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# Examining the Effects of Academic and Social Interventions on the Behavior of Students with or At-risk for Emotional or Behavioral Disorders

Lauren M. LeJeune
*Louisiana State University and Agricultural and Mechanical College*

# EXAMINING THE EFFECTS OF ACADEMIC AND SOCIAL INTERVENTIONS ON THE BEHAVIOR OF STUDENTS WITH OR AT-RISK FOR EMOTIONAL OR BEHAVIORAL DISORDERS

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# Abstract

Certainly the educational issues of students with and at-risk for emotional and behavioral disorders (EBD) are complex and multi-faceted (Forness, Freeman, Paparella, Kauffman, & Walker, 2012; Lane, Walker, Crnobori, Oliver, Bruhn, & Oakes, 2013; Wagner, 2004; Wiley & Forness, 2011). While improvements have been made in interventions for challenging behavior through a developing technology of functional behavior assessment and multi-tiered models of support, there remains a need for the demonstration of more effective academic and behavioral interventions applied in schools and under the direction of school personnel. The current study examined two such interventions across multiple students in a variety of educational settings. Using a reversal design and targeting both teacher and student behavior, two interventions, increasing opportunities to respond (OTR) and positive peer reporting (PPR), were systematically investigated across six elementary age students at risk of being identified with EBD.

Results indicated that OTR was successful at increasing mean on-task behavior with four students, decreasing disruptive behavior with five students, and increasing percentage of correct responses with four students. PPR was successful at increasing mean on-task behavior with four students and decreasing mean disruptive behavior with four students but did not result in increases in percentage of correct responses. A combination of OTR and PPR was implemented with two students, which resulted in the highest means of on-task behavior and correct responses and the lowest mean disruptive behavior with one student. The second student was also observed to have the highest mean on-task behavior and mean percentage of correct responses during this intervention, along with a decrease in disruptive behavior.

# Chapter 1. Review of the Literature

Despite impressive gains in many areas of special education, outcomes for students identified with or at risk for emotional or behavioral disorders (EBD) remain startling. These students are making limited academic or behavioral progress and are often failing to receive high school diplomas. Wagner (2014) compared national longitudinal data for students with and without EBD and found that 57.4% of students with EBD graduated high school compared to 70.3% of the general population. In the 2001-2002 school year, almost one-fourth of students with EBD missed more the 4 days of school in a month. Based on assessments of academic achievement, students with EBD lagged far behind students in the general population on measures of language arts, math, social studies, and science. These statistics point to the importance of early intervention, but a two-year gap often exists between the time of identification and receipt of services for students in elementary school (Wagner, 2014). This information becomes even more relevant when combined with the estimate that at least 12% of school-age children have an emotional or behavior disorder with at least moderate impairment (Forness, Freeman, Paparella, Kauffman, & Walker, 2012).

In addition to the information that many students with or at risk for EBD are failing to graduate, it has been shown that factors such socioeconomic status and placement make little difference on their outcomes. Wiley and Forness (2011) used the *Woodcock Johnson III* (WJ III) to measure academic achievement and the *Social Skills Rating System-Teacher Version* (SSRS-T) to measure problem behavior of 86 total students over the course of a two-year period. The students were divided into the following three groups: 35 students with ED from low-income elementary schools, 26 students with ED from high-income schools, and 25 students at-risk for ED from low-income schools. Regardless of type of school, placement, or services received, it

was found that none of the groups showed academic improvement as measured by the *WWJ III* from the spring of one school year to the spring of the next school year. The only group that showed a change in behavior was the 26 at-risk students from low-income schools, which significantly improved on internalizing behavior problems.

While it can be difficult to diagnose young students with emotional or behavioral disorders, early intervention could be crucial to their future success. As Wagner (2014) stated, "the early elementary years are critical for establishing a solid foundation for success in school" (p. 89). Indicators such as difficulty with basic biological functioning, inadequate social responses, or delays in learning language can indicate that a student is at risk for developing an emotional or behavioral disorder (Hallahan & Kauffman, 2006). Lane, Walker, Crnobori, Oliver, Bruhn, and Oakes (2013) recommended that for very young students, intervention efforts should take place before students become highly efficient at aggressive or coercive behaviors. These students should be taught more desirable and equally efficient ways to have their needs met. For older or nonresponsive students, they stressed the importance of intervening early in the acting-out cycle to prevent low levels of disruptive behavior from escalating.

Despite the overall low performance of students with emotional or behavioral disorders, researchers have found that early interventions for at-risk students can yield positive effects. Kamps, Tankersley, and Ellis (2000) followed two groups of 31 total students across the final two years of a three-year longitudinal study. These students had been identified as displaying aggressive and anti-social behavior during their participation in a Head Start program, and social skills (across all three years) and peer-tutoring interventions (across years two and three) were implemented to assess the effectiveness of prevention efforts. While teacher and parent involvement varied across the years, generally positive outcomes were found for the students in

the treatment group in comparison to a control group of students who had been identified as having similar patterns of behavior in Head Start. Across the final two years, the experimental group showed significantly reduced aggression, grabbing, out-of-seat behaviors, negative verbal statements, and increased compliance in contrast to the comparison group. Students in the treatment group were also observed to participate in significantly longer peer interactions than students who did not receive treatment. The results of this study indicate that, although success for students with or at risk is not currently occurring at high rates, it may not be an impossible feat to achieve.

**Academic Interventions for Challenging Behavior**

It is well documented that students with EBD or challenging behavior most often suffer from academic deficits as well. Wagner (2014) found that, "overall, 61% of younger students with EBD had scores on the WJ III Passage Comprehension subtest that were equivalent to scores of the 25% of lowest-scoring students in the general population." One theory to describe this trend is that students may exhibit "*coercive behaviors*" in the classroom that were originally developed and reinforced by parents at home and then transferred to interactions with teachers at school (Nelson, Benner, & Bohaty, 2014). Students that exhibit these challenging behaviors may then come into limited contact with effective instruction because of their ability to successfully escape from aversive events. While it is unknown whether academic and behavioral challenges stem from the same developmental deficit, or one may be the cause of the other, the academic struggle of students with or at-risk for EBD should not be ignored when planning interventions. Ineffective instruction may even exacerbate the problems students with emotional or behavioral disorders are already facing (Gunter & Denny, 1998).

The first step in identifying a student's need for academic intervention is to assess their current level of performance. Curriculum-based measurements (CBM) are effective assessment tools designed to monitor growth and fluency of basic academic skills in the following areas: reading, spelling, written expression, and mathematics (Deno, 1998; Kalberg, Lane, & Menzies, 2010). Schools using a response-to-intervention (RTI) framework typically use CBM such as Dynamic Indicators of Basic Early Literacy Skills (DIBELS ©) or AIMSweb © at least three times per school year. For students who are identified as having academic deficits, progress-monitoring takes place more often and should continuously be used to plan and evaluate instruction. Once the specific academic needs of a student are identified and remediation efforts are planned, methods for addressing challenging behavior that may be related to academic demands can be developed. Interventions such as matching the task demands to a student's present level of performance, shortening task duration, and increasing opportunities to respond (OTR) are all ways to make instructional activities less aversive and increase appropriate behavior.

Adjusting the difficulty of academic tasks is one way to effect off-task and inappropriate behavior. Gunter, Denny, and Venn (2000) provided the following examples of ways to manipulate task difficulty: adapting the skill level, problem type, or rules on how the learner may approach the work. Roberts, Marshall, Nelson, and Albers (2001) used functional behavior assessment and curriculum-based assessment with three first and second grade students to determine if escape-motivated behavior could be a function of task difficulty. The first student was off task during 81% of frustration level math activities and 41% of instructional level activities, the second student was off task during 72% of frustration level math activities and 23% of instructional level activities, and the third student was off task 79% of the time during

frustration academics and only 7% of the time during instructional activities. These results indicated that off-task behavior was more likely when materials were at a frustration level, suggesting that interventions could be planned to manipulate the difficulty of tasks in an effort to control off task and inappropriate behavior.

Sanford and Horner (2012) extended previous research on the interaction of task difficulty and behavior by examining the effects of placing four second- and third-grade students in instructional level reading materials. During Phase A of the nonconcurrent multiple baseline design, students were assessed in their current reading materials, which were found to be at a frustration level for all students. A functional behavior analysis was conducted for each student, and each was found to be exhibiting escape-maintained problem behaviors. During Phase B, students were placed in instructional level materials using the Reading Mastery curriculum. Problem behavior decreased from an average of 27% of intervals during Phase A to an average of 11% of intervals during Phase B. Mean academic engagement increased from a 69% of intervals during Phase A to 84% of intervals during Phase B. The authors concluded that their findings provided further support for delivering instruction at appropriate levels and suggested that further research focus on the amount of instruction needed to catch students up to grade-level peers.

By shortening the duration of a task, the number of items that students are expected to learn or complete in a work period is reduced with the intention of reducing the response cost of an activity and providing greater opportunity for reinforcement. Variations can include dividing materials into sections or breaking a lesson down into multiple shorter periods (Gunter, Denny, & Venn, 2000). Miller, Gunter, Venn, Hummel, and Wiley (2003) examined the effects of shortened math assignments on three students' rates of correct responses and intervals of on-task

behavior. The authors used a multiple baseline design with three students with EBD ranging in age from 9 to 12 years. During baseline conditions, the students were given a packet of at least five math worksheets stapled together and were expected to work mostly independently for thirty minutes. During the intervention, students were given one half sheet of math problems that could be turned in at any time for another sheet. A third condition was used with two of the students where models of correct responses were provided in addition to the shortened sheets. Across both the shortened assignment and shortened assignment with modeling conditions, the three students showed minimal improvements in correct responses per minute; however, improvements in on-task behavior were evident. For one student, on-task behavior increased from an average of 68% during long assignments to 84% during shortened assignments. During baseline conditions, the second student was on task an average of 80%, and the third was on task on average of 69%. When the shortened task intervention was implemented, their on-task averages increased to 91% and 78%, respectively. With the addition of a model to the shortened task, the second student's time on-task remained at 92% and the third student's increased to 87%. This study showed that simply shortening the amount of materials given at one time may not have an effect on correct responses, but it can improve the on-task behavior of students.

**Providing Students with Increased Opportunities to Respond (OTR)**

While shortening task duration and adjusting the difficulty of tasks are effective interventions, both of these options require a large amount of time and resources and may even result in placement changes. Interventions that involve increasing OTR provide a proactive option for teachers to improve the behavior and academic responding of students with little time and effort. OTR has been defined as the interaction between a teacher's academic prompt and a student's response (Haydon, Mancil, & Van Loan, 2009). Utilizing this strategy can allow

teachers to determine whether students comprehend materials and then adjust subsequent instruction and questioning accordingly. Increasing OTR provides an opportunity for students to be more engaged in the lesson content and increase the number of correct responses. Teachers using OTR interventions can give the targeted students more opportunities to actively participate in lessons through individual responses, choral responses, written answers, or response cards.

Early research on OTR compared the amount of active student responding provided to disadvantaged students versus advantaged students. In a pair of studies by Greenwood, Delquadri, Stanley, Sasso, Whorton, and Schulte (1981) and Stanley and Greenwood (1983) (as cited in Greenwood, Delquadri, & Hall, 1984), minority students who attended a Title I school and had significantly lower IQ and socioeconomic status were compared to suburban, non-Title 1 students. Results indicated that the non-Title 1 students were engaged in academic responding for an average of 14 minutes per day in comparison to 11 minutes per day for the Title I students. The Title I group was also engaged in less academic talk (3.8 vs. 5.5 min. per day) and silent reading (5.0 vs. 8.2 min.). While differences existed between the two groups, it was determined that both groups spent approximately twice the time passively paying attention as actively responding. In addition to determining the amount of academic responding provided to students, Greenwood et al. also found that out of all variables measured, academic responding had the strongest correlation with achievement.

Researchers from this same group continued this line of research by conducting studies to examine the effects of experimentally increasing academic responding through peer tutoring interventions. Results from Wharton et al. (in press; as cited in Greenwood, Delquadri, & Hall, 1984) indicated that peer tutoring could increase academic responding and oral reading rates. Results from Greendwood et al. (1982; as cited in Greenwood, Delquadri, & Hall, 1984)

indicated that a peer tutoring intervention that increased academic responding could also result in greater spelling accuracy and increase appropriate behavior.

Carnine (1976) demonstrated the first application of increased OTR during group instruction by comparing a low teacher-presentation rate to an increased teacher-presentation rate during a first-grade Distar reading lesson. Using an ABABAB design, the author trained two teachers to pause for about five seconds between tasks during baseline conditions and present a new task immediately following a completed task during intervention conditions. For two students, this intervention increased participation and answering correctly and decreased off task behavior. The first student had a mean decrease in off-task behavior of 60.7% from baseline phases to intervention phases and mean increases in answering correctly and participation of approximately 52.37% and 45.8%, respectively. The second student had a mean decrease of approximately 48.3% for off-task behavior from baseline phases to intervention phases and an increase of approximately 24.07% for answering correctly and 27.7% for participation.

West and Sloane (1986) extended the work of Carnine on teacher presentation rate by comparing a fast rate of instruction to a slow rate of instruction with five elementary students diagnosed with behavior disorders. The authors used a multielement design to manipulate the following treatment conditions: fast rate/high reinforcement, fast rate/low reinforcement, slow rate/high reinforcement, and slow rate/low reinforcement. During fast rate conditions, the teacher presented an instruction every 20 seconds. During slow rate conditions the teacher presented an instruction every 60 seconds. The teacher manipulated reinforcement by providing points toward the class-wide system following the first correct response every 60 seconds during the high reinforcement conditions and every 240 seconds during the low reinforcement conditions. Group disruptive behavior was observed to occur during an average of 53% of the sessions with fast

rate/high reinforcement condition, 57% of the fast rate/low reinforcement sessions, 76% of the slow rate/high reinforcement sessions, and 81% of the slow rate/low reinforcement sessions. Mean performance accuracy for the fast rate conditions was 79%, and mean performance accuracy for the slow rate conditions was 86%. During the fast rate conditions, mean response rate was 2.44 correct responses per minute, and mean response rate during the slow rate conditions was .87 correct responses per minute. These results suggested that rate of presentation may have a stronger effect on behavior and academic responding than rate of reinforcement.

