

2012

Evaluating the differential effects of parental involvement on check in/check out in children with externalizing behavior problems

Aaron Jason Fischer

Louisiana State University and Agricultural and Mechanical College, afisch4@lsu.edu

Follow this and additional works at: https://digitalcommons.lsu.edu/gradschool_theses



Part of the [Psychology Commons](#)

Recommended Citation

Fischer, Aaron Jason, "Evaluating the differential effects of parental involvement on check in/check out in children with externalizing behavior problems" (2012). *LSU Master's Theses*. 2691.

https://digitalcommons.lsu.edu/gradschool_theses/2691

This Thesis is brought to you for free and open access by the Graduate School at LSU Digital Commons. It has been accepted for inclusion in LSU Master's Theses by an authorized graduate school editor of LSU Digital Commons. For more information, please contact gradetd@lsu.edu.

EVALUATING THE DIFFERENTIAL EFFECTS OF PARENTAL INVOLVEMENT ON
CHECK IN/CHECK OUT IN CHILDREN WITH EXTERNALIZING BEHAVIOR
PROBLEMS

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Arts

in

The Department of Psychology

by
Aaron J. Fischer
B.A., University of Miami, 2008
May 2012

TABLE OF CONTENTS

LIST OF TABLES.....	iii
LIST OF FIGURES.....	iv
ABSTRACT.....	v
INTRODUCTION.....	1
METHOD.....	8
Participants and Recruitment.....	8
Measures.....	10
Behavioral Parent Training.....	14
Treatment.....	14
Research Design.....	15
Treatment Integrity.....	18
Procedure.....	19
Data Analysis.....	20
RESULTS.....	22
IRP-15 Scores Pre-/Post-Intervention.....	22
Inter-Observer Agreement (IOA).....	22
Tom.....	23
Anthony.....	24
Gail.....	24
Alton.....	26
Cohen’s d and PCC.....	27
DISCUSSION.....	33
Considerations Related to an RTI Approach.....	35
Limitations and Future Research.....	37
REFERENCES.....	39
APPENDIX A: CICO DAILY PROGRESS RATING.....	43
APPENDIX B: IRB CONSENT FORM.....	44
VITA.....	45

LIST OF TABLES

1. Descriptive statistics of students.....	10
2. Descriptive statistics of teachers.....	14
3. Treatment integrity means across respondents.....	19
4. IRP-15 scores pre/post intervention.....	23
5. Standardized mean difference score across treatment conditions.....	32
6. Pearson correlation coefficients between BBR and DBR.....	32

LIST OF FIGURES

1. Tom's DPR, SDO, and BBR data.....	28
2. Anthony's DPR and BBR data.....	29
3. Gail's DPR, BBR, and SDO data.....	30
4. Alton's DPR and BBR data.....	31

ABSTRACT

School-based interventions are typically implemented based on a Response to Intervention model, i.e., a 3-tiered support system. Tier 1 provides universal support for all students; Tier 2 targets children who are at risk for developing problems; Tier 3 focuses on remediation for children with severe problems. The interventions in Tier 2 are important because they provide an opportunity to access children before their problems become critically dysfunctional. Check in/Check out (CICO) is a Tier 2 intervention that has been evaluated for children with externalizing behavior problems. In the current CICO literature, parent involvement during CICO integrates school and home life, but the specific effects of parent involvement have not been evaluated with adequate treatment integrity. The current study evaluated the differential effects of parent involvement on CICO. The Brief Behavior Rating Scale, a 12-item change sensitive problem behavior scale, was the dependent measure used to evaluate parent involvement. The effect of parent involvement was evaluated using a reversal design (A-B-A-C). The current study hypothesized that children would show lower levels of problem behavior when parent-based reinforcement was implemented, rather than mentor-based reinforcement, in CICO. Results showed that students responded to the CICO intervention, however it was only effective for certain participants. Mentor-provided reinforcement CICO was more effective than parent-provided reinforcement CICO, and there was a strong correlation between the Brief Behavior Rating (BBR) and the Daily Progress Report (DPR). Results are discussed and the studies limitations were considered.

INTRODUCTION

Children with externalizing behavior problems engage in behaviors such as impulsivity, defiance, inattention, over-activity, and antisocial acts (Hinshaw, 1992). The Diagnostic Statistical Manual-Four-Text Revision (DSM-IV-TR) categorizes children with externalizing behavior problems as those diagnosed with Attention Deficit/Hyperactivity Disorder (ADHD), Oppositional Defiance Disorder (ODD), and Conduct Disorder (CD). Children with externalizing behavior problems tend to score highly on the Child Behavior Checklist (CBCL) (Achenbach & Edelbrock, 1983) in the categories of hyperactivity, delinquency, and aggressiveness/cruelty. Specific problems associated with externalizing problem behavior are deficits in peer interaction, self-esteem, and academic achievement. These deficits in children are prominent in school settings; treatments offered in the school system may provide opportunities to intervene at a pivotal time in life.

School based mental health has become predominant in schools because children who require services tend not to receive treatment (Burns, Costello, Angold, Stangl, Farmer, & Erkanli, 1995). The school system is a consistent environment that allows for accessibility of services. This notion has allowed schools to become a primary source of treatment (Rones & Hoagwood, 2000). Mental health services in the schools have benefits because they provide a unique setting for treatment and allow for easier access to screening and treatments (Shirk & Jungbluth, 2008). Working with children in the school setting can be preventative, since professionals can treat problem behavior proactively, saving future costs and resources (Shinn & Walker, 2010). Finally, the use of progress monitoring can be implemented easier in schools since children spend most of their day in that setting (Shinn & Walker, 2010).

The Individuals with Disabilities Act (IDEA, 2004), identified Response to Intervention (RTI) as means for identification of a learning disability (LD) as compared to the discrepancy model of identification of a LD. The RTI model is beneficial because it provides proactive identification of problems and provides evidence-based treatment for them. RTI (Shinn & Walker, 2010) is a 3-Tiered model of support that is applied to behavioral and academic concerns for students. The model is based on providing universal screening to identify at-risk children. RTI aims to provide early intervention for at-risk children by providing increasingly more intensive interventions depending on the severity of the problem. RTI begins broad with universal screening/treatment (Tier 1), then provides support for students at risk for developing more severe academic/behavioral problems (Tier 2), and finally implements intensive individualized interventions (Tier 3). A main component of RTI is progress monitoring, which is a measure of students' improvement over the course of intervention and after the intervention has been implemented. In addition to progresses monitoring, RTI stresses the importance of treatment integrity during the intervention. Treatment integrity ensures that all components of an intervention are being implemented properly.

The universal programs of Tier 1 are effective at improving school-wide concerns (e.g., classroom management), which can subsequently improve student behavior and academic performance. An example of a Tier 1 intervention is School-Wide Positive Behavioral Support. Tier 2 of RTI is considered “evidence-based, more intensive intervention for students who need more [than Tier 1]”(Shinn & Walker, 2010). Tier 2 targets children who are at-risk for developing more severe academic/behavior problems. Tier two is intended to be highly efficient because it helps practitioners with early identification of at-risk children, allowing for a quick response to assess/treat the problem. This type of efficiency also reduces the long-term cost of

resources. Areas of functioning that Tier 2 addresses are social skills (e.g., peer interaction, anger management), academics (e.g., reading, writing, math), and behavior (Hawken, 2006). There are many Tier 2 evidence-based treatments that can be implemented to improve a student's behavior. Todd, Kaufman, Meyer, and Horner (2008) described examples of treatments, such as social skills training, check in-check out systems, First Step to Success, peer mentors, or homework clubs. Check in/Check out (CICO) is an emergent Tier 2 intervention used to monitor and improve behavior of students (Hawken & Horner, 2003).

CICO, also known as the Behavioral Education Program (Hawken & Johnston, 2007; Hawken & Horner, 2003), is a mentor-based intervention for children with externalizing behavior problems (Todd, Kaufman, Meyer, & Horner, 2008). Mentors are selected by students and may be any school staff member (e.g., guidance counselor, lunch aid, janitorial staff). The mentor is responsible for meeting with the student at the beginning of the school day (check in) to discuss target behavior, to discuss number of points needed to earn in exchange for reinforcement, and to briefly provide some motivational words. At the conclusion of the school day, the mentor calculates the amount of points earned and discusses daily performance with the student (check out). The mentor provides the student with reinforcement if the student earns the required amount of points. Reinforcement in the current literature has ranged from verbal praise (Cheney, Stage, Hawken, Lynass, Mielenz, & Waugh, 2009), to tangible items (Todd, Kaufman, Meyer, & Horner, 2008; Hawken, MacLeod, & Rawlings, 2007). In CICO, points are earned through a daily progress report that teacher's rate student behavior.

CICO evaluates student progress based on the point system; students have the opportunity to earn points for meeting goals throughout the school day (e.g., homework

completion, sitting nicely, being quiet, respecting others, etc.). Target behaviors are selected from the child's repertoire.

In CICO, teachers are responsible for rating their students' behavior and assign points (0-2) for their behavior. The last component of CICO is parent involvement, in which parents sign off on the daily performance of their child's performance.

Currently there are 8 published studies involving CICO evaluations. These studies focused on different aspects of the CICO program, including the dependent variable measured, the method of research design, and the statistical analysis implemented to evaluate the effects of the CICO program. Many of the studies evaluating CICO have measured the number of office discipline referrals (ODRs) as its dependent variable (Filter, McKenna, Benedict, Horner, Todd, & Watson, 2007; Hawken, MacLeod, & Rawlings, 2007; McIntosh, Campbell, Carter, & Dickey, 2009; March & Horner, 2002). ODRs are considered an indirect form of measurement to show change in behavior and indicate when students are referred to the principal/vice principal for behavior problems. Other CICO studies collected systematic direct observations (SDOs) of student behavior as their dependent measure to evaluate behavior change (Hawken & Horner, 2003; March & Horner, 2002; Todd, Campbell, Meyer, & Horner, 2008, Fairbanks, Sugai, Gaurdino, & Lathrop, 2007).

