PD delivery (as stated above, fidelity was calculated at 100%). After the universal PD, I continued to collect direct observation data, along with teacher self-monitoring data, DBR-SIS ratings, and weekly DOFR probes. I also continued to collect the DBR-SIS and DORF data as described for the duration of each teachers' participation in the study.

Following universal training, teachers used their golf counter to track and the excel spreadsheet to record and graph the number of TD-OTRs presented during the same 15-min direct instruction literacy block being videotaped. I recorded teachers' daily TD-OTR counts after each observation. Teachers were assessed, based on the direct observation data (over a period of 5 data points or the equivalent of 1 school week), to determine if they were meeting the

target average TD-OTR presentation rate (i.e., 3.00 OTRs per minute) or if they demonstrated an increasing trend. Teachers with a baseline level (i.e., prior to universal training) or who increased as a result of universal training (as demonstrated by a minimum of 5 researcher-collected data points) to an average rate of 3.00 OTRs per minute did not receive additional training, continued to self-monitor, and were observed on a daily basis for the duration of the study. Based on the researcher-collected data obtained during the baseline condition, teachers who did not meet the established criterion for success after universal PD (i.e., an average rate of 3.00 OTRs presented per min) were eligible to receive the targeted PD intervention.

Intervention phase two: Targeted PD. I planned for teachers who did not meet the established TD-OTR rate ($n = 1$; Teacher 5) to enter the targeted PD phase in a staggered fashion. Specifically, each eligible participant would have entered the phase after (a) the demonstration of a minimum of 5 stable data points, averaging less than 3.00 OTRs per min, in the previous phase (across all eligible teachers) or a decreasing trend, and (b) after 5 stable targeted PD data points for the previous participant were collected (for all eligible teachers but the initial targeted PD participant). Because only one teacher entered targeted PD, only the first decision rule applied.

Targeted PD was a targeted intervention package combining self-management that continued to utilize self-monitoring (i.e., teacher continue to collecting her own data), but intensified support by adding consultation to help the teacher to review her own data, create an action plan based on those data, set individual goals, and to determine self-reinforcement when goals were met. I also provided weekly performance feedback to the teacher based on her self-monitoring data via email. Specifically, I met with the teacher individually to review the critical features of the TD-OTR strategy and facilitated teacher completion of the pre-requisite steps for

self-management (i.e., action planning, goal setting, and contingency planning). The teacher engaged in the following self-management procedures similar to those outlined by Simonsen et al. (in press) in the review of literature. Specifically, I asked the teacher to: (a) work on the target CWPBS practice of increasing her presentation of TD-OTRs, (b) achieve a stable average rate of OTR presentation equal to or exceeding 3.00 per min (i.e., the criterion for success set in this study) or to demonstrate an increasing trend, (c) to select a strategy to increase her presentation of TD-OTRs (e.g., utilize choral responses to a series of review questions) to inform an action plan and set a goal, (d) to continue to use a golf counter to collect data and to enter that data into an Excel database on Dropbox to self-monitor her use of OTRs, (e) to view the graph in Dropbox showing her daily progress and evaluate if she met her daily goal, and (f) to self-reinforce when she met the goal (e.g., attend a yoga class after school or purchase a favorite latte at Cafemantic). After this meeting, the teacher engaged in the self-management plan described and continued to be observed by data collectors on the videotapes.

In addition to the teacher driven components of the targeted intervention package, I provided the teacher with intermittent performance feedback via email based on teacher self-report data (i.e., after the first day of implementation post training and then once per week). This performance feedback email provided a brief positive statement about their fidelity of implementation of self-management procedures (i.e., “Thank you for entering your data consistently for the past five days.”). Also, I provided a brief data-based statement about teacher goal progress and tips for increasing TD-OTRs (i.e., “Your average rate of OTRs is 2.70 per minute. Great job! You are very close to meeting your goal of 3.00 OTRs per minute. Remember, adding in an opportunity for choral response can increase the academic engagement

of all students.”). During this time, student data collection continued under the same conditions described in baseline.

Once the qualifying teacher ($n = 1$) entered targeted intervention, a minimum of 5 data points were collected and researcher-collected data indicated sustained improvement, the teacher participated in a final consultation meeting to review progress and plan for skill maintenance. Following the final meeting, the teacher moved into a follow-up phase (described subsequently).

Intervention phase three: Individualized PD. If a teacher had required intensive (tier 3) intervention, I would have implemented individualized, data-based consultation. Due to the aim of this study (i.e., to increase teacher presentation of TD-OTRs using targeted PD support) and the scope of this study (i.e., to demonstrate experimental control of targeted PD intervention), I did not plan to stagger in individualized PD supports and therefore would not have demonstrated experimental control over individualized intervention. Has this occurred, I would have met with the teacher to (a) review the target skill (i.e., presentation of TD-OTRs) and self-monitoring data, (b) share researcher-collected data, and (c) revise the goal and action plan developed during the previous phase. Subsequently, I planned to provide daily emails that included graphs of TD-OTR presentation (based on researcher-collected data), summarized goal progress, and to offered a tip for increasing TD-OTR presentation. If after a minimum of 5 data points were collected (i.e., researcher-collected observational data), the teachers’ average rate of TD-OTR presentation was stable at or above 3.00 OTRs presented per minute or demonstrated an increasing trend, the teacher would participate in a final consultation meeting to review progress and plan for maintenance only (i.e., the consultant would provide no further assistance with goal setting/action planning). The teacher would move into the follow-up phase upon

meeting the goal (i.e., a stable average rate of 3.00 TD-OTRs presented per min or demonstration of an increasing trend) with individualized supports. Due to the constraints of the scope of the study, after the final consultation meeting all teachers would move into the follow-up phase (described subsequently). Therefore, regardless of teacher response to intervention, it was planned that the study would end after five data points had been collected post-individualized intervention.

Follow-up Phase. During the follow-up phase, I conducted biweekly probes for TD-OTR presentation, using the same data collection methods used throughout the study (i.e., I videotaped 15-min observation periods and trained data collectors coded the observation session for teacher TD-OTR presentation). Teachers were no longer required to return self-monitoring data, but individual teachers could choose to continue (or discontinue) self-monitoring; therefore, I asked each teacher whether s/he had been continuing to self-monitor during the observation period. Due to teacher response to intervention, the study design was modified (see Chapter 3) and the follow-up phase was not completed as described for Teachers 1-4. However, Teacher 5 did engage in the follow-up phase as described. See Appendix F for a comprehensive timeline of study procedures.

Procedures for Data Analysis

I used visual analysis to examine individual teacher and student behavioral data. The procedure for visual analysis adhered to the procedural guidelines outlined in the *What Works Clearinghouse: Single Case Design Technical Documentation Guidelines* (2010) and focused on the six identified variables: level, trend, variability, immediacy of the effect, overlap, and consistency of data patterns across similar phases. The visual analysis included four steps: (1) identifying a predictable baseline; (2) assessing within-phase data pattern (level, trend, and

variability); (3) comparing level, trend, and variability of adjacent phases (within participant); and (4) comparing level, trend and variability across participants to confirm replication of effect. Trend was analyzed using the four-step split-middle line of progression method as outlined in Cooper, Heron, and Heward (2007). First, the data points within each phase were split into two equal parts. For even number of data, the dividing line fell between two data points and for an odd number of data points, the diving line fell through the mid-point. Second, the intersection of the mid-rate and mid-date for each half of the equal parts within each phase was identified. Third, a line was drawn through both of the mid-rate/mid-date intersection points. Last, the number of data points above and below the line drawn from the two mid-rate/mid-date intersections were identified. If unequal numbers of points were above or below, the line was moved up or down while remaining parallel to the original mid-rate/mid-date intersection line until balance (i.e., equal numbers of points above and below the line) was achieved.

For the DORF, I report data and offer a descriptive comparison of results across moderate/high-risk students and their typical peers. Note, students' were assessed on the DORF based on their present levels of performance (i.e., the DORF grade level in which they were below proficient at the start of the study). See Table X containing student demographic information for each students' present level of performance used in the DORF assessment.

As noted, I collected a minimum of five data points per phase. This allowed for the calculation of effect sizes using percent of non-overlapping data (PND). Although many single subject effect sizes have been proposed in the literature (Gage & Lewis, 2013), PND is the most widely used and accessible (Scruggs & Mastropieri, 2012). PND was used to supplement and support visual analysis as per recommendations from the What Works Clearinghouse (WWC) single-case standards panel (Kratochwill et al., 2013). Scruggs & Mastropieri explain how PND

is calculated:

For a measure of nonoverlapping data, we calculated the proportion of data observed in treatment phases that did not overlap data observed in the baseline phases. For example, if 9 of 10 treatment observations exceeded the highest (or lowest, depending on the intended treatment effect) baseline value, this would be calculated as 90% nonoverlapping data. (p. 3)

I applied the same calculation procedures described above to this study. Specifically, I calculated PND by dividing the total number of non-overlapping data points within an intervention phase by the total number of data points within the prior adjacent phase and multiplying by 100%. I calculated PND for the primary DV (TD-OTRs), student behavior data (measured by DBR-SIS), and student achievement data (measured by the DORF). To interpret these results, I applied the interpretation of effect sizes using PND is described by Scruggs, Mastropiere (2001), "...PND scores above 90 represent very effective treatments, scores from 70 to 90 represent effective treatments, scores from 50 to 70 are questionable, and scores below 50 are ineffective" (p. 230). However, the authors note that PND must be interpreted with caution by observers who take into account the possibility of differential levels of effectiveness.

Chapter III

Results

In this dissertation, I investigated the effects of targeted professional development (PD) within the context of a multi-tiered system of support (MTSS) for teacher PD on five teachers' rates of teacher-directed opportunities to respond (TD-OTRs) during direct phonics instruction. I also explored the relationship between teachers' increase in TD-OTR presentation rate and the impact on students' academic and social behavior. Trained observers used the Student/Classroom Observation and Analysis (SCOA) application to code daily video recorded observations of teacher behavior during 15-minute samples during direct phonics instruction across all conditions. During these observations, data collectors tracked the total number of TD-OTRs presented (across individual, unison, and peer opportunities to respond). Additionally, teachers used the Direct Behavior Rating (DBR) system to track students' social behavior (i.e., academic engagement and disruption) on a daily basis, and I administered a weekly DIBELS Oral Reading Fluency (DORF) probe throughout the duration of the study.

I used visual analysis to examine individual teacher and student behavioral data. The procedure for visual analysis adhered to the procedural guidelines outlined in the *What Works Clearinghouse: Single Case Design Technical Documentation Guidelines* (2010) and focused on the six identified variables: level, trend, variability, immediacy of the effect, overlap, and consistency of data patterns across similar phases. The visual analysis included four steps: (1) identifying a predictable baseline; (2) assessing within-phase data pattern (level, trend, and variability); (3) comparing level, trend, and variability of adjacent phases (within participant); and (4) comparing level, trend, and variability across participants. Additionally, to describe the

results I presented means, medians, and ranges by condition to represent trend and variability and support visual analysis findings. Given the concerns about serial dependency (time series) in the data, means should be interpreted with caution (Suen & Ary, 1989). In the following sections I will present the results of participants' in response to each research question and the social validity of conducting universal and targeted PD in the context of an MTSS framework for teacher PD. However, prior to presenting participant results, I will review changes to study design made based on visual analysis of the data and teachers' response to intervention.

Data-based Changes to Study Design

This study was designed to examine the effects of a targeted PD on teachers' presentation rates of TD-OTRs and the secondary impact of TD-OTR rate changes on students' academic (i.e., DORF) and social behavior (i.e., academic engagement and disruption) within the context of an MTSS framework for PD. My hypothesis was that presenting teachers with a universal PD would result in no or minimal teacher behavior change (e.g., no or small difference in TD-OTR rates above baseline conditions) for some teachers, and that more intensive (i.e., a targeted intervention package) intervention would be necessary to increase those teachers' rates of presentation of TD-OTRs to criterion (i.e., 3.00 TD-OTRs presented per minute). Therefore, the study was originally conceived to empirically test the impact of a targeted PD package by employing a multiple baseline design. Specifically, I planned to utilize a single-subject multiple-baseline design across teachers to examine the effects of targeted PD (i.e., a targeted intervention package that included self-management and performance feedback; tier 2) on teachers' rates of TD-OTRs for teachers unresponsive (i.e., not increasing TD-OTRs) to the initial universal training and self-monitoring (tier 1). That is, I intended to introduce the targeted PD intervention /in a staggered format to demonstrate experimental control by replicating effects across teachers.

The targeted PD package, delivered within an MTSS framework, was intended to be the independent variable and teacher's presentation of TD-OTRs was the primary dependent variable. The corresponding impact on students' classroom behavior (i.e., academic engagement and disruptive behavior) and academic achievement (i.e., performance on the DORF) resulting from increased TD-OTRs were the secondary or distal dependent variables.

A total of five teachers enrolled in the study and all teachers participated in the initial 5 days of baseline data collection. As stated above, the study was designed to employ a multiple baseline to determine a functional relationship between targeted PD and teacher rates of presentation of TD-OTRs as well as corresponding impacts on students' academic and social behavior. However, after the universal PD was delivered, only one teacher met criterion to be considered eligible for the targeted PD intervention (i.e. TD-OTR presentation rate consistently less than a mean of 3.00 per minute).

Given that only one teacher met criterion to be eligible for the targeted PD, I revised my design to accommodate the different circumstances. First, the research questions and hypotheses were re-written as follows:

Research Question #1. For teachers that do increase their TD-OTRs to criterion after receiving universal PD, is there a functional relationship between (a) self-monitoring and (b) teacher behavior (i.e., the rate of OTRs).

Research Hypothesis #1. Teachers' may demonstrate some decrease in the average rates of TD-OTRs presented without self-monitoring but these decreases will not be as low as those rates demonstrated during baseline and when self-monitoring is reinstated teachers rates of OTRs will increase.

Research Question #2. Is there a functional relationship between (a) teachers' response to targeted PD support (i.e., Tier 2), following didactic training and self-monitoring of TD-OTRs (Tier 1), and (b) teacher behavior (i.e., the rate of TD-OTRs) for teachers whose rate of TD-OTRs was **below** the criterion level (3.00 per min) after Tier 1 training?

Research Hypothesis #2. Teachers,' whose rates of TD-OTRs were below the criterion level after Tier 1 training, will increase their presentation of opportunities to respond during and after engaging in Tier 2 self-management strategies.

Research Question #3. Is there a corresponding relationship between teacher behavior change (increases in TD-OTR rates) and students' level of academic engagement (measured by DBR) and achievement (measured by the DORF)?

Research Hypothesis #3. Teachers' increased presentation of TD-OTRs will correspond with an increase in students' academic engagement and decreases in disruption (as measured by DBR) and will increase students' academic achievement (as measured by the DORF).

Next, based on the adjusted research questions, the design of the study was changed to two forms of a reversal/withdrawal design.

All 5 teachers enrolled in the study completed a baseline (A) and universal PD intervention (i.e., post-universal; B) phase. After initial participation (i.e., baseline and a period of 5 days post-universal intervention), all teachers' data were evaluated to determine responsiveness to universal PD intervention. Teachers ($n = 4$) whose data indicated responsiveness (i.e., an average TD-OTR rate of 3.00 or above and/or an increasing trend) were moved to participate in a reversal-withdrawal design to address research question 1 (testing universal PD), and the single teacher whose data indicated unresponsiveness (i.e., an average OTR rate below 3.00 per minute) participated in a reversal-withdrawal design to address research

question 2. For all teachers, I examined student behavior across study phases to address research question 3 (the relationship between changes in teacher behavior and student behavior).

Reversal/Withdrawal design to address question 1 (Universal PD). As stated, teachers who met or exceeded the criterion of 3.00 TD-OTRs per minute participated in a reversal/withdrawal study to examine the effects of self-monitoring (a component of the universal PD). To determine if there was a functional relation between self-monitoring (one component of universal PD) and teachers' rates of TD-OTRs, I withdrew (asked teachers to stop) self-monitoring during a second modified baseline (A_M) phase for a period of at least 5 days or until a relatively stable data path was established. Self-monitoring was a pivotal component of the B phase and, congruent with other self-monitoring research using a reversal design (e.g. Todd, Horner, & Sugai, 1999), the removal of self-monitoring was analogous to the initial A phase. However, teachers may have learned from PD and learning cannot be withdrawn; therefore, I use the term A_M to distinguish the two A phases. Then, I planned to re-introduce self-monitoring for another period of at least 5 days. Thus, I planned for teachers in this study design to progress through two baseline (A and A_M) and two intervention (B) phases in the following order: ABA_MB. Finally, I planned to conduct bi-weekly follow-up probes after the completion of all phases.

Reversal/Withdrawal design to address question 2 (Targeted PD). The teacher who did not increase or maintain her TD-OTR rate at or above 3.00 OTRs per minute during baseline (A) phase and after the initial universal PD (i.e., post-universal; B) phase (i.e., the first data collection period post-universal training), received targeted professional development support during an additional intervention (C) phase. I planned that this teacher would participate in a reversal/withdrawal design to test the effects of the targeted intervention package, and

specifically she would progress through a series of phases, including baseline (A), universal PD with self-monitoring (i.e., post-universal; B), and targeted (C), in the following order: ABCBC. Finally, I planned to conduct bi-weekly follow-up probes after the completion of all phases.

Final study design based on teachers' pattern of response. Teachers 1, 2, 3, and 4 all participated in the reversal/withdrawal design to answer question 1 and the data for all of these teachers followed a similar pattern. After baseline (A) and universal PD (i.e., post-universal; B) each of these teachers demonstrated a TD-OTR rate that either exceeded the criterion for success (i.e., an average rate of TD-OTRs that was more than 3.00 per minute) and/or demonstrated an increasing trend. Therefore, once data indicated a stable or relatively stable pattern of response, I withdrew (i.e., asked teachers to stop) the self-monitoring component of the intervention implemented during the B phase, and teachers returned to a modified A phase (A_M ; i.e., no self-monitoring).

Unexpectedly, during the A_M phase, teachers' TD-OTR rates did not return to baseline levels and in fact showed significant overlap with the previous B phase. Therefore, because there was not a reversal of effect (trend, level, or variability) when the self-monitoring component of the intervention was withdrawn, I did not introduce a second B phase and the reversal/withdrawal design became an ABA_M case study for Teachers 1, 2, 3, and 4. Additionally, because the conditions during the A_M phase matched those of the follow-up probes in the original study design, I did not collect follow-up data.

Based on the data, Teacher 5 was the only teacher who participated in the reversal/withdrawal design to answer question 2. During baseline (A) Teacher 5's data demonstrated a decreasing trend. Next, during the post-universal B phase (i.e., self-monitoring following universal training) Teacher 5's data were highly variable with an almost flat trend that

overlapped significantly with the data in baseline. Due to the data pattern and a mean TD-OTR rate that barely met criterion (i.e., 3.00 TD-OTRs presented per minute), Teacher 5 received the targeted intervention package (C). During the C phase Teacher 5's demonstrated an immediate level increase in her TD-OTR presentation rate that exceeded the criterion for success and sustained across time. Based on her performance, Teacher 5 was moved back into the universal phase (B) during which time her data did not return to baseline (A) or previous (B) levels and in fact showed significant overlap with the most recent and previous (C) phase. Therefore, because there was not a reversal of effect between the change in the C phase and the second B phase, a second C phase was not introduced and the reversal/withdrawal design became an ABCB case study for Teacher 5. After the final data collection in the second B phase, follow-up probes (as described in Chapter 2) were conducted to examine the impact on all teacher and student variables in the absence of self-monitoring. In the proceeding sections I present detailed results of participants' in response to each research question and the social validity of conducting universal and targeted PD in the context of an MTSS framework for teacher PD. It is important to view and interpret these results with caution because due to the case study design (which stemmed from teachers' response to intervention); that is, I did not achieve experimental control or document a functional relationship.

Research Question 1: For Teachers that do Increase their TD-OTRs to Criterion After Receiving Universal PD, is there a Functional Relation Between (a) Self-monitoring and (b) Teacher Behavior (i.e., the rate of OTRs).

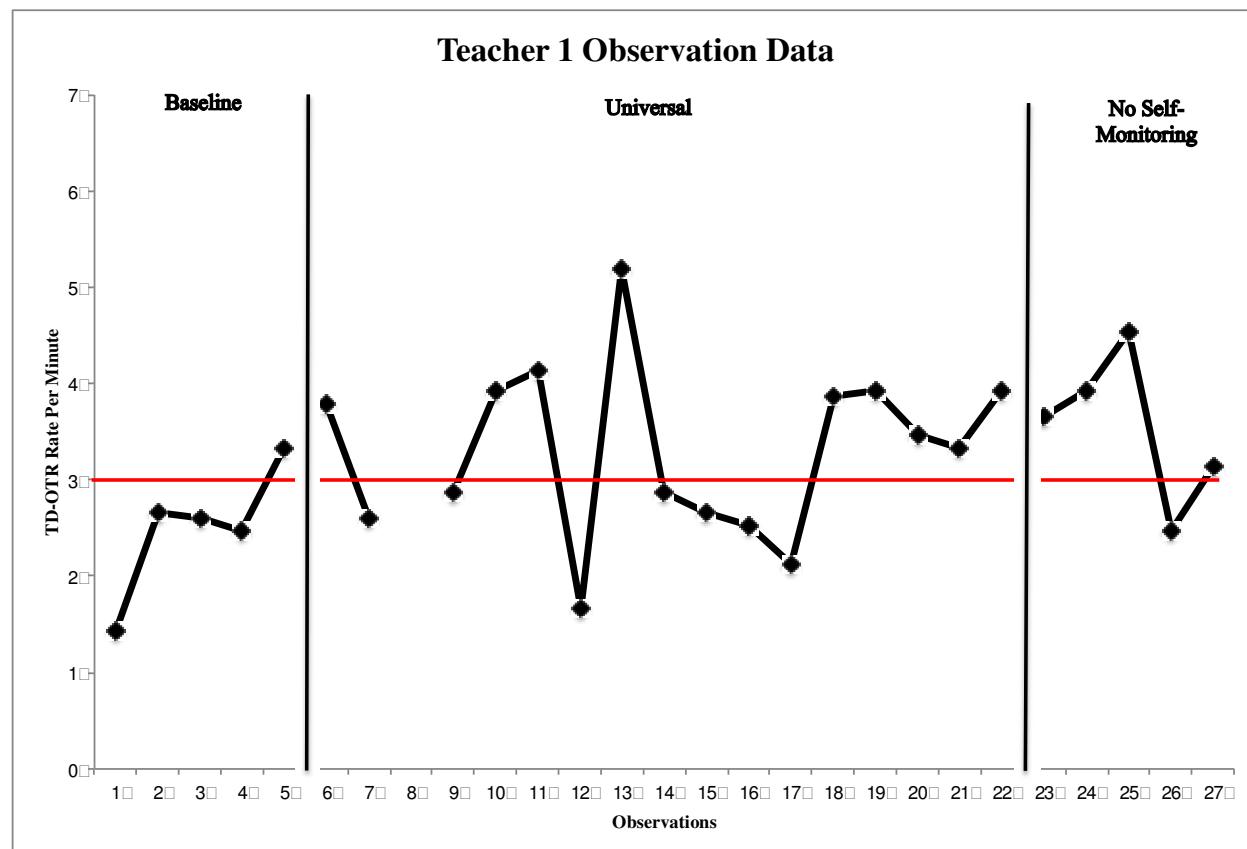
Individual graphs for the four teachers who only received universal PD (Teacher 1, Teacher 2, Teacher 3, and Teacher 4) are shown below in Figures 3, 4, 5, and 6 and descriptive statistics for all teachers (including Teacher 5) are presented in Table 11 at the end of the section

answering research question 2. I present each figure independently followed by a narrative describing the results within and across phases and provide any anecdotal information that is essential to the interpretation of the graphs. For each recorded observation, the rate of presentation of TD-OTRs per minute is indicated. The observation numbers are listed on the abscissa (x axis) and rate of presentation of TD-OTRs per minute are listed along the ordinate (y axis). Vertical lines indicate phase changes, and the red horizontal line represents the criterion for success (i.e., the rate of 3.00 per minute).

Teacher 1. Figure 3 shows Teacher 1's data across the baseline (A), universal PD (with self-monitoring; B), and the return to baseline conditions without self-monitoring (A_M) phases.

Figure 3.

Teacher 1 Direct Observation Data



During baseline Teacher 1's TD-OTR rate was variable but four of the five data points in baseline were below the criterion for success (i.e., an average of 3.00 TD-OTRs per minute; $M = 2.50$, $Mdn = 2.60$, range = 1.43-3.33). Despite the variable data, visual analysis of Teacher 1's data indicated an increasing trend. As stated above, the intent of the study was to exercise experimental control over the targeted PD package not the universal PD; therefore, after 5 days of data collection, I provided all teachers with universal PD.

After receiving universal PD, Teacher 1's data continued to be highly variable with significant overlap between baseline and post-universal PD, especially for observations 6-17. Across baseline and post-universal phases, visual analysis demonstrates an initial change in level (i.e., the first data point post-universal PD was a rate of 3.80 TD-OTRs per minute); however this change was not sustained consistently. On day 18 Teacher one approached me and asked, "Am I supposed to be hitting the goal line?" During universal intervention all teachers were responsible for tracking their own data (using a golf counter) and entering it into an Excel spreadsheet that automatically graphed their performance. Therefore, Teacher 1 was aware that he was not meeting goal (based on his own data not the researcher collected data). I reiterated what I stated in universal PD, "Research suggests a rate of 3.00-5.00 TD-OTRs per minute is optimal during teacher directed instruction." Teacher 1 then stated that he was going to, "Hit the line!" Following this, the data for observations 18-22 demonstrated decreased variability and increased consistency in addition to exceeding the criterion for success. Throughout the universal phase, Teacher 1 demonstrated a slight increasing trend and an overall mean of 3.31 (range = 1.67-5.20) and a median of 3.40.

There was significant variability and overlap across the baseline and universal phases, but an increased level of TD-OTRs and slight increasing trend was evident. I calculated Percentage

of Non-Overlapping Data (PND) to generate a descriptive effect size between conditions. As noted in Chapter 2, Scruggs & Mastropiere (2001) describe the interpretation of PND scores as, “...PND scores above 90% represent very effective treatments, scores from 70% to 90% represent effective treatments, scores from 50% to 70% are questionable, and scores below 50% are ineffective” (p. 230). From baseline to universal, PND was 56.25% indicating that universal PD was a questionable intervention for Teacher 1.

I removed self-monitoring and Teacher 1 moved into the second baseline (i.e. no self-monitoring) phase based on visual analysis of Teacher 1’s data during universal intervention indicating a relatively stable and consistent pattern within the universal phase. During the no-self-monitoring phase (A_M), Teacher 1 again demonstrated variable data and a clear level change was not observed. Although the overall trend in this phase was slightly downward, four of the five data points exceeded the criterion for success ($M = 3.62$, $Mdn = 3.67$, range = 2.47-4.53). Due to the significant data overlap between the universal phase and the return to baseline (or no-self-monitoring) phase, visual analysis did not indicate a reversal of effect between self-monitoring and Teacher 1’s rate of presentation of TD-OTRs; thus a return to universal conditions (i.e., self-monitoring) was not indicated and data collection was terminated.

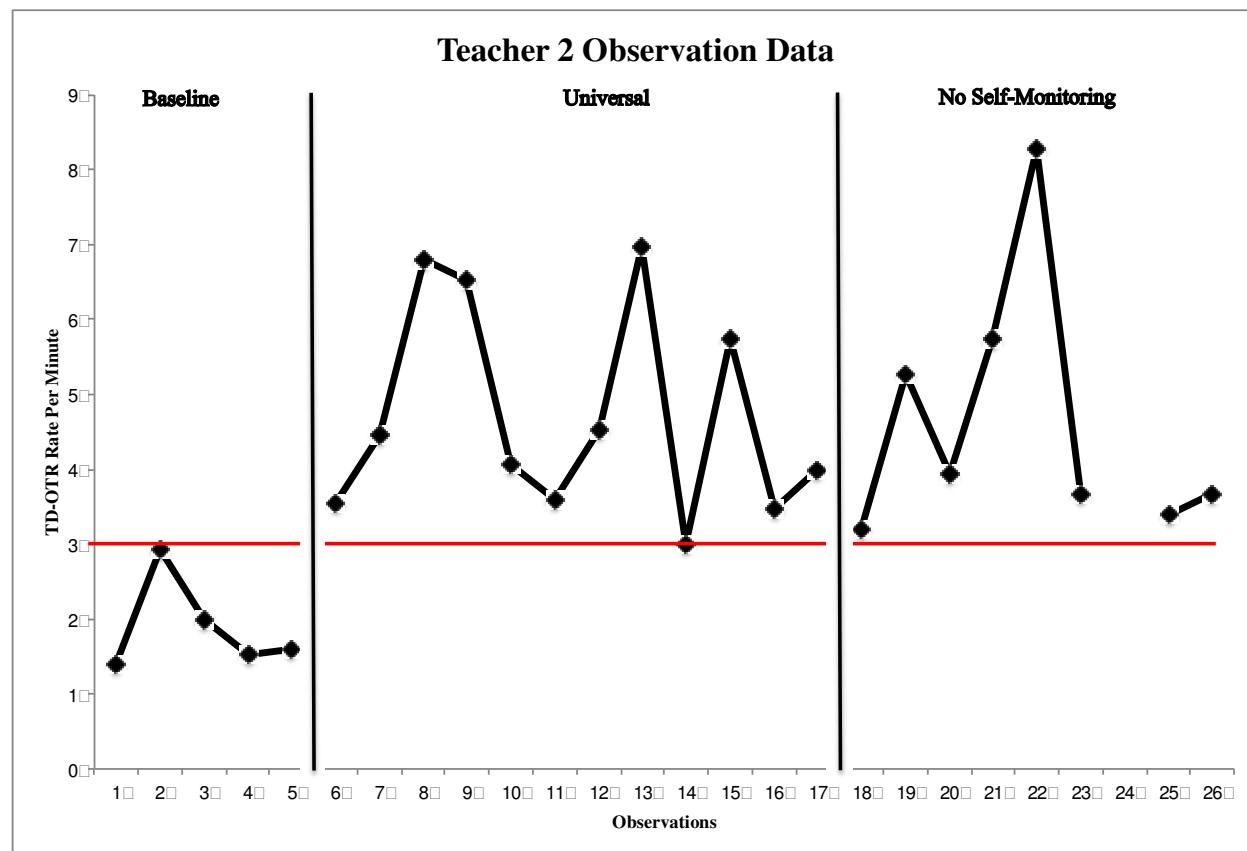
I calculated PND between the universal phase and the second baseline phase (i.e., the withdrawal of self-monitoring). Although PND has traditionally been used to calculate a single overall effect size to determine intervention effectiveness, it has also been used to compare adjacent phases inside a single graph (Gast, 2010). PND was 42.86% between the universal phase and the second baseline phase, indicating that the withdrawal of self-monitoring after the didactic instruction and self-monitoring (i.e., the universal phase) was not effective at changing TD-OTR rates. However, since the learning (i.e., the didactic training) that occurred as part of

the universal phase could not be withdrawn, the only difference between the universal phase and the second baseline phase was the removal of self-monitoring; thus, these results suggest that universal PD alone may have increased Teacher 1's mean TD-OTRs rates (although the PND suggested that this effect was questionable); however, it is important to note that the rates maintained even after the removal of self-monitoring. As stated in the previous section describing the changes to the study design based on teachers' response to intervention, the pattern of results for Teacher 2, Teacher 3, and Teacher 4 is similar to that of Teacher 1.

Teacher 2. Figure 4 shows Teacher 2's data across the baseline (A), universal PD (with self-monitoring; B), and the return to baseline conditions without self-monitoring (A_M) phases.

Figure 4.

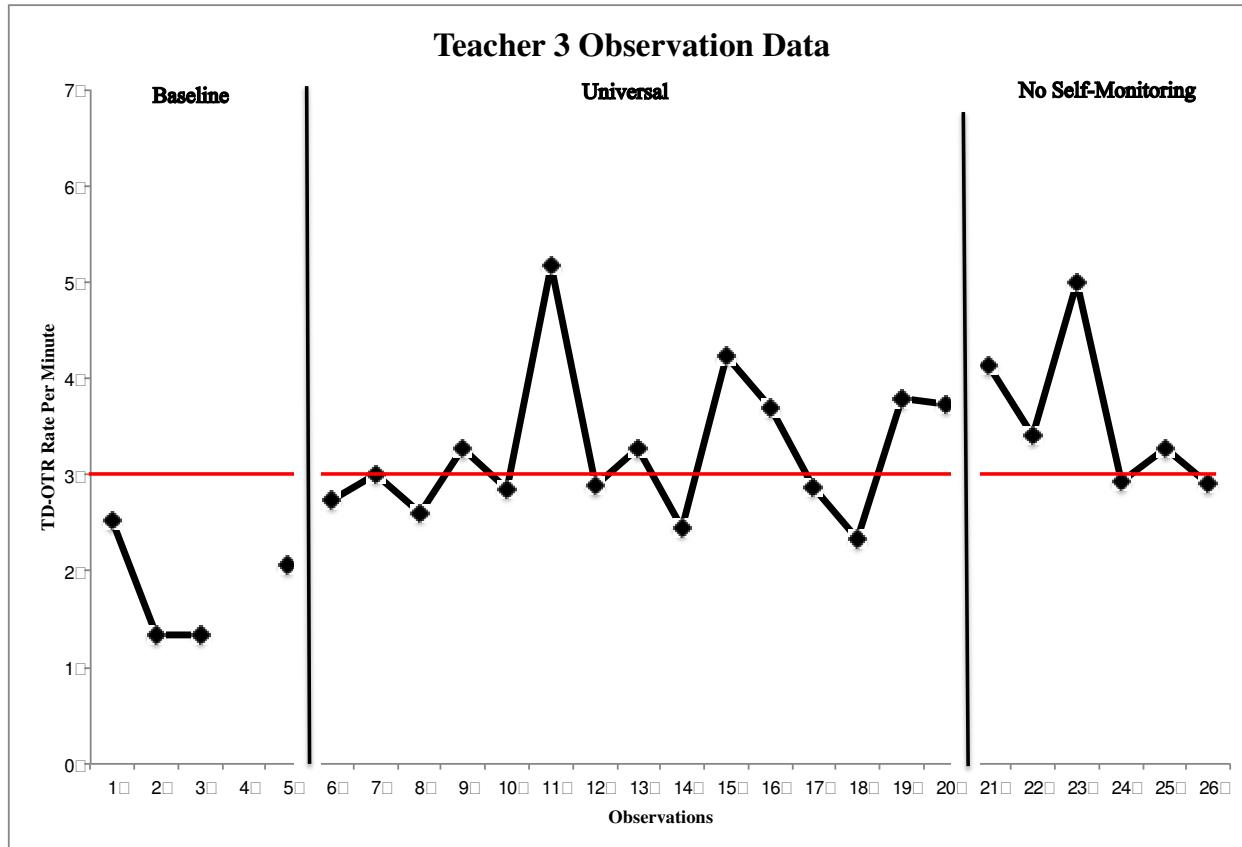
Teacher 2 Direct Observation Data



During baseline Teacher 2's TD-OTR rate was relatively stable, demonstrated a downward trend, and four out of five data points were below the criterion for success ($M = 1.89$, $Mdn = 1.60$, range = 1.40-2.93). After the introduction of universal PD (i.e., didactic training with self-monitoring) Teacher 2's data showed an immediate and sustained change in level with a mean increase that exceeded the criterion for success and baseline ($M = 4.72$, $Mdn = 4.27$, range = 3.00-6.96). Although data were highly variable within this phase, a relatively stable and flat trend emerged and no data points overlapped between the baseline phase and the universal phase (PND = 100.00%). After self-monitoring was withdrawn during the next phase (A_M) no changes in level (PND = 12.50%) or trend was observed. Despite continued high variability in the data, rates consistently exceed the criterion for success ($M = 4.64$, $Mdn = 3.80$, range = 3.20-8.27).

Teacher 3. Figure 5 shows Teacher 3's data across the baseline (A), universal PD (with self-monitoring; B), and the return to baseline conditions without self-monitoring (A_M) phases.

Figure 5.

Teacher 3 Direct Observation Data

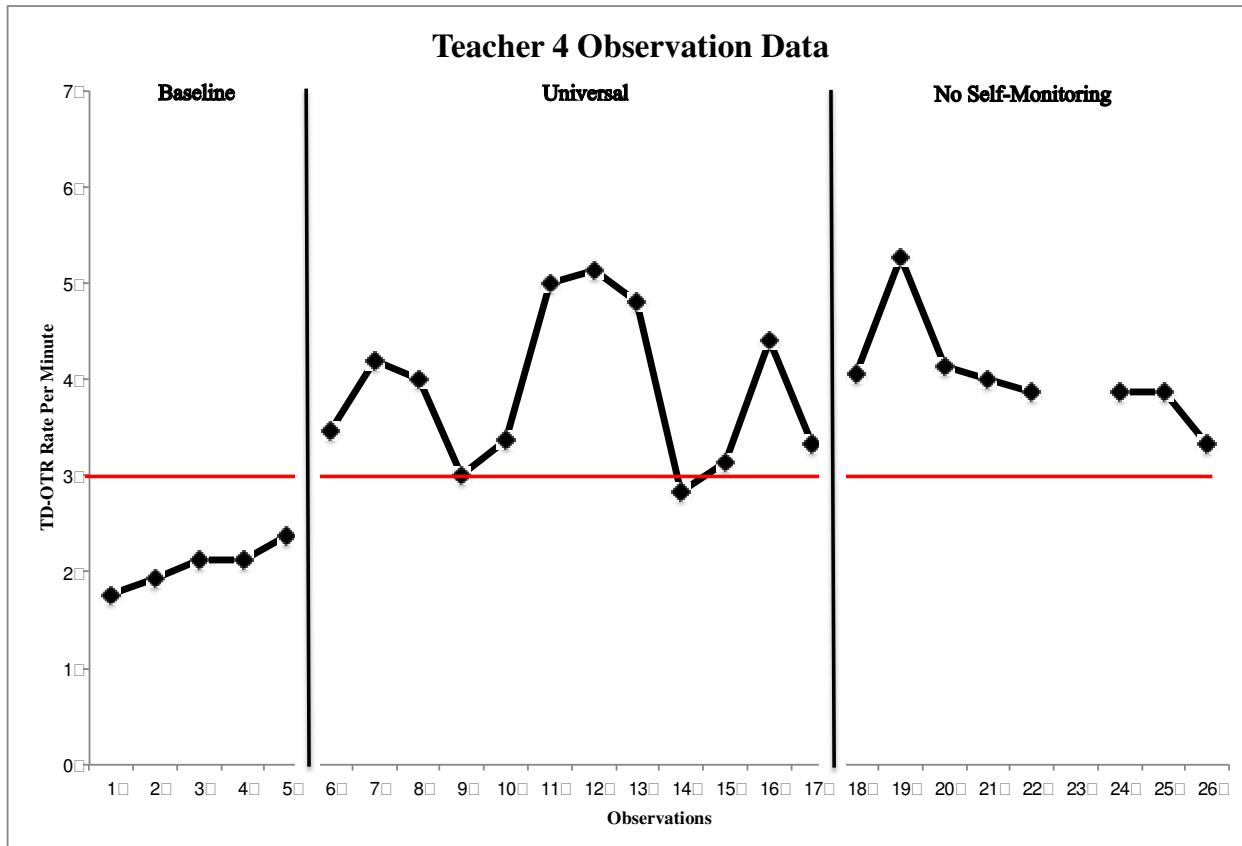
During baseline, Teacher 3's TD-OTR rate was somewhat variable, visual analysis indicated a slight downward trend, and all data points collected were below the criterion for success ($M = 1.82$, $Mdn = 1.70$, range = 1.33-2.35). After the introduction of universal PD, Teacher 3's data showed an immediate and sustained change in level with a mean increase that exceeded the criterion for success and baseline ($M = 3.26$, $Mdn = 3.00$, range = 2.33-5.17). Although data were somewhat variable within this phase, a relatively stable and slightly increasing trend emerged and few data points overlapped between the baseline phase and this universal phase (PND = 86.67%) indicating an effective intervention. Self-monitoring was removed and during this phase (A_M), and a slight increase in level (on the first day) was noted

followed by a decreasing trend (in comparison to the previous universal phase). Again, data continued to be somewhat variable during this phase, but never overlapped with the initial baseline phase. During this phase mean TD-OTR rates continued, on average, to exceed the criterion for success ($M = 3.61$, $Mdn = 3.33$, range = 2.92-5.00). Variability was again present across phases and no clear level change was evident (PND = 0.00%).

Teacher 4. Figure 6 shows Teacher 4's data across the baseline (A), universal PD (with self-monitoring; B), and the return to baseline conditions without self-monitoring (A_M) phases.

Figure 6.

Teacher 4 Direct Observation Data



During baseline, Teacher 4's TD-OTR rate was relatively stable with a slightly increasing trend, and all data points were below the criterion for success ($M = 2.07$ OTRs per minute, Mdn

= 2.13, range = 1.77-2.38). After the introduction of universal PD, Teacher 4's data showed an immediate and sustained change in level that exceeded the criterion for success ($M = 3.89$, $Mdn = 3.73$, range = 2.83-5.13). Although data were variable within this phase, a relatively stable and flat trend emerged and no data points overlapped between the baseline phase and this universal phase (PND = 100%); however, the increasing trend in the baseline phase is a concern in interpreting the effect. When Teacher 4 stopped self-monitoring during a second baseline phase (A_M), her TD-OTR rates maintained at a similar level (PND 12.5%), decreased in trend and were somewhat variable; however, mean TD-OTR rates exceeded the criterion for success ($M = 4.05$, $Mdn = 3.93$, range = 3.33-5.27).