Sutherland, Alder, and Gunter (2003) conducted a study that showed the positive effect of increased OTR on correct responses, task engagement, and disruptive behavior. The authors used an ABAB withdrawal design with nine students in a self-contained classroom for students with EBD. During baseline and withdrawal conditions, the teacher's mean rates of OTR per minute were 1.68 and 2.25, which increased during the intervention conditions to 3.52 and 3.49. The mean percentage of correct responses during baseline was 71.8% and increased to 75.5% during the first intervention phase. During the withdrawal phase, the mean percentage of correct responses dropped to 55.5%, and then returned to 73.8% during the second intervention phase. The biggest change occurred on the percentage of on-task intervals. During the baseline phase, the mean percentage of on-task intervals was 55.2%, which increased to 78.9% during intervention. During the withdrawal phase, the mean percentage of on-task intervals decreased to 65.4%, but averaged 82.6% during the second intervention phase. These results showed that simply giving students more opportunities to be active participants in instruction can have a dramatic effect on their behavior and success.

Haydon, Mancil, and Van Loan (2009) extended the work of Sutherland et al. by implementing an OTR intervention with a student at-risk for EBD in a general education

classroom. An ABA withdrawal design was used to examine the effects of OTR over 3 per minute during science instruction with an 11-year-old female at risk for being identified with EBD. After training the teacher on how to provide adequate OTR, the authors provided feedback sharing graphed data daily. The teacher successfully raised the rate of OTR from 1.15 per minute during baseline to 3.35 per minute during intervention, and then reduced them to 1.5 per minute during the withdrawal phase. The student's on-task behavior increased from 34.15% during baseline to 67.0% during intervention and then decreased to 38.0% following withdrawal of the intervention. Disruptive behavior decreased from 1.90 per minute during baseline to 0.25 per minute during intervention and increased to 2.00 per minute after the intervention was withdrawn. The rate of correct responses increased from 0.025 during baseline to 0.90 during intervention and then decreased to 0.20 during the withdrawal phase. These results indicated that an increased rate of OTR implemented in a whole group setting could have effects on student behavior.

Most recently, the effectiveness of three different types of OTR on academic and social behaviors has been examined. Haydon, Conroy, Scott, Sindelar, Barber, and Orlando (2010) used an alternating treatments design to compare how choral responding, individual responding, and mixed responding effected the disruption, off-task behavior, and active student responding of six second-grade students at-risk for being identified with EBD. For five out of six students, disruptive behavior and off-task behavior was lowest during the mixed responding condition than either the individual or choral responding conditions. Half of the students demonstrated the highest percentage of active student responding during the mixed responding condition, while the other half demonstrated the highest percentage of active student responding during the choral

responding condition. This indicated that both choral and mixed responding might be more effective than individual responding for students at-risk for EBD.

In addition to demonstrating that increasing OTR can have positive effects during both group and peer instruction, researchers have also compared the effectiveness of similar interventions that involved increasing OTR. Through this type of research, it has been determined that taped words and drill interventions might be equally effective at increasing sight word fluency because both interventions result in increased OTR (Skinner & Shapiro, 1989). In addition, interventions that increase OTR beyond typical classroom instruction but have small differences in intertrial interval duration may be equally effective at increasing sight-word acquisition (Skinner, Smith, & McLean, 1994). Finally, interventions that increase OTR, even when the topography of responses used during intervention do not match the topography of assessment responses, have been found to increase accuracy on multiplication problems (Skinner, Ford, & Yunker, 1991; Skinner, Belfiore, Mace, Williams-Wilson, & Johns; 1997). The results of these studies suggest that increases in OTR through a variety of means can result in positive outcomes.

**Social Interventions for Challenging Behavior**

A second perspective on intervening on challenging behavior of students is that social interactions should be directly addressed by systematically teaching and reinforcing appropriate social skills. Social skills have been defined as "socially acceptable and learned forms of behavior that enable an individual to interact effectively with others and to avoid or escape unacceptable behavior that results in negative social interactions with others" (Gresham, 2010). Students with emotional and behavioral disorders may have social deficits that present themselves in an externalizing or internalizing fashion. Externalizing behaviors can be described

as aggressive or "*acting-out*," while internalizing behaviors are characterized as anxious, withdrawn, and depressed (Hallahan & Kauffman, 2006). The same student can also display behaviors from the two categories at different times.

As with academic concerns, students that possess social deficits can be identified through research-based assessment procedures. Kalberg, Lane, and Menzies (2010) described the use of the Systematic Screener for Behavior Disorders (SSBD) with a group of students from kindergarten to fifth grade. The SSBD is a three-stage screener that starts with teachers placing students into two categories, those that display externalizing behaviors and those that display internalizing behaviors. Teachers then complete normed rating scales on three students from each category that are most likely to display these behaviors. Students exceeding the normative criteria are then systematically observed, and individual needs are determined. Interventions for social behavior fall into two categories: teaching behavior that is not currently in a student's repertoire and increasing behavior that has already been learned. Some successful social interventions include social skills training (SST), replacement behavior training (RBT), and positive peer reporting (PPR).

While social skills training programs vary to some degree, Elliot & Gresham (2007) have identified six components of effective programs: tell, show, do, practice, monitor progress, and generalize. Gresham, Van, and Cook (2006) examined the effects of 60 hours of social skills training on four students age 6 to 8 with acquisition deficits who were considered at risk for developing emotional and behavioral disorders. The students' total disruptive behavior, alone time, and negative social interactions were observed across an ABAB design. Results were reported using the percentage of nonoverlapping data points, and the group mean across all three dependent variables was 76.23%. The authors determined that sixty hours of social skills training

produced large and positive changes in the following areas: negative social interactions for two students, total disruptive behavior for three students, and alone time for three students.

In 2008, the Collaborative for Academic, Social, and Emotional Learning (CASEL) conducted a meta-analyses of 80 studies involving 11,337 students between the ages of 5 and 13 that showed signs of emotional or behavioral problems but were not receiving special education services. The results showed that when social and emotional learning (SEL) programs were implemented individually or in small groups, the students demonstrated increased social-emotional skills, more positive attitudes toward self and others, more positive social behaviors, fewer conduct problems, lower levels of emotional distress, and better academic performance (Payton et al., 2008).

Replacement behavior training (RBT) is a function-based intervention based on using a prosocial behavior to replace a competing problem behavior. For example, if it is determined that a student uses aggression to escape from aversive instruction, that student could be taught to ask for a break as a functionally equivalent replacement behavior. Gresham and Elliot (2014) reviewed RBT interventions and stated the following: "RBT may help solve many of the problems described in the social skills training literature, such as poor generalization and maintenance, modest effect sizes, and social invalidity of target behavior selection" (p. 155).

Dwyer, Rozewski, and Simonsen (2012) proposed a method for deciding among three functionally relevant replacement behaviors using an alternating treatment design, and also examined the effects of implementing a replacement behavior selected using this method. Three 7 and 8 year old students with emotional disorders in a special classroom were shown to have off-task behaviors that resulted in escape through the use of functional behavior assessment. After taking baseline data, an alternating treatments condition was used to compare the effects of

having the opportunity to ask for help, the opportunity to ask for a break, the opportunity to ask for either help or a break, and no replacement behavior. Student 1 was off-task for an average of 61.11% of intervals during the no replacement behavior condition, and showed the lowest amount of off-task behavior during the help or break condition (29.07% of intervals). Student 2 was off task for an average of 42.26% of intervals during the no replacement behavior condition and dropped to a low of 18.45% of off-task intervals during the choice condition. Student 3 displayed off-task behavior during an average of 65.74% of intervals during the no replacement behavior condition, and also had the lowest percentage of off-task intervals (26.02%) during the choice condition. An "optimal condition" was then implemented in a multiple baseline fashion; because all three students showed the lowest amount of off-task behavior the choice condition, it was implemented during this time. During this condition, Student 1 was off-task an average of 23.05% of intervals, Student 2 was off-task an average of 14.72% of intervals, and Student 3 was off-task an average of 40% of intervals. The authors concluded that these results indicated that giving students a choice between functionally relevant replacement behaviors might be the most effective strategy.

**Peer Supported Social Interventions**

While SST and RBT have been proven to be effective interventions, they are similar to shortening task duration and adjusting task difficulty in that they may take more time and effect than a teacher has available. Peer supported social interventions may be a better choice for teachers to increase prosocial behaviors and decrease inappropriate behaviors, especially if those goals must be achieved during large group instruction. Researchers have used positive peer reporting (PPR) and tootling interventions to train classmates and peers to recognize and praise the appropriate behaviors of both a small group of target students and a large group of

classmates. These interventions provide teachers with the option to designate some of the workload of behavior management to willing peers.

Early investigations into the effectiveness PPR demonstrated that peer reports of "friendly" behavior could be effective in changing behavior with and without additional reinforcement. Grieger, Kauffman, and Grieger (1975) trained 90 kindergarten students to name a student who had been friendly to them during a free play period. Using an ABAC reversal design, they investigated the effects of this intervention first with the use of a happy face sticker for students who were friendly and second without additional reinforcement. From baseline to the first intervention, cooperative play increased from 42% to 55% and aggressive acts decreased from 42 to 9. From the reversal phase to the second intervention, cooperative play increased from 42% to 60% and aggressive acts decreased from 40 to 6. The authors concluded that simple social praise from a peer was effective at making large behavior changes.

Extending the work of previous researchers, Carden-Smith and Fowler (1984) demonstrated that student-led interventions could be just as effective as teacher-led interventions and that peer monitors could effectively reduce disruptive behavior without corrective feedback from a teacher. The authors trained kindergarten students to monitor the disruptive behavior of classmates during a transition period and to award points that were redeemable for privileges. In their first experiment, an ABAC design was used to compare the effectiveness of a teacher awarding points to peer monitors awarding points. Disruptive behavior ranged from 12% to 23% during the teacher-led portion and 1% to 11% during the student-led portion; similarly, participation ranged 84% to 97% during the teacher-led intervention and remained close to 90% for all students during the student-led portion. In their second experiment, a multiple baseline design demonstrated that disruptive behavior ranged from 18% to 53% during baseline

conditions and remained at 8% or less during peer monitoring both with and without correct feedback from a teacher. Baseline averages of participation ranged from approximately 40% to 62% and increased from 90% to 97% during the peer monitoring intervention with correct feedback; results were maintained even when feedback ceased. These results indicated that student implementation of a monitoring intervention could have positive results even without feedback from a teacher.

Ervin, Miller, and Friman (1996) found that PPR could also be effective at improving the social interactions and acceptance of a rejected student. The authors trained a class of seventh-grade students to make positive comments about a socially rejected 13-year-old girl in exchange for privileges. The data were variable, but an ABAB design showed that the PPR intervention increased positive interactions between the student and classmates and decreased negative interactions. This research suggested that peer reports could improve a student's social status in addition to increasing positive behaviors.

Bowers (1999) then drew from the work of Ervin, Miller, and Friman in his application of PPR in a group home setting. A 15-year-old boy that had been placed in Father Flanagan's Boys' Home (Boys Town) was praised by his peers during a 90-minute social period each evening. Peers were rewarded with points that were redeemable for privileges after they made positive comments, and the target student could also earn points for making positive comments about himself. Baseline observations indicated that the adolescent engaged in positive interactions for an average of 61% of sessions and negative interactions for an average of 36% of sessions. Following implementation of the PPR intervention, the mean for positive interactions increased to 73% and negative interactions decreased to 22%. Peer acceptance ratings also increased after intervention and problem behavior decreased as measured by the Parent Daily

Report checklist. These results indicated that peer reporting could increase positive interactions and decrease negative interactions in a group home setting.

Continuing their work in Boys Town, Jones, Young, and Friman (2000) next assessed the specific effect of PPR on cooperation and social acceptance. For this study, an eight-grade math teacher trained students to provide detailed compliments to peers following three weekly cooperative learning activities. Each week a "*star student*" was selected to receive praise following the cooperative activities, and data were collected on three target students during the week immediately preceding and the week during which they were the star using a multiple baseline design. Mean cooperative statements increased from 32% to 63.5% for the first student, from 25% to 48% for the second student, and 20% to 39% for the third student. Sociometric ratings obtained from classmates also increased from baseline to treatment. These results extended previous results by demonstrating that peer reporting in a classroom setting at a group home could increase cooperate behavior.

Bowers, Woods, Carlyon, and Friman (2000) continued their work in Boys Town by replicating the results of their 1999 study. In this study, four adolescents ranging from 10 to 16 years old were given the chance to be the Most Valuable Person (MVP) in their group home for a week. During this period, peers were given points redeemable for privileges by reporting positive social behavior exhibited by the MVP. An ABAB multiple baseline design was used for three participants, and a separate ABAB design was used for the third participant. All participants showed an overall increase in positive social activity during treatment phases, but only one participant showed a decrease in negative interactions.

In addition to increasing prosocial behaviors in classrooms and group homes, PPR has also been shown to increase social involvement during recess periods (Moroz and Jones, 2002).

Using a multiple baseline design, a PPR intervention was implemented that involved all classmates reporting praise statements on a "star student" during a seven to ten minute group session. All three target students were observed to have an increase in social involvement at recess after implementing PPR conditions. One student displayed a mean increase of 28% (from 8% to 36%) from baseline to the PPR condition, and remained at 81% after PPR was removed. The second student increased from a mean of 53% during baseline to 82% during PPR, then decreased to 46% when baseline conditions were re-implemented. The third student had a mean of 26% during baseline, 55% during PPR, and 31% during the return to baseline phase. These results indicated that PPR could be an effective way to increase the social involvement of isolated students during recess periods.