Besides the measurement of the dependent variable, CICO has been evaluated using single-case and group design. The research designs used to evaluate CICO have been mostly single subject (Filter et al., 2007; Hawken, MacLeod, & Rawlings, 2007; March & Horner, 2002; Todd et al., 2008) and only one has implemented a group design (McIntosh, Campbell, Carter, & Dickey, 2009). These studies have found that the CICO program had positive effects on

decreasing problem behavior (by decreasing ODRs or percentage off task) and some have shown increases in academic performance (Hawken & Horner, 2003; March & Horner, 2002).

Unfortunately, the current CICO literature lacks well-documented treatment integrity regarding the parent component of the intervention. Todd, Kaufman, Meyer, and Horner (2008) and Cheney et al., (2006) do not report treatment integrity for the parent component; Hawken (2006), Hawken MacLeod, and Rawlings (2007), and Filter et al. (2007) reported parent component treatment integrity of 48%, 36%, and 41% respectfully. Parent involvement should be studied with high level treatment integrity to evaluate the impact it has on the CICO program (Todd Kaufman, Meyer, & Horner, 2008). Since the impact of parental involvement has not been specifically targeted in CICO, it may be important to study the differential effects the parents have on the intervention. Typical CICO procedures require a mentor to provide reinforcement at the conclusion of the school day, however it may be important to evaluate if parent provided reinforcement has an effect on the CICO intervention. It is important to consider parent treatment integrity and parent provided reinforcement when considering the effects parents have on Conjoint Behavioral Consultation (CBC).

CBC is a structured, indirect form of mental health services in which teachers and parents are brought together to assess and treat students' needs (Sheridan & Kratochwill, 1992). CBC encourages parent participation in education. Parent participation has been shown to be related to improvements in school attendance, positive attitude towards schools, study and homework habits, fewer discipline referrals, and better consistency between school and home (Sheridan, Eagle, Cowan, & Mickelson, 2001). Sheridan, Eagle, Cowan, and Mickelson (2001) found an effect size of 1.08 in the home, and in schools they found an effect size of 1.11 in regard to improvements in academics and conduct. CBC places a lot of attention on the home-school

relationship (Sheridan & Kratochwill, 1992) between parents and school staff (e.g., teachers, administrators, guidance counselors). The idea of collaborating between teachers and parents has been evaluated using the School-Home Note (Kelley, 1990).

The School-Home Note has been used for improving classroom performance (Kelley, 1990). The concept behind this type of intervention is that teachers evaluate student behavior daily and report to parents about the student's behavior or academic concerns. Parents are expected to provide consequences based on evaluations of the student's behavior from the School-Home Note. Kelley and McCain (1995) described advantages of using the School-Home Note in that it establishes contact with parents and teachers, it does not require teacher routine changes (teacher is only required to monitor student behavior), and it uses potent reinforcement that may only be available in the home (i.e., television time, attention from parents, favorite snack, etc.). Also, the School-Home Note has been shown to increase academic performance and on-task behavior of students (Jurbergs, Palcic, & Kelley, 2007). Since CICO utilizes a parent component similar to the School-Home Note, but has not studied the parent component as the primary independent variable, it may be important to evaluate the individual effects of parent-provided reinforcement. Also a measurement of treatment integrity regarding the parent component has not been adequately collected in the current literature evaluating CICO (Todd, et al., 2008).

The current study evaluated the differential effects of parental involvement on CICO in children, who exhibited externalizing behavior problems, by systematically replicating the CICO program while evaluating the effects of differential reinforcement (i.e., mentor vs. parent provided reinforcement). The current study hypothesized that the participants would exhibit less

problem behaviors when parents, rather than a mentors, provided reinforcement for meeting goals in the CICO intervention.

METHOD

Participants and Recruitment

Students. Students were selected using a multiple gating procedure. In the first gate, public elementary school teachers from East Baton Rouge and Central Louisiana referred student's who exhibited frequent problem behavior. In the second gate, students must qualify as at risk for externalizing problem behavior based on the TRF. Finally, in the third gate, students externalizing problem behavior was confirmed through direct observations. Students were included in the current study if their behavior was disruptive for at least 50% of observed intervals. Descriptive statistics for the student participants are shown in Table 1.

The first participant, Tom, scored in the clinical range for externalizing behavior problems on the TRF and in the borderline clinical range on the CBCL. Tom DPR had the following target behaviors: Sit in area without moving spot or until teacher instructed to do so, listen and attend to teacher or other academic task, raise hand to speak and wait until called on, and speak kindly and appropriately to peers. Tom had the opportunity to earn a possible 40 points on his DPR. His preferred items were 15-minutes of extra recess with mentor and LSU dollars for larger prizes (i.e., action figures). Tom accumulated LSU dollars for access to an action figure. Tom lived with his biological father, sister, and his father's girlfriend.

The second participant, Anthony, scored in the clinical range for externalizing behavior problems on the TRF and in the borderline clinical range on the CBCL. Anthony's DPR had the following target behaviors: Do what you teacher asks of you the first time and answer questions, refrain from talking out and distracting students, attend to academic task and ask for help when needed, and stay in required area. Anthony had the opportunity to earn a possible 40 points on his DPR. His preferred items were various small toys (e.g., sticky hands, cardboard airplanes,

Play-Doh®, erasers) and candy (e.g., sucking candy, lollipops, gum) that the mentors carried around in a small plastic container (i.e., treasure box) or were provided to the parents. Anthony lived with his biological parents.

The third participant, Gail, scored in the clinical range for externalizing behavior problems on the TRF and in the clinical range on the CBCL. Gail's DPR had the following target behaviors: Do what your teacher asks of you the first time, attend to academic task and stays in seat, raise hand to speak and use a quiet voice, and refrain from distracting other students. Gail had the opportunity to earn a possible 32 points on her DPR. Her preferred items were various small toys (e.g., sticky hands, cardboard airplanes, Play-Doh®, erasers) and candy (e.g., sucking candy, lollipops, gum) that the mentors carried around in a small plastic container (i.e., treasure box) or were provided to the parents. Gail's parents were separated; she lived with her grandmother and mother. Gail's spent time on the weekends with her father; he lived in a separate residence.

The fourth participant, Alton, scored in the clinical range for externalizing behavior problems on the TRF and on the CBCL. Alton's DPR had the following target behaviors: Do what your teacher asks of you the first time, attend to academic task until completed, raise hand to speak and speak kindly to others, and refrain from distracting other students. Alton had the opportunity to earn a possible 56 points on his DPR. His preferred items were LSU dollars for larger prizes (e.g., movie theatre gift cards and DVDs). Alton lived with his biological mother. Also, during treatment Alton was prescribed INTUNIV® and CONCERTA®. INTUNIV®, also known as Guanfacine, is a non-stimulant medication prescribed for symptoms related to Attention Deficit/Hyperactivity Disorder (ADHD). CONCERTA®, also known as Methylphenidate, is a stimulant medication prescribed for symptoms related to ADHD

Table 1

Descriptive Statistics of Students

Student	Age	Gender	Ethnicity	Grade	Medication (Y/N)
Tom	8	Male	Hispanic	2	N
Anthony	6	Male	African American	1	N
Gail	6	Female	African American	1	N
Alton	11	Male	African American	4	Y

Mentors and Teachers. Mentors were school psychology graduate students or undergraduate research assistants. Multiple mentors interacted with each student during the intervention, this occurred because of scheduling limitations for each mentor (i.e., class commitments). The first author, using a tell-show-do teaching model, trained the mentors until competent in conducting their intervention responsibilities. First, mentors read the treatment integrity sheet and listened to the first author explain the procedures. Second, the mentor would check in with the student and model the appropriate way to interact with the students. Last, the mentors would check in with the student while the first author supervised their interaction. Feedback was provided at the conclusion of each teaching step.

All students worked with a consistent teacher throughout the course of the study except for Anthony. Anthony’s primary teacher (Teacher) was on maternity leave when the study began. A substitute teacher (Substitute) taught the class while Teacher was on maternity leave. Teacher supervised Substitute the previous school year, when Substitute conducted her student teaching. Teacher returned to school on the third day of the last condition of the intervention. Demographic information for teachers is located in Table 2.

Measures

Child Behavior Checklist. The Child Behavior Checklist (CBCL; Achenbach, 1991) is a 140-item behavior-rating checklist, completed by parents, designed to rate child behavior

problems. The CBCL can be administered to children from age 6 to 18 years old. The CBCL evaluates externalizing problem behavior, measured on six constructs of externalizing problem behavior; aggression, hyperactivity, bullying, conduct problems, defiance, and violence. Items on the CBCL are scored on a 3-point likert scale (0-never, 1-sometimes, 2-aways). The CBCL was included because of its ability to effectively identify children with externalizing behavior problems.

Teacher Report Form. The Teacher Report Form (TRF; Achenbach & Rescorla, 2001) is the teacher version of the CBCL. The TRF was designed and rated similar to the CBCL and allows for a comprehensive evaluation of problem behavior based on teacher ratings. The CBCL and the TRF were shown to be valid and reliable measures for assessing externalizing problem behavior in children (Achenbach, 1991; Greenbaum & Dedrick, 1998), and are highly correlated with one another (Achenbach, 1991). The TRF was included because of its ability to effectively identify children with externalizing problem behavior.

Systematic Direct Observations. Systematic Direct Observations (SDOs; Chafouleas, Riley-Tillman, & Sugai, 2007) are measures of direct behavioral observation, designed to quantify the behavior of participants, using clearly defined operational definitions of target behaviors. SDOs were collected to confirm the occurrence of the teacher reported problem behavior and track student behavior (i.e., supplemental dependent measure) throughout the course of the study. Graduate students conducted the SDOs during the most problematic time of the school day; ratings were conducted on a 10-second interval, for 15 minutes. The SDOs measured the frequency of on-task behavior, disruptive behavior, and inattentive behavior.

