EVALUATING THE EFFECTIVENESS AND FEASIBILITY OF INTEGRATING SELF-MONITORING INTO AN EXISTING TIER II INTERVENTION FOR ELEMENTARY SCHOOL STUDENTS

by

MICHAEL JOHN PARRY

A DISSERTATION

Presented to the Department of Special Education and Clinical Sciences
and the Graduate School of the University of Oregon
in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy

June 2014

DISSERTATION APPROVAL PAGE

Student: Michael John Parry

Title: Evaluating the Effectiveness and Feasibility of Integrating Self-Monitoring into an Existing Tier II Intervention for Elementary School Students

This dissertation has been accepted and approved in partial fulfillment of the requirements for the Doctor of Philosophy degree in the Department of Special Education and Clinical Sciences by:

Cynthia M. Anderson	Chairperson
Tiffany Kodak	Core Member
Christopher Murray	Core Member
Daniel Close	Institutional Representative

and

Kimberly Andrews Espy	Vice President for Research and Innovation; Dean of the Graduate School

Original approval signatures are on file with the University of Oregon Graduate School.

Degree awarded June 2014.

DISSERTATION ABSTRACT

Michael John Parry

Doctor of Philosophy

Department of Special Education and Clinical Sciences

June 2014

Title: Evaluating the Effectiveness and Feasibility of Integrating Self-Monitoring into an Existing Tier II Intervention for Elementary School Students

Multi-tiered systems of behavioral support are a promising approach for schools looking to maximize their resources while at the same time ensuring that every student's social and behavioral needs are being met. A commonly used Tier II intervention is Check-in/Check-out (CICO), wherein students check in with an adult before and after school and then receive feedback from their teachers throughout the day using a point card. Although CICO has been well supported through previous research, the intervention does require a fair amount of teacher time after each class period, and it also leaves students entirely reliant on the teacher for feedback regarding their behavioral performance throughout the day. The current study therefore examined the effectiveness and feasibility of integrating self-monitoring into CICO, called Student-Guided CICO (SG-CICO). Three elementary students were taught how to self-monitor their behavior after each class and then compare their ratings to those provided by the teacher. Teacher accuracy checks were faded back once students became consistently accurate with their self-ratings. An ABABC single subject design was used to evaluate the effect SG-CICO had on each participant's on-task and disruptive behavior. Each participant displayed (to varying degrees) increased on-task responding and reductions in disruptive behavior following implementation of SG-CICO. Students reported enjoying their participation in

SG-CICO, however the acceptability of SG-CICO was met with mixed reactions from staff. Conceptual implications of these results along with a description of study limitations and directions for future research are provided.

CURRICULUM VITAE

NAME OF AUTHOR: Michael John Parry

GRADUATE AND UNDERGRADUATE SCHOOLS ATTENDED:

University of Oregon, Eugene
Minnesota State University, Mankato

DEGREES AWARDED:

Doctor of Philosophy, School Psychology, 2014, University of Oregon
Master of Science, Special Education, 2013, University of Oregon
Bachelor of Science, Psychology, 2008, Minnesota State University – Mankato
Bachelor of Science, Sociology, 2008, Minnesota State University – Mankato

AREAS OF SPECIAL INTEREST:

School-wide Positive Behavioral Interventions and Supports (SW-PBIS)
Functional Behavior Assessment
School-based Behavioral Consultation

PROFESSIONAL EXPERIENCE:

School Psychologist Intern, Paul Bunyan Education Cooperative, Brainerd, Minnesota, September 2013 – Present

Behavioral Consultant, School and Community Partners, University of Oregon, Eugene, September 2011 – June 2013

Assistant Practicum Supervisor, School Psychology Program, University of Oregon, Eugene, September 2012 – June 2013

Teaching Assistant, SPSY 610: Advanced Consultation, University of Oregon, Eugene, December 2012 – March 2012, and December 2013 – March 2013

Teaching Assistant, EDST 111: Educational Issues and Problems, University of Oregon, Eugene, September 2010 – June 2011

GRANTS, AWARDS, HONORS:

Graduate Teaching Fellowship, Assistant School Psychology Practicum Supervisor, University of Oregon, Eugene, September 2012 – June 2013.

Graduate Teaching Fellowship, School Community Partners, University of Oregon, Eugene, September 2011 – June 2013

Graduate Teaching Fellowship, Teaching Assistant for EDST 111, University of Oregon, Eugene, September 2010 – June 2011.

Magna Cum Laude, Minnesota State University – Mankato, 2008

PUBLICATIONS:

Anderson, C. M., Turtura, J, & **Parry, M.** (2013). Addressing avoidance-maintained responding at Tier II. *Journal of Applied School Psychology*, *29*, 167-182.

Parry, M. (2012). Manifestation determination reviews: An overview of legal requirements and best practices. *Oregon School Psychologist Association Bulletin, 34*(2), 1-2.

ACKNOWLEDGMENTS

First and foremost, I am thankful for the support and guidance provided by Dr. Cynthia M. Anderson. Dr. Anderson's professional expertise and superb mentoring skills contributed greatly to this study, from the initial conceptualization stages, to the final preparation of this manuscript. Many of the skills I've gained throughout this project, and across my entire graduate career, can be directly attributed to the supervision provided by Dr. Anderson, and for that I will always be grateful.

I would also like to express my sincere appreciation to the members of my dissertation committee: Dr. Tiffany Kodak, Dr. Christopher Murray, and Dr. Daniel Close. Their thoughtful feedback before, during and after the completion of this study was extremely helpful, and as a result, I'm more confident in my skills as a researcher going forward.

Lastly, a special "thank you" must also be extended to the following school psychology graduate students who helped with data collection for this project: Michael Schwartz, Caitlin Rasplica, Trish Zemantic, and Vinnie Campbell. I appreciate all of your valuable time spent assisting on this project. Without such help, this project would not have been possible.

To my wife, Jen, and son, Mason. Your patience and support throughout my entire graduate school career was nothing short of amazing. I love you both so very much…

TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION	1
School-wide Positive Behavior Interventions and Supports	2
Tier II Interventions	3
Check-in/Check-out Intervention	4
CICO Research Support	7
CICO Implementation Considerations	11
Self-Management	14
Antecedent-Based Strategies	15
Self-Monitoring	17
Self-Management Research	19
Accuracy Training	20
Reinforcement	21
Programming for Generalization	26
Self-Monitoring: Mechanisms of Change	30
Self-Monitoring: Implementation Considerations	31
Statement of the Problem	33
II. METHODS AND PROCEDURES	34
Setting and Participants	34
Setting	34
Participants	34
Scott	35
Tim	35
Nora	35
Response Measurement	36

Chapter Page

Fidelity of Implementation 38
Social Validity 40
SG-CICO Knowledge Assessment 42
Design and Procedures 42
Functional Behavior Assessment 42
Coordinator Training 43
Classroom Teacher Training 44
Student Training 44
SG-CICO Intervention 45
Teacher Fading 48
Data Analysis 49
III. RESULTS 50
Functional Behavior Assessment 50
Scott 50
Tim 52
Nora 54
Intervention Evaluation 56
Scott 56
Tim 58
Nora 61
Behavior Rating Accuracy 63
SG-CICO Point Card Data 65
Social Validity 67
Teachers 67
Students 69

Chapter Page

Coordinator 70
IV. DISCUSSION 72
Summary of Main Findings 72
Mechanisms of Change 74
Behavioral Function 74
Active Participation 75
Token Economy 77
Limitations 77
Sample 77
FBA Methodology 78
Research Design 78
Generalization and Maintenance 79
Directions for Future Research 80
Component Analysis 80
Comparison to CICO 81
Self-Monitoring vs. Self-Evaluation 81
Conclusion 82
APPENDICES 84
A. SAMPLE CICO POINT CARD 84
B. MORNING CHECK-IN FIDELITY CHECKLIST 85
C. AFTERNOON CHECK-OUT FIDELITY CHECKLIST 86
D. CLASSROOM IMPLEMENTATION FIDELITY CHECKLIST 87
E. TEACHER FIDELITY SELF-ASSESSMENT 88
F. COORDINATOR FIDELITY SELF-ASSESSMENT 89
G. SG-CICO SOCIAL VALIDITY QUESTIONNAIRE (TEACHER) 90

Chapter Page

H. SG-CICO SOCIAL VALIDITY QUESTIONNAIRE (COORDINATOR) 91

I. SG-CICO SOCIAL VALIDITY QUESTIONNAIRE (STUDENT) 92

J. SG-CICO KNOWLEDGE ASSESSMENT (COORDINATOR) 93

K. SG-CICO KNOWLEDGE ASSESSMENT (TEACHER) 95

L. FLOWCHART OF SG-CICO IMPLEMENTATION 98

REFERENCES CITED 99

LIST OF FIGURES

Figure Page

1. Conditional probabilities for Scott's disruptive behavior. 51

2. Conditional probabilities for Scott's off-task behavior 51

3. Conditional probabilities for Tim's disruptive behavior 53

4. Conditional probabilities for Tim's off-task behavior 53

5. Conditional probabilities for Nora's disruptive behavior 55

6. Conditional probabilities for Nora's off-task behavior 55

7. Graph depicting the percentage of intervals scored with on-task and disruptive behavior across all phases for Scott 56

8. Graph depicting the percentage of intervals scored with on-task and disruptive behavior across all phases for Tim 59

9. Graph depicting the percentage of intervals scored with on-task and disruptive behavior across all phases for Nora 62

10. Percentage of behavior ratings in agreement with teacher ratings for each participant 64

11. Percentage of total daily points earned by each SG-CICO participant 66

LIST OF TABLES

Table Page

1. Average (range) interobserver agreement across participants 38

2. Comparison of fidelity of implementation ratings between PI and teachers 39

3. Comparison of fidelity of implementation ratings between PI and coordinator.... 41

4. Teacher responses on the treatment acceptability questionnaire 68

5. Student responses on the treatment acceptability questionnaire 70

6. Coordinator responses on the treatment acceptability questionnaire 71

CHAPTER I

INTRODUCTION

The primary goal for all schools is to provide students with the resources, instruction, and support necessary to obtain the highest possible level of academic achievement. The importance of schools achieving this aim for all students is obvious given the well-established link between low educational attainment and poor future outcomes in life. A meta-analysis conducted by Maguin and Loeber (1996) found numerous links between poor academic performance and subsequent juvenile delinquency, including substance abuse and violent crime. Further, Lochner and Moretti (2004) found that even a single-grade increase in educational attainment can result in up to a 30% reduction in the likelihood of a student engaging in future violent criminal activity (e.g., assault, murder, robbery). Given these serious long-term implications, maximizing the academic achievement of all students remains a central focus in our education system, and rightfully so. Recent government-issued mandates such as No Child Left Behind Act (NCLB, 2001) have reaffirmed this stance by holding states accountable for obtaining high standards of academic achievement for all students. It should not be forgotten, however, that schools are also charged with the equally important responsibility of supporting the healthy emotional and behavioral development of the students they serve.

Although many students appear to seamlessly enter the school setting and display few, if any, social behavioral difficulties across their educational career, others face more difficulties in adapting to the demands and expectations of the learning environment (Colvin, Kameenui, & Sugai, 1993). Disruptive, or 'antisocial', behaviors are one of the

top concerns reported by teachers working in the public school setting. This should come as no surprise given the detrimental effects problem behaviors can have on the child's learning, as well as the learning of others. Lane, Carter, Pierson, and Glaeser (2006) not only found that students with emotional and behavior disorders perform significantly below average on standardized academic achievement tests, but that teachers also view them as less academically competent when compared to students with learning disabilities. Disruptive student behavior also has a negative impact on the learning environment as a whole. Managing disruptive student behavior reactively in the classroom reduces the amount of time teachers can spend providing academic instruction. In fact, nearly 20% of teachers report spending four or more hours per week addressing disruptive student behavior (Walker, Ramsey, & Gresham, 2003). One way that schools can proactively provide support to all students and their social, emotional and behavioral development is to adopt a multi-tiered, prevention-oriented system across the entire school (Walker et al., 1996). A commonly used example of such a system is school-wide positive behavior interventions and supports (SWPBIS).

School-wide Positive Behavior Interventions and Supports

School-wide positive behavior interventions and supports has been referred to as a "promising approach to establish school environments that address problem behavior in a positive and preventative manner" (Sugai & Horner, 2006, p. 246). A key feature and strength of this approach is the focus on prevention, rather than the more traditional and primarily reactive approach to school discipline (e.g., suspension, exclusion, expulsion). The SWPBIS model typically consists of three levels of intensifying behavioral support. Efforts to prevent the development of social and behavioral problems are delivered to all

students in a school building through the universal (or Tier I) level of support. Implementing consistent school-wide discipline procedures, defining, teaching, and modeling behavioral expectations, and rewarding students who display desired pro-social behaviors are all examples of supports provided at the universal level. When implemented with fidelity, the vast majority (approximately 80%) of students will respond positively to the preventive efforts delivered at the universal level (Bradshaw, Reinke, Brown, Bevans, & Leaf, 2008). For the approximately 10-20% of students who continue to display concerning behavior patterns (e.g., truancy, classroom disruptions, physical or verbal aggression), secondary (Tier II) and tertiary (Tier III) levels of support are systematically provided through a process driven by data-based decisions. Students displaying the most severe and pervasive social, emotional, and behavioral problems will often require the most intensive Tier III interventions (e.g., multi-component function-based behavior support plans for individual students). These interventions are often costly in terms of the time, effort, and skill required to implement them. Thus, Tier II interventions, which are the focus of the present study, are a key part of the continuum of SWPBIS through which schools can maximize their resources while preventing the development of more serious and difficult to treat antisocial behavior problems.

Tier II Interventions

The goal of Tier II supports is to enhance the level of instruction, opportunities to practice, and feedback beyond that provided at Tier I. Students not succeeding with Tier I supports may require more frequent or explicit instruction to address a skill deficit. Alternatively, students may require more explicit reinforcement for engaging in desired behaviors—both of which are provided via Tier II supports. Students who can benefit

from Tier II supports include those who engage in frequent, albeit non-dangerous problem behaviors, such as non-compliance, talking out during instruction, refusing to complete work, and/or have difficulties staying "engaged" during an academic task.

Core features of successful Tier II interventions include explicit teaching of the desired skill using (a) proactive and systematic prompting of the desired behavior, (b) frequent opportunities to practice the new behavior, and (c) frequent opportunities to receive positive behavioral feedback (Anderson & Borgmeier, 2010). In review of these features, it is clear that teaching a student appropriate or desired behaviors through a Tier II intervention is akin to teaching a student a new academic skill, as the skill must be defined, taught, modeled, and rehearsed with feedback continuously provided. According to Anderson and Borgmeier and Crone and Horner (2003), Tier II interventions should also be (a) continuously available and easily accessible, (b) resource (e.g., time, effort, cost) efficient, (c) consistent with school-wide expectations, (d) implemented with fidelity, and (e) consistently and continuously monitored using data to guide decision-making. The Behavior Education Program (BEP; Crone, Horner, & Hawken, 2004), otherwise commonly known as a Check-in/Check-out (CICO) program, is a well-researched Tier II intervention which meets the aforementioned criteria and that has gained widespread adoption in schools implementing SWPBIS.

Check-in/Check-out Intervention

The CICO program is used to reduce problem behavior among students who require supports beyond those provided at the universal level (Crone, Horner, & Hawken, 2004; Hawken, 2006). For schools who have adopted SWPBIS, CICO should be readily available for newly referred students, and should allow for consistent implementation

across a small group of students with a high degree of fidelity. The CICO program was developed with well-established behavioral principles in mind. Although slight variations in CICO may exist across schools implementing the program (e.g., behaviors being monitored, decision rules used for progress monitoring, use of tangible rewards for meeting behavior goals), the core elements of CICO remain quite consistent across the literature and in practice. These features include (a) increased structure to the student's school day, (b) clearly defined behavioral expectations and additional instruction to teach and practice them, (c) frequent prompts for displays of expected behaviors, and (d) consistent feedback and positive reinforcement for displays of expected behavior.

Students may be referred to CICO by teachers, parents, or other school staff if there is a need for additional support indicated through office discipline referrals (ODRs), detention/suspension data, and/or other school-wide sources of behavioral data. The student's participation in CICO typically begins after the referral has been reviewed and discussed by the school's behavior support team, and the student's parents or guardians have provided consent. Once the student is ready to participate, he or she "checks-in" with the coordinator each morning when they arrive to school. During the brief morning check-in (e.g., 3-5 minutes), the coordinator and student review the behavioral expectations and the goals for the day. Since CICO fits within a SWPBIS framework, the behaviors addressed through the program should be consistent with the core behavioral expectations established for all students in the school building (e.g., be safe, be responsible, be respectful). The coordinator also ensures the student has the necessary materials to be prepared for his or her classes (e.g., pencils, homework). Finally, the

student is issued a daily progress report (DPR) card used to track the student's success in meeting the behavioral expectations (see Appendix A for a sample DPR).

The DPR is carried by the student throughout the day and teachers record feedback on the card in the form of a numerical value (e.g., 0-2 scale); verbal behavior-specific feedback should also accompany the ratings. At the end of the school day the student returns to the CICO coordinator for the "check-out". During the check-out, the student and coordinator review the behavior ratings/scores for the day and determine if the point goal was reached (typically 80% of the possible points). Praise and tangible rewards (e.g., stickers, candy, small toys) may be provided if the daily point goal is met. Some schools may be hesitant to provide tangible rewards to students for meeting the basic behavioral expectations (e.g., being respectful). However, providing some form of incentive to students who meet their daily or weekly point goal is an important component contributing to the success of the program (Hawken & Horner, 2003; Hawken, 2006). Incentives might include praise or extra attention, access to preferred activities such as library time, or tangible items such as stickers. If the goal is not met, the student is provided positive corrective feedback and encouragement towards reaching the goal the next day. Lastly, to foster collaboration and communication between home and school, the student may be asked to bring home a copy of the DPR to be reviewed and signed by parents.

This CICO process is implemented every day the student is in school, with data (e.g., daily point card totals, ODRs) continuously collected and reviewed to determine student progress. There are no definitive, research-based decision rules for how long a student must participate in CICO before it is faded. Instead, the student's individual data

should be used as the primary source of information when making these decisions. Nonetheless, Crone et al. (2004) have suggested that the student should be successful (e.g., meet the daily point goal on 80% of the days) for at least one month before fading should be considered.

CICO research support. Research suggests that CICO is an effective program for reducing problematic behaviors and promoting desired behaviors such as increased task engagement. To date, CICO has been evaluated in a total of ten studies. A variety of measures have been used in these studies to examine effects of CICO, including (a) office discipline referrals, (b) behavior rating scales, and (c) direct observations.

Four quasi-experimental studies have examined effects of CICO on office discipline referrals (e.g., Filter, McKenna, Benedict, Horner, Todd, & Watson, 2007; Hawken, 2006; Hawken, O'Neill, & MacLeod, 2011; March & Horner, 2002). Filter et al., for example, compared the rate of ODRs student's received per week prior to implementation of CICO to the weekly rate of ODRs received during implementation. After combining major (e.g., defiance, aggression, vandalism) and minor (e.g., inappropriate language, refusal to complete work) ODRs, post-hoc analyses showed that the rate of ODRs for students participating in CICO had been reduced by an average of 34%. Fidelity of implementation data showed that CICO was implemented with integrity and was rated by teachers, staff, and administrators as useful and important. That said, parental involvement was found to be the most inconsistently implemented component of CICO. The results of Filter et al. are representative of the other quasi-experimental studies examining effects of CICO on office referrals in that all documented reductions in ODRs following implementation of CICO.

Effects of CICO on ODRs have also been examined in three experimental studies, two using group designs (McIntosh, Campbell, Carter, & Dickey, 2009; Simonsen, Myers, & Briere, 2011), and one using a single-subject design (Hawken, MacLeod, & Rawlings, 2007). McIntosh et al. used ODR patterns, as well as scores from a norm-referenced behavior rating scale (the *Behavior Assessment Scale for Children 2*; Reynolds & Kamphaus, 2004) to examine effects of CICO. Pretest measures were obtained eight weeks before and eight weeks after implementation of CICO. The authors' main objective in this study was to investigate CICO outcomes in relation to the function served by each student's problem behavior (assessed indirectly using the *FACTS*; March et al., 2000). Multivariate analysis of variance methods (MANOVA) were used to compare the repeated measures on each dependent variable (i.e., pre-post ODR rates, pre-post BASC-2 scores), and to determine whether behavioral function moderated the effects of the CICO intervention. Simple effects for CICO indicated that implementation was associated with statistically significant (a) improvements in BASC-2 ratings of problem behavior and (b) reductions in office discipline referrals. Lastly, CICO intervention effects were found to be significantly moderated by the function of the student's problem behavior. More specifically, only students with attention-maintained problem behavior showed statistically significant improvements, whereas any improvements experienced by the "escape-maintained" group did not reach a level of statistical significance.

Hawken et al. (2007) used a multiple baseline across groups design to experimentally examine effects of CICO on student ODR patterns. The intervention was implemented sequentially across four groups of students, with three students in each

group. The authors found that implementation of CICO was associated with reductions in the number of ODRs per month across all four groups, with reductions ranging from 25-51% compared to baseline conditions. Further, high levels of treatment integrity and social validity data were again reported by school staff.

Researchers also have examined effects of CICO via behavior rating scales completed by teachers (McIntosh et al., 2009; Simonsen et al, 2011). For example, Simonsen et al. used a randomized pretest-posttest control group design to experimentally compare the effects of CICO to a school's standard intervention practices. The researchers randomly assigned 42 middle school students to either a CICO group (n = 27) or a control group (n = 15), which consisted of weekly individualized counseling sessions. The authors then used a combination of scores on the Social Skills Rating System (SSRS; Gresham & Elliott, 1990), direct behavior observations, and discipline referral data to examine the outcomes of each respective treatment group. Following a one-way ANOVA of gain scores from pre to post implementation, the reductions in off-task behavior and ODRs observed for students in the CICO group were found to be significantly greater than those demonstrated by the control group who received the weekly counseling sessions. Although no statistically significant changes in teacher perceptions of student behavior (i.e., SSRS scores) were found for either group, this may have been due to the relatively short period of time that had passed between the collection of pre and post measures (6 weeks). Overall, these findings support the effectiveness of CICO, but more importantly, lend support to the notion that a Tier II intervention like CICO may be even more effective than the time and resource intensive interventions often developed for individual students.

Given the low level of inference associated with direct observations of behavior, it is typically viewed as the gold standard when assessing student behavior patterns in classroom settings (Landau & Swerdlik, 2005). Several experimental studies have therefore used direct observations of student behavior to experimentally examine effects of CICO (e.g., Campbell & Anderson, 2011; Fairbanks et al., 2007; Hawken & Horner, 2003; Simonsen et al, 2011; Todd, et al., 2008). In addition to using pre-post ODR patterns to examine CICO effects, Todd et al. also used direct behavior observations within a multiple baseline across subjects design. Results showed that three of the four elementary students participating in the study had reductions in the rate of ODRs per day following implementation of CICO. More importantly, direct observations showed an immediate reduction in the frequency of problematic behaviors for all participants. Reductions in problem behavior were small, ranging from 14-19%, however this was largely due to low levels of problem behavior being observed during baseline conditions (i.e., a floor effect had occurred). Fidelity of implementation and social validity data were at acceptably high levels, and positive results regarding CICO's contextual fit within the school were also reported.