While research on PPR was ongoing, Skinner, Cashwell, and Skinner (2000) began a series of studies on a version of PPR that they called "*tootling*," which differed from PPR in that group contingencies were put in place to reward class-wide reporting of positive behaviors. They trained 28 students in a general education fourth-grade classroom to report prosocial behaviors throughout the school day by recording detailed "tootles" on an index card and placing them in a box. An ABAB reversal design was used to examine the amount of daily tootles that could be achieved with and without additional reinforcement. During the initial baseline phase and the return to baseline, students were instructed to record tootles but were not provided any additional incentives. During treatment phases, an initial goal of 100 cumulative tootles was set with a reward of thirty extra minutes of recess time. After that goal was achieved, a new goal of 150 tootles was set with rewards of 30 minutes of extra recess at a rarely used area and time to watch a movie. The first treatment phase did not result in a significant increase in tootling, but the return to baseline and second treatment phase indicated a clear relationship between

reinforcement and additional tootles. Though the authors did not examine whether the tootling intervention resulted in an increase in prosocial behaviors, they did demonstrate that students could be trained to report the incidental prosocial behaviors of their classmates.

Next, Cashwell, Skinner, and Smith (2001) provided a replication and extension of the preliminary research on tootling by teaching a class of 17 second-grade students to report the incidental prosocial behaviors of their classmates. Using an ABAB design with procedures nearly identical to their initial, the authors showed that a group contingency reward program was more effective than tootling procedures without a reward. While this study provided more and stronger evidence that students could be trained to report positive behaviors, the authors did not collect data on whether tootling was effective at increasing the behaviors that were reported.

Morrison and Jones (2007) combined the procedures used during both previous PPR and tootling research by implementing a class-wide public reporting system and measuring its effects on social and emotional behavior. Two third grade classes consisting of 27 total students were trained to report praise statements on randomly chosen students during daily sessions of approximately 15 minutes. A multiple baseline design was used to measure the effects of this intervention on daily teacher ratings on an adapted Critical Events Index (CEI). In the first classroom, the average daily score per week decreased from 4.17 critical events per day during baseline to 3.17 during treatment. In the second classroom, the average daily score per week decreased from 10.72 critical events per day during baseline to 7.87 during treatment. "*Socially isolated*" students as measured by sociometric ratings also decreased from a mean of 5 during baseline to 1.5 during treatment, and generalization observations during lunchtime and transitions indicated that critical events decreased significantly. The authors noted that the teachers only completed the CEI forms on 79% and 72% of days, and interobserver agreement

was not calculated for the ratings completed. These results indicated that peer reporting could be effective at reducing problem behavior.

Most recently, Cihak, Kirk, and Boon (2009) extended these findings by implementing a tootling procedure with 19 third grade students in an inclusion classroom to determine if it would reduce disruptive behaviors. Students were taught to report the prosocial behaviors of their classmates throughout the day by writing comments on index cards and placing them in a box in the classroom. At the end of the day, the teacher read the comments aloud to the class. Students were given reinforcement (extra recess) when 75 total tootles were reached; on days that the goal was not reached the amount was carried over to the next day's total. The amount of disruptive behavior across the school day was observed by the classroom teacher and reported as the following averages: 23.2 during baseline, 8.4 during the first implementation of tootling, 16 during a return to baseline conditions, and 3.5 during the second implementation of tootling. These results indicated that tootling could be effective at reducing average disruptive behavior in an inclusion classroom.

**A Combined Approach**

It is clear that students with or at-risk for EBD often need interventions for both academics and social behavior, but whether or not it is wise to wait for one area to improve before intervening on the other should also be considered. Research on the academic and social deficits of students with challenging behaviors has revealed that social ability and academic achievement are closely related. Social competence has been shown to have a close relationship with academic achievement, which has led to the use of the term "*academic enablers*." "Academic enablers are the attitudes and behaviors that allow students to participate in and ultimately benefit from academic instruction in the classroom" (Gresham & Elliot, 2014). On the

other hand, problem behaviors can function as "*academic disablers*" that are associated with decreases in academic performance. Children with externalizing behaviors such as aggression, noncompliance, and/or teacher defiance often have moderate to severe academic skill deficits that are reflected in below-average academic achievement.

This idea was supported by the findings of Malecki and Elliot (2002), who conducted a longitudinal analysis that examined correlations between the social skills, problem behaviors, academic competence, and academic achievement of 139 third and fourth graders. These variables were measured with The Social Skills Rating System and Iowa Test of Basic Skills at the beginning and end of a school year. The results provided evidence to support a moderate relationship among social skills, academic competence, and academic achievement when examining teacher ratings of social skills. Results also showed a moderate relationship between students' problem behaviors, academic competence, and academic achievement. While it is not known if the difficulty of academics causes problem behavior or if poor academic achievement is a consequence of behaviors that compete with task engagement, the need for interventions that address both is clear.

There is ample research to support the use of varied academic and social interventions to improve the behavior of students with or at risk for emotional or behavioral disorders, but little is known about how these interventions should be combined. With the exception of Dwyer, Rozewski, and Simonsen's (2012) study, the research examined in this review focused on implementing one intervention at a time, but perhaps the best outcomes could be found by intervening on multiple deficits at once. With research to support the complicated relationship between academic achievement and social behavior, it is possible to hypothesize that it may not be possible for one domain to make substantial improvement without the improvement of the

other domain. Similar undesirable classroom behaviors may also be reinforced through multiple consequences. For example, it is possible that problem behaviors could have multiple functions such as escape from a difficult task and teacher or peer attention. In that case, the best outcomes might be achieved by combining an academic modification such as OTR with a social intervention like PPR.

The idea that academic and social/behavioral interventions demand equal attention is not new, and numerous professionals have called for their integration. Hallahan and Kauffman (2006) made two points: effective methods are needed to teach academic skills to students with emotional or behavioral disorders, and social skills are just as crucial as academic instruction. Kalberg, Lane, and Menzies (2010) stated that students with academic underachievement and behavior disorders need supports that yield improvements in both domains. In their words, "we cannot wait to teach until behavior improves; nor can we wait to improve behavior until students learn the content." Wagner (2014) provided the following advice for changing the outcomes for students with EBD: start earlier, intervene with academic and behavioral problems in tandem and at all levels, master intervention and systems change implementation and sustainability, partner more effectively with organizations and individuals, and encourage disability self-awareness and self-determination among youth with EBD. While the need for addressing both needs of our students is clear, research must continue to seek how that can best be achieved.

**Purpose of the Current Study**

This study extended the current knowledge on classroom applications of opportunities to respond (OTR) and positive peer reporting (PPR). The purpose of this study was to answer three research questions. (1) What are the effects of academic based and social based interventions on classroom disruption, on-task behavior, and academic responding? This was explored by

comparing the effects of implementing OTR and PPR with the participants through a reversal design. (2) What is the combined effect of an academic based and social based intervention on classroom disruption, on-task behavior, and academic responding? This was determined by implementing increased OTR and PPR concurrently and comparing the effects to the effects of the interventions implemented individually. (3) What is the effect of dyadic PPR on classroom disruption, on-task behavior, and academic responding? Previous research on PPR and tootling used groups of children to report on either one student or all students in the group. This study extended that research by assigning one peer helper to each participant and training that helper to report positive behaviors. (4) What is the effect of peer/teacher feedback? This study differs from previous research because a special education teacher served as the primary investigator and peer who performed training and gave feedback to other teachers in her district.

# Chapter 2. Method

## Setting and Participants

This study took place in two suburban elementary schools in a south Louisiana school district. Both schools instruct students from Head Start to second grade. At the time of this study, the first school had a total of 659 students, with 62% of students receiving free or reduced lunch. The second school had a total of 407 students, with 95% of students receiving free or reduced lunch. Participating students ranged from Head Start to second grade (ages 4-8). All observations and interventions were conducted in the students' regular classroom settings. Training sessions for PPR were conducted in short 10-15 minute sessions in either the students' classrooms or a pullout setting.

Before beginning this study, a proposal was approved by the university's institutional review board. After the principals at both schools had agreed to participate, they were asked to identify teachers with students that were considered to be highly disruptive and in need of academic support. After nominations were collected, teacher permissions and anecdotal information about the students' behavior were obtained in person and through e-mail. All six teachers that were nominated agreed to participate, and parent permission and student assent were obtained for six out of seven students. Because parent permission was not obtained for one student, five of the six teachers that had agreed actually did participate. To determine the academic achievement of these students, a review of their most recent Dynamic Indicators of Early Literacy Skills Next (DIBELS Next) and Scholastic Math Inventory (SMI) scores was conducted.

**Student 1.** Aidan was a seven-year-old Hispanic male who primarily received instruction in a self-contained special education classroom. He was nominated to participate

during the 45-minute math lesson that he attended daily in a first grade regular education classroom. His behavior was described as hyperactive, off-task, and disruptive. He frequently called out to the regular education teacher and classmates and would become angry when not chosen to share answers with the class. He also frequently made noises, left his seat without permission, and attempted to draw pictures of cartoon characters. Aidan received special education services under the category of developmental delay and had a medical diagnosis of Attention Deficit Hyperactivity Disorder (ADHD), mood disorder, and speech delay. Throughout all phases of this study he was prescribed daily dosages of 0.25 mg of Risperdal and 10 mg of Metadate. Aidan also had a token economy system throughout this study where he could earn rewards such as computer time for refraining from verbal and physical aggression. Due to his unwillingness to cooperate with assessment attempts, DIBELS scores were not available at the time of this study. His most recent SMI scores indicated that he was within the basic range.

The regular education math teacher was in her ninth year of teaching and was certified in elementary education grades 1-6. Aidan's special education teacher attended daily math lessons with him to provide one-on-one assistance. She was in her third year of teaching and had certifications in elementary education grades 1-5 and special education - mild to moderate disabilities. She was completing a master's degree in special education and served as the author and primary investigator of this study as part of the requirements for her thesis. Observations took place during math instruction in the regular education classroom.

**Student 2.** Smith was a four-year-old African-American male in a pre-kindergarten classroom. His regular education teacher described his behavior as high-energy and impulsive. She also stated that he had difficulty dealing appropriately with his emotions and could be disruptive or unengaged at times. He received special education services under the category of

developmental delay and had a medical diagnosis of ADHD. He had a prescription to take Quilivant before school in the morning throughout this study. Due to his age, he did not yet participate in DIBELS or SMI testing. Smith had a response cost system in place throughout this study where he was given three "*strikes*" for aggressive behavior and noncompliance and was then removed from the classroom.

Smith's regular education teacher was certified to teacher pre-kindergarten and kindergarten and had a master's degree in curriculum and instruction in early childhood education. Observations and interventions took place during a 15-minute rhyme lesson. His special education teacher was not present during any of these sessions.

**Student 3.** Martin was an eight-year-old African-American male in a second grade classroom. He qualified for special education services under the category of specific learning disability – reading comprehension and had repeated kindergarten. His behavior was described as hyperactive and impulsive. His teacher stated that he frequently eloped, invaded other people's personal space, was off-task, tapped/poked at peers, and displayed inappropriate verbalizations. Following many of these behaviors, he would loudly apologize. Both his most recent DIBELS and SMI scores indicated that he required intensive interventions.

His special education teacher was in her third year of teaching and had certifications in elementary education grades 1-5 and special education, mild to moderate. His regular education teacher was in her fourth year of teaching and was certified to teach elementary educations grades 1-5. Observation and intervention sessions were conducted during daily 90-minute reading lessons.

**Student 4.** Becky was an eight-year-old Caucasian female in a second grade classroom. Her teacher described her behavior as fidgety, talkative, and unfocused. At the time of this study,

she had been referred to the school's Student Assistance Team (SAT) by her teacher for academic and behavior concerns. Her most recent DIBELS scores indicated that she was in need of intensive intervention, and her most recent SMI scores indicated that she had achieved benchmark level.

Her teacher was in her third year of teaching and had a bachelor's degree in elementary education. All observations and interventions took place during the daily 75-minute math lesson.

**Student 5.** At the beginning of this study, Duncan was five years old; during the study he turned six. He was an African American in kindergarten who received special education and speech therapy services under the category of developmental delay. His special education teacher stated that he was very hyperactive and frequently shouted out seemingly random phrases and words. His most recent DIBELS assessment indicated that he had achieved benchmark scores, and his most recent SMI scores indicated that he was in need of intensive interventions.

His regular education teacher was in her tenth year of teaching and was certified in early childhood education. His special education teacher was in her ninth year of teaching and had certifications in nursery school/kindergarten education. Observations and interventions were conducted during daily 90-minute reading lessons.

**Student 6.** Lindsay was a five-year-old African American female in kindergarten. She had been referred to the school's SAT for behavior and was seeing a counselor both at school and privately. Her teacher described her behavior as attention seeking and stated that she frequently shouted out and had a hard time keeping her hands to herself. She was also considered very argumentative. Her most recent DIBELS scores indicated that she had achieved benchmark levels, and her most recent SMI scores indicated that she was in need of intensive interventions.

Lindsay was in the same reading class as Duncan; therefore, teacher information is the same for both.

**Scholastic Math Inventory (SMI)**

SMI is a computer-based assessment intended to be used as a universal screener for students in grades 1-8. The following five content strands are included as part of the assessment: number and operations, geometry, algebra, data analysis and probability, and measurement. Student's scores are reported as a criterion-referenced Quantile measure. The Quantile measure is then used to group students into the following performance levels: below basic, basic, proficient, and advanced. These performance levels were based on the test developers' equal-interval norming sample of 40,000 students in 2004 (Scholastic Inc., 2010).