Students engaging in assignments, complying with classroom rules, and following instructions operationally define on-task behavior. Classroom rules were obtained prior to the

collection of the SDOs. Students talking out in class, disrupting other students, and breaking any classroom rules operationally define disruptive behavior. Students engaging in a non-disruptive behavior while also being unengaged in the current activity, longer than 3-seconds, operationally define inattentive behavior. Examples of inattentive behavior may include but are not limited to putting head on the desk with eyes closed, playing/focusing on items not included in assigned task, etc.

Student reactivity to observers in the classroom imposed on the ability to collect SDO for some students. The validity of the measure became confounded, because students would attend to the observer and become distracted from their work. The observer did not distract Tom and Gail from their schoolwork, so SDOs were collected for them. Conversely, Anthony and Alton were too reactive to observers in the classroom; SDOs were not collected on those students.

Daily Progress Report. The Daily Progress Report (DBR) evaluated 4 behavioral goals individualized for each student. Items were selected from teacher interview and confirmed with SDOs. Teachers rated students performance on target behaviors at the completion of each class activity. Teacher rated each target behavior on a 3-point scale (0 = did not attempt goal, 1 = sometimes attempted goal, 2 = Always attempted goal). Goals were determined by averaging the 3 previous days total points. Once the student reached 80% of possible points, 3 consecutive days, the criteria would never decrease below that level. Additionally, the DPR was sent home each day, so that parents were able to see their child's daily progress. A copy of the DPR is located in the Appendix.

Brief Behavior Rating Scale. The Brief Behavior Rating Scale (BBRS; Gresham et al, 2010) is a 12-item change sensitive measure based off of the *Social Skills Improvement System-Rating Scale* (Gresham & Elliot, 2008). The BBRS is a change sensitive measure (Gresham et

al., 2010) so it was used to track the progress of students' problem behavior and functioned as a secondary dependent measure. The BBRS rates the occurrence of certain behaviors on an 8-point likert scale (e.g., 0- never occurs, 7- always occurs). Teachers completed the DBR at the completion of each school day. Higher scores on the BBRS indicate that a student's behavior is pro-social and lower scores indicate that the student is not being pro-social.

Intervention Rating Profile-15. The Intervention Rating Profile-15 (IRP-15; Witt & Elliott, 1990) is a 15-item measure of intervention acceptability. Items are rated on a 6-point likert scale (e.g., 1-strongly disagree, 6-strongly agree). Teachers completed the IRP-15 before and after the intervention was implemented. Averaging the scores across the 15 items derives acceptability scores; scores of between 5-6 represent string acceptability and scores between 1-2 represent low acceptability.

Preference Assessment. This measure was conducted with participants to evaluate which items/activities were preferred to access to during the intervention. The examiner conducted the preference assessment by sitting with the student and asking them to list their top 10 preferred items. Students were allowed to look through a prize box at potential toys/edible items, earn extra recess, and earn "LSU dollars" (i.e., play money) to use towards a larger prize. Each reinforcer was functionally equivalent with each other so that one item was not considered more reinforcing than any other reward. A sample of this measure is available in Appendix A.

Record Review. In addition to previously described measures, academic reports, office discipline referrals (ODRs), conduct grades, and absences were collected for each student. These measures were used to supplement information obtained from the BBRSs and SDOs.

Table 2

Descriptive Statistics of Teachers

Teacher	Years Teaching	Gender	Ethnicity	# Students
Tom's Teacher	10	Female	Caucasian	22
Anthony's Teacher(s)	1,12	Female	Caucasian	23
Gail's Teacher	8	Female	Caucasian	24
Alton 's Teacher	20	Female	Caucasian	18

Note. Anthony's teachers had identical gender and ethnicity. Years teaching was the only factor that differed between them.

Behavioral Parent Training

Typically, a Behavior Parent Training (BPT) teaches parents how to effectively modify antecedents (e.g., rules, commands) and consequences (e.g., time-out, rewards) for target behaviors (e.g., compliance, noncompliance) as well as change maladaptive thoughts/ideas related to parenting (Fabiano, Chacko, Pelham, Robb, Walker, Wymbs, Sastry, Flammer, Visweswarajah, Shulman, Herbst, & Pirvics, 2008; Fabiano, 2007). In the current study, parents were trained on the previously described features, were explained the purpose of CICO, reviewed their responsibilities for the study, practiced filling out treatment integrity forms, and had an opportunity to ask the examiner questions. The BPTs were held at the elementary school that their child attended. The examiner conducted trainings with parents; trainings were conducted individually (i.e., one student's parent(s) and the examiner). Parents arrived at the BPT at the pre-scheduled appointment time and were greeted by the examiner. Next, the examiner and the parents went into a small conference room and conducted the previously described responsibilities. After the BPT the experimenter answered any questions regarding the study.

Treatment

CICO. CICO was implemented identical to the procedures of Todd Kaufman, Meyer, &

Horner (2008). Each morning (check in), participants met with a mentor. The mentor and the student went over the target behaviors and the number of points required to earn reinforcement. Target behaviors were grouped under four categories and individualized for each student. Mentors provided positive/motivational comments to the participants, to encourage them to work hard on completing their target behaviors and working towards their point goal, through the school day. Teachers rated the participants across each of their subjects and provided performance feedback during each rating period. Feedback was framed to encourage the students to continue to do well, even if they were having trouble meeting their behavioral goals.

At the end of the school day (check out), the mentor met picked up the DPR from the student's teacher and met with the student outside the classroom. The mentor reviewed the student's progress and discussed how they did on each of the target behaviors. Regardless of the reinforcement condition (i.e., mentor-/parent-provided reinforcement) the mentor would provide praise for meeting goals and encouragement if the students did not meet their goals. During the mentor-provided reinforcement condition, mentors provided reinforcement for completing behavioral goals and parents only provided praise to their child (or encouragement if goals were not met). In contrast, during parent-provided reinforcement, parent's provided rewards and praised their child (or encouraged them if they did not meet their behavioral goal). Additionally, parents were required to document on the treatment integrity if their child earned enough points throughout the day, earned reinforcement, and what they provided as reinforcement.

Research Design

A reversal design (Kazdin, 1982) was implemented to evaluate the differential effects of mentor-provided vs. parent-provided reinforcement. Each participant was slated to received 2 treatment conditions; mentor-provided and parent-provided reinforcement. Initially, each

student began with a baseline condition. Baseline was void of any treatments and functioned as the control condition for each participant. The baseline condition lasted until teacher ratings on the DBR were stable. Whitley (2002) suggested strategies for evaluating a stable baseline regarding trend, variability, and level of data. The trend of data describes the direction of the data over the course of a condition. Data has a positive trend if the values increase and a negative trend if the values decrease. A stable baseline lacks a trend (i.e., the data points average a straight line). The variability of data points contributes to the stability of a baseline. If the data points are not variable then stability can be achieved quickly, however, a great deal of variability could require the baseline condition to be extended until the trend is determined. Last, level describes the magnitude of the data. The current study attempted to increase on-task behavior, so low magnitude of on-task behavior were desired during baseline. The combination of uniform variability, lack of trend, and desired level of the data were considered when evaluating stability during baseline and treatment conditions.

Mentor-based reinforcement. In this treatment condition, mentors provided reinforcement (e.g., LSU dollars, extra recess, and small toys) for students if they earned the appropriate number of points throughout the school day. Mentors provided reinforcement at the end of the school day, before students were dismissed. If students did not earn their required number of points, the mentors provided them with performance feedback to improve their scores the following day. During this condition parents were required to only provide praise if their child met their goal, or feedback on how to improve the following day. Additionally, mentors and parents completed a treatment integrity form that monitored their adherence to the intervention procedures and treatment implementation reliability.

Parent-based reinforcement. In this treatment condition, mentors provided only praise for students if they earned the appropriate number of points throughout the school day. If students did not earn their required number of points, the mentors provided them with performance feedback to improve their scores the following day. During this condition parents provided reinforcement (e.g., LSU dollars, outside time with parent, and small toys) for their child at the end of the school day, after they arrived home. If the child did not earn their required number of points, parents provided them with performance feedback to improve their scores the following day. Additionally, mentors and parents completed a treatment integrity form that monitored their adherence to the intervention procedures and treatment implementation reliability.

Treatment Order. The 2 treatment conditions were evaluated using an A-B-A-C design. This design began with baseline (A) followed by mentor-based reinforcement (B). Next, the treatment was removed and baseline was implemented. After the reversal back to baseline, the participants received parent-based reinforcement (C). The order of treatment was randomized across the 4 participants, so that 2 participants started in mentor-provided reinforcement condition and 2 participants started in the parent-provided reinforcement condition.

The first participant, Tom, received treatment using an A-B-A-C design. However, due to his performance in the reversal back to baseline, he was unable to experience condition C. His treatment order was actually A-B-A. The second participant, Anthony, received treatment using an A-C-A-B design. However, since he did respond to the intervention during condition C, a reversal was not implemented. Anthony's treatment order was actually A-C-B. The third participant, Gail, received treatment using an A-C-A-B-C design. Finally, the fourth participant, Alton, received treatment using an A-B-A-C design. However, due to his performance during

condition B, he required a more intensive intervention and was unable to receive condition C. Alton received a modified version of treatment B, instead of condition C, which is described in the treatment section of the current study.

CICO +. The intensive intervention that was implemented for Alton was coined CICO +, because the procedures were identical to the intervention he received in the mentor-based reinforcement CICO, however there were additional aspects included. First Alton spent time with 1st grade students during their math class and provided peer tutoring for them. This privilege was contingent upon his performance on the previous days DPR. Also, Alton not only checked in and out with mentors, but also had multiple visits with the dean of students. During those visits he showed her his progress and received praise/ feedback.