In another experimental study using direct observations, Campbell and Anderson (2011) assessed the relative contribution of teacher feedback (i.e., attention) for four students between second and fifth grade, all of whom engaged in attention-maintained problem behavior. Following an ABAB reversal design to examine effects of CICO on problem behavior, teacher feedback sessions throughout the day were systematically removed (although morning and afternoon check-ins remained in place). Direct observational data showed that the reductions in problem behavior and increases in

academic engagement were maintained over time despite the reduced frequency of teacher-issued behavioral feedback sessions. A limitation of this study is that fading was accomplished relatively quickly and thus the extent to which gains would have been sustained over a longer period is not clear. That said, findings from this study suggest that perhaps teacher attention can be systematically removed or reduced while maintaining positive outcomes, at least for some students.

There is some question about whether CICO might be more effective for students whose behavior is maintained by adult attention (e.g., March & Horner, 2002; McIntosh et al., 2009), however other studies have suggested that CICO is generally effective regardless of operant function (e.g., Hawken et al., 2011). In any case, the extant research suggests that CICO is an evidence-based Tier II intervention with a high degree of social validity as reported by teachers and students.

CICO implementation considerations. All published research on CICO to date has been conducted in schools implementing CICO independent of researcher involvement. This level of implementation requires schools to attend to systems to support implementation (Anderson & Borgmeier, 2010). A first step is the development of a Tier II behavior support team, charged with the responsibility of (a) ensuring the intervention is implemented with fidelity, (b) selecting students who would benefit from additional supports, and (c) monitoring each student's response to the intervention (Anderson & Borgmeier). Ideally this team will include general and special education teachers from multiple-grade levels, an administrator, behavior specialist, and one adult who is assigned the role of being the coordinator for the intervention (Crone et al., 2003). It is important that the CICO coordinator be a full-time staff member who is familiar with

the program, and has the flexibility in their schedule to conduct check-ins with the students during the morning and afternoon. Crone et al. estimate that a CICO program serving 30 students will require roughly 10 hours of the coordinator's time each week (i.e., .25 FTE). Further, the individual chosen to serve as coordinator should be well-liked and respected by the students and school staff (Hawken, 2006).

The use of data to drive the decision-making process is another critical component associated with successful implementation of CICO. Data can and should be used to facilitate all aspects of CICO implementation, from determining students in need of additional behavior support, to tracking the progress student's demonstrate following implementation of the intervention. Several sources of data can be used to identify good candidates for CICO, including office referral patterns and teacher-issued requests for assistance (Anderson & Borgmeier, 2010). Once students have been identified, a definite strength of CICO is that the daily point card serves as a direct source of data that can be used to determine the students' responses to the intervention. By entering student point card data into a database and producing graphs of their daily point totals, confident decisions can then be made by the team as to whether the intervention should be continued, modified, or faded.

Since students participating in CICO are likely to come from various classrooms and grade levels within the school building, it is likely that most teachers will at one point or another be involved with the implementation of CICO. The research on CICO suggests it has a high level of social validity amongst teachers. However, asking a teacher to implement CICO with a student in his or her classroom in the absence of appropriate training or resources may not only lead to a low level of treatment integrity, but could

also lead to negative opinions being developed regarding the intervention as a whole. Therefore, providing training to *all staff* in the school building is critically important (Anderson & Borgmeier, 2010). Ensuring all staff are adequately trained helps to ensure the intervention is implemented with fidelity and helps to establish a culture of acceptance for the intervention (i.e., obtains teacher buy-in).

Even though CICO may not be as time or resource intensive as other individualized interventions, the reality is that the teacher and coordinator do assume full responsibility for implementing the intervention. The time required to implement CICO in the classroom may seem minimal, especially if only one student in the classroom is participating in the intervention. However, if several students in a given classroom are on CICO, the amount of time required by the teacher to implement the intervention with fidelity can quickly become unfeasible. For example, if a teacher had three students on CICO and spent only one minute debriefing with each student after each class, it would require roughly three minutes to implement the intervention, *after each class.* Anyone who has spent time in an elementary or middle school classroom would agree that allocating three-minutes between each class period is simply not practical. Given that interventions which require additional teacher time and effort typically receive lower levels of treatment integrity (Gresham, 1989), it would appear under certain circumstances that the capacity of CICO for any one teacher is limited.

With time restraints and resource limitations now commonplace in most of today's classrooms, the use of inexpensive and easy-to-implement interventions are more valuable than ever. It is therefore necessary to develop additional Tier II intervention options schools can use that are (a) effective in reducing problem behaviors, (b) require

limited teacher time/effort, and (c) can be implemented quickly with a high degree of fidelity across an entire group of students. One possible way to increase the number of Tier II supports available within a school is to use CICO as a building block for the implementation of new behavioral supports, such as self-management.

Self-Management

The concept of self-management was described by Skinner (1953), who used the term "self-control" to describe the process wherein one attempts to increase or decrease one's own operant behavior by manipulating or arranging the variables in the environment that affect that particular response. The notion that an individual can manipulate the variables that control their behavior may seem to run counter to Skinner's assertions that human behavior is largely controlled by external variables in the environment. Importantly, the control is still in the environment—an individual affects his or her own behavior by altering the events that precede or follow the response targeted. Skinner stated that two separate, yet closely related responses are involved with self-control: the *controlling response,* and the *controlled response.* The controlling response "affects variables in such a way as to change the probability of the other, the *controlled response*" (p. 231). For instance, an individual exercises self-control when he or she uses an alarm clock to prevent over-sleeping and missing an important meeting. In this example, the act of setting the alarm clock serves as the controlling response because it alters the probability of over-sleeping (the controlled response). Thus, for Skinner the controlled response is the target behavior and the controlling response is what one does to affect a change in the controlled behavior.

Although individuals may achieve some degree of control over a particular response, Skinner (1953) argues that controlling responses are ultimately learned through previous experiences and interactions within the environment. Thus, in the alarm clock example, the individual is likely to have witnessed or have been taught at some point how to engage in the self-controlling behavior of setting an alarm clock to prevent over-sleeping. Given the operant nature of controlling responses, Cooper, Heron, and Heward (2007) argue that the term self-control is misleading because "it implies that the ultimate control of behavior lies within the person" (p. 578). Since this is not true, the authors instead suggest "self-management" to be a more appropriate term, which they broadly define as "the personal application of behavior change tactics that produces a desired change in behavior" (Cooper et al., 2007, p. 578). According to this definition, when an individual takes control of one (or more) components of a behavior modification program, they are engaging in some degree of self-management. The most common self-management interventions discussed in the literature involve (a) antecedent-based strategies, and (b) self-monitoring strategies.

Antecedent-based strategies. Antecedent-based self-management tactics focus on the manipulation of stimuli that precede a target response. Antecedent variables may be manipulated, reduced, or eliminated to either evoke the occurrence of desired behavior, or to suppress the occurrence of an undesired behavior. Thoreson and Mahoney (1977) refer to this approach as *environmental planning,* and describe it as the process wherein an individual "plans and implements changes in relevant situational factors *prior* to the execution of a target behavior" (p. 16). In other words, the individual

takes a more active role in the deliberate management of the antecedents which control his or her behavior.

The important role stimulus control plays in this type of self-management intervention is emphasized by Kazdin (1984), who states, "a person who is aware of how certain stimuli control a behavior can structure his or her environment to maximize the likelihood that the desired behavior occurs" (p. 199). So, if the objective of an antecedent-based self-management intervention is to *reduce* the frequency of an undesired behavior, the "first step must be to narrow the range of existing stimuli which control the behavior" (Ferster, Nurnberger, and Levitt, 1962, p. 95). Smoking is a good example because it is a behavior that often comes under the control of numerous stimuli (e.g., waking up in the morning, after a meal, while having a cup of coffee, while socializing at a party). A self-management intervention for someone looking to quit smoking may therefore involve having them avoid these situations and only smoke during times or places where access to the controlling (or reinforcing) stimuli is unavailable.

Another preventive self-management strategy involves removing stimuli that enable or evoke an undesired response (Cooper et al., 2007). Thoreson and Mahoney (1977) provide a good illustration of this process when describing the case of a smoker who intentionally left his house each morning without the funds necessary to buy a pack of cigarettes. In this situation, the individual eliminated an environmental variable (money) that was associated with the increased likelihood of engaging in the undesired response (buying and smoking cigarettes). Providing oneself with response prompts is yet another simple and common antecedent-based self-management tactic used in

behavior modification (Cooper et al.). An example of this strategy might involve teaching a student who has difficulty with reading comprehension to draw a star at the bottom of every third page in the book. The star in this example functions as the response prompt cuing the student to reflect on whether he or she has understood what was just read during the last few minutes. It is clear that antecedent-based self-management tactics have a wide range of applications. With that being said, the most commonly selected self-management interventions used in educational settings involve the use of *self-monitoring* (Rafferty & Raimondi, 2009). Self-monitoring can, of course, be used within antecedent interventions.

Self-monitoring. Self-monitoring (also called *self-observation*; Rosenbaum & Drabman, 1979) is an efficient and effective intervention which involves an individual observing and recording the occurrence, or absence, of one or more target behaviors following a predefined time interval. The two most common self-monitoring interventions reported in the literature focus on self-monitoring of attention (SMA), and self-monitoring of performance (SMP). In an SMA intervention, the student is required to self-assess whether or not their attention is directed at the relevant materials (e.g., on task) when an external prompt or cue is delivered (e.g., Amato-Zech, Hoff, & Doepke, 2006). On the other hand, SMP interventions require the student to complete a certain task, or series of tasks, and then assess and record either the accuracy or amount of the work which was completed (e.g., Shimabukuro, Prater, Jenkins, & Edelen-Smith, 1999). Some researchers have contended that SMP interventions are superior because growth in academic performance in turn increases on-task behavior, whereas others suggest that the increased on-task behavior afforded through SMA interventions subsequently results in

improved academic performance (Rafferty & Raimondi, 2009; Reid & Harris, 1993). The "chicken or the egg" theory aside, both types of self-monitoring interventions require the same two primary component responses from the student: *self-observation* and *self-recording* (Kazdin, 1984). In other words, the student must discriminate whether or not a target response has occurred (i.e., self-observe), and then make a record of that occurrence (or nonoccurrence) using some form of permanent product, such as a checkmark on a sheet of paper. Often an external cue, such as a small beeper, is used to prompt the individual to self-observe and self-record. For example, Wolfe, Heron, and Goddard (2000) taught four elementary students to ask themselves "Am I on-task?" every time a beep was delivered on a variable interval 1 min schedule. Using an ABAB reversal design to assess functional control, the self-monitoring intervention resulted in increases in participant's on-task behavior, increasing the level of task engagement for each participant between 30-56% compared to initial baseline conditions.

A component frequently embedded within self-monitoring interventions is called *self-evaluation.* In self-evaluation, "the self-monitoring process is followed by an evaluation of the behavior on a subjective basis, usually with an externally provided criterion" (Rosenbaum & Drabman, 1979, p. 468). For instance, a student may be prompted to evaluate his or her on-task behavior every 30-minutes using a one to four rating scale, with each number/rating being clearly defined. A score of three could therefore mean that the student's behavior over the past 30 minutes met most of the expectations for being "on-task", but several corrective prompts were delivered by the teacher. Self-evaluation will henceforth be described as a form of self-monitoring

because, once again, it requires the same two component responses: self-observation and self-recording.

Self-Management Research

A robust literature base supports the use of self-management interventions in school settings. This research spans various target behaviors, ages, and diagnostic categories. Behaviors that have been effectively targeted by self-management interventions in the literature include increased academic engagement (e.g., Amato-Zech et al., 2006; Brooks, Todd, Tofflemoyer, & Horner, 2003; DiGangi, Maag, & Rutherford, 1991; Gulchak, 2008), improved work productivity and accuracy (e.g., Harris et al., 2005; Rock, 2005; Rafferty & Raimondi, 2009), increased compliance (e.g., Agran et al., 2005), and reduced levels of disruptive behavior (e.g., Dunlap, Clarke, Jackson, Wright, Ramos, & Brinson, 1995; Todd, Horner, & Sugai, 1999). These positive outcomes have been documented across multiple age groups, including elementary students (e.g., McDougall & Brady, 1995; Moore, Prebble, Robertson, Waetford, & Anderson, 2001; Wolfe et al., 2000), middle-school students (e.g., Dalton, Martella, & Marchand-Martella, 1999; Gureasko-Moore, DuPaul, & White, 2007; Peterson, Young, Salzberg, West, & Hill, 2006; Shimabukuro, et al., 1999; Wood, Murdock, & Cronin, 2002), and high-school students (e.g., Smith, Young, Nelson, & West, 1992; Stewart & McLaughlin, 1992).

The effectiveness of self-management based interventions has also been documented across neurotypical students (e.g., Briere & Simonsen, 2011; Rock, 2005; Ardoin & Martens, 2004), students with autism spectrum disorders or other developmental delays (e.g., Agran et al., 2005; Brooks, Todd, Tofflemayer, & Horner,

2003; O'Reilly et al., 2002), students with learning disabilities (e.g., Amato-Zech et al., 2006; DiGangi et al., 1991; Uberti, Mastropieri, & Scruggs, 2004) or ADHD (e.g., Gureasko-Moore et al., 2007; Harris et al., 2005; Mathes & Bender, 1997; Shimabukuro et al., 1999), and students with emotional or behavioral disorders (e.g., Blood et al., 2011; Rafferty & Raimondi, 2009; Gulchak, 2008; Wood et al., 2002). Following a review of this expansive research base, several consistent themes arise. These include the importance of (a) accuracy training, (b) reinforcement, and (c) programming for generalization.

Accuracy training. Accuracy training has been a core component of most self-management interventions evaluated to date. Accuracy training typically involves the student comparing his or her self-ratings to the ratings provided by a secondary rater, such as a teacher (e.g., Ardoin & Martens, 2004; DuPaul & Hoff, 1998; Rhode, Morgan, & Young, 1983). For instance, Rhode et al. examined the effectiveness of a self-evaluation intervention using a multiple baseline across subjects design with six elementary students with severe behavior disorders. In the first phase, teachers issued behavioral ratings to students using a 1 to 5 Likert scale. Students then entered the "accuracy matching phase" whereby they provided self-evaluations using the same scale, while the teachers continued to provide ratings independently. Although the teacher-student ratings were initially compared for accuracy every 15 minutes, these accuracy checks were systematically faded out until eventually all students were independently providing *accurate* self-ratings and experiencing positive treatment gains.

The process of accuracy training described above has been consistently implemented across numerous other studies examining self-management interventions

(e.g., Drabman, Spitalnik, & O'Leary, 1973; Kaufman & O'Leary, 1972; Santogrossi, O'Leary, Romancyzk, and Kaufman, 1973; Shapiro, DuPaul, & Bradley-Klug, 1998). Ardoin and Martens (2004) documented the importance of providing explicit training and feedback regarding the accuracy of students' self-monitoring behavior by examining the accuracy of student self-evaluations before and after receiving training. The authors found that none of the four participants were able to accurately self-evaluate their behavior prior to training, and subsequently no reductions in problem behavior were noted during the self-evaluation component alone. However, when self-evaluation was paired with accuracy-matching procedures (similar to those used by Rhode et al., 1983), each student displayed more accurate ratings and, more importantly, reductions in problem behavior ranging from 24-44% compared to baseline conditions for three of the four participants. The authors add that it may not be the self-monitoring process itself which evokes desired behavior change, but instead a critical feature appears to be "the matching component, whereby accurate self-evaluations of behavior are reinforced" (p. 19).

Reinforcement. In the Ardoin and Martens (2004) study described above, student's accurate self-ratings were reinforced via delivery of $.10 each time a student's ratings matched those provided by the teacher. Throughout much of the literature on self-management, reinforcement has been delivered for successful self-monitoring of target behavior(s) (e.g., Dalton et al., 1999; Dunlap et al., 1995; Peterson et al., 2006). Further, several studies evaluating the necessity of a reinforcement component have demonstrated that self management without reinforcement is not effective (e.g., Santogrossi et al., 1973; Turkewitz, O'Leary, & Ironsmith, 1975). For instance,

Santogrossi et al. found no discernible reductions in the mean level of disruptive behavior displayed across nine adolescent boys in a psychiatric hospital after implementing self-evaluation procedures similar to those used by Rhode et al. (1983). Turkewitz, O'Leary, and Ironsmith (1975) also found self-management procedures alone to be ineffective in reducing the mean level of disruptive behavior across eight at-risk children. In both studies, desired treatment effects were only obtained following the addition of a contingent reinforcement component (i.e., token economy). The delivery of reinforcement contingent upon successful self-managed behavior therefore appears to be critically important.

There are two primary modes through which reinforcement can be administered within the context of self-management interventions, (a) *externally-delivered*, (b) and *self-administered*. With regards to externally delivered reinforcement, an external agent (e.g., teacher, therapist, parent) provides reinforcement to the target individual contingent upon the display of a desired behavior (or the absence of an undesired behavior). Within this form of reinforcement delivery, the individual does not have the ability to access reinforcement until the conditional response has been displayed, or a particular criterion has been met. For instance, a token economy system was embedded within the self-monitoring intervention examined by Wolfe et al. (2000), whereby students were awarded points/tokens for accurately self-recording their on-task behavior. In this example of externally delivered reinforcement, students were required to perform the controlling response (i.e., self-monitoring) to a specific accuracy standard established by the teacher. Only by meeting this standard were students *then* able to obtain the reinforcement from the teacher.

In contrast to externally delivered reinforcement, self-reinforcement is a process in which "individuals regulate their behavior by making self-reward conditional upon matching self-prescribed standards of performance" (Bandura, 1976, p. 135). One obvious potential problem with self-reinforcement is that an individual may simply access (or self-deliver) the reinforcement in the absence of successful execution of the conditional response. In other words, the individual can cheat, per se, and access the reinforcement without having met the behavioral expectations which were intended to be contingent upon its delivery. The accuracy-matching components often used within self-monitoring interventions can help to prevent untruthful or inaccurate self-ratings, whereby the expected reinforcer is either withheld or reduced (e.g., no bonus point earned for matched ratings).

Self-reinforcement typically requires the individual to observe and record his or her own behavior to determine whether a particular criterion or standard has been met. Thus, self-reinforcement procedures are naturally used and studied within the context of self-monitoring interventions (Kazdin, 1984). For this reason, effects of self-administered consequences in isolation are difficult to evaluate (Cooper et al., 2007). Nonetheless, a number of studies to date have examined the differential effects of externally versus self-delivered reinforcement (e.g., Bandura & Perloff, 1967; Bolstad & Johnson, 1972; Glynn, 1970; Santogrossi et al., 1973). These studies are equivocal with regard to whether self-delivered or teacher-delivered reinforcement is superior, with some studies documenting equivalent findings (e.g., Bandura & Perloff, 1967; Glynn, 1970), some suggesting that self-delivered reinforcement may produce better outcomes (e.g., Bolstad & Johnson, 1972), and still others suggesting that teacher-delivered

reinforcement may be more effective within the context of a classroom setting (e.g., Santogrossi et al., 1973).

When student-delivered reinforcement is ineffective, it is generally because students choose to access the reinforcement regardless of whether their behavior met criterion. This problem was clear in the study reported by Santogrossi et al. (1973). Working with nine students in a psychiatric hospital setting, they implemented a self-management intervention targeting disruptive behavior, and alternated between phases of student-determined and teacher-determined reinforcement. The authors found that students displayed higher rates of disruptive behavior during the self-determined reinforcement phase when compared to the rates observed when teacher behavior ratings were used to determine the appropriate level of reinforcement. It appeared that students in this study quickly figured out that they could beat the system by simply providing embellished self-evaluations of their behavior. The authors concluded that self-delivered reinforcement might still be a viable self-management strategy, but that an *intermittent* accuracy-matching component appeared to be necessary.

Cooper et al. (2007) pointed out that "self-administered reinforcement does not have to be self-delivered" (p. 600). Instead, an individual may be taught to produce a response that results in someone else delivering the reinforcer to them; a process called *self-recruited reinforcement*. This strategy has been used in a number of studies (e.g., Craft, Alber, & Heward, 1998; Smith & Sugai, 2000; Todd et al, 1999). Todd et al. used self-recruited reinforcement procedures to decrease the problem behavior and increase the task engagement of a nine-year old boy with learning disabilities. Results from a functional behavior assessment suggested the student's problem behaviors were attention-

maintained. Using an audiotape that delivered a prompt on a variable interval 4 min schedule, the student self-monitored his behavior by recording a checkmark if he had been "working quietly and keeping his hands and feet to himself" during the previous time interval. The student was then taught to self-recruit reinforcement (i.e., teacher attention) after he had obtained three checkmarks. Intervention effects were evaluated using a multiple baseline across settings design, with a withdrawal element embedded within the first setting (reading class). Results showed that the self-management intervention (self-monitoring and self-recruited reinforcement) was associated with a 60% reduction in problem behavior, a 70% increase in on-task behavior, and an overall increase in the amount of work completed during each class. These effects were consistently observed across each class period where the intervention was implemented.

Self-delivered reinforcement can also be used to maintain treatment gains initially obtained through the external delivery of reinforcement. Newman, Tuntigian, Ryan, and Reinecke (1997) successfully transferred the control of reinforcement delivery from a classroom teacher to three students diagnosed with autism spectrum disorders. A teacher-mediated token economy system was first implemented, which consisted of the teacher giving students a token if no problem behavior was emitted during a one-min interval (i.e., DRO). As expected, the externally-delivered reinforcement procedures were effective in reducing the target behaviors of all three participants, with two participants no longer displaying any problem behavior (out of seat). The students then entered a "prompted self-reinforcement" phase which involved the teacher reminding the students to take a token if there were no inappropriate behaviors displayed during a one-minute interval. Lastly, students entered an "unprompted self-reinforcement" phase that allowed

them to freely obtain a token following intervals with no problem behavior. With no teacher prompting required, and no feedback provided regarding the accuracy of their self-delivered reinforcements, students were able to maintain their low level of disruptive behavior. Although this research design did not allow for a specific comparison between the effectiveness of teacher versus student-delivered reinforcement, the results do suggest that control over the delivery of reinforcement can be effectively transferred to the student.

Although *accurate* self-monitoring or self-evaluation may not be a necessary or sufficient condition for producing behavior change, it is nevertheless desirable (Cooper et al., 2007). Therefore, whether it is self-delivered, self-recruited, or externally-determined, reinforcement for successful, accurate self-monitoring behavior appears to be a critical component. Overall, the literature suggests that all three forms of reinforcement delivery can be effective within a variety of contexts. Clearly one of the benefits of transferring the control of reinforcement delivery over to the student is that it reduces some of the effort required by the teacher (e.g., Newman et al., 1997). Further, teaching a student to self-administer his or her own reinforcement may lead to greater resistance to extinction after the intervention has been faded or removed (e.g., Bolstad & Johnson, 1972). Regardless of how a consequence is delivered, the most important thing to consider is whether or not it serves to strengthen the controlling response, that is, the self-monitoring of one's own behavior (Kazdin, 1984).