**Dynamic Indicators of Basic Early Literacy Skills Next (DIBELS Next)**

DIBELS Next is a short assessment administered to students in grades K-6 to assess early literacy and reading skills. This assessment is comprised of the following five measures for first and second grade students: first sound fluency, letter naming fluency, phoneme segmentation fluency, nonsense word fluency, and oral reading fluency. DIBELS Next uses three descriptors to rank students in levels: benchmark, strategic, and intensive. A student whose scores fall in the benchmark range is considered to have approximately an 80-90% probability of achieving subsequent reading benchmarks. A student whose scores fall in the strategic range is considered to have approximately a 50% probability of achieving subsequent reading benchmarks. A student whose scores fall in the intensive range is considered to have approximately a 10-20% probability of achieving subsequent reading benchmarks (Good et al., 2011).

**Data Collection Procedure (Appendix A)**

Data were collected daily on the following three dependent variables: disruptive behavior, on task behavior, and correct responses. All variables were measured during 15-minute observation sessions using a partial interval recording system. The time those observation sessions took place varied daily in an attempt to observe the students throughout all times of the designated instructional period. An interval timer with visual and audio cues was programmed to signal 10 sec watch periods and 5 sec recording periods. A behavior was marked as observed if it occurred at any time during the 10 sec watch period. Data were reported as percentage of intervals with disruptive behavior, percentage of intervals with on task behavior, and percentage of intervals with correct responses.

**Behavior Definitions.** Disruptive behavior was defined as the following: talking without teacher permission (either to teacher or another student), making noise with an object or mouth (including crying and screaming), leaving a seat or designated area without teacher permission (including falling out of chair), or motor movements that interfered with instruction (touching another student, tapping a pencil).

On-task behavior was defined as the following: orientation towards teacher or lesson materials for more than 2 consecutive seconds, speaking with teacher or peers about lesson content with permission, writing when instructed, reading aloud when instructed, or any other teacher-directed action (passing out materials, finding the page in a book). Given the relatively short observation interval, any interval that was scored as disruptive was automatically not scored as on-task.

A correct response was defined as a correct oral response, written response, or motor action directly related to a teacher's question or prompt about lesson content. For example,

stating, “4” was a correct oral response to the question, “What is 2 plus 2?” Writing “4” on a response card was also a correct response if it was shared with the class. Signals such as “me too” or giving a thumbs up when prompted were counted as a correct response if they were in response to an academic question. Correct responses were only counted if the response was shared with the entire class and were not counted if the teacher was individually speaking to a student while other students were working independently. Both intervals with correct responses (ICR) and percentage of correct responses (PCR) are reported as results. ICR indicates the percentage of intervals that were scored as on-task during the observation period. PCR indicates the percentage of intervals with correct responses divided by the percentage of intervals with OTR.

During each observation session, data were also collected on the amount of opportunities to respond (OTR) given to the target student using the same partial-interval recording system. OTR was defined as the teacher asking the target student to share a response with the class or asking for a choral response or motor movement from the entire class. The number of intervals with OTR was divided by the total amount of observed minutes to calculate the approximate rate when providing feedback to teachers. For example, if OTR were present during 20 intervals of the 15-minute observation session, the approximate rate was calculated by dividing 20 by 15, which would equal approximately 1.3 OTR per minute.

**Materials (Appendix B)**

The participants’ peer helpers were each given a half sheet of paper placed on the corner of their desk for use during PPR phases. The sheets had the following three categories where the peer helper could draw checks for observing target behaviors: working hard, following rules, and

helping others. Additional materials included data sheets for observers and any lesson specific materials provided by the teachers.

**Observer Training**

Six undergraduate students from a local university conducted daily observations. Four of the students were elementary education majors, one was a secondary education major, and one was a kinesiology major. Two of the observers were also student teaching at the first school. Observers were trained by the primary investigator on how to observe dependent variables and complete data sheets. Videotapes of a target student and direct observations were scored during training sessions, and observers were considered trained when interobserver agreement on all variables reached 80% or greater at least two consecutive times.

**Experimental Design**

An ABACAD reversal design was used to determine the effects of OTR and PPR when implemented first separately and then together. An increased OTR phase and a PPR phase were implemented with all students, and a combination OTR+PPR phase was implemented with two students. Before beginning the OTR intervention, baseline data were taken on each student, and a reversal to baseline conditions was implemented after each subsequent intervention phase.

A single-subject research design was chosen for this study because it allowed each student to serve as his or her own control and eliminated the need for a control group as in group design studies. Because an ABACAD design involves systematically introducing and withdrawing the interventions, the use of this design demonstrates that the intervention currently in place is responsible for any observed behavior changes and a functional relation exists. The use of a reversal phase between each intervention phase was chosen to minimize any sequence effects that may have been caused by one intervention immediately following another. The

design chosen also allowed for the possibility that five replications of experimental control between each intervention and the dependent variables could be demonstrated (Cooper, Heron, & Heward, 2007).

**Safeguard for Participants**

In order to prevent harm to any of the participants in this study, it was determined that a daily session would be terminated if a student became overly agitated or aggressive. At that time, a university supervisor would be contacted and the appropriateness of continuing would be determined.

# Chapter 3. Experimental Procedure

## Functional Behavior Assessment

Teachers completed a Prevent-Teach-Reinforce (PTR; Dunlap et al., 2010) FBA Checklist to form a hypothesis about the function of each student's disruptive behavior. Each teacher was provided with the operational definition of disruptive behavior and asked to complete the checklist while baseline data were collected. During this process, the primary investigator served to clarify any misunderstood items or sections. After each teacher completed a PTR FBA Checklist, responses were reviewed with the teacher and a hypothesis for the function of each student's disruptive behavior was formed.

## Baseline and Reversal

During baseline phases, teachers were instructed to conduct lessons in their typical fashion. Observers collected data unobtrusively from an area where they could see and hear the target student. Data were collected on each student until a stable baseline was achieved for a minimum of three school days or an increasing trend of disruptive behavior was established. Data were considered stable when all data points fell within 15% on either side of the mean.

During reversal phases, teachers were instructed to reverse their classrooms to baseline conditions. Following the OTR phase, teachers were asked to reduce the amount of OTR given to the target student to an amount at or below baseline levels. Following the PPR phase, PPR materials were removed from the peer helper and the teacher discouraged incidental reporting of behaviors beyond what occurred during baseline levels.

## Opportunities to Respond

During OTR and OTR+PPR phases, the teachers were signaled at the beginning of the observation period that OTR should be increased. Before the end of the school day, the rate of

OTR achieved during the observation period was shared with the teachers. If teachers failed to reach their goal two observation periods in a row, a short review of how to increase OTR was provided.

**Positive Peer Reporting**

During PPR and OTR+PPR phases, the peer helper had a checklist placed on their desk or on a clipboard at the beginning of the class period and the target student was informed that their peer helper was looking for positive behaviors that day. At the end of the class period, the peer helper shared the positive behaviors they observed with both a teacher and the target student. The peer helper sometimes received tickets for the school's PBIS system or other small rewards for sharing positive statements. The target student did not receive any additional reinforcement.

**Training**

After baseline data were obtained for each student, their teachers were provided information on their current rate of OTR and the students' percentages of disruptive behavior, on-task behavior, and correct responses. Teachers were also given information on the importance of giving students adequate OTR as well as examples of research that supports the effectiveness of increased OTR and PPR. Teachers were asked to set a goal for OTR based on their baseline rates; goals that doubled baseline rates of OTR were encouraged. Teachers were given examples of ways to increase OTR for target students, including individual responding, choral responding, and written responses.

Research supporting the effectiveness of PPR interventions was also shared before implementing PPR conditions, and teachers were asked to nominate peer helpers to partner with the target students. It was advised that the peers should be students who would be willing to

participate and already have good rapport with the target students. These students attended a short 10-15 minute training session along with the target student to learn how they were expected to report target behaviors.

**Treatment Integrity**

Treatment integrity was calculated during all intervention phases of this study. During OTR phases, treatment integrity was calculated by determining the percentage of intervention sessions where OTR were increased from the baseline average. During PPR phases, treatment integrity was calculated by determining the percentage of intervention sessions where a teacher initialed and dated a completed reporting sheet. During OTR+PPR phases, treatment integrity was calculated by determining the percentage of intervention sessions where OTR were increased over the reversal average and completed reporting sheets were initialed and dated by a teacher. Mean treatment integrity was 80.82% (range, 50-100) for the OTR intervention and 95.85% (range, 75-100) for the PPR intervention. The combination of OTR and PPR was implemented with two students, and mean treatment integrity was 90% (range, 80-100).

**Interobserver Agreement**

Interobserver agreement was calculated on each student for an average of 35% (range, 27-43) of observation sessions using an agreement occurrence formula. For each dependent variable measured and OTR, the amount of agreements that it occurred was divided by the amount of agreements plus disagreements. Mean agreement was 93% (range, 67-100) for disruptive behavior, 95% (range, 59-100) for on-task behavior, 98% (range, 83-100) for OTR, and 98% (range, 67-100) for correct responses.

**Social Validity**

At the end of the study, each teacher was asked to complete the *Intervention Rating Profile-15* (IRP-15; Martens, Witt, Elliott, & Darveaux, 1985). The IRP-15 is a questionnaire that consists of 15 statements that are rated on a 6-point Likert-type scale. The items address various aspects of treatment acceptability such as the appropriateness and effectiveness of the intervention. Total scores can range from 15 to 90, and higher scores indicate more acceptable interventions. Each teacher completed a separate IRP-15 form for the OTR and PPR interventions, and results are in Table 3.

# Chapter 4. Results

## Percentage of Correct Responses (PCR)

Results for mean PCR for each student are reported in Table 1. When OTR was implemented, mean PCR increased for four students. Implementation of the PPR intervention did not result in increases in mean PCR for any students. When OTR+PPR was implemented with two students, mean PCR was higher than during any of the preceding phases.

Table 1. Mean PCR for each student

| Student | Baseline | OTR Intervention | Reversal | PPR Intervention | Reversal | OTR+PPR Intervention |
|---|---|---|---|---|---|---|
| **Aidan** | 34.30% | 49.05% | 25.85% | 18.09% | 29.39% | 59.51% |
| **Smith** | 75.64% | 75.78% | 74.57% | 55.53% | 77.50% | |
| **Martin** | 68.57% | 67.62% | 50.00% | 50.15% | 50.60% | 72.25% |
| **Becky** | 40.49% | 50.60% | 66.50% | 42.25% | | |
| **Duncan** | 34.77% | 42.57% | 66.93% | 46.27% | | |
| **Lindsay** | 47.68% | 55.05% | 80.61% | 45.03% | | |

## Student 1

Aidan's special education teacher completed the PTR FBA, and results indicated that he exhibited disruptive behavior to gain attention from peers and adults in the inclusion classroom, gain access to drawing materials, and delay the transition from recess to math. Both the OTR and PPR interventions were considered functionally appropriate because they would create opportunities for praise and attention from adults and peers.

Data on intervals for on-task behavior, disruptive behavior, OTR, and intervals with correct responses (ICW) for Aidan are in Figure 1. Baseline data were collected for five days, and mean OTR was 22.39% (range, 5-43) or approximately 0.93 per minute (.93/min). OTR followed a decreasing trend throughout the baseline period and had a mean of 14.54% or

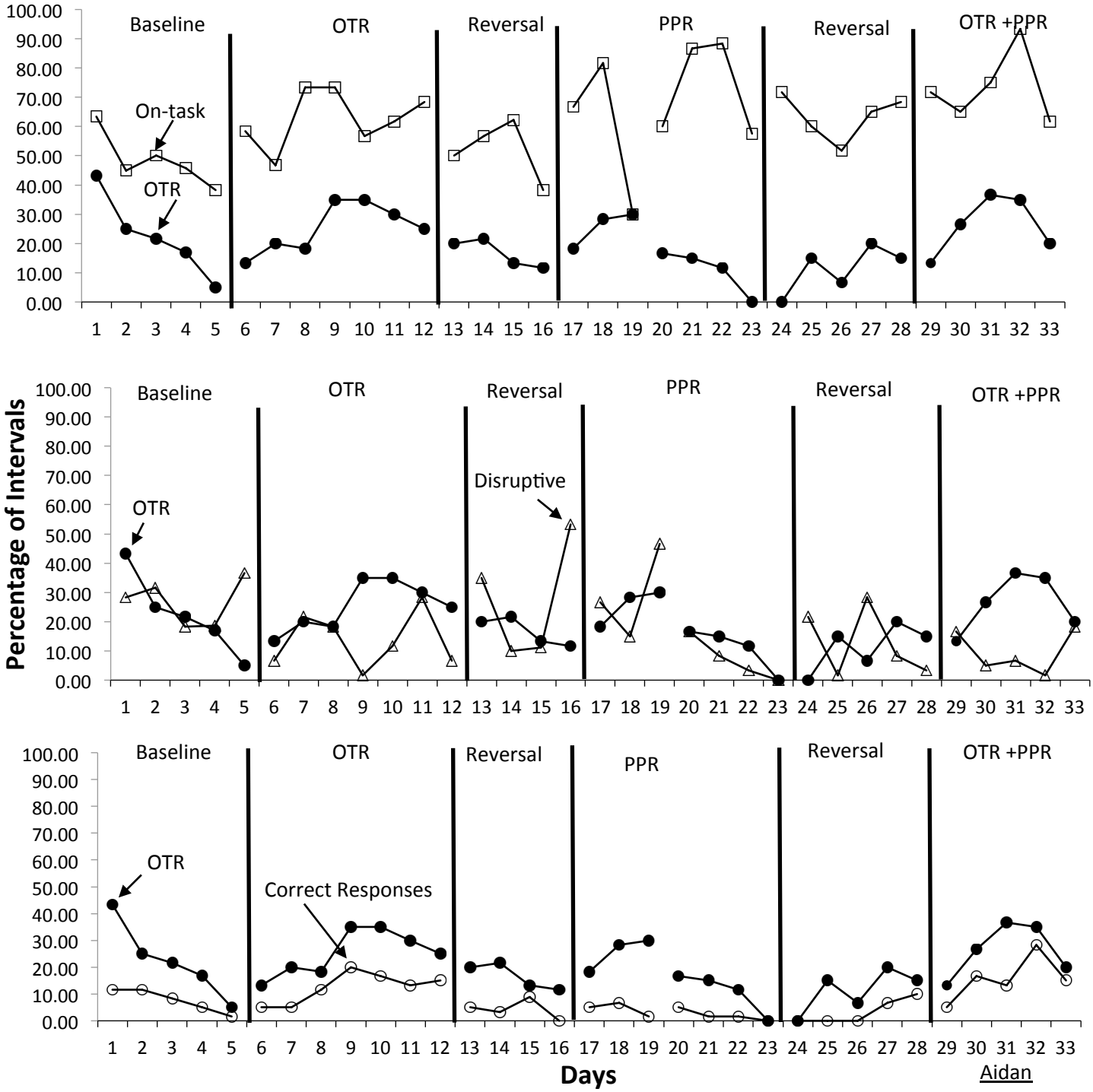


Figure 1. Percentage of intervals with on-task behavior, disruptive behavior, OTR, and intervals with correct responses (ICR) for Aidan

approximately 0.60/min during the final three days. Before beginning intervention, Aidan's regular education teacher set a goal of approximately 1.50 OTR/min. During implementation of the OTR intervention, mean OTR increased to 25.24% (range, 13-25) or approximately 1.00/min. During reversal, mean OTR decreased to 16.67% (range, 11-21) or approximately 0.67/min. During PPR and reversal phases, mean OTR were 17.14% and 11.33%, respectively. Before beginning the OTR+PPR phase, Aidan's regular education teacher decreased her goal from the OTR phase to 1.00/min. Following implementation, mean OTR were 26.33% (range, 13-36) or approximately 1.06/min.