Summary of teacher results. Despite variability within their data, Teachers 1, 2, 3, and 4 all demonstrated increases in mean rates of TD-OTRs with the introduction of universal PD. Further, these mean increases all exceeded the criterion for success and were sustained despite the withdrawal of self-monitoring. For three out of the four teachers, PND results suggest that universal PD may be a very effective intervention for increasing the TD-OTR rates. However, since the final study design became an ABA_M case study, it is not possible to draw strong conclusions from this data because experimental control was not achieved and a functional relation was not documented.

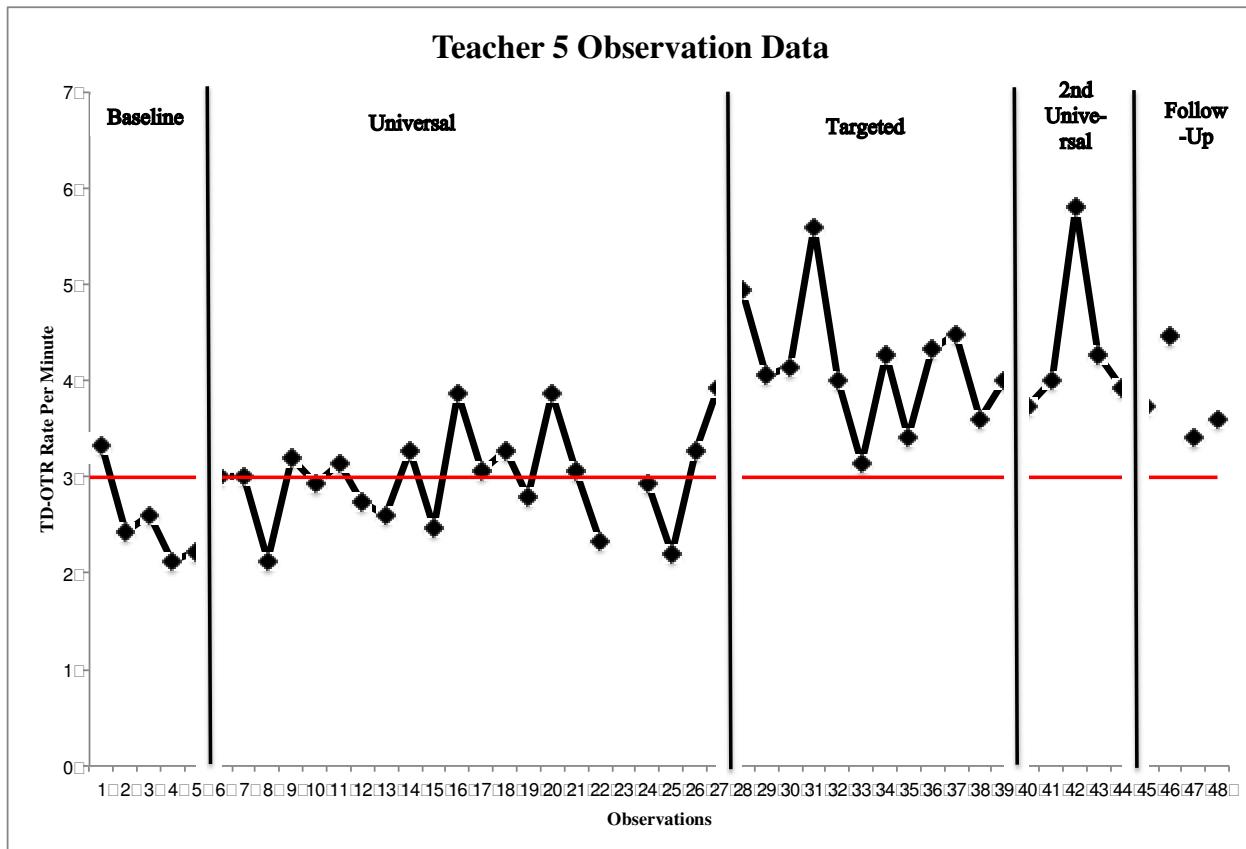
Research Question 2: Is there a functional relationship between (a) teachers' response to targeted PD support (i.e., Tier 2), following didactic training and self-monitoring of TD-OTRs (Tier 1), and (b) teacher behavior (i.e., the rate of TD-OTRs) for teachers whose rate of TD-OTRs was below the criterion level (3.00 per min) after Tier 1 training?

Teacher 5 was the only participant considered for the second research question. Figure 7 shows Teacher 5's data across the baseline (A), universal PD (with self-monitoring; B), targeted

PD (with continued self-monitoring plus added self-management and intermittent performance feedback; C), the return to universal conditions (self-monitoring without self-management and no intermittent performance feedback; B) phases, and the follow-up (i.e., bi-weekly probes with no self-monitoring similar to baseline conditions) phases.

Figure 7.

Teacher 5 Direct Observation Data



During baseline, Teacher 5's TD-OTR rate was somewhat variable, demonstrating a decreasing trend, and only one data point exceeded the criterion for success ($M = 2.54$, $Mdn = 2.43$, range = 2.13-3.33). As stated above, the intent of the study was to demonstrate experimental control of the targeted PD package on TD-OTRs (i.e., staggered introduction across

participants), not experimental control of universal PD on TD-OTRs and therefore, after 5 days of data collection all teachers (including Teacher 5) were provided with universal PD.

After receiving universal PD Teacher 5's data were highly variable with overlap between baseline and post-universal PD. Visual analysis within this phase demonstrates an initial change in level (i.e., the first two data points post-universal PD); however, this change was not sustained consistently, and these two points overlapped with the initial data point in baseline. Throughout the universal phase, Teacher 5 demonstrated a flat trend and an overall mean that just met the criterion of success ($M = 3.00$, $Mdn = 3.00$, range = 2.13-3.93). Based on visual analysis of Teacher 5's data during universal intervention (demonstrating a flat trend) and the mean TD-OTR rate of 3.00 it was decided that Teacher 5 should be moved into the targeted intervention (i.e., continued self-monitoring plus self-management and intermittent performance feedback) phase. PND between baseline and universal phases was 25.00% indicating an ineffective intervention.

During the targeted PD phase Teacher 5 again demonstrated variable data; however, the data showed an immediate change in level with a slight downward trend, although all points exceeded the criterion for success ($M = 4.16$, $Mdn = 4.10$, range = 3.13-5.60). Across universal and targeted phases, a clear level change was evident, but there was overlap and an increasing trend between the last three data points in the universal phase and the first three data points in the targeted phase, which suggests the level change may have occurred absent of the intervention. PND results somewhat supported the findings. PND was 75.00% between universal and targeted phases indicating an effective intervention.

Once a stable pattern of data were observed, I removed the unique components of the targeted phase (i.e., self-management and intermittent performance feedback), and Teacher 5

returned to universal conditions (i.e., self-monitoring only). Data in this phase overlapped significantly with the previous phase, were variable, and demonstrated a slight increasing trend; but none of the data points fell below the criterion for success ($M = 4.35$, $Mdn = 4.00$, range = 3.73-5.80). Due to the significant data overlap between the targeted phase and the return to universal (i.e., self-monitoring only) phase, visual analysis did not indicate a reversal of effect between the withdrawal of the unique components of targeted intervention support (i.e., self-management and intermittent performance feedback) and Teacher 5's rate of presentation of TD-OTRs. Thus, a return to targeted intervention conditions (i.e., continued self-monitoring plus added self-management and intermittent performance feedback) was not indicated and Teacher 5 moved into the follow-up phase. No clear level or trend change was evident across the targeted and second universal phases and variability was consistent across phases (PND = 20.00%).

The follow-up phase consisted of bi-weekly probes (2 weeks, four data points) to assess TD-OTR rates as well as student variables (DBR and DORF). During the follow-up phase Teacher 5 discontinued all self-monitoring. Data were variable and demonstrated a slightly decreasing trend, but remained above the criterion for success ($M = 3.80$, $Mdn = 3.67$, range = 3.40 – 4.47).

Summary of Teacher 5's results. Despite variability within her data, Teacher 5 demonstrated sustained increases in mean rates of TD-OTRs with the introduction of targeted PD. These increases exceeded the criterion for success and were sustained despite the withdrawal of the unique targeted intervention components (i.e., self-management and intermittent performance feedback). Further, during follow-up probes Teacher 5 continued to show the same levels of TD-OTRs exhibited after targeted PD. Similar to the results of Teachers 1-4, once Teacher 5 demonstrated a sustained increase of TD-OTRs, all five teachers maintained

the elevated levels at or above the criterion for success even after supports (i.e., self-monitoring, self-management, and intermittent performance feedback) were withdrawn. However, since the final study design became an ABCB case study with only a single participant, it is not possible to draw conclusions from this data because experimental control was not achieved and a functional relationship was not documented.

Table 11

TD-OTR Means and Ranges by Phase

Teacher	Baseline (A)		Universal PD (B)		No Self-Monitoring (A _M)		Targeted PD (C)		2 nd Universal (B)	
	<i>M</i>	<i>Mdn</i>	<i>M</i>	Range	<i>M</i>	Range	<i>M</i>	Range	<i>M</i>	Range
Teacher 1	2.50 (2.60)	1.43- 3.33	3.31 (3.40)	1.67- 5.20	3.62 (3.67)	2.47- 4.53	-	-	-	-
Teacher 2	1.89 (1.60)	1.40- 2.93	4.72 (4.27)	3.00- 6.96	4.64 (3.80)	3.20- 8.27	-	-	-	-
Teacher 3	1.82 (1.70)	1.33- 2.35	3.26 (3.00)	2.33- 5.17	3.61 (3.33)	2.92- 5.00	-	-	-	-
Teacher 4	2.07 (2.13)	1.77- 2.38	3.89 (3.73)	2.83- 5.13	4.05 (3.93)	3.33- 5.27	-	-	-	-
Teacher 5	2.54 (2.43)	2.13- 3.33	3.00 (3.00)	2.13- 3.93	-	-	4.16 (4.10)	3.13- 5.60	4.35 (4.00)	3.73- 5.80

Question 3: Is there a corresponding relationship between teacher behavior change (increases in TD-OTR rates) and students' level of academic engagement (measured by DBR) and achievement (measured by the DORF)?

Individual graphs and tables for each of the six students included from each teacher's classroom are shown below in Figures 8 - 37 and Tables 12 - 16. Across all teachers, Student 1, Student 2, and Student 3 represent the moderate/high-risk students and Student 4, Student 5, and Student 6 represent the low-risk comparison peers. Students are presented for each teacher plus a table of means for each set (i.e. moderate/high risk and low-risk comparison) of students by teacher followed by a narrative summarizing the across phases. For each recorded observation,

the teacher's rating of academic engagement (blue line) and disruptive behavior (red line) as measured by the DBR is presented. Additionally, the weekly DORF probe data appears as a green triangle within each student's graph. The observation numbers are listed on the abscissa (x axis) and percentage of time spent academically engaged and time spent engaging in disruptive behavior is presented along the left ordinate (y axis) while the number of words read correctly per minute (i.e., the DORF score) is presented along the right ordinate (y axis). Vertical lines indicate phase changes. It is important to note that these results should be interpreted with caution because (a) due to teachers' response to intervention, experimental control was not achieved and a functional relationship was not established and (b) since student variables represent a secondary dependent variable, student behavioral data can not be causally linked with intervention. It should also be noted that all social behavior results are based on teacher perceptions and not direct observations.

Teacher 1. Figures 8-13 and Table 12 show Teacher 1's students data across the baseline (A), universal PD (with self-monitoring; B), and the modified baseline condition without self-monitoring (A_M) phases. Figures 8-10 shows the three moderate/high-risk students and Figures 11-13 show the three low-risk comparison students.

Figure 8.

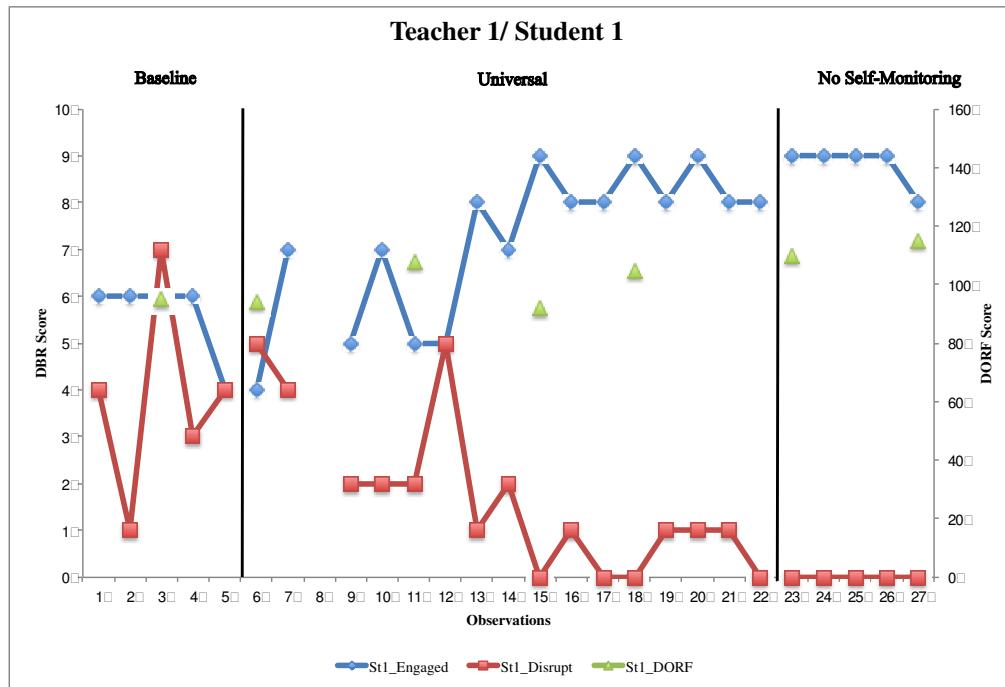
Teacher 1/Student 1 DBR & DORF Data

Figure 9.

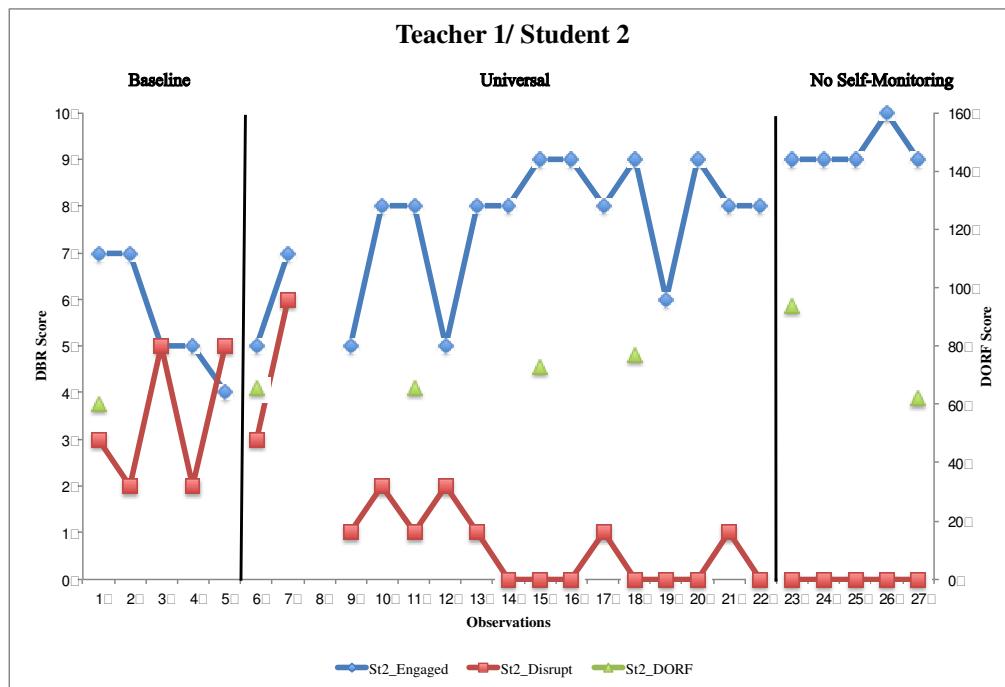
Teacher 1/Student 2 DBR & DORF Data

Figure 10.

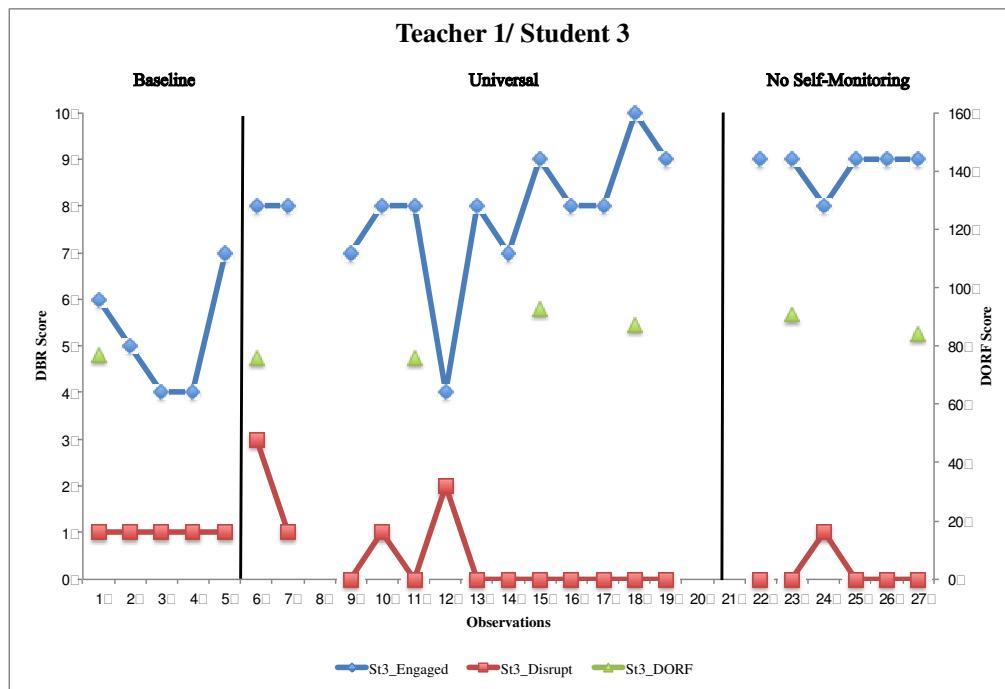
Teacher 1/Student 3 DBR & DORF Data

Figure 11.

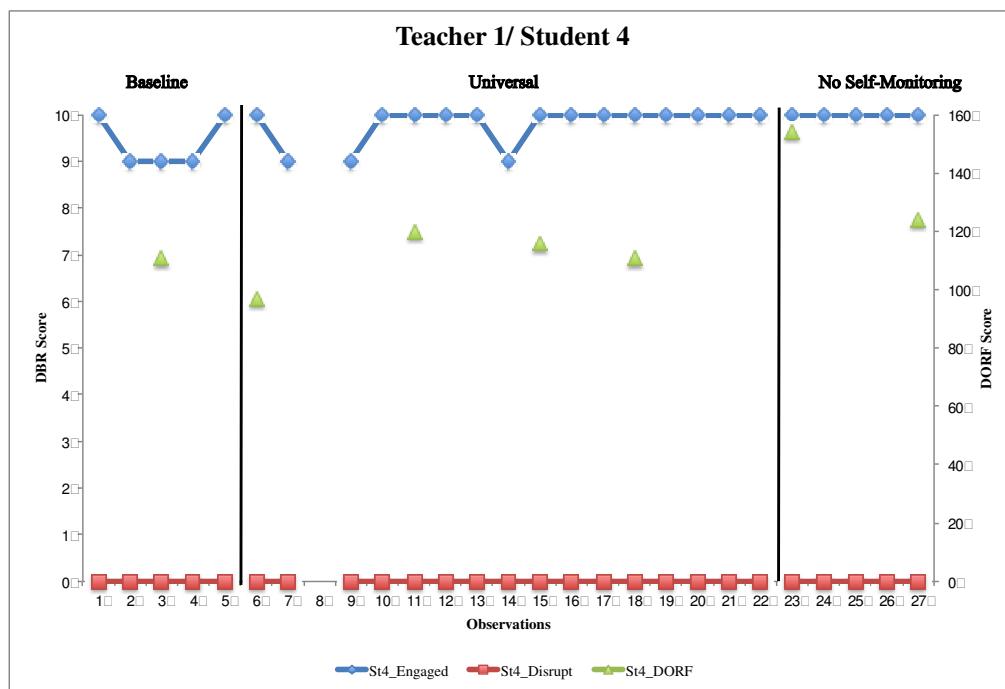
Teacher 1/Student 4 DBR & DORF Data

Figure 12.

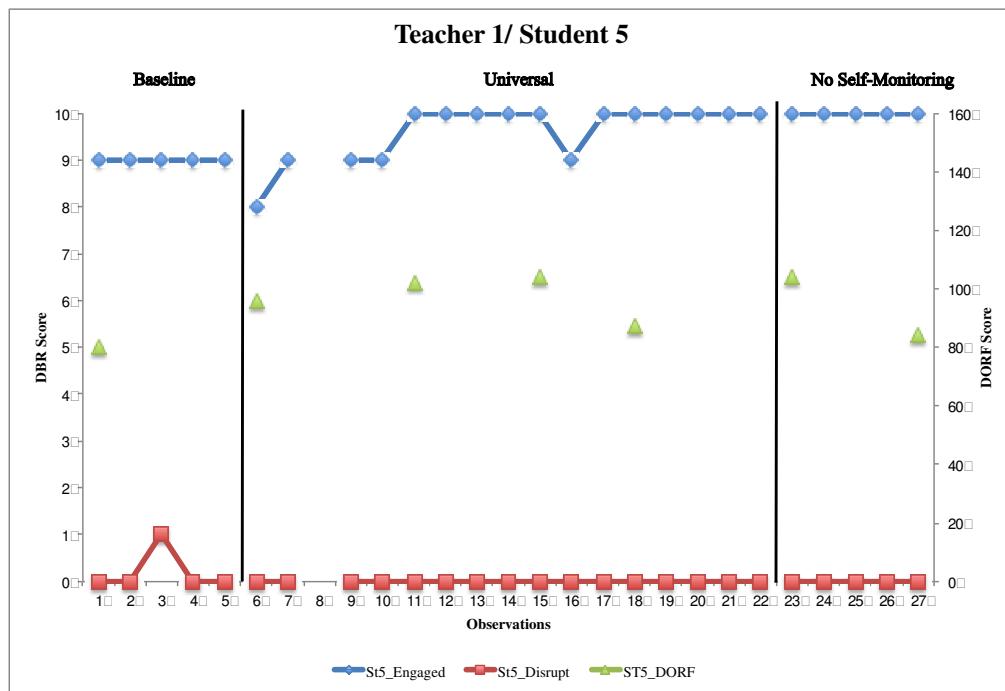
Teacher 1/Student 5 DBR & DORF Data

Figure 13.

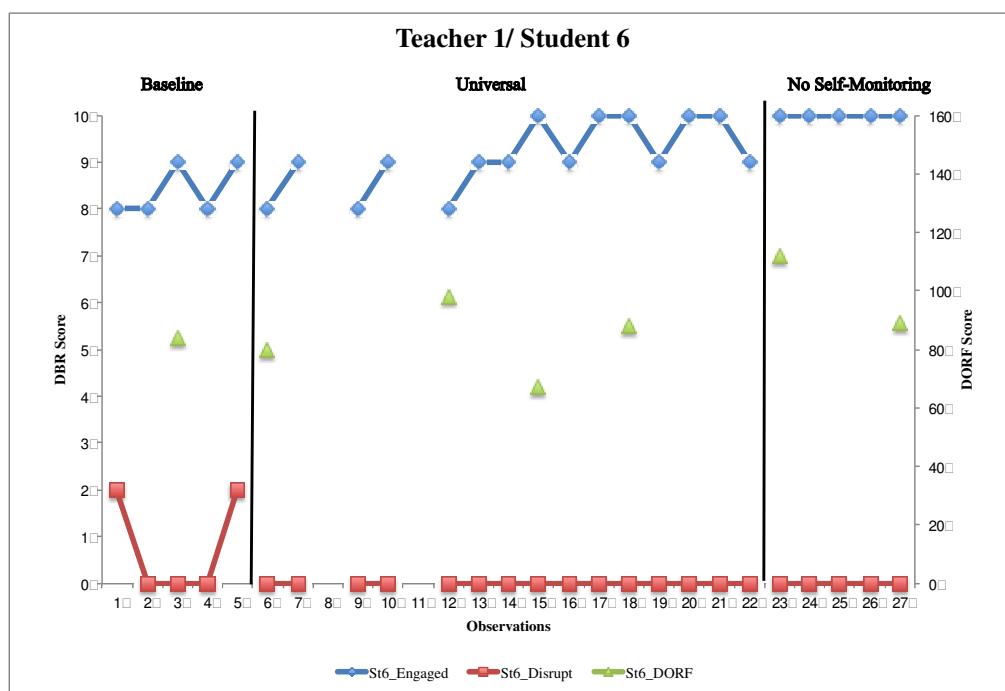
Teacher 1/Student 6 DBR & DORF Data

Table 12

Teacher 1 Student-level Means and Ranges

Phase	Variable	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Baseline							
Academic Engagement							
	M	5.60	5.60	5.20	9.40	9.00	8.40
	Min	4.00	4.00	4.00	9.00	9.00	8.00
	Max	6.00	7.00	7.00	10.00	9.00	9.00
Disruptive							
	M	3.80	3.40	1.00	1.40	0.20	0.80
	Min	1.00	2.00	1.00	0.00	0.00	0.00
	Max	7.00	5.00	1.00	7.00	1.00	2.00
DORF							
	M	95.00	60.00	77.00	111.00	80.00	84.00
	Min.						
	Max						
Universal							
Academic Engagement							
	M	7.19	7.50	7.93	9.81	9.63	8.95
	Min	4.00	5.00	4.00	9.00	8.00	8.00
	Max	9.00	9.00	10.00	10.00	10.00	10.00
Disruptive							
	M	1.69	1.13	0.50	0.00	0.00	0.00
	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	5.00	6.00	3.00	0.00	0.00	0.00
DORF							
	M	99.75	70.50	83.00	111.00	97.25	83.25

	Min.	92.00	66.00	76.00	97.00	87.00	67.00
	Max	108.00	77.00	93.00	120.00	104.00	98.00
No Self-monitoring							
Academic Engagement							
	M	8.80	9.20	8.80	10.00	10.00	10.00
	Min	8.00	9.00	8.00	10.00	10.00	10.00
	Max	9.00	10.00	9.00	10.00	10.00	10.00
Disruptive							
	M	0.00	0.00	0.20	0.00	0.00	0.00
	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	0.00	0.00	1.00	0.00	0.00	0.00
DORF							
	M	112.50	78.00	87.50	139.00	94.00	100.50
	Min.	110.00	62.00	84.00	124.00	84.00	89.00
	Max	115.00	94.00	91.00	154.00	104.00	112.00

During baseline, the three moderate/high-risk students in Teacher 1's classroom were rated as demonstrating lower levels of academic engagement and higher levels of disruptive behavior than their three comparison peers. After the introduction of universal PD, the three moderate/high-risk students began to demonstrate increased levels of academic engagement (as evidenced by an increasing trend) and decreased levels of disruption (as evidenced by a decreasing trend). This pattern continued and became more stable during the portion of the universal phase when Teacher 1 consistently increased his TD-OTR rate to above criterion (i.e., observations 18-22). Data from the end of the universal phase and the second baseline phase (i.e., the withdrawal of self-monitoring) demonstrate moderate/high-risk students displaying almost full academic engagement and almost no disruptions. These changes in student behavior are congruent with changes in Teacher 1's rate of presentation of TD-OTRs. Further, the three comparison peers displayed already high levels of academic engagement and low levels of disruption during baseline which sustained or followed a pattern of increase (of academic engagement) and decrease (of disruption) that was less dramatic yet matched their moderate/high-risk peers. DORF data did not change within or between phases for both groups of students across the intervention. This pattern of student response was similar for most moderate/high-risk students and comparison peers in the classrooms of Teacher 2, Teacher 3, and Teacher 4.

Teacher 2. Figures 14-19 and Table 13 show Teacher 2's student data across the baseline (A), universal PD (with self-monitoring; B), and the modified baseline conditions without self-monitoring (A_M) phases. Figures 14-16 shows the three moderate/high-risk students and Figures 17-19 show the three low-risk comparison students.

Figure 14.

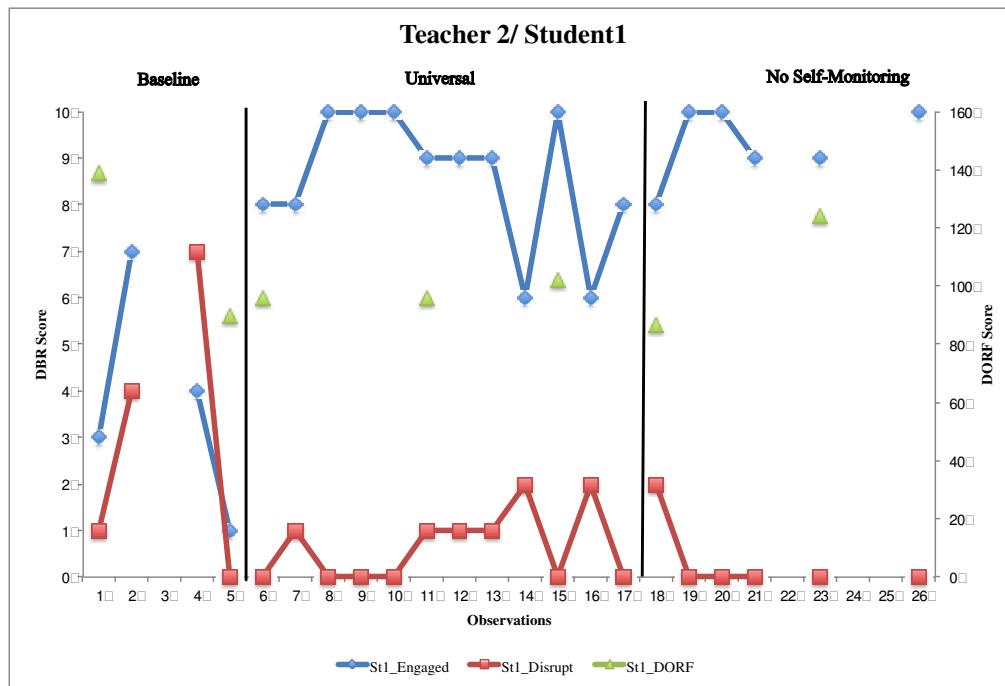
Teacher 2/Student 1 DBR & DORF Data

Figure 15.

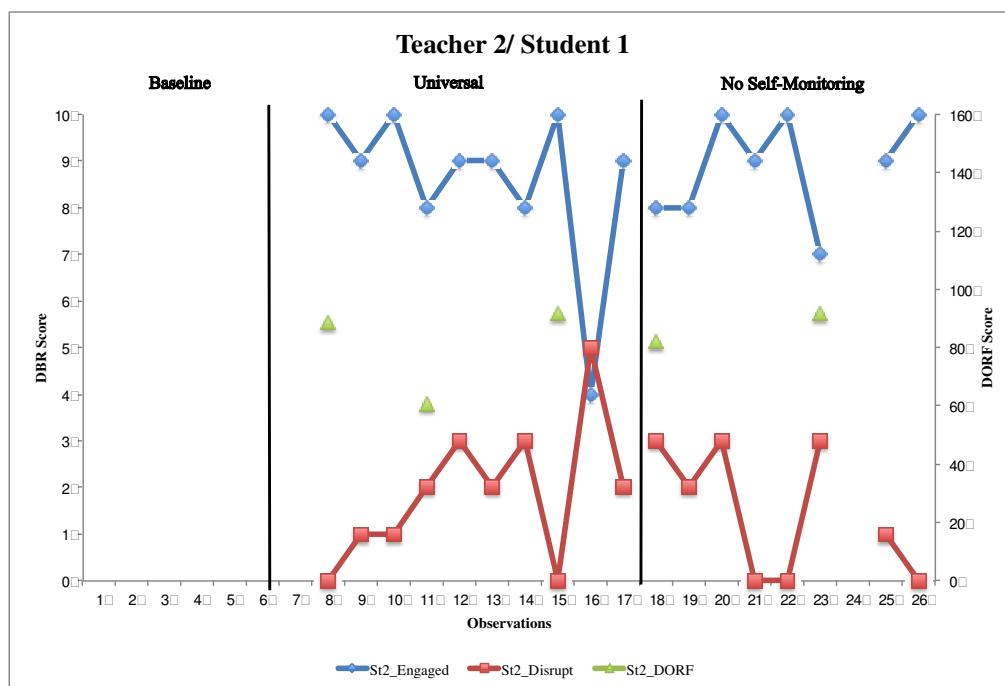
Teacher 2/Student 2 DBR & DORF Data

Figure 16.

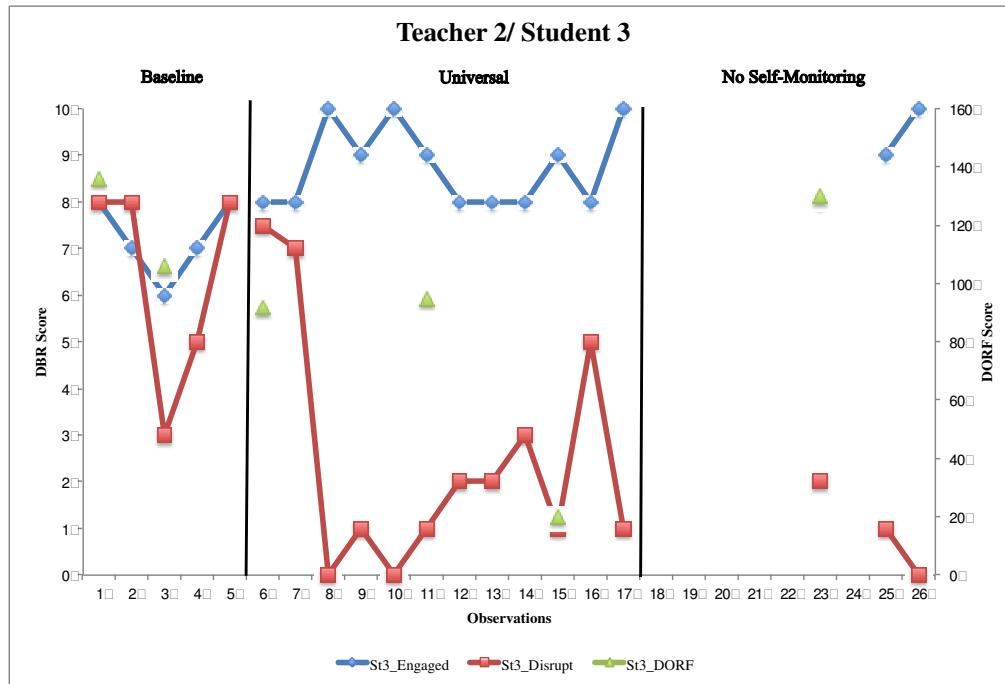
Teacher 2/Student 3 DBR & DORF Data

Figure 17.

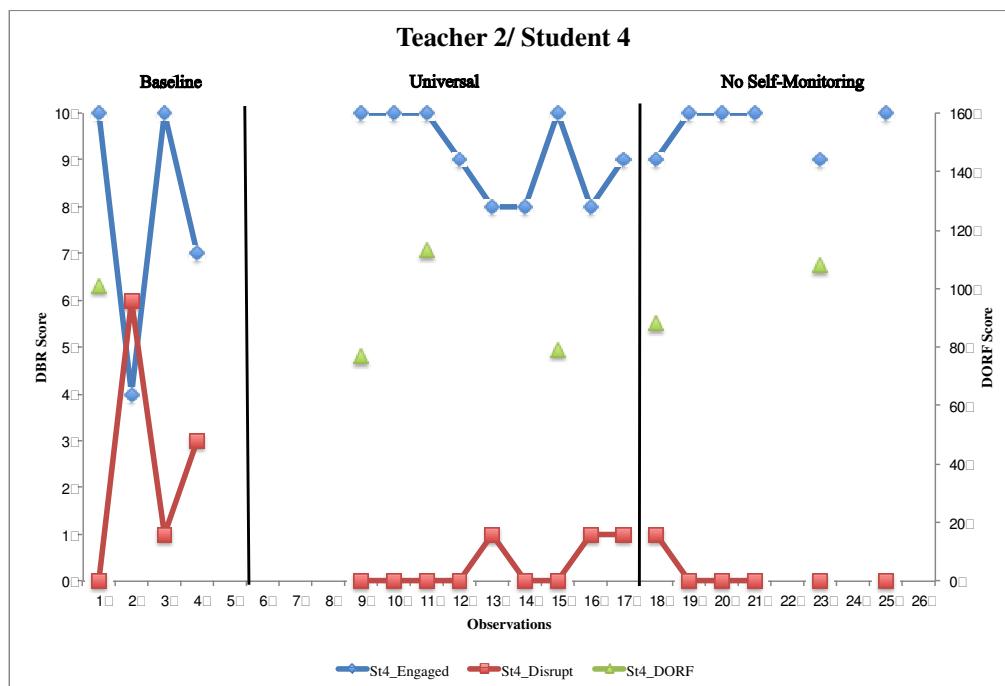
Teacher 2/Student 4 DBR & DORF Data

Figure 18.

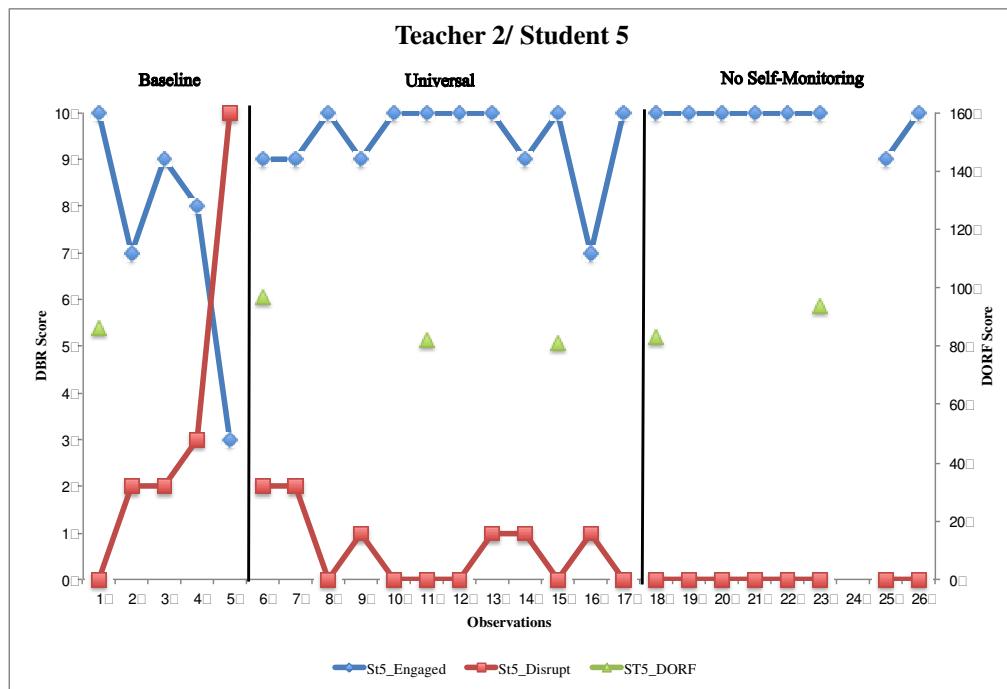
Teacher 2/Student 5 DBR & DORF Data

Figure 19.