Programming for generalization. According to Stokes and Baer (1977), generalization refers to "the occurrence of relevant behavior under different, non-training conditions...without the scheduling of the same events in those conditions as had been

scheduled in the training conditions" (p. 350). A goal of many behavioral interventions is to produce a desired change in a target response across multiple relevant settings. For instance, assume that a student frequently talks out during his math, reading, and science classes. If an intervention targeting talking out behavior was only taught and implemented within math class, but improvements in the student's disruptive behavior were subsequently observed during reading and science, then generalization of the intervention's effects across settings may be assumed. However, often times this process of generalization does not naturally or spontaneously occur across settings or behaviors. Stokes and Baer therefore highlighted the need to "actively *program* generalization, rather than passively expect it as an outcome of certain training procedures" (p. 350, emphasis in original).

While the effectiveness of self-management interventions in schools has consistently been documented, the generalization of these treatment gains across settings and classrooms has not (e.g., Brooks et al., 2003; Smith, Young, Morgan, West, & Rhode, 1988; Wood, Murdock, & Cronin, 2002). For instance, Wood and colleagues evaluated a self-monitoring intervention with four at-risk adolescent students previously expelled from their traditional school for disciplinary reasons. Using a multiple baseline across settings design to assess for generalization of effects, the authors found improvements not only in on-task and disruptive behavior, but also academic performance (grades). These treatment gains were maintained at a three month follow-up period. However, spontaneous generalization of the effects did not occur within settings where the self-monitoring intervention was not implemented. In addition, Brooks et al. (2003) taught a ten-year-old girl with Down syndrome to self-monitor and self-recruit

teacher and peer attention. Using a multiple baseline across settings design, results showed that the intervention effectively increased academic engagement within the first two training routines (seatwork), but the effects did not generalize to a group instruction routine.

Based on the findings from the aforementioned studies, the effects of self-monitoring interventions do not appear to spontaneously generalize to other settings without additional supports being provided (i.e., programming for generalization). The successful generalization of treatment gains across settings has, however, been documented in numerous studies when the self-monitoring intervention, or some component therein, is implemented within non-training settings (e.g., DuPaul & Hoff, 1998; Gregory, Kehle, & McLoughlin, 1997; Ninness, Fuerst, Rutherford, & Glenn, 1991; Peterson, Young, West, & Peterson, 1999; Peterson et al., 2006; Rhode et al., 1983; Smith et al., 1992). For instance, Smith et al. used self-evaluation and accuracy training procedures in a resource room to reduce the mean level of off-task behavior displayed across all eight high school participants. The students were then integrated into the general education setting, where the mean level of off-task behavior across participants nearly doubled from 20% to 40%. Thus, treatment gains in the resource setting did not spontaneously generalize. To facilitate generalization, the students were taught to compare their self-evaluations to the ratings provided by fellow peers in their general education classroom. A multiple baseline across settings design demonstrated that this peer-mediated modification to the self-evaluation intervention was effective in reducing the students' off-task behavior in the general education classroom to levels similar to those previously observed within the training/resource room.

Peterson et al. (1999) also demonstrated that positive effects of a self-monitoring intervention can be generalized across a student's school day by implementing a "programmed generalization process" (p. 367). The authors taught 29 at-risk middle school students to self-monitor and self-evaluate their behavior in a resource room. After a student had met a predefined accuracy criterion (e.g., match teacher ratings on 4 out of 5 days) within the resource room setting, he or she was then allowed to select a new general education classroom to enter. A process of *sequential modification* (Stokes & Baer, 1977) was then implemented wherein students had to meet the self-evaluation accuracy criterion within the new setting before being allowed to continue the generalization process within a new classroom or routine. Results showed that 83% of the students successfully completed the process of programmed generalization across their entire school day (six classes), and that students met behavioral expectations 96% of the time.

The procedures used by Peterson et al. (1999) to program for generalization have been replicated and found to be effective in numerous additional studies (e.g., DuPaul & Hoff, 1998; Peterson et al, 2006; Rhode et al., 1983). In each of these studies, the use of similar yet less intensive self-management procedures were necessary to produce generalized effects across classrooms. It is often the case that students who have difficulties following behavioral expectations in one setting, also struggle to meet them in other settings. Therefore, the literature suggests that an important feature of an effective school-based self-management intervention is that it is continually available and/or implemented across the settings, routines, or classes which span the student's entire school day.

Self-Monitoring: Mechanisms of Change

Several theories have been suggested regarding the actual mechanisms of change that make self-management, and more specifically self-monitoring, interventions effective. Loosely speaking, its effectiveness has been attributed to the fact that it "helps students become more aware of and responsible for their behavior" (Wolfe et al., 2000, p. 50). With a more behavioral explanation, Malott (1981) suggests that self-monitoring is effective because it creates a internalized process of "self-talk", wherein the individual delivers self-evaluative statements regarding their behavior, which then serve to either reinforce or punish specific target responses (as cited by Cooper et al, 2007). From this perspective, treatment gains may occur as a result of the target behavior becoming strengthened through negative reinforcement, such as avoiding self-punishing thoughts following displays of undesired behavior. Self-monitoring may also be effective at producing desired behavior change because the interplay between self-observation and self-recording allows for an *immediate* consequence to be delivered following an occurrence of the target response (Reid et al., 2005).

Another theory, discussed by Baer (1984), relates to the direct contingencies that are often used to establish a desired skill or behavior. When these direct contingencies are discontinued, or are replaced by new, inefficient contingencies, the desired behavior is not likely be maintained at the same level or frequency that it was observed at while supported by the direct contingencies. Therefore, Baer contends that the process of self-monitoring helps to "mediate the delayed, indirect, or otherwise inefficient contingencies supporting desired behavior" (p. 216). By teaching the student to self-monitor a target response, the target response's stimulus controls are re-established. In other words, the

process of self-monitoring serves as a discriminative stimulus and cues desired behavior, because it allows the student to discriminate the target behavior and remind him or her of the contingencies that are present in the environment.

Self-Monitoring: Implementation Considerations

There are several essential features to self-monitoring (and self-evaluation) interventions that should be considered prior to implementation. First, it is important to note that the success of a self-monitoring intervention is predicated on the ability of the student to discriminate the presence or absence of a target response. Therefore, it is critical that the target response is operationally defined using clear, observable terms that can be measured. Secondly, solicitation of buy-in from the student is also very important since the student serves as the primary treatment agent (Ganz, 2005). A low level of interest with the intervention is likely to result in low fidelity of monitoring, and the effectiveness of the intervention will be subsequently limited. Discussing with the student the benefits of learning improved self-management skills can help in this regard (Rankin & Reid, 1995; Rafferty, 2010). Third, as with any behavioral intervention, the collection of baseline data on the target behaviors in the natural setting is necessary for a confident decision to be made regarding the student's response to the intervention.

Another important decision to be made prior to implementation is in regards to which monitoring schedule and recording system is best for the student. In terms of the monitoring schedule, there is a high degree of variance observed in the literature. More intensive interventions for high-frequency behavior problems may require self-monitoring prompts as frequently as every 30 to 60 seconds using a variable interval schedule (Harris et al., 2005; Digangi et al., 1999). In contrast, less intensive

interventions, such as those for minor or infrequent problem behaviors, may only require the student to self-monitor his or her behavior following each class period (e.g., Peterson et al., 2006). In short, the schedule of monitoring should be determined in relation to the setting, target behavior, and individual characteristics (e.g., age, skill level) of the student (Ganz, 2008). The method for self-recording the presence or absence of a response also varies. Recently, electronic mobile devices (e.g., iPod Touch; Blood et al., 2011) and other handheld computerized apparatuses (e.g., PalmPilot; Gulchak, 2008) have been used within research studies. However, the most commonly used self-recording systems implemented in school settings remains the use of pencil and paper recording.

If an acceptable level of treatment integrity is to be achieved, ample time must be spent teaching the student *how* to self-monitor. As mentioned previously, the student should first and foremost be taught how to discriminate between the occurrence and nonoccurrence of a target response (Rafferty, 2010). For an intervention using self-evaluation procedures, this discrimination training should focus on whether or not the student's behavioral performance met the predefined standard or criterion. Modeling examples and non-examples of target responses should be included in the discrimination training (Ganz, 2008). The prompting schedule and self-recording procedures being used should also be explicitly taught using teacher modeling, role-plays, rehearsal, and feedback. Lastly, it is consistently recommended and observed throughout the literature that self-monitoring interventions be initially implemented by both the teacher and student concurrently until a high degree of accuracy in self-ratings is achieved. This is especially common within the research on self-evaluation (e.g., Rhode, Morgan, &

Young, 1983; Ardoin & Martens, 2004). Once a high degree of agreement has been achieved (e.g., 80% agreement on two out of three days), the student can then begin self-monitoring (or self-evaluating) independently.

Statement of the Problem

The adoption of SWPBIS, and more specifically Tier II behavioral supports such as CICO, has proven to be a promising approach in addressing the wide range of behavioral needs present in any given school building. However, one potential limitation of CICO is that it requires additional teacher time and effort since the teacher must monitor the student, fill out the card, and provide feedback on student behavior after each class period.

Although individualized self-monitoring interventions may be necessary for students with very specific or intense target behaviors, for students requiring Tier II behavior supports it seems plausible that a standardized self-monitoring intervention would be an appropriate option to address their problematic behaviors. The purpose of this study was to conduct a preliminary examination of effects of integrating self-monitoring into a CICO intervention framework via a new intervention, Student-Guided Check-in/Check-out (SG-CICO). The following research questions were addressed in the current study:

1. What are the effects of SG-CICO on on-task and disruptive behavior?
2. Is SG-CICO socially valid, as evaluated by students, teachers, and intervention coordinators?
3. Do teachers and intervention coordinators view SG-CICO as being a feasible modification to an existing CICO program?

CHAPTER II

METHODS AND PROCEDURES

Setting and Participants

Setting. This study was implemented in general education classrooms within a public K-5 elementary school in the Pacific Northwest. A total of 535 students attended this elementary school during the 2012-2013 school year, of which 67.1% were eligible for free and/or reduced lunch. The majority of students in this school were White/Caucasian, followed by Hispanic (27.7%), Asian/Pacific Islander (2.4%), and African American (0.8%). At the time of recruitment, this elementary school had been implementing SW-PBIS for over eight years, and CICO for over five years. In a given year, between 9 and 14 students participated in CICO. Prior to any data collection, formal written consent was obtained from the respective school district, as well as the school principal.

Participants. Three main criteria were used to identify and screen potential participants. First, the student had to be in fourth or fifth grade and engage in frequent, non-dangerous problem behavior in the classroom setting (e.g., off-task, talking out). Both school-wide data (i.e., office discipline referrals) and teacher-initiated referrals were used to identify students who fit this profile. Second, their problem behavior(s) had to be at least partially maintained by obtainment of adult attention (determined via a functional behavior assessment, described later). Third, the student's parents/guardians had to provide formal written consent, and the student had to provide written assent. Using these recruitment procedures, three students were identified and participated in this study: Scott, Tim, and Nora. These students were the first three students who met all

three criteria for participation. No students who met criteria for participation were excluded or dropped out of the study during participation.

Scott. Scott was a 9 year-old white male in the 4th grade. Scott had no documented disabilities and received all of his instruction in the general education setting. Curriculum-based measures administered in Fall 2012 showed that Scott was at the 10th percentile in oral reading fluency (below average), and at the 89th percentile in mathematics (above average). Scott had met the statewide standards in math and reading during the previous school year. Scott's classroom teachers and the school psychologist referred Scott to the study due to concerns regarding his frequent off-task, disruptive, and non-compliant behavior in the classroom.

Tim. Tim was a 10 year-old white male in the 5th grade. Tim did not have any documented disabilities, and his instruction was delivered exclusively within the general education setting. Tim's performance in math and oral reading fluency was within the average range on district-wide curriculum-based measures. On the statewide-standardized test administered during the previous school year, Tim met the benchmark in math and exceeded the benchmark in reading. Citing concerns regarding his persistent off-task and disruptive behavior in the classroom, Tim's teacher and the CICO coordinator referred him for participation in this intervention study.

Nora. Nora was a 10 year-old Hispanic female in the 5th grade. Although Nora had previously received instruction in an English as a Second Language (ESL) classroom, she now received all instruction within the general education setting. Nora spoke and read English fluently, and described English as being her primary language used at school and at home. On district-wide curriculum-based measures, Nora was at

the 37th percentile for oral reading fluency (average range). Her performance on the previous year's statewide standardized test showed that she "nearly met" the benchmark in math, and met the benchmark for reading. Nora's classroom teacher referred her for the study due to concerns regarding her off-task behavior and frequent interactions with peers during instructional times.

Response Measurement

The two primary dependent variables measured via direct observations in the classroom setting were *on-task behavior* and *disruptive behavior.* On-task behavior was operationally defined as "the student having his/her eyes directed at the teacher or relevant class materials." On-task behavior was measured via direct observations using a 5 s momentary time sampling procedure. Disruptive behavior was defined as the student "getting out of seat when the expectation is to be seated, and/or verbally or physically making noises that can be heard from a distance greater than five feet during instructional time when the expectation is to be quiet." Examples of disruptive behavior included talking to peers, blurting out answers without raising a hand or being called on, and making inappropriate comments or sounds during instruction. Disruptive behavior was measured via direct observation using a 5 s partial interval recording system. Direct observations were 15 min in length and were conducted at least three times per week in the most challenging instructional routine identified by the teacher during FACTS interview (described later). A computerized data collection program (ABC DataPro on iPad) was used to collect the observational data for this study.

Both graduate and undergraduate students in the College of Education assisted with data collection in this study. All data collectors were formally trained before

entering the classroom and collecting data. Training sessions were facilitated by the principal investigator (PI), and included a detailed review of the data collection program, the operational definitions, the data recording methods, and a description of SG-CICO components. Trainees practiced the data collection procedures using a pre-recorded training video depicting a fictional classroom context/routine. Before collecting data for this study, all trainees were required to obtain three consecutive IOA ratings of 80% or greater for each variable when compared to the PI's coding file. Once data collection commenced, if IOA had dropped below 80% on any code for three consecutive observations, training would have been re-instituted until the training criteria was achieved. No coders required retraining.

For purposes of obtaining IOA, two data collectors simultaneously observed the target student's behavior during at least 30% of the observation sessions across all phases of the study for each participant. Total agreement, occurrence-only agreement, and non-occurrence-only agreement coefficients were calculated for each participant. To calculate total agreement, all intervals in which both observers were in agreement (occurrence or non-occurrence) were summed and then divided by the total number of intervals in the observation session (180). To calculate occurrence-only IOA, all intervals that were scored with an occurrence of the target behavior by both observers were summed and then divided by the total number of intervals scored with an occurrence of the target response by either of the observers. For non-occurrence IOA, all intervals in which both observers scored a non-occurrence of target behavior were summed and then divided by the total number of non-occurrence intervals scored by either observer. To calculate total agreement, all intervals which were in agreement (both occurrence and non-occurrence)

were summed and then divided by the total number of intervals in the observation. Interobserver Agreement coefficients are presented in Table 1.

Table 1

Average (range) interobserver agreement across participants.

Participant	*Response*	*Occurrence Only*	*Non-Occurrence Only*	*Total Agreement*
Scott	On-task	95.7% (92.8-98.8%)	82.5% (50.0-91.6%)	94.6% (91.1-98.8%)
	Disruption	85.9% (50.0-100%)	99.2% (95.0-100%)	99.38% (97.7-100%)
Tim	On-Task	94.9% (87.2-100%)	84.3% (50-100%)	95.0% (87.2-100%)
	Disruption	71.53% (0-100%)	97.1% (76.4-100%)	98.4% (97.2-100%)
Nora	On-Task	94.6% (88.8-98.7%)	85.9% (71.9-98.4%)	94.2% (89.4-98.3%)
	Disruption	74.5% (0-100%)	98.6% (95.5-100%)	98.6% (95.5-100%)

Fidelity of implementation. Fidelity of implementation data was collected both directly by the PI as well as indirectly via teacher-completed checklists. Fidelity checks were conducted during the morning check-ins (see Appendix B), afternoon check-outs (see Appendix C), and across the student's school day during behavior feedback sessions (see Appendix D). Teachers (see Appendix E) and the intervention coordinator (see Appendix F) also completed fidelity checklists on a bi-weekly basis. The teacher/coordinator fidelity checklists used a 1-5 Likert scale for rating their level of implementation of each component (1 = "Never", 5 = "Always"). When completing the checklist, the teachers and coordinator were asked to select the rating that best described

their level of implementation across the previous two weeks. It should be noted that teacher/coordinator ratings were converted to a percentage for the purpose of comparing them to PI ratings. For instance, a rating of "4" (i.e., "usually implemented") is reported below as 80% implementation.

Table 2 displays a comparison of fidelity of implementation data collected by the PI and reported by participating teachers. Responses from Scott's and Tim's teachers suggested a generally high degree of treatment integrity across all components of SG-CICO (range = 70% to 100%). Fidelity ratings from Nora's teacher were slightly lower for (a) Nora having the point card nearby (55%), (b) Nora independently rating her behavior (70%), and (c) the teacher reviewing ratings with Nora (66%). Interestingly, fidelity checks conducted by the PI revealed higher rates fidelity of implementation (100%) on these components for Nora.

Table 2

Comparison of fidelity of implementation ratings between PI and teachers.

	Scott		*Tim*		*Nora*	
Components of SG-CICO	PI	Teach	PI	Teach	PI	Teach
Student Point Card Nearby	100%	70%	100%	86%	100%	55%
Student Self-Rated	100%	75%	100%	80%	100%	70%
Teacher Provided Ratings	100%*	80%	100%*	90%	100%*	86%
Ratings Reviewed w/ Student	100%*	100%	83%*	80%	66%*	66%
Praise Provided if Accurate	66%*	90%	50%*	80%	33%*	86%
Corrective Feedback Given	N/A	100%	100%	100%	N/A	100%
Avg. Duration of Feedback	43.3 seconds		20.8 seconds		19.2 seconds	

* During the first phase of SG-CICO (i.e., accuracy matching phase)

It should be noted that discrepancies observed between PI and teacher fidelity ratings across these components (as well as others) may be attributed to the fact that fidelity checks by the PI were only conducted once per week, whereas teachers had two weeks' worth of SG-CICO implementation to reflect upon when providing ratings on the fidelity checklists. Therefore, due to the PI's fidelity checks only providing a snapshot of the day-to-day implementation of SG-CICO, it is possible that fidelity ratings provided by the teachers (and coordinator) are more representative of the overall level of treatment integrity present across the duration of this study.

A comparison of fidelity data collected by the PI and reported by the SG-CICO coordinator is presented in Table 3. Both sources of fidelity data showed high rates of treatment integrity across all morning check-in components except for the daily review of SG-CICO self-monitoring procedures (range = 86% to 100%). While the CICO coordinator reviewed these procedures with the students during the first few days of implementation, she reported that there was generally not enough time in the morning to continue doing so and she felt confident that the students understood the procedures. Aside from (a) specific praise being giving for accurate ratings, and (b) re-teaching being provided if the point goal was not met, all other afternoon check-out components were implemented with a high degree of fidelity (range = 93% to 100%). Limited time was once again reported as the main barrier to consistently praising accurate ratings and re-teaching when point goals were not met.

Social validity. A key focus of this study was to assess teacher and student preferences for SG-CICO. Thus, a treatment acceptability questionnaire was completed

by the teacher (see Appendix G), coordinator (see Appendix H), as well as the student (see Appendix I) following their formal participation in the intervention study.

Table 3

Comparison of fidelity of implementation ratings between PI and coordinator.

	Scott		*Tim*		*Nora*	
Components of SG-CICO	PI	Coor.	PI	Coor.	PI	Coor.
Morning Check-In						
Positively greet student	100%	100%	100%	100%	100%	100%
Give new point card	100%	100%	100%	100%	100%	100%
Review expectations	100%	100%	100%	86%	100%	86%
Review SG-CICO steps	25%	33%	20%	0%	50%	33%
Review point goal/reward	100%	93%	100%	80%	100%	100%
Positively encouraged	100%	100%	100%	100%	100%	100%
Avg. duration of check-in	52.5 seconds		47.0 seconds		36.3 seconds	
Afternoon Check-Out						
Positively greeted student	100%	100%	100%	100%	100%	100%
Reviewed point card	100%	100%	100%	100%	100%	93%
Praise for meeting goal	100%	100%	100%	100%	100%	100%
Praise for accurate ratings	50%	80%	75%	86%	25%	86%
Re-teaching if goal not met	N/A	73%	N/A	53%	100%	73%
Reward given if goal met	100%	100%	100%	100%	100%	100%
Data entered into Excel	100%	100%	100%	100%	100%	100%
Avg. duration of check-out	45.0 seconds		61.3 seconds		51.3 seconds	

SG-CICO knowledge assessment. To assess coordinator and teacher understanding of SG-CICO, a brief post-training knowledge assessment questionnaire was used (see Appendices J & K). Responses on this questionnaire were used identify areas in need of additional training. Any incorrect responses provided by the teacher/coordinator on the questionnaire were followed up on directly by the PI.

Design and Procedures

Effects of SG-CICO were evaluated using an ABABC reversal design. The baseline phases (A and A') were "business as usual" in the target student's classroom; teachers were asked to interact with and respond to students in a typical manner. The intervention phases (B and B') involved implementation of SG-CICO wherein the student *and* teacher both provided behavior ratings concurrently after each class period. The final phase (C) involved the teacher-fading component to SG-CICO (i.e., reduced accuracy checks across the day).

At least five data points were collected within each phase of the study for each participant. Phase changes from baseline to intervention only occurred when the last three data points were stable (less than 20% variability) or indicative of an increasing trend in disruptive behavior and/or a decreasing trend in on-task behavior. Phase changes from intervention back to baseline conditions did not occur until at least five observations had taken place, *and* there was less than 20% variability in the level of responding within the last three graphed data points for on-task and disruptive behavior.

Functional behavior assessment. A functional behavior assessment (FBA) was conducted at the beginning of the study for each participant. The FBA began with a structured interview (FACTS-R; Anderson & Borgmeier, 2007) conducted with each

student's teacher. The FACTS-R is designed to assist in: a) identifying and operationally defining a student's problem behavior, b) identifying the routines where problem behavior is most and least likely to occur, and c) identifying the environmental events which precede and follow problem behavior (i.e., antecedents and consequences). Following the FBA interview, three direct observations were conducted within the target setting (i.e., the routine identified as being most challenging) on three separate days. During each 15-20 min observation, on-task and disruptive behavior were recorded using a 10 s partial interval data collection procedure (using the previously stated operational definitions). Specific environmental variables that preceded (e.g., task demands, unstructured class time, diverted teacher attention) and followed (e.g., teacher or peer attention, escape from the current task demands) occurrences of these target behaviors were recorded. Data from the direct FBA observations were used to calculate the conditional probability of a particular consequence being delivered in the presence or absence of a target response. Results of the FBA observations were then depicted using a contingency space analysis (CSA) to examine the conditional probabilities (Martens et al., 2008).