During the five-day baseline period, mean on-task behavior was 48.49% (range, 38-63). During implementation of the OTR intervention, mean on-task behavior increased to 62.62% (range, 46-73). Following removal of the OTR intervention for four days, mean on-task decreased to 51.81% (range, 38-62). During implementation of the PPR intervention, mean on-task behavior increased to 67.26% (range, 30-88). Following removal of the PPR intervention for five days, mean on-task behavior decreased slightly to 62.08% (range, 51-71). When the OTR and PPR interventions were combined for the final six days, mean on-task increased to 73.33% (range, 61-93).

Mean disruptive behavior was 26.73% (range, 18-36) during baseline and decreased to 13.57% (range, 1-28) during OTR. Following removal of the OTR intervention for four days, mean disruptions increased slightly above baseline level to 27.36% (range, 10-53). During implementation of the PPR intervention, mean disruptive behavior decreased to 16.67% (range, 0-46) and remained similar at 12.67% (range, 1-28) during the subsequent five-day reversal. Disruptive behavior occurred the least amount during the combination of OTR and PPR, with a mean of 9.67 (range, 1-18).

During the five-day baseline period, mean intervals with correct responses (ICR) were 7.68% (range, 1-11), and mean percentage of correct responses (PCR) was 34.30%. During implementation of the OTR intervention, mean ICR increased to 12.38% (range, 5-20) and mean PRC increased to 49.05%. Following removal of the OTR intervention for four days, mean ICR decreased to 4.31% (range, 0-8) and mean PCR decreased to 25.85%. During PPR implementation, mean ICR remained low at 3.10% (range, 0-6) and mean PCR was 18.09%. During the reversal following PPR, mean ICR were and 3.33% (range, 0-10) and mean PCR was 29.39%. Mean ICR reached the highest amount when OTR and PPR were combined, with a mean of 15.76% (range, 5-28); in addition, PCR rose to 59.51%.

**Student 2**

Smith's regular and special education teachers collaborated to complete the PTR FBA, and results indicated that his disruptive behavior was exhibited to gain attention from adults or to obtain objects. Both the OTR and PPR interventions were deemed functionally appropriate because they would create opportunities for praise and attention from adults.

Data on intervals for on-task behavior, disruptive behavior, OTR, and ICW for Smith are in Figure 2. Baseline data were collected for five days, and mean OTR was 27.46% (range, 20-37) or approximately 1.10/min. Before beginning the intervention, Smith's regular education teacher set a goal of approximately 2 OTR/min. During implementation of the OTR intervention, mean OTR increased to 44.72% (range, 35-56) or approximately 1.8/min. During reversal, mean OTR remained high at 47.5% (range, 31-75) or approximately 1.9/min. During implementation of the PPR intervention, mean OTR was 29.01% (range, 20-45) or approximately 1.13/min. Following reversal from the PPR intervention, mean OTR was 22.22% (range, 8-33) or approximately 0.87/min.

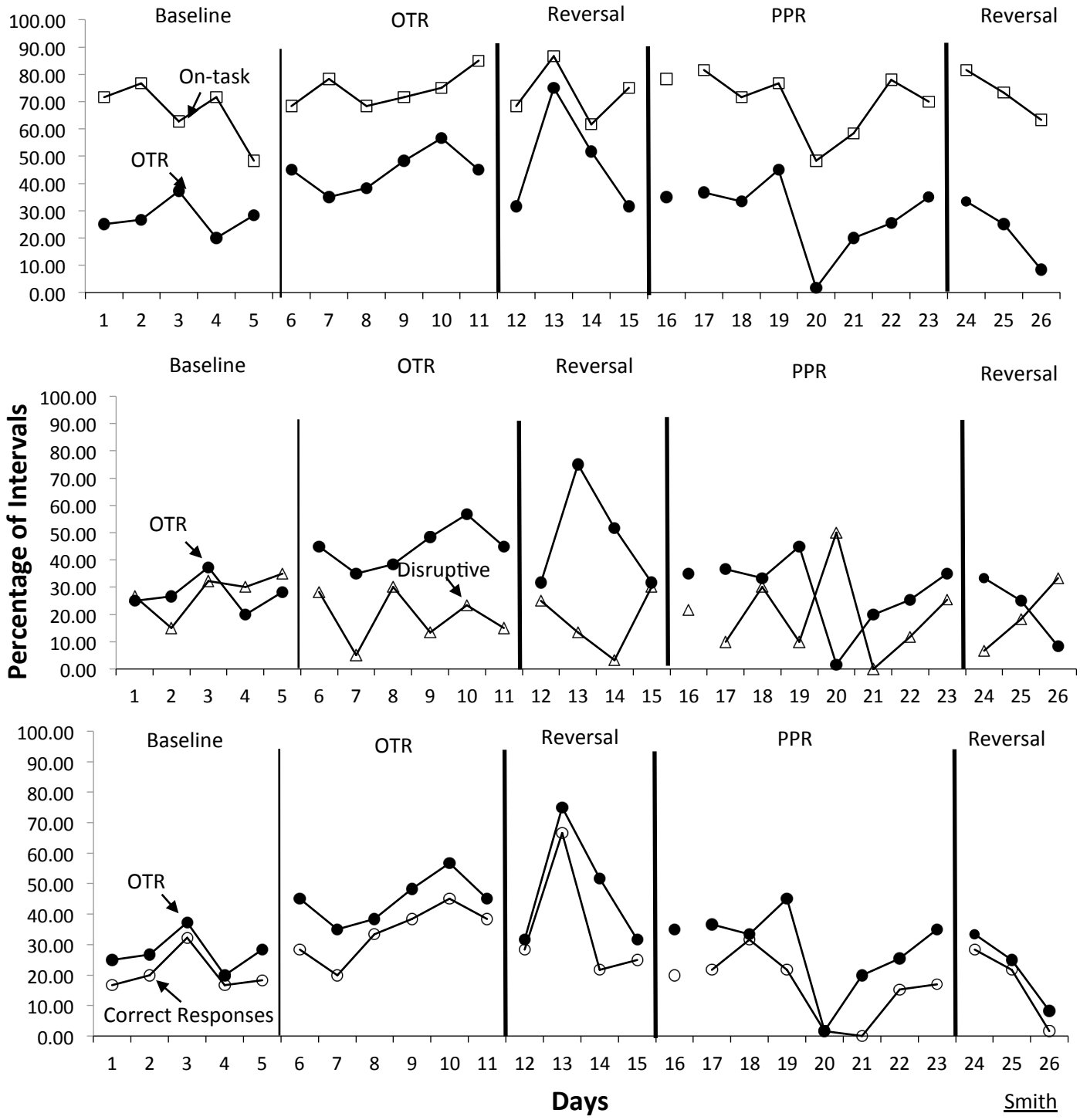


Figure 2. Percentage of intervals with on-task behavior, disruptive behavior, OTR, and ICR for Smith

During the five-day baseline period, mean on-task behavior was 66.21% (range, 48-76). During implementation of the OTR intervention, mean on-task behavior increased to 74.44% (range, 68-85). During the four-day reversal phase, mean on-task behavior remained similar at 72.92% (range,61-86). During implementation of the PPR intervention, mean on-task behavior continued to remain similar at 70.37% (range, 48-81). Following removal of the PPR intervention for three days, mean on-task behavior remained at 72.78% (range, 63-81) and followed a decreasing trend.

Mean disruptive behavior was 27.77% (range, 15-35) during baseline. During implementation of the OTR intervention, mean disruptive behavior decreased to 19.17% (range, 5-30). During the reversal phase, mean disruptions remained similar at 17.92% (range, 3-30) and continued to remain at 19.87% (range, 0-50) during PPR. Following removal of the PPR intervention for three days, mean disruptive behavior remained at 19.44% (range, 6-33) and followed an increasing trend.

During the five-day baseline period, mean ICR was 20.77% (range, 16-32) and mean PCR was 75.64%. During implementation of the OTR intervention, mean ICR increased to 33.89% (range, 20-49), and mean PCR was 75.78%. During the reversal phase, mean ICR remained high at 35.42% (range, 21-66), and mean PCR was 74.57%. During PPR implementation, mean ICR decreased 16.11% (range, 0-31), and mean PCR decreased to 55.53%. During the reversal phase following PPR, mean ICR remained relatively low at 17.22% (range, 1-28), and mean PCR was 77.50%.

**Student 3**

Martin's special education teacher completed the PTR FBA, which indicated that disruptive behavior may have been exhibited in order to gain attention from peers or escape from

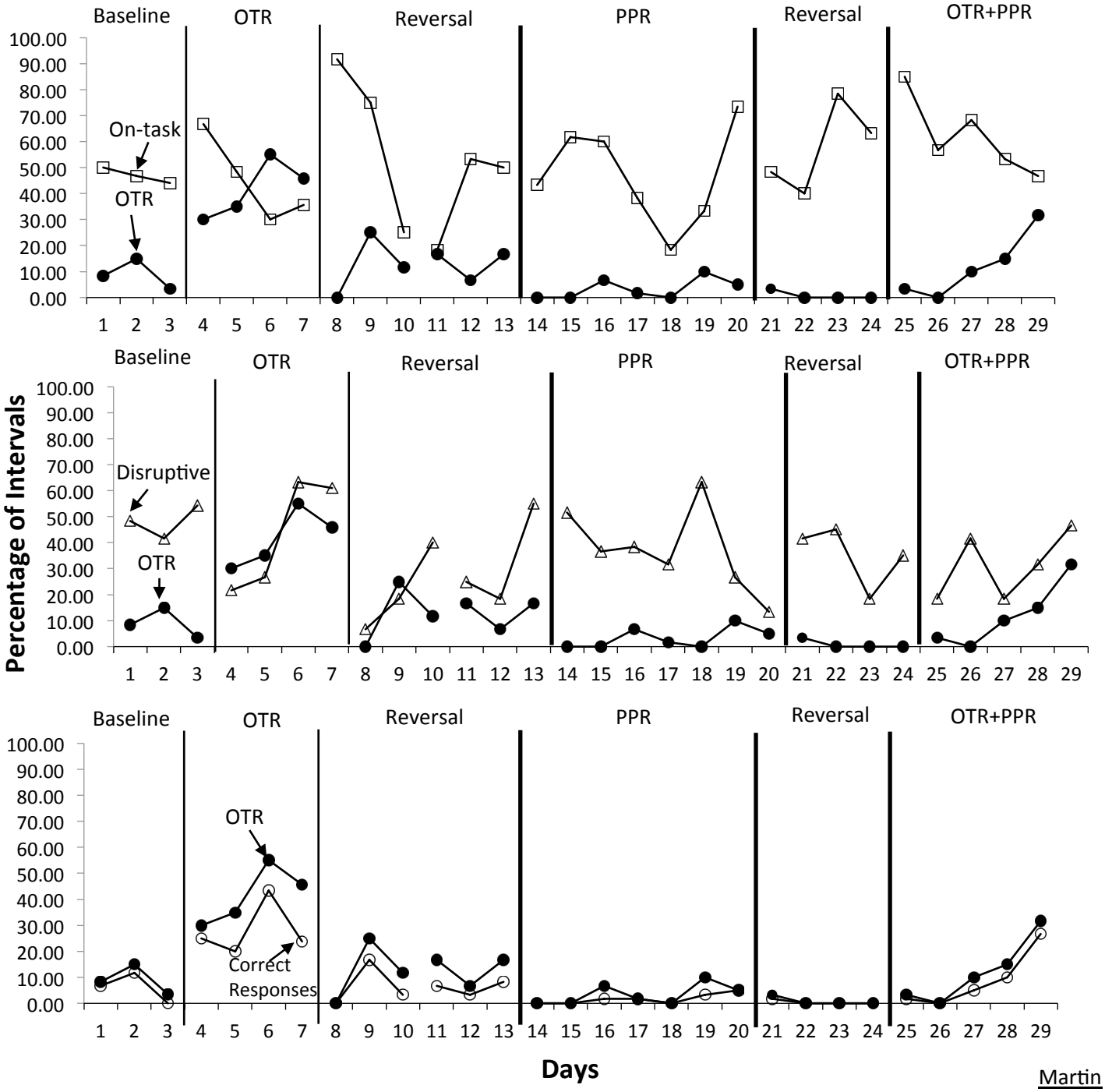


Figure 3. Percentage of intervals with on-task behavior, disruptive behavior, OTR, and ICR for Martin

instruction. Both the OTR and PPR interventions were deemed functionally appropriate because they would create opportunities for attention and praise from peers.