Treatment Integrity

Gresham (2009) explains that treatment integrity is a measure of the implementation of the independent variable (i.e., treatment). Treatment integrity has been conceptualized as adherence to the intervention and competence of the person administering the intervention. In the current study, the examiner measured treatment integrity in teachers, mentors, and parents. Data was collected through a brief questionnaire attached to the DPR that was individualized for each respondent. Mentors and parents were required to complete the treatment integrity sheet daily, regardless of the condition. If the sheet was not completed, the experimenter contacted the mentor/parent via a phone call to remind them to fill out the form the next day. The questionnaire asked questions regarding amount of points earned by child, how many points were needed to provide reinforcement, and reinforcement delivery (i.e., was reinforcement delivered, who delivered reinforcement, what was reinforcement, when was reinforcement delivered). Also, the treatment integrity form had a fill in option for comments or questions. If

treatment integrity was not completed, the examiner provided performance feedback to the appropriate respondent. Treatment integrity forms are available in Appendix A. Mentor, teacher, and parent treatment integrity are shown, for each participant, in Table 3.

Table 3

Treatment Integrity Means Across Respondents

Student	Mentor	Parent	Teacher
Tom	85 (50-100)	85 (0-100)	94 (20-100)
Anthony	91 (50-100)	86 (0-100)	94 (0-100)
Gail	97 (50-100)	38 (0-100)	100
Alton	100	58 (0-100)	97 (60-100)

Note. Ranges listed in parenthesis

Procedure

Initially, the examiner received referrals from the vice principal of the schools. The examiner emailed teachers to follow up with the referral and set up a meeting between them. The examiner conducted a problem identification interview (Bergan & Kratochwill, 1990), completed informed consent with the teacher, set up times to observe the student, and administered the TRF. If the TRF confirmed externalizing problem behavior, the teacher sent home a folder containing the CBCL and consent form to the student’s parents. Once informed consent was returned, the examiner observed the students to confirm that they met the disruptive behavior criteria of 60%. If they student qualified, the examiner began collecting pre baseline data (i.e., ODRs, absences, and conduct grades). Next, the examiner set up an appointment to conduct the BPT. Last, participants were randomly placed into 1 of 4 treatment orders and the baseline condition began. The examiner collected BBRs, ODRs, and SDO during baseline. Data collected was entered daily into an Excel spreadsheet. After a stable baseline was obtained,

the CICO intervention began. During all treatment conditions, SDOs, BBRSS, and ODRs were collected. The examiner facilitated CICO and monitored the treatment integrity.

Data Analysis

Visual Analysis. The current study implemented a single subject design, so statistical analysis was not used to interpret the data. The data was analyzed based on visual inspection, which is the standard that single subject research is analyzed (Whitley, 2002). Visual inspection analysis utilizes guideless to help the examiner interpret the data accurately and reliably. Cooper, Heron, & Heward (2006) described conditions to evaluate data through visual inspection as well. They explained that the number of data points should provide for believability of the effects observed for the reader. This means that the data points should be numerous enough to show if a trend exists. If the treatment effects are anticipated to improve behavior, than a positive trend from baseline to treatment may confound the results.

Cooper, Heron, & Heward (2006) also described accurate ways to evaluate the level of the data. The level is the degree in which the participants are responding. Finding the mean responding of the data and drawing a horizontal line at that point determine the level. This allows the observer to evaluate if levels of behavior are low medium or high. High levels of behavior have scores that average around the larger values on the y-axis and low levels of responding average scores at low values on the y-axis. These levels also allow for the examiner to calculate difference scores from different conditions.

Standardized Mean Difference (Cohen's d). In addition to visual analysis of the data, standardized mean difference scores were calculated (Cohen, 1988). Cohen's d was calculated for DPR data and was calculated by subtracting the mean scores from one condition (e.g., mentor-based reinforcement) from another condition (e.g., baseline). Next, the previously

described score was divided by the standard deviation of the data. The formula for calculating Cohen's d is shown below:

$$d = \frac{\bar{x}_1 - \bar{x}_2}{s}$$

The scores obtained from the differences between two conditions explain the degree to which the treatment had an effect on the dependent variable. An effect size of .2 was considered a small effect, .5 a moderate effect, and .8 a large effect (Cohen, 1988).

Pearson Correlation Coefficient (PCC). The last method of data analysis was the Pearson correlation coefficient (Cohen, 2008; Pearson, 1897). PCCs were calculated from scores on the DPR and BBR and measured the linear association between those variables. The formula for calculating PCC is shown below:

$$r = \frac{\sum Z_x Z_y}{N}$$

The PCC produces scores that range from +1 to -1. A score of 0 means that there is not an association between two variables. A score greater than 0 means that there is a positive association between two variables, conversely, a score less than 0 means that there is a negative association, between the variables.

RESULTS

IRP-15 Scores Pre-/Post-Intervention

All teachers found the CICO intervention acceptable as an intervention to reduce problem behavior and promote pro-social behavior for their students. Tom's teacher found the intervention very acceptable before and after implementing the CICO intervention; her intervention acceptability rating, of 6.0 was stable across rating periods. Different teachers rated the acceptability pre-/post-intervention for Anthony. The Substitute, initially found the CICO intervention acceptable, with a rating of 4.7. The Teacher rated acceptability post-intervention. Her rating indicated higher acceptability if the intervention with a score of 5.5. Gail's teacher initially rated intervention acceptability at 5.0 and her post-intervention rating lowered to 4.7. Both of her ratings indicated acceptability of the intervention. Finally, Alton's teacher initially rated intervention acceptability at 5.6 and her post-intervention rating lowered to 5.6. Both of her ratings indicated strong acceptability of the intervention

Inter-Observer Agreement (IOA)

During SDOs, two graduate student observers independently collected data. Initially, graduate students collected data with the first author, until they were proficient at observer child behavior. Graduate students were considered proficient once their IOA was at or above 90% for three consecutive observations. IOA for Tom was collected for 28% of the SDOs conducted and IOA average 87% across observations (Range 78%-91%). IOA for Gail was collected for 43% of the SDOs conducted and IOA averaged 91% across observations (Range 84%-96%). IOA was calculated using a point-by-point agreement ratio (Kazdin, 1982).

Table 4

IRP-15 Scores Pre-/Post-Intervention

Teacher	Pre	Post
Tom's Teacher	6	6
Anthony's Teacher	4.7	5.5
Gail's Teacher	5	4.7
Alton 's Teacher	5.6	5.5

Note. All teachers found the CICO intervention acceptable as an intervention to reduce problem behavior and promote pro-social behavior for their students.

Tom

Figure 1. shows Tom's progress across the current study using DPRs, BBRs, and SDOs. On DPRs, Tom was rated low during baseline, followed by a gradual increase in ratings during mentor-provided reinforcement CICO. After his scores reached a stable level, the reversal back to baseline was implemented. During the reversal, his ratings initially stayed high followed by a dip in rating back to baseline levels. After the low rated day his rating increased until he was rated a perfect score 3 consecutive days.

On BBRs, Tom was rated low during baseline, followed by an increase in ratings when mentor-provided reinforcement CICO was implemented. During that condition, his ratings were variable but stayed above baseline levels of responding. In the reversal condition, his ratings initially followed a similar trend to the DPR. However, after the decrease in rating on the third day, his ratings gradually increased but never reached a stable rating.

On SDOs, Tom's disruptive behavior during baseline was on an upward trend, on-task behavior was on a downward trend, and inattentive behavior remained predominately low. Once the mentor-provided reinforcement CICO condition was introduced, Tom's on-task behavior increased to high levels and remained stable. His disruptive and inattentive behavior remained low and predominantly stable. After the reversal was introduced, Tom's on-task behavior

initially stayed high but dropped to lower levels and became variable. His disruptive behavior initially was low, but increased for a few observations, until it dropped down to a low level. Inattentive behavior increased throughout the reversal condition.

Anthony

Figure 2. shows Anthony's progress across the current study using DPRs, BBRs. On DPRs, Anthony was rated low during baseline. After baseline, parent-provided reinforcement CICO was implemented and his ratings maintained at baseline levels, besides his increased rating on the fifth day of that condition. Since his scores were consistent with baseline ratings, a reversal was not implemented and the mentor-provided reinforcement CICO condition was implemented. His ratings increased to 50% possible points he could earn during this condition and maintained throughout the condition.

On BBRs, Anthony was rated low during baseline. After baseline, parent-provided reinforcement CICO was implemented and his ratings maintained at baseline levels, however, there was an increase in his ratings a few points. Next the mentor-provided reinforcement CICO condition was implemented. His ratings initially stayed the same as the previous condition, but gradually increased. After the increase his behavior was rated lower but still higher than both baseline and parent-provided reinforcement CICO.

Gail

Figure 3. shows Gail's progress across the current study using DPRs, BBRs, and SDOs. On DPRs, Gail was rated low during baseline, followed by a stable and higher level in ratings during parent-provided reinforcement CICO. After her scores reached a stable level, the reversal back to baseline was implemented. During the reversal, her ratings reduced to the initial baseline level. Once the stable reversal occurred, mentor-provided reinforcement CICO was implemented. During this condition her score immediately increased to high ratings, but was

extremely variable. There was a pattern occurring throughout this condition of 1 day rated high followed by 3 days of low level ratings. Once the ratings in this condition stabilized, the parent-provided reinforcement condition was implemented again, since it showed the most stable and high-level ratings. During this condition, the same pattern was observed as in the previous condition of 1 day of high-level ratings followed by 3 days of low-level ratings.

On BBRs, Gail was rated low during baseline, followed by a stable and higher level in ratings during parent-provided reinforcement CICO. After her scores reached a stable level, the reversal back to baseline was implemented. During the reversal, her ratings reduced to the initial baseline level. Once the stable reversal occurred, mentor-provided reinforcement CICO was implemented. During this condition her score immediately increased to high ratings, but was extremely variable. There was a pattern occurring throughout this condition of 1 day rated high followed by 3 days of low level ratings. Once the ratings in this condition stabilized, the parent-provided reinforcement condition was implemented again, since it showed the most stable and high-level ratings. During this condition, the same pattern was observed as in the previous condition of 1 day of high-level ratings followed by 3 days of low-level ratings.