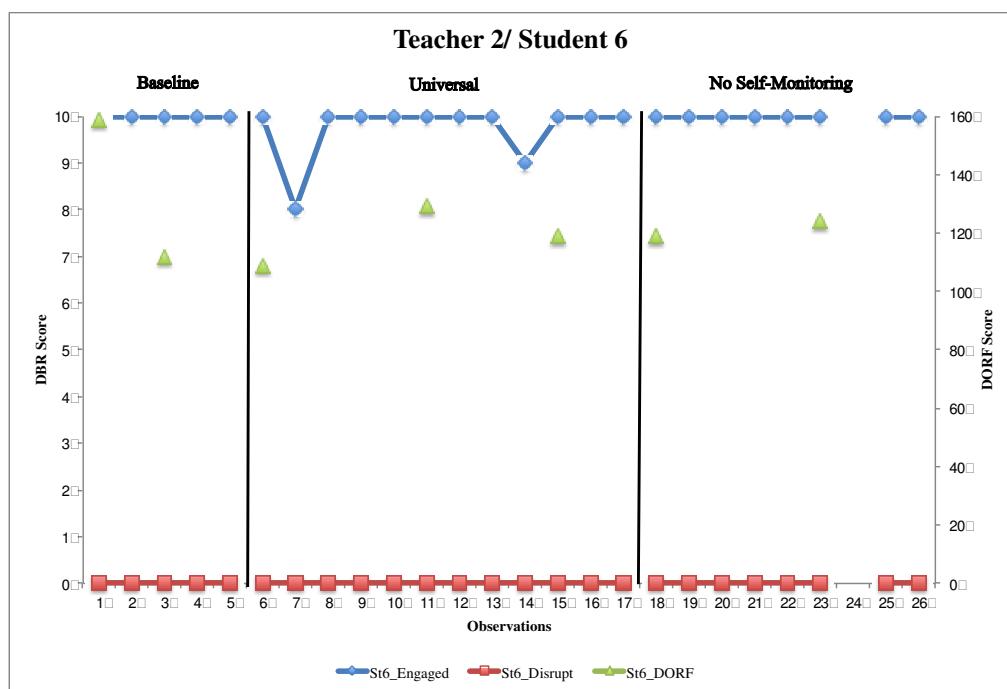
Teacher 2/Student 6 DBR & DORF Data

Table 13

Teacher 2 Student-level Means and Ranges

Phase	Variable	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Baseline	Academic Engagement						
	M	3.75		7.20	7.75	7.40	10.00
	Min	1.00		6.00	4.00	3.00	10.00
	Max	7.00		8.00	10.00	10.00	10.00
	Disruptive						
	M	3.00		6.40	2.50	3.40	0.00
	Min	0.00		3.00	0.00	0.00	0.00
	Max	7.00		8.00	6.00	10.00	0.00
	DORF						
	M	114.50		121.00	101.00	86.00	135.50
	Min.						
	Max						
Universal	Academic Engagement						
	M	8.58	8.60	8.75	9.11	9.42	9.82
	Min	6.00	4.00	8.00	8.00	7.00	8.00
	Max	10.00	10.00	10.00	10.00	10.00	10.00
	Disruptive						
	M	0.67	1.90	2.54	0.33	0.67	0.00
	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	2.00	5.00	7.50	1.00	2.00	0.00
	DORF						
	M	98.00	80.67	69.00	89.67	86.67	119.00

	Min.	96.00	61.00	20.00	77.00	81.00	109.00
	Max	102.00	92.00	95.00	113.00	97.00	129.00
No Self-monitoring							
Academic Engagement							
	M	9.33	8.88	9.00	9.67	9.88	10.00
	Min	8.00	7.00	8.00	9.00	9.00	10.00
	Max	10.00	10.00	10.00	10.00	10.00	10.00
Disruptive							
	M	0.33	1.50	1.00	0.17	0.00	0.00
	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	2.00	3.00	2.00	1.00	0.00	0.00
DORF							
	M	105.50	87.00	130.00	98.00	88.50	121.50
	Min.	87.00	82.00	130.00	88.00	83.00	119.00
	Max	124.00	92.00	130.00	108.00	94.00	124.00

It is important to note that several of Teacher 2's students were absent due to serious illness (i.e., a week or more) during the study; therefore, some graphs are missing data. Similar to the students in Teacher 1's classroom and despite highly variable data, during baseline, the three moderate/high-risk students in Teacher 2's classroom demonstrated lower levels of academic engagement and higher levels of disruptive behavior than their three comparison peers based on their teacher's perception. After the introduction of universal PD, the three moderate/high-risk students were rated as demonstrating increased levels of academic engagement (as evidenced by an increasing trend) and decreased levels of disruption (as evidenced by a decreasing trend). These patterns continued into the second baseline phase (when self-monitoring was withdrawn). Changes in student behavior are congruent with changes in Teacher 2's rate of presentation of TD-OTRs. However, unlike the three comparison peers in Teacher 1's class, two of the three comparison peers in Teacher 2's class were rated as displaying varying levels of academic engagement and disruption during baseline that followed a pattern of increase (of academic engagement) and decrease (of disruption) that was similar to their moderate/high-risk peers. The other low-risk comparison peer demonstrated high levels of academic engagement and low-levels of disruption across all phases of the study. Also, like the students of Teacher 1, DORF data did not change within or between phases for both groups of students across the intervention.

Teacher 3. Figures 20-25 and Table 14 shows Teacher 3's student data across the baseline (A), universal PD (with self-monitoring; B), and the return to baseline conditions without self-monitoring (A) phases. Figures 20-22 show the three moderate/high-risk students and Figures 23-25 show the three low-risk comparison students.

Figure 20.

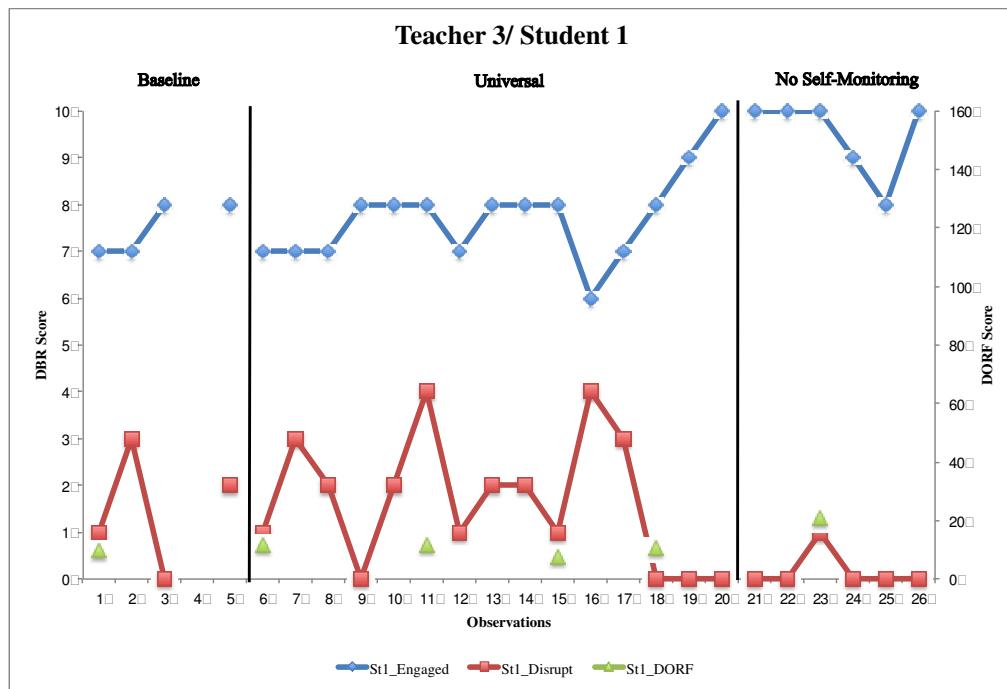
Teacher 3/Student 1 DBR & DORF Data

Figure 21.

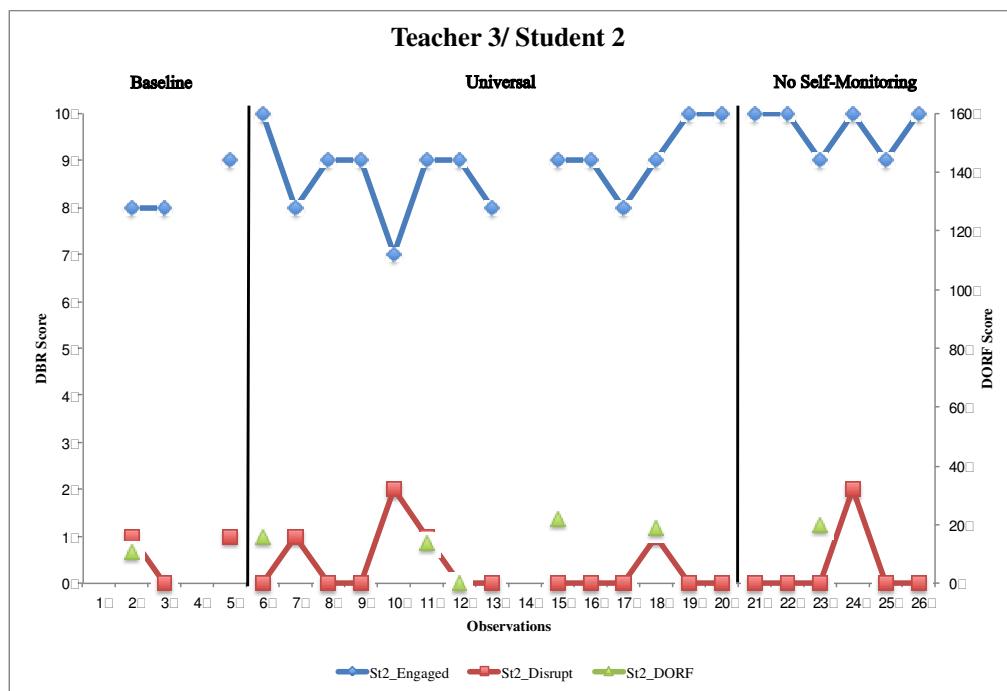
Teacher 3/Student 2 DBR & DORF Data

Figure 22.

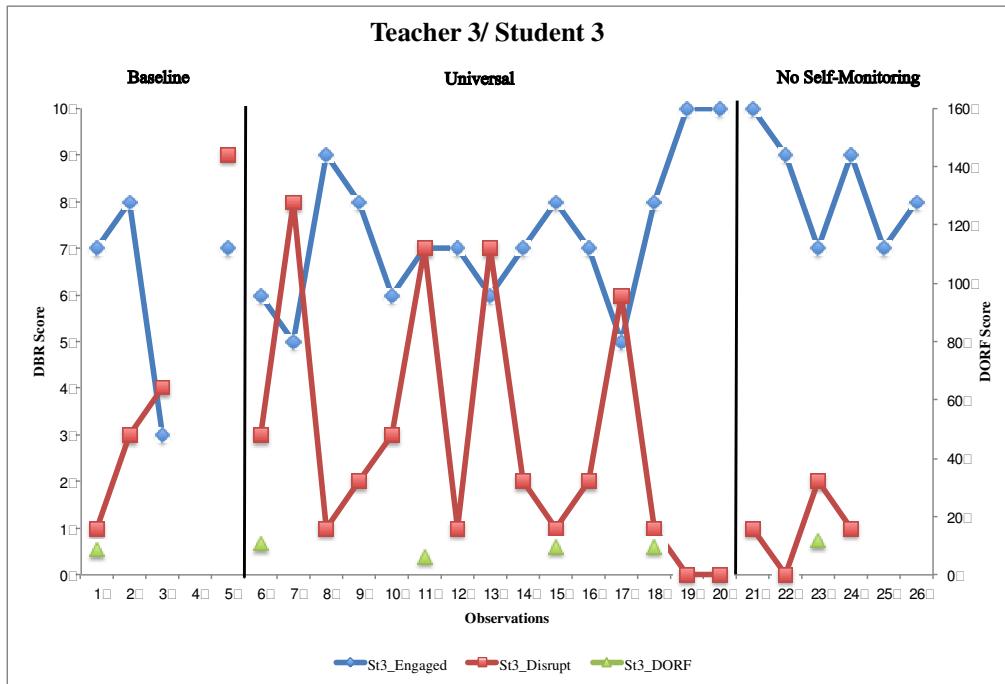
Teacher 3/Student 3 DBR & DORF Data

Figure 23.

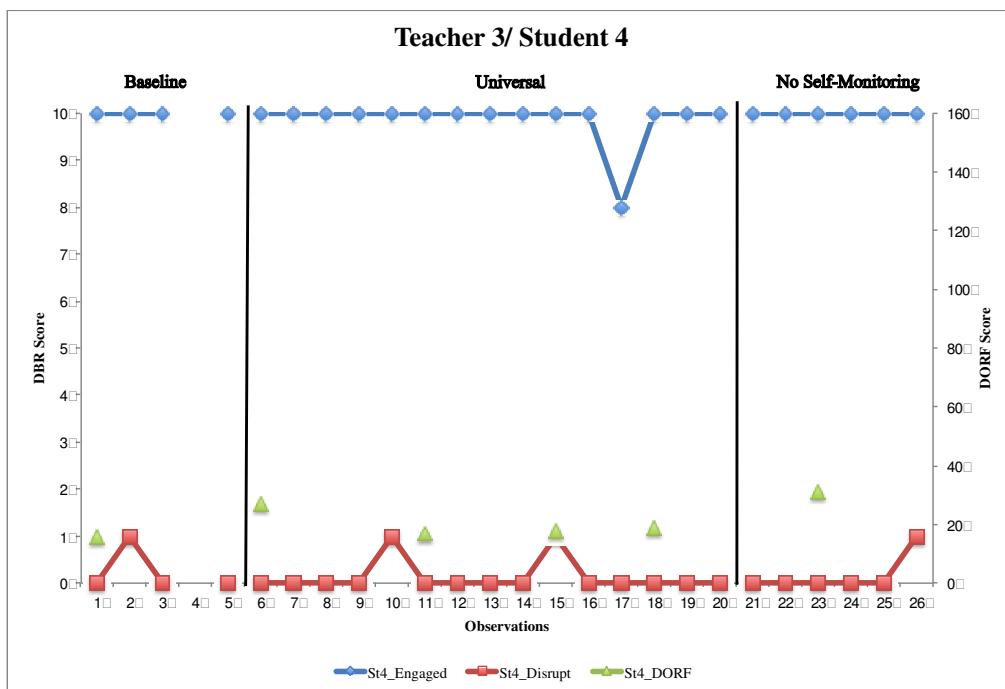
Teacher 3/Student 4 DBR & DORF Data

Figure 24.

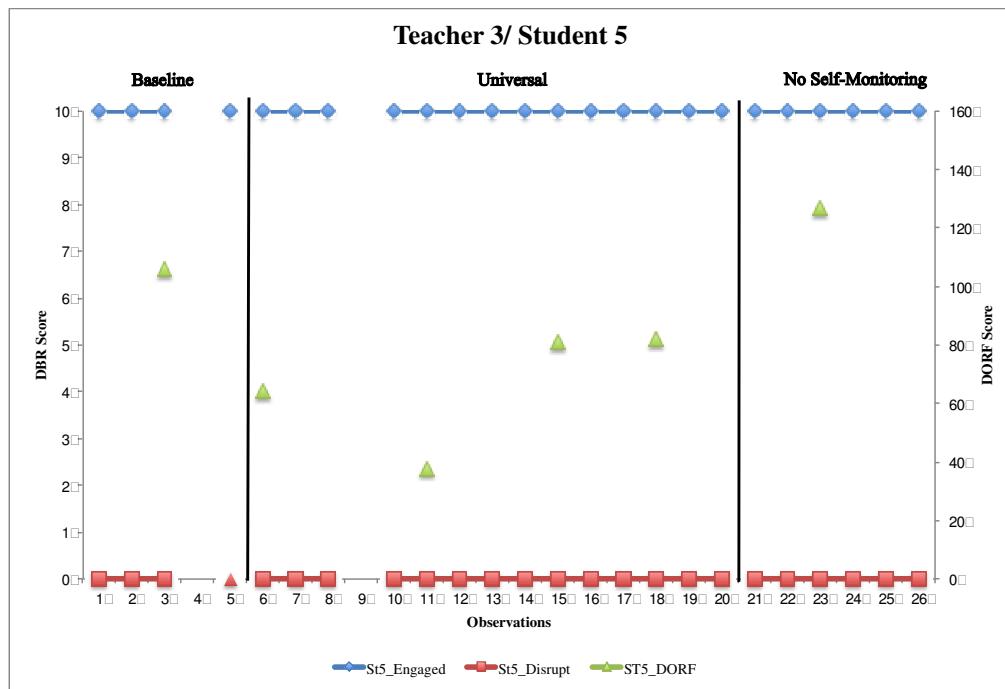
Teacher 3/Student 5 DBR & DORF Data

Figure 25.

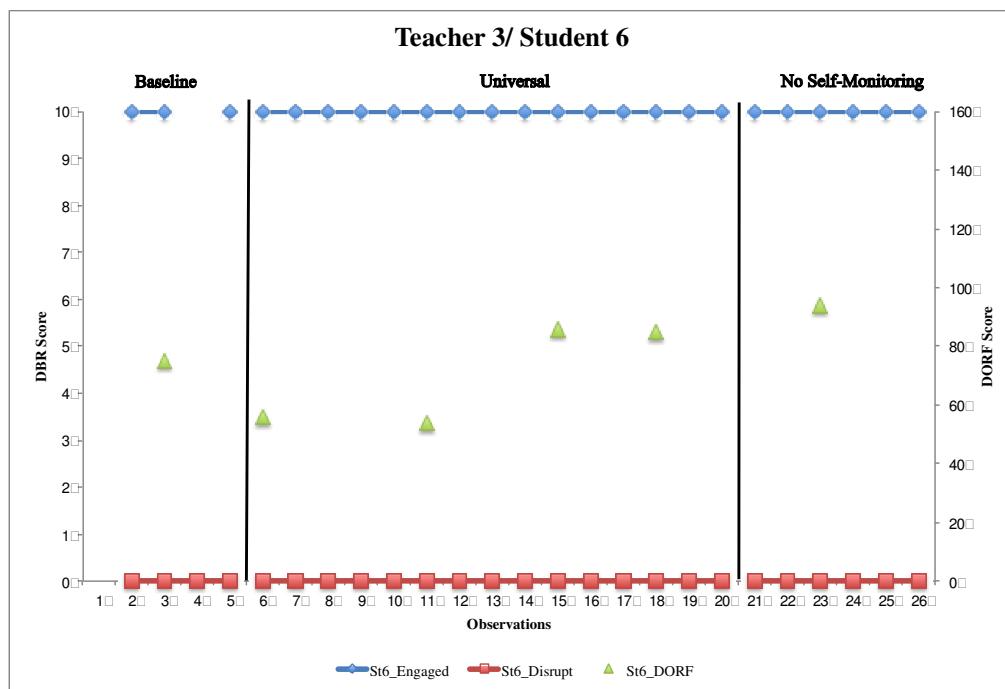
Teacher 3/Student 6 DBR & DORF Data

Table 14

Teacher 3 Student-level Means and Ranges

Phase	Variable	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Baseline	Academic Engagement						
	M	7.50	8.33	6.25	10.00	10.00	10.00
	Min	7.00	8.00	3.00	10.00	10.00	10.00
	Max	8.00	9.00	8.00	10.00	10.00	10.00
	Disruptive						
	M	1.50	0.67	4.25	0.25	0.00	0.00
	Min	0.00	0.00	1.00	0.00	0.00	0.00
	Max	3.00	1.00	9.00	1.00	0.00	0.00
	DORF						
	M	10.00	11.00	9.00	16.00	106.00	75.00
	Min.						
	Max						
Universal	Academic Engagement						
	M	7.73	8.86	7.27	9.87	10.00	10.00
	Min	6.00	7.00	5.00	8.00	10.00	10.00
	Max	10.00	10.00	10.00	10.00	10.00	10.00
	Disruptive						
	M	1.67	0.36	2.93	0.13	0.00	0.00
	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	4.00	2.00	8.00	1.00	0.00	0.00
	DORF						
	M	10.75	17.75	9.25	20.25	66.25	70.25

	Min.	8.00	14.00	6.00	17.00	38.00	54.00
	Max	12.00	22.00	11.00	27.00	82.00	86.00
No Self-monitoring							
Academic Engagement							
	M	9.50	9.67	8.33	10.00	10.00	10.00
	Min	8.00	9.00	7.00	10.00	10.00	10.00
	Max	10.00	10.00	10.00	10.00	10.00	10.00
Disruptive							
	M	0.17	0.33	1.00	0.17	0.00	0.00
	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	1.00	2.00	2.00	1.00	0.00	0.00
DORF							
	M	21.00	20.00	12.00	31.00	127.00	94.00
	Min.	21.00	20.00	12.00	31.00	127.00	94.00
	Max	21.00	20.00	12.00	31.00	127.00	94.00

The pattern of results for students in Teacher 3's classroom are similar for Students 1, 4, 5, and 6 to those noted for the moderate/high-risk and low-risk students of Teacher 1 and Teacher 2 (i.e., for the moderate/high-risk student increases in academic engagement and decreases in disruption corresponding to the introduction of higher rates of TD-OTRs/universal PD and similar patterns of consistent high levels of academic engagement and low levels of disruption for comparison low-risk peers across phases). However, the data for two of the moderate/high-risk students (Student 2 and Student 3) was less clear. Student 2 was absent for two days during baseline and the data that was collected on academic engagement and disruption in the universal overlaps with data collected and withdrawal of self-monitoring phases. Student 3 demonstrated highly variable data that overlapped across all phases. Like the students of Teacher 1 and 2, DORF data did not change within or between phases for both groups of students across the intervention in Teacher 3's classroom.

Teacher 4. Figures 26-31 and Table 15 shows Teacher 4's student data across the baseline (A), universal PD (with self-monitoring; B), and the return to baseline conditions without self-monitoring (A_M) phases. Figures 26-28 shows the three moderate/high-risk students and Figures 29-31 show the three low-risk comparison students.

Figure 26.

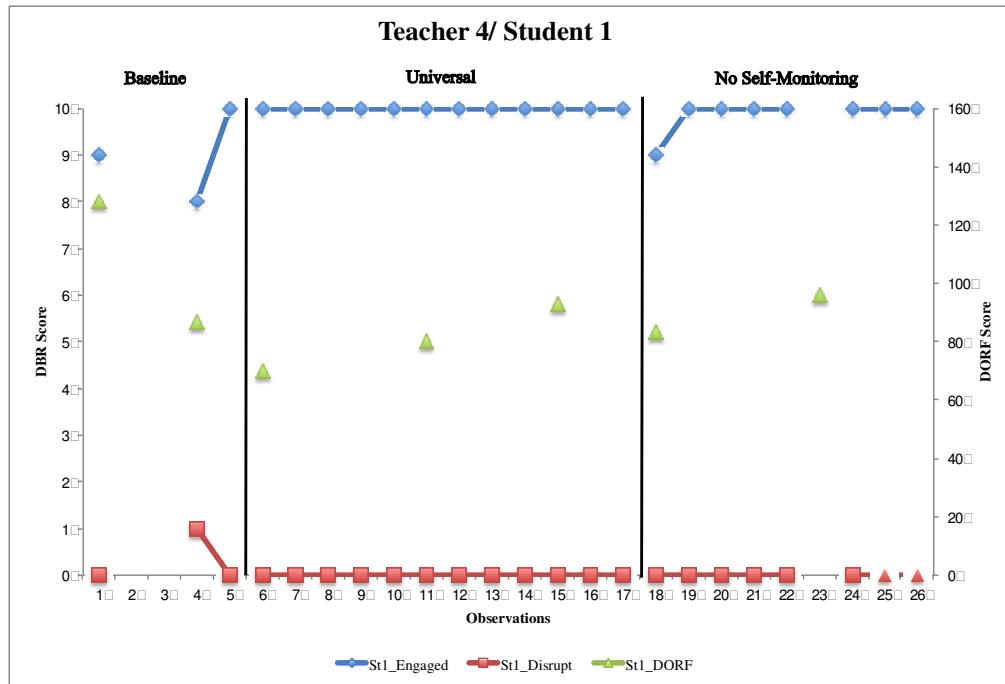
Teacher 4/Student 1 DBR & DORF Data

Figure 27.

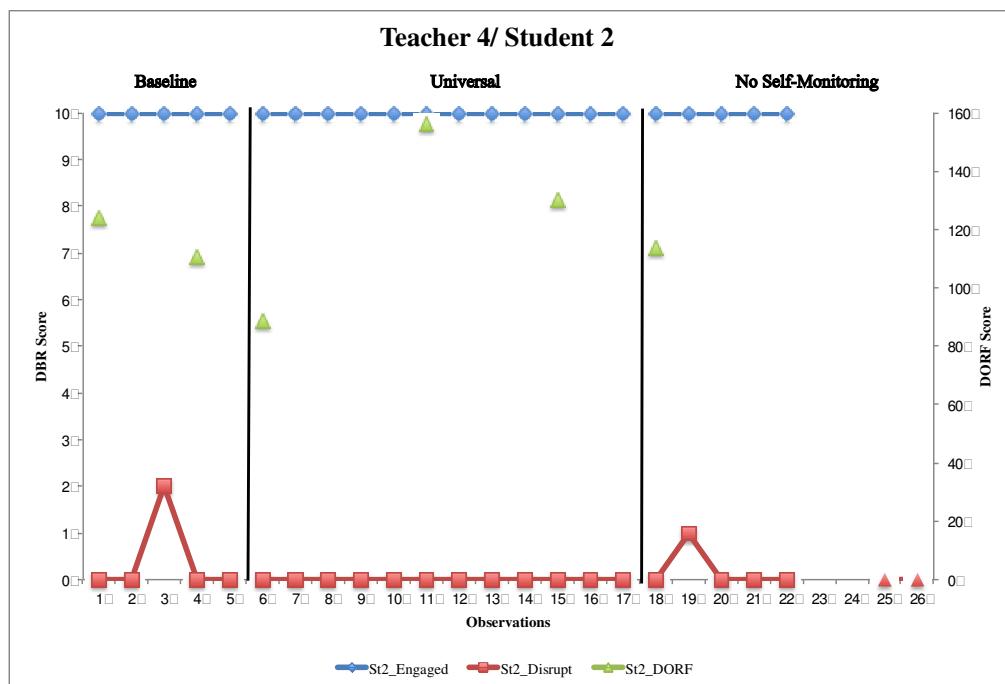
Teacher 4/Student 2 DBR & DORF Data

Figure 28.

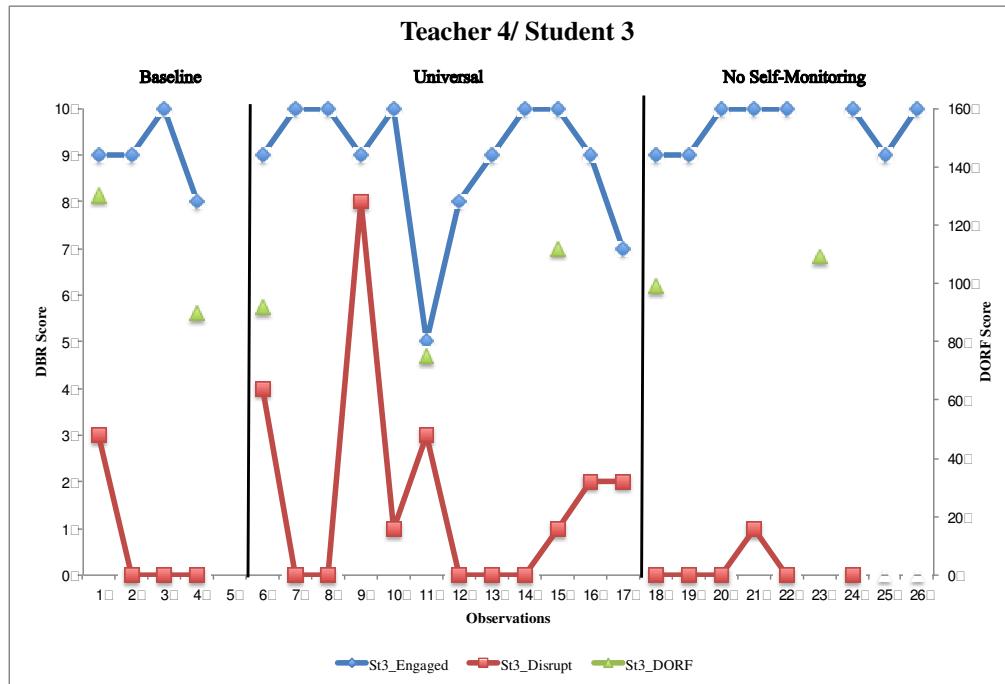
Teacher 4/Student 3 DBR & DORF Data

Figure 29.

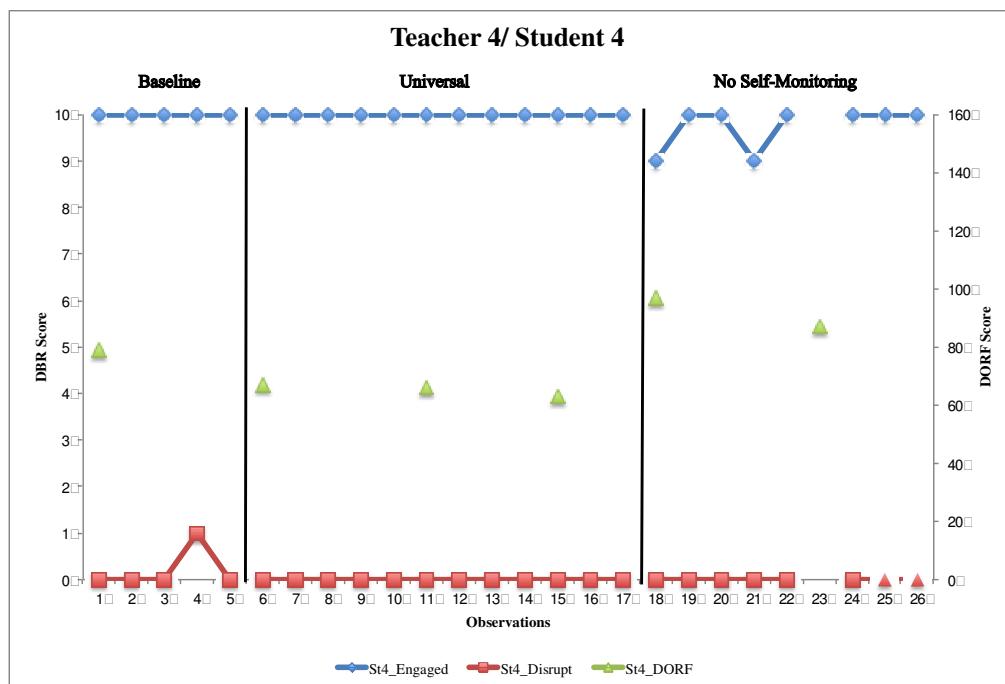
Teacher 4/Student 4 DBR & DORF Data

Figure 30.

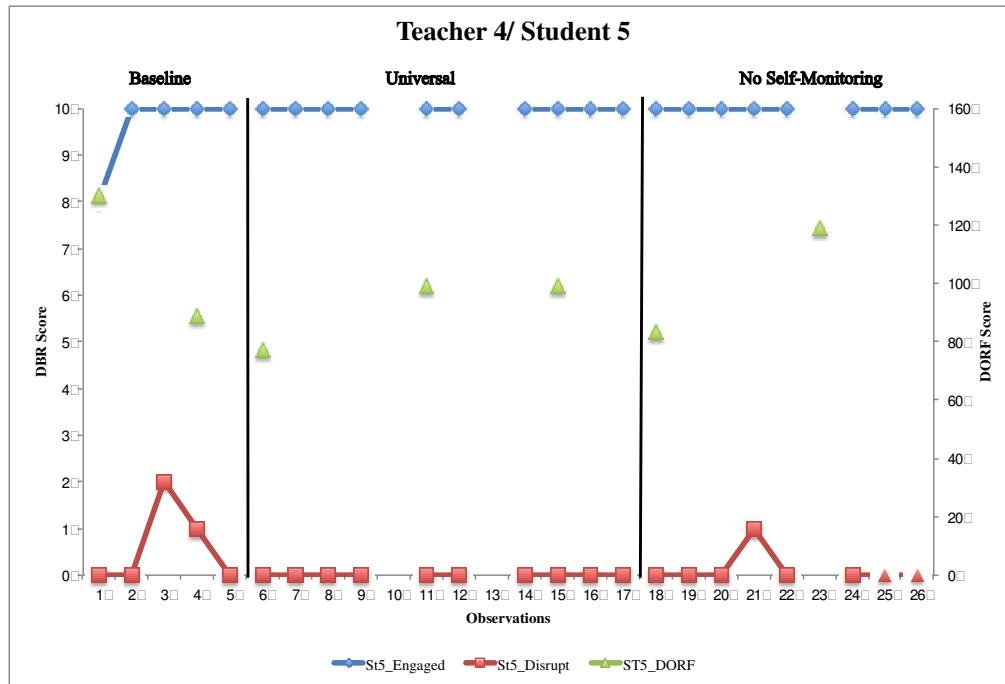
Teacher 4/Student 5 DBR & DORF Data

Figure 31.

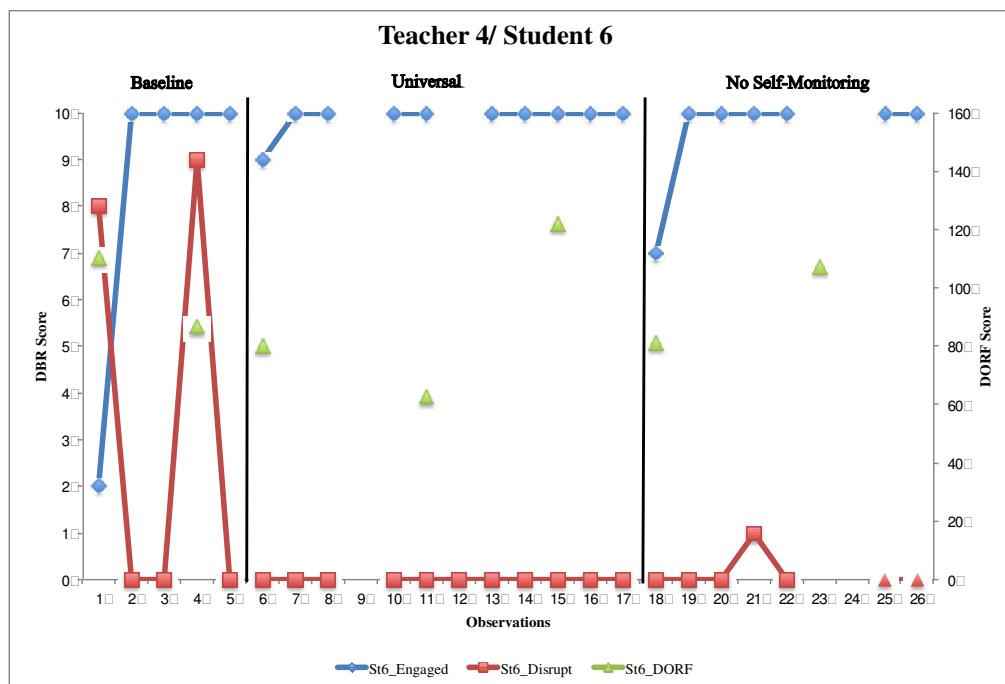
Teacher 4/Student 6 DBR & DORF Data

Table 15

Teacher 4 Student-level Means and Ranges

Phase	Variable	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Baseline	Academic Engagement						
	M	9.00	10.00	9.00	10.00	9.60	8.40
	Min	8.00	10.00	8.00	10.00	8.00	2.00
	Max	10.00	10.00	10.00	10.00	10.00	10.00
	Disruptive						
	M	0.33	0.40	0.75	0.20	0.60	3.40
	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	1.00	2.00	3.00	1.00	2.00	9.00
	DORF						
	M	107.50	117.50	110.00	79.00	109.50	98.50
	Min.						
	Max						
Universal	Academic Engagement						
	M	10.00	10.00	8.83	10.00	10.00	9.40
	Min	10.00	10.00	5.00	10.00	10.00	9.00
	Max	10.00	10.00	10.00	10.00	10.00	10.00
	Disruptive						
	M	0.00	0.00	1.75	0.00	0.00	0.00
	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	0.00	0.00	8.00	0.00	0.00	0.00
	DORF						
	M	81.00	125.00	93.00	65.33	91.67	88.33

	Min.	70.00	89.00	75.00	63.00	77.00	63.00
	Max	93.00	156.00	112.00	67.00	99.00	122.00
No Self-monitoring							
Academic Engagement							
	M	9.88	10.00	9.63	9.75	10.00	9.57
	Min	9.00	10.00	9.00	9.00	10.00	7.00
	Max	10.00	10.00	10.00	10.00	10.00	10.00
Disruptive							
	M	0.00	0.20	0.13	0.00	0.13	0.14
	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	0.00	1.00	1.00	0.00	1.00	1.00
DORF							
	M	89.50	114.00	104.00	92.00	101.00	94.00
	Min.	83.00	114.00	99.00	87.00	83.00	81.00
	Max	96.00	114.00	109.00	97.00	119.00	107.00

Overall, students in Teacher 4's classroom appeared to display less disruptive behavior and more academic engagement than those in other classrooms regardless of risk status. The pattern of results for students in Teacher 4's class are similar for Students 1, 4, 5, and 6 to those noted for the moderate/high-risk and low-risk students of Teacher 1, Teacher 2, and Teacher 3 (i.e., for the moderate/high-risk student increases in academic engagement and decreases in disruption corresponding to the introduction of higher rates of TD-OTRs/universal PD and similar patterns of consistent high levels of academic engagement and low levels of disruption for comparison low-risk peers across phases). However, the data for two of the moderate/high-risk students (Student 2 and Student 3) was different. Student 2 demonstrated high levels of academic engagement and low levels of disruptive behavior across all phases in a pattern similar to the low-risk peers within Teacher 4 and others classrooms. Similar to Student 3 in Teacher 3's classroom, Student 3 in Teacher 4's classroom demonstrated highly variable data that overlapped across all phases however an increasing trend in academic engagement and a decreasing trend in disruptive behavior was noted with the withdrawal of self-monitoring (i.e., the return to second baseline phase). Like the students of Teachers 1, 2, and 3, DORF data did not change within or between phases for both groups of students across the intervention in Teacher 4's classroom.

Teacher 5. Figures 32-37 and Table 16 shows Teacher 5's student data across the baseline (A), universal PD (with self-monitoring; B), targeted PD (C), and the return to universal conditions (with self-monitoring; B), and the subsequent follow-up phases (bi-weekly probes conducted with no self-monitoring). Figures 32-34 shows the three moderate/high-risk students and Figures 35-37 show the three low-risk comparison students.

Figure 32.

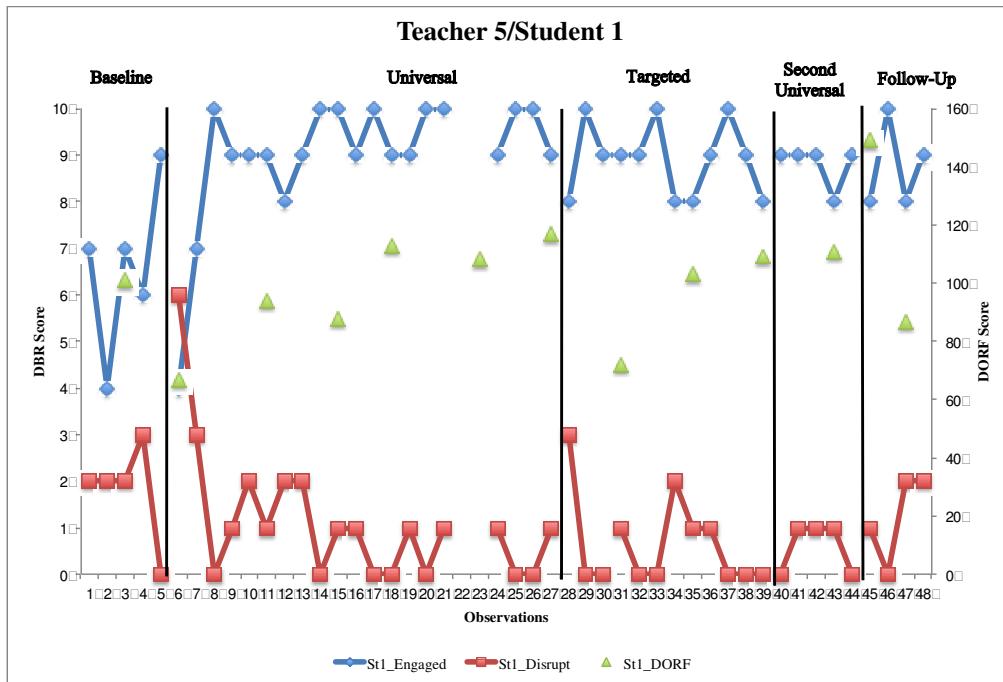
Teacher 5/Student 1 DBR & DORF Data

Figure 33.

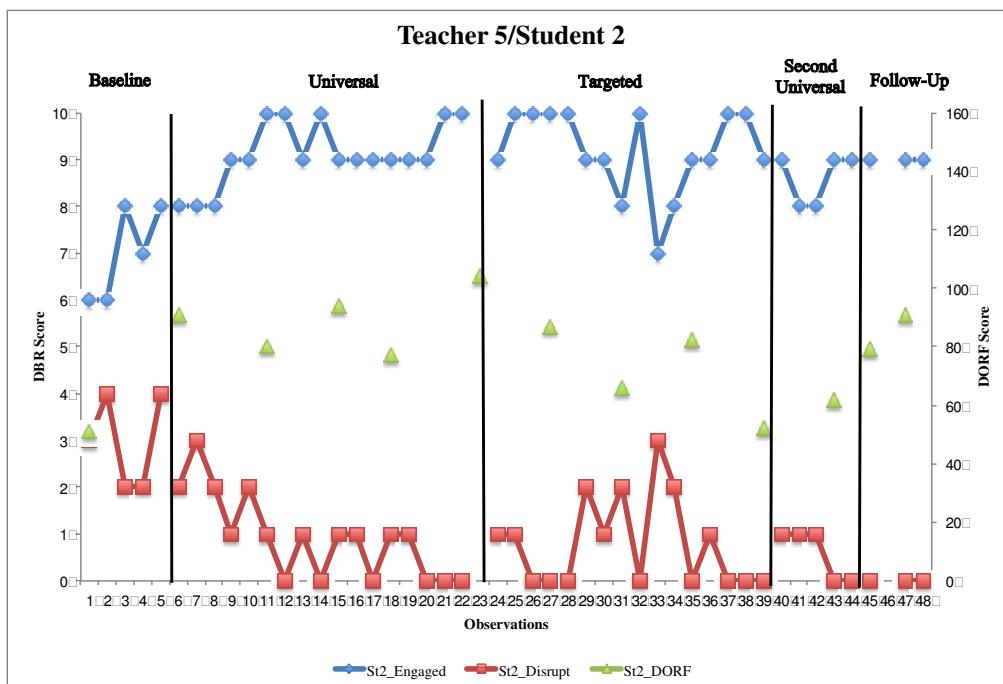
Teacher 5/Student 2 DBR & DORF Data

Figure 34.