Data on intervals for on-task behavior, disruptive behavior, OTR, and ICW for Martin are in Figure 3. Baseline data were collected on Martin for three days. During this time, OTR averaged 8.91% (range, 3-15) or approximately 0.33/min. Before beginning the OTR intervention, his teachers set a goal of 1 OTR/min. During the four-day implementation of the increased OTR intervention, mean OTR was 41.44% (range, 30-55) or approximately 1.70/min. During the six-day reversal period, mean OTR was 12.78% (range, 0-25) or approximately 0.53/min. During the PPR intervention and the subsequent reversal period, mean OTR was 3.33% (range, 0-10) and 0.83% (range, 0-3), respectively. Before beginning the combination OTR+PPR phase, Martin's teachers set a new goal of approximately 0.5 OTR/min. During implementation of the OTR+PPR intervention, mean OTR were 12.00% (range, 0-31) or approximately 0.47/min.

While baseline data were collected, mean on-task behavior was 46.91% (range, 44-50). When the OTR intervention was implemented, mean on-task behavior remained similar at 45.15% (range, 30-66). During the following reversal phase, mean on-task behavior increased to 52.22% (range, 18-21), but was highly variable. After implementation of the PPR intervention, mean on-task behavior decreased from the reversal phase to 42.50% (range, 18-73). While in the subsequent reversal period, mean on-task increased to 52.23% (range, 40-78). The highest amount of on-task behavior occurred during the combination of OTR+PPR, with a mean of 62.00% (range, 46-85).

During baseline, mean disruptive behavior was 48.08% (range, 41-54). Following implementation of the OTR intervention, mean disruptive behavior decreased to 43.17% (range, 21-63) but followed an increasing trend. During the reversal from increased OTR, mean disruptive behavior decreased to 27.22% (range, 6-55) and was fairly variable. Once the PPR intervention was implemented, mean disruptive behavior increased from reversal to 37.38% (range, 13-51). Disruptive behavior decreased slightly in the reversal period following PPR, with a mean of 34.35% (range, 18-45). After OTR+PPR were implemented, mean disruptive behavior decreased slightly from the reversal period to 31.33% (range, 18-46).

ICR averaged 6.11% (range, 0-11) during baseline, and mean PCR was 68.57%. When the OTR intervention was implemented, mean ICR increased to 28.02% (range, 20-43) and mean PCR remained similar at 67.62%. After the OTR condition was reversed, mean ICR decreased to 6.39% (range, 0-16); in addition, mean PCR decreased to 50.00%. ICR remained low during both the PPR intervention and the subsequent reversal phase, with means of 1.67% (range, 0-5) and 0.42% (range, 0-1), respectively. During the PPR intervention, mean PCR was 50.15%, and mean PCR was 50.60% during the reversal from PPR. When the OTR and PPR interventions were combined, mean ICR increased to 8.67% (range, 0-26) with an increasing trend, and mean PCR was 72.25%.

**Student 4**

While completing the PTR FBA, Becky's teacher was unable to confidently form a hypothesis about the function of her disruptive behavior. However, the teacher did indicate that the most frequent consequences that followed disruptive behavior were assistance given, verbal direction, verbal reprimand, and stated rules, which indicated that the function of her behavior

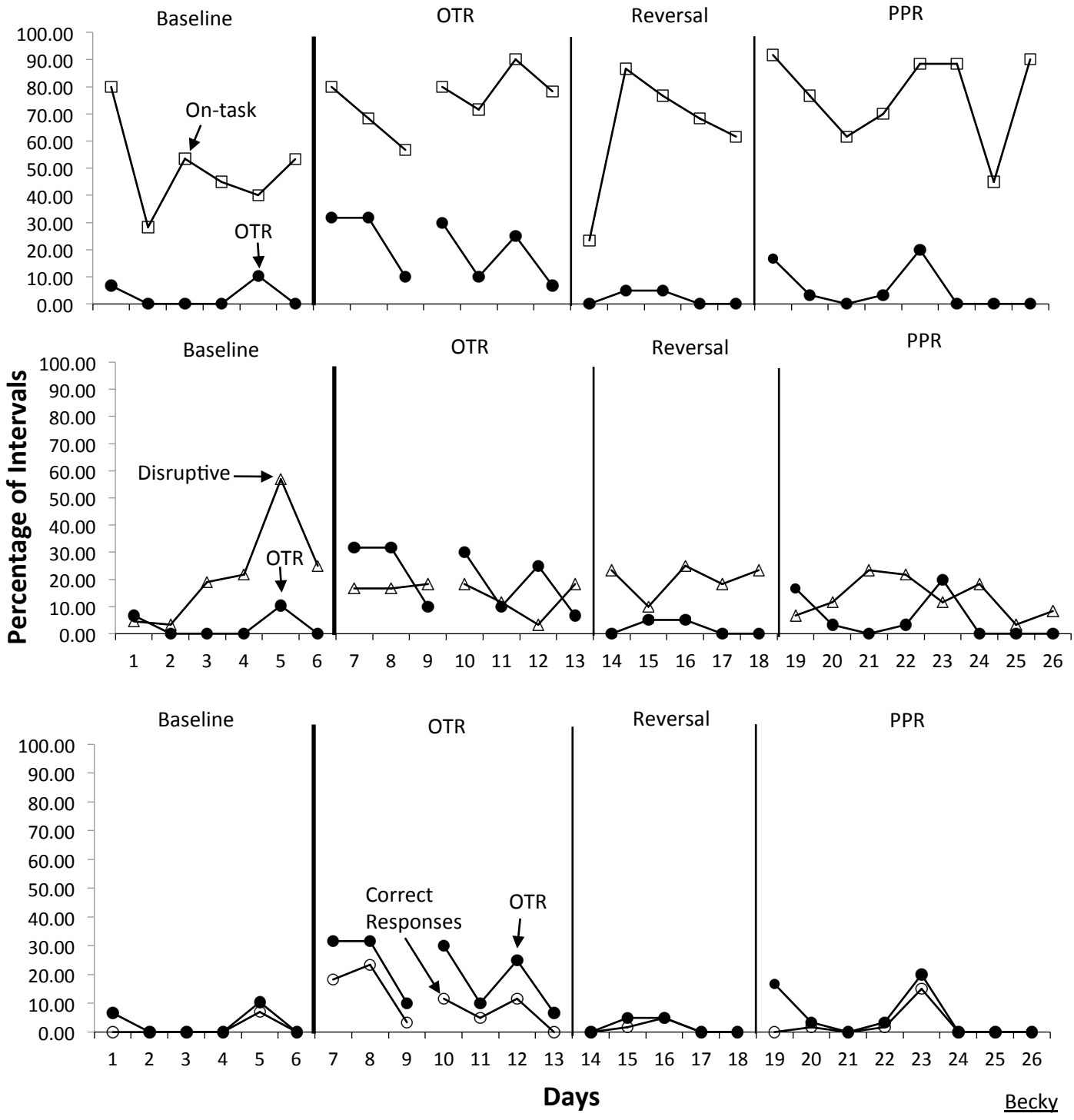


Figure 4. Percentage of intervals with on-task behavior, disruptive behavior, OTR, and ICR for Becky

may have been to seek attention. Therefore, the OTR and PPR interventions were deemed functionally appropriate because they would create opportunities for attention and praise.

Data on intervals for on-task behavior, disruptive behavior, OTR, and ICW for Becky are in Figure 4. Baseline data were collected for six days; during this time OTR averaged 2.84% (range, 0-10) or approximately 0.13/min. Becky's teacher set a goal of approximately 1 OTR/min before beginning intervention and increased to a mean of 20.71% (range, 6-31) or approximately 0.80/min during intervention. During the reversal following intervention, mean OTR decreased to 2.00% (range, 0-5) or approximately 0.07/min. Following the implementation of PPR, mean OTR increased slightly to 5.42% (range, 0-20) or approximately 0.20/min.

During the baseline phase, mean on-task behavior was 50.02% (range, 40-80). After the OTR intervention was implemented, mean on-task behavior increased to 75.00% (range, 56-90). During the reversal from OTR, mean on-task behavior decreased to 66.67% (range, 23-86) and followed a decreased trend. When PPR was implemented, mean on-task behavior increased to 76.46% (range, 45-91).

Mean disruptive behavior was 21.72% (range, 5-56) during baseline and followed an increasing trend. After increased OTR was implemented, mean disruptive behavior decreased to 14.76% (range, 3-18). Following removal of the OTR intervention, mean disruptive behavior increased slightly to 18.5% (range, 10-25). After PPR was implemented, mean disruptive behavior decreased to 13.13% (range, 3-23).

Mean ICR was 1.15% (range, 0-6) during the baseline phase, and mean PCR was 40.49%. After increased OTR was implemented, mean ICR increased to 10.48% (range, 0-23), mean PCR increased to 50.60%. During the reversal from the OTR intervention, mean ICR

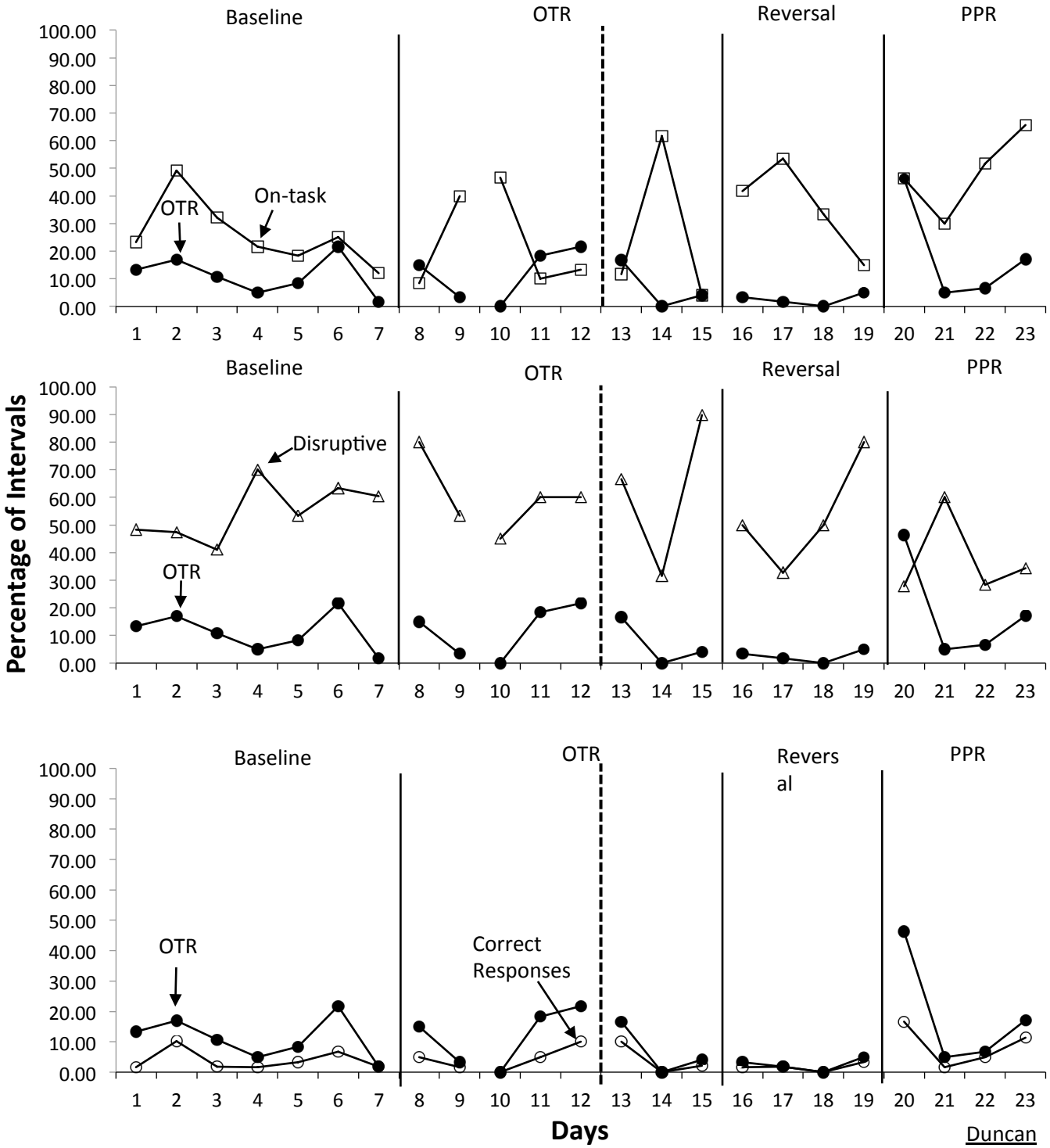


Figure 5. Percentage of intervals with on-task behavior, disruptive behavior, OTR, and ICR for Duncan

decreased to 1.33% (range, 0-5), and mean PCR was 66.50%. After PPR was implemented, mean ICR stayed relatively low at 2.29% (range, 0-15), and mean PCR decreased to 42.25%.

**Student 5**

Duncan's regular education teacher completed the PTR FBA, which indicated that disruptive behavior was exhibited in order to gain attention from peers. Both the OTR and PPR interventions were deemed functionally appropriate because they would create opportunities for attention and praise from peers.

Data on intervals for on-task behavior, disruptive behavior, OTR, and ICW for Duncan are in Figure 5. Baseline data were collected for seven days, and during this period mean OTR were 11.1% (range, 1-21) or approximately 0.47/min. Before beginning the OTR intervention, his teacher set a goal of approximately 1 OTR/min. During the implementation of the OTR intervention, mean OTR were 12.50% (range, 0-21) or approximately 0.53/min. During the final three days of the OTR intervention, Duncan's regular education teacher was absent and his special education led whole class instruction. Dashed lines on Figure 5 indicate this time period. When the OTR intervention was removed, mean OTR decreased to 2.51% (range, 0-3) or approximately 0.13/min. During the PPR intervention phase, mean OTR increased to 18.78% (range, 5-46) or approximately 0.73/min.