On SDOs, Gail's disruptive behavior during baseline was observed at high levels, on-task behavior and inattentive behavior remained low. Once the parent-provided reinforcement CICO condition was introduced, Gail's on-task behavior increased to high levels. Her disruptive behavior lowered and her inattentive behavior remained low and stable. During the reversal, Gail's on-task behavior and disruptive behavior decreased, and her inattentive behavior increased. After the reversal, mentor-provided reinforcement CICO was implemented. During that condition Gail's on-task behavior immediately increased to high levels and maintained about 80% on-task. Both inattentive and disruptive behavior immediately reduced, but gradually

increased throughout the condition. Finally, parent-provided reinforcement CICO was implemented for a second time. During this condition Gail's on-task behavior reduced from the last condition but increased to high levels. Also, her disruptive and inattentive behavior steadily decreased across days.

Alton

Figure 4. shows Tom's progress across the current study using DPRs, BBRs. On DPRs, Alton was rated low during baseline. After baseline, mentor-provided reinforcement CICO was implemented and his behavior immediately decreased, followed by a gradual increase. On the fifth day of this condition Alton's behavior was rated high but became variable throughout the condition. In addition to the variability of ratings, Alton's ratings decreased until they stabilized at baseline rated levels. Since his behavior was rated similar to baseline, teachers requested a more intensive intervention and the CICO+ condition was implemented. During that condition Alton's behavior was initially rated higher than baseline, averaging 50% of possible points. Alton's behavior ratings steadily increased until his scores were above 90% of the possible points he could earn.

On BBRs, Alton was rated low during baseline. After baseline, mentor-provided reinforcement CICO was implemented and his behavior immediately decreased, followed by a gradual increase. On the fifth day of this condition Alton's behavior was rated high. On day 9, Alton's teacher left school early and was unable to complete the BBR. On the tenth day of this condition, Alton's behavior was rated higher than the previous point, followed by a steep decrease. After the decrease, his behavior was rated very lower than baseline levels 4 out of the last 5 days. Since his behavior was rated lower than baseline, teachers requested a more intensive intervention and the CICO+ condition was implemented. During that condition Alton's behavior

was initially rated higher than baseline. Alton's behavior ratings initially decreased, however, on the fourth day of CICO+ his behavior increased. Alton's behavior ratings increased until the last day of the treatment when his behavior was rated highest of all conditions.

Cohen's d and PCC

Calculations of Cohen's d and PCC are located in Table 5. and Table 6. respectively. Measures of effect size indicated that for these participants mentor-provided reinforcement CICO was more effective than parent-provided reinforcement CICO. Anthony and Gail showed that mentor-provided reinforcement CICO had large and medium-large effect on their behavior ($r = 0.90$ and $r = 0.52$). Additionally Gail showed that the parent-provided reinforcement CICO condition had a medium-large effect on her behavior, $r = 0.47$. In contrast, the parent-provided reinforcement CICO condition had a small negative effect on Anthony's behavior, $r = -0.14$. The mentor-provided reinforcement CICO condition had a small, effect for Tom, $r = 0.16$. Also, CICO+ was more effective for Alton than mentor-provided reinforcement CICO ($r = 0.89$ and 0.32). PCC showed that the BBRs and DPRs were highly correlated measures to rate behavior for Tom, Anthony, and Alton ($r = 0.85$, $r = 0.81$, and $r = 0.83$). PCC showed a medium correlation between BBRs and DPRs, $r = 0.47$.