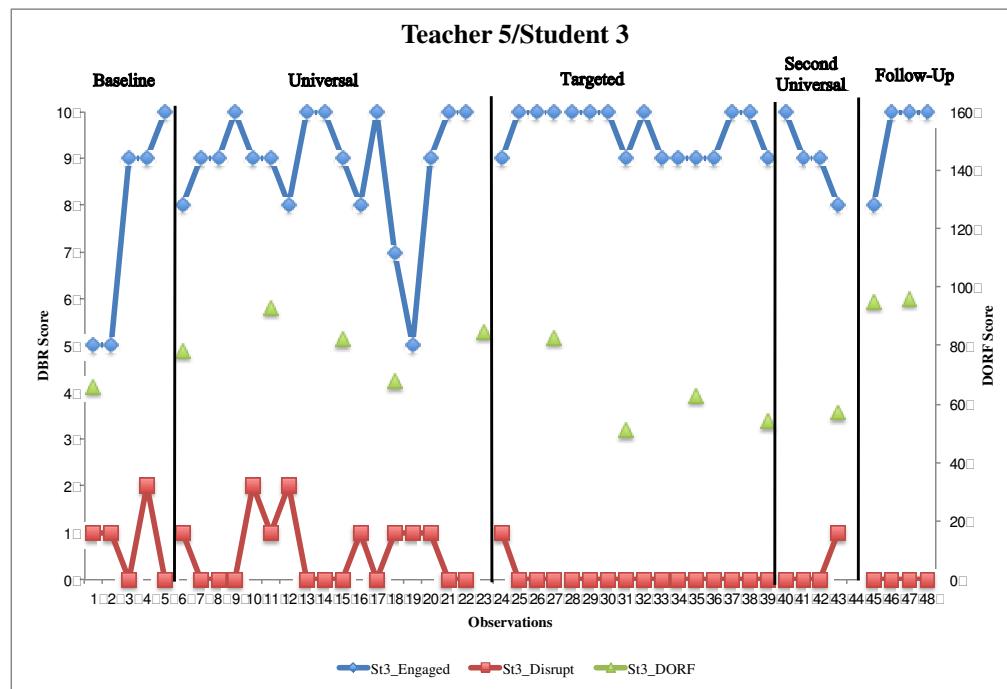
Teacher 5/Student 3 DBR & DORF Data

Figure 35.

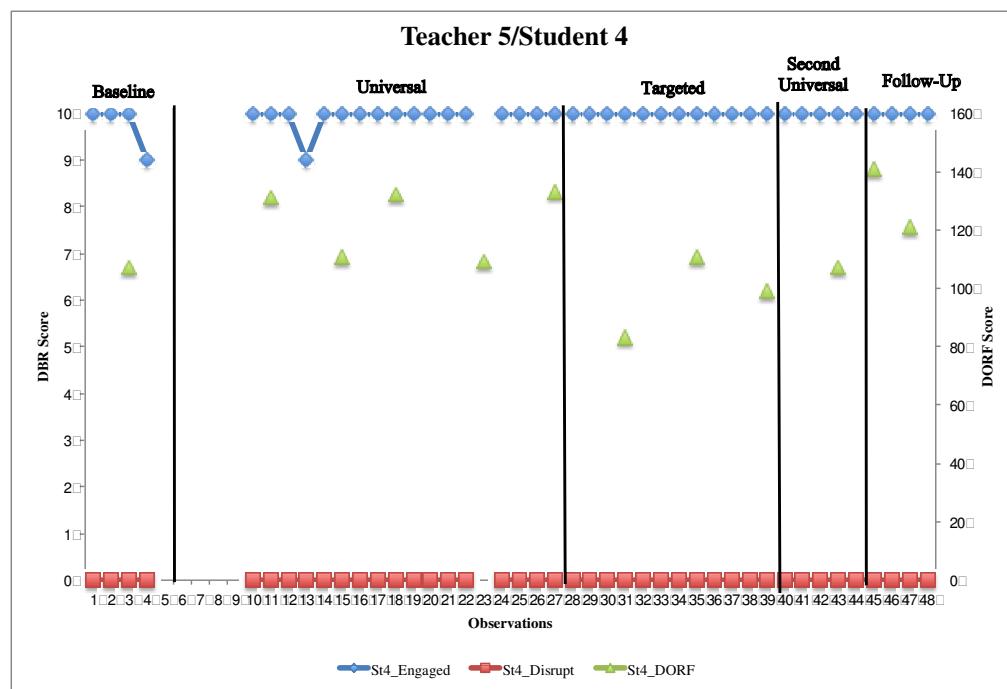
Teacher 5/Student 4 DBR & DORF Data

Figure 36.

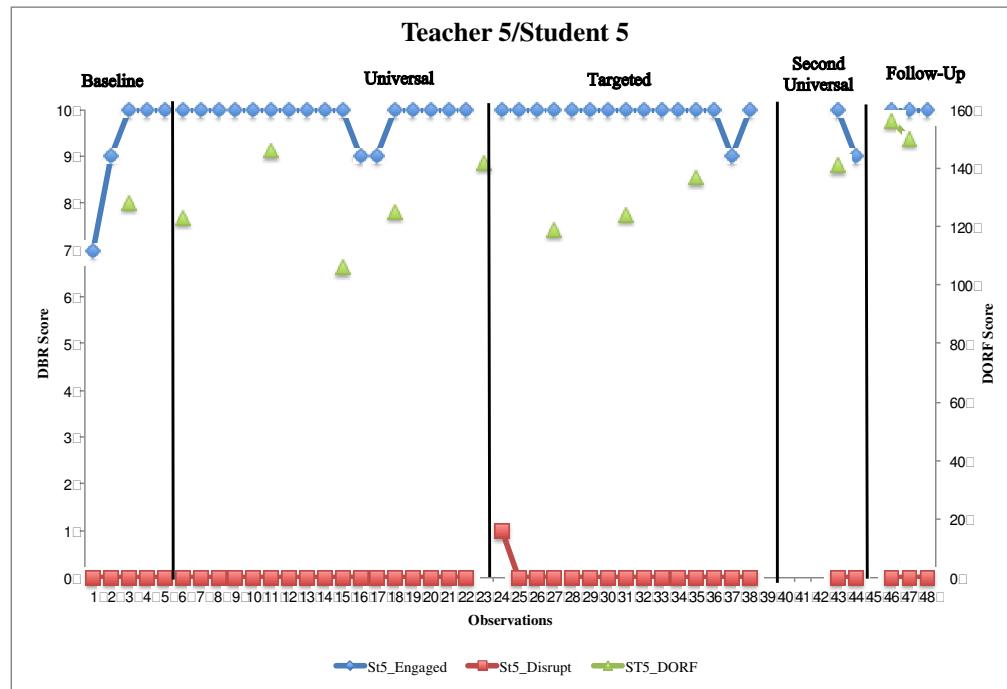
Teacher 5/Student 5 DBR & DORF Data

Figure 37.

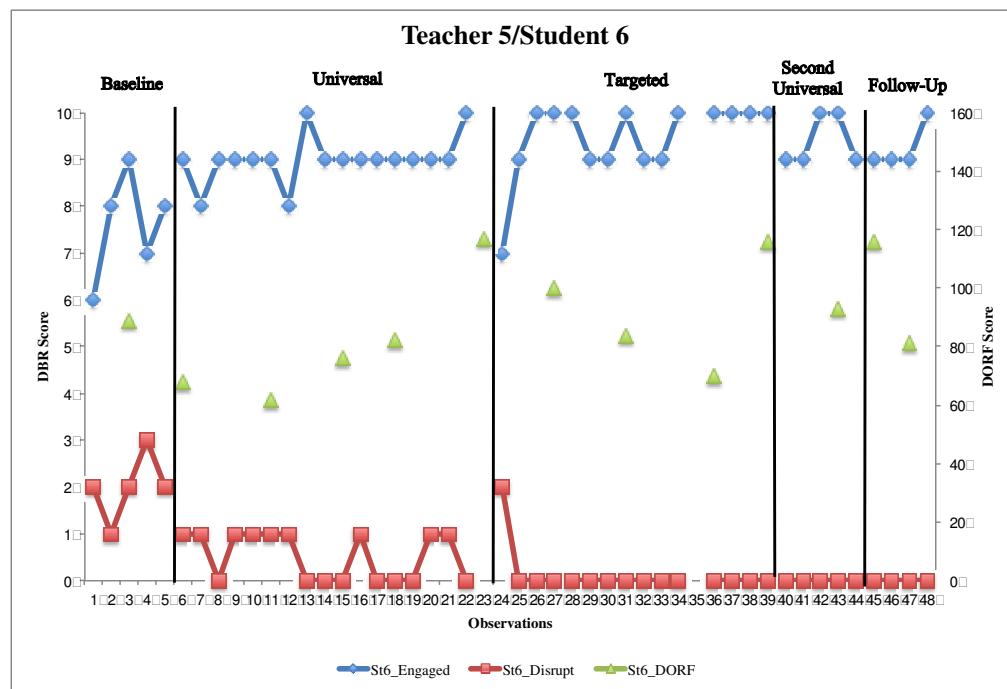
Teacher 5/Student 6 DBR & DORF Data

Table 16

Teacher 5 Student-level Means and Ranges

Phase	Variable	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Baseline							
Academic Engagement							
	M	6.60	7.00	7.60	9.75	9.20	7.60
	Min	4.00	6.00	5.00	9.00	7.00	6.00
	Max	9.00	8.00	10.00	10.00	10.00	9.00
Disruptive							
	M	1.80	3.00	0.80	0.00	0.00	2.00
	Min	0.00	2.00	0.00	0.00	0.00	1.00
	Max	3.00	4.00	2.00	0.00	0.00	3.00
DORF							
	M	101.00	51.00	66.00	107.00	128.00	89.00
	Min.						
	Max						
Universal							
Academic Engagement							
	M	9.00	9.24	9.00	9.94	9.90	8.73
	Min	4.00	8.00	5.00	9.00	9.00	7.00
	Max	10.00	10.00	10.00	10.00	10.00	10.00
Disruptive							
	M	1.15	0.86	0.52	0.00	0.05	0.52
	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	6.00	3.00	2.00	0.00	1.00	2.00
DORF							
	M	97.83	88.83	81.50	123.20	126.83	84.17

	Min.	67.00	77.00	68.00	109.00	106.00	62.00
	Max	117.00	104.00	93.00	133.00	146.00	117.00
Targeted							
	Academic Engagement						
	M	8.92	9.00	9.50	10.00	9.91	9.64
	Min	8.00	7.00	9.00	10.00	9.00	9.00
	Max	10.00	10.00	10.00	10.00	10.00	10.00
	Disruptive						
	M	0.67	0.92	0.00	0.00	0.00	0.00
	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	3.00	3.00	0.00	0.00	0.00	0.00
	DORF						
	M	94.67	66.67	56.00	97.67	130.50	90.00
	Min.	72.00	52.00	51.00	83.00	124.00	70.00
	Max	109.00	82.00	63.00	111.00	137.00	116.00
2nd Universal							
	Academic Engagement						
	M	8.80	8.60	9.00	10.00	9.50	9.40
	Min	8.00	8.00	8.00	10.00	9.00	9.00
	Max	9.00	9.00	10.00	10.00	10.00	10.00
	Disruptive						
	M	0.60	0.60	0.25	0.00	0.00	0.00
	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	1.00	1.00	1.00	0.00	0.00	0.00
	DORF						
	M	111.00	62.00	57.00	107.00	141.00	93.00
	Min.	111.00	62.00	57.00	107.00	141.00	93.00
	Max	111.00	62.00	57.00	107.00	141.00	93.00
Follow-Up							

Academic Engagement						
	M	8.75	9.00	9.50	10.00	10.00
	Min	8.00	9.00	8.00	10.00	10.00
	Max	10.00	9.00	10.00	10.00	10.00
Disruptive						
	M	1.25	0.00	0.00	0.00	0.00
	Min	0.00	0.00	0.00	0.00	0.00
	Max	2.00	0.00	0.00	0.00	0.00
DORF						
	M	118.00	85.00	95.50	131.00	153.00
	Min.	87.00	79.00	95.00	121.00	150.00
	Max	149.00	91.00	96.00	141.00	156.00

The student data in Teacher 5's class followed a similar pattern to the students in the classes of the other four teachers. During baseline the three moderate/high-risk students demonstrated highly variable data with respect to academic engagement and disruption. During the first universal phase these data continued to be variable, but in the cases of Student 1 and Student 2 disruptions began to decrease and academic engagement began to increase. The data for Student 3 was less clear with more overlap between the baseline and universal phases. During the targeted intervention phase student three demonstrated the lowest levels of disruptive behavior and the highest levels of academic engagement. For Student 1 and Student 2, high overlap with the data in the universal phase did not indicate a change. All three moderate/high-risk students continued this data pattern during the second universal phase (once self-management and intermittent performance feedback were removed). During the follow-up phase Teacher 5 rated all students as maintaining high levels of engagement and low levels of disruption.

The data trajectory for the three low-risk students was similar to that of the students in the classrooms of Teachers 1, 2, 3, and 4. During baseline low-risk peers exhibited relatively high levels of academic engagement and low levels of disruption. During the first universal phase these levels stayed consistently appropriate (i.e., high academic engagement and/or low disruption) or demonstrated a slight positive change (i.e., slightly higher academic engagement and slightly lower disruption). When targeted intervention was implemented, all low-risk students either remained consistent with their appropriate behavior or demonstrated their lowest levels of disruption and highest levels of academic engagement. This data pattern continued into the second universal phase and the follow-up phase. As with the students of Teachers 1, 2, 3,

and 4 the DORF data for all six students within Teacher 5's classroom did not demonstrate change across study conditions.

Overall, the pattern of data for the students in Teacher 5's classroom was similar to the pattern of data for students in the other teachers' classrooms. Data indicated that when teachers increased their presentation rates of TD-OTRs, teacher ratings also indicated positive effects (i.e., increased academic engagement and decreased disruption) for the behavior of moderate/high-risk students and consistent or similar but less dramatic effects were noted for comparison low-risk peers. DORF data did not show change across study conditions for any of the six students.

Summary of social behavioral results for moderate/high-risk students and low-risk students (Teachers 1-4). Table 17 presents a summary of mean teacher ratings of social behavioral (i.e., academic engagement and disruptive) data for all moderate/high-risk and low-risk students across Teacher 1, Teacher 2, Teacher 3, and Teacher 4; and Table 18 presents results for Teacher 5. DORF data are not presented as visual analysis did not reveal a difference across phases and students in the study ranged from first grade to fifth grade on their DORF assessment levels so mean data were not comparable.

Table 17

Low and Moderate/High-Risk Student-level Means (Teachers 1-4)

Social Behavior	Risk Status	Baseline		Universal PD		No Self-Monitoring	
		M	Range	M	Range	M	Range
Academic Engagement	Moderate/High Risk	7.04	1 - 10	8.44	4 - 10	9.25	7 - 10
	Low-Risk	9.16	2 - 10	9.67	7 - 10	9.91	7 - 10
Disruptive	Moderate/High Risk	2.32	0 - 9	1.26	0 - 8	0.4	0 - 3
	Low-Risk	1.06	0 - 10	0.09	0 - 2	0.05	0 - 1

Table 18

Low and Moderate/High Risk Student-level Means (Teacher 5)

Social Behavior	Risk Status	Baseline		Universal PD		Targeted PD		2 nd Universal		Follow-up		
		M	Range	M	Range	M	Range	M	Range	M	Range	
Academic Engagement												
Moderate/High Risk												
Disruptive	Low-Risk	7.07	4.00-10.00	9.08	4.00-10.00	9.14	7.00-10.00	8.80	8.00-10.00	9.08	8.00-10.00	
		8.85	6.00-10.00	9.62	7.00-10.00	9.85	9.00-10.00	9.63	9.00-10.00	9.75	9.00-10.00	
Moderate/High Risk												
	Low-Risk	1.87	0.00-4.00	0.84	0.00-6.00	0.53	0.00-3.00	0.48	0.00-1.00	0.42	0.00-2.00	
		0.67	0.00-3.00	0.19	0.00-2.00	0.00	0.00-0.00	0.00	0.00-0.00	0.00	0.00-0.00	

During baseline, moderate/high-risk students exhibited mean levels of academic engagement of 7.04 (a rating indicating approximately 70.4% of the time) with a range from 1.00 – 10.00 (or a rating indicating approximately 10% - 100%). Low-risk peers demonstrated mean levels of academic engagement of 9.61 (i.e., 96.1%) with a range from 2.00 – 10.00 (i.e., a rating indicating approximately 20%-100%). Both sets of students (i.e., moderate/high-risk and low-risk) had relatively high mean academic engagement levels with a similarly large range between the minimum and maximum levels. However, low-risk comparison peers ratings demonstrated higher levels of academic engagement than their moderate/high-risk peers. A similar pattern was noted during baseline for disruptive behavior. Moderate/high-risk students were rated as exhibiting mean levels of disruption of 2.32 (or 23.2%) with a range from 0.00-9.00. Comparison low-risk peers were rated as demonstrating a mean level of disruption of 1.06 (a rating indicating approximately 10.6%) with a range from 0.00-10.00. Again, although levels of disruptive behavior were lower for low-risk comparison peers, both groups exhibited a large range of levels.

During the universal phase, after teachers increased their mean rates of presentation of TD-OTRs to criterion, ratings of academic engagement increased for the moderate/high-risk ($M = 8.44$, range = 4.00-10.00) and low-risk ($M = 9.67$, range = 7.00-10.00) students. Further, the range for both groups of students decreased. Again, a similar pattern was noted for the disruptive behavior of moderate/high-risk ($M = 1.26$, range = 0.00-9.00) and low-risk ($M = 1.06$, range = 0.00-2.00) students. For ratings of disruptive behavior during this phase a slight reduction in range was evidenced for moderate/high-risk students and a more significant reduction in range appeared for low-risk peers (in comparison to baseline values).

During the final phase (A_M ; the return to baseline conditions or no-self-monitoring phase) teachers continued to display mean rates of TD-OTRs meeting criterion. Mean rates of academic engagement for moderate/high-risk students ($M = 9.25$, range = 7.00-10.00) and low-risk ($M = 9.91$, range = 7.00-10.00) student continued to increase. Similarly, mean rates of disruption were at their lowest point during the study for both moderate/high-risk ($M = 0.40$, range = 0.00-3.00) and low-risk ($M = 0.05$, range = 0.00-1.00) students with the smallest ranges between student scores across study phases.

Again, as stated at the beginning of the section describing student results, it is important to interpret these results with caution because (a) a functional relation was not established for teacher behavior and (b) student behavioral data (secondary dependent variable) can not be causally linked with intervention. However, an examination of the mean student data summarized across the moderate/high-risk student participants and the low-risk comparison peers suggests that student behavior improved (i.e., academic engagement increased and disruptive behavior decreased) for both groups of students when teacher rates of TD-OTR presentation reached the criterion for success. Further in conjunction with the removal of self-monitoring, teacher rates of presentation of TD-OTRs sustained and student levels of appropriate behavior reached their highest levels yet with the least amount of variability regardless of risk status.

Results of Social Validity

To evaluate the acceptability of using universal and targeted PD within an MTSS framework to support teachers' increased rates of presentation of TD-OTRs each participating teacher was asked to complete a modified Intervention Rating Profile-15 (IRP-15; see Appendix D for the original IRP-15 by Martens et al., 1985 and the modified IRP-15) for each level of

intervention they participated in. All teachers received the universal PD, so all teachers completed the modified IRP-15 for universal PD. Only Teacher 5 received targeted PD, and her answers are presented separately. Each participant was asked to complete the universal (and in the case of Teacher 5 targeted) survey after all direct observations (including follow-up probes) and final meetings had been completed. The survey included 16 questions that the participants answered on a scale ranging from 1 (strongly disagree) to 6 (strongly agree). Table 19 presents the results of the universal social validity measure for Teachers 1-4, Table 20 presents Teacher 5's answers, and Table 21 presents the results of the targeted social validity measure for Teacher 5.

Table 19

Social Validity Ratings by Teachers 1, 2, 3, and 4 for Universal PD (Means & Ranges)

Survey Item	Mean	Range
1. This would be an acceptable intervention to address the PD needs of teachers.	5.5	5-6
2. Most teachers would find this intervention appropriate for addressing classroom management PD needs including the one described above.	4.5	3-6
3. This investigation should prove effective in changing the teachers' rate of OTR presentation.	5.75	5-6
4. I would suggest the use of this intervention to the other teachers.	6	6-6
5. The classroom's behavior problems are severe enough to warrant use of this intervention.	4	2-6
6. Most teachers would find this intervention suitable for meeting classroom management PD needs as described.	4.5	3-6
7. I would be willing to use this intervention again in the school/classroom setting.	6	6-6
8. This intervention would not result in negative side-effects for the teacher.	5.5	5-6

9. This intervention would be appropriate for a variety of teachers.	6	6-6
10. The intervention is consistent with those I have used in school/classroom settings.	3.5	2-5
11. The intervention was a fair way to handle the classroom management training need(s) described.	5.75	5-6
12. This intervention is reasonable for the classroom management problem described.	6	6-6
13. I like the procedures used in this intervention.	5.5	5-6
14. This intervention was a good way to handle the need for classroom management PD.	5.75	5-6
15. Overall, this intervention would be beneficial for the teacher.	5.75	5-6
* Changes in teacher behavior (i.e., increased OTR presentation) positively impacted student behavior	5.75	5-6

Table 20

Social Validity Ratings by Teachers 5 for Universal PD (Actual Scores)

Survey Item	Score
1. This would be an acceptable intervention to address the PD needs of teachers.	6
2. Most teachers would find this intervention appropriate for addressing classroom management PD needs including the one described above.	6
3. This investigation should prove effective in changing the teachers' rate of OTR presentation.	5
4. I would suggest the use of this intervention to the other teachers.	6
5. The classroom's behavior problems are severe enough to warrant use of this intervention.	4
6. Most teachers would find this intervention suitable for meeting classroom management PD needs as described.	5
7. I would be willing to use this intervention again in the	6

school/classroom setting.

8. This intervention would not result in negative side-effects for the teacher.	6
9. This intervention would be appropriate for a variety of teachers.	6
10. The intervention is consistent with those I have used in school/classroom settings.	3
11. The intervention was a fair way to handle the classroom management training need(s) described.	6
12. This intervention is reasonable for the classroom management problem described.	6
13. I like the procedures used in this intervention.	6
14. This intervention was a good way to handle the need for classroom management PD.	6
15. Overall, this intervention would be beneficial for the teacher.	6
* Changes in teacher behavior (i.e., increased OTR presentation) positively impacted student behavior	5

Table 21

Social Validity Ratings by Teacher5 for Targeted PD (Actual Scores)

Survey Item	Score
1. This would be an acceptable intervention to address the PD needs of teachers.	6
2. Most teachers would find this intervention appropriate for addressing classroom management PD needs including the one described above.	6
3. This investigation should prove effective in changing the teachers' rate of OTR presentation.	6
4. I would suggest the use of this intervention to the other teachers.	6
5. The classroom's behavior problems are severe enough to warrant use of this intervention.	4

6. Most teachers would find this intervention suitable for meeting classroom management PD needs as described.	6
7. I would be willing to use this intervention again in the school/classroom setting.	6
8. This intervention would not result in negative side-effects for the teacher.	6
9. This intervention would be appropriate for a variety of teachers.	6
10. The intervention is consistent with those I have used in school/classroom settings.	3
11. The intervention was a fair way to handle the classroom management training need(s) described.	6
12. This intervention is reasonable for the classroom management problem described.	6
13. I like the procedures used in this intervention.	6
14. This intervention was a good way to handle the need for classroom management PD.	6
15. Overall, this intervention would be beneficial for the teacher.	6
* Changes in teacher behavior (i.e., increased OTR presentation) positively impacted student behavior	6

Overall, results from the social validity measure for the universal and targeted interventions were very positive indicating that all participants were satisfied with the intervention(s) he/she received. Across both universal and targeted interventions, item 10 (i.e., “The intervention is consistent with those I have used in school/classroom settings.”) scored the lowest (Teacher’s 1-4 $M = 3.5$, range 2-5; Teacher 5 score = 3 on both universal and targeted assessments). Anecdotally, teachers reported that their typical PD consisted of in-service workshops/presentations where information was delivered to them in a large group setting once

and they were then expected to return to the classroom and apply that learning without any follow-up or performance feedback. Thus, the structure of both the universal and targeted PD (shorter training with opportunities for practice and performance feedback in the form of self-monitoring and for Teacher 5 intermittent emailed feedback) did vary from PD interventions typically/Previously used by teachers. Teacher's 1-4 and Teacher 5 scored item five (i.e., "The classroom's behavior problems are severe enough to warrant use of this intervention.") the second lowest (Teacher's 1-4 $M = 4$, range 2-6; Teacher 5 score = 4 on both universal and targeted assessments). This scoring is consistent with anecdotal reports from teachers (e.g., Teacher 4 stated during the initial meeting to sign consent for the study that, "I don't have significant classroom management problems.") that classroom behavior was not a significant problem in the school. Additionally, a relatively low score on this item could be expected given the overall high levels of academic engagement and low levels of disruptive behavior exhibited by low-risk students and some of the moderate/high-risk peers within the study.

Overall, with respect to universal PD, Teacher's 1-4 rated the majority of items with a mean score between five and six with a range never exceeding three scale points (with the single exception of item 5 discussed above). Similarly scores issued by Teacher 5 indicated high levels of satisfaction (i.e., most items scored five or six). Participants perceived that universal intervention was acceptable for addressing the PD needs of teachers (Teacher's 1-4, $M = 5.5$; Teacher 5 = 6) and that the intervention was effective at changing teachers' rates of presentation of TD-OTRs (Teacher's 1-4, $M = 5.75$; Teacher 5 = 5). Further, all teachers strongly agreed (all rated a 6) that universal intervention was appropriate for the classroom management problem described (i.e., for increasing teachers' rates of presentation of TD-OTRs), they would suggest using this intervention to other teachers, that they would be willing to use this intervention again

themselves in the future, and that this intervention would be appropriate for a variety of teachers. Teachers 1-4 agreed that they liked the procedures used in this intervention ($M = 5.5$, range 5-6), that it was beneficial for the teacher ($M = 5.75$, range 5-6), and that it was a good and fair way to handle the need for classroom management PD ($M = 5.75$, range 5-6). Teacher 5 strongly agreed (a rating of 6) with all of these statements too. Finally, all teachers agreed that the universal intervention created changes in teacher behavior (i.e., increasing rates of presentation of TD-OTRs) positively impacted students' behavior (Teachers 1-4 $M = 5.75$, range 5-6; Teacher 5 = 5).

Only Teacher 5 completed the targeted PD and subsequently the targeted PD social validity measure. Her scores on this measure echoed all of the positive statements about the effect of the intervention on teacher behavior, the appropriateness of the intervention for providing classroom management PD, and the impact of the change in teacher behavior on student performance. It is of note that Teacher 5 rated three items (i.e., 3, 6, and 16) higher (i.e., 5 instead of 6) on this measure than on the social validity measure for universal PD. Item 3 ("This investigation should prove effective in changing the teachers' rate of OTR presentation."), item 6 ("Most teachers would find this intervention suitable for meeting classroom management PD needs as described."), and the final item ("Changes in teacher behavior (i.e., increased OTR presentation) positively impacted student behavior.") all described areas where Teacher 5 demonstrated more growth or better fit during the targeted intervention phase. Therefore, these higher scores are to be expected because, given targeted PD, Teacher 5 reached her highest rates of TD-OTR presentation, was able to meet the criterion for success, and her students' behavior was the most appropriate/consistent.

Chapter IV

Discussion

Classroom management is a critical component of effective educational practice. Research suggests that many teachers struggle with classroom management and cite classroom management as a primary reason for leaving the teaching profession (Martin et al., 2003). Research also suggests that teachers received little professional development or assistance in classroom management generally, and empirically-supported classroom management strategies specifically (Begeny & Martens, 2006; Markow et al., 2006). As a result, researchers are (a) identifying empirically-supported classroom management strategies, such as teacher-directed opportunities to respond (TD-OTR; Simonsen et al., 2008) and (b) efficient and effective models for delivering professional development in empirically supported classroom management strategies (Myers et al., 2011; Simonsen et al., 2011). One promising approach to effective and efficient professional development is a multi-tiered system of support (MTSS) framework to organize effective PD strategies (Simonsen et al., *in press*).

The current study was originally designed to experimentally test the impact of a targeted professional development (PD) package (i.e., a package that included self-monitoring, self-management, and intermittent performance feedback) on teachers' behavior (i.e., rates of presentation of teacher-directed opportunities to respond; TD-OTRs) and students' academic and social behavior (i.e., academic engagement, disruption, and the DIBLES measure of Oral Reading Fluency; DORF). In this study, I delivered PD to teachers' within a MTSS framework, meaning that I provided universal PD to all participating teachers and then, based on teachers' response to intervention (i.e., if they met the criterion for success an average rate of 3.00 TD-

OTRs presented per minute and/or demonstration of an increasing trend), I introduced targeted PD if applicable.

Although I had intended to stagger implementation of targeted PD across teachers who did not respond to universal PD (multiple-baseline design), as described in Chapter 3, four of the five teachers in this study increased their rates of presentation of TD-OTRs to the criterion for success after receiving universal PD and only one teacher required targeted PD to meet the same criterion. As a result of teachers' response to intervention, I was not able to demonstrate experimental control or document a functional relation. Therefore, this study provides four descriptive ABA case studies examining the impact of universal PD and one ABCB case study examining the impact of targeted PD on teacher and student behavior.

Data collectors recorded teachers' rates of TD-OTR (primary DV) while viewing videotaped segments of teachers' direct phonics instruction across phases. After each observation, teachers assessed student behavior (secondary DVs) using Direct Behavior Rating (DBR) to determine levels of academic engagement and disruptive behavior. On a weekly basis I conducted DORF probes to assess each student's oral reading fluency. This study sought to extend the previous literature base (Haydon et al., 2009; Haydon & Hunter, 2011; Myers et al., 2011; Simonsen et al., 2010; Simonsen et al., 2011, Simonsen et al., in press) by focusing on providing PD supports within an MTSS framework to increase teachers' TD-OTR presentation rate. Further, this project aimed to link changes in teacher behavior with corresponding changes in student behavior and academic performance. The rest of this chapter discusses study results, limitations, and implications.

Discussion of Study Results

This section provides a description of the results of five case studies detailing the impact of providing teachers' with PD within an MTSS framework to increase teachers' rates of TD-OTRs and the corresponding impact of increased rates on students' academic and social behavior. Due to teachers' response to intervention (i.e., four of the five teachers met the criterion for success after receiving universal PD), I was not able to demonstrate experimental or document functional relation. Therefore, results must be interpreted with caution due to the limitations of the case study design.

The results of this study may provide support for the positive effects of providing teachers with high quality PD within an MTSS framework to increase teachers use of empirically supported classwide positive behavior support (CWPBS) practices and specifically increasing teachers' rates of presentation of TD-OTRs (Myers et al., 2011; Simonsen et al., in press). Overall, all but one teacher demonstrated increased rates of TD-OTRs after the introduction of universal intervention. All teachers in the study maintained rates of TD-OTR presentation at or above the criterion for success after the removal of intervention components given the optimal PD condition (i.e., for Teachers 1-4 the removal of self-monitoring after universal PD and for Teacher 5 the removal of self-management, intermittent performance feedback after targeted PD, and eventually self-monitoring).

Research question one. With respect to research question number one (i.e., For teachers that do increase their TD-OTRs to criterion after receiving universal PD, is there a functional relationship between (a) self-monitoring and (b) teacher behavior (i.e., the rate of TD-OTRs)?), data from Teacher 1, 2, 3, and 4 do not support a functional relation between self-monitoring and teachers rates of presentation of TD-OTRs. Despite variability within their data, Teacher 1,

Teacher 2, Teacher 3, and Teacher 4 all demonstrated increases in mean rates of TD-OTRs with the introduction of universal PD that met the criterion for success. Further, these mean increases all sustained despite the withdrawal of self-monitoring. This result suggests that teachers' shifted stimulus control (i.e., contingencies) from one member of a stimulus class (i.e., self-monitoring) to another member of a stimulus class (i.e., the naturally occurring increases in student engagement and learning). Research suggests that when contrived reinforcement (i.e., self-monitoring) is shifted to naturally occurring reinforcement (i.e., increases in student engagement and learning), it is easier to maintain the target behavior (Kallman, Hersen, & O'Toole, 1975).

For three out of the four teachers, PND results support the hypothesis that since the learning that occurred during the universal phase could not be withdrawn along with the removal of self-monitoring, universal PD may be an effective intervention for increasing the TD-OTR rates (Teacher 2 PND baseline to universal PD = 100.00%; Teacher 3 PND baseline to universal PD = 86.67%; Teacher 4 PND baseline to universal PD = 100.00%). For Teacher 1, PND indicated that universal PD may be a questionably effective intervention (PND = 56.25%) but it is important to note that Teacher 1 demonstrated highly variable data during the first part of the universal phase that later showed an increasing trend and more stability (i.e., from observations 18-22). After self-monitoring was withdrawn, Teacher 1 continued to exhibit rates of presentation of TD-OTRs above the criterion of 3.0 TD-OTRs per minute. Thus, these findings suggest that universal PD may be sufficient to increase some teachers' rates of presentation of TD-OTRs and that this behavior may maintain in the absence of self-monitoring.

These findings echo the results of prior research suggesting that didactic training combined with self-monitoring may be an effective method of increasing teachers' use of

evidence-based classroom management practices (Simonsen et al., *in press*; Simonsen, MacSuga, Fallon, & Sugai, 2012). However, as previously stated, due to the lack of experimental control and the threat of history on internal validity (i.e. the specific events occurring between measurement occasions and phases in addition to the experimental variable [Campbell & Stanley, 1966]), it is not possible to assert causality from this study alone and future studies employing experimental designs will be needed to document a functional relation between universal PD and teacher rates of presentation of TD-OTRs.

Research question two. With respect to research question number two (i.e., Is there a functional relationship between (a) teachers' response to targeted PD support (i.e., Tier 2), following didactic training and self-monitoring of TD-OTRs (Tier 1), and (b) teacher behavior (i.e., the rate of TD-OTRs) for teachers whose rate of TD-OTRs was **below** the criterion level (3.00 per min) after Tier 1 training?), data from Teacher 5 does suggest that a meaningful change in behavior occurred following the introduction of targeted PD; however, a functional relation was not documented because there was only one demonstration of effect. During baseline Teacher 5's mean TD-OTR rate was below the criterion for success and a clear decreasing trend was present. After receiving universal PD Teacher 5's data demonstrated a flat trend and an overall mean that just met the criterion of success. Because of the variability and low TD-OTR rate, I entered Teacher 5 into the targeted phase, resulting in an immediate and sustained level shift in TD-OTR rates. Despite the withdrawal of unique targeted supports (i.e., self-management and intermittent performance feedback) in the second universal phase, Teacher 5's mean rate of presentation of TD-OTRs did not change significantly and the further withdrawal of self-monitoring during the follow-up phase also demonstrated consistent levels of rates of presentation of TD-OTRs. Visual analysis indicated that universal intervention was not an

effective intervention for Teacher 5, but that targeted PD was an effective intervention. Like Teachers 1, 2, 3, and 4, the withdrawal of self-monitoring did not occasion a return to baseline rates of presentation of TD-OTRs, suggesting that PD provided within an MTSS framework may be an effective and efficient model to increase and sustain desirable rates of presentation of TD-OTRs. These findings fit with prior research suggesting that teachers may need increased levels of support based on their individual performance (i.e., given initial training and self-monitoring how teacher behavior changes or does not change to exhibit desired levels of the target classroom management skill) to meet optimal or empirically suggested levels of performance (Myers, et al., 2011; Simonsen et al., in press; Simonsen et al., 2012).

As stated previously, since the final study designs became ABA_M and ABCB case studies it is not possible to draw conclusions from these data alone as a functional relationship was not documented and thus experimental control was not achieved. Thus, further studies exercising experimental control to document a functional relationship will be needed. However, these five case studies provide descriptive support that PD, when provided within an MTSS framework (universal PD for all, targeted support for some based on data), may positively impact teachers' rates of presentation of TD-OTRs by increasing them to the optimal levels suggested by research and practice (i.e., an average rate of 3-5 TD-OTRs presented per minute). Given the PD that matched their response to intervention, all teachers met the criterion for success (i.e., an average rate of TD-OTR presentation that met or exceeded 3.00 per minute). Further, with the withdrawal of all self-monitoring, self-management, and intermittent performance feedback (i.e., the universal and targeted components that were extraneous to teacher learning and could be withdrawn), teachers continued to maintain average rates of presentation of TD-OTRs between 3-5 per minute. These results suggest that it is important to consider the needs of all teachers

receiving intervention. As the MTSS logic indicates, teacher PD should be based on data and provide support as indicated by teacher response to intervention. Study results lend support for further research to determine if a functional relation exists between tiered models of intervention (i.e., universal and targeted PD) and teacher behavior change within the context of an MTSS continuum of supports.

Research question three. As stated in Chapter 3, it is important to interpret student results (like teacher results) with caution because a functional relation between conditions was not established and student behavioral data cannot be causally linked with intervention. However, visual analysis of student data suggested that a change in teacher behavior (i.e., increased rates of presentation of TD-OTRs) may have a positive impact on students' social behavior (i.e., academic engagement and disruption) during teacher directed phonics instruction.

Despite the lack of experimental control, overall, results suggest that moderate/high-risk students demonstrated their highest levels of academic engagement and lowest levels of disruption during phases when teachers presented optimal levels of TD-OTRs (i.e., when teachers were meeting or exceeding 3.00 TD-OTRs presented per minute). Further, low-risk comparison peers either maintained appropriate levels of academic engagement and disruption across all phases (i.e., approximately 100% of time spent academically engaged and 0% of time spent engaging in disruptive behavior) or demonstrated similar (yet less dramatic) social behavior changes matching moderate/high-risk peers (i.e., increases in academic engagement and decreases in disruption in conjunction with optimal rates of teachers' presentation of TD-OTRs). It is important to note that due to the high levels of students' academic engagement and low levels of disruption (especially in the case of the low-risk comparison peers) during baseline, floor and ceiling effects should be considered when interpreting these data. Ceiling and floor

effects refer to the upper and lower limits of a measure and that change cannot be demonstrated because of the limits (Kazdin, 2011).

However, these findings mirror those of prior research that document positive impacts on students' social behavioral achievement coinciding with the increase in rates of presentation of TD-OTRs (Blood, 2010; Carnine, 1976; Haydon & Hunter, 2011; Haydon, Conroy, Scott, Sindelar, Barbutta, & Orlando, 2010; Kamps, Dugan, Leonard, & Daoust, 1994; Lambert, Cartledge, Heward, & Lo, 2006; McKenzie & Henry, 1979; Sutherland, Alder, & Gunter, 2003; Sutherland & Wehby, 2001). An added component of this study was a standardized measure of reading. DORF results for all students across all study phases demonstrated a consistent level of oral reading fluency that maintained throughout the study indicating no relationship between increases in teachers' rates of presentation of TD-OTRs and academic achievement as measured by the DORF. These findings may be due to two factors: (a) the DORF was a distal measure of intervention effectiveness and (b) the DORF is designed to measure the increases in oral reading fluency within a grade level across the school year, while this intervention was conducted over only 16-22 days of instruction.

Although no effect was demonstrated, four teachers (i.e., Teacher 1, Teacher 2, Teacher 4, and Teacher 5) anecdotally noted that students' weekly spelling test scores (i.e., the content that was directly linked to the teacher directed phonics instruction during the daily observation period) increased in conjunction with increased presentation of TD-OTRs. These teacher reported increases were not documented in this study, but do align with prior research (Davis & O'Niel, 2004; Gardner, Heward, & Grossi, 1994; Haydon & Hunter, 2011; Kamps et al., 1994; McKenzie & Henry, 1979; Narayan, Heward, & Gardner, 1990; Sindelar, Bursuck, & Halle, 1986; Sterling, Barbutta, Heward, & Heron, 1997; Sutherland et al., 2003). This finding suggests

that for interventions of short duration or those conducted within single-subject research contexts, measures more closely aligned to the content presented in conjunction with increased TD-OTRs may be more sensitive to changes in students' academic achievement and thus may provide a more accurate depiction of student outcomes.

Study results demonstrated that, overall, students exhibited the highest levels of academic engagement and lowest levels of disruptive behavior in conjunction with their teachers' rate of presentation of TD-OTRs that met or exceeded the criterion for success (i.e., an average of 3.00 per minute). As stated in the introduction, to date, no studies have conclusively examined differential effects of specific rates of TD-OTRs or the possibility of ceiling effects (i.e., saturation), particularly within the context of class-wide delivery. In their 1987 report, the CEC recommended rates of TD-OTRs for best practice for teachers of students with high incidence disabilities. These guidelines (among the first and only published recommendations for the desired rate of TD-OTRs) suggested rates of 4-6 responses per minute during the instruction of new material (CEC, 1987). However, it is unclear from these guidelines if the recommendations were based on direct observation of teachers or what the optimal rate would be in classrooms containing a mixture of general and special education students. Therefore, this rate may be too high for teachers providing other types of direct instruction class-wide.