During the baseline period, mean on-task behavior was 25.96% (range, 12-49). When the OTR intervention was implemented, mean on-task behavior remained similar at 24.47% (range, 4-61). During the reversal following the OTR intervention, mean on-task behavior increased to 32.06% (range, 15-53) but followed a decreasing trend. After PPR was implemented, mean on-task behavior increased to 48.42% (range, 30-65) and followed an increasing trend.

Mean disruptive behavior was 54.84% (range, 41-70) during baseline. After increased OTR was implemented, mean disruptive behavior increased to 60.81% (range, 31-89). During the reversal from increased OTR, mean disruptive behavior decreased to 55.73% (range, 32-80), but followed an increasing trend. When PPR was implemented, mean disruptive behavior decreased to 37.6% (range, 27-60).

Mean ICR was 3.86% (range 1-10) during the baseline phase, and mean PCR was 34.77%. After increased OTR was implemented, mean ICR remained similar at 4.21% (range, 0-10), and mean PCR was 42.56%. During the reversal from OTR, mean ICR decreased to 1.68% (range, 0-3), and mean PCR was 66.93%. When PPR was implemented, mean ICR increased to 8.69% (range, 5-16), and mean PCR was 46.27%.

**Student 6**

Lindsay's regular education teacher completed the PTR FBA, which indicated that disruptive behavior was exhibited to gain attention from peers and the special education teacher and to get away from peers with which she disagreed. This suggested that both the OTR and PPR interventions would be functionally appropriate because they would create opportunities for attention and praise from peers and teachers.

Data on intervals for on-task behavior, disruptive behavior, OTR, and ICW for Lindsay are in Figure 5. Across five days of baseline data collection, mean OTR was 6.67% (range, 0-14) or approximately 0.27/min. Her teacher set a goal of 1 OTR/min before beginning the increased OTR intervention and averaged 11.95% (range, 0-26) or approximately 0.47/min. There is a dashed line on the graphs in Figure 6 to mark the period during which her regular education teacher was absent and the special education teacher led whole-group instruction. During the reversal period following the OTR intervention, mean OTR was 7.58% (range, 0-16) or

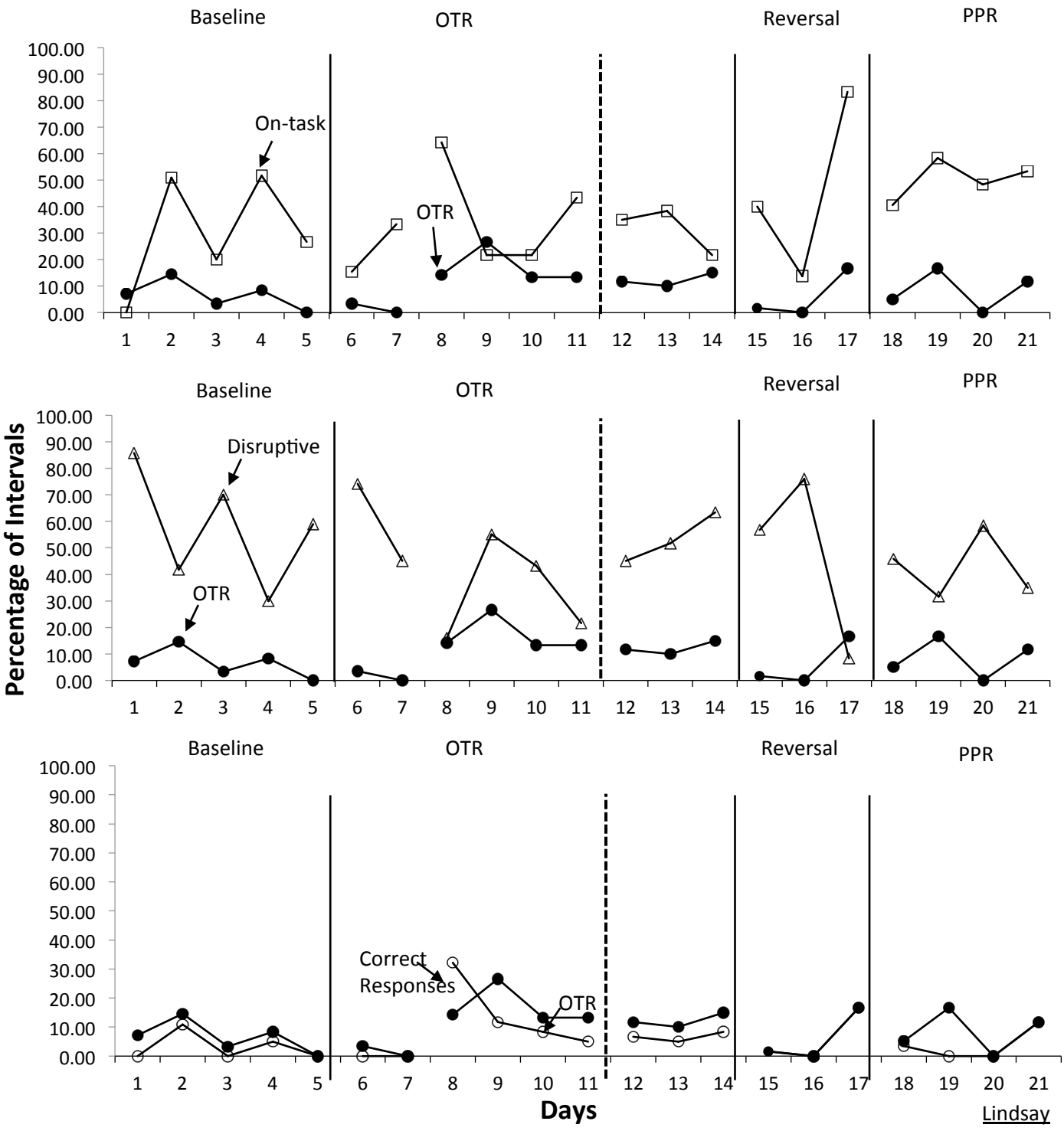


Figure 6. Percentage of intervals with on-task behavior, disruptive behavior, OTR, and ICR for Lindsay

approximately 0.30/min. While the PPR intervention was implemented, mean OTR was 8.35% (range, 0-16) or approximately 0.33/min.

During the baseline period, mean on-task behavior was 29.87% (range, 0-51) and was very variable. The decision was made to begin the OTR intervention despite the lack of stability in the data because Lindsay was highly off-task on the majority of days. While increased OTR was implemented, mean on-task behavior increased slightly to 32.76% (range, 15-64), but remained variable. During the reversal period, mean on-task behavior was 45.71% (range, 13-83). On-task behavior was observed at the highest percentage and was most stable during the PPR intervention, with a mean of 50.17% (range, 40-58).

Mean disruptive behavior was 57.29% (range, 30-85) during baseline and was also observed to be very variable. During the OTR intervention, mean disruptive behavior decreased to 46.13% (range, 16-74), but followed an increasing trend on the final three days when the regular education teacher was absent. Following the removal of the OTR intervention, mean disruptive behavior remained at 46.95% (range, 8-75). During the implementation of PPR, mean disruptive behavior decreased slightly to 42.69% (range, 31-58) and was more stable than during previous phases.

Mean ICR was 3.18% (range, 0-10) during baseline, with mean PCR was 47.68%.Mean intervals ICR increased to 6.59% (range, 0-14) during the OTR intervention, and mean PCR was 55.05%. Following the reversal from OTR, mean ICR remained similar at 6.11% (range, 0-16), and mean PCR was 80.61%. When the PPR intervention was implemented, mean ICR decreased to 3.76% (range, 0-11), and mean PCR was 45.03%.

**Percentage of Non-overlapping Data (PND)**

PND (Scruggs, Mastropieri, & Casto, 1987) was calculated for each student from baseline to the first intervention phase and from each reversal phase to the following intervention phase. An intervention is typically considered highly effective if PND is greater than 90%, moderately effective if PND is between 70% and 90%, minimally effective if PND is between 50% and 70%, and ineffective if PND is less than 50%.

Table 2. PND calculations for each student

| Student | OTR Intervention | | | PPR Intervention | | | OTR+PPR Intervention | | |
|---|---|---|---|---|---|---|---|---|---|
| | Disruptive | On-task | Correct Responses | Disruptive | On-task | Correct Responses | Disruptive | On-task | Correct Responses |
| **Aidan** | 57.14% | 42.86% | 57.14% | 42.86% | 57.14% | 0% | 0% | 20% | 80% |
| **Smith** | 33.33% | 50% | 100% | 12.5% | 0% | 0% | | | |
| **Martin** | 50% | 25% | 100% | 0% | 0% | 0% | 0% | 20% | 60% |
| **Becky** | 0% | 14.29% | 57.14% | 37.5% | 25% | 12.5% | | | |
| **Duncan** | 12.5% | 12.5% | 0% | 50% | 25% | 75% | | | |
| **Lindsay** | 22.22% | 11.11% | 22.22% | 0% | 0% | 0% | | | |

Based on PND calculations, the OTR intervention was highly effective at increasing ICR with 2 students. OTR was minimally effective at decreasing the disruptive behavior of 2 students, increasing the on-task behavior of 1 student, and increasing ICR with 2 students. The OTR intervention was ineffective at decreasing disruptive behavior with 4 students, increasing on-task behavior with 5 students, and increasing ICR with 2 students.

PND calculations indicated that the PPR intervention was moderately effective at increasing ICR with 1 student, minimally effective at decreasing disruptive behavior with 1 student, and minimally effective at increasing on-task behavior with 1 student. The PPR

intervention was found to be ineffective at decreasing disruptive behavior with 5 students, increasing on-task behavior of 5 students, and increasing ICR with 5 students.

PND could only be calculated on the OTR+PPR intervention for Aidan and Martin. For Aidan, PND calculations indicated that the intervention was ineffective at decreasing disruptive behavior and increasing on-task behavior and moderately effective at increasing ICR. For Martin, PND calculations indicated that the intervention was ineffective at decreasing disruptive behavior and increasing on-task behavior and minimally effective at increasing ICR.

**Social Validity**

Teacher measures of acceptability and effectiveness for each intervention were reported on the IRP-15. In general, the teachers found both interventions to be acceptable, though they did somewhat vary on their perceptions of the effectiveness of the interventions. Table 3 reflects the overall scores by each student's teacher.

Table 3. Teacher ratings for social validity as measured by the IRP-15

| Student | OTR Intervention | PPR Intervention |
|---|---|---|
| **Aidan** | 61 | 77 |
| **Smith** | 76 | 87 |
| **Martin** | 58 | 64 |
| **Becky** | 84 | 67 |
| **Duncan** | 65 | 72 |
| **Lindsay** | 52 | 72 |

IRP-15 scores for the OTR intervention ranged from 52 to 84 and scores on the PPR intervention ranged from 64 to 87. Based on these scores, 5 teachers found the PPR intervention to be more acceptable than the OTR intervention.

# Chapter 5. Discussion

## Limitations

All results of this study should be interpreted with knowledge of the inherent limitations. These limitations include, but may not be limited to: insufficient time to investigate research questions, inability to control confounding variables, inability to reverse behavior, and the use of a partial-interval recording system.

Data collection for this study began in March of the 2014-2015 school year and continued until instruction ceased in May. This allowed for a possibility of at least 33 days of data collection for each student; however, due to absences and schedule changes, actual days of participation ranged from 21 to 34. The implementation of the OTR+PPR intervention was only possible with 2 students, and with 2 students the PPR intervention was only implemented for 4 days. Therefore, multiple replications of the effects of the OTR+PPR intervention were not available, and limited effects of the PPR intervention were available for Duncan and Lindsay.

As with much of applied research, there were multiple variables in each classroom that were difficult to control and could have contributed to the variability of results. For example, the teacher leading instruction in Duncan and Lindsay's classroom sometimes changed from the regular education teacher to the special education teacher. There were also teacher absences in other classrooms that resulted in an unfamiliar teacher leading instruction, which may have affected the fidelity of implementation of the current interventions and student behavior. Another confounding variable was the difference in the daily structure of lessons; for example, test days, project presentation days, or the difference between independent written work and whole group instruction may have affected the students' behavior and academic responding.

The results of this study were also affected by the inability to reverse some student and teacher behavior during designated reversal phases. Multiple teachers struggled to sharply

decrease OTR during the reversal after intervention; for example, Smith was given more OTR during the designated reversal phase than during the intervention. In multiple cases, even with the removal of the intervention, student behavior failed to reverse to baseline levels. For example, Smith's disruptive behavior followed a decreasing trend after OTR was removed, and Martin's on-task behavior remained relatively high following the removal of PPR. The lack of reversal makes it difficult to assess the positive effects of the interventions and negatively impacted PND scores.

An additional limitation of this study was the use of a partial-interval recording system, which may have overestimated the actual occurrence of behaviors. A behavior was marked as observed if it occurred during any portion of a 10-second interval; therefore, the behavior appeared as if it occurred during the entire interval regardless of its actual duration. This system of measuring behavior is not sensitive to small changes and may not have captured the most accurate representation of each intervention's effect.

**Question 1**

The purpose of this study was to answer four research questions about the effects of academic and social interventions on the behavior and academic responding of six students. The first question was, "What are the effects of academic based and social based interventions on classroom disruption, on-task behavior, and academic responding?" The answer to this question was investigated through the implementation of OTR and PPR interventions through a reversal design.