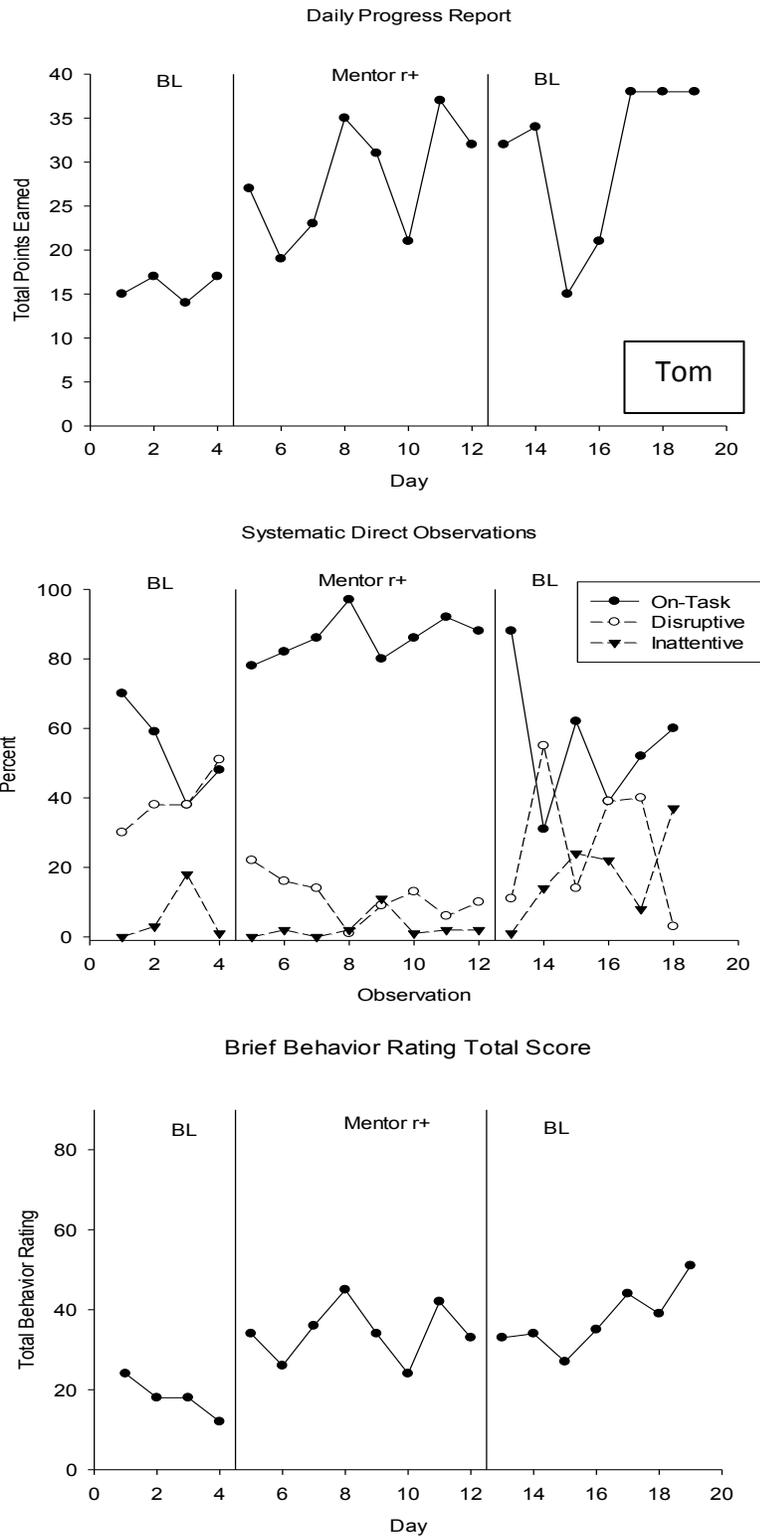


Figure 1. Tom's DPR, SDO, and BBR

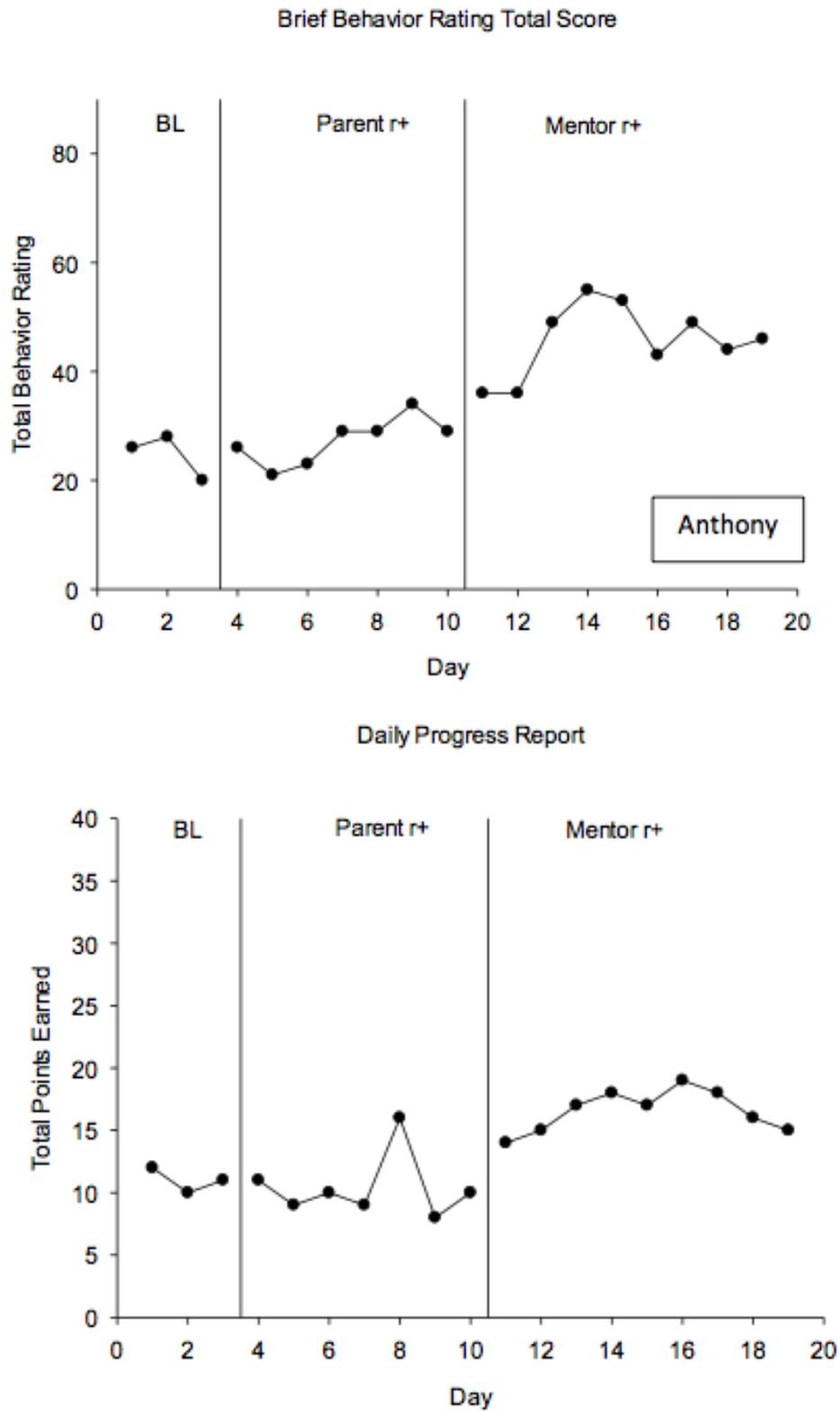


Figure 2. Anthony's DPR and BBR data

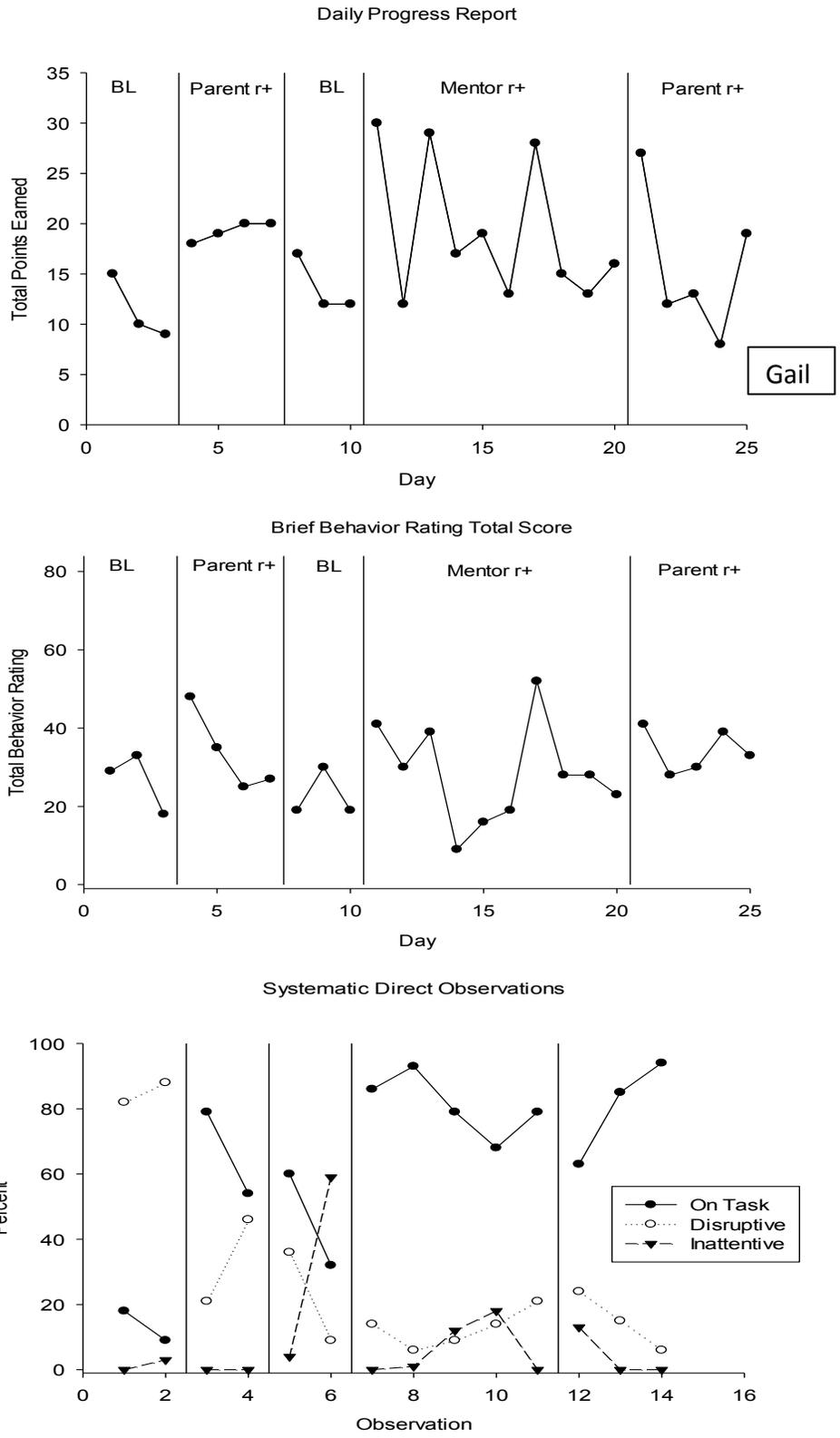
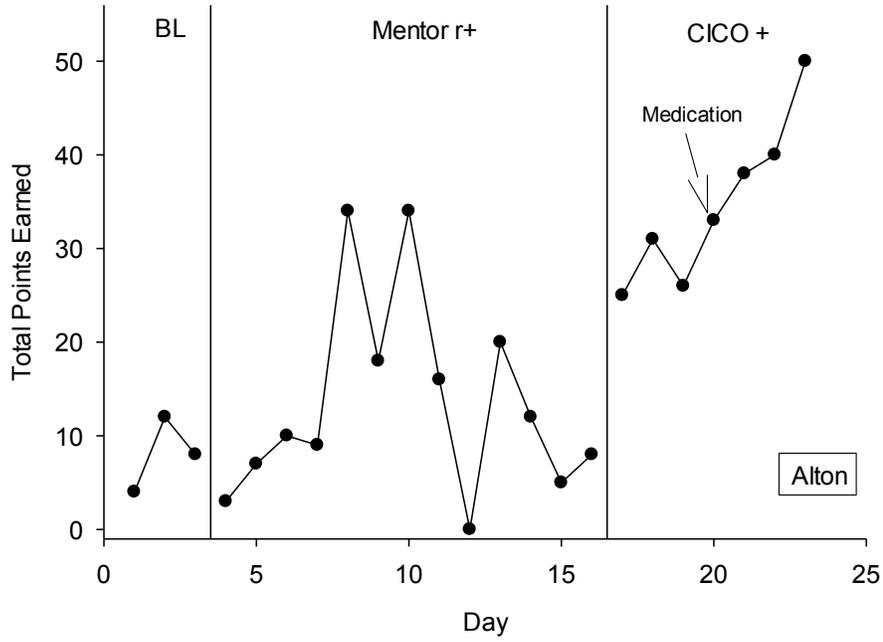


Figure 3. Gail's DPR, BBR, and SDO

Daily Progress Report



Brief Behavior Rating Total Score

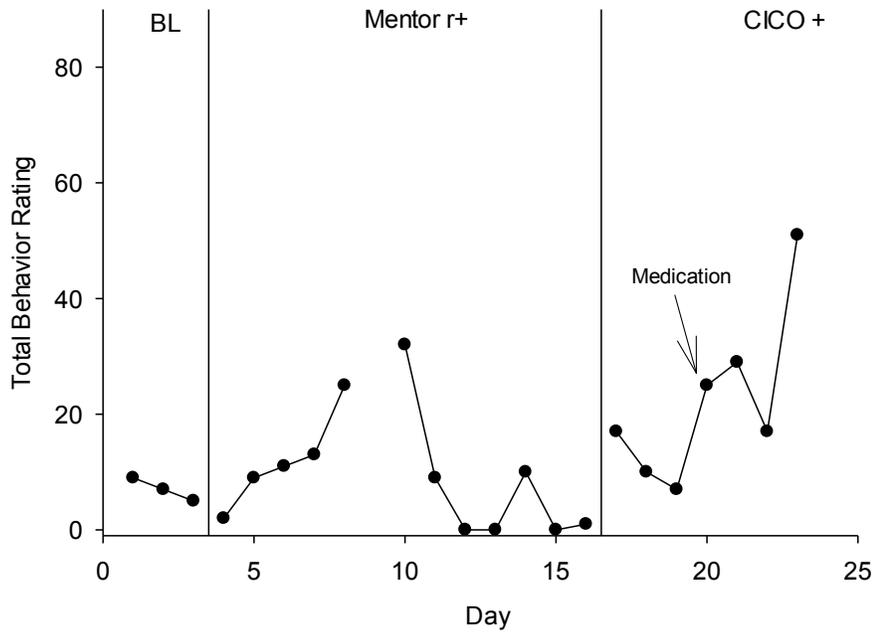


Figure 4. Alton's DPR and BBR data

Table 5.

Standardized Mean Difference Scores Across Treatment Condition

Student	Parent	Mentor	CICO+
Tom			
Cohen's d	-	0.32	-
Effect size	-	0.16	-
Anthony			
Cohen's d	-0.29	4.04	-
Effect size	-0.14	0.90	-
Gail			
Cohen's d	1.08	1.23	-
Effect size	0.47	0.52	-
Alton			
Cohen's d	-	0.68	3.93
Effect size	-	0.32	0.89

Note. Dashes mean that the participant did not receive the treatment condition

Table 6.

Pearson Correlation Coefficients Between BBR and DPR

Student	r
Tom	0.85
Anthony	0.81
Gail	0.47
Alton	0.83

Note. The BBR was highly correlated with DPR for Tom, Anthony and Alton. BBRs and DPRs were moderately correlated with each other for Gail

DISCUSSION

Overall the CICO intervention was effective for reducing problem behavior. Mentor-provided reinforcement CICO and parent-provided reinforcement CICO were differentially effective within and across students. Gail's behavior improved during both conditions of the CICO intervention, however the mentor-provided reinforcement CICO condition produced the largest decrease in disruptive behavior and higher ratings on DPRs and BBRs. The variability in her behavior across the conditions may have been due to the number of absences she accrued over the course of the intervention. During the last month of the intervention she was able to attend school 24 days, 11 off which she was absent for. The inconsistency between days receiving/not receiving the intervention may have contributed to the variable effect in her behavior. Also, her parent's treatment integrity was very low and inconsistent; and could have confounded her performance on the days she did attend school and receive the treatment.