Coordinator training. The CICO coordinator for the participating school also served as coordinator for SG-CICO. The coordinator training session was approximately 40 min in length, and was conducted by the PI. Since the SG-CICO morning and afternoon check-ins remained very similar to that of the standard CICO intervention, the coordinator experienced very few changes with regard to her current role within CICO. The training session consisted of (a) providing a rationale for the use of SG-CICO, (b) describing the roles and responsibilities of being the SG-CICO coordinator, (c)

explaining how and when students were to self-monitor, (d) providing opportunities to practice the morning and afternoon check-ups, and (e) allowing time for open discussion about the intervention and answering the coordinator's questions. Lastly, the coordinator was asked to complete the SG-CICO post-training knowledge assessment. Upon review, the responses on this questionnaire were all correct, confirming that the intervention components were clearly understood.

Classroom teacher training. Each classroom teacher involved with implementation of SG-CICO was trained by the PI. A training sequence similar to the one described above was used with teachers. The primary focus, however, was on implementation of the intervention within the classroom setting. Thus, the 30-40 min training sessions addressed (a) the operational definitions of each behavioral expectation and what each rating "looked like", (b) how and when to conduct feedback sessions with the student, and (c) when to conduct the self-monitoring accuracy checks. Time was made available at the end to address any remaining questions or concerns. Lastly, each teacher completed the post-training knowledge assessment. All teachers provided correct responses on all questionnaire items except for Nora's teacher, who incorrectly listed the three behavioral expectations students were to be self-monitoring (e.g., safe, responsible, respectful). A brief meeting was then held with this teacher to review and operationally define each expectation.

Student training. Prior to beginning the training session, student assent and buy-in for the intervention was obtained. The PI trained each student individually, with sessions taking between 20-30 min. Since each student was new to the SG-CICO process, the training first addressed specifics around the check-in and check-out with the

coordinator (e.g., who, how, when and where to check-in and out). Next, the training focused on teaching the student about self-monitoring, why it is helpful, and when he or she will be expected to self-monitor. Each student was then trained on what each behavioral expectation looks like (e.g., safe, responsible, respectful), with an emphasis on teaching how to accurately use the 0-2 rating scale to rate their behavior following each class. Numerous examples and non-examples were used to teach what a "2" for respectful classroom behavior looks like as opposed to a "1" for respectful behavior. The general guideline used with students (and teachers) was that if the student received no behavioral prompts/reminders for a given behavioral expectation (e.g., be respectful) during the class period, then the score would be a 2. If the student received one or two behavioral prompts for failing to meet a given behavioral expectation, the score for that expectation would be a 1. Lastly, if the student received 3 or more prompts, the score would be a 0.

The process for self-monitoring each target response was then modeled and practiced with the student using role-plays. To check for skill acquisition, a trial session was conducted wherein the PI sat and observed in the student's classroom and provided behavior ratings at the end of the class. The student and the PI then compared their ratings to see if they were in agreement. For each participant, the trial session yielded perfect agreement across PI and student behavior ratings.

SG-CICO intervention. The intervention was implemented following staff and student trainings, and after a stable and predictable level of participant responding in baseline was obtained. Since the goal of this study was to examine effects of integrating self-monitoring into an existing CICO program (in isolation of other factors), an attempt

was made to keep as many of the core CICO components the same during implementation of SG-CICO. Therefore, participants checked-in with the coordinator first thing in the morning just like students on the standard CICO program. Upon arrival at check-in, the coordinator greeted the students warmly and provided each student with a new self-monitoring point card. The point card used for SG-CICO was also the same as the one used for standard CICO, targeting the three school-wide behavior expectations: "be safe," "be respectful," and "be responsible." The point cards used by the participating school had two sheets/layers, with the back sheet being a yellow carbon copy. Thus, the students independently provided self-ratings of their behavior on the front (white) page, and those ratings then automatically transferred over to the back (yellow) carbon copy where teacher ratings were recorded. This allowed for an efficient system of comparing the accuracy of ratings visually by seeing if the student and teacher circled the same scores. Students were responsible for carrying this card throughout the day. During the morning check-in, the coordinator briefly reviewed the self-monitoring procedures with the student (e.g., how and when to self-monitor) and then reviewed what each of the behavior expectations looked like in the classroom. Lastly, the student was reminded of the point goal for the day, as well as what the incentive was for meeting the point goal *and* for providing accurate ratings (i.e., student provides ratings that match those given by the teacher).

Students monitored their own behavior throughout classes and, at the end of each class period, provided a self-rating for each behavioral expectation. During the first phase of SG-CICO implementation, the classroom teacher provided behavior ratings and conducted accuracy checks with the student after *each class*. There were two separate

measures used in determining whether ratings between student and teacher were in agreement following a given routine. First, the PI calculated a point-by-point comparison of the student-teacher ratings. This allowed for an analysis of the percentage of ratings across the whole day that were in perfect agreement between student and teacher; a total of 24 agreements per day were possible (*note*: this method was used to analyze each student's rating accuracy within the Results section). The second method used was developed based on teacher request, as they felt the above-described method would be infeasible in their classrooms. Thus, in the second method used by teachers to determine whether bonus points for accuracy were earned, student-teacher ratings were deemed a match if the sum total of the student's self-ratings either matched (or were one fewer than) the sum total of the points awarded by the teacher. For instance, if a student gave himself a "2" for being safe, a "2" for being respectful, and a "1" for being responsible, he would have a total of 5 points. If the teacher, on the other hand, gave the student a "2" for being safe, a "1" for being respectful, and a "2" for being responsible, that too would result in a total of 5 points being awarded for that routine. Thus, even though their point-by-point ratings were not in agreement, their overall point totals matched. If the point totals for the student and teacher within a given routine matched or the student gave himself one less point than the teacher, the teacher provided praise (e.g., "Great job being accurate"), and the student received a star above that routine on the card which signified a "bonus point".

The afternoon checkout closely resembled standard CICO. Students reported to the coordinator's classroom at the end of the day. The student's point card was reviewed with the coordinator to determine if the daily point goal was met. If the goal was met, the

student was praised and given a tangible reward. For instance, Scott earned "Yu-Gi-Oh" playing cards for meeting his point goal, whereas Tim and Nora received candy and "Pawsitives" (school-wide "good behavior" tokens) for meeting their point goals. If the daily goal was not met, neutral corrective feedback (e.g., reviewing and practicing behavior expectations) was provided and the student was given encouragement to try again the following day.

Teacher fading. To enter the "teacher-fading" phase of SG-CICO, there had to be agreement on 7 out of 8 daily routines using the "sum-total" method of determining rating accuracy, on 4 out of 5 consecutive days. Students were also transitioned to the teacher-fading phase if at least 80% of the ratings across all routines were in agreement on 4 out of 5 consecutive days. Once the student reached one of these criteria, concurrent teacher monitoring occurred during only two to four randomly selected class periods each day. The periods during which monitoring occurred were selected randomly by the teacher. There was not a prescribed order for the random nature of teacher monitoring, but teachers reported loosely following an "every other day" schedule. For instance, if a teacher had not done an accuracy check during the previous day's math class, an accuracy check would be more likely to occur following that class period the following day. It should be emphasized, however, that teachers made an attempt to keep their monitoring as random as possible so students did not know when an accuracy check was going to occur. A flowchart depicting the implementation of both phases of SG-CICO can be viewed in Appendix L.

Data Analysis

Data collected via direct observations in the participant's classrooms were displayed and evaluated using line graphs. Visual analysis of the data was used to examine whether a functional relation existed between implementation of SG-CICO and subsequent reductions in disruptive behavior and increases in on-task behavior. Functional relations were examined based upon the immediacy with which changes in level, trend, and variability of student responding were observed between baseline and intervention phases.

In addition to fidelity of implementation data, the accuracy of student ratings during implementation of SG-CICO was evaluated by comparing student-teacher ratings, as well as to the ratings provided by the trained data collectors after each classroom observation. Lastly, descriptive statistics were reported for data collected via teacher and student questionnaires regarding the social validity of SG-CICO. An item-by-item analysis was conducted to identify specific features of SG-CICO that were not met with a high degree of acceptability.

CHAPTER III

RESULTS

The results of each student's FBA are presented first, followed by an analysis of each participant's respective response to SG-CICO. Data collected indirectly regarding the social validity of SG-CICO are then presented at the end.

Functional Behavior Assessment

Scott. The primary behaviors of concern noted by Scott's teachers during the FACTS interview included disruptive behaviors, such as shouting out answers, talking to neighbors, and getting out of seat without permission. As a result of these behaviors, his teachers were also concerned with the amount of instructional time Scott spent off-task. It was noted that disruptive behaviors were most frequent during large group instructional times, specifically during math and reading. Scott's teachers hypothesized that these behaviors were maintained by access to teacher and peer attention. Direct confirmatory observations were then conducted within the aforementioned routines. The conditional probabilities depicted in Figure 1 showed that adult attention most consistently followed occurrences of Scott's disruptive behavior. In fact, across all instances wherein Scott accessed direct attention from the teacher, 72% of the time it was following an occurrence of disruptive behavior. Disruptive behavior was not followed by peer attention or escape as frequently. Instead, as shown in Figure 2, escape most frequently followed Scott's off-task behaviors (e.g., staring out the window, fiddling with irrelevant objects). Of all intervals wherein Scott was clearly escaping class demands, 90% occurred while he was solely off-task. These data suggested that Scott's two primary problem behaviors (off-task and disruptive) were effective in obtaining two

separate consequences in the classroom setting; disruptive behavior typically resulted in teacher reprimands, whereas the less overt off-task behaviors typically resulted in fewer teacher reprimands, but also more prolonged periods of escape from class demands. Therefore, Scott's target responses appeared to be sensitive to multiple forms of potential reinforcement: teacher attention and escape. It may be worth noting, however, that of all instances wherein Scott accessed direct attention from his teacher, only 14% occurred when he was on-task *and* not being disruptive.

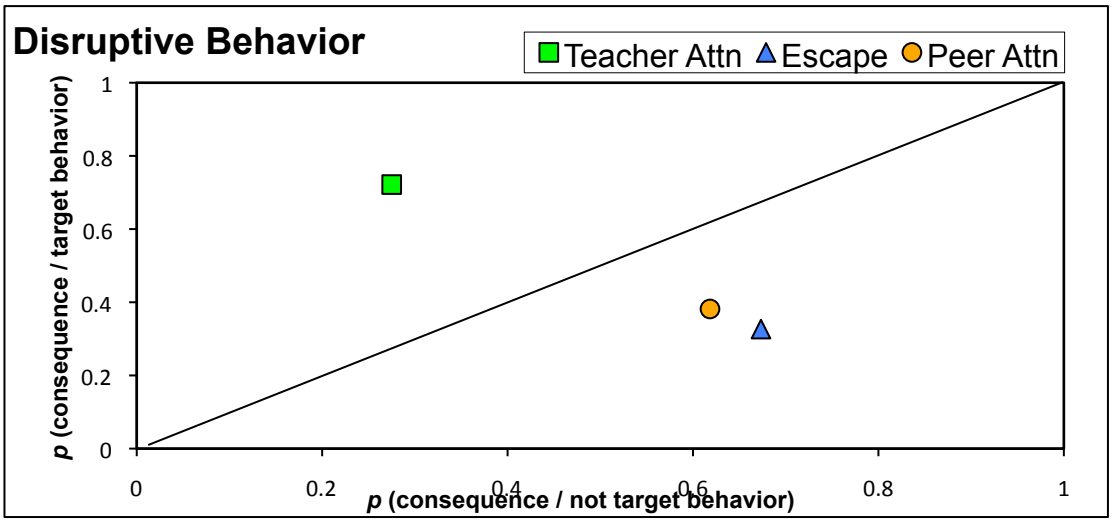


Figure 1. Conditional probabilities for Scott's disruptive behavior.

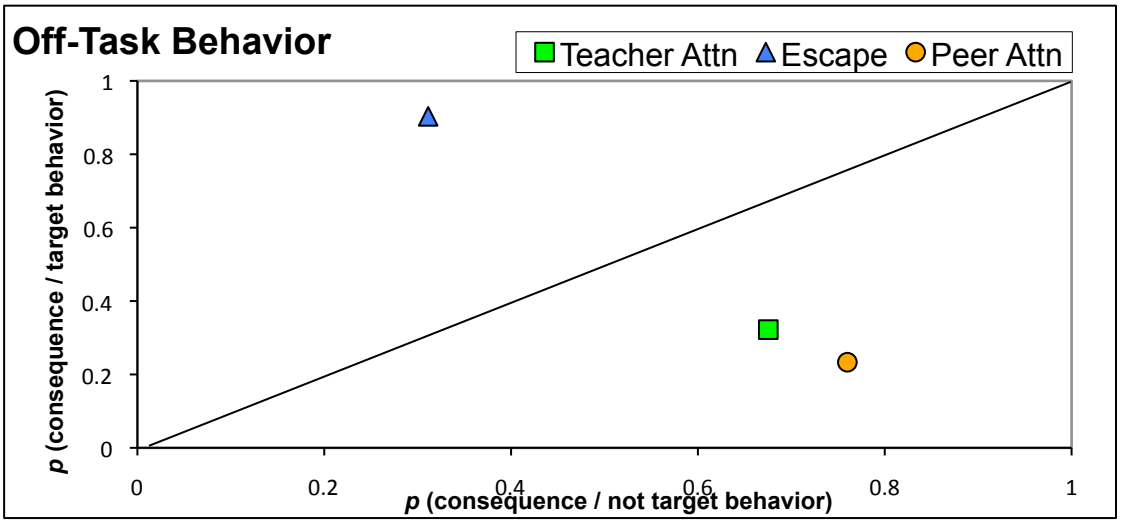


Figure 2. Conditional probabilities for Scott's off-task behavior.

Tim. Tim's teacher reported during the FACTS interview that disruptive behavior was the primary behavior of concern. More specifically, it was reported that Tim frequently spoke out of turn, talked with neighbors, and engaged in "back and forth power struggles" with the teacher. Tim also reportedly spent a large portion of time "passively off-task", such as fiddling with objects and/or putting his head down on the desk. Although these behavioral concerns were reported to be present across multiple instructional contexts and formats, his teacher listed small group reading and large group math as particularly problematic times. It was hypothesized that Tim engaged in these behaviors in order to obtain attention from teachers and peers. Following direct FBA observations within the small group reading and large group math classes, conditional probabilities were calculated.

Figure 3 shows that teacher attention most frequently followed the occurrence of disruptive behavior, and rarely occurred in its absence. Of all instances wherein Tim received direct attention from his teacher, 80% directly followed the occurrence of disruptive behavior, whereas only 20% occurred in its absence. Thus, Tim was approximately four times more likely to receive attention from his teacher while being disruptive than he was while being appropriate. Tim also received more attention from his peers when being disruptive versus appropriately behaved - 69% of peer attention occurred in the presence of disruption, whereas 14% occurred in its absence.

Separate conditional probabilities were examined for when Tim was "passively" off-task. Figure 4 shows that escape most consistently followed off-task behaviors, with 80% of all intervals scored with escape following passive off-task. This was not surprising given that the topography of this behavior failed to attract the attention of the

teacher as easily as the more overtly disruptive behaviors, such as talking out of turn. That said, conditional probabilities revealed that Tim was still more likely to obtain teacher attention while being passively off-task than when he was appropriately behaved (i.e., on-task). In sum, the results from Tim's FBA suggested that his disruptive behaviors were consistently followed by access to teacher and peer attention, as well as by escape from academic demands while passively off-task.

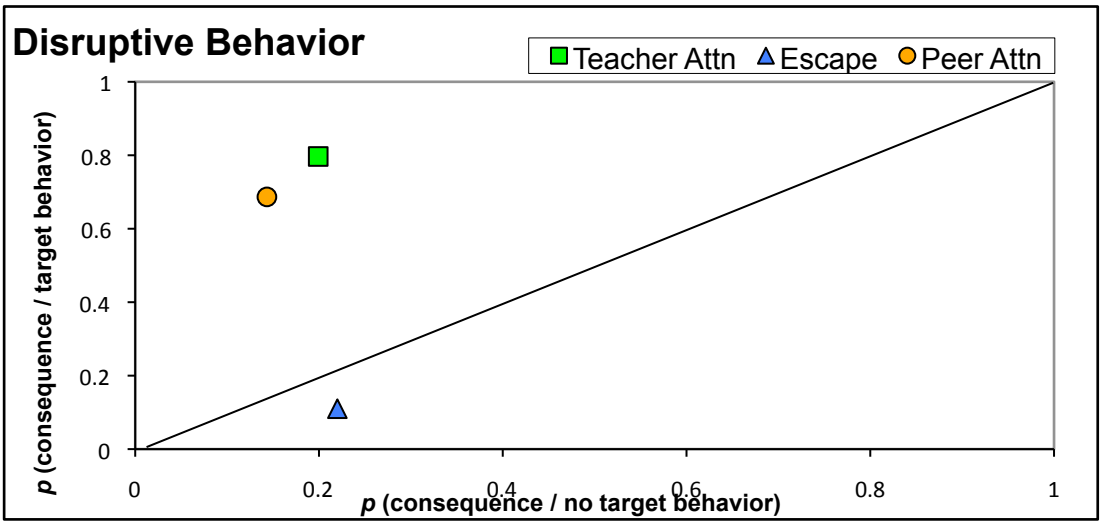


Figure 3. Conditional probabilities for Tim's disruptive behavior.

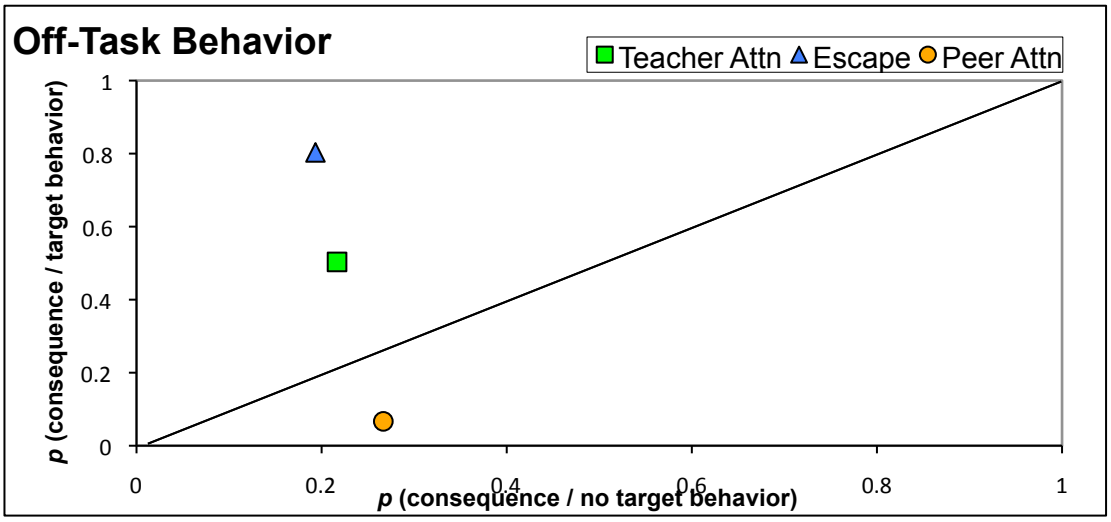


Figure 4. Conditional probabilities for Tim's off-task behavior.

Nora. During the FACTS interview with Nora's teacher, it was noted that the most problematic routine during the day was teacher-led instruction during large group settings. During these times, Nora frequently engaged in disruptive behavior by talking with nearby peers. She also engaged in off-task behaviors, such as scribbling on pieces of paper, coloring on her hands, and looking at irrelevant class materials. Nora's teacher reported having to frequently prompt her to stop talking and/or get back to work. It was hypothesized that her problem behaviors were maintained by access to peer and adult attention.

An examination of the conditional probabilities from direct FBA observations in her math and reading classes are shown in Figures 5 and 6. Peer attention was the most consistent and frequent consequence obtained through Nora's disruptive behavior. Of all attention Nora obtained from peers, 83% occurred in the presence of disruptive behavior. Adult attention was also much more likely to be obtained following occurrences of disruptive behavior as opposed to while she was on-task and following directions - 68% of all direct attention Nora received from the teacher occurred while being disruptive in class. Escape appeared to be a less consistent consequence following disruptive behaviors, as she was typically still engaged in the task but making noises and/or engaging in brief side-conversations with nearby peers. Figure 6 depicts conditional probabilities calculated for when Nora was off-task. Naturally, Nora escaped class demands more consistently when engaging in off-task behaviors. Of all intervals scored with escape, 74% occurred while she was (quietly/passively) off-task, with the rest occurring while being disruptive.

In sum, findings from the FBA conducted for Nora suggested that her disruptive behavior was sensitive to peer and adult attention, and that her off-task behaviors consistently led to escape from class demands. Lastly, it should be noted that across all FBA observations, only 7% of the attention Nora obtained from her teacher occurred while she was appropriately behaved (i.e., on-task and undisruptive), suggesting that her problem behaviors were a much more effective and efficient way to solicit attention from adults and peers.

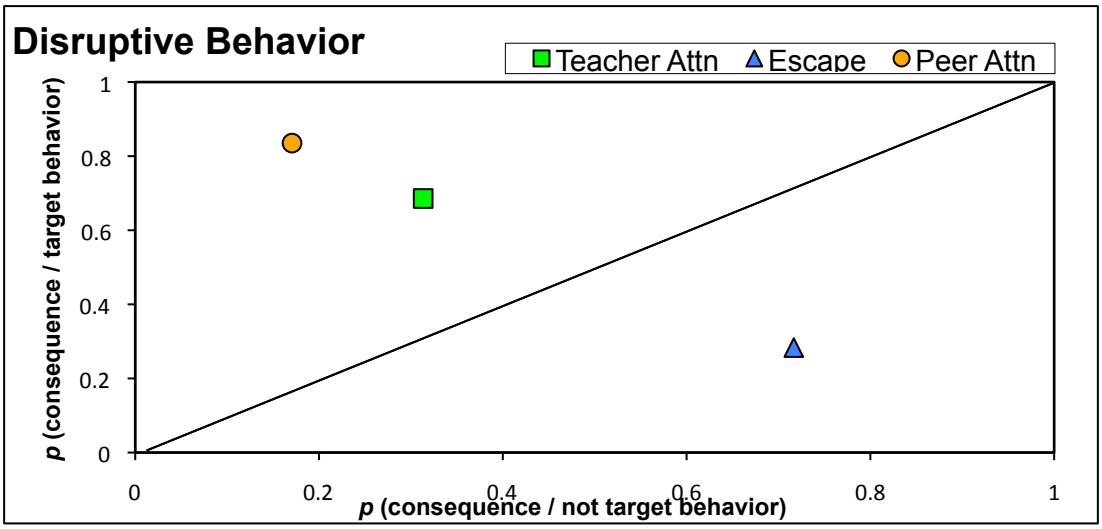


Figure 5. Conditional probabilities for Nora's disruptive behavior.

