An Evaluation of the Relationship Between Function of Behavior and a Modified Check-In, Check-Out Intervention using a Daily Behavior Report Card

Christopher John Klein

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An evaluation of the relationship between function of behavior and a modified check-in, check-out intervention using a daily behavior report card

By

Christopher John Klein

A Dissertation
Submitted to the Faculty of
Mississippi State University
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in the Department of Counseling and Educational Psychology

Mississippi State, Mississippi

August 2014
An evaluation of the relationship between function of behavior and a modified check-in, check-out intervention using a daily behavior report card

By

Christopher John Klein

Approved:

________________________________________
Tawny E. McCleon
(Co-Major Professor)

________________________________________
Carlen Henington
(Co-Major Professor)

________________________________________
Kimberly Renee Hall
(Committee Member)

________________________________________
Carmen D. Reisener
(Committee Member)

________________________________________
Daniel W. Wong
(Graduate Coordinator)

________________________________________
Richard Blackbourn
Dean
College of Education
The purpose of the study is to evaluate if the effectiveness of a check-in, check-out (CICO) intervention varies based on the function maintaining students’ target behaviors as determined by functional analyses prior to the implementation of the intervention. Participants in the study consisted of 6 children enrolled in general education Kindergarten classes across 6 teachers in the Southeastern United States. Upon completion of a functional analysis, participants were determined to fit into functional groups (i.e., combined attention and escape, attention, and escape), then a modified between groups design with a component of a multiple-baseline across participants design was completed. Overall, the current study found that the CICO intervention increased desired behavior as measured by points earned on the daily behavior report card ratings across baseline to intervention phases. All functional groups displayed an increase in average points earned from baseline phase across intervention phases. The results of the current study have implications within the educational systems for selecting interventions within the response to intervention framework, utilizing functional analysis.
for the CICO intervention, and acceptability of evidence based interventions. Limitations and recommendations for future research are presented.
DEDICATION

I would like to dedicate the current research to my niece, Kaitlyn, as she has continually reminded me of why we, as adults, have the responsibility to help children as best we can; our sacrifices and support never go unnoticed. Kate, remember to be honest, hard working, kind to others, and true to yourself and your life will be as fulfilling as you want your life to be with all things possible.
ACKNOWLEDGEMENTS

At this time I would like to take the time to thank all of the individuals throughout my graduate career that helped me to become the person and professional I am at the time of this writing. First, I would like to express my eternal gratitude to Dr. Tawny McCleon for her support and guidance over the course of my career at Mississippi State. Her mentorship, encouragement, and perpetual optimism gave me the strength to carry on, especially during our everlasting Monday meetings! Second, I would not be half the person I am without the support of my soon to be wife, Tasha. Thank you for understanding, long travel plans, late nights, sticking with me during those “funks,” and unwavering encouragement; I could not have done any of this without you. I would also like to thank Dr. Bruce Mortenson for his continued mentorship and hair-brain idea for me to pursue my doctorate in the first place; I look forward to the day we have official consultation and ‘doctor meetings’ on the golf course. I cannot forget to thank my family, particularly my nieces, mother, and brother without your love, prayers, and support I may still be up north in all the snow. Specifically to my brother, without our frequent stress relief online video game sessions, I may have quit or been on heavy medication to ease my anxiety, loneliness, and stress a long time ago.

Finally, I would like to thank my fellow graduate students who support me throughout this process, particularly the object observers that came with me and put up with my random schedules to collect enough data; Lacy I would not have been able to do
it without you. Becky, my fellow Present of the 5th floor, where all the ideas and policies happened, thank you. I would not have survived Starkville without you. Drs. Henington, Reisener, and Hall, thank you for your support and guidance throughout this process. I appreciate all your feedback and advice on how to complete a successful dissertation.

Thank you, Carpe Diem!
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Educators have one of the most difficult jobs within our society: preparing and teaching the future leaders and contributors of the world. The major focus of current educational systems is placed on how to teach core material (i.e., reading, writing, and arithmetic) with behavioral, emotional, and social functioning being an afterthought. In addition to educators having the responsibility to provide the academic foundation students will need to succeed, they are responsible for teaching students how to appropriately interact with other individuals in society. The behavioral, emotional, and social functioning of students often has an important impact on students’ educational performance and may have a significant impact on the education of peers (Duchaine, Green, & Jolivette, 2011; Zentall, Kuester, & Craig, 2011). Therefore, behavior management techniques and interventions should be a focal point within educational systems.

Due to legislative changes over the past 10 years, emphasis has been placed on incorporating behavior management techniques and interventions within educational systems. The Individuals with Disabilities Education Improvement Act of 2004 (IDEIA) indicates schools “may use a process that determine if the child responds to scientific, research-based intervention as part of the evaluation procedures” (Pub. L. No 108-446 § 614, 118 Stat. 2706, 2004). Therefore, instead of the traditional ‘IQ test and place’
method, schools are encouraged to use a *response to intervention* (RTI) framework to assist in meeting all students’ educational needs (Fairbanks, Sugai, Guardino, & Lathrop, 2007; Powers, Hagans, & Busse, 2008). The RTI framework includes implementation of three levels of tiered interventions to address students’ needs in the areas of academic and behavior, with the first tier focusing on all students, the second tier focusing on smaller groups of students needing more supports (i.e., 10 – 15% of the total school population), and the third tier focusing on individualized need of intensive supports (i.e., 3 – 5% of the total school population; Hawken, Adolphson, Macleod, & Schumann, 2008; Sugai & Horner, 2006; Wilson, Faggella-Lub, & Yan, 2013). The RTI framework includes assessment procedures, which can then be linked directly to intervention (Fairbanks et al., 2007), particularly focusing on behavior in this study.