Results of studies reviewed in preparation for this dissertation study (MacSuga-Gage & Simonsen, under review) identified TD-OTR rates during direct instruction of basic facts (e.g., the presentation of flash cards with sight words) during optimum conditions (i.e., the response condition associated with positive student outcomes) ranged from approximately 3-5 TD-OTRs per minute. These rates fall below the guidelines set forth by the CEC (1987); however, different populations of students (i.e., students without disabilities or students with other types of

disabilities) participated in these studies. Since positive impacts were noted for students receiving similar instruction within these studies, it may be that slightly lower rates than suggested by the CEC are still optimal. Rates of teacher presentation of TD-OTRs in this study during optimal PD conditions (i.e., those conditions in which teachers met the criterion for success and students demonstrated increased academic engagement and decreased disruption) matched those demonstrated in previous studies (e.g., Haydon & Hunter, 2011; Sutherland et al., 2003) ranging from a mean of 3.31 to 4.72, range 1.67-8.27.

In summary, results of student social behavior data align with and add to prior research (e.g., Blood, 2010; Carnine, 1976; Haydon & Hunter, 2011; McKenzie & Henry, 1979; Sutherland, Alder, & Gunter, 2003; Sutherland & Wehby, 2001) suggesting that increasing teachers' presentation of TD-OTRs may result in improvements in students' social behavioral outcomes. Specifically, results of this study demonstrate the benefits, for both moderate/high-risk students and typical, of increasing teachers' rates of presentation of TD-OTRs on students' levels of academic engagement and disruption. These findings may suggest that introducing evidence based CWPBS practices (such as increased rates of presentation of TD-OTRs) with fidelity may increase social behavioral achievement for students with and without challenging behaviors. However, due to the lack of experimental control that did not allow for the demonstration of a functional relation, it is important that these findings be interpreted with caution. Further research to establish experimental control, replicate, and extend these findings is necessary to generate stronger evidence supporting the link between teacher behavior and student outcomes but these initial findings may suggest potential links. Further, although teachers' anecdotal reports support increases in students' academic achievement may have

occurred in conjunction with increases in teachers' rates of presentation of TD-OTRs, findings of this study did not support increases in academic achievement as measured by the DORF.

Social Validity. Overall, teachers indicated high levels of satisfaction with both the universal and targeted PD based on the results of the adapted Intervention Rating Profile-15s (IRP-15). This is consistent with previous interventions examining the impact of increasing teachers' rates of presentation of TD-OTRs on student outcomes which found that both teachers and students reported perceptions of increased student achievement in conjunction with increases in TD-OTR rates (Davis & O'Neil, 2004; Haydon & Hunter, 2011; Haydon et al., 2010; Kamps et al., 1994; Lambert et al., 2006; Narayan et al., 1990). Anecdotally, Teacher 5 stated that she saw a big difference in the moderate/high-risk students' behavior when she presented more frequent TD-OTRs. She further noted how much more on-task and engaged these students seemed when they each had a response opportunity (i.e., during unison or group responses such as writing an answer on a white board or providing a gestural response like thumbs-up/thumbs-down to indicate agreement). Teacher 2 stated that since implementing higher rates of TD-OTRs during direct phonics instruction, spelling scores on class-wide curriculum based assessments had increased substantially.

Limitations

Results from this study should be interpreted with regard to limitations related to setting and participants, study design (i.e., lack of experimental control and the subsequent case study design that resulted from teachers' response to intervention), the status of student variables as secondary dependent variables, and data collection methods. Each will be described in turn.

Setting and Participants. The setting and nominated participants for this study should be considered a limitation for multiple reasons. First, teachers self-nominated for study

participation and thus varied in respect to prior classroom management education and experience. Self-nomination was also a limitation because only teachers interested in the intervention or interested in receiving classroom management training participated and, as such, may be systematically different from other teachers. However, to control for this variation, all teachers participating in the study received the same universal PD (i.e., didactic training coupled with self-monitoring) at the same time. Second, because the teacher participants self-nominated, it is possible that they responded differently or achieved greater positive outcomes than their colleagues who opted not to participate in the study but may have had greater need (i.e., lower rates of presentation of TD-OTRs).

Third, this study included reinforcement that would not typically be available to teachers in a traditional PD experience. All participants received a \$50 gift card for participation, and I provided training plus data summary, which was not linked to school-based or administrator performance feedback/evaluation (i.e., I provided teachers with instruction in what TD-OTRs were and how to increase them and conducted final meetings during which time teachers were able to view their results without fear of ramifications to employment). Fourth, the particular school within the district where this study was conducted was the wealthiest school in a high SES district noted for performing well on statewide measures of school excellence (e.g., statewide standardized measures of academic achievement). Therefore, teachers in this setting had access to ideal materials, ample planning time (in excess of one hour per day), frequent high-quality professional development (with respect to curriculum and School-wide Positive Behavior Interventions and Supports; SWPBIS), small class sizes (under 23 students per classroom), related services support (e.g., co-teaching with special education teachers), and complete technology resources (i.e., all teachers possessed a desktop computer with internet access, a

printer, an interactive overhead cart that included DVD capabilities, Smartboards, access to laptops for all students in the class to used, and most had individual school-provided iPads plus a technology professional was on-site to assist teachers three days per week). Given the wealth of resources available to teachers within this setting and demographic characteristics of the teachers, it may be difficult to generalize the results of this dissertation to other settings.

Finally, the majority of moderate/high-risk and low-risk students demonstrated high levels of academic achievement (i.e., 20 out of 30 students scored proficient on the DORF at baseline and many of those students demonstrated oral reading fluency levels more than one grade level above their class assignment). Therefore, it is possible that the TD-OTR intervention was not warranted with respect to students' academic achievement because students were already achieving so highly regardless of risk status. Due to the limitations described above, any conclusions are limited to the specific demographics of the participating school and teacher/student participants.

Study Design. Generalization from single-subject research is attained through replication (Horner, 2005); therefore, replication of effects is a necessary component in order to draw conclusions about the impact of interventions. When this study was originally conceived, I aimed to utilize a multiple baseline design single-subject research design to experimentally examine the impact of targeted PD within an MTSS framework for PD on teacher and student behavior. To ensure that all teachers had equal access to classroom management training (since prior experience varied) all teachers were provided with universal PD at the same time as part of the study design. Because four of the five teachers responded to this level of intervention and the universal PD was implemented concurrently, I was not able to demonstrate experimental control and document a functional relationship between universal PD and teachers' rates of presentation

of TD-OTRs. Thus, the positive outcomes documented across a series of four ABA_M case studies and one ABCB case study should be interpreted with caution.

Student Variables as Secondary Dependent Variables. The status of student variables as secondary dependent variables poses another limitation to this study. As stated previously, the reader must interpret student results with caution because due to the limitations of the final case study design and the status of student variables as secondary dependent variables. .

In addition, the interpretation of the lack of impact on academic achievement as measured by the DORF is problematic for two reasons. First, as stated above in the discussion of student results, the timeline of intervention was short once teachers were entered into the optimal intervention condition. Second, the majority of the student participants within the study (20 out of 30) had baseline DORF levels that exceeded their grade level and thus a mismatch between the instructional content presented during teacher directed phonics instruction and the level of academic achievement as measured by the DORF was present.

Data Collection Methods. Finally, data collection methods present further limitations to this study. First, due to a lack of personnel resources, two methods of data collection may have induced observer reactivity. I used video cameras to capture daily observations that observers subsequently coded. Thus, the presence of the video camera in the classroom during teacher directed phonics instruction may have affected teacher and student behaviors during observations. However, to address this potential concern, the video camera was placed in the classroom for 5 days prior to the start of baseline data collection. Another potential cause for observer reactivity was that I conducted bi-weekly DBR inter-observer agreement (IOA) checks by entering the classroom and observing students while the teacher conducted his or her daily phonics lesson. To adjust for this concern, I made efforts to remain as inconspicuous as possible

during these observations and I made sure to clearly articulate to teachers that I was not observing their behavior during my observations to minimize the affect on teacher behavior. To counteract the effect of my presence on student behavior, at the start of the study I introduced myself to all students and informed them that at times I would come into the classroom to learn about teaching and to take notes.

Second, all student behavior data were based on ratings performed by the student's teacher, and IOA data were conducted by an observer who was not blind to study purpose or conditions. Thus, ratings may have been affected by bias. However, all teachers sucessfully completed the online DBR training module

(<http://www.directbehaviorratings.com/cms/index.php/library/online>) as evidenced by the certificates of completion they submitted to me. Successful completion of the module requires that participants demonstrate fluency in rating objectively defined behaviors (i.e., academic engagement and disruptive behavior) therefore, teachers were trained to be objective despite the fact that they were not blind to study conditions. Also, DBR data was collected daily from teachers thus they never got to see all of the student data collectively until the end of study meetings further reducing the potential impact of the data collection method on teachers' beahvior.

Third, the amount of time/labor to complete the data collection, provide intermittent performance feedback, and to provide targeted PD to individual teachers may limit the feasibility of implementation absent of researcher-support. However, schools allocate resources for the successful implementation of many programs that require coaching/consultation for both behavior and academics such as School-wide Positive Behavior Supports (SWPBS), literacy, and mathematics initiatives. Therefore, if future iterations of this dissertation study document

experimental control (i.e., through the demonstration of a functional relationship) between universal and/or targeted PD and teachers' rates of presentation of TD-OTRs, then subsequent studies can look to the use of school-based implementers as coaches/consultants assisting with PD in an MTSS framework. The data collection and planning tools used in this study are all low-cost or free and are readily available (e.g., the SCOA app, SSRS, DBR, Excel to graph individual performance, the use of Dropbox and email to communicate between teachers and the PD provider). This fits into the goal of applied research because it works toward the identification of a strong model that has the potential for transition to in-vivo settings.

Implications

Despite the significant limitations described above, the results of this dissertation study support further investigation of the impact of universal and targeted PD couched within an MTSS framework to support teachers' use of CWPBS practices (such as increasing presentation rates of TD-OTRs) and the corresponding effect these changes in teacher behavior may have on students' academic and social behavior. Although experimental control was not achieved, case study results suggested that universal PD and targeted PD may result in increases of teachers' rates of presentation of TD-OTRs during teacher directed instruction. Further, results also suggest that moderate/high-risk students and low-risk comparison peers both benefited (although to differing degrees that corresponded with baseline rates of academic engagement and disruption) from increased teacher presentation of TD-OTRs. Thus, results of this dissertation study add to the existing literature base and offer limited implications for policymakers, practice, and future research.

Implications for policymakers. Due to the limited scope of this study and the lack of experimental control it is not possible to make concrete recommendations for policy based on the

results of this dissertation alone. However, it is recommended that policymakers continue to examine the growing base of literature exploring the impacts of teacher PD presented within an MTSS framework on both teacher and student behavior. As this body of research grows, studies should be synthesized and recommendations for policy, based on multiple empirical examples of effect, should be generated. Specifically, alternate forms of PD that do not utilize the ineffective train and hope approach (Stokes & Baer, 1977), but instead incorporate components of the MTSS framework (e.g., didactic skill instruction, self-monitoring, performance feedback) that have demonstrated effects on increasing teacher demonstration of empirically supported classroom management practices (Allan & Forman, 1984; Simonsen et al., in press; Simonsen et al., in preparation; Slider et al., 2006). Overall, any PD approaches recommended and adopted by policymakers should fit with the National Staff Development Council's (NSDC) definition for "high quality" PD by providing a comprehensive, sustained, and intensive (yet feasible) approach to supporting teacher use of a practices that increase student achievement.

Implications for Practice. Findings of this study may have practical implications for teachers educating all students within general and special education classroom settings as well as administrators providing PD to teachers within their buildings and districts. First, results of this study mirror the results of prior research (e.g., Blood, 2010; Carnine, 1976; Haydon & Hunter, 2011; McKenzie & Henry, 1979; Sutherland, Alder, & Gunter, 2003; Sutherland & Wehby, 2001) demonstrating that increased rates of presentation of TD-OTRs may impact students' social behavioral achievement. Research suggests that by increasing the rate of TD-OTR presentation and varying the modality (i.e., providing unison response opportunities to the whole group that include choral response, gestural response, the use of white boards, etc.), teachers can support student gains regardless of disability status.

Second, results of this study may provide support for providing teachers with PD within an MTSS framework. Study results suggest that teachers have differential responses to PD intervention. Specifically, four out of the five teachers (i.e., 80%) who participated in this study responded to universal PD and one teacher (i.e., 20%) required additional targeted PD to meet the criterion for success (i.e., a presentation rate of TD-OTRs that met or exceeded 3.00 per minute). This proportion of teacher response to intervention matches the tiered logic that underlies the MTSS levels of support (i.e., universal intervention supports approximately 80%, targeted intervention approximately 15%, and tertiary intervention approximately 5%). Therefore, recommendations for providing teachers with PD are based on those suggested by Simonsen et al. (in press) but also reflect the results of the current dissertation study:

- a) Provide universal training to all teachers in specific classroom management practices (e.g., increasing rates of presentation of TD-OTRs).
- b) Create and implement a data-based system to determine teacher levels of performance of classroom management skills (post universal training) and provide additional support based on teachers response to universal PD.
- c) Support identified teachers in need of additional PD after universal PD by providing targeted PD that incorporates performance feedback and teacher accountability for behavior (e.g., through self-monitoring data that informs intermittent performance feedback provided by an outside observer). If necessary (as indicated by data) provide additional individualized supports that include 1:1 coaching or consultation (e.g., Briere et al., under review; MacSuga & Simonsen, 2011).
- d) Continue to monitor teachers' classroom management to adjust (i.e., intensify or fade) supports.

- e) Given the great variation that exists in teacher preparation programs (Freeman et al., under review) and in-service PD (Wei et al., 2009; Wei et al., 2010), develop a system to ensure that classroom management instruction is provided to new staff members as part of new staff or new teacher mentorship/orientation.

Implications for Future Research. As detailed in Chapter 1, a recent systematic review of the literature examining the impact of increasing rates of presentation of TD-OTRs on student outcomes yielded only 15 experimental studies (MacSuga-Gage & Simonsen, under review). None of these studies focused on the implications of providing teachers with PD within a MTSS framework to increase their rates of presentation of TD-OTRs. Thus, the current dissertation study adds to the present research base by providing five descriptive case studies that examine the impact of increasing teachers' rates of presentation of TD-OTRs within an MTSS framework on teacher and student behavior.

The first implication of this study is to replicate study procedures (i.e., MTSS framework for PD in TD-OTRs) with other groups of teachers and students while demonstrating experimental control over universal and targeted PD. This study was based on and aimed to extend prior research focused on similar and overlapping classroom management strategies (Briere et al., under review; Haydon et al., 2009; Haydon & Williams, 2011; MacSuga & Simonsen, 2011; Myers et al., 2011; Simonsen et al., 2011; Simonsen et al., 2010). Specifically, this study originally sought to demonstrate experimental control over the targeted intervention phase of teacher PD. Unlike prior studies, this study provided a universal PD as part of the baseline procedures and due to teachers' response to this intervention, experimental control was not established and effects were not replicated. Future studies should use experimental designs, both single-subject and group designs, to test specific intervention components (i.e. universal and

targeted supports) and the overall effectiveness of the MTSS model. Additionally, due to the lack of demonstration of academic achievement on the DORF, it is recommended that alternate study designs explore ways to collect longitudinal data on more distal measures of student performance (e.g., DORF) as well as proximal measures of student performance directly linked to the content provided during the teacher directed instruction period during which TD-OTRs are targeted for increase (e.g., weekly spelling quizzes).

Second, once other investigations replicate the findings of this study while exercising experimental control, future studies should replicate effects of increasing rates of teacher presentation of TD-OTRs across different populations, settings, and types of academic instruction (e.g., math). For example, to date, only three studies have examined the impact of increasing TD-OTRs on students within middle and high school settings (Blood, 2010; Davis & O’Neil, 2004; Haydon & Hunter, 2011). Further, the unique characteristics of the school setting and participant population in this study (e.g., high SES, access and support for use of technology, ample planning time) may have significantly contributed to the success of teachers within this study. Thus, replicating procedures in alternate settings without the same level of resources and support is essential to determining if the MTSS framework for increasing teachers’ use of CWPBS practices is in fact generalizable and durable.

Given the results of prior research coupled with the results from this dissertation study I make the following recommendations for future research:

- a) Replicate findings of the current research study utilizing experimental control via the demonstration of a functional relationship
- b) Consider alternate methods for assessing academic achievement that are more closely tied to the content taught during the period of teacher directed instruction

targeted for increasing rates of presentation of TD-OTRs (e.g., teacher or researcher created curriculum based measures such as quizzes).

- c) Once findings from the dissertation study have been shown to be replicable, conduct multiple iterations of the study that examine the impact of the same procedures on different populations (e.g., low SES), settings (e.g., settings without resources), and types of academic instruction (e.g., math).

Conclusions

As stated in the introduction, effective teaching is a complex skill set. In addition to skillfully delivering academic instruction, effective teachers must engage in empirically supported class-wide classroom management strategies (Conroy et al., 2008; MacSuga-Gage et al., in press; Simonsen, et al., 2008). Unfortunately, in-service teachers receive little PD and support in adopting and implementing evidence-based classroom management strategies (Wei et al., 2010) and the traditional PD models show little to no evidence of success. Together, our inability to bridge the research to practice gap and provide high-quality, effective PD keeps good teachers from implementing what we know works in classroom management. In this dissertation study, I aimed to explore the impact of targeted PD (given the presentation of universal PD) on teachers' behavior (i.e., teachers' presentation of TD-OTRs) and the commensurate impacts on student outcomes (i.e., student behavior and academic achievement).

Specifically, this study merged prior research on teacher PD (e.g., self-monitoring, self-management, and performance feedback) shown to correlate with increases in teachers' use of classroom management strategies with the CWPBS practice of providing students with increased TD-OTRs. Although experimental control was not achieved due to teachers' response to universal intervention, this study did provide rigorously conducted descriptive case studies

detailing the impact that the implementation of universal and targeted PD may have had on both teacher and student behavior. Therefore, this study adds another step within this line of research by bringing an effective research-based CWPBS practice (i.e., increased rates of teacher presentation of TD-OTRs) to schools through the application of universal and targeted PD support informed by the MTSS framework. Given the appropriate level of PD (i.e., universal PD for four teachers and targeted PD for one teacher), teachers demonstrated mean rates of TD-OTR presentation that exceeded the criterion for success (i.e., 3.00 TD-OTRs per minute) spanning 3.31-4.72 per minute (range 1.67-8.27). Further, student outcomes indicated that when teachers engaged in optimal rates of TD-OTR presentation, moderate/high-risk students and low-risk comparison peers displayed the lowest levels of disruptive behavior and highest levels of academic engagement. Thus, universal and targeted PD supports may be promising practices that could fill the critical gap between ineffective one-time train-and-hope PD and more effective and efficient MTSS models for PD. If future replications of this study with experimental control again demonstrate the results of this dissertation study, then these studies will have the potential to build on and extend prior research by empirically validating both universal and targeted PD within an MTSS framework. The goal of this line of research is to continue to improve the delivery of PD and increase and sustain the use of effective CWPBS practices.

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List of Appendices

Appendix A: Student Risk Screening Scale (SRSS)

Appendix B: Teacher overview of Direct Behavior Rating (DBR)

Appendix C: Graphs of Direct Behavior Rating (DBR) Inter-Observer Agreement (IOA)

Appendix D: Intervention Rating Profile -15 (IRP-15) Original & Adapted Versions

Appendix E: Training Scripts & Fidelity Checklists

Appendix F: Comprehensive Timeline of Study Procedures

Appendix A

Student Risk Screening Scale (SRSS; Drummond, 1994)

District:

School:

Teacher:

Date:

Directions: Each classroom teacher will fill in the names of the students in alphabetical order (use additional sheets of this Scale as needed). Rate all of the students on each behavior using the following scale: 0=Never, 1=Rarely, 2=Occasionally, 3=Frequently. At the bottom of page 2, please summarize the number and percent of students in each risk category.

The total scores range from 0 to 21, forming three risk categories:

(L) Low Risk (0 to 3)

(M) Moderate Risk (4 to 8)

(H) High Risk (9 to 21)

Student Name	Steal	Lie, Cheat, Sneak	Behavior Problem	Peer Rejection	Low Academic Achieve- ment	Negative Attitude	Aggressive Behavior	Total (0-21)	Risk (circle)
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15.									L M H
16.									L M H
17.									L M H
18.									L M H
19.									L M H
20.									L M H
21.									L M H
22.									L M H
23.									L M H
24.									L M H
25.									L M H
26.									L M H
27.									L M H
28.									L M H
29.									L M H
30.									L M H

SRSS Summary (for the classroom)

	Low Risk	Moderate Risk	High Risk
Number of Students			
Percent of Students			

Appendix B



Direct Behavior Rating (DBR): An Overview for TEACHERS

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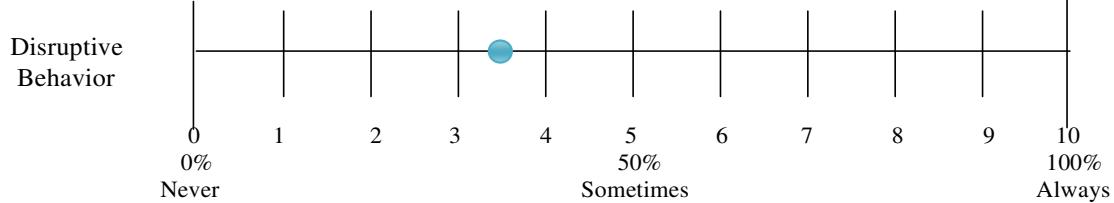
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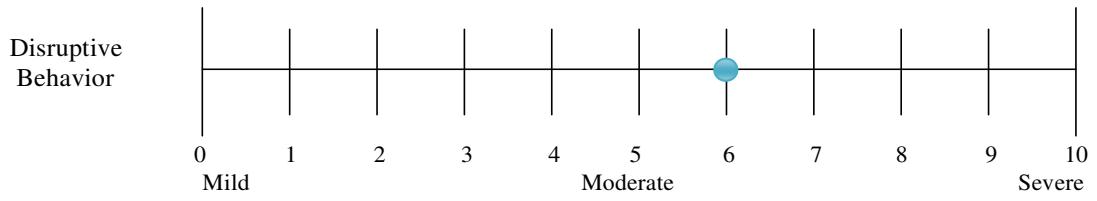
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Example 1: Mrs. Smith is estimating the **percentage** of time that Emily displayed disruptive behavior during math (10-10:44am).



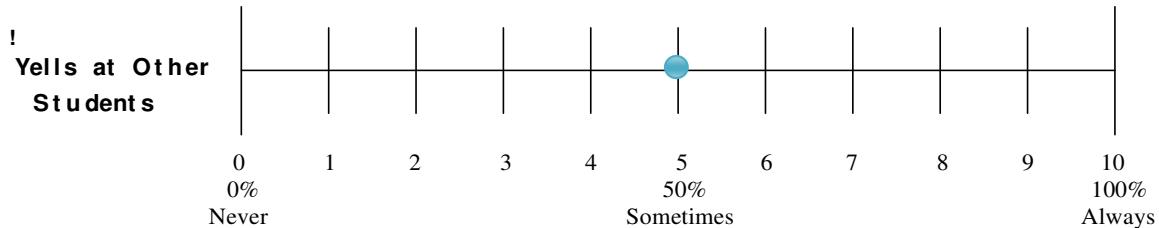
In this example, Emily displayed disruptive behavior 35% of the total observation period.

Example 2: Mr. Green is estimating the **intensity** of disruptive behavior displayed by during science class (1:12-1:50pm).



In this example, John's behavior during science was rated at 6, which represents moderately disruptive.

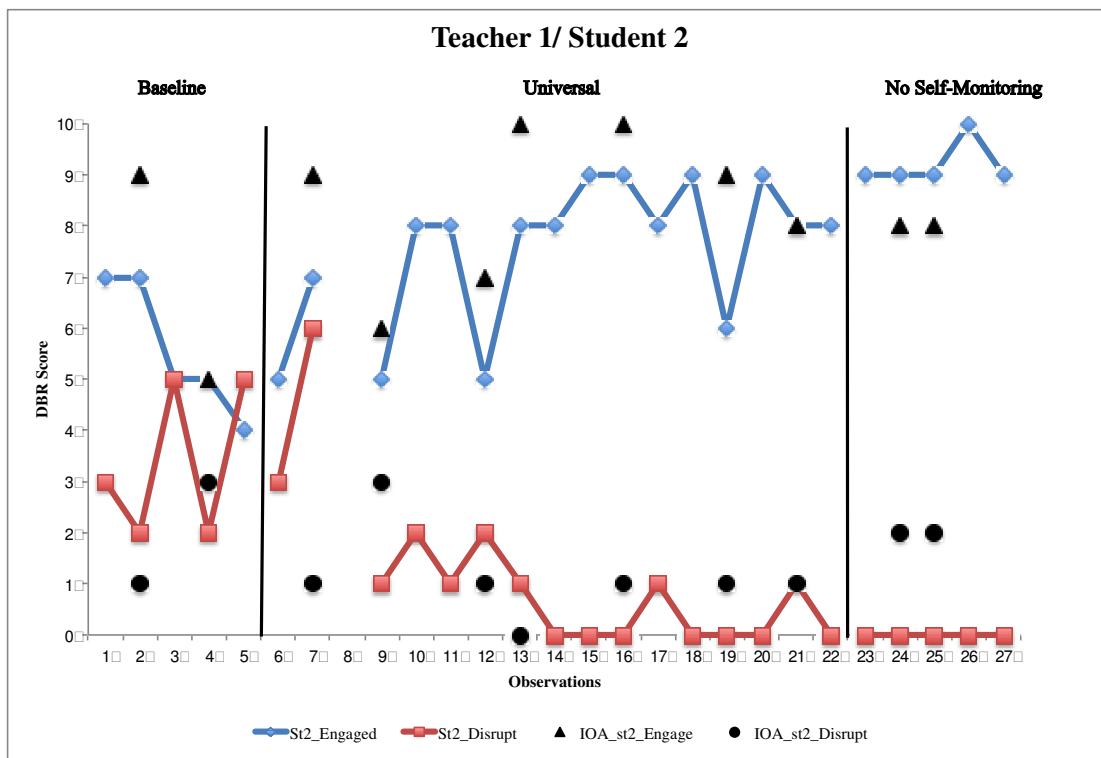
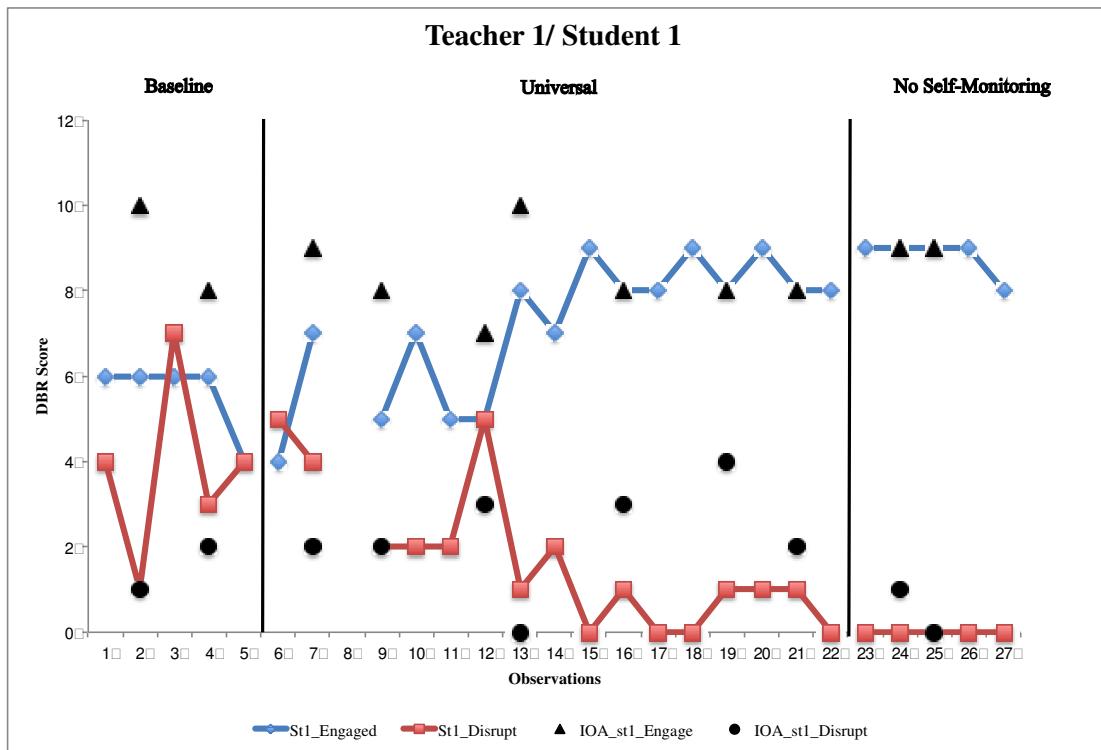
Example 3: Mrs. Wright has chosen to add the behavior **“Yells at Other Students”** and is estimating the **percentage** of time Sam displayed this behavior during language arts (8:30-9:25am).

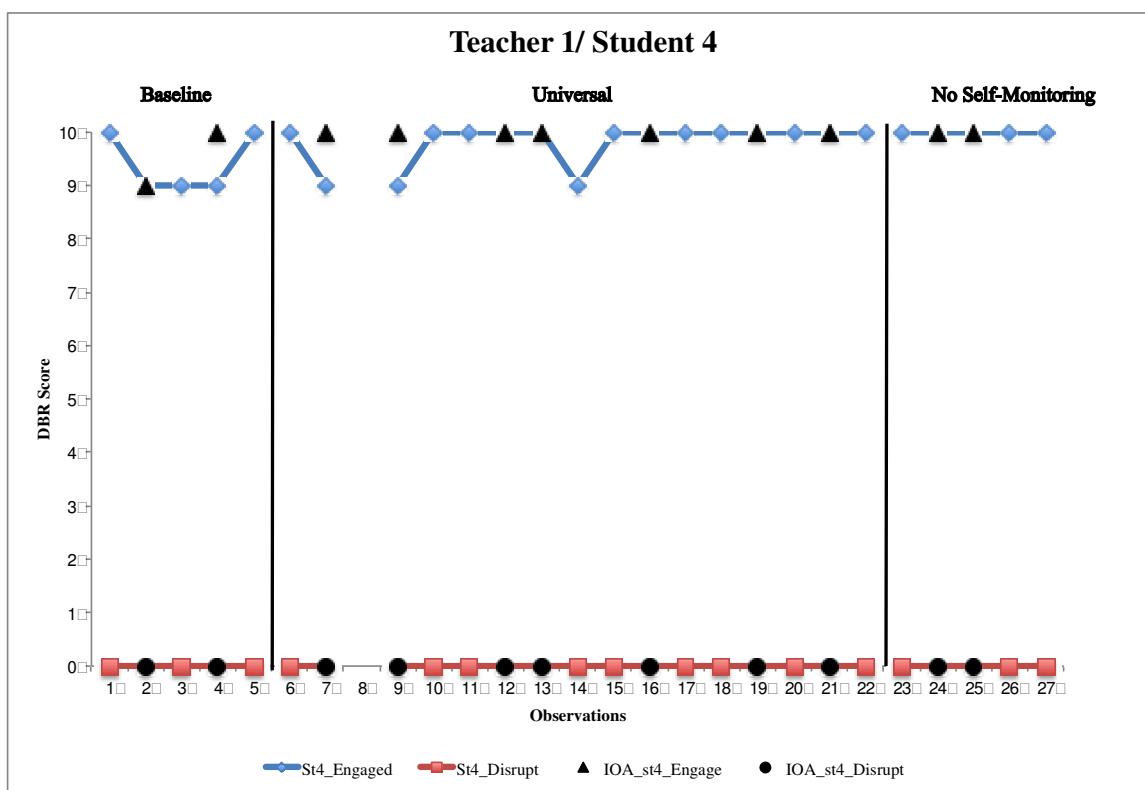
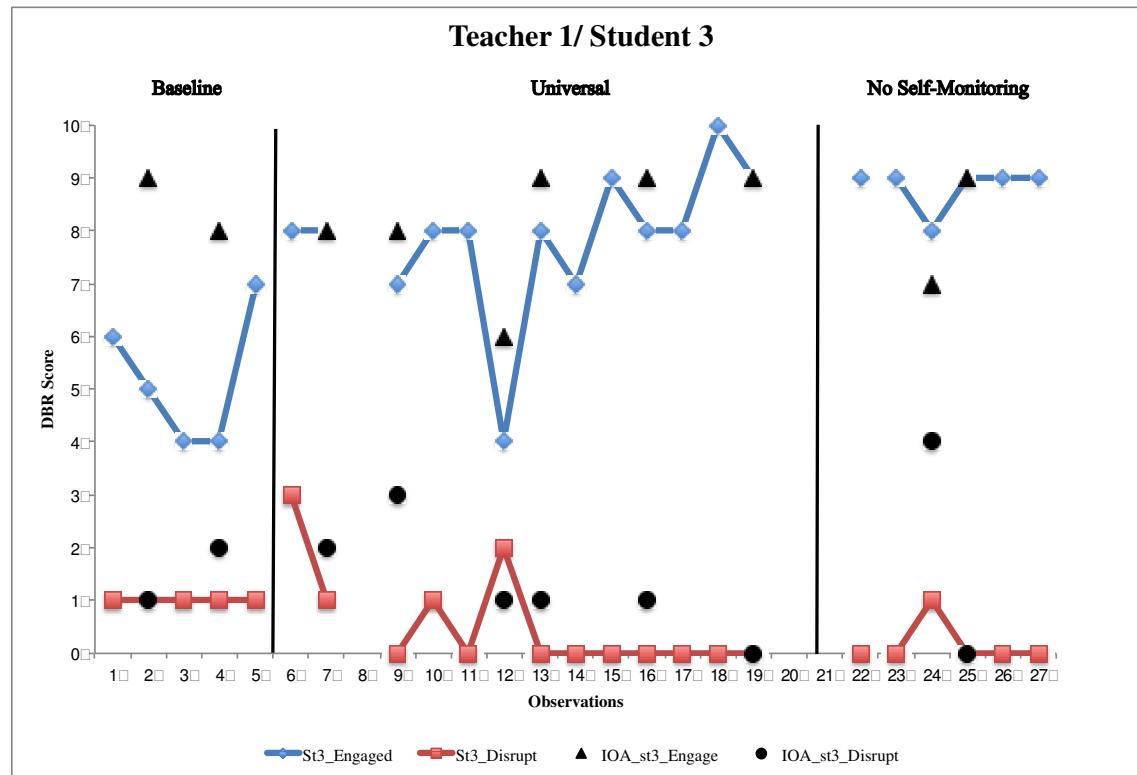


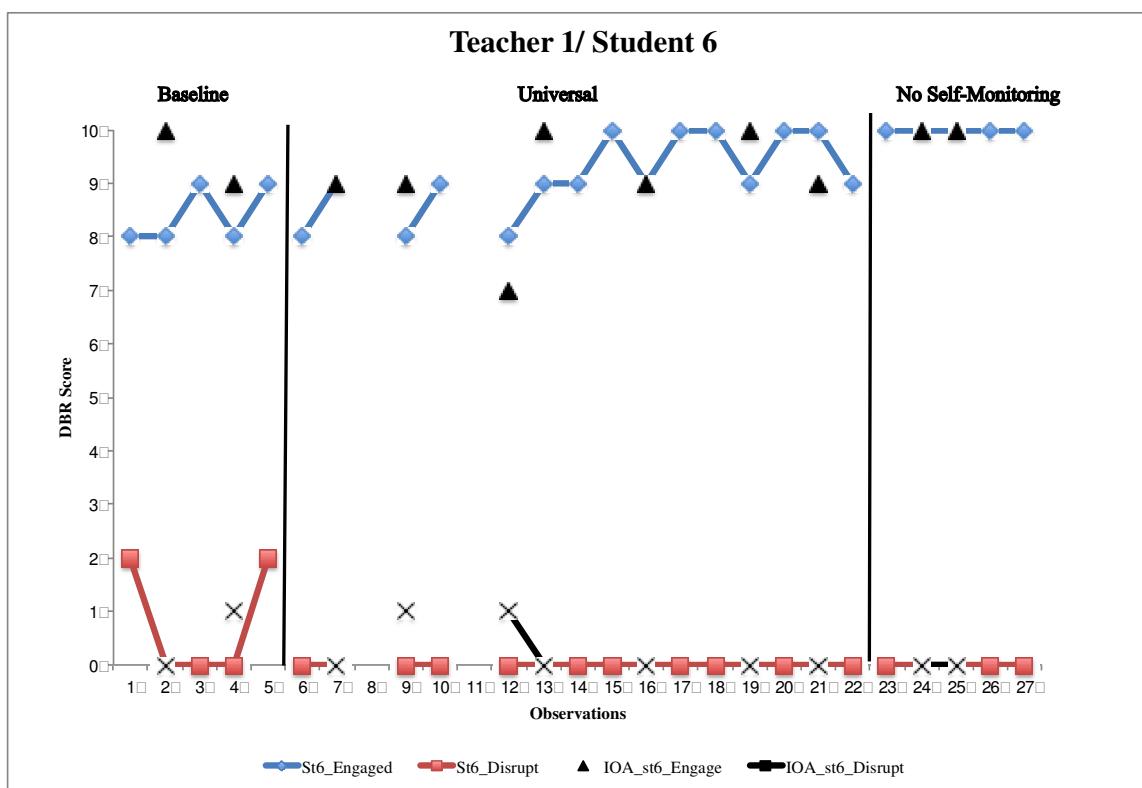
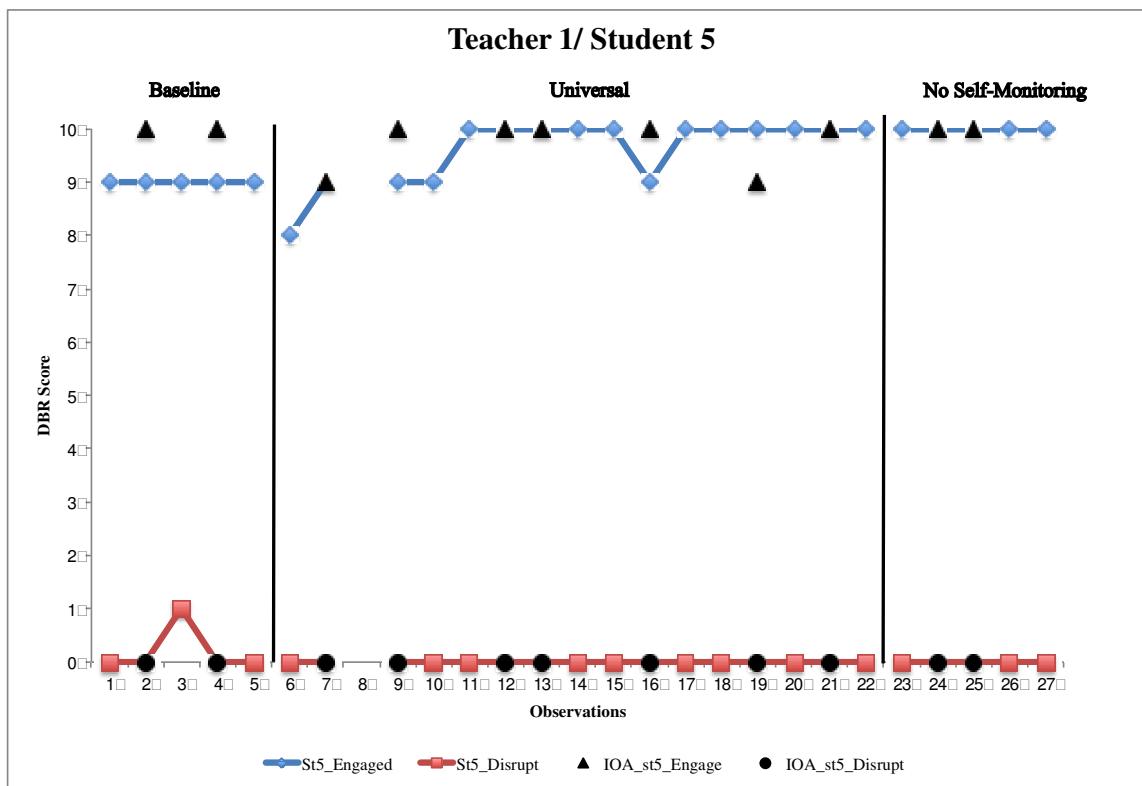
In this example, Sam yelled at other students about 50% of the observed time.