Anthony's behavior worsened during parent-provided reinforcement CICO, however during mentor-provided reinforcement CICO his behavior improved and remain stable throughout the condition. Even though the increase in the mentor-provided reinforcement CICO condition was small, Anthony's Teacher expressed that she did not think he needed the intervention anymore because his behavior problems were not occurring in her class anymore. Possible explanations of this effect are explained in the limitations section of the current study.

Tom's behavior across the course of the intervention is unique, particularly because of his performance during the reversal condition. The effect size calculated for Tom during the mentor-provided reinforcement CICO condition yielded a small effect. However this was due to the increased rating during the reversal. The trend could be conceptualized as extinction burst (Lerman & Iwata, 1995). Initially in the reversal, Tom's DPRs and BBRs remained high. This

could have been because his peers and/or teacher, in addition to the LSU dollars he worked for, reinforced his on-appropriate behavior. Tom's behavior falls off after a couple of days, as expected, since baseline conditions were being implemented. However, his behavior increased after the two-day decrease and stayed above 90% of the possible points he could have earned on his DPR. It could be conceptualized that the peer/teacher reinforcement was not sufficient enough to maintain appropriate behavior (i.e., not receiving LSU dollars) and he started to be disruptive. During those disruptive days, his peers may have ostracized him for acting inappropriately, in addition to not receiving LSU dollars. Though the LSU dollars may have been shown to improve his behavior, peer/teacher attention may have been more powerful as a reinforcer and Tom may have acted appropriately to avoid being ostracized and reprimanded. Another explanation of this behavior pattern was that the last few days of the intervention occurred during the final week of the school year. Tom may have been motivated by the school year ending and acted appropriately so that he could participate in preferred school activities. Also, these findings may have occurred because his teacher may have been more lenient with her DPR and BBRs ratings towards the end of the school year.

Tom's SDOs, in addition to DPRs and BBRs, supported the finding that the mentor-provided reinforcement CICO condition was effective at increasing his on-task behavior. Conversely to the BBRs and DPRs, the SDOs showed a decrease in on-task behavior and an increase in off-task behaviors (inattentive and disruptive behavior). These findings may have been observed because he was engaged in less academic instruction during those periods since it was the end of the school year. Another explanation is that the SDOs were valid and his behavior did decrease and become more variable during the reversal. Riley-Tillman, Chafouleas, Sassu, Chanese, and Glazer (2008) showed a strong correlation between a Direct Behavior

Ratings (teacher rating similar to BBRs and DPRs) and direct observations. The discrepancy between SDOs and DPRs/BBRs for Tom, suggests a lack of convergence between observations and teacher ratings of behavior. It is important to consider both measures, but the difference in ratings cannot be conclusively explained by the data collected.

Alton's behavior improved in both the mentor-provided reinforcement CICO condition and CICO+ condition. The effect of the mentor-provided reinforcement CICO condition was small, and didn't produce a large enough change in his behavior. Unfortunately, Alton did not experience the parent-provided reinforcement CICO condition because his teachers requested that a more intensive intervention was implemented to improve his behavior. Once the CICO+ intervention was implemented, scores improved on the DPRs but the same effect was not shown with BBRs. An important consideration of this condition was that Alton began taking prescription medication for ADHD symptom; and the largest effect on his behavior was shown. It was not possible to evaluate the effectiveness of CICO independent of the medication because of the ethical considerations regarding his improved behavior (i.e., it would not be appropriate to stop an effective intervention with a student who is experiencing success). The effect the medication and CICO+ had on his behavior was a very large and warranted continued use. Additionally, the treatment integrity of Alton's parent was low and inconsistent and could have contributed to his low performance.

Considerations related an RTI approach

The current study had many important factors that supported the use of RTI in schools. Those factors are classroom management/teacher tolerance, issues of non-responders and screening, treatment integrity, and progress monitoring. Anthony's teacher substitute teacher and primary teacher may have had different strategies for classroom management and teacher

tolerance. This could be due to the difference in experience they had teaching. Also, Tom's teacher may have developed more of a tolerance with him as the intervention progressed, because his behavior had overall increased, i.e., lower rates of problem behavior.

Alton was considered a non-responder to the CICO (mentor-provided reinforcement) intervention. Since he did not show a sustained Alton responded briefly to the intervention but the effect was not sustained. This evidence based finding warranted the use of a more intensive intervention. Essentially the intensive intervention, i.e., CICO+ addressed the need for more frequent attention from adults, and symptoms of neuropsychological problems. Support for a function-based assessment was shown since this student eventually needed an intensive intervention, that he responded well to.

In addition to a function-based assessment, treatment integrity is another important aspect of RTI. The correspondence between variable/low-levels on DPRs/BBRSs and low treatment integrity, may explain why Gail and Alton behavior ratings were so variable. Parent treatment integrity for Anthony was above adequate levels and he showed the largest effect in the CICO intervention. For these participants, high levels of parent involvement seemed to promote higher levels of appropriate behavior and higher ratings on rating scales.

The last consideration from an RTI approach is continuous progress monitoring of behavior. The BBRSs were strongly correlated with the DPRs. Since that association was shown, it lends support for the BBRS measure to be used as a change sensitive measure for problem behavior at schools. The BBRS could be used as an independent measure for rating student behavior. The BBRS was shown to have potentially good application as a measure of problem behavior in students. The benefits of this measure are that it can be completed once per day and

has a short number of items to rate., in comparison to the DPR that had 20 or more items to rate per day.

Limitations and Future Research

The current study has some limitations to consider. It is important that the results from the current study are interpreted with caution, so that overgeneralization does not occur. First, despite the explicit instruction and reminder for parent to complete brief treatment integrity form each day, some had difficulty completing them with high integrity, if at all. Parents may have been either too busy or not interested in becoming involved with their student's school experience and behavioral success. Future research should attempt to collect more data on parent treatment integrity to further evaluate the effect it may have on the CICO intervention. Second, the current study used multiple mentors for each student during the intervention. The variability in mentors may have provided variability in quality of the implementation of the intervention. Since there was no measure of treatment implementation quality, it cannot be determined having multiple mentors contributed to variability in the behavior ratings. Future research should attempt to replicate the current studies procedures while using 1 consistent mentor. Also, future research could evaluate how many mentors could be used and still have an effective intervention. This is useful, because school staff members are limited in terms of their time resources.

A third limitation of the study could be that the parents who participated in the study were more involved in their child's education, even before beginning the current study. Areas of low socio-economic status (SES) tend to have parents, especially fathers, who are less involved in their child's education (Wasserman, 1972). A range of SES allowed for a more representative sample to draw conclusions from, however, there was not difference between treatment integrity

and SES. Future studies could replicate the results with a larger sample size, across different SES groups. Additionally, A fourth limitation was that each student did not receive all treatment conditions of the intervention. This was due to idiosyncratic behavior during baseline (i.e., high levels of pro-social behavior) and the need for intensive function-based interventions. Finally, the last limitation was that no maintenance data was collected for students. Future studies should attempt to collect maintenance data so that the lasting effect of the intervention can be tracked.

The current study evokes some additional ideas about future research that should be considered. First, some students ultimately need an intensive intervention for problem behavior, the development of a screener to identify which students need a function-based assessment and an intensive intervention should be created to save resources (i.e., time and money) and improve efficiency of mental health providers. Measures such as the TRF or SSIS-RS could be used to determine the need of function-based assessment, if specific cut-off scores are developed. Also the results of the current study should be replicated to validate the effects shown. These systematic replications should account for different ethnicities, SES, home environments (i.e., parent involvement), and cultures. If possible a randomized control trial should be implemented to evaluate the proposed systematic replications.

REFERENCES

- Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist/4-18 and 1991 Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Achenbach, T.M. & Edelbrock, C. (1983). *Manual for the child behavior checklist and revised child behavior profile*. Burlington, VT: Queen City Printers.
- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA School-Age Forms & Profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, and Families.
- Allison, D. B., & Gorman, B. S. (1993). Calculating effect size for meta-analysis: The case of the single case. *Behavior Research and Therapy*, *31*, 621-631
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders-Fourth Edition Text Revision (DSM-IV-TR)*. Washington, DC: Author.
- Bergan, J. R., & Kratochwill, T. R. (1990). *Behavioral Consultations and Therapy*. New York, New York: Plenum Press.
- Burns, B.J., Costello, E.J., Angold, A., Tweed, D., Stangl, D., Farmer, E.M.Z., & Erkanli, A. (1995). Children's mental health service use across service sectors. *Health Affairs*, *14*, 147-159.
- Chafouleas, S., Riley-Tillman, T. C., & Sugai, G. (2007). *School-Based Behavioral Assessment: Informing intervention and instruction*. New York: Guilford Press.
- Cheney, D., Flower, A., Templeton, T. (2008). Applying response to intervention metrics in the social domain for students at risk of developing emotional and behavioral disorders. *Journal of Special Education*, *42*, 108-126.
- Cheney, D., Stage, S. Hawken, L., Lynass, L., Mielenz, C., Waugh, M. (2009). A 2-year outcome study of the check, connect, and expect intervention for students at risk for severe behavior problems. *Journal of Emotional and Behavioral Disorders*. *17*, 226-243.
- Cohen, B. (2008). *Explaining Psychological Statistics* (3rd ed.) Hoboken, NJ: John Wiley & Sons.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Cooper, J. O., Heron, T. E., & Heward, W. L. (2006). *Applied Behavior Analysis*. (2nd Ed.) Upper Saddle River, NJ: Pearson Prentice Hall.
- Godbold, E. S., Gresham, F. M., Noell, G. H., & Dart, E. (in submission). Visual and statistical

Analysis of single-case design data: Effects on Type I and Type II error rates. *Behavior Modification*.