As part of the RTI framework for addressing behavior, positive behavior supports are utilized at the tier one level that can help in determining appropriate system-wide interventions (George, Kincaid, & Pollard-Sage, 2008; Turnbull et al., 2002). Specifically, positive behavior supports seek to reduce discipline problems and increase positive outcomes for all students. The primary focus of positive behavior supports is to increase the display of socially desirable behaviors by creating an environment that makes the display of problematic behavior less rewarding (Scheuermann & Hall, 2008; Turnbull et al., 2002). Dunlap, Sailor, Horner and Sugai (2008) recommended that educational systems should include four components for successful implementation of positive behavior supports: (a) implementation of research-based behavioral science; (b) integration of various intervention methods to provide environmentally practical, valid support; (c) commitment to functional, long-standing lifestyle outcomes; and (d)
implementation of support with organizational systems that facilitate continual effects. Overall, positive behavior supports’ primary focus of increasing positive outcomes for all students meets the criteria at tier one in a RTI framework.

When considering the tier two level within a RTI framework, students with behavior concerns who did not respond at the tier one level are identified as in need of additional supplemental supports (Hawken et al., 2008; Hunley & McNamara, 2010). One behavioral intervention program that is associated with the tier two level and has been proven to be effective in reducing problematic behavior is the Behavior Education Program (Myers, Briere, & Simonsen, 2010; Newcomer, Freeman, & Barrett, 2013). This program is designed to provide additional behavioral support through teaching, modeling, practicing, and delivering feedback. One major component of the Behavior Education Program is delivering feedback, which is also known as check-in, check-out (CICO), where students are given consistent feedback by an adult regarding behavioral performance throughout the day. Feedback and progress within the Behavior Education Program is monitored by using a daily progress report (Hawken et al., 2008; Hawken, O’Neill, & MacLeod, 2011), which can be considered a slight modification of the daily behavior report card (DBRC; Schumaker, Hovell, & Sherman, 1977) and includes an added parental involvement component (Hawken et al., 2008; Hawken et al., 2011).

Similar to the daily progress report used to provide feedback during CICO, the DBRC is a tool that can be used to collect data for monitoring progress to assist in the decision making process (Riley-Tillman, Chafouleas, & Briesch, 2007). Although DBRCs have not been directly defined in the literature, guidelines are provided based on effectiveness, which includes specifying behavior(s), rating the behavior(s), and sharing
the information across individuals (e.g., parents, teachers, students) in order to monitor
the effects of an intervention (Chafouleas, McDougal, Riley-Tillman, Panahon, & Hilt,
2005; Chafouleas, Riley-Tillman, & McDougal, 2002; Riley-Tillman et al., 2007).
Consequently, combining the DBRC with a CICO intervention can serve as an effective
method for monitoring process at the tier two level within a RTI framework. Overall, the
CICO component of the Behavior Education Program can serve as an effective tier two
level intervention to address students with behavior concerns within a RTI framework.

At the tier three level of a RTI framework, students with behavioral concerns are
identified as in need of more intensive supports (Hawken et al., 2008; Hunley &
McNamara, 2010). Tier three interventions have been recommended to incorporate
functional behavior assessments (FBA) to address individualized needs and assist in the
development of behavior intervention and support plans (Cooper, Heron, & Heward,
2006; IDEIA, 2004; MDE, 2010). The recommended FBA process includes direct and
indirect assessments, such as record reviews, interviews, observations, and verification of
the cause(s) of problematic behavior (Camacho, Anderson, Moore, & Furlonger, 2014;
Sterling-Turner, Robinson, & Wilczynski, 2001). Upon the review of FBA data,
behavioral intervention and support plans are linked to the individualized antecedents and
causes of problematic behavior (Restori, Gresham, Change, Lee, & Laija-Rodriquez,
2007; Watson & Steege, 2003). Overall, individualized behavior intervention and support
plans developed based upon FBA may serve as an effective strategy at the tier three level
within a RTI framework.

Based on a RTI framework, the FBA process is highly recommended at the tier
three level primarily to provide individualized and intensive supports to students with
behavior concerns. However, the FBA process could offer insight to explain students’ problematic behavior at any tier level and setting within a RTI framework (Horner, 1994; MDE, 2010; Sugai, Horner, Fixsen, & Blase, 2010). Horner (1994) suggested that verifying the cause of behavior (i.e., functional analysis) within FBAs or in isolation is vital in addressing problematic behavior. Verification procedures with the FBA process are referred to as functional analysis, which involves the manipulation of environmental events to determine the cause of problematic behavior (Cooper et al., 2006; Gresham, Watson, & Skinner, 2001; Iwata, Dorsey, Slifer, Bauman, & Richman, 1994). Thus, the use of FBA, including functional analysis at any level of a RTI framework can be beneficial to intervention planning when addressing students with behavioral concerns.

Although CICO has been found to be effective at decreasing office discipline referrals and behaviors of concern (Hawken, 2006; Hawken & Horner, 2003; Hawken, MacLeod, & Rawlings, 2007; McCurdy, Kunsch, & Reibstein, 2007), the existing literature evaluating CICO primarily supports the effectiveness of CICO for students who display problematic behavior maintained by attention (Fairbanks et al., 2007; March & Horner, 2002; Todd, Campbell, Meyere, & Horner, 2008). Although previous research has focused on which function of behavior (i.e., combined attention and escape, attention, escape, access to tangibles) best responds to CICO, the representation of each function was found to be inconsistent. Also, in each of the studies mentioned, the functional relationship between the use of CICO and problematic behavior was determined by the use of indirect FBA methods (i.e., interviews and observations; e.g., Hawken & Horner, 2003; Hawken et al., 2011; Lane, Capizzi, Fisher, & Ennis, 2012) rather than manipulating the environment through functional analysis. Therefore, in order to best
determine the relationship of CICO to the function of displayed behavior, conducting functional analyses of students’ behavior before the implementation of CICO is beneficial to behavior intervention and support planning.

Statement of the Problem

Changes in legislation (e.g., No Child Left Behind [NCLB], 2002 and IDEIA) over the past 10 years has produced a phenomenon of transformation with focus on educational performance to expand beyond academic core material taught by teachers to educational systems also placing greater focus on behavioral, emotional, and social functioning of students (Hoffman & Caniglia, 2009; Oliver & Reschly, 2007). The RTI framework encourages the use of positive behavior supports and individualized behavior intervention supports for all students (Sugai et al., 2010; Turnbull et al., 2002). However, educators continue to struggle with selecting and implementing appropriate strategies to address students with behavioral concerns due to lack of resources and expertise.