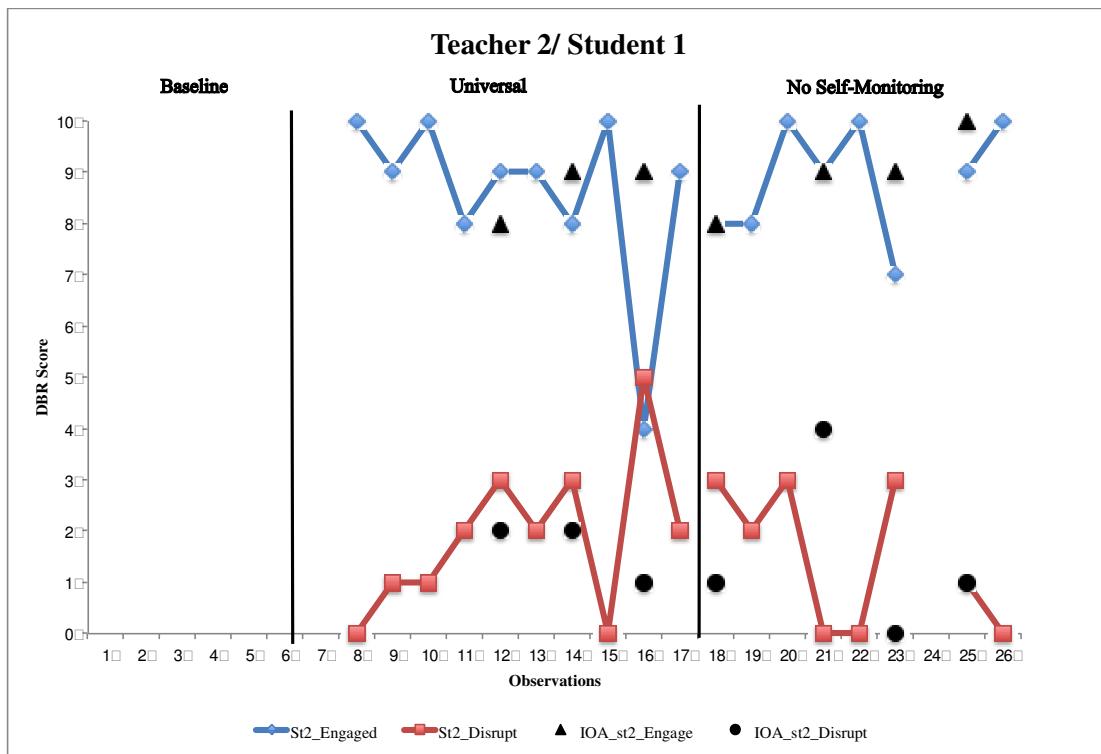
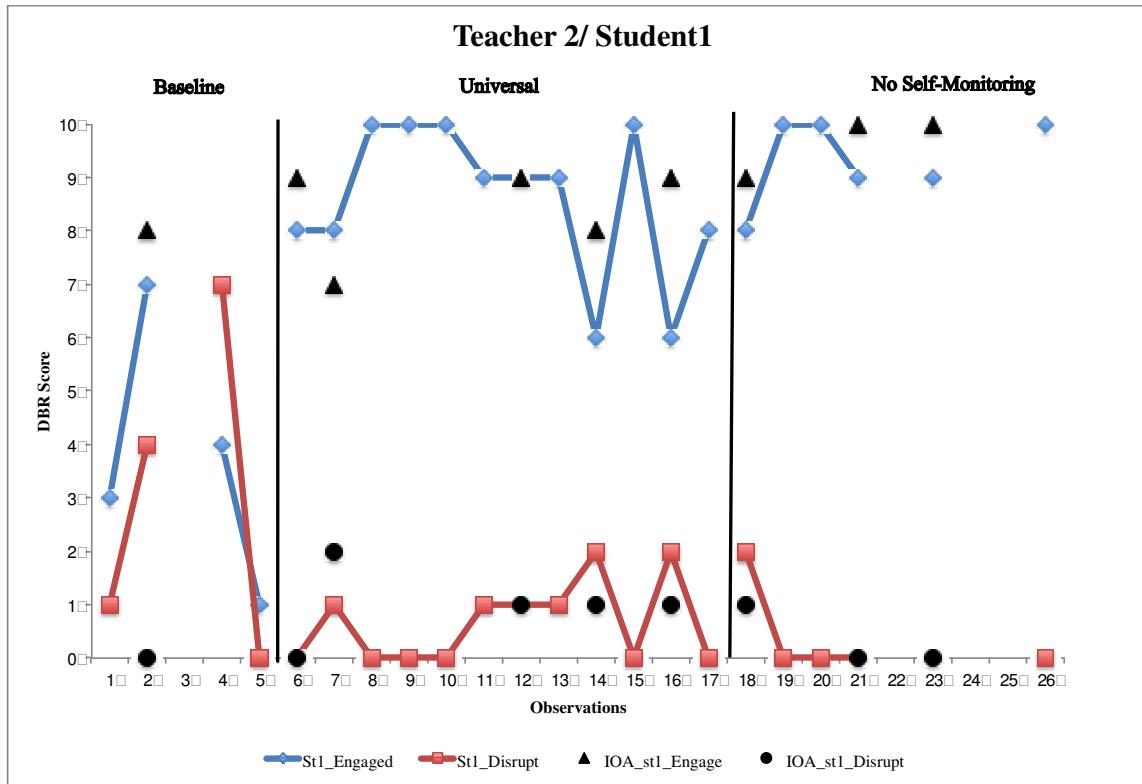
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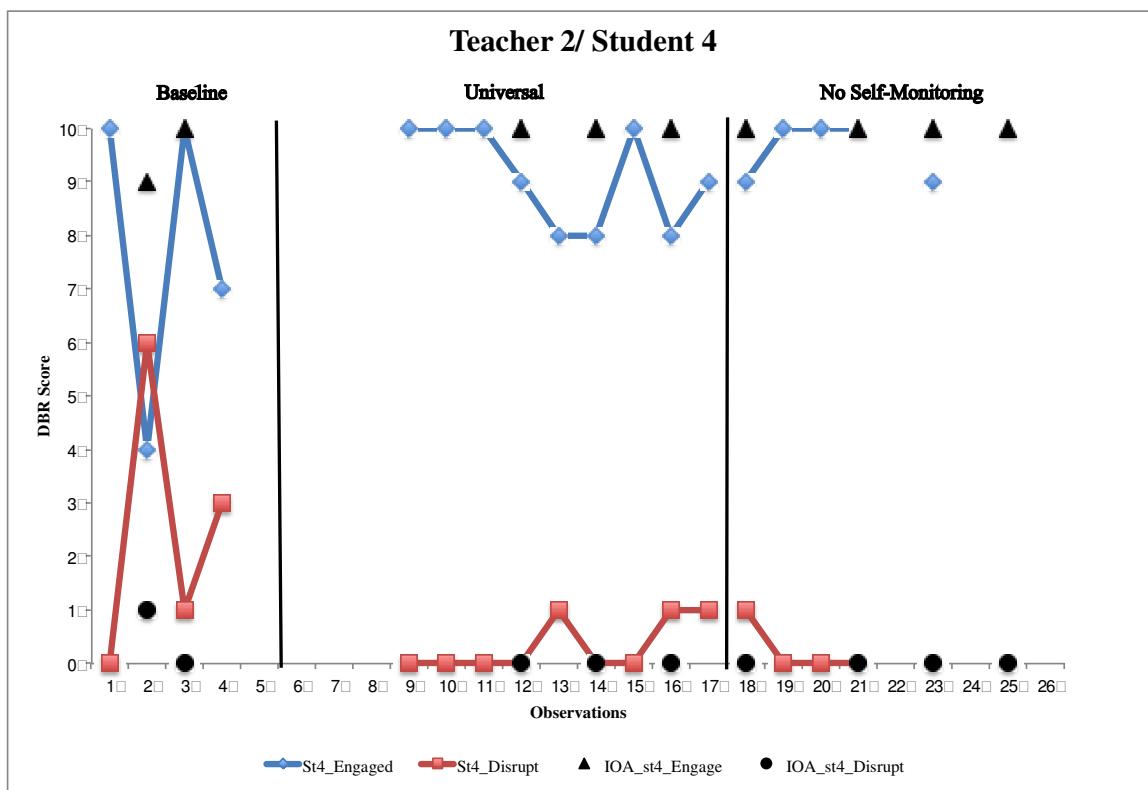
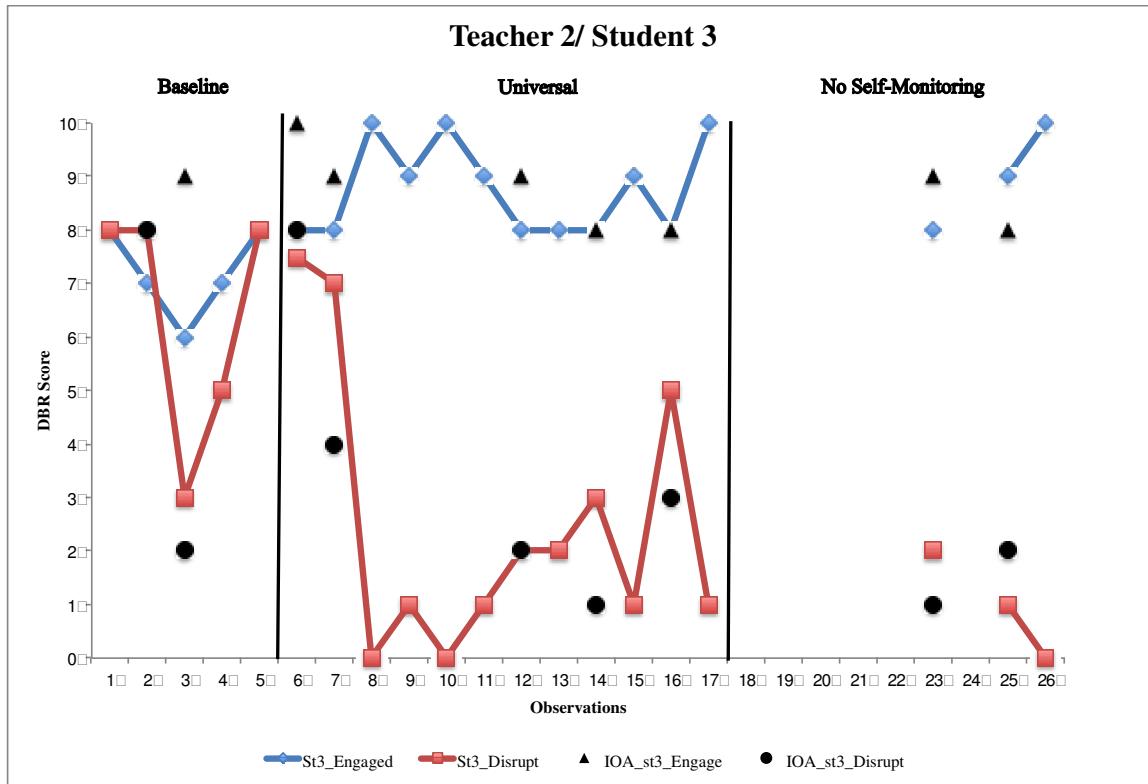
Appendix C

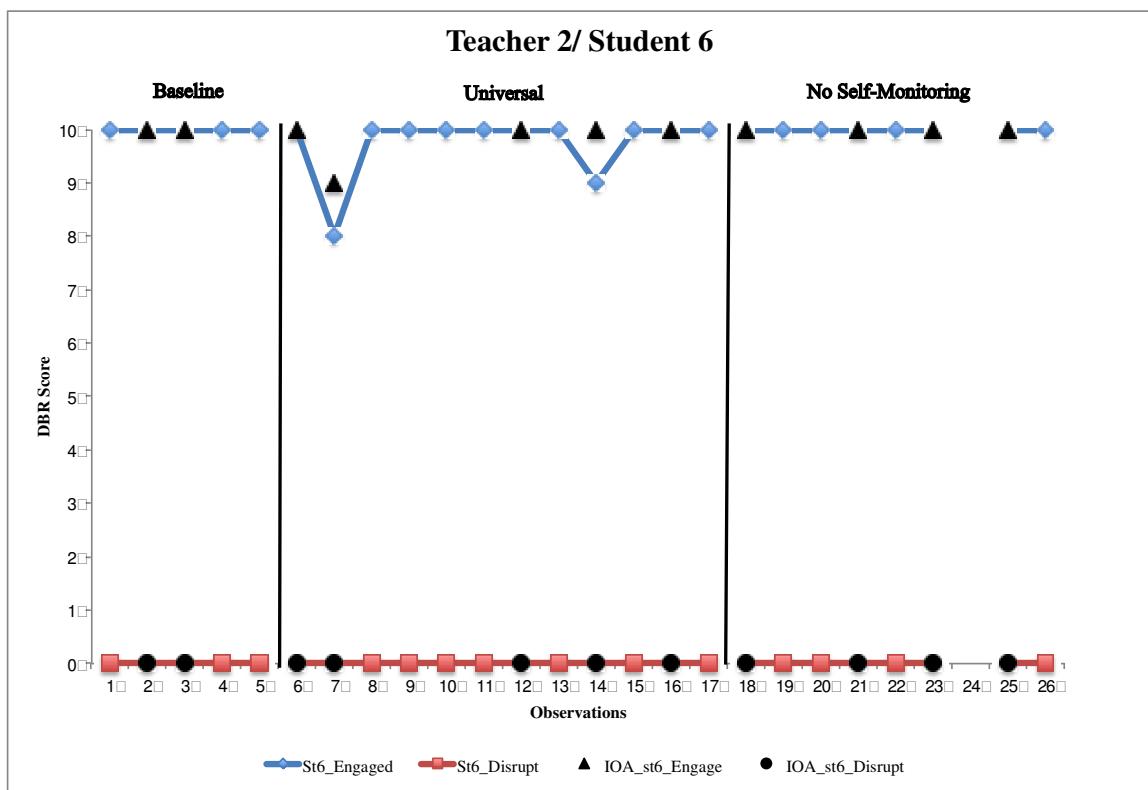
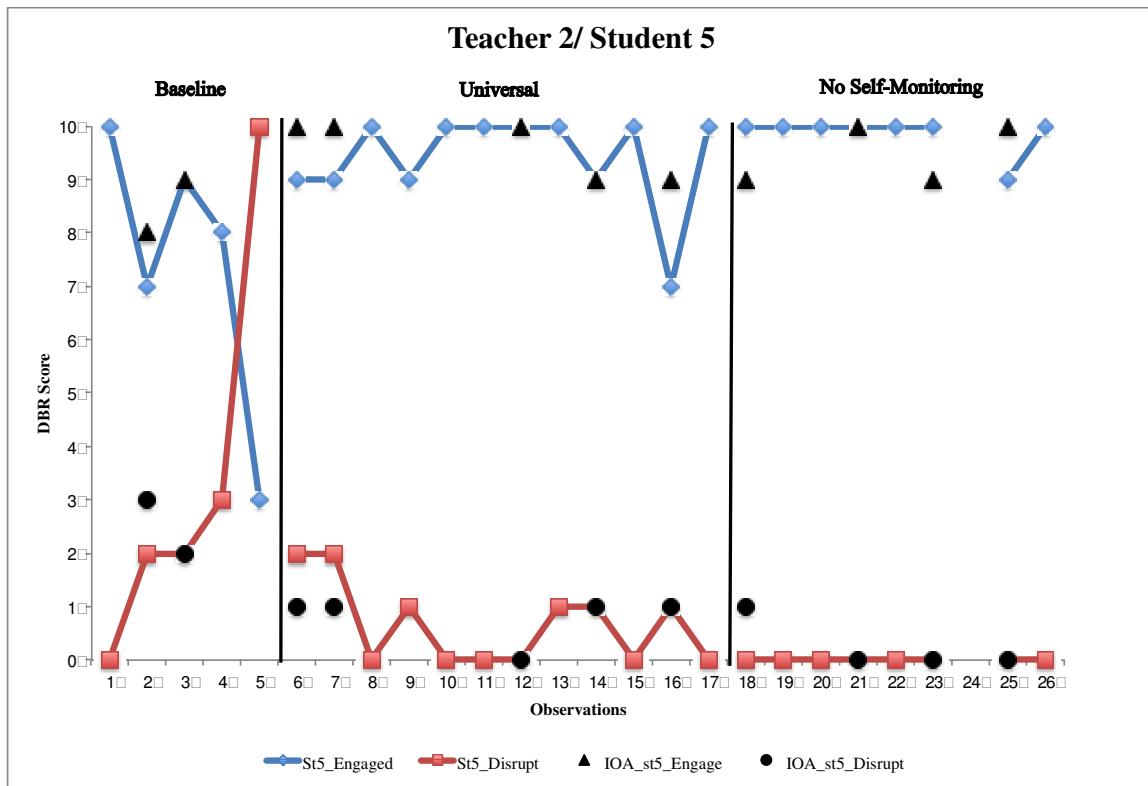


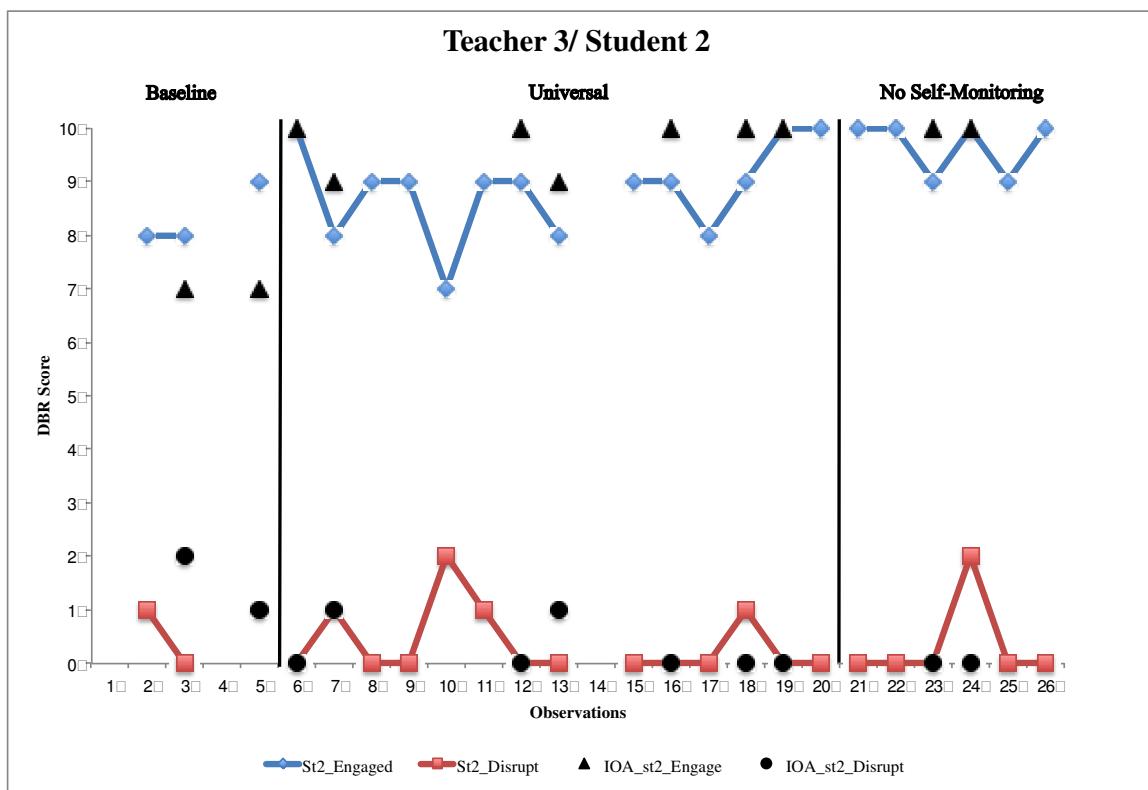
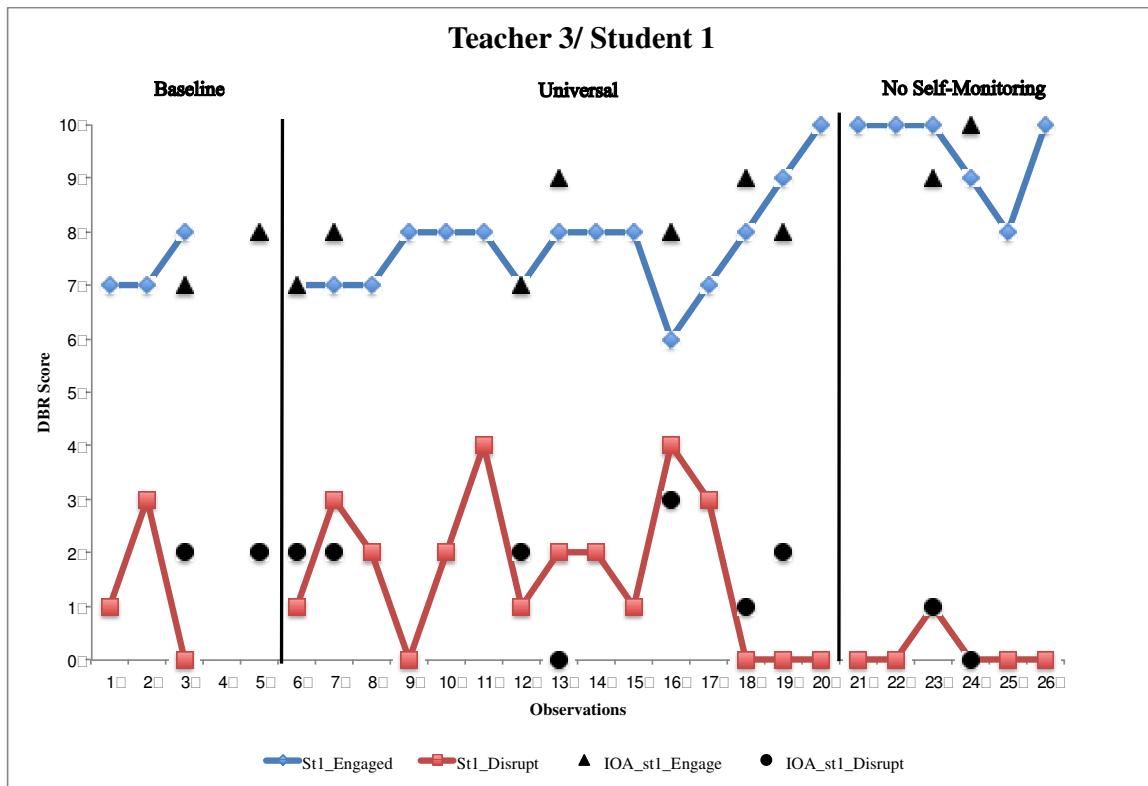


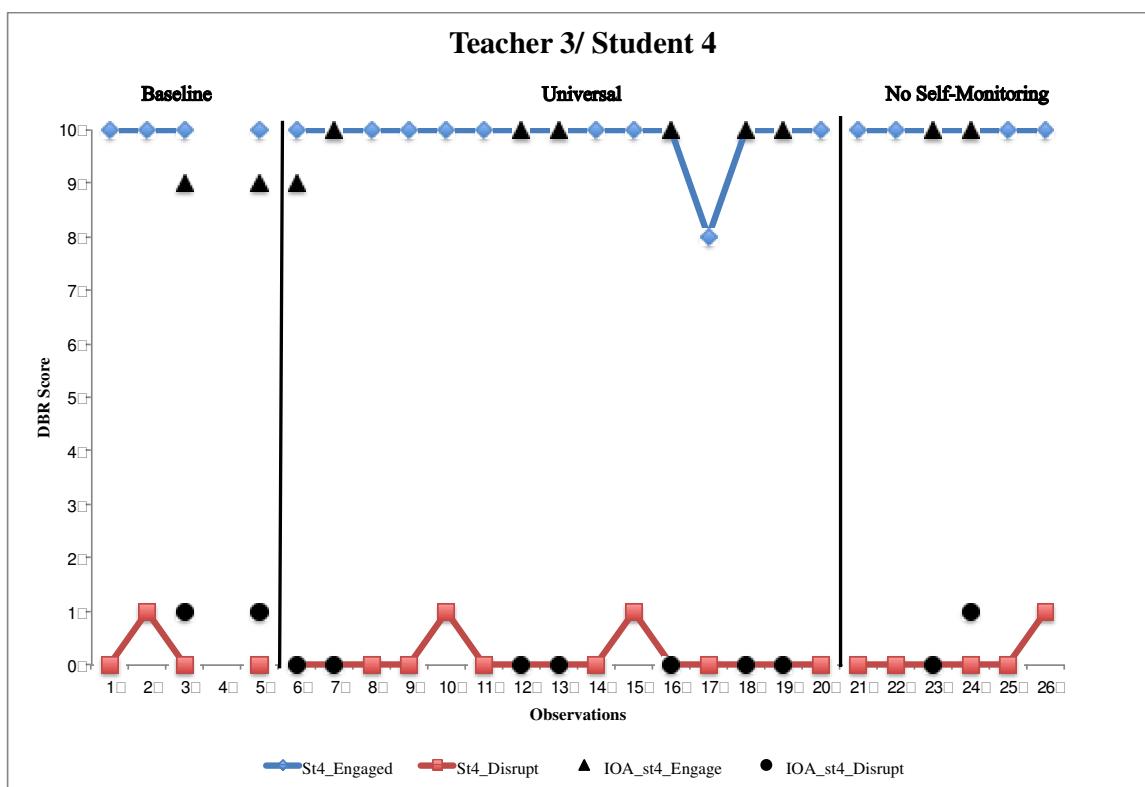
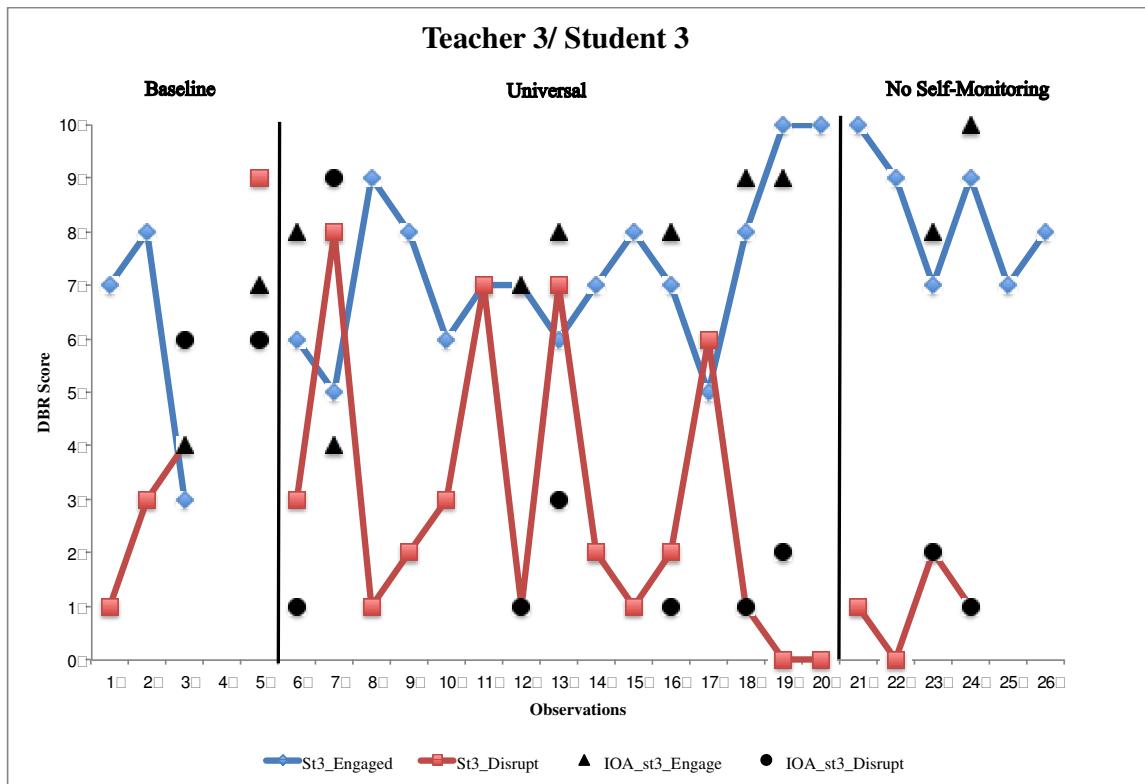


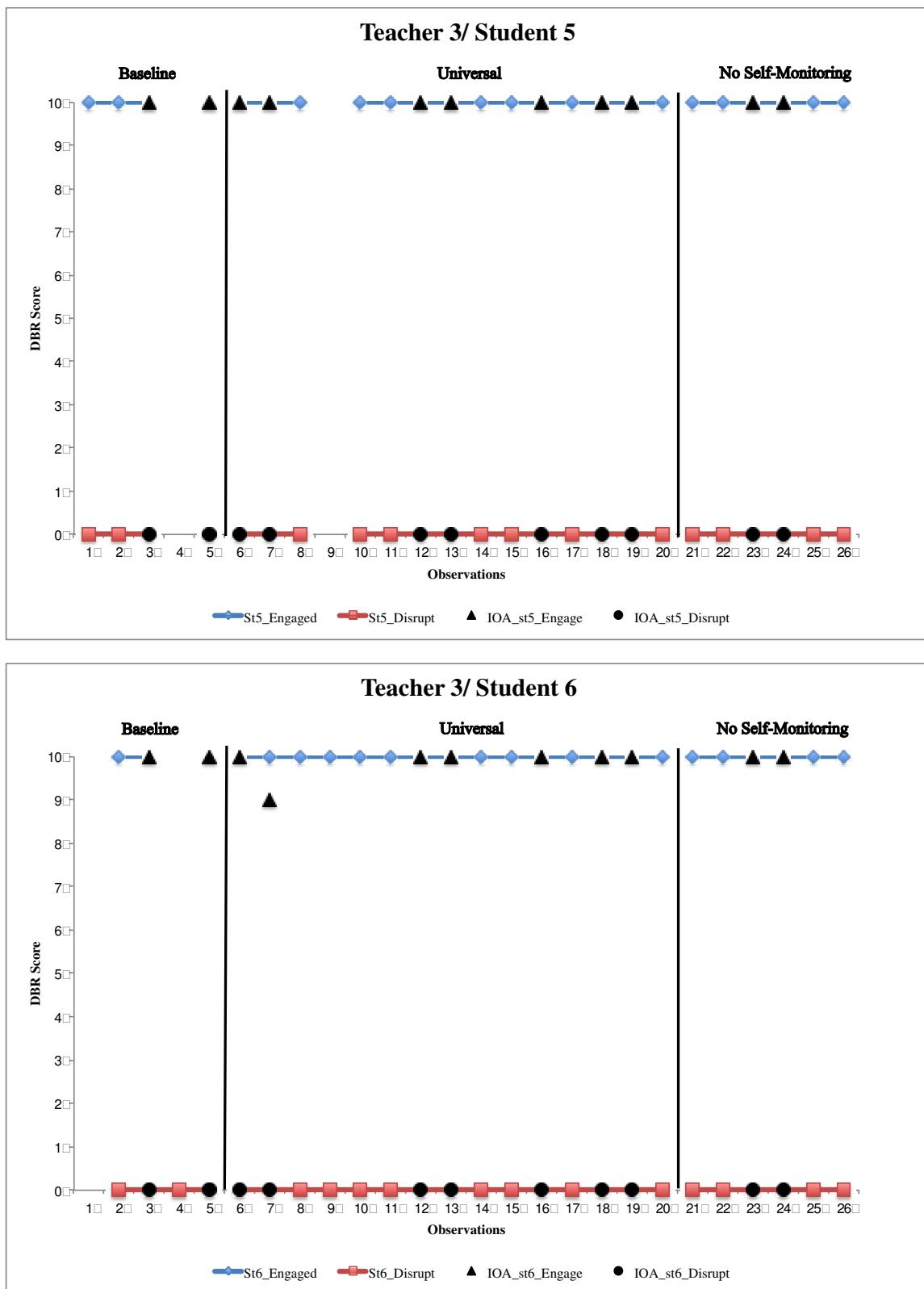


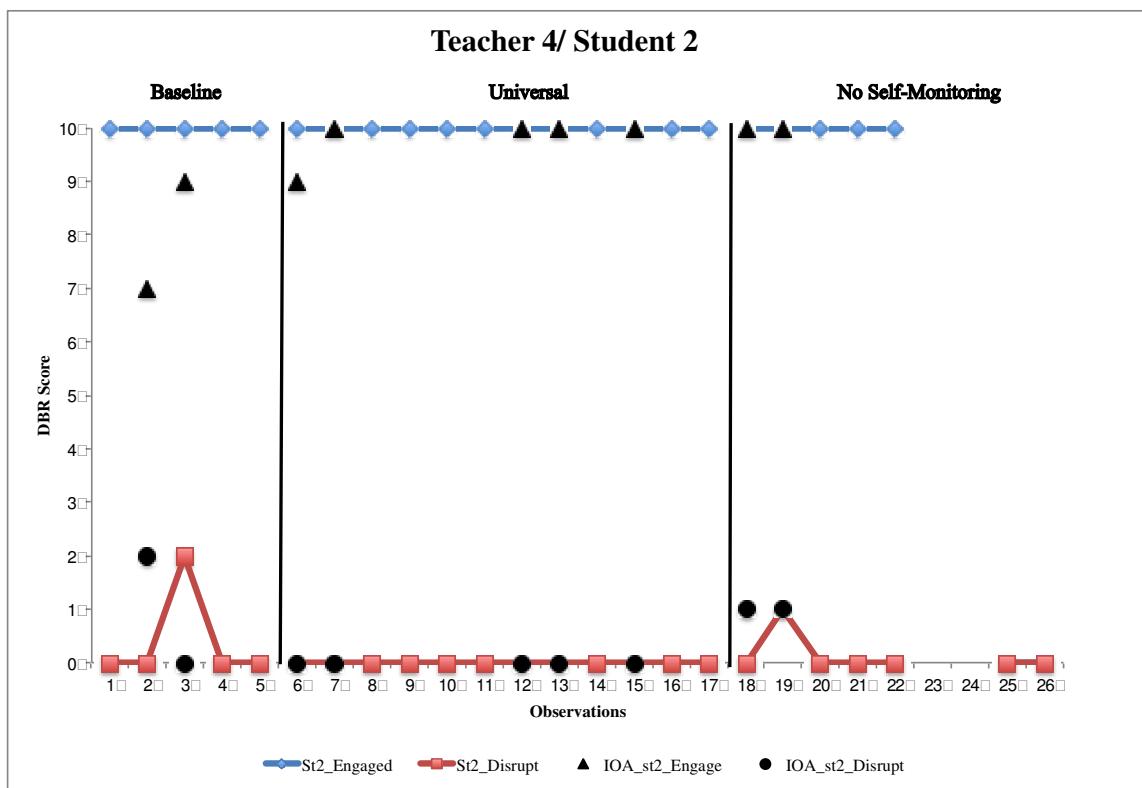
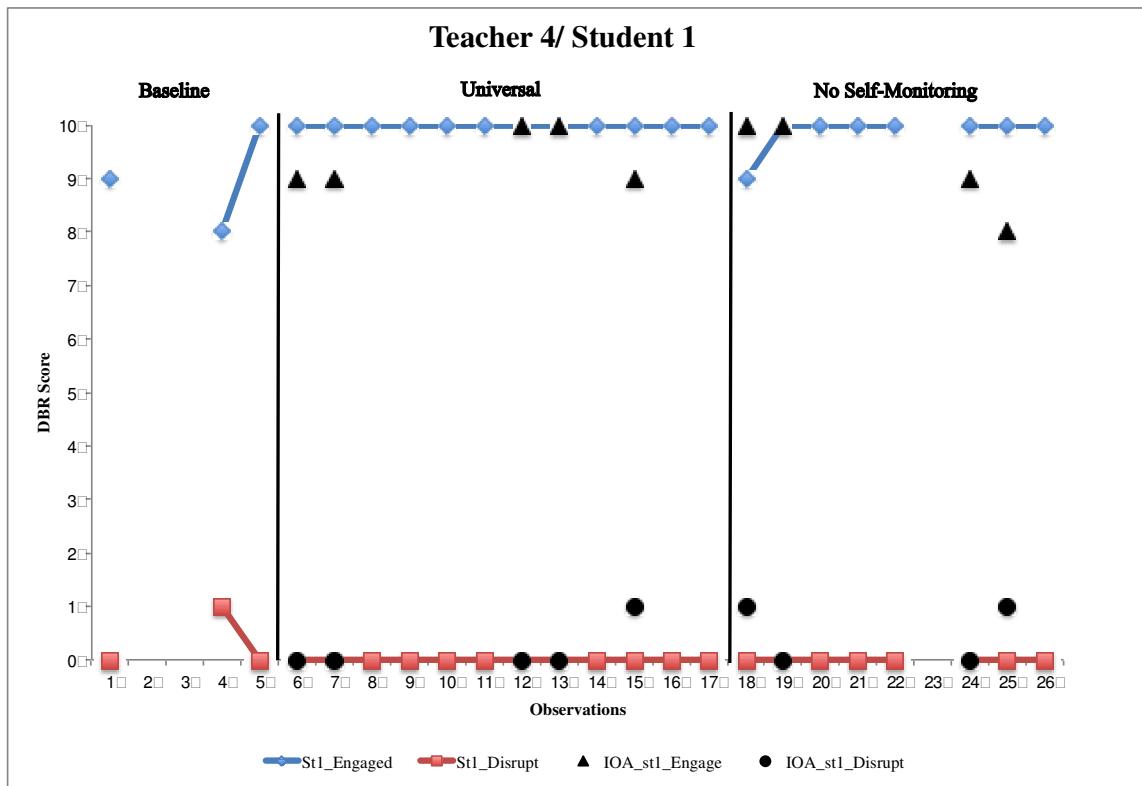


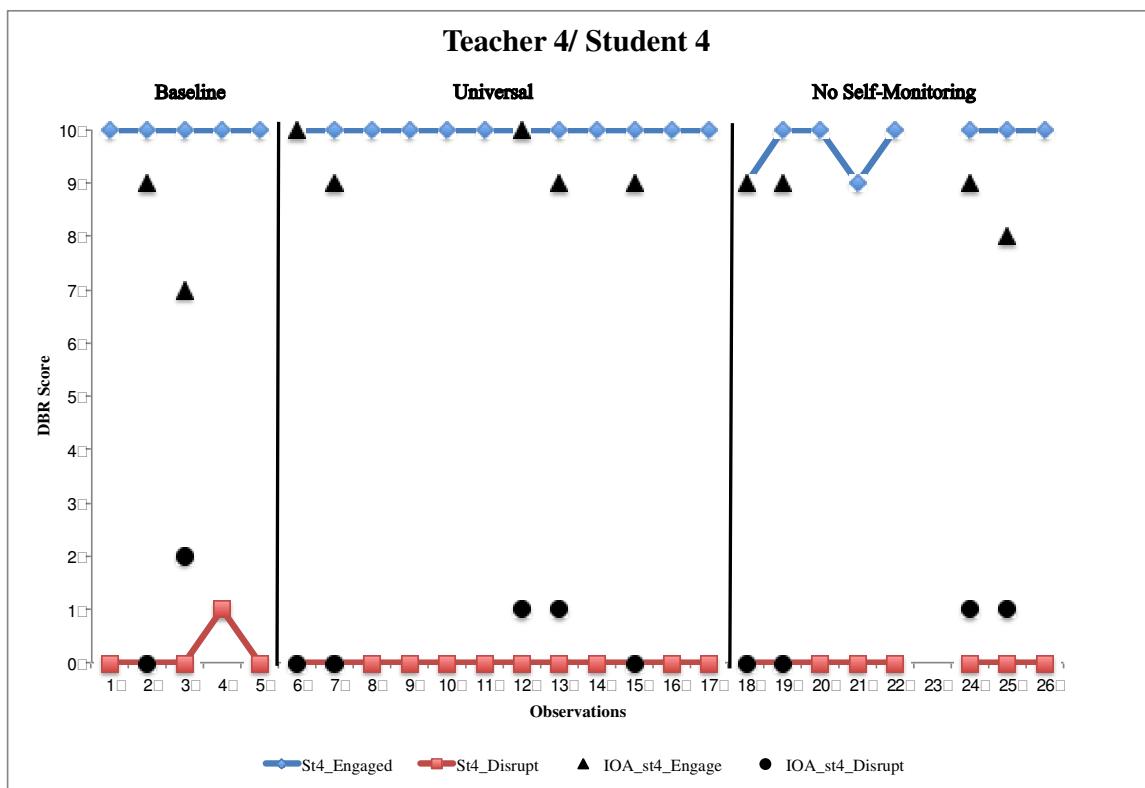
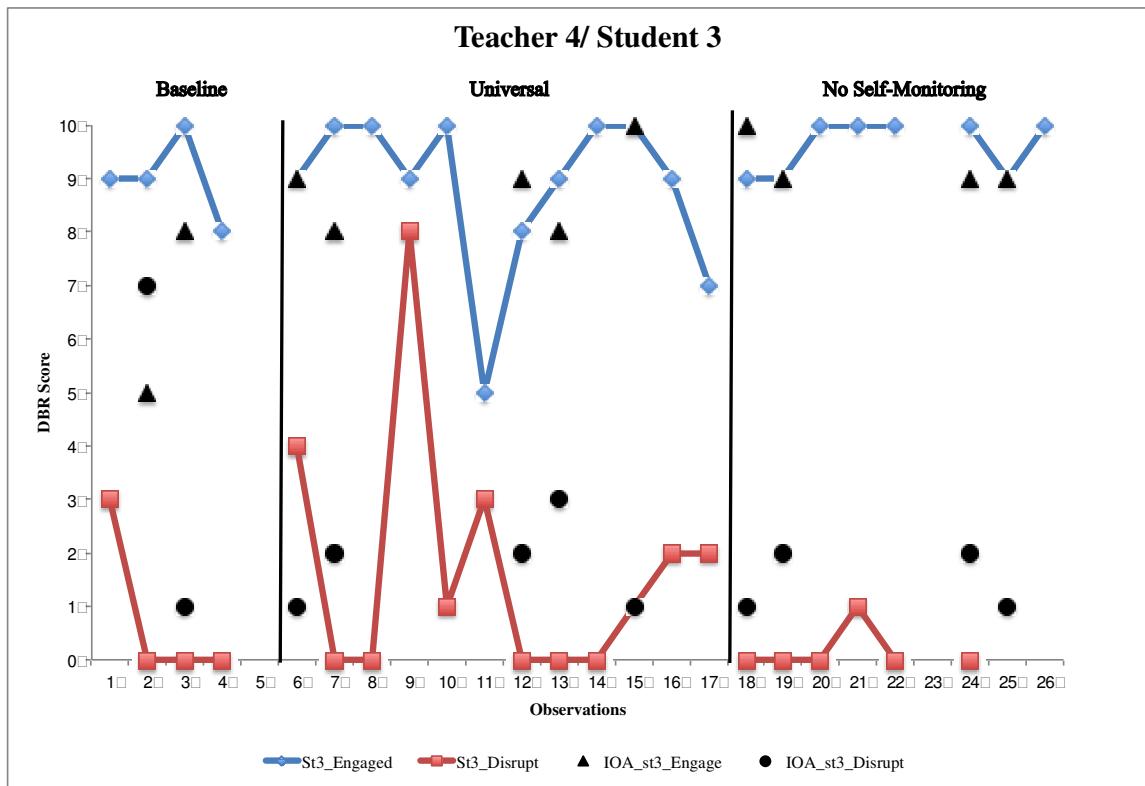