- Fabiano, G. A., Chacko, A., Pelham Jr., W. E., Robb, J., Walker, K. S., Wymbs, J., Sastry, A. L., Flammer, L., Keenan, J. K., Visweswarajah, H., Shulman, S., Herbst, L., & Pirvics, L. (2009). A Comparison of behavioral parent training programs for fathers of children with attention-deficit/hyperactivity disorder. *Behavior Therapy*, *40*, 190-204.
- Fairbanks, S., Sugai, G., Guardino, D., & Lathrop, M. (2007). Response to intervention: Examining classroom behavior support in second grade. *Exceptional Children*, *73*(3), 288-310.
- Filter, K. J., McKenna, M. K., Benedict, E. A., Horner, R. H., Todd, A. W., & Watson, J. (2007). Check in/ Check out: A Post-Hoc Evaluation of an Efficient, Secondary-Level Targeted Intervention for Reducing Problem Behaviors in Schools. *Education and Treatment of Children*, *30*, 69-84.
- Frick, P. J., Christian, R. E., & Wooton, J. M. (1999). Age trends in the association between parenting practices and conduct problems. *Behavior Modification*, *23*, 106–128.
- Greenbaum, P. E., & Dedrick, R. F. (1998). Hierarchical confirmatory factor analysis of the Child Behavior Checklist/4-18. *Psychological Assessment*, *10*, 149-155.
- Gresham, F. M. (2009). Evolution of the treatment integrity concept: Current status and future directions. *School Psychology Review*, *38*, 533-540.
- Gresham, F.M., Cook, C.R., Collins, T., Dart, E., Rasetshwane, K., Grant, S., & Truelson, E. (in press). Developing change sensitive brief behavior ratings scales as a progress monitoring tool for social behavior: An example using the SSRS-Teacher Form. *School Psychology Review*.
- Gresham, F.M., & Elliott, S.N. (2008). *Social Skills Improvement System: Rating Scales Manual*. Minneapolis: Pearson Assessments.
- Hawken, L. H. & Johnston, S. (2007). Preventing severe problem behavior in young children: The Behavior Education Program. *Journal of Early and Intensive Behavior Intervention*, *4*, 599-613.
- Hawken, L. S., & Homer, R. H. (2003). Evaluation of a targeted intervention within a schoolwide system of behavior support. *Journal of Behavioral Education*, *12*, 225-240.
- Hawken, L. S. (2006). School psychologists as leaders in the implementation of a targeted intervention: the behavior education program. *School Psychology Quarterly*, *21*, 91-111.
- Hawken, L. S., MacLeod, K. S., & Rawlings, L. (2007). Effects of the behavior education program (BEP) on office discipline referrals of elementary school students. *Journal of*

Positive Behavioral Interventions, 9, 94-101.

- Hinshaw, S. P. (1992). Externalizing behavior problems and academic underachievement in childhood and adolescence: Causal relationships and underlying mechanisms. *Psychological Bulletin, 111*, 127-155.
- Individuals with Disabilities Education Improvement Act of 2004, H.R. 1350, §661, 108th Cong. (2004)
- Jurbergs, N., Palcic, J., & Kelley, M. L., (2007). School-Home notes with and without response cost: Increasing attention and academic performance in low-income children with Attention-Deficit/Hyperactivity Disorder. *School Psychology Quarterly, 22*, 358-379.
- Jordan, S. S., (2003). Further validation of the child routines inventory (CRI): Relationship to parenting practices, maternal distress and child externalizing behavior. Unpublished doctoral dissertation, Louisiana State University, Baton Rouge.
- Kelley, M. L. (1990). *School-Home notes: Promoting children's classroom success*. New York: Guilford
- Kelley, M. L., & McCain, A. P. (1995). Promoting academic performance in inattentive children: The relative efficacy of school home notes with and without response cost. *Behavior Modification, 19*, 357-375.
- Lerman, D. C., & Iwata, B. A. (1995). Prevalence of the extinction burst and its attenuation during treatment. *Journal of Applied Behavior Analysis, 28*, 93-94.
- Luiselli, J. K., Putnam, R. F., Handler, M. W., & Feinberg, A. B. (2005). Whole-School Positive Behaviour Support: Effects on student discipline problems and academic performance. *Educational Psychology, 25*, 183-198.
- March, R. E., & Horner, R.H. (2002). Feasibility and contributions of functional behavioral assessment in schools. *Journal of Emotional and Behavioral Disorders, 10*, 158-170.
- McIntosh, K., Campbell, A., Carter, D., & Dickey, C. (2009). Differential effects of a tier 2 behavioral intervention based on function of problem behavior. *Journal of Positive Behavior Interventions, 11*(2), 82-93.
- Parker, R. I., & Hagan-Burke, S. (2007). Useful effect size interpretations for single subject research. *Behavior Therapy, 38*, 95-105.
- Pearson, K. K. (1897). Mathematical Contributions to the Theory of Evolution: Regression, Heredity and Panmixia. *Philosophical Transactions Of The Royal Society Of London, CLXXXVII*, 253-318.
- Riley-Tillman, T. C., Chafouleas, S. M., Sassu, K. A., Chanese, J. A. M., Glazer, A. D. (2008).

- Examining the agreement of direct behavior ratings and systematic direct observation data for on-task and disruptive behavior. *Journal of Positive Behavioral Interventions*, 10, 136-143.
- Rones, M. & Hoagwood, K. (2000). School-based mental health services: A research review. *Clinical Child and Family Psychology Review*, 3, 223-241.
- Sheridan, S. M., & Kratochwill, T. R. (1992). Behavioral parent-teacher consultation: Conceptual and research considerations. *Journal of School Psychology*, 30, 117-139.
- Shinn, M. R., & Walker, H. M. (Eds.) (2010). *Interventions for achievement and behavior problems in a three-tier model including RTI*. Bethesda, MD: National Association of School Psychologists.
- Shirk S. R. & Jungbluth N. J. (2008) School-based mental health checkups: Ready for practical action. *Clinical Psychology: Science and Practice*, 5, 217–223
- Todd, A.W., Kaufman, A., Meyer, G., & Horner, R.H. (2008). The effects of a targeted intervention to reduce problem behaviors: Elementary school implementation of Check-In/Check-Out. *Journal of Positive Behavioral Interventions*, 10, 46-55.
- Wasserman, H. L. (1972). A comparative study of school performance among boys from broken and intact black families. *Journal of Negro Education*, 41, 137-141.
- Whitley, Jr., B. E. (2002). Principles of research in behavioral Science, second edition, McGraw-Hill.
- Witt, J. C., & Elliott, S. N. (1985). Acceptability of classroom intervention strategies. In T. R. Kratochwill (Ed.), *Advances in school psychology* (Vol. 4, pp.251-288). Mahwah, NJ: Erlbaum

APPENDIX A: CICO DAILY PROGRESS RATING

0 = Not Yet 1= Good 2= Excellent		Show Self Control		Stay On Task		Be Your Personal Best			Teacher Initials
		Respond positively to peers and teachers and worry about myself only	Ignore other students and work on what's important	Do something positive for a friend/teacher	Follow directions and complete work efficiently	Completed homework			
Morning Routine	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 NA		
Ms. White Reading	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 NA		
Ms. White after 10	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 NA		
Mrs. Lakey	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 NA		
Ms. Brown	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 NA		
Mrs. Williams	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 NA		
Total Points =		Today _____		Goal _____					

Participant

Date _____

APPENDIX B: IRB CONSENT FORM

Louisiana State University

Informed Consent Form

Study Approved By:

Dr. Robert C. Mathews, Chairman
Institutional Review Board
Louisiana State University
203 B-1 David Boyd Hall
225-578-8892 | www.lsu.edu/irb
Approval Expires: 1-17-2012

My child has been selected, if I choose, to participate in a research project aimed at improving student’s behavior during school by having parental involvement in the intervention program. The name of this project is *Evaluating the Differential Effects of Parental Involvement on Check In/Check Out in children with externalizing Behavior Problems*. This study is being conducted at schools in East Baton Rouge and Central School Districts. Frank M. Gresham, Ph.D. of the Department of Psychology at Louisiana State University (LSU) is conducting this research.

I understand that the purpose of the study is to evaluate the effectiveness of the behavioral intervention Check In/Check Out. I understand that as part of this project, my child’s teacher will be asked to fill out rating forms about my child’s social skills/ problems behavior and project staff will observe my child in his/her classroom, and that my child may receive a classroom-based intervention intended to replace undesirable behavior with more socially appropriate behavior. I understand that the researchers will review your child’s records and share intervention information with the school in order to coordinate the assessment and intervention with your child’s school.

I understand that there are minimal risks with participation in this study. For example, my child may feel uncomfortable being observed in the classroom, (This risk is not likely, as project staff will use observation techniques so it is not obvious which child is being observed).

I understand that my child is likely to benefit from participation by showing improved behavior with classmates and teachers. Research also suggests improved social behavior can also increase children’s current and future academic performance. Also, I understand that my child’s participation in this study may increase the research knowledge of social skills, which may benefit other children in the future.

I understand that any observations, answers to questions, to any other information about my child will remain completely confidential. My child will be assigned a code number so s/he cannot be identified by personal information.

I understand that my child’s participation is voluntary, and I may withdraw my child from the study at any time without affecting my relationship with my child’s school or with LSU. I understand that these services will be provided at no charge and will be coordinated with my child’s classroom schedule.

If I have any questions about this study, and what is expected of my child or me, I may contact Dr. Gresham at (225) 578-4663. Any problems that may develop as a result of my child’s participation in this study may be reported to Dr. Robert Mathews, Human Subjects Committee Chair at (225) 578-4114.

By Signing, I acknowledge I have read and understand the above information.

I give my child permission to participate (PLEASE CIRCLE), YES NO

Date _____

Child’s Name _____ Parent/Guardian Name _____

Signature _____

Phone Number _____ Email _____

VITA

Aaron J Fischer was born on November 26, in St. Louis, Missouri. He was raised in Marlton, New Jersey where he lived until leaving for Miami to attend the University of Miami in 2004. Aaron Graduated with his Bachelor of Arts in psychology from the University of Miami in 2008 before spending a year as a research coordinator. In 2009, Aaron went to Louisiana State University to begin his graduate education in school psychology.