The literature has consistently shown that some interventions, specifically CICO, are effective in increasing desirable behaviors inside the classroom and decreasing office discipline referrals (Hawken, 2006; Hawken, MacLeod, & Rawlins, 2007; Todd et al., 2008). Also, the literature using indirect FBA methods has shown CICO to have positive effects for students with an identified function of attention for target behaviors. However, the current literature fails to explicitly compare the functional relationship of behavior through functional analysis and the use of CICO.
Purpose of the Study

The purpose of the current study was to evaluate if the effectiveness of CICO varies based on the function maintaining students’ target behaviors as determined by functional analyses prior to the implementation of the intervention. Specifically, the study examined the differences between participants with target behaviors maintained by combined (i.e., attention and escape), attention, and escape. After the function of target behaviors was determined, the study evaluated the relationship between the function of behavior and effects of CICO on student performance using teacher ratings from a DBRC.

Research Question

From previous literature, one research question was developed. The current study includes the following research question:

Is there a differentiation in the effectiveness of a CICO intervention, as measured by the DBRC, based on the function of behavior (i.e., combined attention and escape, attention, and escape)?
CHAPTER II
REVIEW OF THE LITERATURE

Due to changes in the nature of students’ educational problems, current legislation has placed more emphasis on addressing the behavioral, social, and emotional functioning of children participating in the United States educational system (Duchnowski & Kutash, 2011; Freeman & Sugai, 2013). Behavioral interventions and supports have been vital to addressing students who display problematic behaviors in the school setting (Benner, Nelson, Sanders, & Ralston, 2012; Snyder et al., 2013). Of the many types of behavioral interventions and supports, feedback methods such as check-in, check-out (CICO) are commonly used in educational systems due to feasibility and cost efficiency (Lingo, Jolivette, & Barton-Arwood, 2009; Todd et al., 2008). This chapter will consist of a literature review of the issues, concerns, and research relevant to the topic. The following topics will be discussed: (a) theoretical basis; (b) functional assessment and analysis; (c) evidence based interventions; and (d) types of feedback intervention methods; (e) an overall summary; and (f) rationale of study.

Theoretical Basis

Rarely do new ideas (e.g., current educational practices) come to fruition without any influence from prior research. In the field of education, theories are intertwined with educational frameworks to provide guidance for instructional practices and intervention
designs, such as behaviorism and response to intervention (RTI). In terms of intervention design in the educational setting, the key principles of behaviorism are found throughout day-to-day practices for addressing both academic and behavior functioning of students. Although other theoretical frameworks exist to address problem behavior displayed by student, behaviorism provides arguably a good foundation for the development of strategies to address school-wide climate, classroom management, individualized support plans and identification of students’ needs, all of which are ingrained in the RTI educational framework. The RTI framework is designed to meet all students’ academic and behavior needs through frequent data collection in order to help in the decision making process. The behavioral component of the RTI framework is grounded in behavioral principles. Behaviorism and the RTI framework will be discussed in the following sections.

**Behaviorism**

As mentioned previously, instructional practices and intervention designs used in current educational systems typically incorporate key principles of behaviorism. Whether educators are focusing on identifying individual student’s needs, classroom management, or systemic changes, behaviorism typically plays a major role in influencing practices even though professionals can hold other theoretical perspectives (e.g., attachment, cognitive, interdependence, and social cognitive; Barry & Kelly, 2006; Card, 2011; Kennedy & Kennedy, 2004). Two key behaviorists who have influenced behavioral practices in the educational system are Edward Thorndike and B.F. Skinner.

Thorndike, a leader in educational psychology, proposed two key principles of learning: Law of Effect and Law of Exercise (Thorndike, 1898). The first key principle,
the Law of Effect indicates if an act was followed by a satisfying change in the environment, the act is likely to be repeated. Conversely, if the act is followed by unsatisfactory change, the behavior is unlikely to be repeated (Thorndike, 1898, 1912). The Law of Exercise, Thorndike’s second key principle, indicates that with practice, associations are strengthened and without practice, associations are weakened (Cooper-Twamley & Null, 2009; Thorndike, 1898). Basic application of Thorndike’s Law of Exercise includes students practicing the material over and over until the material is mastered and students reviewing previously taught skills. Thorndike believed students are more likely to do something pleasant rather than something unpleasant. He also believed the more one practices something, the more likely they are to remember a skill (Thorndike, 1906). In summary, based on Thorndike’s two key principles of learning, the more students practice and the more often students are reinforced for successful practice, then the more likely students will display learned behaviors. In other words, practice and reinforcement will lead to high rates of learning (Gable, Hester, Rock, & Hughes, 2009; Thorndike, 1912). Thus, the contributions of Thorndike provided a foundation for behaviorism (e.g., B.F. Skinner), which today is instrumental in designing positive behavior supports within the RTI framework (Cooper-Twamley & Null, 2009).

Using the foundation provided by Thorndike, B. F. Skinner, one of the most well known behaviorists, applied principles of learning to explain the concept of operant conditioning (Bush, 2006). Operant conditioning utilizes two principles to help teach behavior: reinforcement and punishment. Reinforcement is the process of increasing the chances a specific behavior will be repeated (e.g., providing a piece of candy after raising your hand to answer a question; Skinner, 1938, 1953). Punishment is the process of
decreasing the chances a specific behavior will be repeated (e.g., administering corporal
punishment to a student for calling out in order to answer a question too many times; 
Skinner, 1938, 1953). Skinner (1968) advocated that the use of reinforcement is key for
learning as students retain small amounts of information over time in a step-like fashion
(i.e., learning what behaviors are expected must be reinforced over time until all
behaviors are mastered or demonstrated). In summary, reinforcement is key to successful
display of desired behavior. Thus, the operant conditioning applied in the school setting
addresses both system-wide and individual needs to address academic and behavior