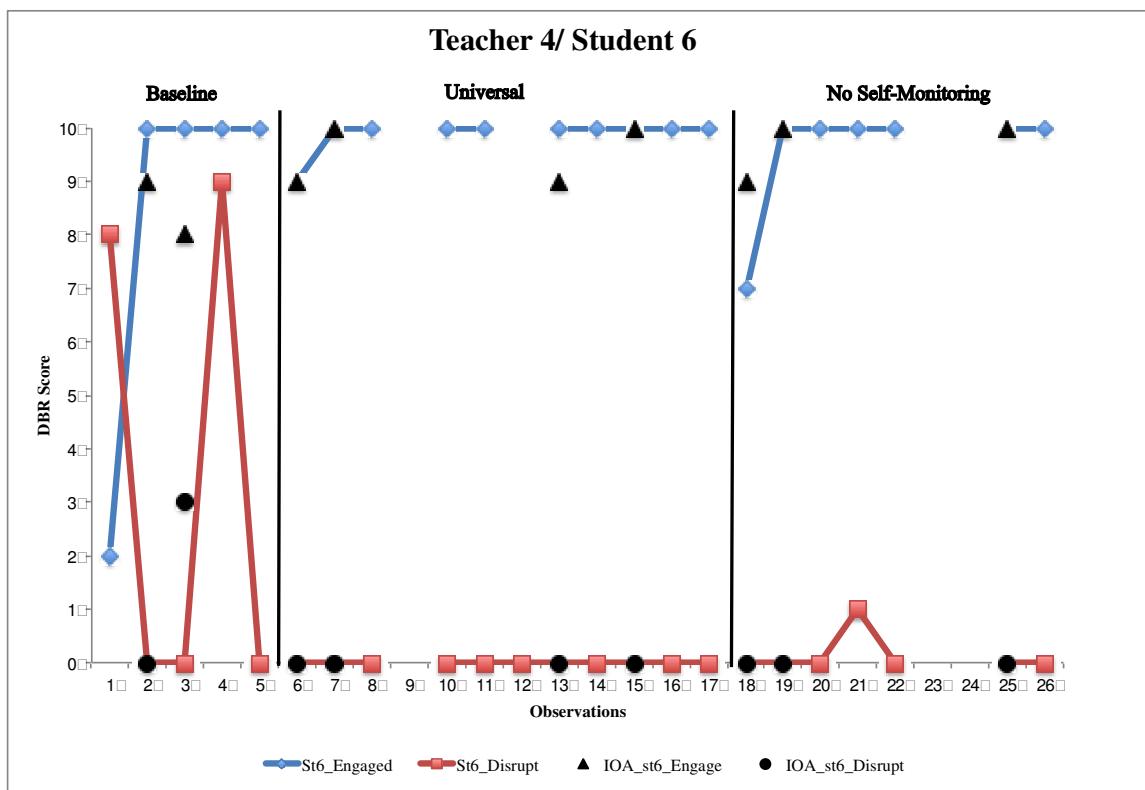
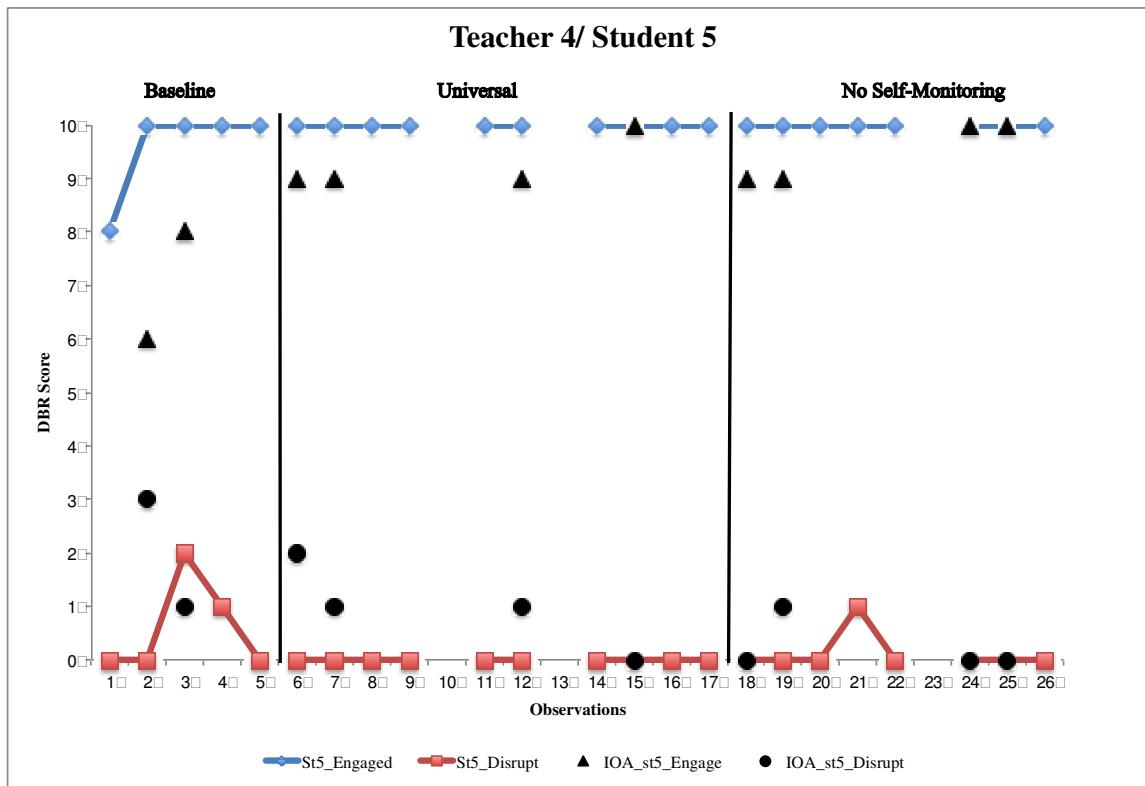


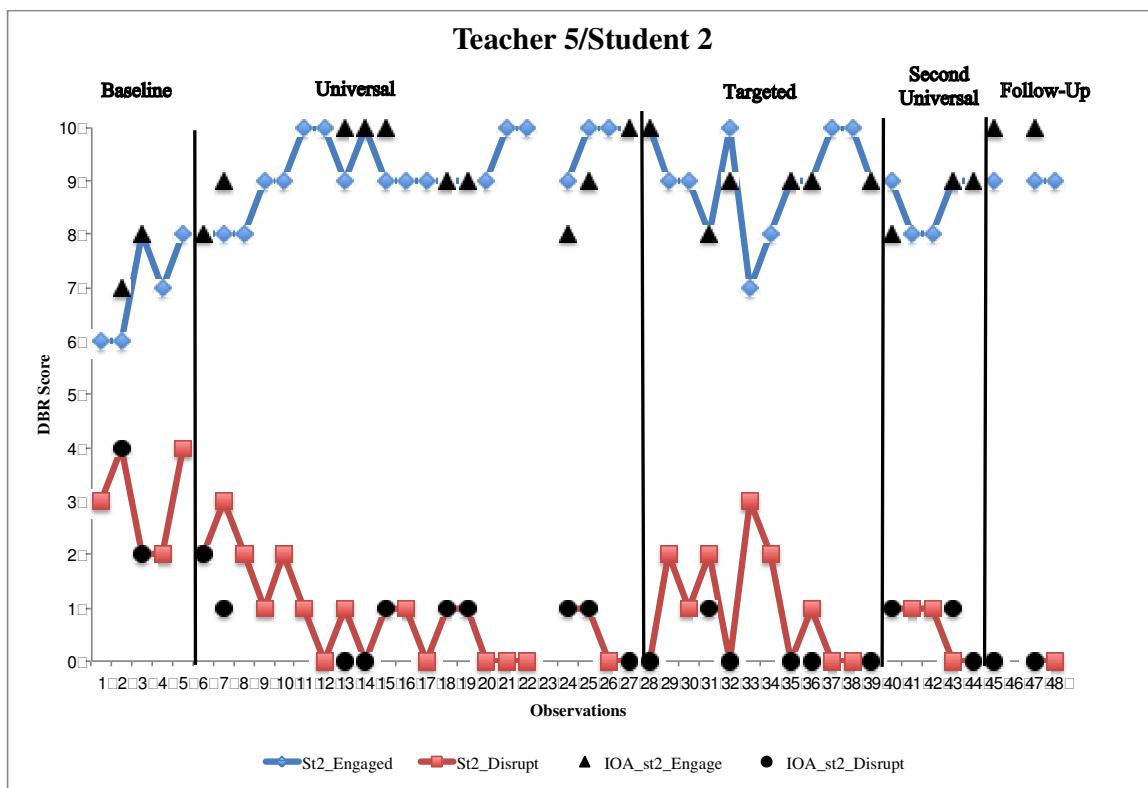
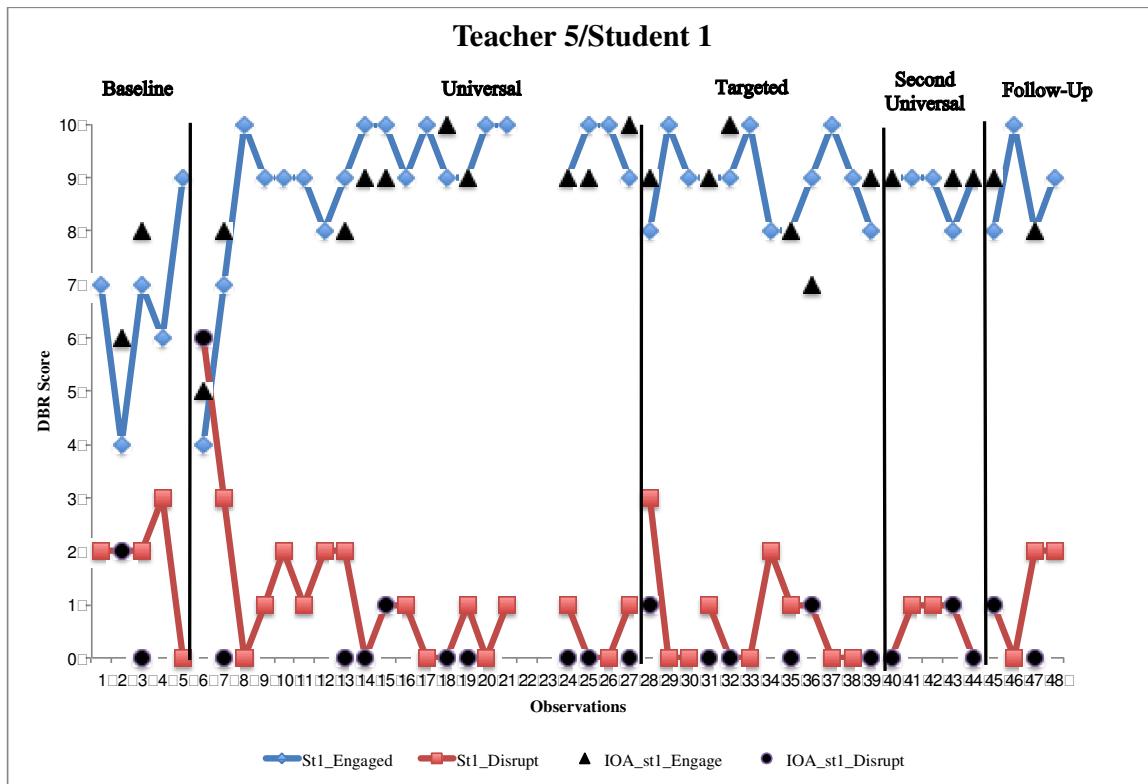


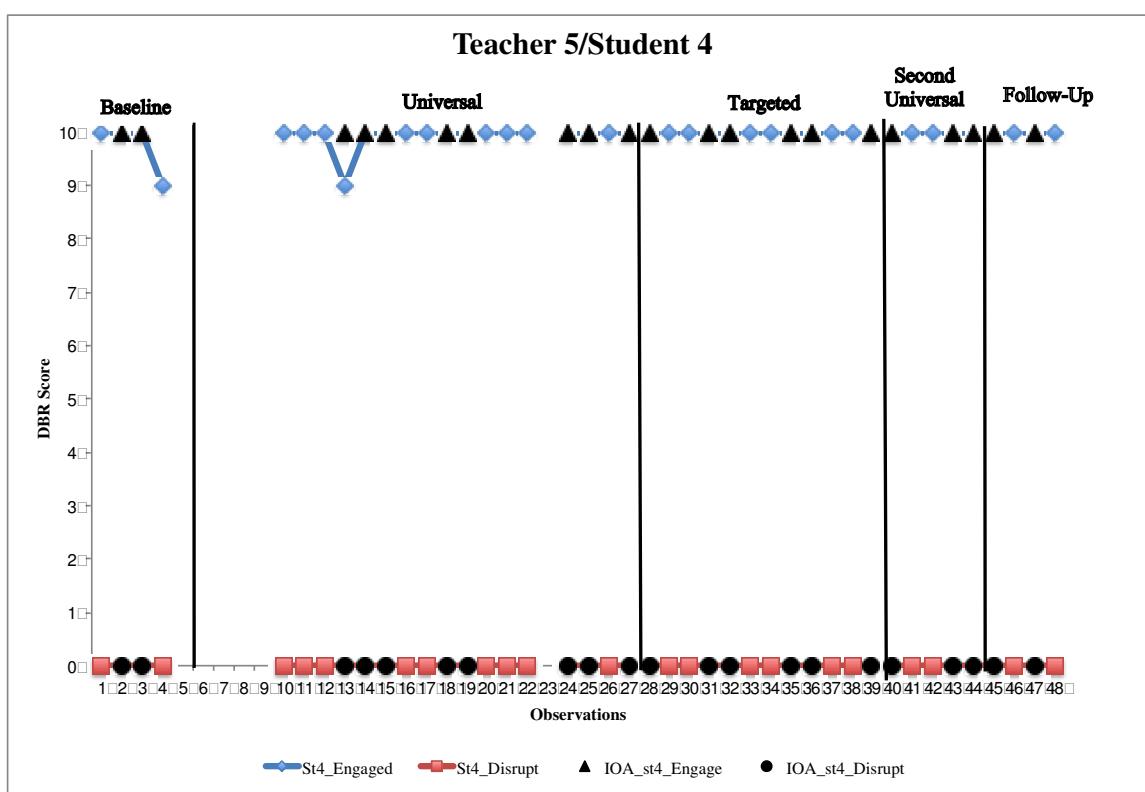
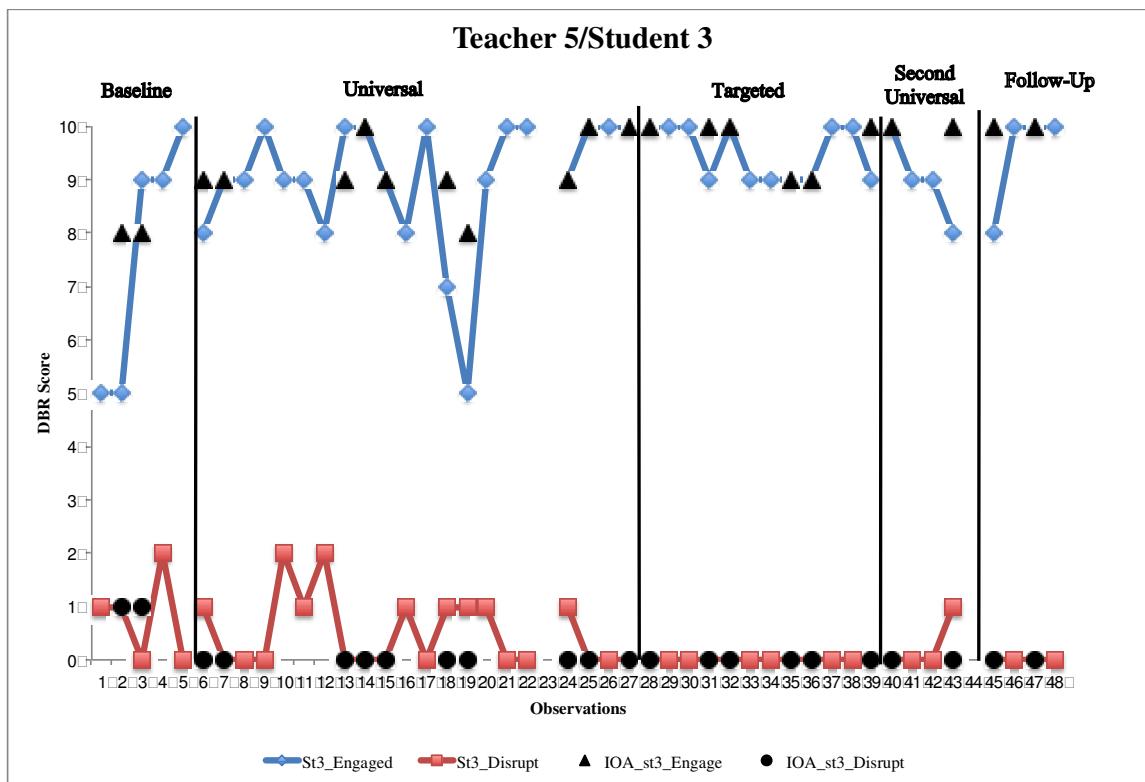


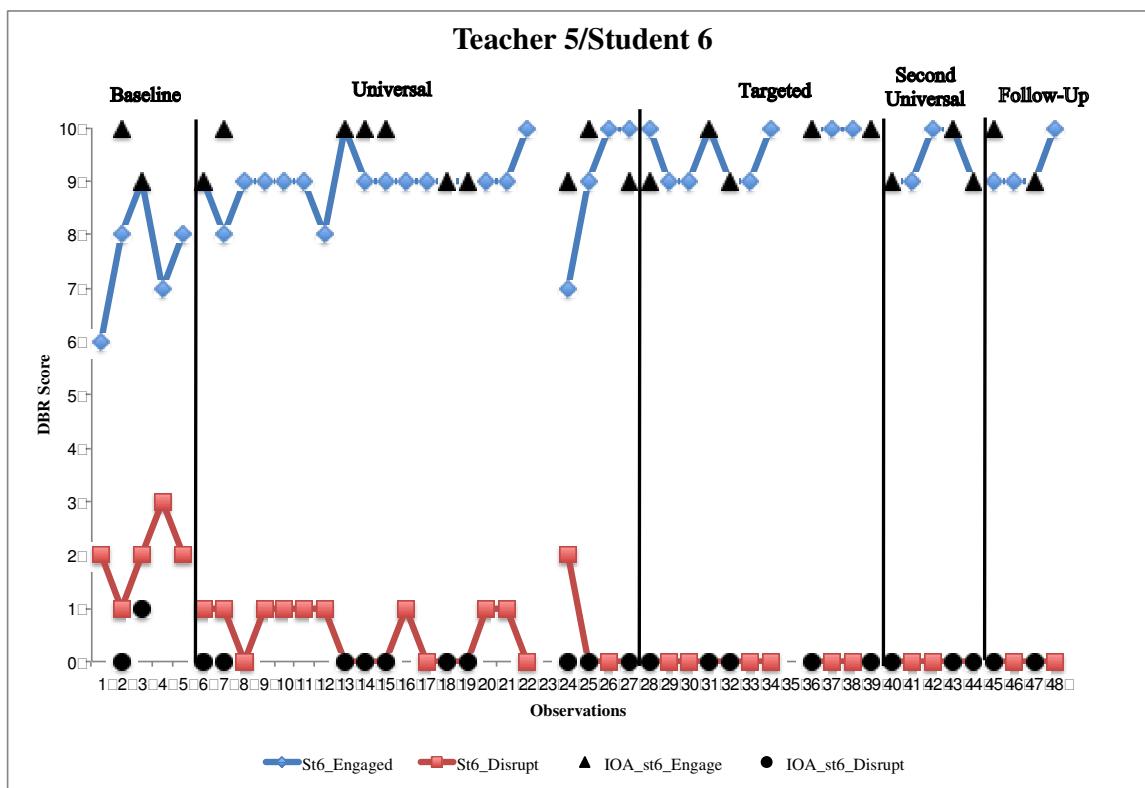
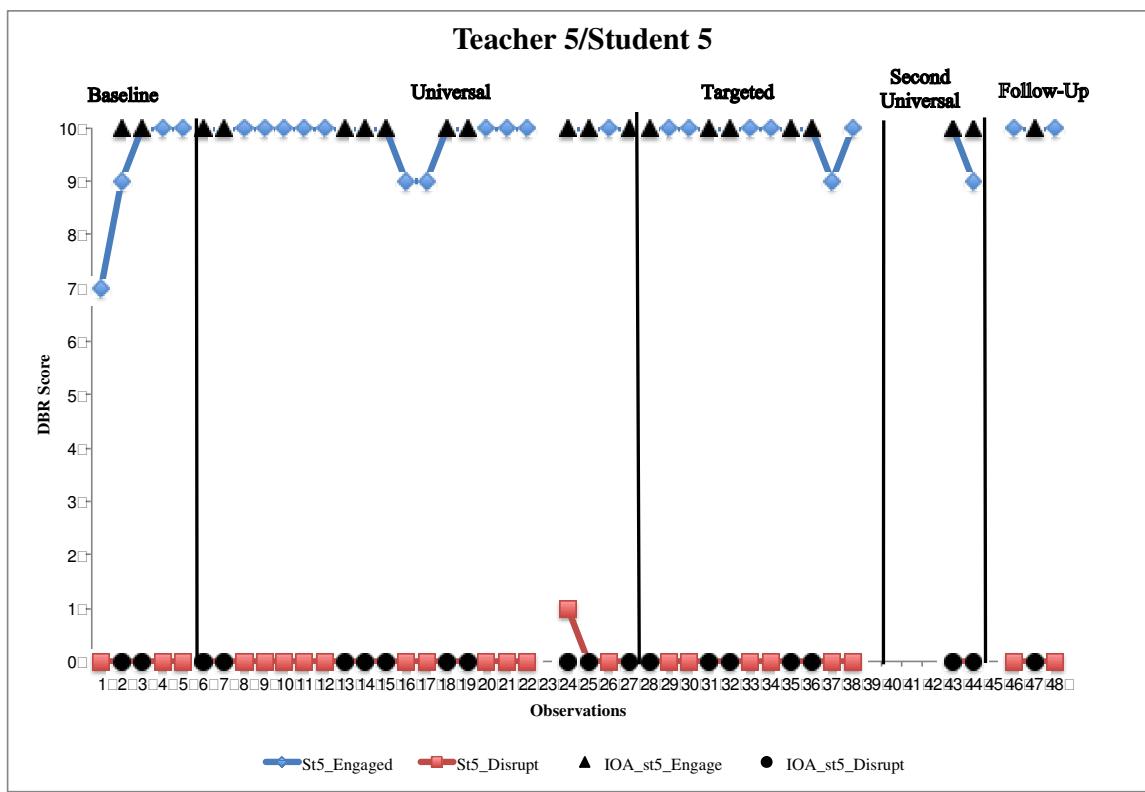












Appendix D

Intervention Rating Profile (IRP-15)
Original Version

The purpose of this questionnaire is to obtain the information that will aide in the selection of classroom interventions. Please circle the number which best describes your agreement with each statement.

Strongly Disagree 1	Disagree 2	Slightly Disagree 3	Slightly Agree 4	Agree 5	Strongly Agree 6
------------------------	---------------	------------------------	---------------------	------------	---------------------

1. This would be an acceptable intervention for the child's problem behavior.	1	2	3	4	5	6
2. Most teachers would find this intervention appropriate for behavior problems in addition to the one described.	1	2	3	4	5	6
3. This investigation should prove effective in changing the child's problem behavior.	1	2	3	4	5	6
4. I would suggest the use of this intervention to the other teachers.	1	2	3	4	5	6
5. The child's behavior problem is severe enough to warrant use of this intervention.	1	2	3	4	5	6
6. Most teachers would find this intervention suitable for the behavior problem described.	1	2	3	4	5	6
7. I would be willing to use this intervention in the classroom setting.	1	2	3	4	5	6
8. This intervention would not result in negative side-effects for the child.	1	2	3	4	5	6
9. This intervention would be appropriate for a variety of children.	1	2	3	4	5	6
10. The intervention is consistent with those I have used in classroom settings.	1	2	3	4	5	6
11. The intervention was a fair way to handle the child's problem described.	1	2	3	4	5	6
12. This intervention is reasonable for the behavior problem described.	1	2	3	4	5	6
13. I like the procedures used in this intervention.	1	2	3	4	5	6
14. This intervention was a good way to handle the child's problem behavior.	1	2	3	4	5	6
15. Overall, this intervention would be beneficial for the child.	1	2	3	4	5	6

Original IRP-15 taken from Martens, B. K., Witt, J. C., Elliott, S. N., & Darveaux, D. X. (1985). Teacher judgments concerning the acceptability of school-based interventions. *Professional Psychology: Research and Practice*, 16, 191-198.

Intervention Rating Profile (IRP-15)
Adapted Version: Universal Professional Development (PD) Intervention

The purpose of this questionnaire is to obtain information that will aide in the selection of PD interventions for teachers. The universal professional development to increase teachers' presentation of a key classroom management skill (i.e., opportunities to respond; OTR) included a brief one time training session followed by self-monitoring. Please circle the number which best describes your agreement with each statement.

Strongly Disagree 1	Disagree 2	Slightly Disagree 3	Slightly Agree 4	Agree 5	Strongly Agree 6
------------------------	---------------	------------------------	---------------------	------------	---------------------

1. This would be an acceptable intervention to address the PD needs of teachers.	1	2	3	4	5	6
2. Most teachers would find this intervention appropriate for addressing classroom management PD needs including the one described above.	1	2	3	4	5	6
3. This investigation should prove effective in changing the teachers' rate of OTR presentation.	1	2	3	4	5	6
4. I would suggest the use of this intervention to the other teachers.	1	2	3	4	5	6
5. The classroom's behavior problems are severe enough to warrant use of this intervention.	1	2	3	4	5	6
6. Most teachers would find this intervention suitable for meeting classroom management PD needs as described.	1	2	3	4	5	6
7. I would be willing to use this intervention again in the school/classroom setting.	1	2	3	4	5	6
8. This intervention would not result in negative side-effects for the teacher.	1	2	3	4	5	6
9. This intervention would be appropriate for a variety of teachers.	1	2	3	4	5	6
10. The intervention is consistent with those I have used in school/classroom settings.	1	2	3	4	5	6
11. The intervention was a fair way to handle the classroom management training need(s) described.	1	2	3	4	5	6
12. This intervention is reasonable for the classroom management problem described.	1	2	3	4	5	6
13. I like the procedures used in this intervention.	1	2	3	4	5	6
14. This intervention was a good way to handle the need for classroom management PD.	1	2	3	4	5	6
15. Overall, this intervention would be beneficial for the teacher.	1	2	3	4	5	6
* Changes in teacher behavior (i.e., increased OTR presentation) positively impacted student behavior	1	2	3	4	5	6

Adapted from Martens, B. K., Witt, J. C., Elliott, S. N., & Darveaux, D. X. (1985). Teacher judgments concerning the acceptability of school-based interventions. *Professional Psychology: Research and Practice, 16*, 191-198.

Intervention Rating Profile (IRP-15)
Adapted Version: Targeted Professional Development (PD) Intervention

The purpose of this questionnaire is to obtain information that will aide in the selection of PD interventions for teachers. The targeted professional development to increase teachers' presentation of a key classroom management skill (i.e., opportunities to respond; OTR) included development of a self-management plan followed by self-monitoring with performance feedback. Please circle the number which best describes your agreement with each statement.

Strongly Disagree 1	Disagree 2	Slightly Disagree 3	Slightly Agree 4	Agree 5	Strongly Agree 6
------------------------	---------------	------------------------	---------------------	------------	---------------------

1. This would be an acceptable intervention to address the PD needs of teachers.	1	2	3	4	5	6
2. Most teachers would find this intervention appropriate for addressing classroom management PD needs including the one described above.	1	2	3	4	5	6
3. This investigation should prove effective in changing the teachers' rate of OTR presentation.	1	2	3	4	5	6
4. I would suggest the use of this intervention to the other teachers.	1	2	3	4	5	6
5. The classroom's behavior problems are severe enough to warrant use of this intervention.	1	2	3	4	5	6
6. Most teachers would find this intervention suitable for meeting classroom management PD needs as described.	1	2	3	4	5	6
7. I would be willing to use this intervention again in the school/classroom setting.	1	2	3	4	5	6
8. This intervention would not result in negative side-effects for the teacher.	1	2	3	4	5	6
9. This intervention would be appropriate for a variety of teachers.	1	2	3	4	5	6
10. The intervention is consistent with those I have used in school/classroom settings.	1	2	3	4	5	6
11. The intervention was a fair way to handle the classroom management training need(s) described.	1	2	3	4	5	6
12. This intervention is reasonable for the classroom management problem described.	1	2	3	4	5	6
13. I like the procedures used in this intervention.	1	2	3	4	5	6
14. This intervention was a good way to handle the need for classroom management PD.	1	2	3	4	5	6
15. Overall, this intervention would be beneficial for the teacher.	1	2	3	4	5	6
* Changes in teacher behavior (i.e., increased OTR presentation) positively impacted student behavior	1	2	3	4	5	6

Adapted from Martens, B. K., Witt, J. C., Elliott, S. N., & Darveaux, D. X. (1985). Teacher judgments concerning the acceptability of school-based interventions. *Professional Psychology: Research and Practice, 16*, 191-198.

Intervention Rating Profile (IRP-15)
Adapted Version: Individualized Professional Development (PD) Intervention

The purpose of this questionnaire is to obtain information that will aide in the selection of PD interventions for teachers. The individualized professional development to increase teachers' presentation of a key classroom management skill (i.e., opportunities to respond; OTR) included individualized 1:1 consultation and performance feedback. Please circle the number which best describes your agreement with each statement.

Strongly Disagree 1	Disagree 2	Slightly Disagree 3	Slightly Agree 4	Agree 5	Strongly Agree 6
------------------------	---------------	------------------------	---------------------	------------	---------------------

1. This would be an acceptable intervention to address the PD needs of teachers.	1	2	3	4	5	6
2. Most teachers would find this intervention appropriate for addressing classroom management PD needs including the one described above.	1	2	3	4	5	6
3. This investigation should prove effective in changing the teachers' rate of OTR presentation.	1	2	3	4	5	6
4. I would suggest the use of this intervention to the other teachers.	1	2	3	4	5	6
5. The classroom's behavior problems are severe enough to warrant use of this intervention.	1	2	3	4	5	6
6. Most teachers would find this intervention suitable for meeting classroom management PD needs as described.	1	2	3	4	5	6
7. I would be willing to use this intervention again in the school/classroom setting.	1	2	3	4	5	6
8. This intervention would not result in negative side-effects for the teacher.	1	2	3	4	5	6
9. This intervention would be appropriate for a variety of teachers.	1	2	3	4	5	6
10. The intervention is consistent with those I have used in school/classroom settings.	1	2	3	4	5	6
11. The intervention was a fair way to handle the classroom management training need(s) described.	1	2	3	4	5	6
12. This intervention is reasonable for the classroom management problem described.	1	2	3	4	5	6
13. I like the procedures used in this intervention.	1	2	3	4	5	6
14. This intervention was a good way to handle the need for classroom management PD.	1	2	3	4	5	6
15. Overall, this intervention would be beneficial for the teacher.	1	2	3	4	5	6
* Changes in teacher behavior (i.e., increased OTR presentation) positively impacted student behavior	1	2	3	4	5	6

Adapted from Martens, B. K., Witt, J. C., Elliott, S. N., & Darveaux, D. X. (1985). Teacher judgments concerning the acceptability of school-based interventions. *Professional Psychology: Research and Practice, 16*, 191-198.

Appendix E

Providing Students with Teacher-Directed Opportunities to Respond

Universal In-Service Training

Core Components:

Discussion

- Definition of skill
- Rationale for using skill
- Examples of skill
- Critical features of skill

Activity

- Identifying examples of opportunities to respond in your context

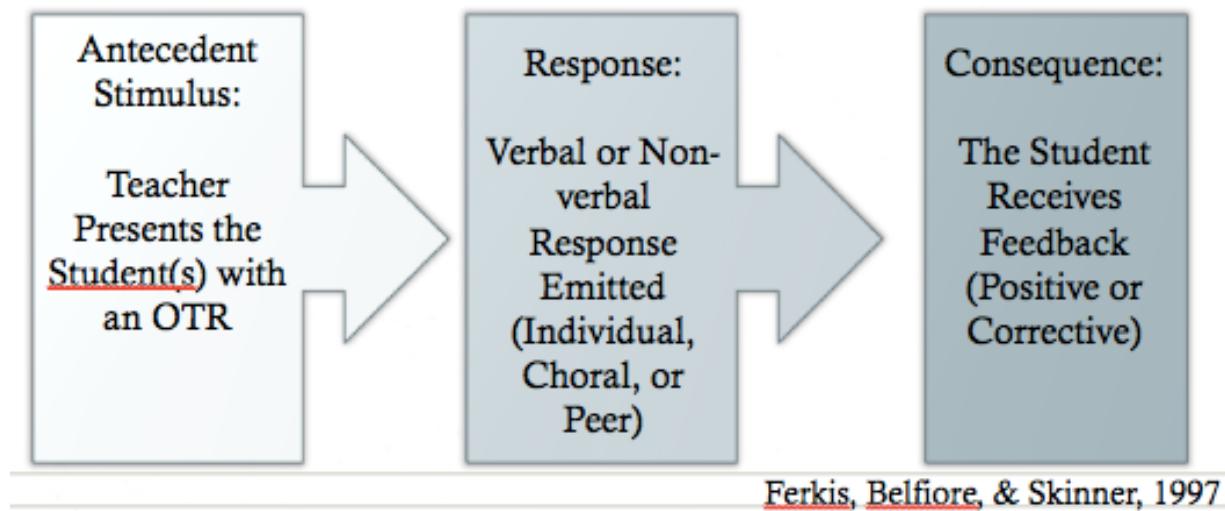
Develop self-monitoring strategies

- Focus on self-monitoring (using Counter & Excel on Dropbox)
- Review/discuss materials needed to implement
- Practice using strategy

Teacher-Directed Opportunities to Respond (TD-OTRs)

What are teacher-directed opportunities to respond (TD-OTRs)?

TD-OTRs are defined as teacher-directed opportunities to respond that occasion student responses. Specifically, TD-OTRs follow the following behavior chain:



There are three specific types of TD-OTRs:

1. Teacher-directed individual OTRs
2. Teacher-directed unison OTRs
3. Teacher-directed peer OTRs

The table on the next page provides specific definitions and examples/non-examples of each of the three TD-OTR types.

Definitions of the Three Types of TD-OTRs

TD-OTR Individual	<p><i>Definition:</i> “Teacher provides an academic opportunity to respond toward a specific individual.</p> <p><i>Example:</i> The teacher says the name of an individual student paired with an opportunity to respond (e.g., “Jimmy, what sounds can the letter ‘C’ make?”) or presents an opportunity to respond to the class but selects only one student to respond (e.g., the teacher holds up a letter card containing /ch/ and says, “Someone raise your hand and tell me what sound this makes.”)</p> <p><i>Non-Example:</i> The teacher presents a rhetorical question to an individual student then answers that question him or herself (e.g., “Bobby, what sound does short ‘a’ make? Short ‘a’ says /ă/ as in bat.”)</p>
TD-OTR Unison	<p><i>Definition:</i> “Teacher provides an academic opportunity to respond that is directed at the whole class. This can involve verbal or non-verbal (e.g., gestures or response cards) choral responses.</p> <p><i>Example:</i> The teacher presents the entire class with an opportunity to respond. For example, the teacher says, “Class, on your white board write the letter that makes the /h/ sound.”</p> <p><i>Non-Example:</i> The teacher directs the whole class to follow a direction to perform a task. For example, “Class, put away your white boards and get ready for silent reading.”</p>
TD-OTR Peer	<p><i>Definition:</i> Teacher provides an academic opportunity to respond that is directed at whole class and the response expectation is that students must communicate with a peer to demonstrate knowledge.</p> <p><i>Example:</i> The teacher presents all students within the class with an opportunity to respond that involves responding to a peer. For example, “Students, turn and tell your partner how to sound out the word on the board.”</p> <p><i>Non-Example:</i> The teacher tells students to engage in a social conversation while he or she attends to an issue outside the classroom. For example, the teacher asks students to “turn and tell a friend about your weekend” while he or she answers the classroom phone.</p>

Why provide increased rates of TD-OTRs?

- Increasing presentation of **TD-OTRs** results in:
 - Positive academic outcomes for students
 - Increases in:
 - (a) correct responses,
 - (b) learning of academic content, and
 - (c) academic achievement
 - Positive behavioral outcomes for students
 - Decreases in:
 - (a) off-task behavior, and
 - (b) disruptive behavior
 - Increases in:
 - (a) participation,
 - (b) time on-task, and
 - (c) active student responding,

Blood, 2010; Carnine, 1976; Davis & O’Neil, 2004; Gardner Heward, & Grossi, 1994; Haydon, Conroy, Scott, Sindelar, Barbetta, & Orlando, 2009; Haydon & Hunter, 2011; Kamps, Dugan, Leonard, & Daoust, 1994; Lambert, Cartledge, Heward, & Lo, 2006; McKenzie & Henry, 1979; Narayan Heward, & Gardner, 1990; Sindelar, Bursuck, & Halle, 1986; Sterling, Barbetta, Heward, & Heron, 1997; Sutherland, Alder, & Gunter, 2003; West & Sloane, 1968

- Despite the evidence supporting that increasing the number of **opportunities to respond presented to students with emotional behavioral disorders (EBD)** was associated with positive academic and behavioral outcomes, research shows that these students typically receive the least TD-OTRs falling (on average) near zero per minute (Sutherland & Wehby, 2001).
- Providing students with increased TD-OTRs classwide is an empirically supported classroom management practice that may lead to improved academic and behavioral outcomes for students (Conroy, Sutherland, Snyder, & Marsh, 2008; Lewis, Hudson, Richter, & Johnosn, 2004; Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008).

How frequently should TD-OTRs be provided during direct instruction?

Research suggests that providing TD-OTRs at a rate of approximately 3.00 per minute or greater is associated with positive student academic and behavioral outcomes (MacSuga & Simonsen, in preparation; Sutherland, Alder, & Gunter, 2003; Sutherland & Wehby, 2001)

What are some examples of TD-OTRs?

- TD-OTR Individual:
 - During teacher-directed instruction, the teacher asks the class “What letter does the word ‘apple’ begin with?” All students raise their hands and **the teacher calls on a single student** to respond, “Jeremy.” The student gives a response and the teacher provides contingent feedback, “Yes Jeremy, the word ‘apple’ begins with the letter A.”
- TD-OTR Unison (Written):
 - During teacher-directed instruction, **the teacher instructs the entire class** to, “Write the letter that the word ‘apple’ begins with on your white boards and hold them up for me to see.” All students write the letter they believe ‘apple’ begins with on their individual white boards and each holds up the board for the teacher to see. After the all students display their responses, the teacher provides contingent feedback, “Nice work class, most of you wrote the letter A and the word ‘apple’ begins with the letter A.”
- TD-OTR Unison (Verbal):
 - **The teacher instructs the entire class** to recite all of the vowels, “Class, together say all five vowel sounds.” The students recite, “A, E, I, O, U.” The teacher provides contingent feedback based on student responses, “Ok, I heard a few people forget U. Let’s try it all together again!”
- TD-OTR Unison (Gestural):
 - The teacher provides **all students** with a set of consonant cards and **instructs the entire class** to hold up the card that makes the /t/ sound. All students hold up the card they believe to make the /t/ sound and the teacher provides contingent feedback based on student responses, “Fantastic! You all held up the correct letter!”
- TD-OTR Peer:
 - The teacher provides **all students** with a set of consonant cards and **instructs the entire class** to show their **partner (i.e., peer)** the card that makes the /t/ sound. All students show their partner (i.e., a nearby peer) the card they believe to make the /t/ sound as the teacher supervises. After students have responded to their peers, the teacher provides contingent feedback based on student responses, “Good job. Most of you showed your partner the letter T.”

What are the critical features of TD-OTRs?

- Delivered by the teacher to the students
- Specifically, each OTR involves a teacher prompt for response, student response, and subsequent contingent feedback
- TD-OTRs can be delivered individually or in unison via verbal or non-verbal options

- Provide TD-OTRs at a rate of 3.00 per minute or greater during teacher directed instruction

How will you increase your use of TD-OTRs in your classroom?

Write three (or more) examples of ways that you will provide all students in your classroom with opportunities to respond during teacher directed instruction.

1. _____
—

—
2. _____
—

—
3. _____
—

How will you increase the likelihood that you will deliver more frequent TD-OTRs to ALL students?