Overall, the OTR intervention was effective at increasing mean on-task behavior with four out of six students, decreasing mean disruptive behavior with five out of six students, increasing mean ICR with all six students, and increasing mean PCR with four students. One

explanation for these positive results is that increasing OTR created more opportunities for teachers to praise target students (Gunter, Denny, Jack, Shores, & Nelson, 1993). The increased availability of praise may have also created a more positive environment that served as an establishing operation for additional positive behavior. A second explanation for why increased OTR resulted in positive behavior change is that answering academic questions is a behavior incompatible with disruptive and off-task behavior (Deno, 1998). With students spending more time responding to questions, there was less time available for undesired behaviors.

In addition to increasing the intervals with correct responses, implementation of the OTR intervention also resulted in four out of six students responding correctly to a greater percentage of OTR than during to baseline conditions. When results from the OTR and PPR interventions are compared, increased OTR conditions also resulted in a greater percentage of correct responses than PPR conditions. OTR resulted in four students having an increase in PCR while PPR did not result in any students having an increase in PCR. This is most likely because when smaller amounts of OTR are given, small numbers of incorrect responses will result in a low PCR. While both interventions did result in more on-task behavior, it appears that an increase in OTR is necessary to result in greater percentages of accuracy.

While the OTR intervention resulted in positive gains for the majority of students, on-task behavior did not increase for two students and disruptive behavior did not decrease for one student. In the case of Martin, the results of his FBA indicated that one function of his disruptive behavior was to escape from instruction. When OTR were increased, on-task behavior decreased slightly and disruptive behavior followed an increasing trend, which suggests that he began engaging in more behaviors to escape from the increased instructional demands. Duncan's on-task behavior also decreased slightly and disruptive behavior increased during the OTR

intervention, which suggests that the hypothesis formed through the FBA process may have been incorrect, and he may have also displayed escape-motivated behavior. However, anecdotal information provided by observers did indicate that many of his disruptions were "shout outs" related to the academic instruction, so there is a possibility that the increase in his disruptive behavior may have been simply due to a change in the topography of his disruptions which the measurement system used was not sensitive enough to catch. These results point to the importance of continuing to combine FBA procedures with instructional strategies to achieve best results (Scott & Kamps, 2007).

Overall, PPR was effective at increasing on-task behavior and decreasing disruptive behavior, but was ineffective at increasing correct responses. Mean on-task behavior was increased with four students and mean disruptive behavior decreased with four students, but mean ICR only increased with one student. In addition, PCR did not increase with any student.

During PPR conditions, peer reporters were encouraged to give one or two examples of how the target student had worked hard, followed the rules, or helped others. However, the peer reporter was not given feedback on whether the reports were accurate and the target student could have engaged in significantly more or less positive behavior than he or she was praised for. Therefore, the positive results observed under the PPR conditions may have been mainly due to noncontingent praise and attention. The increases in on-task behavior and decreases in disruptive behavior under PPR conditions may have also increased the accessibility of reinforcers that were already occurring in the students' natural environments (Morrison & Jones, 2007). While data were not collected on additional attention given to the target students by teachers and other peers, anecdotal reports indicated that both teachers and peers more frequently praised target students while PPR was implemented. PPR may have altered both peers' and teachers' perceptions of the

targeted students, creating an environment more rich with reinforcement (Morrison & Jones, 2007).

The implementation of PPR resulted in decreases in mean on-task behavior and increases in mean disruptive behavior relative to the preceding reversal conditions for both Smith and Martin. For both of these students, data collected during the reversal following OTR and preceding PPR were very variable, which may have accounted for these results. During the last three days of PPR implementation, Martin's on-task behavior followed an increasing trend and disruptive behavior followed a decreasing trend. In this case, data trends may be a more appropriate indicator of effects that changes in means.

**Question 2**

The second research question addressed in this study was, "What is the combined effect of an academic based and social based intervention on classroom disruption, on-task behavior, and academic responding? The answer to this question was investigated through the implementation of a combination OTR+PPR intervention.

Because of the time constraints of this study, the combination OTR+PPR intervention was only implemented with two students. For Aidan, this intervention produced the highest means for on-task behavior, ICR, and PCR; and the lowest mean for disruptive behavior of all phases. For Martin, this intervention produced the highest means for on-task behavior and correct responses of all phases, and disruptive behavior decreased slightly from the preceding reversal phase.

One explanation for these results is that increased OTR created more opportunities for peer reporters to record positive behaviors, resulting in the greatest increases in teacher and peer attention of all phases. It is also possible that the increase in ICR and PCR created by the OTR

intervention served as reinforcement that created an establishing operation for prosocial behavior and further correct responses. Another possible explanation is that because increases in accuracy occurred, the aversive nature of the task and motivation to escape were reduced. While the combination of interventions did have positive effects with both students, interpretation of these results is limited due to the lack of replications.

**Question 3**

The third research question asked as part of this study was, "What is the effect of dyadic PPR on classroom disruption, on-task behavior, and academic responding?" This was investigated by assigning one peer helper to each target student as part of the PPR intervention, whereas previous PPR and tootling studies had assigned groups of students to report on one or multiple students.

Implementation of dyadic PPR was very successful, as evidenced by mean treatment integrity of 95.85% (range, 75-100) for the PPR intervention and 90.00% (range, 80-100) for the OTR+PPR intervention. In addition to the intervention being implemented with fidelity, mean on-task behavior was increased with four students, mean disruptive behavior decreased with four students. Mean percentage of correct responses did not increase for any student while PPR was implemented, but mean correct responses reached the highest percentages for the two students with which OTR+PPR was implemented. These results indicated that dyadic PPR can be successful at increasing on-task behavior and decreasing disruptive behavior, but additional intervention may be necessary to result in an increase in correct responding.

Peer reporters in this study were not given additional incentives beyond praise and were not given feedback on whether or not reports were accurate, which provides additional support to previous research that demonstrated students can be trained to report prosocial behaviors without

additional reinforcement (Grieger, Kauffman, & Grieger, 1975) and correct feedback (Carden-Smith & Fowler, 1984). This study also extended the work of previous researchers by demonstrating the effectiveness of dyadic PPR, which could provide a simpler and less time consuming alternative to group reporting.

**Question 4**

The final question addressed in this study was, "What is the effect of peer teacher feedback on teachers' rates of OTR?" A special education teacher implemented this study as part of the requirements of her master's thesis. As part of the experimental procedure, this teacher was a peer who provided all training and feedback to teachers. With two teachers, this feedback was provided in person on a daily basis, and with three teachers, feedback was provided primarily through email. Feedback was given by providing daily reports of OTR; praise was given when teachers reached their goals and encouragement was given when they did not. Graphs of OTR and student behavior were also shared one or two times per week.

Mean treatment integrity was 80.82% (range, 50-100) for the OTR intervention, and 90.00% (range, 80-100) for the OTR+PPR intervention, which indicates that the majority of teachers were successful at increasing OTR over baseline rates when given feedback from a peer. These results support previous research, which demonstrated that teachers could increase rates of OTR when given feedback from researchers (Sutherland, Alder, & Gunter, 2003; Haydon, Mancil, & Van Loan, 2009). These results also extend previous research by demonstrating that minimal feedback from a peer can have an effect on teacher behavior, which may be easier to maintain over a longer period of time than researcher feedback.

The use of peer feedback may provide future researchers with a method to train teachers to continue to use effective interventions after a study's conclusion. Just as increasing praise

given to students can create a more positive learning environment, training teachers to praise each other has the potential to create a more positive teaching environment, which could be especially important for teachers of students with challenging behavior.

**Future Directions**

While this study did demonstrate some positive effects from the OTR, PPR, and OTR+PPR interventions, continued research on these interventions is warranted. Because the combination OTR+PPR intervention could only be implemented with two students, this combination should be replicated in future studies to further determine if the combination is more effective than either intervention on its own. In addition, the effect of peer teacher feedback on implementation of both of these interventions should continue to be investigated.

The need for comparison of the effectiveness of PPR and other interventions at improving social relations has been noted (Bowers, Wood, Carlyon, & Friman, 2000), and this study did attempt to do that. Because interpretation of the results of this study were limited by the inability to reverse some teacher and student behavior, future research on these interventions should employ experimental designs more suited to comparing interventions. A multiple baseline design or an alternating treatments design may be suitable options. Future research should also focus on which type of PPR is most effective. While dyadic PPR was shown to be effective in this study, it is unknown whether traditional PPR, tootling, or dyadic PPR is most effective at increasing prosocial behaviors.

Researchers have also indicated the need for more research examining the effects of increased OTR for students with EBD (Sutherland & Wehby, 2001), and this study did demonstrate one application of OTR with students at-risk for EBD. Future research should continue to explore these early intervention efforts, especially in inclusion classrooms.

Furthermore, future research should examine the most optimal rate of OTR (Haydon et al., 2010). In this study, teachers attempted to double initially low rates of OTR, but results may have been more dramatic if rates were increased even higher.

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# Appendix A: Data Collection Sheet

**Student: _____ Observer: _____ Date: _____**

**Start Time: _____ End Time: _____**

| Min | Behavior | Interval | | | | Total | Min | Behavior | Interval | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | | | | 5 | 6 | 7 | 8 | |
| 1 | Disruptive | | | | | | 2 | Disruptive | | | | | |
| | On-task | | | | | | | On-task | | | | | |
| | Opportunity to Respond | | | | | | | Opportunity to Respond | | | | | |
| | Correct Responses | | | | | | | Correct Responses | | | | | |
| | | 9 | 10 | 11 | 12 | | 4 | | 13 | 14 | 15 | 16 | |
| 3 | Disruptive | | | | | | | Disruptive | | | | | |
| | On-task | | | | | | | On-task | | | | | |
| | Opportunity to Respond | | | | | | | Opportunity to Respond | | | | | |
| | Correct Responses | | | | | | | Correct Responses | | | | | |
| | | 17 | 18 | 19 | 20 | | | | 21 | 22 | 23 | 24 | |
| 5 | Disruptive | | | | | | 6 | Disruptive | | | | | |
| | On-task | | | | | | | On-task | | | | | |
| | Opportunity to Respond | | | | | | | Opportunity to Respond | | | | | |
| | Correct Responses | | | | | | | Correct Responses | | | | | |
| | | 25 | 26 | 27 | 28 | | | | 29 | 30 | 31 | 32 | |
| 7 | Disruptive | | | | | | 8 | Disruptive | | | | | |
| | On-task | | | | | | | On-task | | | | | |
| | Opportunity to Respond | | | | | | | Opportunity to Respond | | | | | |
| | Correct Responses | | | | | | | Correct Responses | | | | | |
| | | 33 | 34 | 35 | 36 | | | | 37 | 38 | 39 | 40 | |
| 9 | Disruptive | | | | | | 10 | Disruptive | | | | | |
| | On-task | | | | | | | On-task | | | | | |
| | Opportunity to Respond | | | | | | | Opportunity to Respond | | | | | |
| | Correct Responses | | | | | | | Correct Responses | | | | | |

| Min | Behavior | Interval | | | | Total | Min | Behavior | Interval | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 41 | 42 | 43 | 44 | | | | 45 | 46 | 47 | 48 | |
| 11 | Disruptive | | | | | | 12 | Disruptive | | | | | |
| | On-task | | | | | | | On-task | | | | | |
| | Opportunity to Respond | | | | | | | Opportunity to Respond | | | | | |
| | Correct Responses | | | | | | | Correct Responses | | | | | |
| | | 49 | 50 | 51 | 52 | | 14 | | 53 | 54 | 55 | 56 | |
| 13 | Disruptive | | | | | | | Disruptive | | | | | |
| | On-task | | | | | | | On-task | | | | | |
| | Opportunity to Respond | | | | | | | Opportunity to Respond | | | | | |
| | Correct Responses | | | | | | | Correct Responses | | | | | |
| | | 57 | 58 | 59 | 60 | | | | | | | | |
| 15 | Disruptive | | | | | | | | | | | | |
| | On-task | | | | | | | | | | | | |
| | Opportunity to Respond | | | | | | | | | | | | |
| | Correct Responses | | | | | | | | | | | | |

Notes:

_____
_____
_____
_____
_____
_____

| Behavior | Total Count | Percent |
|---|---|---|
| Disruptive | _____ / 60 | |
| On-task | _____ / 60 | |
| Opportunity to Respond | _____ / 60 | |
| Correct Responses | _____ / 60 | |

**Appendix B: Positive Peer Reporting Sheet**

**I see _____…**

| | |
|---|---|
| Working Hard | |
| Following Rules | |
| Helping Others | |

# Appendix C: IRB Approval

**ACTION ON EXEMPTION APPROVAL REQUEST**

Institutional Review Board
Dr. Dennis Landin, Chair
130 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
F: 225.578.5983
irb@lsu.edu | lsu.edu/irb

**TO:** Lauren LeJeune
Special Education

**FROM:** Dennis Landin
Chair, Institutional Review Board

**DATE:** January 27, 2015

**RE:** **IRB#** E9148

**TITLE:** A Comparison of Academic and Social Interventions through the use of Opportunities to Respond and Positive Peer Reporting

**New Protocol/Modification/Continuation:** New Protocol

**Review Date:** 1/26/2015

**Approved** X **Disapproved** _____

**Approval Date:** 1/26/2015 **Approval Expiration Date:** 1/25/2018

**Exemption Category/Paragraph:** 1, 4a

**Signed Consent Waived?:** Yes

**Re-review frequency:** (three years unless otherwise stated)

**LSU Proposal Number** (if applicable): _____

**Protocol Matches Scope of Work in Grant proposal:** (if applicable) _____

**By**: Dennis Landin, Chairman _____

**PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –**
**Continuing approval is CONDITIONAL on:**

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. **SPECIAL NOTE:**

**All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at http://www.lsu.edu/irb*

# Vita

Lauren M. LeJeune completed a bachelor's degree in elementary education with a minor in special education at Louisiana State University in 2012. Upon graduation, she began working as a special education teacher in West Baton Rouge Parish. After a year of teaching, she began working on a special education master's degree with a concentration in behavior and instruction at LSU while continuing to teach. She will complete her master's degree in August 2015 and is entering a doctoral program at Vanderbilt's Peabody College.