According to behaviorism, learners undergo some form of conditioning to
produce a behavioral result (e.g., learning appropriate behaviors; Boghossian, 2006).
However, the way students learn what behavior is appropriate or inappropriate must be
explicitly defined; otherwise students will be unaware of what they should be doing.
Behaviorists must lay out learning objectives in behavioral (i.e., observable) terms in
order to record and provide reinforcement or punishment appropriately (Hergenhahn &
Olson, 2005; Petress, 2006). In the school setting, reinforcement should be based on
clearly defined contingencies (e.g., operational definitions of desired behaviors and
subsequent consequences), so behavior deemed important is encouraged. Additionally,
teachers adopting behavioral theory would avoid the use of punishment altogether.
Therefore, the teachers would reinforce appropriate behavior and ignore inappropriate
behavior; while overtime, the teachers would move from target behaviors being
reinforced 100% of the time to partial reinforcement (Hergenhahn & Olson, 2005;
Ingvarsson, Hanley, & Welter, 2009).
In summary, based on two prominent theorists, reinforcement of operationally defined behaviors and repeated practice is the key to teaching new behaviors in the educational system. Behaviorism focuses on providing students with the necessary skills to learn what is expected by teaching the student how to behave through the use of reinforcement. Behaviorism does not advocate the use of punishment, but rather supports an environment for students to be reinforced consistently for display of appropriate behaviors. Educators are encouraged to provide examples of what behaviors are expected (e.g., instructional strategies), to monitor the behaviors with strict accountability measures (e.g., progress monitoring or permanent products; Bush 2006; Lembke & Stichter, 2006; Torres, Farley, & Cook, 2012; Ysseldyke & Tardew, 2007), and then reinforce the display of the desired behaviors while ignoring undesirable behaviors (i.e., consequent strategies; Christensen, Young, & Marchant, 2007; Downing, Keating, & Bennett, 2005). Overall, key behavioral principles are utilized in the decision making process for addressing students with behavioral concerns. Educators may refer to behavioral principles in order to address appropriate intervention strategies at all levels of the educational system. Thus, behaviorism has an impact on assessment, intervention planning and implementation, and progress monitoring.

Response to Intervention

RTI is an educational framework designed to identify and meet student’s academic, behavioral, and mental health needs through increasingly more intense levels of assessment and interventions (Hunley & McNamara, 2010; Steinberg, 2013). When examining the RTI framework there are several key components often described: (a) using a continuum of evidence-based services for all students, from universal
interventions and procedures to high intensity and individual interventions; (b) pre-established decision points to determine if students are performing below their peers in academic and social behavior domains; (c) continual monitoring of student progress; (d) employment of more intensive or different interventions when students do not improve in response to other interventions; and (e) evaluation for special education services if students do not respond to the highest level of individualized intervention instruction (Barnett et al., 2006; Fairbanks et al., 2007; Myers, Simonsen, & Sugai, 2011).

Although RTI has traditionally focused on academic needs, the behavioral needs of students are starting to be incorporated into the RTI framework, thus the need for research to support evidence-based practices within an RTI framework is necessary. Although the empirical support for the overall RTI framework is in the early stages, behavior frameworks using the RTI framework have been implemented (Barnett et al., 2006; VanDerHeyden, Witt, & Barnett, 2005). The frameworks have inclusive and gradual levels for various behavior needs: (a) tier one, which consists of universal interventions for all students; (b) tier two, which consists of targeted interventions for students not responding to tier one interventions with the interventions often provided in small groups; and (c) tier three, which consists of highly intensive and individualized interventions based on assessments of the student’s needs (Barnett et al., 2006; Sulkowski, Joyce, & Storch, 2012). In traditional behavior RTI frameworks, tier one interventions may be as simple as having school-wide rules, educating and practicing the rules as a class, and reinforcement for following the rules. Tier two interventions are standard protocols of more intensive interventions (e.g., modified CICO) and supplemental to the universal interventions being applied at the class wide level.
Comparatively, tier three interventions are often based on FBA, which try to determine what is maintaining or causing the student to display the behavior of concern (e.g., teacher attention, escape from demand; Barnett et al., 2006; Fairbanks et al., 2007). In addition, tier three adds more frequent progress monitoring to support decision-making and structured problem solving by applying functional assessment methods to students not responding to tier two interventions or who need more immediate comprehensive programming (Barnett et al., 2006; Sulkowski et al., 2012).

RTI is designed to determine whether to increase or decrease academic or behavior support to students (Steinberg, 2013; VanDerHeyden, 2005). RTI attempts to promote learning environments that are effective, efficient, relevant, and durable for all individuals involved (i.e., students, teachers, parents). RTI is designed to use data-based decisions to increase or decrease the intensity of support; either academic or behavioral (Myers et al., 2011; Steinberg, 2013; VanDerHeyden, 2005). In an RTI framework, tier two interventions (i.e., targeted interventions) focus on providing feedback (e.g., DBRC, CICO) to students in a systematic way in order for the student to learn and subsequently maintain the new behaviors being taught (Myers et al., 2011). A tier two intervention can simply be taking the school or class wide goals or rules and providing a feedback system with reinforcement built in (i.e., earn points for the display of appropriate behaviors across the day that are then exchanged for preferred items like extra computer time). DBRC and a CICO intervention are ideally suited to meet the needs of tier two students due to their flexibility in design and ease of use to collect data and/or serve as a stand-alone intervention.
With RTI becoming more popular due to the passage of IDEIA, the importance of accurate data is key. Formative, frequent, and valid measures of behavior are necessary in order to support and make decisions for students. For example, the DBRC is a tool that can be used to collect data for behavior monitoring to help in the decision making process (Riley-Tillman et al., 2007; Vannest, Burke, Sauber, Davis, & Davis, 2011) either at the tier two level to provide behavior monitoring for future decisions or at the tier three level after an FBA is considered and a specific intervention is designed. However, at the tier three level, DBRCs should always be used in conjunction with frequent systematic direct observations to ensure appropriate education decisions are made (Riley-Tillman et al., 2007). At the tier two level, DBRCs can be used as an intervention tool to rate and provide feedback to students for behaviors ranging from inappropriate vocalization to academic behaviors such as completing homework or task accuracy (Cheney, Flower, & Templeton, 2008; Riley-Tillman et al., 2007).