- Self-monitoring
 - One way we can manage ourselves is to **self-monitor** and **self-evaluate**. In this study, we will examine the effects of self-monitoring. Specifically, we will ask you to **count** your TD-OTRs (using a golf counter)
 - Press button to advance counter each time you deliver a single TD-OTR to one (or more) students during teacher directed instruction (i.e., when the video camera is rolling)
 - In the Excel spreadsheet on Dropbox, record the total number of TD-OTRs you present daily, and the number of minutes (typically 15) you were observed. Based on your data entry, your daily TD-OTR rate (i.e., total number of TD-OTRs presented divided by number of minutes observed that day) will generate a data point on the Excel graph that you can view.
 - Remember, our goal is to see how self-monitoring affects your rates of TD-OTRs. Therefore, we will also ask you how you like self-monitoring (using a brief survey) at the end of the study.
 - Based on our observational data, we will meet with individual teachers to provide additional support.

Thank You! If you have any further questions, please email Ashley at:
ashley.macsuga@gmail.com

Providing Students with Teacher-Directed Opportunities to Respond

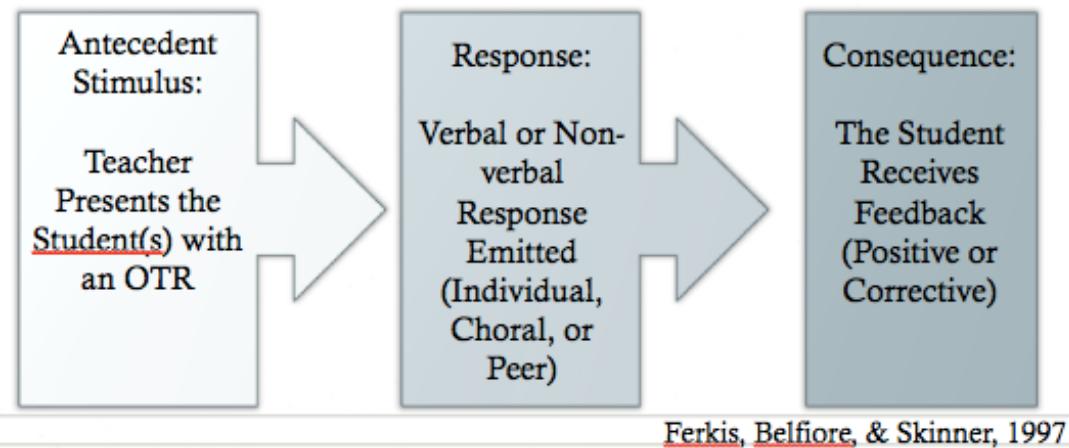
Targeted Professional Development Training

Teacher Pseudonym: _____
Date: _____

Review of TD-OTRs & Introduction to Comprehensive Self-Management with Performance-based Feedback

What are teacher-directed opportunities to respond (TD-OTRs)?

TD-OTRs are defined as teacher-directed opportunities to respond that occasion student responses. Specifically, TD-OTRs follow the following behavior chain:



There are three specific types of TD-OTRs:

1. Teacher-directed **individual** OTRs
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3. Teacher-directed **peer** OTRs

What are some examples of TD-OTRs?

- TD-OTR Individual:
 - During teacher-directed instruction, the teacher asks the class “What letter does the word ‘apple’ begin with?” All students raise their hands and **the teacher calls on a single student** to respond, “Jeremy.” The student gives a response and the teacher provides contingent feedback, “Yes Jeremy, the word ‘apple’ begins with the letter A.”
- TD-OTR Unison (Written):
 - During teacher-directed instruction, **the teacher instructs the entire class** to, “Write the letter that the word ‘apple’ begins with on your white boards and hold them up for me to see.” All students write the letter they believe ‘apple’ begins with on their individual white boards and each holds up the board for the teacher to see. After all students display their responses, the teacher provides contingent feedback, “Nice work class, most of you wrote the letter A and the word ‘apple’ begins with the letter A.”
- TD-OTR Peer:
 - The teacher provides **all students** with a set of consonant cards and **instructs the entire class** to show their **partner (i.e., peer)** the card that makes the /t/ sound.

All students show their partner (i.e., a nearby peer) the card they believe to make the /t/ sound as the teacher supervises. After students have responded to their peers, the teacher provides contingent feedback based on student responses, “Good job. Most of you showed your partner the letter T.”

What are the critical features of TD-OTRs?

- Delivered by the teacher to the students
- Specifically, each OTR involves a teacher prompt for response, student response, and subsequent contingent feedback
- TD-OTRs can be delivered individually or in unison via verbal or non-verbal options
- Provide TD-OTRs at a rate of 3.00 per minute or greater during teacher directed instruction

How will you increase the likelihood that you will deliver more frequent TD-OTRs to ALL students?

- Continued Self-monitoring
 - One way we can manage ourselves is to **self-monitor** and **self-evaluate**. In this study, we will examine the effects of self-monitoring. Specifically, we will ask you to **count** your TD-OTRs (using a golf counter)
 - Press button to advance counter each time you deliver a single TD-OTR to one (or more) students during teacher directed instruction (i.e., when the video camera is rolling)
 - In the Excel spreadsheet on Dropbox, record the total number of TD-OTRs you present daily, and the number of minutes (typically 15) you were observed. Based on your data entry, your daily TD-OTR rate (i.e., total number of TD-OTRs presented divided by number of minutes observed that day) will generate a data point on the Excel graph that you can view.
 - In addition to self-monitoring, we would like to explore the effects of a **targeted intervention package** that includes **self-management** and **performance-based feedback**.

What is involved in the targeted intervention package (i.e., additional self-management plus performance feedback)?

- Self-management
 - According to Skinner (1953), we manage our own behavior in the same manner as we manage anyone else’s—“through the **manipulation of variables** of which behavior is a function” (p. 228).
 - Self-management is engaging in one response (the **self-management** behavior) that affects the probability of a subsequent behavior (the **target** or desired behavior)

- One way we can manage ourselves is to **self-monitor** and **self-evaluate**. In this study, we will examine the effects of self-monitoring. Specifically, we will ask you to **count** your TD-OTRs (using a golf counter). This is the continuation of self-monitoring.
 - In addition to self-monitoring, you will set a **goal** (based on your previously collected data) and create an **action plan** to help you reach your goal.
 - **Self-reinforcement**. You will be asked to select a self-delivered reinforcer (e.g., a latte, a yoga class) and to deliver that reinforcer when your data indicates that you have met your goal.
 - In this study, we will ask you self manage to (a) set a **goal** for your praise rate (based on the data you've collected), (b) create an **action plan** to help you meet that goal, (c) identify a **reinforcer** you will deliver to yourself on days you meet your goal and record that information in the Dropbox system, and (c) continue to enter your daily TD-OTR rate into the Dropbox system allowing you to self-monitor your progress whether you earned your self-delivered reinforcer daily or not.
- Performance feedback:
- Performance feedback “consists of monitoring a behavior that is the focus of concern and providing feedback to the individual regarding that behavior” (Noel et al., 2005, p. 88). Skinner (1958) noted that, “a considerable effect may be achieved by clarifying the relationship between behavior and its consequences” (p.319), which is the goal of performance feedback.
 - For the purposes of this study, performance feedback will include prompts via **intermittent email feedback** and one additional step for you.
 - You will receive intermittent email feedback based on the data you have entered into your self-monitoring sheet that indicates if you are (a) self-monitoring with fidelity and (b) if you have met your goal or not. These emails will also contain a brief suggestion for ways to increase your OTR presentation should you not meet your goal. Please make sure to reply to each email to let us know it was received.
 - Now, please complete the brief action plan on the next page.

Self-Management Plan

Current TD-OTR Presentation Rate:	____ TD-OTRs presented per minute
Goal TD-OTR Presentation Rate:	____ TD-OTRs presented per minute
Action Plan: <i>Identify at least three concrete steps you will take to increase the rate of TD-OTRs you provide to students.</i>	1. 2. 3.
Self-delivered Reinforcement: <i>Identify the reinforcer you will deliver daily when you meet your goal.</i>	
Procedure for Self-delivered Reinforcement: <i>Identify when you will (a) enter your TD-OTR rate, (b) determine if you met your goal, and (c) reinforce yourself. Also, describe how you will deliver/access your reinforcer.</i>	
Procedure for Acknowledging the Receipt of Email Feedback: <i>Identify when you will check email (prior to the observed class) to receive performance feedback & additional prompts.</i>	

- Remember, our goal is to see how the use of a targeted intervention package affects your presentation of TD-OTRs. Therefore, we will ask you how you like this targeted intervention package (using a brief survey) at the end of the study and we will also ask you to report how often you self-reinforced when you met your goal. As with universal training, researchers will again continue to monitor observational information and based on researcher-collected data and we will meet with you to provide additional support if needed.

Thank You! If you have any further questions, please email Ashley at: ashley.macsuga@gmail.com

Providing Students with Teacher-Directed Opportunities to Respond

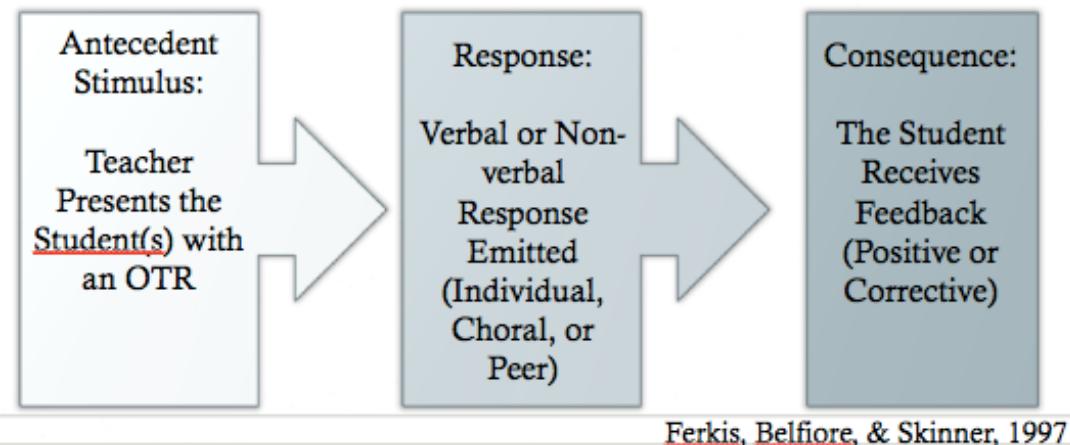
Individualized Professional Development Training

Teacher Pseudonym: _____
Date: _____

Review of TD-OTRs & Introduction to Comprehensive Self-Management with Performance-based Feedback

What are teacher-directed opportunities to respond (TD-OTRs)?

TD-OTRs are defined as teacher-directed opportunities to respond that occasion student responses. Specifically, TD-OTRs follow the following behavior chain:



There are three specific types of TD-OTRs:

1. Teacher-directed **individual** OTRs
2. Teacher-directed **unison** OTRs
3. Teacher-directed **peer** OTRs

What are some examples of TD-OTRs?

- TD-OTR Individual:
 - During teacher-directed instruction, the teacher asks the class “What letter does the word ‘apple’ begin with?” All students raise their hands and **the teacher calls on a single student** to respond, “Jeremy.” The student gives a response and the teacher provides contingent feedback, “Yes Jeremy, the word ‘apple’ begins with the letter A.”
- TD-OTR Unison (Written):
 - During teacher-directed instruction, **the teacher instructs the entire class to**, “Write the letter that the word ‘apple’ begins with on your white boards and hold them up for me to see.” All students write the letter they believe ‘apple’ begins with on their individual white boards and each holds up the board for the teacher to see. After all students display their responses, the teacher provides contingent feedback, “Nice work class, most of you wrote the letter A and the word ‘apple’ begins with the letter A.”
- TD-OTR Peer:
 - The teacher provides **all students** with a set of consonant cards and **instructs the entire class** to show their **partner (i.e., peer)** the card that makes the /t/ sound.

All students show their partner (i.e., a nearby peer) the card they believe to make the /t/ sound as the teacher supervises. After students have responded to their peers, the teacher provides contingent feedback based on student responses, “Good job. Most of you showed your partner the letter T.”

What are the critical features of TD-OTRs?

- Delivered by the teacher to the students
- Specifically, each OTR involves a teacher prompt for response, student response, and subsequent contingent feedback
- TD-OTRs can be delivered individually or in unison via verbal or non-verbal options
- Provide TD-OTRs at a rate of 3.00 per minute or greater during teacher directed instruction

How will you increase the likelihood that you will deliver more frequent TD-OTRs to ALL students?

- Continued Self-monitoring
 - One way we can manage ourselves is to **self-monitor** and **self-evaluate**. In this study, we will examine the effects of self-monitoring. Specifically, we will ask you to **count** your TD-OTRs (using a golf counter)
 - Press button to advance counter each time you deliver a single TD-OTR to one (or more) students during teacher directed instruction (i.e., when the video camera is rolling)
 - In the Excel spreadsheet on Dropbox, record the total number of TD-OTRs you present daily, and the number of minutes (typically 15) you were observed. Based on your data entry, your daily TD-OTR rate (i.e., total number of TD-OTRs presented divided by number of minutes observed that day) will generate a data point on the Excel graph that you can view.
- In addition to self-monitoring, we asked you to explore the effects of a **targeted intervention package** that includes **self-management** and **performance-based feedback** using your own self-collected data paired with intermittent external performance feedback. This included the following additional procedures:
 - For the purposes of this study, you were asked to engage in self-management. Specifically, you were asked to:
 - (a) set a **goal** for your praise rate (based on the data you've collected),
 - (b) create an **action plan** to help you meet that goal,
 - (c) to continue to enter your daily TD-OTR rate into the Dropbox system allowing you to **self-monitor** your progress whether you earned your self-delivered reinforcer daily or not, and
 - (d) identify a self-delivered **reinforcer** you delivered to yourself on days you meet your goal

- Also, you have been receiving intermittent email reinforcement based on the data you entered into your self-monitoring sheet that indicated if you have been (a) self-monitoring with fidelity, and (b) if you have met your goal or not. These emails contained a brief suggestion for ways to increase your OTR presentation if you did not meet your goal.

Individualized Consultation with Researcher Data as Performance Feedback

We will use the information from the following interview to help revise your action plan and goal. Please engage in the following activities/answer the following questions:

- You will now be asked to review the observational data the research team has collected on your presentation of TD-OTRs over the course of the study. Based on the information presented in the researcher data, your average daily TD-OTR presentation rate is _____.
_____.
- Please review your previously set goal for TD-OTR presentation rate. What is the difference between your goal rate and your average observed rate?
_____.
- Based on this difference, review your previous action plan. What was working and what did not work?
_____.

Now using the information you provided above, please work with the consultant to update the following information in your self-management plan.

Revised Self-Management Plan

Current TD-OTR Presentation Rate:	____ TD-OTRs presented per minute
Goal TD-OTR Presentation Rate:	____ TD-OTRs presented per minute
Action Plan: <i>Identify at least three concrete steps you will take to increase the rate of TD-OTRs you provide to students.</i>	1. 2. 3.
Self-delivered Reinforcement: <i>Identify the reinforcer you will deliver daily when you meet your goal.</i>	
Procedure for Self-delivered Reinforcement: <i>Identify when you will (a) check your email to obtain your daily TD-OTR rates, (b) determine if you met your goal, and (c) reinforce yourself. Also, describe how you will deliver/access your reinforcer.</i>	
Procedure for Acknowledging the Receipt of Email Feedback: <i>Identify when you will check email (prior to the observed class) to receive performance feedback & additional prompts. Also, identify how you will let researchers know you have checked your daily email feedback</i>	

- Remember, our goal is to see how individualized consultation with daily performance feedback affects your presentation of TD-OTRs. Therefore, we will ask you how you like this individualized intervention package (using a brief survey) at the end of the study and we will also ask you to report how often you self-reinforced when you met your goal. At the end of data collection (i.e., approximately five days) we will meet with you again to provide summary information and to assist you in planning for maintenance and generalization.

Thank You! If you have any further questions, please email Ashley at: ashley.macsuga@gmail.com

Providing Students with Teacher-Directed Opportunities to Respond

Universal In-Service Training

Fidelity Checklist

Name of Observer: _____

Date of Training/Observation: _____

Total Number of Steps Observed: _____

Total Number of Possible Steps: 8

(Note: Total number of steps observed _____ / the total number of possible steps 8 = overall training fidelity score _____)

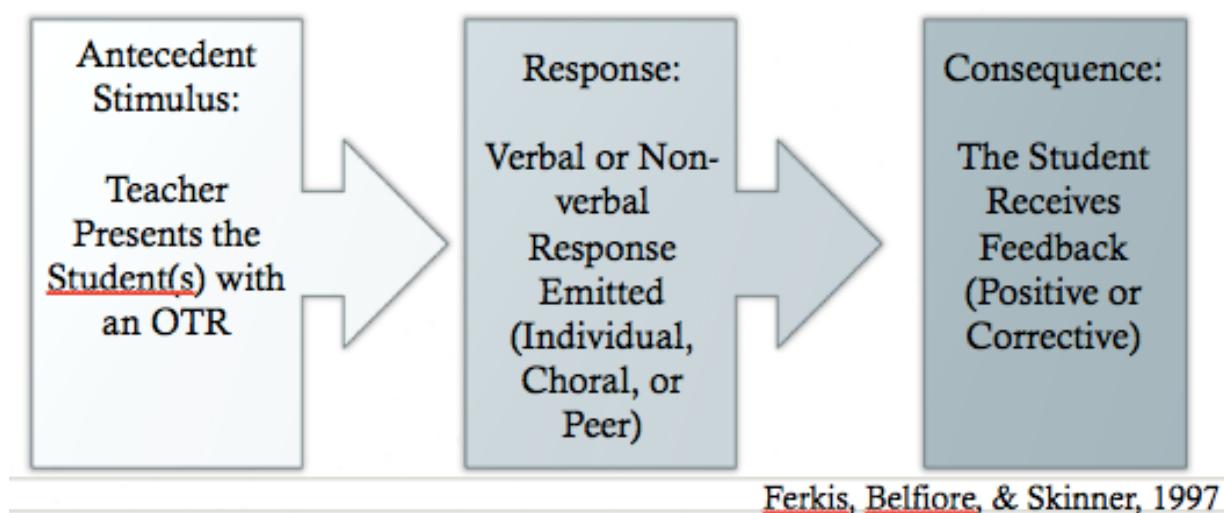
Overall Training Fidelity Score: _____

Teacher-Directed Opportunities to Respond (TD-OTRs)

What are teacher-directed opportunities to respond (TD-OTRs)?

Reviewed by Trainer? Yes No

TD-OTRs are defined as teacher-directed opportunities to respond that occasion student responses. Specifically, TD-OTRs follow the following behavior chain:



There are three specific types of TD-OTRs:

1. Teacher-directed individual OTRs
2. Teacher-directed unison OTRs
3. Teacher-directed peer OTRs

The table on the next page provides specific definitions and examples/non-examples of each of the three TD-OTR types.

Reviewed by Trainer? Yes No

Definitions of the Three Types of TD-OTRs

TD-OTR Individual	<p><i>Definition:</i> “Teacher provides an academic opportunity to respond toward a specific individual.</p> <p><i>Example:</i> The teacher says the name of an individual student paired with an opportunity to respond (e.g., “Jimmy, what sounds can the letter ‘C’ make?”) or presents an opportunity to respond to the class but selects only one student to respond (e.g., the teacher holds up a letter card containing /ch/ and says, “Someone raise your hand and tell me what sound this makes.”)</p> <p><i>Non-Example:</i> The teacher presents a rhetorical question to an individual student then answers that question him or herself (e.g., “Bobby, what sound does short ‘a’ make? Short ‘a’ says /ă/ as in bat.”)</p>
TD-OTR Unison	<p><i>Definition:</i> “Teacher provides an academic opportunity to respond that is directed at the whole class. This can involve verbal or non-verbal (e.g., gestures or response cards) choral responses.</p> <p><i>Example:</i> The teacher presents the entire class with an opportunity to respond. For example, the teacher says, “Class, on your white board write the letter that makes the /h/ sound.”</p> <p><i>Non-Example:</i> The teacher directs the whole class to follow a direction to perform a task. For example, “Class, put away your white boards and get ready for silent reading.”</p>
TD-OTR Peer	<p><i>Definition:</i> Teacher provides an academic opportunity to respond that is directed at whole class and the response expectation is that students must communicate with a peer to demonstrate knowledge.</p> <p><i>Example:</i> The teacher presents all students within the class with an opportunity to respond that involves responding to a peer. For example, “Students, turn and tell your partner how to sound out the word on the board.”</p> <p><i>Non-Example:</i> The teacher tells students to engage in a social conversation while he or she attends to an issue outside the classroom. For example, the teacher asks students to “turn and tell a friend about your weekend” while he or she</p>

answers the classroom phone.

Why provide increased rates of TD-OTRs?**Reviewed by Trainer? Yes No**

- Increasing presentation of **TD-OTRs** results in:
 - Positive academic outcomes for students
 - Increases in:
 - (a) correct responses,
 - (b) learning of academic content, and
 - (c) academic achievement
 - Positive behavioral outcomes for students
 - Decreases in:
 - (a) off-task behavior, and
 - (b) disruptive behavior
 - Increases in:
 - (a) participation,
 - (b) time on-task, and
 - (c) active student responding,

Blood, 2010; Carnine, 1976; Davis & O’Neil, 2004; Gardner Heward, & Grossi, 1994; Haydon, Conroy, Scott, Sindelar, Barbetta, & Orlando, 2009; Haydon & Hunter, 2011; Kamps, Dugan, Leonard, & Daoust, 1994; Lambert, Cartledge, Heward, & Lo, 2006; McKenzie & Henry, 1979; Narayan Heward, & Gardner, 1990; Sindelar, Bursuck, & Halle, 1986; Sterling, Barbetta, Heward, & Heron, 1997; Sutherland, Alder, & Gunter, 2003; West & Sloane, 1968

- Despite the evidence supporting that increasing the number of **opportunities to respond presented to students with emotional behavioral disorders (EBD)** was associated with positive academic and behavioral outcomes, research shows that these students typically receive the least TD-OTRs falling (on average) near zero per minute (Sutherland & Wehby, 2001).
- Providing students with increased TD-OTRs classwide is an empirically supported classroom management practice that may lead to improved academic and behavioral outcomes for students (Conroy, Sutherland, Snyder, & Marsh, 2008; Lewis, Hudson, Richter, & Johnosn, 2004; Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008).

How frequently should TD-OTRs be provided during direct instruction?**Reviewed by Trainer? Yes No**

Research suggests that providing TD-OTRs at a rate of approximately 3.00 per minute or greater is associated with positive student academic and behavioral outcomes (MacSuga & Simonsen, in preparation; Sutherland, Alder, & Gunter, 2003; Sutherland & Wehby, 2001)

What are some examples of TD-OTRs?

Reviewed by Trainer? Yes No

- TD-OTR Individual:
 - During teacher-directed instruction, the teacher asks the class “What letter does the word ‘apple’ begin with?” All students raise their hands and **the teacher calls on a single student** to respond, “Jeremy.” The student gives a response and the teacher provides contingent feedback, “Yes Jeremy, the word ‘apple’ begins with the letter A.”
- TD-OTR Unison (Written):
 - During teacher-directed instruction, **the teacher instructs the entire class** to, “Write the letter that the word ‘apple’ begins with on your white boards and hold them up for me to see.” All students write the letter they believe ‘apple’ begins with on their individual white boards and each holds up the board for the teacher to see. After all students display their responses, the teacher provides contingent feedback, “Nice work class, most of you wrote the letter A and the word ‘apple’ begins with the letter A.”
- TD-OTR Unison (Verbal):
 - **The teacher instructs the entire class** to recite all of the vowels, “Class, together say all five vowel sounds.” The students recite, “A, E, I, O, U.” The teacher provides contingent feedback based on student responses, “Ok, I heard a few people forget U. Let’s try it all together again!”
- TD-OTR Unison (Gestural):
 - The teacher provides **all students** with a set of consonant cards and **instructs the entire class** to hold up the card that makes the /t/ sound. All students hold up the card they believe to make the /t/ sound and the teacher provides contingent feedback based on student responses, “Fantastic! You all held up the correct letter!”
- TD-OTR Peer:
 - The teacher provides **all students** with a set of consonant cards and **instructs the entire class** to show their **partner (i.e., peer)** the card that makes the /t/ sound. All students show their partner (i.e., a nearby peer) the card they believe to make the /t/ sound as the teacher supervises. After students have responded to their peers, the teacher provides contingent feedback based on student responses, “Good job. Most of you showed your partner the letter T.”

What are the critical features of TD-OTRs?

Reviewed by Trainer? Yes No

- Delivered by the teacher to the students
- Specifically, each OTR involves a teacher prompt for response, student response, and subsequent contingent feedback

- TD-OTRs can be delivered individually or in unison via verbal or non-verbal options
- Provide TD-OTRs at a rate of 3.00 per minute or greater during teacher directed instruction

How will you increase your use of TD-OTRs in your classroom?

Reviewed by Trainer? Yes No

Write three (or more) examples of ways that you will provide all students in your classroom with opportunities to respond during teacher directed instruction.

1. _____
-

-

2. _____
-

-

3. _____
-

How will you increase the likelihood that you will deliver more frequent TD-OTRs to ALL students?

Reviewed by Trainer? Yes No

- Self-monitoring
 - One way we can manage ourselves is to **self-monitor** and **self-evaluate**. In this study, we will examine the effects of self-monitoring. Specifically, we will ask you to **count** your TD-OTRs (using a golf counter)
 - Press button to advance counter each time you deliver a single TD-OTR to one (or more) students during teacher directed instruction (i.e., when the video camera is rolling)
 - In the Excel spreadsheet on Dropbox, record the total number of TD-OTRs you present daily, and the number of minutes (typically 15) you were observed. Based on your data entry, your daily TD-OTR rate (i.e., total number of TD-OTRs presented divided by number of minutes observed that day) will generate a data point on the Excel graph that you can view.

- Remember, our goal is to see how self-monitoring affects your rates of TD-OTRs. Therefore, we will also ask you how you like self-monitoring (using a brief survey) at the end of the study.
- Based on our observational data, we will meet with individual teachers to provide additional support.

Thank You! If you have any further questions, please email Ashley at:
ashley.macsuga@gmail.com

Providing Students with Teacher-Directed Opportunities to Respond

Targeted Professional Development Training

Teacher Pseudonym: _____
Date: _____

Fidelity Checklist

Name of Observer: _____

Total Number of Steps Observed: _____

Total Number of Possible Steps: 6

(Note: Total number of steps observed ____ / the total number of possible steps 6 = overall training fidelity score ____)

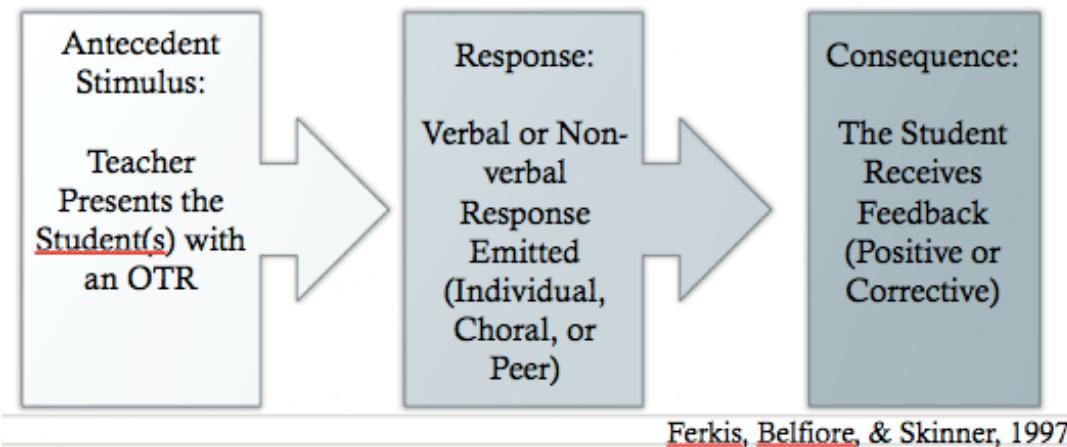
Overall Training Fidelity Score: _____

Review of TD-OTRs & Introduction to Comprehensive Self-Management with Performance-based Feedback

What are teacher-directed opportunities to respond (TD-OTRs)?

Reviewed by Trainer? Yes No

TD-OTRs are defined as teacher-directed opportunities to respond that occasion student responses. Specifically, TD-OTRs follow the following behavior chain:



There are three specific types of TD-OTRs:

1. Teacher-directed **individual** OTRs
2. Teacher-directed **unison** OTRs
3. Teacher-directed **peer** OTRs

What are some examples of TD-OTRs?

Reviewed by Trainer? Yes No

- TD-OTR Individual:
 - During teacher-directed instruction, the teacher asks the class “What letter does the word ‘apple’ begin with?” All students raise their hands and **the teacher calls on a single student** to respond, “Jeremy.” The student gives a response and the teacher provides contingent feedback, “Yes Jeremy, the word ‘apple’ begins with the letter A.”
- TD-OTR Unison (Written):
 - During teacher-directed instruction, **the teacher instructs the entire class** to, “Write the letter that the word ‘apple’ begins with on your white boards and hold them up for me to see.” All students write the letter they believe ‘apple’ begins with on their individual white boards and each holds up the board for the teacher to see. After the all students display their responses, the teacher provides contingent feedback, “Nice work class, most of you wrote the letter A and the word ‘apple’ begins with the letter A.”

- TD-OTR Peer:
 - The teacher provides **all students** with a set of consonant cards and **instructs the entire class** to show their **partner** (i.e., **peer**) the card that makes the /t/ sound. All students show their partner (i.e., a nearby peer) the card they believe to make the /t/ sound as the teacher supervises. After students have responded to their peers, the teacher provides contingent feedback based on student responses, “Good job. Most of you showed your partner the letter T.”

What are the critical features of TD-OTRs?

Reviewed by Trainer? Yes No

- Delivered by the teacher to the students
- Specifically, each OTR involves a teacher prompt for response, student response, and subsequent contingent feedback
- TD-OTRs can be delivered individually or in unison via verbal or non-verbal options
- Provide TD-OTRs at a rate of 3.00 per minute or greater during teacher directed instruction

How will you increase the likelihood that you will deliver more frequent TD-OTRs to ALL students?

Reviewed by Trainer? Yes No

- Continued Self-monitoring
 - One way we can manage ourselves is to **self-monitor** and **self-evaluate**. In this study, we will examine the effects of self-monitoring. Specifically, we will ask you to **count** your TD-OTRs (using a golf counter)
 - Press button to advance counter each time you deliver a single TD-OTR to one (or more) students during teacher directed instruction (i.e., when the video camera is rolling)
 - In the Excel spreadsheet on Dropbox, record the total number of TD-OTRs you present daily, and the number of minutes (typically 15) you were observed. Based on your data entry, your daily TD-OTR rate (i.e., total number of TD-OTRs presented divided by number of minutes observed that day) will generate a data point on the Excel graph that you can view.
 - In addition to self-monitoring, we would like to explore the effects of a **targeted intervention package** that includes **self-management** and performance-based feedback.

What is involved in the targeted intervention package (i.e., additional self-management plus performance feedback)?

Reviewed by Trainer? Yes No

- Self-management

- According to Skinner (1953), we manage our own behavior in the same manner as we manage anyone else's—"through the **manipulation of variables** of which behavior is a function" (p. 228).
 - Self-management is engaging in one response (the **self-management** behavior) that affects the probability of a subsequent behavior (the **target** or desired behavior)
 - One way we can manage ourselves is to **self-monitor** and **self-evaluate**. In this study, we will examine the effects of self-monitoring. Specifically, we will ask you to **count** your TD-OTRs (using a golf counter). This is the continuation of self-monitoring.
 - In addition to self-monitoring, you will set a **goal** (based on your previously collected data) and create an **action plan** to help you reach your goal.
 - **Self-reinforcement.** You will be asked to select a self-delivered reinforcer (e.g., a latte, a yoga class) and to deliver that reinforcer when your data indicates that you have met your goal.
- In this study, we will ask you self manage to (a) set a **goal** for your praise rate (based on the data you've collected), (b) create an **action plan** to help you meet that goal, (c) identify a **reinforcer** you will deliver to yourself on days you meet your goal and record that information in the Dropbox system, and (c) continue to enter your daily TD-OTR rate into the Dropbox system allowing you to self-monitor your progress whether you earned your self-delivered reinforcer daily or not.
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 - For the purposes of this study, performance feedback will include prompts via **intermittent email feedback** and one additional step for you.
 - You will receive intermittent email feedback based on the data you have entered into your self-monitoring sheet that indicates if you are (a) self-monitoring with fidelity and (b) if you have met your goal or not. These emails will also contain a brief suggestion for ways to increase your OTR presentation should you not meet your goal. Please make sure to reply to each email to let us know it was received.
 - Now, please complete the brief action plan on the next page.

Plan Completed by Teacher

Reviewed by Trainer? Yes No

Self-Management Plan

Current TD-OTR Presentation Rate:	____ TD-OTRs presented per minute
Goal TD-OTR Presentation Rate:	____ TD-OTRs presented per minute
Action Plan: <i>Identify at least three concrete steps you will take to increase the rate of TD-OTRs you provide to students.</i>	1. 2. 3.
Self-delivered Reinforcement: <i>Identify the reinforcer you will deliver daily when you meet your goal.</i>	
Procedure for Self-delivered Reinforcement: <i>Identify when you will (a) enter your TD-OTR rate, (b) determine if you met your goal, and (c) reinforce yourself. Also, describe how you will deliver/access your reinforcer.</i>	
Procedure for Acknowledging the Receipt of Email Feedback: <i>Identify when you will check email (prior to the observed class) to receive performance feedback & additional prompts.</i>	

- Remember, our goal is to see how the use of a targeted intervention package affects your presentation of TD-OTRs. Therefore, we will ask you how you like this targeted intervention package (using a brief survey) at the end of the study and we will also ask you to report how often you self-reinforced when you met your goal. As with universal training, researchers will again continue to monitor observational information and based on researcher-collected data and we will meet with you to provide additional support if needed.

Thank You! If you have any further questions, please email Ashley at: ashley.macsuga@gmail.com

Providing Students with Teacher-Directed Opportunities to Respond

Individualized Professional Development Training

Teacher Pseudonym: _____

Date: _____

Fidelity Checklist

Name of Observer: _____

Total Number of Steps Observed: _____

Total Number of Possible Steps: 6

(Note: Total number of steps observed ____ / the total number of possible steps 6 = overall training fidelity score ____)

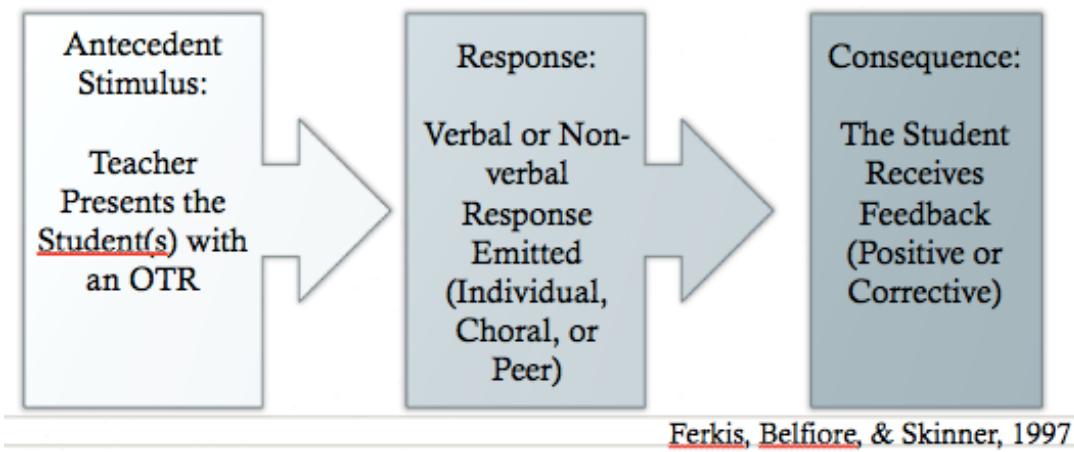
Overall Training Fidelity Score: _____

Review of TD-OTRs & Introduction to Comprehensive Self-Management with Performance-based Feedback

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contingent feedback, “Nice work class, most of you wrote the letter A and the word ‘apple’ begins with the letter A.”

- TD-OTR Peer:
 - The teacher provides **all students** with a set of consonant cards and **instructs the entire class** to show their **partner** (i.e., peer) the card that makes the /t/ sound. All students show their partner (i.e., a nearby peer) the card they believe to make the /t/ sound as the teacher supervises. After students have responded to their peers, the teacher provides contingent feedback based on student responses, “Good job. Most of you showed your partner the letter T.”

What are the critical features of TD-OTRs?

Reviewed by Trainer? Yes No

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- Specifically, each OTR involves a teacher prompt for response, student response, and subsequent contingent feedback
- TD-OTRs can be delivered individually or in unison via verbal or non-verbal options
- Provide TD-OTRs at a rate of 3.00 per minute or greater during teacher directed instruction

How will you increase the likelihood that you will deliver more frequent TD-OTRs to ALL students?

Reviewed by Trainer? Yes No

- Continued Self-monitoring
 - One way we can manage ourselves is to **self-monitor** and **self-evaluate**. In this study, we will examine the effects of self-monitoring. Specifically, we will ask you to **count** your TD-OTRs (using a golf counter)
 - Press button to advance counter each time you deliver a single TD-OTR to one (or more) students during teacher directed instruction (i.e., when the video camera is rolling)
 - In the Excel spreadsheet on Dropbox, record the total number of TD-OTRs you present daily, and the number of minutes (typically 15) you were observed. Based on your data entry, your daily TD-OTR rate (i.e., total number of TD-OTRs presented divided by number of minutes observed that day) will generate a data point on the Excel graph that you can view.
- In addition to self-monitoring, we asked you to explore the effects of a **targeted intervention package** that includes **self-management** and **performance-based feedback** using your own self-collected data paired with intermittent external performance feedback. This included the following additional procedures:

- For the purposes of this study, you were asked to engage in self-management. Specifically, you were asked to:
 - (a) set a **goal** for your praise rate (based on the data you've collected),
 - (b) create an **action plan** to help you meet that goal,
 - (c) to continue to enter your daily TD-OTR rate into the Dropbox system allowing you to **self-monitor** your progress whether you earned your self-delivered reinforcer daily or not, and
 - (d) identify a self-delivered **reinforcer** you delivered to yourself on days you meet your goal
- Also, you have been receiving intermittent email reinforcement based on the data you entered into your self-monitoring sheet that indicated if you have been (a) self-monitoring with fidelity, and (b) if you have met your goal or not. These emails contained a brief suggestion for ways to increase your OTR presentation if you did not meet you goal.

Individualized Consultation with Researcher Data as Performance Feedback

Reviewed by Trainer? Yes No

We will use the information from the following interview to help revise your action plan and goal. Please engage in the following activities/answer the following questions:

- You will now be asked to review the observational data the research team has collected on your presentation of TD-OTRs over the course of the study. Based on the information presented in the researcher data, your average daily TD-OTR presentation rate is _____.
- Please review your previously set goal for TD-OTR presentation rate. What is the difference between your goal rate and your average observed rate?
_____.
- Based on this difference, review your previous action plan. What was working and what did not work?

Now using the information you provided above, please work with the consultant to update the following information in your self-management plan.

Plan Completed by Teacher

Reviewed by Trainer? Yes No

Revised Self-Management Plan

Current TD-OTR Presentation Rate:	____ TD-OTRs presented per minute
Goal TD-OTR Presentation Rate:	____ TD-OTRs presented per minute
Action Plan: <i>Identify at least three concrete steps you will take to increase the rate of TD-OTRs you provide to students.</i>	1. 2. 3.
Self-delivered Reinforcement: <i>Identify the reinforcer you will deliver daily when you meet your goal.</i>	
Procedure for Self-delivered Reinforcement: <i>Identify when you will (a) check your email to obtain your daily TD-OTR rates, (b) determine if you met your goal, and (c) reinforce yourself. Also, describe how you will deliver/access your reinforcer.</i>	
Procedure for Acknowledging the Receipt of Email Feedback: <i>Identify when you will check email (prior to the observed class) to receive performance feedback & additional prompts. Also, identify how you will let researchers know you have checked your daily email feedback</i>	

- Remember, our goal is to see how individualized consultation with daily performance feedback affects your presentation of TD-OTRs. Therefore, we will ask you how you like this individualized intervention package (using a brief survey) at the end of the study and we will also ask you to report how often you self-reinforced when you met your goal. At the end of data collection (i.e., approximately five days) we will meet with you again to provide summary information and to assist you in planning for maintenance and generalization.

Thank You! If you have any further questions, please email Ashley at: ashley.macsuga@gmail.com

Appendix F

Comprehensive Timeline of Study Procedures

Ashley S. MacSuga-Gage, MA
University of Connecticut

Study Management Chart

	Summer 2012	Fall 2012	Winter 2013	Spring 2013	Summer 2013
Complete Manuscript Summarizing the Review of OTR Literature & Submit for Publication					
IRB Submission & Approval					
Purchase and Print Tangible Study Materials					
Recruitment for Study					
Hiring & Training of Data Collectors					
Conduct Study					
Conduct Data Analysis					
Meet with Study Participants to Review Individual Data					
Present Preliminary Findings at Conferences					
Complete & Submit Final Manuscript					