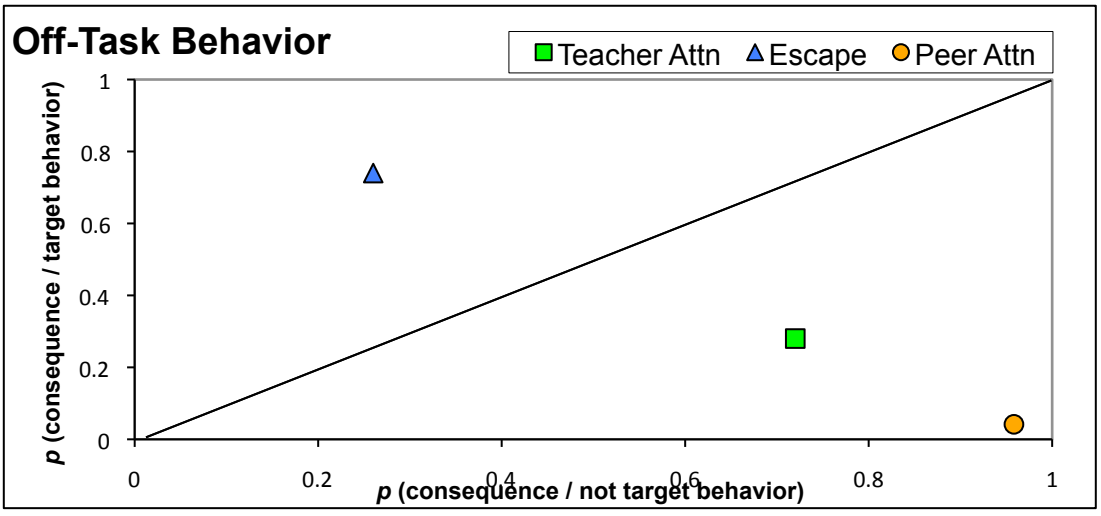


Figure 6. Conditional probabilities for Nora's off-task behavior.

Intervention Evaluation

Scott. Scott's response to SG-CICO is depicted in Figure 7. Scott's on-task behavior was stable during the initial baseline phase, with an average of 60.28% of intervals scored on-task (range = 53.80% to 67.20%). Scott's disruptive behavior occurred less often, however it was similarly stable, with disruption present during an average of 7.25% of the intervals (range = 4.40% to 12.00%). A slight decrease in the trend of disruptive behavior was also observed during this initial baseline phase.

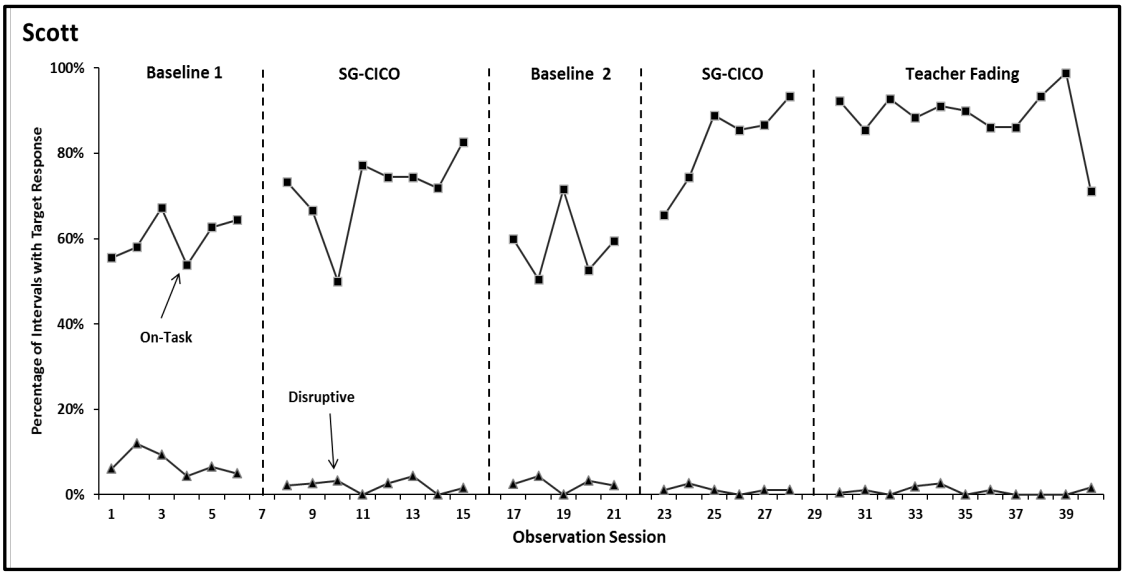


Figure 7. Graph depicting the percentage of intervals scored with on-task and disruptive behavior across all phases for Scott.

Immediately following implementation of SG-CICO, a modest increase in on-task behavior was observed. On-task was present an average of 71.33% of intervals (range = 50.00% to 82.70%). Aside from an aberrant data point during observation 10, there were no overlapping data points between the first intervention phase and the previous baseline phase. There was also an immediate reduction in the occurrence of disruptive behavior following implementation of SG-CICO. The average percentage of intervals scored with disruption across this phase was 2.11% (range = 0.00% to 4.40%). This marked a 71%

reduction in disruptive behavior when compared to the average level of disruption observed during initial baseline conditions.

When SG-CICO was withdrawn, Scott's on-task behavior immediately returned to levels similar to those observed during the initial baseline phase. An average of 58.82% intervals in the second baseline phase were scored with on-task behavior (range = 50.50% to 59.87%), which marked a modest 13% decrease in level of on-task responding when compared to the previous intervention phase. Scott's level of disruptive behavior during the second baseline did not substantially differ from the preceding intervention phase, as disruptive behavior was observed during an average of 2.49% of the intervals (range = 0.00% to 4.40%).

Once SG-CICO was reintroduced, Scott's on-task behavior steadily increased in level and trend. The average percentage of intervals scored with an occurrence of on-task behavior during this second intervention phase was 82.38% (range = 65.50% to 93.33%). When compared to the previous baseline phase, this marked a 23.56% increase in on-task responding. With regards to disruptive behavior, levels of responding again remained very low and stable, averaging 1.42% of intervals being scored with an occurrence of disruption (range = 0.00% to 2.70%).

During the final "teacher fading" phase, Scott's on-task responding increased slightly with regards to level and trend, with an average of 88.68% of intervals being scored with an occurrence of on-task (range = 71.11% to 98.88%). Unfortunately on the final observation session, Scott's level of on-task behavior unexpectedly dropped, and further observational data could not be collected due to his teacher's request to abruptly discontinue the intervention (see the Social Validity section for more details on this).

Lastly, as can be seen in Figure 7, Scott exhibited very little disruptive behavior during the final "teacher fading" phase, with his level of disruptive behavior actually dropping slightly to an average of only 0.82% of intervals (range = 0.00% to 2.70%). Overall, Scott's average level of on-task behavior during the final intervention phase demonstrated a 28.62% increase when compared to the initial baseline conditions. Similarly, his average level of disruptive behavior had decreased by 91% when compared to initial baseline conditions.

Tim. Tim's response to SG-CICO is depicted in Figure 8. Tim's on-task behavior during the initial baseline phase was rather variable, ranging between 38.33% and 85.00% (average = 53.15%). It may be worth nothing that the high percentage of on-task behavior observed during session 6 (85.0%) can be attributed to the fact that he was randomly assigned to read the lines for the main character of the story the class was reading that day. Thus, he was required to be more actively engaged in the activity than usual in order to maintain his correct place within the story. Despite the variable nature of Tim's on-task behavior during this first phase, a slightly decreasing trend can be detected. A more stable pattern of responding, however, was observed for Tim's disruptive behavior, with an average of 6.46% of intervals scored with an occurrence of disruption (range = 1.11% to 13.33%).

Upon introduction of SG-CICO, an immediate increase in the level of on-task responding was observed, whereby the average percentage of intervals scored with on-task behavior was 82.49% (range = 43.88% to 92.22%). This marked a 29.34% increase in on-task behavior when compared to initial baseline conditions. Furthermore, aside from an aberrant data point on observation session 15, Tim's on-task responding was

noticeably more stable when compared to the previous baseline phase. The level of Tim's disruptive behavior also decreased and became more stable following implementation of SG-CICO, with an average of 2.84% of intervals being scored with an occurrence of disruption (range = 0.00% to 5.00%). When compared to baseline conditions, this marked a 56% reduction in disruptive behavior.

Immediately after the SG-CICO intervention had been withdrawn, a substantial reduction in on-task behavior was observed, with the average percentage of on-task intervals falling to 44.33% (range = 33.33% to 56.11%). This represented a 38.16% reduction when compared to the preceding intervention phase. As shown in Figure 8, Tim's on-task behavior was also slightly more variable compared to when SG-CICO was in place. Tim's disruptive behavior remained stable and exhibited a very slight increase following the return to baseline, with disruptions being observed during an average of 4.24% of intervals across this phase (range = 1.66% to 6.67%).

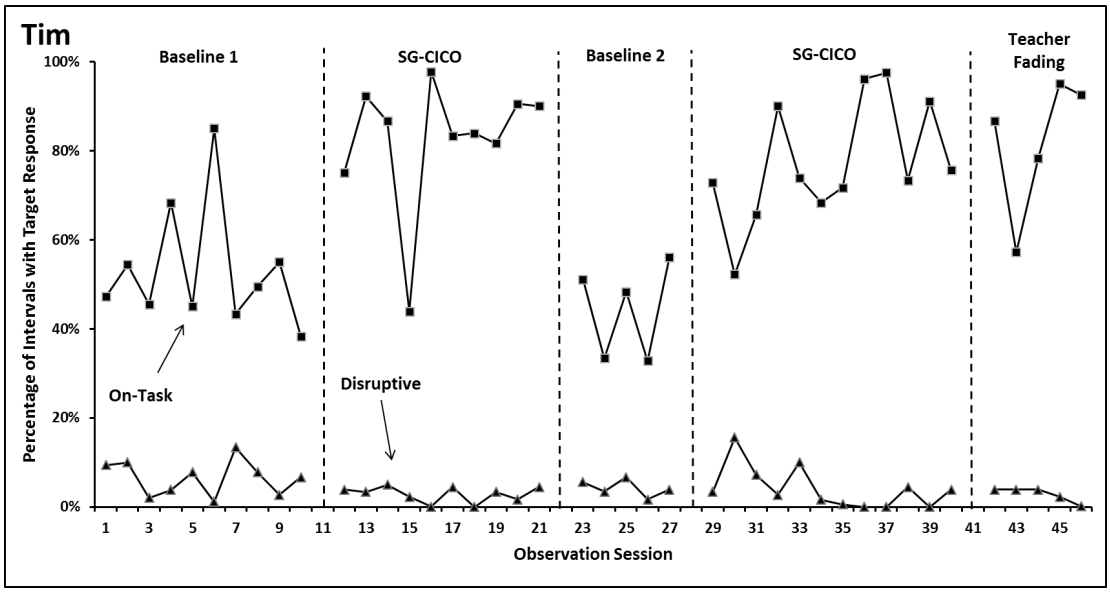


Figure 8. Graph depicting the percentage of intervals scored with on-task and disruptive behavior across all phases for Tim.

Tim's on-task behavior appeared slightly more variable following the reintroduction of SG-CICO (when compared to the previous intervention phase). That said, Figure 8 does depict a noticeable upwards trend and overall increase in the level of on-task responding when compared to baseline levels. The average percentage of intervals scored as on-task during the second intervention phase was 77.34% (range = 52.22% to 97.52%), which is similar to the rates observed during the first intervention phase. An unexpected increase in disruptive behavior occurred immediately following reintroduction of SG-CICO, however the level of disruptive behavior eventually subsided to levels similar to those observed during the previous intervention phase (average = 4.11%, range = 0.00% to 15.55%). It should be noted that there were concerns regarding the fidelity of implementation between observation sessions 29-33. Due to an apparent lapse in communication between the student, teacher, and the PI, the teacher believed during this time that she was to *not* provide behavioral ratings or behavioral feedback after each class period. Thus, the relatively lower rates of on-task behavior and higher rates of disruptive behavior observed during these sessions may be attributed to this miscommunication.

During the final intervention phase, Tim's on-task behavior was variable but remained at levels similar to those observed prior to the fading of teacher feedback sessions. An average of 81.94% of intervals during the teacher-fading phase were scored as on-task (range = 57.22% to 95.00%). The level of Tim's disruptive behavior remained low and stable while demonstrating a decreasing trend across this phase (average = 2.79%, range = 0.08% to 3.89%). When compared to Tim's original levels of responding

during the initial baseline phase, he demonstrated a 28.79% increase in on-task behavior and a 56.82% decrease in the occurrence of disruptive behavior.

Nora. Figure 9 depicts Nora's response to SG-CICO. Nora displayed low levels of on-task behavior which remained stable across the initial baseline phase. Her average level of on-task behavior was 36.39% (range = 27.78% to 43.88%). Nora's disruptive behavior was also stable across the initial baseline phase, with an average of 13.43% of intervals scored with an occurrence of disruption (range = 7.78% to 18.88%).

Immediately following the initial introduction of SG-CICO, a large increase in the level of Nora's on-task behavior was observed, with no data points overlapping with those from the previous baseline phase. Figure 9 also depicts a clear upwards trend in on-task responding. Nora's on-task behavior during the first intervention phase was observed during an average of 79.58% of intervals (range = 65.00% to 93.57%), marking a 43% increase when compared to the previous baseline phase. There was also an abrupt reduction in the level of Nora's disruptive behavior following implementation of SG-CICO, and disruptive behavior also became more stable while demonstrating a clear decreasing trend. The average percentage of intervals scored with disruption during this phase fell to 4.49% (range = 0.00% to 8.33%), which was a 77% reduction compared to baseline levels of responding.

Upon removing SG-CICO and observing once again under baseline conditions, Nora's level of on-task behavior immediately decreased by over 20% (average = 58.36%, range = 48.89% to 68.33%). Nora's disruptive behavior failed to return to levels similar to those observed during the initial baseline phase, as they remained low and stable. Disruptive behavior was observed during an average of 3.33% of intervals during the

second baseline phase (range = 0.00% to 6.11%). Due to a teacher request to re-implement SG-CICO, only four data points were able to be collected during the second baseline phase (as opposed to the desired five).

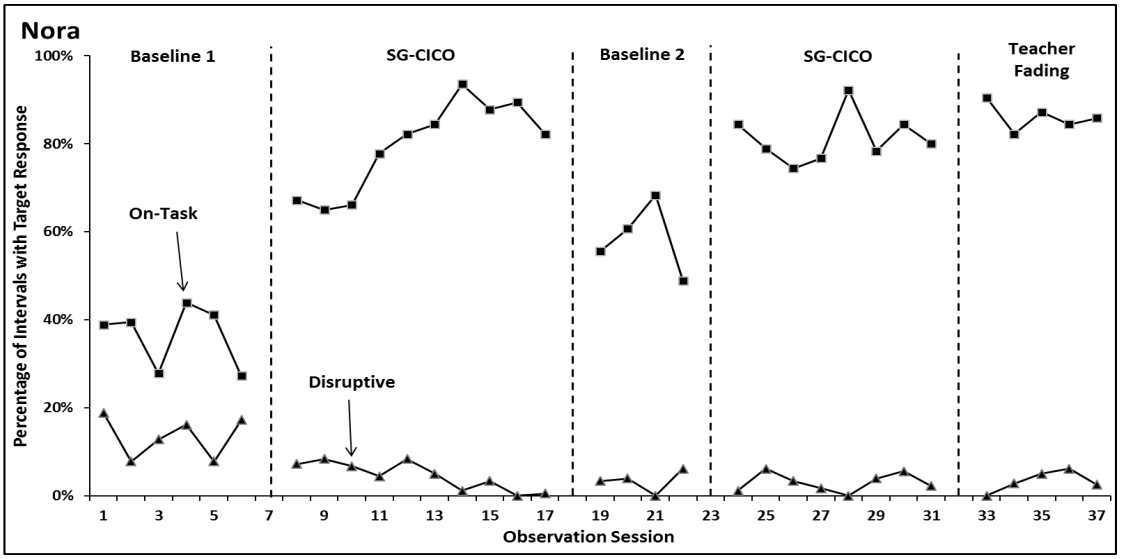


Figure 9. Graph depicting the percentage of intervals scored with on-task and disruptive behavior across all phases for Nora.

Nora's on-task behavior once again demonstrated an immediate and substantial increase in level and trend following the reintroduction of SG-CICO. On-task behavior was observed at rates quite similar to those seen during the first intervention phase, with on-task behavior present during an average of 81.18% of intervals (range = 74.44% to 92.22%). Few changes occurred with regards to Nora's disruptive behavior, as it remained low and relatively stable with an average of 2.98% of intervals scored with an occurrence of disruption (range = 0.00% to 6.11%).

When the frequency of teacher feedback sessions were faded back, Nora's level of on-task behavior remained high and stable, averaging 86.05% of intervals (range = 82.22% to 90.53%). As for her disruptive behavior, a slight increasing trend was observed following teacher fading, however the level of her disruptive behavior

remained similar to the previous phase wherein the "full package" of SG-CICO was being implemented (average = 3.28%, range = 0.00% to 6.11%). Overall, when compared to the first baseline phase, Nora's on-task behavior had increased by 49.66% and her disruptive behavior had been reduced by 75.58%.

Behavior Rating Accuracy

Figure 10 depicts each participant's behavioral ratings when compared to the those provided by the teacher. The goal each day was for students to be accurate with their teachers at least 80% of the time across the day (24 agreements possible each day). Rating accuracies were acceptably high for all participants across the duration of the study. Scott's rating accuracy was slightly variable, however it remained above the 80% threshold for the majority (63.64%) of the first phase of SG-CICO. Scott's average rating accuracy with the teacher during this first phase was 83.14% (range = 66.67% to 100%). Following the transition to teacher fading, Scott's rating accuracy remained at a level and variability similar to that which was observed during the first phase, with his ratings matching the teacher's an average of 84.80% of the time (range = 66.67% to 100%).

Tim demonstrated very high accuracy with regards to the self-ratings he provided, averaging 89.52% accuracy when compared to ratings provided by his teacher (range = 66.67% to 100%). On only three days did Tim fail to meet the 80% accuracy goal (sessions 3, 10, and 11). When teacher feedback sessions were faded back, Tim's rating accuracy remained high and stable, averaging 94.28% agreement across ratings with his teacher (range = 83.33% to 100%). Nora's self-ratings maintained a high rate of accuracy when compared to the ratings provided by the teacher. Nora's self-ratings matched the teacher's an average of 92.14% of the time (range = 75.00% to 100.00%) during the first

phase of SG-CICO. When Nora entered the teacher-fading phase, her rating accuracy remained high with an average of 93.89% of the ratings in perfect agreement (range = 77.78% to 100.00%). During the final three days of SG-CICO, Nora obtained perfect agreement between her self-ratings and those issued from her teacher. The end of the school year prevented additional data from being collected during this phase.

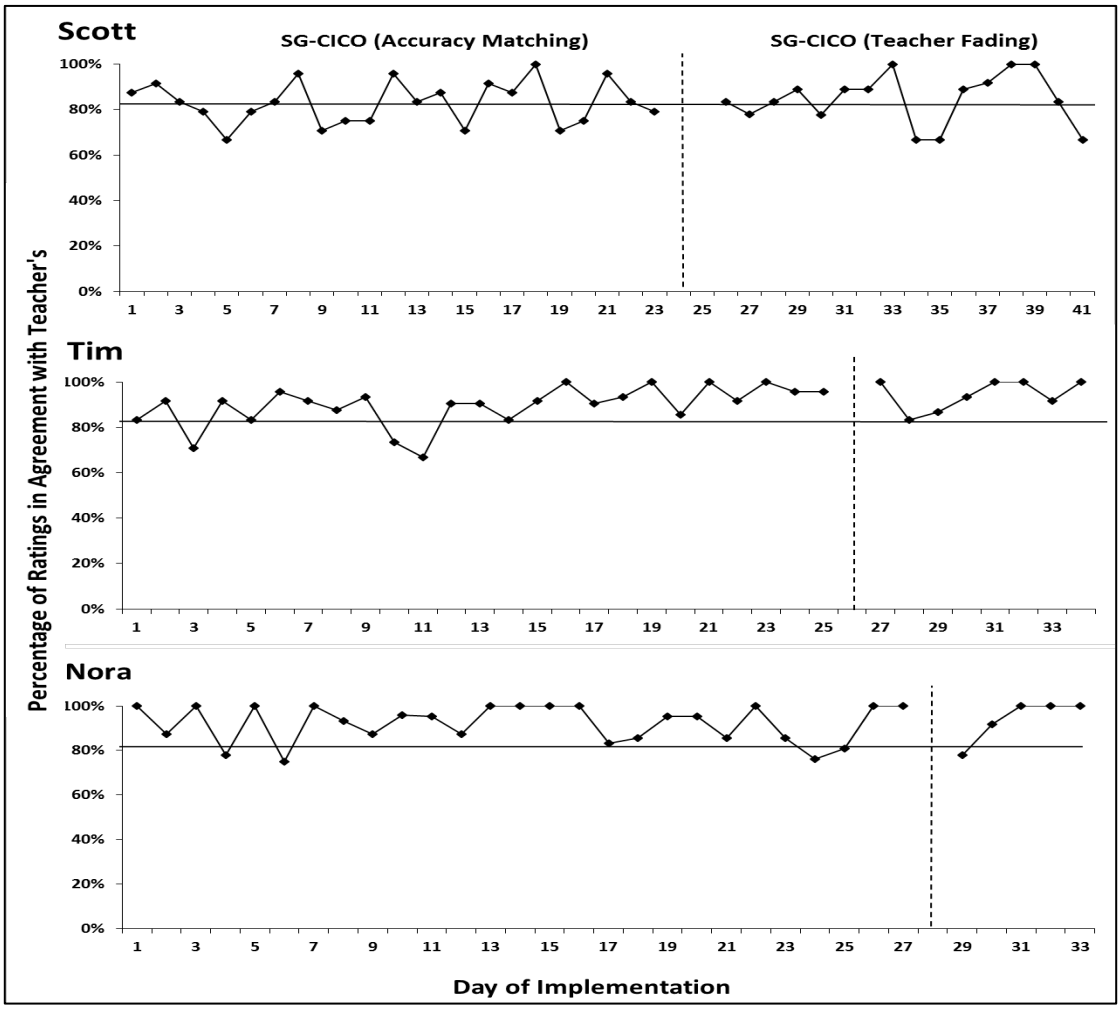


Figure 10. Percentage of behavior ratings in agreement with teacher ratings for each participant.