In conclusion, RTI is an educational framework that can address academic, behavioral, and mental health concerns within a three tiered process (Hawken et al., 2008; Hunley & McNamara, 2010; Steinberg, 2013). The three tiers start at a universal level (i.e., tier one) then increase to more targeted supplemental level (i.e., tier two) and to intensive (i.e., tier three) interventions with few students participating at each tier. The fundamental idea behind the tier process is to determine what individuals do not respond to evidence-based practices at the respective tier in order to provide the appropriate supports to those individuals in order for individual to succeed in the setting.
Summary

Behaviorism focuses strictly on clear operationally defined behaviors and reinforcement by any means (e.g., tangible item, praise, or the removal of unpleasant stimulus) in order to increase the desired behavior(s) of individuals. When looking at the education field, Thorndike and Skinner led the way in their conceptualization of increasing positive student behavior. By ensuring students are informed of behavioral expectations, reinforced for the desired behaviors, and continually practice those practices, only then will positive student behavior be consistently displayed. Therefore, in order to provide varying levels of support (i.e., reinforcement), the RTI framework is necessary. At a tier one level, students are informed for the behavioral expectations and given basic rewards periodically and a majority (i.e., approximately 80%) of students will respond to the basic interventions. However, those students not responding are given additional reminders and more frequent reinforcement of the display of behaviors at the tier two level, which 10 to 15% of student will then respond. For the approximately five percent of students not responding at a tier one and two level, the RTI framework provides intensive interventions to determine what reinforcement will work best for the student due to the fact previous interventions focusing on basic teaching, reminders, and reinforcement did not work at the previous tiers. Thus, combing the behaviorism principles and current RTI framework.

Functional Assessment and Analysis

Due to the legislative changes (i.e., IDEIA and NCLB) the utilization of the RTI framework and FBAs to address all students’ concerns has increased in educational systems, especially to address behavioral concerns (IDEIA, 2006; NCLB, 2004;
As previously mentioned, the RTI framework encourages the utilization of behavioral principles at all tier levels (Benner et al., 2012; Myers et al., 2011; Thompson, Marchant, Anderson, Prater, & Gibb, 2012). Specifically at the tier three level for behavior, the framework focuses on individualized, intensive intervention strategies. FBA procedures, which are grounded in behavioral principles, are commonly used in the educational systems at the tier three level and mandated in specific situations to address discipline under IDEIA (Lee, Vostal, Lylo, & Hua, 2011; Pavri, 2010; Saeki et al., 2011; Scott, Anderson, & Alter, 2012). Thus, assisting students with behavioral concerns, educators are highly likely to be exposed to FBA procedures during intervention planning in the school setting.

As educators seek to develop behavior intervention and support plans in the school setting, the FBA process may be used to address behavioral concerns. The purpose of the FBA is to provide insight and understanding of the environmental factors maintaining a student’s behaviors and to assist with the development of behavior intervention plans in the classroom (Gable, Park, & Scott, 2014; Scott, Anderson, Mancil, & Alter, 2008). Specifically, conducting the FBA seeks to identify the functional relationship of behaviors, such as attention and escape/avoidance (Cooper et al., 2006). The FBA process involves collecting data using direct (e.g., observations) and indirect assessment methods (e.g., interviews, rating scales; Gable et al., 2014; Herzinger & Campbell, 2007); and verification procedures (Cooper et al., 2006) to identify the antecedents and consequences of behavior (Gresham et al., 2001; Watson & Steege, 2003). Although highly encouraged in the RTI framework and mandated in IDEIA, the FBA process can by complicated and time consuming for educators.
Depending upon the time constraints, nature of problem behavior, and setting, any combination of the above mentioned methods for FBA may be used to complete the process thus potentially impacting the validity of the result (Gable et al., 2014; Gresham et al., 2004). The verification procedure, also known as functional analysis, is the only component of the FBA that can be used to test and confirm hypotheses about a possible function(s) of target behaviors (Cooper et al., 2006). Functional analysis is the most commonly used experimental procedure to demonstrate a causal relationship between behavior and environmental stimuli. Similar the FBA process, the goal of a functional analysis is to determine the function or purpose of the displayed target behaviors (Cihak, Alberto, & Fredrick, 2007; Herzinger & Campbell, 2007) and has the potential to produce more reliable results.

When conducting a functional analysis, the educator is encouraged to follow a systematic approach. Based on the work of Iwata, Dorsey, Slifer, Bauman, and Richman (1994), there are typically four conditions within a functional analysis: contingent attention, contingent escape, alone, and a control. The procedure in the contingent attention condition is to withhold attention before target behaviors, but provide attention in the form light corrections following the display of target behaviors. In the contingent escape condition, task demands are provided continuously but once target behaviors are displayed the demand is removed. In the alone condition, low level of environmental stimulation (i.e., play materials are absent) is provided and target behaviors are ignored or redirected in a neutral tone. In the control condition, preferred toys and activities are provided without any demands and target behaviors are ignored or redirected in a neutral tone (Cihak et al., 2007; Cooper et al., 2006). With the functional analysis, the individual
implementing the functional analysis procedures alternates conditions (e.g., contingent attention, contingent escape, control, alone). Throughout each condition (e.g., contingent attention, contingent escape, control, alone), frequency data are being collected on the target behaviors. The conditions are presented multiple times and in random order to avoid bias. The frequency data are then graphed and conditions (e.g., contingent attention, contingent escape, control, alone) with significantly higher raters of target behaviors is assumed to be the function of the behavior(s). Due to the systematic procedures recommended, the functional analysis is considered the gold standard for validity (Cihak et al., 2007; Cooper et al., 2006; Herzinger & Campbell, 2007), but may pose several limitations in educational systems.

In the school setting, functional analyses are often thought to be too difficult to execute due to limited resources (e.g., time, staff) and lack of training by school staff members (Asmus, Vollmer, & Borrero, 2002; Sturmey, 1994). Often the completion of a functional analysis is reserved for students with development disabilities and display severe target behaviors (e.g., self-injurious behavior; Iwata et al., 1994). However, recent research has found a functional analysis can be successfully completed with only slight modifications to traditional clinic-based functional analysis with students without developmental disabilities (Kodak, Fisher, Paden, & Dickes, 2013; LeGray, Dufrene, Sterling-Turner, Olmi, & Bellone, 2010; Mueller, Nkosi, & Hine, 2011; Wright-Gallo, Higbee, Reagon, & Davey, 2006). In fact, with relatively short training sessions (e.g., 20 – 30 minutes) teachers and paraprofessionals have been found to successfully conduct functional analysis with integrity (Bessette & Wills, 2007; Skinner, Veerkamp, Kamps, & Andra, 2009).
Summary

In summary, the utilization of the FBAs in the educational system to address students’ behavioral concerns is rising due to legislative changes. FBAs play a vital role in developing behavioral intervention and supports by identifying the functional relationship of the environment and target behaviors. However, the FBA methods used vary from situation to situation, thus impacting the validity of the results. When seeking to identify the causal relationship between a targeted behavior and the function of that behavior, functional analyses are considered to be the best methodology due to its systematic approach. Other benefits for conducting functional analyses compared to FBAs, are direct observable data and time efficiency (Cihak et al., 2007; Herzinger & Campbell, 2007). Understanding the function of students’ problematic behavior as determined by functional analyses is key to individualizing behavior intervention and support planning at any level of the RTI framework.

Evidence Based Interventions

The utility of positive behavior supports has become more common in the educational system to help meet the needs of students with behavioral, social, and emotional concerns. Due to legislative initiatives (e.g., NCLB and IDEIA), the necessity for local educational agencies to make educational decisions based on data are mandated (Steinberg, 2013; Vannest et al., 2011), which fosters a burden for educators to focus on effectiveness of an intervention and cost efficiency (i.e., resources required, time, and effort) of selected behavioral techniques and interventions (Scott et al., 2008). Educators struggle with identifying, selecting, and most importantly monitoring the progress of
behavioral techniques and interventions for students (Gresham, 2005; Sulkowski et al., 2012) within all levels of the RTI framework.

The use of evidence-based practices meets the legislative requirements, educators’ demands, and individual student’s behavioral needs. Evidence-based practices are intervention, prevention, and treatment approaches, including research-based, manualized, and structured practices that have been tested experimentally in order to establish causation. Guidelines to determine if a practice is evidence-based is effective is based on effect sizes of a given research experiment or meta-analysis with .80 considered high, .50 to .79 moderate, and between .20 to .49 considered weak (Walker, 2004). Unfortunately, leaders in education view recommended practices, even evidence-based practices, with skepticism due to the practices have not been previously embedded within the routine or school system, which further justifies the need for evidence based interventions (EBI; Torres et al., 2012; Walker, 2004).

EBI which fall under the larger category of evidence-based practices (Torres et al., 2012; Walker, 2004) are based on research proving the intervention to be effective (i.e., found to be responsible for producing desired outcomes), efficient (i.e., able to be implemented with average resources available), relevant (i.e., adaptable to individual needs), sustainable (i.e., able to be implemented with fidelity over time with average resources available), and scalable (i.e., the practice able to be applied to similar, but varying situations and/or individuals; Sugai et al., 2010). The mandatory K – 12 education of children is well known for having a large gap between what research has found to be effective and the actual implementation and practice of those interventions. The establishment of effective interventions can take up to 20 years before being
implemented with regularity and integrity in the K – 12 education field. The need to move forward with EBI and increase standards for research in the school is necessary (Walker, 2004).

Ensuring the success for utilization of EBI in the school setting, two key elements must occur for educational settings, establishment of positive relationships and feasibility. The first element to successful utilization of EBI in the school setting is to have creators of interventions work with potential local educational agencies with an open and supportive relationship. Suggested aspects of a positive relationship that can lead to increased implementation of EBI are to ensure quality, not necessarily large quantitative technical support, matching program characteristics, consistent staffing, and community support. Interventions that do not match the school mission (i.e., characteristics) are likely to be rejected. However, if the intervention(s) are universal, require consistent implementation (e.g., class-wide social skills), and can be linked to increases in previously identified outcomes, then the intervention(s) are more likely to be implemented with fidelity. The second key element for utilization for EBI is exploring and establishing feasibly among educators. In order to move to increased implementation of EBI, research in schools must focus on implementation and treatment integrity, scaling up, diffusion and sustaining intervention, and address the issue of generalization of effectiveness of identified research interventions in a controlled setting to the actual practice setting. Educators must keep in mind that the interventions we provide to children must match the need or function of the student to practical application, including feasibility. If we provide interventions not matching the need of a student, which will likely result in no change in student behavior, then the student (and staff) will become
even more resistant to future interventions. Therefore, the key is to match student need with interventions that have been found to be successful with students displaying similar behavior (Torres et al., 2012; Walker, 2004).

**Summary**

In summary, EBI utilized in the school setting can provide empirical support for effectively addressing the behavioral, social, and emotional concerns of all students. Having researched-based and structured practices provides accountability for educators when implementing behavioral techniques and interventions with the RTI framework. Specifically, EBI ensure that practices utilized in educational systems are effective, efficient, relevant, sustainable, and scalable. When EBI are used in conjunction with FBA procedures, educators may demonstrate success with effectively addressing the individualized needs of all students.

FBA methods are necessary to match student’s needs to interventions that are effective and efficient. However, FBA methods vary in their definitions and ultimately their methodologies, which can eventually lead to different outcomes depending on the method employed. Conversely, functional analyses have consistently demonstrated their effectiveness in determine the true function of an individual’s displayed behavior(s) of concern. Therefore, the outcomes of completed functional analysis can inform practitioners (i.e., teachers and school staff members) on which EBI to use with a given student. The interventions based on research are now required by law, which has increased the need for conducting functional analyses that lead to EBI within the school setting.
Types of Feedback Intervention Methods

Among the EBI utilized in the school setting, providing feedback is one key element (Ysseldyke & Elliott, 1999) to the learning process. Several types of feedback have been found to be effective in improving student performance, such as visual performance feedback (Lingo et al., 2009; Mesa, Lewis-Palmer, & Reinke, 2005), corrective feedback (Kirby & Shields, 1972; Skinner, Shapiro, Turco, Cole, & Brown, 1992), differentiated feedback (Konold, Miller, & Konold, 2004), and praise (Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008; Thomas, Becker, & Armstrong, 1968). Providing feedback is a cornerstone of classroom effectiveness, and in order for students to be successful in the classroom, receiving feedback for academic and behavioral performance is essential (Konold et al., 2004). Ysseldyke and Elliott (1999) recommended teachers should give immediate, frequent, and explicit feedback on their performance and behavior.