Another measure of each participant's rating accuracy came from comparing their ratings to those provided by trained observers following classroom observations. Ratings from trained observers perfectly matched those provided by Scott across 90.10% of the

observations. For both Tim and Nora, perfect matches were obtained for 81.82% of the observations. Discrepancies between students and trained observers may be attributed to the fact that observers typically left the classroom shortly after the 15 min observation was completed (to prevent from being a distraction to the learning environment). Thus, with most classes lasting 30-40 min, there is a chance that occasionally the student's behavior had changed (for better or worse) after the observer had left the room, and that the ratings issued by the observer at the time of departure were no longer accurate given his change in behavior. It should be noted that for the vast majority of the time when the ratings between students and trained observed did not perfectly match, it was just a one-point discrepancy.

SG-CICO Point Card Data

Each student's SG-CICO point card data were also examined. The daily goal was 80% of the total possible points for all participants. Point card data for all participants are depicted in Figure 11, above. Scott met this point goal the majority (82.60%) of the time during the first SG-CICO phase. On average, Scott earned 84.33% of the total possible points each day during the first phase (range = 72.00% to 97.90%). During the teacher-fading period, Scott met his point goal every day except for Day 35, obtaining an average of 91.90% of the total possible points across the phase (range = 68.75% to 100.00%).

Tim obtained an average of 90.02% of the daily points during the first phase of SG-CICO (range = 58.33% to 100%). Tim only failed to meet his point goal on three occasions (Days 3, 5, and 23). During the teacher-fading period, Tim continued to

consistently meet his point goal every day while obtaining an average of 94.27% of the total possible daily points (range = 85.42% to 97.92%).

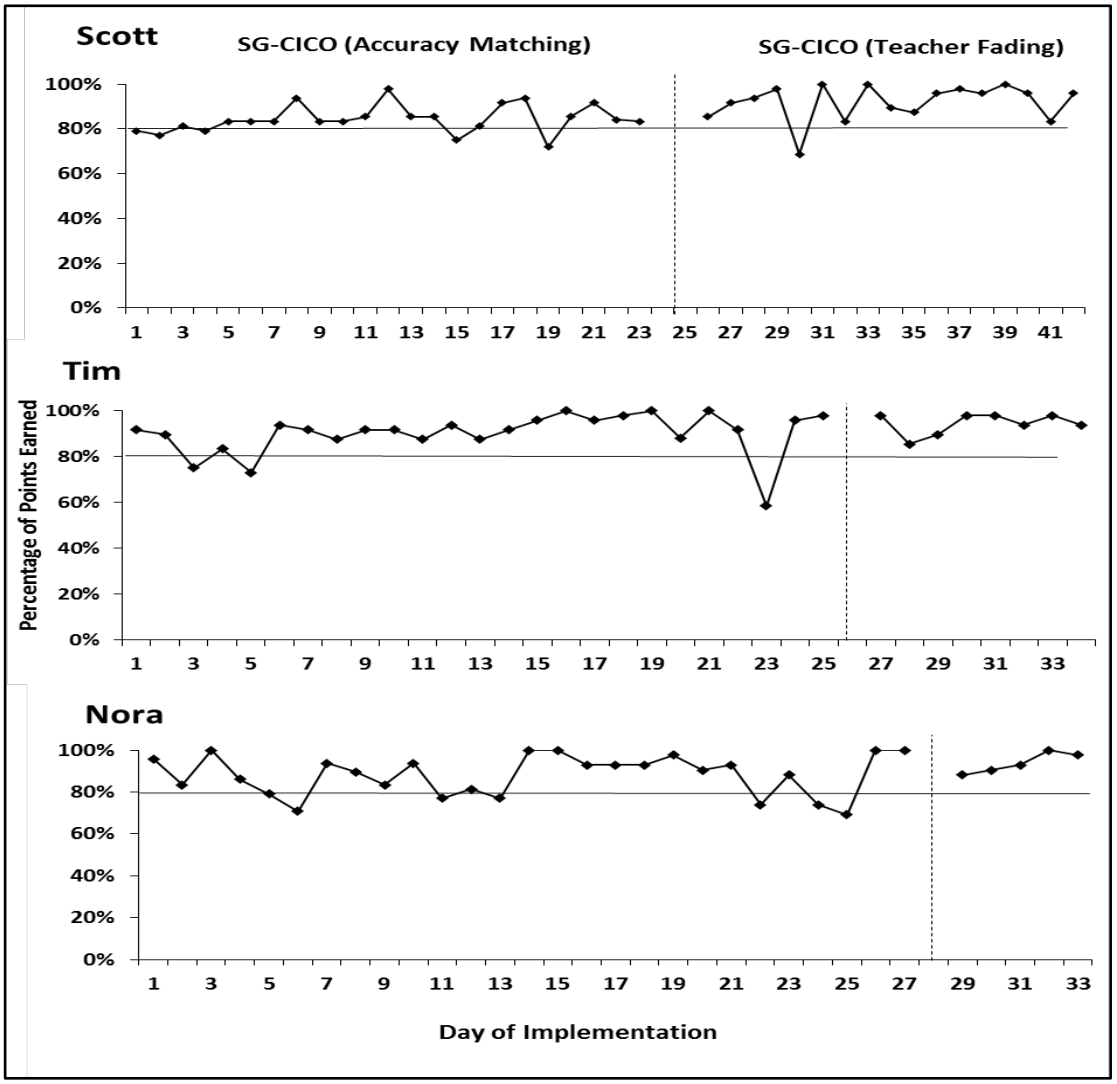


Figure 11. Percentage of total daily points earned by each SG-CICO participant.

Nora's point card data revealed some slight variability in the percentage of total daily points earned. That said, she met her 80% point goal the majority (74.08%) of days during the first SG-CICO phase, while obtaining an average of 87.97% of the total possible points each day (range = 69.04% to 100.00%). Her point card data became more

stable once entering the teacher-fading period, wherein she obtained an average of 93.81% of the total points (range = 88.10% to 100.00%).

Social Validity

Students, teachers, and the CICO coordinator completed a treatment acceptability questionnaire following the last observation session. The questionnaires used a 6-point Likert scale (1 = strongly disagree, 6 = strongly agree) to assess the extent to which SG-CICO produced a valued, positive change in the student's behavior, as well as whether or not the effort to implement the intervention was commensurate with the perceived outcomes. Teacher responses are displayed within Table 4, below. It should be noted that for Tim and Nora, only their primary (homeroom) teachers completed the questionnaire, whereas all three of Scott's teachers completed the questionnaire. Due to the fact that Nora and Tim's homeroom teachers had at least one participant (Nora or Tim) in their classroom throughout the day, it was only necessary for them to complete one social validity questionnaire. Scores listed for Scott therefore represent the average rating across all three of his teachers.

Teachers. Tim and Nora's teachers appeared to have more favorable views towards the SG-CICO than Scott's teachers. For instance, with regards to changes in student behavior, Tim and Nora's teachers responded positively with ratings of 5 (i.e., moderately agree) and 4 (i.e., barely agree), respectively. Scott's teachers, however, negatively rated this question with an average score of 3 (i.e., barely disagree). Where Tim and Nora's teachers appeared to view the intervention as being worth the time required to implement it, Scott's teachers reportedly felt it was not. Tim and Nora's teachers agreed that they would recommend SG-CICO to other teachers, whereas Scott's

did not. Lastly, where Tim and Nora's teachers agreed that SG-CICO was easy to implement compared to other behavioral intervention they've tried, Scott's teachers disagreed. Those discrepancies aside, all teachers did agree to some extent that their students became more aware of their own behavior as a result of participating in SG-CICO, and importantly, all teachers agreed that SG-CICO did not interfere with their ability to teach in the classroom.

Table 4

Teacher responses on the treatment acceptability questionnaire.

Intervention Evaluation Statements	*Scott*	*Tim*	*Nora*	*Average*
Student's Classroom Behavior Improved	3	5	4	4
Student Became More Aware of Behavior	4.33	4	5	4.44
Behavioral Outcomes were Worth the Time	2.67	5	5	4.22
SG-CICO was Age Appropriate	3.33	5	6	4.77
SG-CICO was Appropriate Given Behavior	3.67	5	6	4.89
SG-CICO did not Interfere with Teaching	5	6	6	5.67
I would Recommend SG-CICO to Others	2	5	5	4
SG-CICO was Easy to Implement	2.67	5	6	4.56
SG-CICO Took Less Time Compared to CICO	2.67	4	2	2.89
SG-CICO was as Effective Compared to CICO	3.33	5	3	3.78

Ratings from Scott's teachers were somewhat surprising given that he had demonstrated noticeable improvements with regards to his on-task and disruptive behavior during the course of the study, and he had been consistently meeting his daily point goal. However, it should be noted that Scott's teachers had expressed great

skepticism and doubt at the beginning of the study as to whether or not SG-CICO would actually improve his behavior. In fact, one of Scott's teachers was reluctant to participate in the intervention altogether, but ultimately decided to give it a try. Although Scott made behavioral gains within the classroom setting, his teachers reported that he still engaged in some disruptive behaviors outside the classroom (e.g., at lunch, during recess, and in the hallway). As a result, following observation session 40 (when Scott happened to have an unexpected drop in on-task behavior) his teachers arranged a meeting with the PI and asked that SG-CICO be discontinued with Scott. Therefore, their responses on the treatment acceptability questionnaire were likely influenced by (a) some residual effects from their initial skepticism of and reluctance to trying SG-CICO, and (b) their disappointment that SG-CICO did not improve his behavior across all school routines and contexts.

Students. Student responses on the treatment acceptability questionnaire are displayed in Table 5, below. Scott and Tim scored each intervention evaluation statement with either a 5 or 6, suggesting a high degree of social validity among these two participants. Nora also provided ratings of 5 or 6 on all items except for "the morning check-in prepares me to have a great day", which she rated with a 3 (i.e., barely disagree). All participants gave scores of 1 (i.e., strongly disagree) when asked if participating in the SG-CICO intervention was embarrassing. Overall, each student who participated in SG-CICO had positive views regarding the intervention. They also agreed that the intervention helped them follow directions better, stay more on-task, and complete more work during the school day.

Table 5

Student responses on the intervention acceptability questionnaire.

Intervention Evaluation Statements	*Scott*	*Tim*	*Nora*	*Average*
The Morning Check-in was Helpful	5	6	3	4.67
The Training Sessions were Helpful	5	5	5	5.00
I Rated My Behavior After Each Class	6	6	5	5.67
Random Checks Kept me Honest	5	6	6	5.67
I did not Feel Embarrassed	6	6	6	6.00
Other Students can Benefit from SG-CICO	5	5	6	5.33
SG-CICO Helped me Stay On-Task	5	6	6	5.67
SG-CICO Helps me Complete More Work	5	5	5	5.00
The Afternoon Check-Out was Helpful	5	6	6	5.67
I Enjoy SG-CICO and Want to Continue	5	5	6	5.33

Coordinator. Responses provided by the school's CICO coordinator are provided in Table 6, below. Given the fact that multiple sources of data (i.e., observational data and point card data) supported SG-CICO's effectiveness for all participants (to varying degrees), it was surprising to find that the coordinator provided such overwhelmingly negative ratings on the treatment acceptability questionnaire. In speaking with the coordinator following completion of the study, she mentioned that it was difficult to manage SG-CICO while other students on her caseload were still participating in the standard CICO intervention. Furthermore, she personally felt that the self-management skills taught through SG-CICO would be more appropriate for a middle-school aged population—and not for students in elementary school. This particular school's daily

schedule also made SG-CICO more difficult to implement, as she felt there was not adequate time between class periods to discuss self-ratings and build the self-management skills targeted by SG-CICO. Lastly, she expressed general discontent with SG-CICO because she was already satisfied with how her existing CICO system was functioning, and didn't see the need for a modified version to continue to be implemented in the future. It should be noted that the coordinator was not particularly interested in implementing SG-CICO from the get-go; she was encouraged to do so by the school's school psychologist. Thus, these ratings may, at least in part, reflect her initial reservations.

Table 6

Coordinator responses on the treatment acceptability questionnaire.

Intervention Evaluation Statements	*Response*
SG-CICO Interfered with my Role as CICO Coordinator	3
Progress Monitoring Students on SG-CICO was Similar to CICO	3
The "Check-Ins" and "Check-Outs" Took More Time than CICO	4
It was Easy to Integrate SG-CICO Into Our Existing CICO System	3
Behavioral Outcomes were Commensurate with Time Put Forth	1
SG-CICO Students were as Successful Compared to CICO Students	2
SG-CICO was Appropriate Given the Student's Age	2
SG-CICO was Appropriate Given the Student's Problem Behavior(s)	2
I Would Recommend this Intervention to Other Schools	1
I Plan to Use this Intervention in the Future	1

CHAPTER IV

DISCUSSION

The effectiveness of self-monitoring interventions within school settings has been well supported by a robust body of literature (e.g., Amato-Zech, Hoff, & Doepke, 2006; Todd, Horner, & Sugai, 1999; Wood, Murdock, & Cronin, 2002). Further, self-monitoring procedures have been shown to be effective for students spanning various age groups, ability levels, and target responses. The current study investigated the effectiveness and social acceptability of integrating self-monitoring procedures into a school's existing CICO intervention. More specifically, participants were taught to provide self-ratings (i.e., scores) on a point card following each class period, and then compare them with the ratings provided by their teachers. The combination of self-monitoring and CICO provided students with additional structure throughout the day, and enabled them to receive more frequent and immediate feedback regarding their behavioral performance.

Summary of Main Findings

Descriptive FBA's were conducted for the three elementary school students who participated in the study. Results from these FBA's led the PI and participating teachers to hypothesize that each student's problem behaviors were, in part, maintained by access to adult attention. The current study used an ABABC reversal design to evaluate whether there was a functional relation between implementation of SG-CICO and each participant's level of on-task and disruptive behavior. Additionally, data regarding the social acceptability of SG-CICO was collected from students, teachers, and the intervention coordinator.

For Scott, a moderate functional relation was documented between implementation of SG-CICO and increased on-task responding. The modest change in on-task behavior between intervention phases limited the extent to which a functional relation could be confidently documented. That said, two clear demonstrations of effect were observed for Scott, the first coming after the return to baseline conditions, and the second occurring following the reintroduction of SG-CICO. Immediate reductions in the occurrence of disruptive behavior were observed following initial implementation of SG-CICO, however responding remained low across subsequent intervention phases. Thus, a functional relation between SG-CICO and his disruptive behavior cannot be inferred.

Although an immediate increase in level and trend of Tim's on-task behavior was observed between baseline and intervention phases, his on-task responding remained rather variable across phases. Thus, any functional relation inferred between SG-CICO and his on-task behavior must be viewed with caution. As for Tim's disruptive behavior, reductions were observed following initial implementation of SG-CICO, but remained low and slightly variable across the remaining phases, thus preventing a functional relation from being documented.

Lastly, a clear functional relation was documented between SG-CICO and Nora's on-task responding. Immediate changes in level, trend, and to a lesser extent, variability, were observed between baseline and intervention phases. Similar to Scott and Tim, no functional relation was documented between SG-CICO and Nora's disruptive behavior. There was an immediate reduction in the occurrence of Nora's disruptive behavior upon initial introduction of SG-CICO, however this response failed to return to previously observed levels following withdrawal of the intervention.

Treatment integrity across the duration of the study remained acceptably high. Fidelity checks conducted by the PI indicated an average of 88.50% of the SG-CICO components were implemented correctly throughout the study. Self-reported fidelity ratings from teachers indicated a generally high rate of treatment integrity across all intervention components. Lastly, the intervention coordinator reported an overall (average) fidelity rating of 4.38 out of 5, which was between the descriptors "usually" and "always" implement.

Social validity data produced mixed results. All students participating in SG-CICO were very pleased with the intervention, and felt it was effective for them. Teachers for two out of the three students (Tim and Nora) reported being generally satisfied with the intervention, whereas Scott's teachers had less positive reactions to SG-CICO. Lastly, the intervention coordinator reported being displeased with SG-CICO because she did not feel it was a needed modification to their existing CICO intervention framework.

Mechanisms of Change

Behavioral function. Function-based interventions have been shown to be more effective than those developed in the absence of information obtained through an FBA (e.g., Filter & Horner, 2009; Ingram, Lewis-Palmer, & Sugai, 2006; Newcomer & Lewis, 2004). Given that CICO provides students with built-in opportunities to access positive attention and feedback from adults, some extant research has suggested that CICO is better suited for students with attention-maintained problem behaviors (e.g., March & Horner, 2002; McIntosh et al., 2009). Results from the FBA's conducted with each participant in this study led to hypotheses that adult attention (to at least some

degree) contributed to the maintenance of their problem behaviors. Students were most likely to obtain adult attention following instances of off-task or disruptive behavior.

As a natural result of implementing SG-CICO, there were increased opportunities for participants to access attention from their teachers throughout the day for displaying appropriate behavior. It is worth noting that simply providing behavioral feedback to students has been shown to be an effective behavior change procedure in and of itself (Drabman & Lahey, 1974) Therefore, changes in student behavior may have been influenced by the consistent and structured nature of the behavioral feedback that was provided through SG-CICO. It is certainly possible that feedback sessions with teachers may have been reinforcing at times (e.g., praise given for meeting expectations), and punishing at other times (e.g., corrective feedback given for not meeting expectations). However, even though formal data was not collected on positive versus negative comments from teachers, students were anecdotally observed obtaining more frequent *positive attention* (i.e., praise) when they met the behavior expectations than they were when compared to baseline conditions. Thus, by obtaining more consistent teacher attention for engaging in appropriate behaviors, the contingencies supporting these behaviors were possibly strengthened.

Active participation. Dane & Schneider (1998) use the term 'participant responsiveness' to describe the extent to which students are actively engaged in the treatment process, stating that "deficiencies in participant responsiveness can diminish the impact of a program" (p. 39). Even though the effectiveness of CICO has been well supported through previous research, it can be argued that students participating in the intervention assume a backseat role with regards to the evaluation of their behavioral

performance—their primary role is to carry the point card, not to evaluate their own behavior per se. Students in the current study became more actively engaged in the intervention process, as they were taught to self-observe and self-evaluate the extent to which they met the predefined behavioral expectations. Students continued to receive behavioral feedback from teachers, however it was not until *after* they had reflected on their behavior and provided self-ratings. Therefore, the observed increases in on-task behavior may be attributed to their increased level of involvement throughout the intervention process. Although level of student involvement has yet to be directly studied as a variable in predicting behavioral outcomes, similar findings have been reported by numerous studies using self-monitoring procedures to increase the task engagement of students in the classroom (e.g., Brooks et al., 2003; DiGangi, Maag, & Rutherford, 1991; Rock, 2005)

Baer (1984) has also suggested that self-monitoring is effective because the process itself serves as a discriminative stimulus cueing desired behavior, and thus reestablishes inefficient contingencies supporting desired responses. Following this logic, it could be that prior to implementation of SG-CICO the contingencies for maintaining each participant's appropriate behavior were weaker than those supporting problem behavior. In other words, problem behaviors had become more a more efficient means for accessing reinforcement in the classroom. For interventions like CICO and SG-CICO that use a point-card to track behavioral performance, the card itself can also function as a discriminative stimulus cueing desired behaviors. Given that SG-CICO involved the use of self-monitoring procedures *and* a point card system, it is possible that

an especially salient discriminative stimulus was produced to cue (or remind) the students to engage in appropriate behavior(s).

Token economy. A token economy is a reinforcement-based behavior modification strategy wherein students earn secondary reinforcers (e.g., stickers, coins, tickets) for displaying desired behavior(s), which can be traded in at a later time for more highly preferred tangible items or activities. Previous research has supported the effectiveness of token economies in classroom settings (e.g., Higgins, Williams, and McLaughlin, 2001; Zlomke & Zlomke, 2003**)**. For schools who choose to include a token economy in their CICO intervention, the points earned on the point card function as the secondary reinforcers, which student can then "cash in" during the afternoon check-out for a more preferred (primary) reinforcers. Since the participating school in the current study utilized a token economy system for students on CICO, participants on SG-CICO were also allowed to earn small tangible items they identified as being highly preferred (e.g., a candy bar, good behavior tickets, playing cards). It is therefore possible that the reinforcing qualities of each participant's preferred tangible item(s) outweighed the reinforcement that was previously obtained through their off-task and disruptive behavior in the classroom. Subsequently, certain behavioral outcomes observed in the present study may have been influenced by the token economy component embedded within SG-CICO.

Limitations

Sample. Several key limitations to the current study are worth mentioning at this time. First and foremost, results should be viewed with caution given the small sample size, as this study was conducted with only three participants within a single elementary

school. Thus, any positive or negative responses to and reactions towards SG-CICO discussed herein may not be representative of other students, teachers, or intervention coordinators in other schools. On a similar note, all three participants in this study were in either fourth or fifth grade. Thus, it is unclear whether SG-CICO would be more or less effective with younger or older students. That said, self-monitoring has been shown to be effective for students anywhere from early elementary (e.g., McDougall & Brady, 1995) to high school age (e.g., Smith et al., 1992).

FBA methodology. A descriptive FBA was conducted for each participant, which included a teacher interview and direct classroom observations. Descriptive FBA methods, though practical for applied school-based research, do not allow one to confirm whether the consequences which tend to follow the occurrence of a target response actually possess reinforcing qualities to the target individual. As reported earlier, the consequences which followed each participant's problem behavior varied (e.g., escape, peer attention, and adult attention). Although adult attention did reliably follow instances of problem behavior for each participant, it cannot be inferred that a functional relation existed between their problem behavior and the obtainment of adult attention. Future studies using experimental FBA methods (e.g., analog functional analysis, brief functional analysis) could address this shortcoming of the present study.

Research design. Although the adoption of an ABABC reversal design was appropriate for the purpose of examining functional relations between SG-CICO and each participant's target responses, there were several inherent weaknesses to this design. First, each intervention phase was relatively short in duration. Since this study involved applied research in a real school setting, it was necessary to balance best practices in

single subject research with the school's unique schedule and teacher-issued requests for shorter intervention withdrawal phases. Secondly, SG-CICO was compared to baseline conditions wherein no intervention was in place. Although this was purposefully done, it did not allow for a comparison of the effectiveness of SG-CICO to standard CICO conditions. Lastly, the possibility of extraneous variables (e.g., observer-expectancy effect, novel academic content) being responsible for the observed behavioral outcomes is an inherent risk in any single subject research design. Attempts were nonetheless made to control for risks to internal validity by positioning observers in unobtrusive locations, and conducting all observations during the same academic routines for each participant.

Generalization and maintenance. Although positive outcomes were observed with regards to increased task engagement for each participant, this study did not examine the maintenance of these effects over time. It would have been ideal to conduct three to five month follow up observations for each participant. However, this was not possible because Scott was taken off the intervention upon teacher request, and data collection for Tim and Nora continued until the end of the school year.

The current study also failed to examination the generalization of intervention effects across multiple instructional formats and contexts. Observations were conducted solely within the target routines identified by teachers as being most problematic. As evidenced anecdotally by Scott's teachers, his behavior had shown improvements within the academic setting, but these behavioral gains failed to generalize to less-structured routines, such as recess and lunch. Therefore, additional research looking at the effects of SG-CICO across multiple school contexts appears to be warranted.