Two interventions methods that consist of unique aspects of monitoring student behavior and providing feedback can be found in the literature: CICO and DBRC. The CICO intervention and DBRC are examples of intervention strategies commonly used at the tier two level within the RTI framework that have been found to be successful for students across grade levels. Both intervention strategies have been designed to be flexible in implementation and cost effective, which increases their treatment integrity. Often a CICO intervention is combined with some form of a DBRC, thus combining two of the more used and effective behavior interventions within the behavior RTI literature. A more in-depth review of the key research studies and implications for practices will be reviewed and discussed in the key research section of this paper. A summary of each
intervention methods and supporting literature documenting their effectiveness within the educational system will be discussed in the following sections.

**Check-in, Check-out (CICO)**

The need for behavior intervention programs that are evidence-based and support the RTI framework at all levels is clear in the literature, yet the research base typically focuses on the universal and intensive tier interventions (i.e., tiers one and three; Hawken, Anderson, Pettersson, & Mootz, 2007). As the role of a school psychologist changes from assessment to more consultation and intervention, knowledge of a variety of interventions to address student concerns before student behaviors become severe is vital. To address student behavior, interventions strategies should be designed and implemented in order to decrease undesirable student behavior. One such intervention strategy to address student behavior is the CICO component of the Behavior Education Program (Hawken, 2006; Hawken et al., 2007).

More specifically the Behavior Education Program’s goal is to identify students who are at-risk for engaging in severe problem behavior and to provide support through teaching, modeling, practicing and delivering feedback (Crone, Horner, & Hawken, 2003). The Behavior Education Program is a comprehensive RTI program. As part of the program teams should be created at each school in order to monitor student behavior in order to determine and recommend students with behavior problems that require intervention. In addition, the Behavior Education Program is designed to have individual staff implement and monitoring the entire Behavior Education Program (i.e., a coordinator). The key features of the Behavior Education Program are: (a) Behavior Intervention Program is implemented school-wide; (b) students need to be able to access
the Behavior Education Program intervention quickly from time of referral and the intervention continuously available; (c) time has been allocated for a Behavior Education Program coordinator to oversee the intervention; (d) all school staff and parents should be involved in the intervention, while ensuring intervention requirements are low; (e) student involvement (i.e., if student does not want to be involved, other interventions should be tried), if the student does want to be involved the student checks in twice daily with the coordinator (i.e., before start of the day and at the end of the day) and throughout the day with his/her teacher using a daily progress report; (f) parent involvement through parent signing the daily progress note the student takes home for review; and (g) data from the daily progress reports are summarized by the coordinator and reviewed by a team to determine the effectiveness of the intervention (Hawken, 2006; Hawken & Johnston, 2007). The Behavior Education Program is often referred to as CICO. However, when only the CICO component of the Behavior Education Program (i.e., having the student check in throughout the day with his/her teacher and having his/her behavior rated on a progress report) is used independent of the complete Behavior Education Program, it is more appropriate to use the term a modified CICO program due to the fact the Behavior Education Program is a comprehensive RTI program that uses the CICO component to improve student behavior (Hawken et al., 2008).

The modified CICO program (from this point forward will be referred to as CICO intervention) serves as the feedback component of the Behavior Education Program. The CICO intervention is described as when students “check-in” with an adult in the morning to ensure they have all their necessary school materials for the day and provide the daily progress report, which is a rating form for teachers to provide numerical ratings of the
student’s behavior throughout the day (Hawken & Johnston, 2007). Students are then expected to give the daily progress reports to their teacher at the beginning of each day (or class period), while the teacher then provides a positive greeting and prompt to have a good day. At the end of the school day, the student then takes the daily progress reports to an adult to “check-out” and rewards (e.g., verbal and tangible) are provided to the student based on the amount of point he or she earned for the day. The daily progress reports can be copied and sent home as well. Educators then monitor the student’s progress and determine if the program should be adjusted (e.g., fade Behavior Education Program or lower goals; Hawken, 2006; Hawken & Johnston, 2007).

Several research studies have been published on the effectiveness of Behavior Education Program on addressing students’ behavioral concerns within educational system. Researchers have explored the effects of the Behavior Education Program on decreasing office discipline referrals of at-risk students at the elementary (Hawken et al., 2007; McCurdy, Kunsch, & Reibstein, 2007) and middle school (Hawken, 2006) levels. More specifically, this series of research has resulted in examining the appropriateness of the Behavior Education Program for all students within the RTI process for behavior regardless of the function of students’ behavior (Hawken & Horner, 2003; Hawken et al., 2011). Overall, the research supports the use of the Behavior Education Program in addressing the needs of students at-risk for behavioral concerns.

**Tiered intervention with CICO in middle school.** In the education system, office discipline referrals are used to track and address behavioral concerns at all levels with more referrals occurring at the middle school level (Skiba, Peterson, & Williams, 1997). To examine behavioral concerns at the middle school level, Hawken (2006)
evaluated the effect of the CICO intervention on 10 students in Grades 6 through 8. The steps of the intervention were: (a) student check in at the beginning of the day to ensure previous night’s work was signed by parents and had materials ready for day; (b) teachers gave feedback at natural transitions on a daily progress report with a 0, 1, or 2 rating for keeping hands, feet, and objects to self; use kinds words and actions; follow directions; and work in class; (c) checked out and percentage of points were calculated (80% of total points was goal for all students); and (d) if the student met his/her goal, he/she would receive a reward based on a spinner. The results found seven of the 10 students displayed a decrease in office discipline referrals. Hawken suggested the three students who did not respond to the intervention would be moved to a more intensive intervention (i.e., tier three) found in the RTI framework (Hawken, 2006) as previously reviewed. Thus, the results suggest that the CICO intervention was effective in addressing behavior concerns as measured by office discipline referrals for 70% of the middle school students.