Directions for Future Research

As mentioned earlier, the current study included a small sample of students from just two grades within one elementary school. Thus, an obvious suggestion for future research is to replicate this study among a larger group of students and across a wider range of grades. Furthermore, since not all schools have well-developed Tier II systems of behavioral support in place, it might also be worth examining the feasibility of implementing SG-CICO in a school which lacks a formal CICO intervention system. Findings from such a study may help add to the external validity of SG-CICO. The following are several specific directions for future research.

Component analysis. Gresham (1989) states that "the complexity of a treatment is directly related to the degree of treatment integrity" (p. 101). He goes on to mention that the *time* and *materials* required to implement an intervention are equally important factors which influence fidelity of implementation. Check-in/Check-out interventions are comprised of multiple components, such as morning check-ins, daily feedback sessions, afternoon check-outs, and typically include the use of token economy reward systems. The current study added an additional component into the CICO framework: self-monitoring.

With time and resources stretched to the limit in today's schools, it is critically important that interventions are designed to be as cost effective and resource efficient as possible. The reversal design used in the current study did not allow for an analysis of each component in isolation of one another. It is therefore unclear if all components of SG-CICO were necessary in order to obtain the observed outcomes. Thus, future studies should be conducted to examine each component of SG-CICO in isolation, with the

hopes of identifying the most *effective* and *efficient* intervention possible. For instance, social validity data obtained from several of Scott's teachers suggested that SG-CICO may have been too time intensive for their respective classrooms. A future study could therefore examine whether the initial period of concurrent student-teacher rating after *every* class is really necessary, or if students could instead begin their participation in SG-CICO just doing the random-accuracy checks. Such a modification would presumably cut down on the amount of time required from the teacher on the front end, and possibly increase the social acceptability of the intervention.

Comparison to CICO. The primary goal of the current study was to determine if SG-CICO had a positive effect on the participant's on-task and disruptive behaviors. In other words, does SG-CICO work? While additional research is needed to fully address this initial question, future attention could also someday be directed towards a potentially larger question: Is SG-CICO more or less effective than standard CICO interventions? Therefore, in addition to the more "micro-level" analysis of each SG-CICO component described above, an interesting research endeavor might be to see how the effects of SG-CICO compare to the more well-supported, evidenced-based CICO intervention. Such a study could be conducted using a reversal design with counterbalanced sequencing of the intervention phases across subjects.

Self-monitoring vs. self-evaluation. The type of self-monitoring procedure used in the current study was considered "self-evaluation". Students were taught to reflect upon their behavioral performance after each class, and *evaluate* the extent to which they met the school-wide expectations using a 3-point Likert scale. This form of self-monitoring was selected because it mapped on well to the existing CICO intervention

framework, and it had been supported through previous research (e.g., Rhode, Morgan, & Young, 1983). However, another option could have been to teach students to self-monitor their actual use of acceptable alternative behaviors throughout the day. For example, a student who consistently speaks out during instruction to obtain the teacher's attention may be taught to raise his hand and wait for the teacher to call on him. Each time he uses this functionally equivalent replacement response, he can make a tally on his SG-CICO point card to get "bonus points" and behavior-specific praise from the teacher. Although this might seem like a small modification to the current SG-CICO intervention, it could prove beneficial for students who require more explicit training and reinforcement in order to add a novel, yet functionally relevant replacement response to their behavioral repertoire.

Conclusion

Behavioral supports at the tertiary level require significantly more time, resources, and expertise to implement. As a result, there exists a pressing need for schools to focus on the use of secondary level (Tier II) supports which can limit the number of students requiring the more costly Tier III interventions. Unfortunately, there are currently a limited number of evidence-based Tier II interventions available for schools to turn to. The current study used the framework of an existing CICO program to examine a new, self-monitoring based Tier II intervention. Although the SG-CICO intervention shows some promise in addressing the behavior needs of students with mildly disruptive and off-task behaviors, additional research is required. With that being said, the fact that self-monitoring programs generally require less teacher time and effort to implement should

serve as encouragement and guidance to researchers looking to develop effective and contextually fit Tier II interventions for use in schools.

APPENDIX A

SAMPLE CICO POINT CARD

 **Check-in/Check-out** 

Student: _____ Date: _____

1 = Expectations not met **2 = Some expectations met** **3 = Met all expectations!**	**Be Safe** Walking in the halls and keeping hands and feet to yourself	**Be Responsible** Being prepared and working hard during your classes	**Be Respectful** Using kind words and following directions the first time their given
Check-in	1 2 3	1 2 3	1 2 3
Large group reading	1 2 3	1 2 3	1 2 3
Small group reading	1 2 3	1 2 3	1 2 3
Whole group math	1 2 3	1 2 3	1 2 3
Intervention/RTI group	1 2 3	1 2 3	1 2 3
Music/Library	1 2 3	1 2 3	1 2 3
Recess	1 2 3	1 2 3	1 2 3
Other _____	1 2 3	1 2 3	1 2 3
Check-out	1 2 3	1 2 3	1 2 3

Comments:

Total Points Today = **Points Possible Today =**	**Today's Total:** **Today's Goal:** **Did I reach my goal today?** YES NO

APPENDIX B

MORNING CHECK-IN FIDELITY CHECKLIST

SG-CICO Fidelity Checklist: Morning Check-In

Date:

Student:

Duration of Check-in:

Check-In Adult:

Feature of SG-CICO	YES	NO	N/A
1. Student was greeted individually with a positive tone (ex: "Hey, I'm happy to see you!")			
2. Home note was signed by parents and collected by coordinator			
4. Student was given a new daily point card			
5. Expectations for the day were reviewed with the student			
6. Procedures for self-monitoring after each class were reviewed with the student			
7. Coordinator gave an example to the student to test understanding (e.g., "If you received a few reminders to be quiet during class, what rating would you give?" or "If you followed all teacher directions for the whole class, what rating would you give?")			
8. Student was briefly reminded of point goal (and incentive, if applicable)			
9. Student was given positive encouragement to make good choices to reach his/her goal			

APPENDIX C

AFTERNOON CHECK-OUT FIDELITY CHECKLIST

SG-CICO Fidelity Checklist: *Afternoon Check-Out*

Date:

Student:

Duration of Check-Out:

Feature of SG-CICO	YES	NO	N/A
1. Student greeted individually with a positive tone (ex: "Hey, let's see how your day went!")			
2. The student's point card was reviewed (*points were calculated with the student*)			
3. Positive feedback was provided if the student met the point goal			
4. Specific praise was provided for each time the student's ratings matched those provided by the teacher (e.g., "Wow, you got bonus points for accurately monitoring your own behavior!")			
5. Neutral feedback and re-teaching was provided if the point goal was not reached (e.g., "Lets practice what _____ looks like again")			
6. Incentive/reward was given if student met goal (only applicable if rewards are being used)			
7. Student was given home note (preferably with comments that are positively phrased)			
8. Student was given positive praise for working hard and given encouragement to have a nice night at home			
9. Student's point card data was entered into the school's data collection program (e.g., SWIS, Excel spreadsheet, or star chart)			

APPENDIX D

CLASSROOM IMPLEMENTATION FIDELITY CHECKLIST

SG-CICO Fidelity Checklist: *Classroom Implementation*			
Date: **Student:** **Duration of Feedback Session (if applicable):** **Teacher:**			
Feature of SG-CICO	**YES**	**NO**	**N/A**
1. Student had point card on desk or nearby (e.g., in a folder or under the chair)			
2. After the class the student independently gave him/herself rating for the behavior expectations			
3. No reminders were needed to have student self-monitor behavior after each class			
4. Teacher provided behavior ratings independently on a separate point card (*only applicable if it was a period the teacher randomly selected for an accuracy check*)			
5. If teacher DID provide behavior ratings, they were reviewed with the student afterwards			
6. If teacher DID provide behavior ratings, positive feedback (praise) and a "bonus point" was provided if the ratings were in agreement			
7. Positively phrased corrective feedback was provided if there was disagreement between the ratings (e.g., "let's try harder next time")			
Accuracy of Student Ratings for the Routine that was Observed: ***(to be completed by the PI at a later time)***	**Student Rating**	**Observer Rating**	**Agree?**
Be Safe			
Be Respectful			
Be Responsible			

APPENDIX E

TEACHER FIDELITY SELF-ASSESSMENT

Student-Guided CICO: *Teacher Self-Assessment*	
General Features of SG-CICO	**1=Never 2= Rarely 3 = Sometimes 4= Usually 5 = Always**
1. The student has their point card on their desk or nearby (e.g., in a folder, on a clip board, under their chair)	**1 2 3 4 5**
2. After the class the student independently gives him/herself ratings for the behavior expectations	**1 2 3 4 5**
3. I have to give the student a reminder in order for them to self-monitor their behavior after each class	**1 2 3 4 5**
First Phase of Implementation (*Concurrent Student/Teacher Behavior Ratings*)	
4. I provide behavior ratings after each class period using the back (yellow) sheet of the point card	**1 2 3 4 5**
5. I briefly review my ratings with those given by the student to check for accuracy	**1 2 3 4 5**
6. I provide praise to the student if my behavior ratings agree with their ratings	**1 2 3 4 5**
7. I give brief corrective feedback to the student if the ratings didn't match (e.g., "I gave you a 1 respectful behavior because I had to remind you several times to remain quiet. Remember that in order to get 2's you need to follow the all of the expectations.")	**1 2 3 4 5**
Second Phase of Implementation (*After Accuracy Matching Criterion has been Met*)	
8. I provide behavior ratings at two or three random times throughout the day (i.e., I conduct 2-3 random *accuracy checks* each day)	**1 2 3 4 5**
9. When doing a random accuracy check, I briefly meet with the student to check whether our ratings are in agreement	**1 2 3 4 5**
10. I give praise or corrective feedback depending upon the accuracy of the student's ratings	**1 2 3 4 5**
11. I encourage the student to continue working hard and accurately rating his/her behavior routinely throughout the day	**1 2 3 4 5**

APPENDIX F

COORDINATOR FIDELITY SELF-ASSESSMENT

Student-Guided CICO: *Coordinator Self-Assessment*	
Features of SG-CICO: CHECK-IN	**1=Never 2= Rarely 3 = Sometimes 4= Usually 5 = Always**
1. I greet each student individually with a positive tone.	**1 2 3 4 5**
4. I give each student their SG-CICO point card	**1 2 3 4 5**
5. I review the behavior expectations for the day with the student	**1 2 3 4 5**
6. I briefly explain the procedures for self-monitoring after each class	**1 2 3 4 5**
7. I do a brief review with the student to test their understanding of the rating system	**1 2 3 4 5**
8. I briefly remind the student of the point goal (and incentive, if applicable)	**1 2 3 4 5**
9. I give the student positive encouragement to make good choices to reach his/her goal	**1 2 3 4 5**
Features of SG-CICO: CHECK-OUT	**1=Never 2= Rarely 3 = Sometimes 4= Usually 5 = Always**
1. I greet each student individually when they come to "check-out" in the afternoon	**1 2 3 4 5**
2. I review/calculate behavior points and accuracy bonus points with the students on SG-CICO	**1 2 3 4 5**
3. I give positive praise if the point goal is met	**1 2 3 4 5**
4. If the student's ratings match those given by the teacher, I give specific praise for that behavior	**1 2 3 4 5**
5. I give neutral feedback and re-training if the there is a disagreement between ratings	**1 2 3 4 5**
6. I give the students an incentive/reward if goal is met (only applicable if rewards are used)	**1 2 3 4 5**
7. I give the students the home note (preferably with a few positive comments)	**1 2 3 4 5**
8. I enter the student's data in the progress monitoring system (e.g., Excel)	**1 2 3 4 5**

APPENDIX G

SG-CICO SOCIAL VALIDITY QUESTIONNAIRE (TEACHER)

Student-Guided CICO Intervention: ***Teacher Acceptability Questionnaire***	
Intervention Evaluation Statements	**Rating Scale** **1=Strongly Disagree** **2= Moderately Disagree** **3 = Barely Disagree** **4= Barely Agree** **5 = Moderately Agree** **6 = Strongly Agree**
1. The intervention improved the student's behavior in the classroom	**1 2 3 4 5 6**
2. I feel this intervention has helped the student become more aware of his or her behavior in the classroom	**1 2 3 4 5 6**
3. The behavioral outcomes from this intervention were worth the time and effort required to implement it	**1 2 3 4 5 6**
4. This intervention was appropriate for the student given his/her age	**1 2 3 4 5 6**
5. This intervention was appropriate for the student given the behaviors he/she was displaying prior to implementation	**1 2 3 4 5 6**
6. The procedures used for this intervention interfered with my ability to effectively teach in my classroom	**1 2 3 4 5 6**
7. I would personally recommend this intervention to other teachers and/or schools	**1 2 3 4 5 6**
8. This intervention was easy to implement compared to others I have used in the classroom setting	**1 2 3 4 5 6**
9. The SG-CICO intervention required less time to implement compared to the traditional "Check-in/Check-out" intervention	**1 2 3 4 5 6**
10. The SG-CICO intervention was equally (or more) effective compared to the traditional "Check-in/Check-out" intervention	**1 2 3 4 5 6**

APPENDIX H

SG-CICO SOCIAL VALIDITY QUESTIONNAIRE (COORDINATOR)

Student-Guided CICO Intervention: ***Coordinator Acceptability Questionnaire***	
Intervention Evaluation Statements	**Rating Scale** **1=Strongly Disagree** **2= Moderately Disagree** **3 = Barely Disagree** **4= Barely Agree** **5 = Moderately Agree** **6 = Strongly Agree**
1. Adopting the SG-CICO interfered with my ability to function effectively as the school's CICO coordinator	**1 2 3 4 5 6**
2. I was able to use the same progress monitoring procedures for students participating in SG-CICO.	**1 2 3 4 5 6**
3. The "check-ins" and "check-outs" for students on SG-CICO took more time than those on standard CICO	**1 2 3 4 5 6**
4. Overall, it was easy to integrate this self-monitoring modification into our school's existing CICO intervention framework	**1 2 3 4 5 6**
5. The behavioral outcomes from SG-CICO were worth the time and effort required to be trained	**1 2 3 4 5 6**
6. Students participating in SG-CICO were equally as successful compared to those on standard CICO	**1 2 3 4 5 6**
7. This intervention was appropriate for the student given their age	**1 2 3 4 5 6**
8. This intervention was appropriate for the student given the behaviors he/she was displaying prior to implementation	**1 2 3 4 5 6**
9. I would personally recommend this intervention to other CICO coordinators and/or other middle schools	**1 2 3 4 5 6**
10. I am confident our school can continue using the SG-CICO intervention as an additional Tier II intervention option	**1 2 3 4 5 6**

APPENDIX I

SG-CICO SOCIAL VALIDITY QUESTIONNAIRE (STUDENT)

Student-Guided CICO Intervention: ***Student Acceptability Questionnaire***	
Program Evaluation Statements	**Rating Scale** **1=Strongly Disagree** **2= Moderately Disagree** **3 = Barely Disagree** **4= Barely Agree** **5 = Moderately Agree** **6 = Strongly Agree**
1. The morning check-in helped prepare me to have a great day at school	**1 2 3 4 5 6**
2. The training sessions which taught me how to self-monitor my behavior were helpful before starting the point card program	**1 2 3 4 5 6**
3. It remembered to rate my behavior after each class period without needing my teacher to remind me	**1 2 3 4 5 6**
4. Having my teacher rate my behavior a few times per day helped me stay on track and keep my behavior ratings accurate	**1 2 3 4 5 6**
5. I felt embarrassed participating in this program because other students were not doing the same thing	**1 2 3 4 5 6**
6. I think other students could benefit from the skills I learned through this program (such as being more aware of my own behavior)	**1 2 3 4 5 6**
7. I think this self-monitoring program has helped me stay more on-task and follow the behavior expectations in class	**1 2 3 4 5 6**
8. Participating in this program has helped me complete more work during academic times (such as reading and math class)	**1 2 3 4 5 6**
9. I think the afternoon check-out was helpful to review my progress and count up my the points I earned throughout the day	**1 2 3 4 5 6**
10. Overall, I enjoy this program and would like to continue participating in it for the rest of the school year	**1 2 3 4 5 6**

APPENDIX J

SG-CICO KNOWLEDGE ASSESSMENT (COORDINATOR)

SG-CICO Post-Training Knowledge Assessment: *Coordinator Form*

Instructions: Please respond to the following questions regarding implementation of the SG-CICO intervention. The purpose of this brief questionnaire is to be sure the intervention was clearly explained.

1. What is the rationale for implementing this modification to the standard CICO process?

- ☐ To help teach students important self-management skills
- ☐ To help students become more aware of and responsible for their own behavior
- ☐ To potentially reduce the amount of time required by teachers to implement CICO
- ☐ All of the above

2. List the additional steps you will take for students participating in the SG-CICO as opposed to the standard CICO intervention:

I. _____
II. _____
III. _____
IV. _____
V. _____

3. What will be each student's point goal when starting out on SG-CICO intervention?

- ☐ 60% of total points possible
- ☐ 70% of total points possible
- ☐ 80% of total points possible
- ☐ 90% of total points possible

4. When are students expected to self-monitor their behavior using the SG-CICO point card?

- ☐ Every ten minutes during the class period
- ☐ Once during the morning and once during the afternoon hours
- ☐ Following each class period throughout the day (e.g., reading, math, writing, etc.)
- ☐ Whenever the teacher tells the student to self-monitor

5. Which of the following best describes the self-monitoring process to be used during the initial implementation phase (the first week or so):

- ☐ Student asks the teacher to provide behavior ratings and *then* provides self-ratings
- ☐ Student provides self-ratings on the behavioral expectations and *then* approaches the teacher to compare their ratings after each class period
- ☐ Student provides self-ratings and then compares them to the teacher's at the end of the day
- ☐ The student provides self-ratings independently throughout the entire day

6. What is the agreement criterion for student-teacher ratings that will be used to determine when the frequency of teacher-issued ratings can be reduced?

- ☐ At least 80% agreement between the teacher and student across one full school

day

- ☐ 100% agreement between all teacher and student ratings on two out of three consecutive days
- ☐ At least 80% agreement between teacher and student ratings across the whole day for two out of three consecutive days
- ☐ 100% agreement on each student-teacher accuracy check during the first day of implementation
- ☐

7. After the student has met the agreement criterion, how frequently will the teacher provide "random" accuracy checks?

- ☐ After every class period
- ☐ One time per school day
- ☐ Two times per school day
- ☐ Never

8. What should the teacher do if their ratings during an "accuracy check" do not agree with those provided by the student?

- ☐ The teacher will reprimand the student and change their behavior ratings so they are in agreement with the teacher's
- ☐ The teacher will briefly provide neutral feedback by explaining the reason for his/her ratings, and will remind the student of the incentive for having accurate ratings (i.e., bonus points)
- ☐ The student will have all previous bonus points earned for accurate ratings revoked
- ☐ The student will be sent to the CICO coordinator to be retrained in how to self-monitor accurately

9. If the teacher's and student's ratings do not agree on three consecutive "accuracy checks", what should occur?

- ☐ The teacher and student will be given a brief refresher training to help improve agreement
- ☐ Only the student will be retrained in how to provide self-ratings
- ☐ The intervention will be discontinued
- ☐ Nothing will occur if the teacher-student ratings are in disagreement after three consecutive checks

10. Describe the steps you will take during the afternoon check-out for each student participating in the SG-CICO intervention:

I. _____
II. _____
III. _____
IV. _____
V. _____

11. If you have any additional questions or concerns, please list them below so we can address them in more detail:

I. _____
II. _____
III. _____

APPENDIX K

SG-CICO KNOWLEDGE ASSESSMENT (TEACHER)

SG-CICO Post-Training Knowledge Assessment: *Teacher Form*

Instructions: Please respond to the following questions regarding implementation of the SG-CICO intervention. The purpose of this brief questionnaire is to be sure the intervention was clearly explained.

1. What is the rationale for implementing the SG-CICO modification to the standard CICO process?

- ☐ To help teach students important self-management skills
- ☐ To help students become more aware of and responsible for their own behavior
- ☐ To potentially reduce the amount of time required by classroom teachers to implement CICO
- ☐ All of the above

2. What are the three behaviors that students participating in SG-CICO will be self-monitoring?

VI. _____

VII. _____

VIII. _____

3. Which of the following general guidelines should be used to determine the appropriate score that should be given according to the student's behavior:

- ☐ Award two points if no prompts are required for a given behavioral expectation
- ☐ Award one point if than three prompts are required during the class period for a given behavioral expectation
- ☐ Award zero points if the student receives more than three prompts during a class period to follow a given behavioral expectation
- ☐ All of the above should used as general guidelines for determining appropriate scores

4. When are students expected to self-monitor their behavior using the SG-CICO point card?

- ☐ Every ten minutes during the class period
- ☐ Once during the morning and once during the afternoon hours
- ☐ Following each class period throughout the day just like CICO (e.g., reading, math, writing, etc.)
- ☐ Whenever the teacher tells the student to self-monitor

5. Where should students keep their SG-CICO point card during the school day?

- ☐ The teacher should hold on to the card during the day
- ☐ The student should have the card on them at all times (e.g., on or in their desk, in a folder, etc.)
- ☐ The CICO coordinator will keep the student's card in their office during the day
- ☐ The student will have a different card located in all classrooms he/she visits each

day

6. Which of the following best describes the self-monitoring process to be used during the initial implementation phase in the classroom (the first week or so):

- ☐ Student asks you to provide behavior ratings and *then* provides self-ratings
- ☐ Student provides self-ratings on the behavioral expectations and *then* approached you to compare ratings after each class period
- ☐ Student provides self-ratings and then compares them with yours at the end of the day
- ☐ The student provides self-ratings independently throughout the entire day

7. What will be each student's point goal when starting out on SG-CICO intervention?

- ☐ 60% of total points possible
- ☐ 70% of total points possible
- ☐ 80% of total points possible
- ☐ 90% of total points possible

8. What is the agreement criterion for student-teacher ratings that will be used to determine when the frequency of teacher-issued ratings can be reduced?

- ☐ At least 80% agreement between the teacher and student across one full school day
- ☐ 100% agreement between all teacher and student ratings on two out of three consecutive days
- ☐ At least 80% agreement between teacher and student ratings across the whole day for two out of three consecutive days
- ☐ 100% agreement on each student-teacher accuracy check during the first day of implementation

9. After the student has met the agreement criterion, how frequently should you provide "random" accuracy checks?

- ☐ After every class period
- ☐ One time per school day
- ☐ Two times per school day
- ☐ Never

10. What should you do if the student's self-ratings are in agreement with your ratings during an "accuracy check"?

- ☐ Provide verbal praise and then walk away
- ☐ Provide no feedback regarding the matched behavior-rating
- ☐ Provide verbal praise for accurate self-ratings and tell the student he/she gets a "bonus point"
- ☐ Remind the student of the next time an "accuracy check" will be done

11. What should you do if the student's ratings during an "accuracy check" do not agree with those you have provided?

- ☐ Reprimand the student and change their behavior ratings so they are in agreement with the teacher's
- ☐ Briefly provide neutral feedback by explaining the reason for his/her ratings, and remind the student of the incentive for having accurate ratings (i.e., bonus points)
- ☐ The student will have all previous bonus points earned for accurate ratings revoked
- ☐ The student will be promptly sent to the CICO coordinator to be retrained in how

to self-monitor accurately

12. If your ratings do not agree with the student's on three consecutive "accuracy checks", what will occur?

- ☐ The teacher and student will be given a brief refresher training to help improve agreement
- ☐ Only the student will be retrained in how to provide self-ratings
- ☐ The intervention will be discontinued
- ☐ Nothing will occur if the teacher-student ratings are in disagreement after three consecutive checks

13. If you have any additional questions or concerns, please list them below so we can address them in more detail:

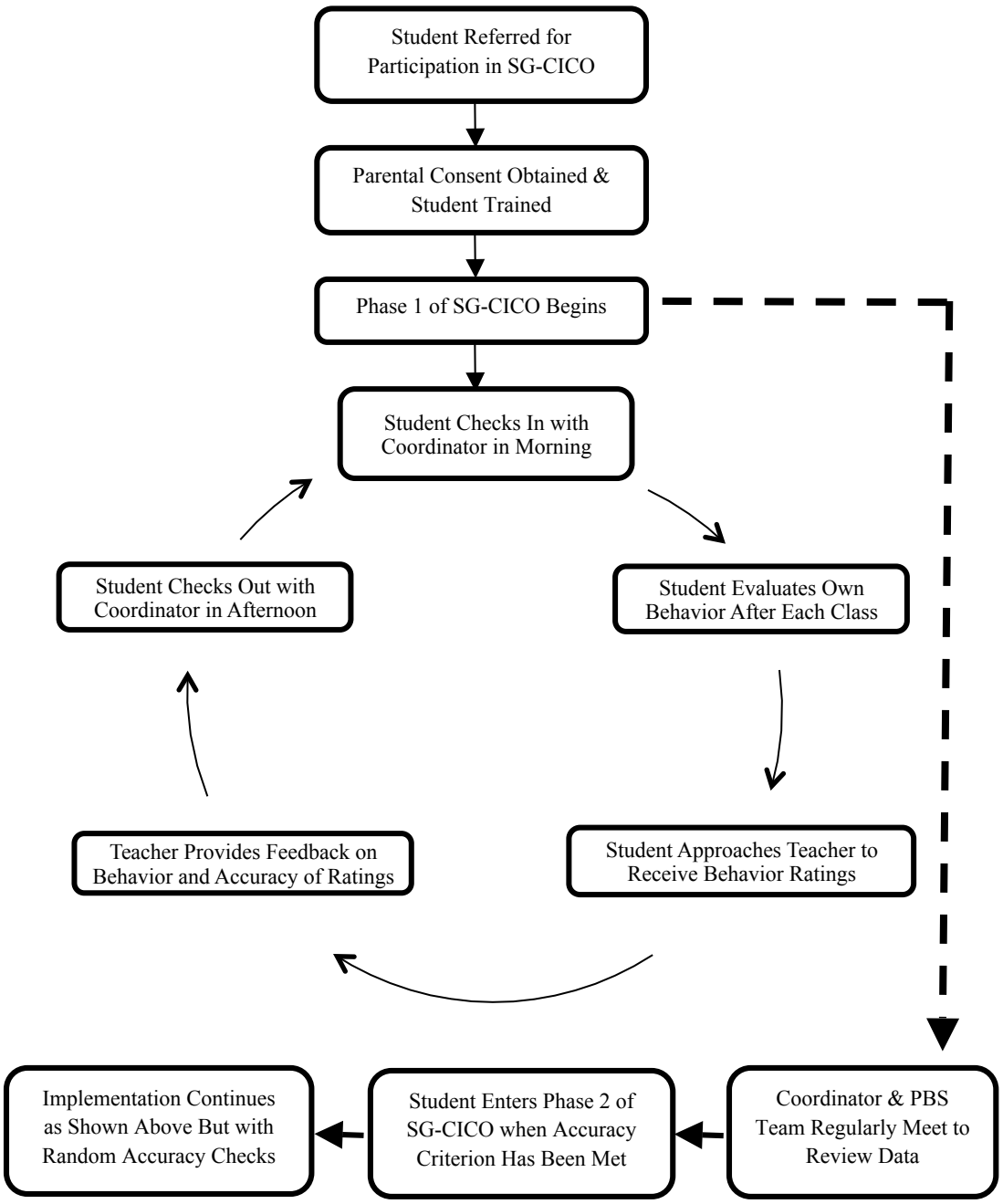
IV. _____

V. _____

VI. _____

APPENDIX L

FLOWCHART OF SG-CICO IMPLEMENTATION



REFERENCES CITED

Agran, M., Blanchard, C., Wehmeyer, M., & Hughes, C. (2001). Teaching students to self-regulate their behavior: the differential effects of student vs. teacher-delivered reinforcement. *Research in Developmental Disabilities, 22,* 319-332.

Agran, M., Alper, S., Cavin, M., Sinclair, T., Wehmeyer, M., & Hughes, C. (2005). Using self-monitoring to increase following-direction skills of students with moderate to severe disabilities in general education. *Education and Training in Developmental Disabilities, 40*(1), 3-13.

Amato-Zech, N. A., Hoff, K. E., & Doepke, K. J. (2006). Increasing on-task behavior in the classroom: Extension of self-monitoring strategies. *Psychology in the Schools, 43*(2), 211-222.

Anderson, C. M., & Borgmeier, C. (2007). *Efficient functional behavior assessment: the functional assessment checklist for teachers and staff (FACTS).* Eugene, OR: Educational and Community Supports. Available from http://www.pbis.org

Anderson, C. M., & Borgmeier, C. (2010). Tier II interventions within the framework of school-wide positive behavior support: Essential features for design, implementation, and maintenance. *Behavior Analysis in Practice, 3*(1), 33-45.

Ardoin, S., & Martens, B. (2004). Training children to make accurate self-evaluations: Effects on behavior and the quality of self-ratings. *Journal of Behavioral Education, 13*(1), 1-23.

Baer, D. (1984). Does research on self-control need more control? *Analysis and Intervention in Developmental Disabilities, 4,* 211-218.

Bandura, A. (1976). Self-reinforcement: Theoretical and methodological considerations. *Behaviorism, 4*(2), 135-155.

Bandura, A., & Perloff, B. (1967). Relative efficacy of self-monitored and externally imposed reinforcement systems. *Journal of Personality and Social Psychology, 7*(2), 111-116.

Blood, E., Johnson, J., Ridenour, L., Simmons, K., & Crouch, S. (2011). Using an IPod Touch to teach social and self-management skills to an elementary student with emotional/behavioral disorders. *Education & Treatment of Children, 34*(3), 299-322.

Bolstad, O., & Johnson, S. (1972). Self-regulation in the modification of disruptive classroom behavior. *Journal of Applied Behavior Analysis, 5*(4), 443-454.

Bradshaw, C., Reinke, W., Brown, L., Bevans, K., & Leaf, P. (2008). Implementation of school-wide positive behavioral interventions and supports in elementary schools: Observations of a randomized trial. *Education and Treatment of Children, 31*(1), 1-26.

Briere, D., & Simonsen, B. (2011). Self-monitoring interventions for at-risk middle school students: The importance of considering function. *Behavioral Disorders*, *36*(2), 129-140.

Briesch, A., & Chafouleas, S. (2009). Review and analysis of literature on self-management intervention to promote appropriate classroom behaviors (1988-2008). *School Psychology Quarterly, 24*(2), 106-118.

Brooks, A., Todd, A., Tofflemeyor, S., & Horner, R. (2003). Use of functional assessment and a self-management system to increase academic engagement and work completion. *Journal of Positive Behavior Interventions, 5*(3), 144-152.

Campbell, A., & Anderson, C. M. (2008). Enhancing effects of check-in/check-out with function-based support. *Behavior Disorders, 33*(4), 233-245.

Christensen, L., Young, K., Marchant, M. (2007). Behavioral intervention planning: Increasing appropriate behavior of a socially withdrawn student. *Education and Treatment of Children, 30*(4), 81-103.

Colvin, G., Kameenui, E. J., & Sugai, G. (1993). Schoolwide and classroom management: Reconceptualizing the integration and management of students with behavior problems in general education. *Education and Treatment of Children*, *16*, 361–381.

Cooper, J., Heron, T., & Heward, W. (2007). *Applied behavior analysis* (2nd ed.). Ohio: Merrill/Prentice Hall.

Crone, D. A., & Horner, R. H. (2003). *Building the capacity to implement functional behavioral assessment in schools: A practical guide to function-based support.* New York: Guilford.

Crone, D., Horner, R., & Hawken, L. (2004). *Responding to problem behavior in schools: The behavior education program.* New York: Guilford Press.

DiGangi, S. A., Maag, J. W., & Rutherford, R. B. (1991). Self-graphing of on-task behavior: Enhancing the reactive effects of self-monitoring on on-task behavior and academic performance. *Learning Disability Quarterly*, *14*(3), 221.

Drabman, R., Spitalnik, R., & O'Leary, K. (1973). Teaching self-control to disruptive children. *Journal of Abnormal Psychology, 82*(1), 10-16.

Drabman, R., & Lahey, B. (1974). Feedback in classroom behavior modification: Effects on the target and her classmates. *Journal of Applied Behavior Analysis, 7*(4), 591-598.

Dunlap, G., Clarke, S., Jackson, M., Wright, S., Ramos, E., & Brinson, S. (1995). Self-monitoring of classroom behaviors with students exhibiting emotional and behavioral challenges. *School Psychology Quarterly, 10*(2), 165-177.

DuPaul, G. J., & Hoff, K. E. (1998). Reducing disruptive behavior in general education settings: The use of self-management strategies. *School Psychology Review, 27*(2), 290-303.

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.

Ferster, C.B., Nurnberger, J.I. & Levitt, E.E. (1962). The control of eating. *Journal of Mathetics, 1*, 87- 109.

Filter, K. & Horner, R. (2009). Function-based academic interventions for problem behavior. *Education & Treatment of Children*, *32*(1), 1-19.

Filter, K., Benedict, E., Horner, R., McKenna, M., & 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(1), 69-84.

Ganz, J. B. (2008). Self-monitoring across age and ability levels: Teaching students to implement their own positive behavioral interventions. *Preventing School Failure: Alternative Education for Children and Youth*, *53*(1), 39-48.

Ganz, J. B., & Sigafoos, J. (2005). Self-monitoring: Are young adults with MR and autism able to utilize cognitive strategies independently? *Education and Training in Developmental Disabilities*, *40*(1), 24-33.

Ganz, J., Cook, K., & Earles-Vollrath, T. (2007). A grab bag of strategies for children with mild communication deficits. *Intervention in School and Clinic, 42*(3), 179–187.

Glynn, E. (1970). Classroom applications of self-determined reinforcement. *Journal of Applied Behavior Analysis, 3*(2), 123-132.

Goldiamond, I. (1976). Self-reinforcement. *Journal of Applied Behavior Analysis, 9*(4), 509-514.

Gregory, K., Kehle, T., & McLoughlin, C. (1997). Generalization and maintenance of treatment gains using self-management procedures with behaviorally disordered adolescents. *Psychological Reports, 80*, 683-690.

Gresham, F. (1996). Treatment integrity in single-subject research. In R.D. Franklin, D.B. Allison, & B.S. Gorman (eds): *Design and analysis of single-case research* (pp. 93-117). Hillsdale, NJ: Lawrence Erlbaum Associates.

Gresham, F. (1989). Assessment of treatment integrity in school consultation and prereferral intervention. *School Psychology Review, 18*(1), 37-50.

Gresham, F., & Elliott, S. (1990). *Social Skills Rating System: Manual.* Circle Pines, MN: American.

Gulchak, D. J. (2008). Using a mobile handheld computer to teach a student with an emotional and behavioral disorder to self-monitor attention. *Education and Treatment of Children*, *31*(4), 567-581.

Gureasko-Moore, S., DuPaul, G., & White, G. (2007). Self-management of classroom preparedness and homework: Effects on school functioning of adolescents with attention deficit hyperactivity disorder. *School Psychology Review, 36*(4), 647-664.

Harris, K., Friedlander, B., Saddler, B., Frizzelle, R., & Graham, S. (2005). Self-monitoring of attention versus self-monitoring of academic performance: Effects among students with ADHD in the general education classroom. *Journal of Special Education, 39*(2), 145-156.

Hawken, L., S. (2006). School psychologists as leaders in the implementation of a targeted intervention: The behavior education program. *School Psychology Quarterly, 21*(1), 91-111.

Hawken, L., & Horner, R. (2003). Evaluation of a targeted intervention within a school-wide system of behavior support. *Journal of Behavioral Education, 12*(3)*,* 225-240.

Hawken, L., MacLeod, K., & Rawlings, L. (2007). Effects of the behavior education program (BEP) on office discipline referrals of elementary school students. *Journal of Positive Behavior Interventions*, *9*(2), 94-101.

Hawken, L., O'Neill, R., & MacLeod, K. (2011). An investigation of the impact of function of problem behavior on effectiveness of the behavior education program (BEP). *Education and Treatment of Children, 34*(4), 551-574.

Higgins, J., Williams, R., & McLaughlin, T. F. (2001). The effects of a token economy employing instructional consequences for a third-grade student with learning disabilities: A data-based case study. *Education & Treatment of Children*, *24*(1), 99.

Kaufman, K., & O'Leary, D. (1972). Reward, cost, and self-evaluation procedures for disruptive students in a psychiatric hospital school. *Journal of Applied Behavior Analysis, 5*(3), 293-309.

Kazdin, A. (1984). *Behavior modification in applied settings* (3rd ed.). Homewood, Illinois: Dorsey Press.

Landau, S., & Swerdlik, M. (2005). What you see is what you get: A commentary on school-based direct observation systems. *School Psychology Review, 34*(4), 529-536.

Lane, K., Carter, E., Pierson, M., & Glaeser, B. (2006). Academic, social, and behavioral characteristics of high school students with emotional disturbances or learning disabilities. *Journal of Emotional and Behavioral Disorders, 14*(2), 108-117.

Lewis, T., & Sugai, G. (1999). Effective behavior support: A systems approach to proactive school-wide management. *Focus on Exceptional Children, 31*(6), 1-24.

Lochner, L., & Moretti, E. (2004). The effect of education on crime: evidence from prison inmates, arrests, and self-reports. *American Economic Review*, 94, 155-189.

Maguin, E., & Loeber, R. (1996). Academic performance and delinquency. *Crime and Justice, 20,*145-264.

March, R., Horner, R., Lewis-Palmer, T., Brown, D., Crone, D., Todd, A., & Carr, E. (2000). *Functional assessment checklist for teachers and staff (FACTS).* Eugene: University of Oregon.

March, R. E., & Horner, R.H. (2002). Feasibility and contributions of functional behavioral assessment in schools. *Journal of Emotional and Behavioral Disorders*, *10*(3), 158-170.

Martens, B., DiGennaro, F., Reed, D., Szczech, F., & Rosenthal, B. (2008). Contingency space analysis: An alternate method for identifying contingent relations from observational data. *Journal of Applied Behavior Analysis, 41*(1), 69-81.

Mathes, M., & Bender, W. (1997). The effects of self-monitoring on children with attention-deficit/hyperactivity disorder who are receiving pharmacological interventions. *Remedial and Special Education, 18*(2), 121-128.

McDougall, D., & Brady, M. (1995). Using audio-cued self-monitoring for students with severe behavior disorders. *The Journal of Educational Research, 88*(5), 309-317.

McIntosh, K., Campbell, A., Carter, D., & Dickey, C. (2009). Differential effects of a tier two behavior intervention based on function of problem behavior. *Journal of Positive Behavior Interventions, 11*(2)*,* 82-93.

Moore, D. W., Prebble, S., Robertson, J., Waetford, R., & Anderson, A. (2001). Self-recording with goal setting: A self-management programme for the classroom. *Educational Psychology, 21,* 255–265.

Newcomer, L. L., & Lewis, T. J. (2004). Functional behavioral assessment: An investigation of assessment reliability and effectiveness of function-based interventions. *Journal of Emotional and Behavioral Disorders*, *12*(3), 168-181.

Newman, B., Tuntigian, L., Ryan, C., & Reinecke, D. (1997). Self-management of a DRO procedure by three students with autism. *Behavioral Interventions, 12*(3), 149-156.

Ninness, H., Fuerst, J., Rutherford, R., & Glenn, S. (1991). Effects of self-management training and reinforcement on the transfer of improved conduct in the absence of supervision. *Journal of Applied Behavior Analysis, 24*(3), 499-508.

No Child Left Behind Act of 2001, 20 U.S.C. § 6319 (2008).

O'Reilly, M., Tiernan, R., Lancioni, G., Lacey, C., Hillery, J., & Gardiner, M. (2002). Use of self-monitoring and delayed feedback to increase on-task behavior in a post-institutionalized child within regular classroom settings. *Education & Treatment of Children*, *25*(1), 91-102.

Peterson, L., Young, K., West, R., Peterson, M. (1999). Effects of self-management on generalization of student performance to regular classrooms. *Education and Treatment of Children, 22*(3), 357-372.

Peterson, L., Young, K., Salzberg, C., West, R., & Hill, M. (2006). Using self-management procedures to improve classroom social skills in multiple general education settings. *Education and Treatment of Children, 29*(1), 1-21.

Rafferty, L., & Raimondi, S. (2009). Self-monitoring of attention versus self-monitoring of performance: Examining the differential effects among students with emotional disturbance engaged in independent math practice. *Journal of Behavioral Education*, *18*(4), 279-299.

Rafferty, L. (2010). Step-by-step: Teaching students to self-monitor. *Teaching Exceptional Students, 43*(2), 50-58.

Rankin, J., & Reid, R. (1995). The SM rap - Or, here's the rap on self-monitoring. *Intervention in School and Clinic, 30*(3), 181-188.

Reid, R., & Harris, K. (1993). Self-monitoring of attention versus self-monitoring of performance: Effects on attention and academic performance. *Exceptional Children, 60,* 29–40.

Reid, R., Trout, A., & Schartz, M. (2005). Self-regulation interventions for children with attention deficit/hyperactivity disorder. *Exceptional Children*, *71*(4), 361-377.

Reynolds, C. R., & Kamphaus, R. W. (2004). *Behavior Assessment Scale for Children* (2nd ed.). Circle Pines, MN: AGS Publishing.

Rhode, G., Morgan, D., & Young, K. (1983). Generalization and maintenance of treatment gains of behaviorally handicapped students from resource rooms to regular classrooms using self-evaluation procedures. *Journal of Applied Behavior Analysis, 16*(2), 171-188.

Rock, M. (2005). Use of strategic self-monitoring to enhance academic engagement, productivity, and accuracy of students with and without exceptionalities. *Journal of Positive Behavior Interventions*, *7*(1), 3-17.

Rosenbaum, M., & Drabman, R. (1979). Self-control training in the classroom: A review and critique. *Journal of Applied Behavior Analysis, 12*(3), 467-485.

Santogrossi, D., O'Learly, K., Romancyzk, R., & Kaufman, K. (1973). Self-evaluation by adolescents in a psychiatric hospital school token program. *Journal of Applied Behavior Analysis, 6*(2), 277-287.

Shadish, W., Cook, T., & Campbell, D. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston: Houghton-Mifflin.

Shapiro, E., DuPaul, G., & Bradley-Klug, K. (1998). Self-management as a strategy to improve the classroom behavior of adolescents with ADHD. *Journal of Learning Disabilities, 31*(6), 545-555.

Shimabukuro, S., & Prater, S. (1999). The effects of self-monitoring of academic performance on students with learning disabilities and ADD/ADHD. *Education & Treatment of Children, 22*(4), 397-414.

Skinner, B.F. (1953). *Science and human behavior.* New York, NY: Macmillan.

Simonsen, B., Myers, D., & Briere, D. (2011). Comparing a behavioral check-in/check-out (CICO) intervention to standard practice in an urban middle school setting using an experimental group design. *Journal of Positive Behavior Interventions, 13*(1), 31-48.

Smith, B. & Sugai, G. (2000). A self-management functional assessment-based behavior support plan for a middle school student with EBD. *Journal of Positive Behavior Interventions, 2*(4), 208-217.

Smith, D. J., Young, K. R., Nelson, J. R., & West, R. P. (1992). The effect of a self-management procedure on the classroom academic behavior of students with mild handicaps. *School Psychology Review*, *21*(1), 59-72.

Stewart, K. G., & McLaughlin, T. F. (1992). Self recording: Effects of reducing off-task behavior with a high school student with an attention deficit hyperactivity disorder. *Child & Family Behavior Therapy, 14,* 53–59.

Stokes, T., & Baer, D. (1977). An implicit technology of generalization. *Journal of Applied Behavior Analysis, 10*(2), 349-367.

Sugai, G., & Horner, R. (2006). A promising approach for expanding and staining school-wide positive behavior support. *School Psychology Review, 35*(2), 245-259.

Thoresen, C. E., & Mahoney, M. J. (1974). *Behavioral self-control*. New York: Holt, Rinehart & Winston.

Todd, A., Horner, R., & Sugai, G. (1999). Self-monitoring and self-recruited praise: Effects on problem behavior, academic engagement, and work completion in a typical classroom. *Journal of Positive Behavior Interventions, 1*(2), 66-76.

Todd, A., Campbell, A., Meyer, G., & Horner, R. (2008). The effects of targeted intervention to reduce problem behaviors: Elementary school implementation of check in-check out. *Journal of Positive Behavior Interventions, 10*(1), 46-55.

Turkewitz, H., O'Leary, K., & Ironsmith, M. (1975). Generalization and maintenance of appropriate behavior through self-control. *Journal of Consulting and Clinical Psychology, 43*(4), 577-583.

Uberti, H., Mastropieri, M., & Scruggs, T. (2004). Check it off: Individualizing a math algorithm for students with disabilities via self-monitoring checklists. *Intervention in School & Clinic*, *39*(5), 269-275.

Walker, H., Horner, R., Sugai, G., Bullis, M. Sprague, J., Bricker, D., & Kaufman, M. (1996). Integrated approaches to preventing antisocial behavior patterns among school-age youth. *Journal of Emotional and Behavioral Disorders, 4*(4)*,* 194-209.

Walker, H. M., Ramsey, E., & Gresham, F. (2003). Heading off disruptive behavior: How early intervention can reduce defiant behavior and win back teaching time. *American Educator, 26*(4), 6-45.

Wolfe, L., Heron, T., & Goddard, Y. (2000). Effects of self-monitoring on the on-task behavior and written language performance of elementary students with learning disabilities. *Journal of Behavioral Education, 10*(1), 49-73.

Wood, S., Murdock, J., & Cronin, M. (2002). Self-monitoring and at-risk middle school students: Academic performance improves, maintains, and generalizes. *Behavior Modification, 26*(5), 605-626.

Zlomke, K., & Zlomke, L. (2003). Token economy plus self -monitoring to reduce disruptive classroom behaviors. *Behavior Analyst Today*, *4*(2), 177-182.