**Tiered intervention with CICO in elementary school.** Although office discipline referrals are less common at the elementary level, there is a need to address behavioral concerns of at-risk students. Therefore, in a follow up study to Hawken (2006), Hawken, MacLeod, and Rawlings (2007) evaluating the impact of the CICO intervention on office discipline referrals of elementary school students. Hawken et al. (2007) selected 12 students to participant in the CICO intervention for 6 weeks using similar intervention procedures. The results indicated that nine of the 12 students had a decrease in office discipline referrals, while two students were referred for tier three services (e.g., FBA and behavior support plan). The social validity for parents, teachers, and students was found to be high with averages of four or higher on a 6-point scale,
suggesting the CICO program was important and acceptable for the participants. Thus, the results revealed that the CICO intervention was also effective for reducing behavioral concerns at the elementary level.

Similar to Hawken (2006) and Hawken et al. (2007), McCurdy, Kunsch, and Reibstein (2007) evaluated the impact of the CICO intervention of eight students in grades one through five. McCurdy and colleagues implemented the CICO intervention as part of a 3-tier system. The CICO intervention was used as a tier two intervention support. Results found that six of the eight students showed success. The program also found additional, unforeseen outcomes including students labeled as “difficult” were found to demonstrate success to teachers (e.g., one student even earned student of the month award). Peers also challenged each other to do better to earn a group reward. General education teachers, with limited behavior intervention training, overwhelmingly found the intervention to be effective and simple to implement. In addition, the authors suggest the CICO intervention provides a relatively easy alternative to completing FBAs of difficult students when looking to address relatively new and less severe behavioral challenges.

In summary, the CICO intervention is specifically designed to be part of a tiered system, specifically used as a tier two level intervention strategy and alternative to FBAs. Research has found the CICO intervention can be effective in reducing student behavior concerns across elementary and middle school levels (Hawken, 2006; Hawken et al., 2007; McCurdy et al., 2007). In addition, since the CICO intervention is used as a tier two intervention, only a minority of student are likely to not respond, thus CICO
intervention will help to identify the students requiring more intensive individualized interventions.

**Function within CICO.** As mentioned previously, although the FBA process may be instrumental to behavior intervention planning, the process can be time consuming and requiring a variety of resources. Therefore, researchers have focused on developing programs designed to address a wide range of students at-risk for behavior concerns, such as the Behavior Education Program (Crone et al., 2003). In 2003, Hawken and Horner examined the effectiveness of a school-wide system of behavior support through the Behavior Education Program for middle school students whose problem behaviors were maintained by social attention. Hawken and Horner examined the extent to which a functional relationship was present based on the intervention implementation and reduction of the display of four six-grade students’ disruptive behavior maintained by social attention. FBA procedures (i.e., interviews with teachers using the Functional Assessment Checklist for Teachers and Students) were used to determine the potential functions maintaining the participants’ behaviors. Across the four students the Functional Assessment Checklist for Teachers and Students indicated two students’ behavior was maintained by both adult and peer attention, while the other two students’ behavior was maintained by only peer attention.

The primary dependent variable was the parentage of observation intervals with problem behavior. Problem behavior was recorded using 20-minute 10-second partial interval recording observations conducted by trained graduate students. A secondary variable of academic engagement was also measured using the same partial interval observation format. Interobserver agreement was collected during at least 20% of the
total observations across phases. Social validity was measured using the Behavior Education Program Acceptability Questionnaire.

Using a multiple baseline design, the four students had baseline data collected before beginning the treatment phase. Overall results suggested a reduction in variability and display of the problem behaviors. Secondly, students became more consistent in their participation in class without displaying problems behaviors. Results of the functional relationship were limited due to the data collection procedures (i.e., observations only occurred in one classroom). However, the results suggest a modest functional relationship between implementation of the intervention and students with behaviors maintained by attention using FBA procedures. Social validity indicated teachers found the intervention to be worth the time and effort, while parent ratings were mixed. Thus, the results suggested that the Behavior Education Program is effective in reducing observed problematic behaviors in the classroom for middle school students who behavior is maintained by social attention.

With a desire to further understand the relationship of functions of behavior in relationship to the effectiveness of the Behavior Education Program, Hawken, O’Neill, and MacLeod (2011) sought to replicate previous research on the effectiveness of the Behavior Education Program in elementary schools and to investigate the relationship between function of problem behavior and the effectiveness of the Behavior Education Program. Seventeen students with problem behavior maintained by a variety of functions (i.e., social attention, escape, access to tangibles) across two schools in grades first through sixth were included in the study. Treatment fidelity was completed on 10 randomly selected days within the study. Daily behavior report card included 3-4 school-
wide expectations with 4-7 opportunities per day for teachers to provide feedback. To gain information about the participants’ functions of behavior, an interview similar to the Functional Assessment Checklist for Teachers and Students was conducted with each student’s classroom teacher following the posttest. The design of the study was a pretest-posttest quasi-experimental design to determine the effects of the Behavior Education Program on mean office discipline referrals. Results found that across the 17 students, 13 of the students showed a reduction in the mean average of office discipline referrals. In relation to function of behavior, all students (i.e., nine) identified with behavior maintained by peer attention showed improvement by the reduction of office discipline referrals. Two of the five students with behavior maintained by adult attention showed a decreased in office discipline referrals. One of the two students with behavior maintained by escape improved and the only student with behavior maintained by access to tangibles showed improvement by reduction of office discipline referrals. Teachers, parents, and students rated the Behavior Education Program as highly acceptable intervention. Overall, the results support that 73% of students with behavioral concerns demonstrated a reduction of office discipline referrals. All students’ with peer attention maintained behavior demonstrated a reduction of office discipline referrals. For the students with behavior maintained by adult attention, access to tangibles, and escape were underrepresented in the study.

Lane, Capizzi, Fisher, and Ennis (2012) sought to extend the Behavior Education Program research by examining the functional relationship of student’s behavior and behavioral progress with the implementation of the Behavior Education Program. Four sixth-grade males with problem behaviors maintained by both attention and escape as
determined by conducting a FBA participated in the study. The FBA process included preliminary information gathering, functional assessment interviews, direct observations, and behavior rating scales. The dependent variable was the percentage of possible points obtained for compliance and cooperation on the daily progress report completed by the teacher. The design of the study was a changing-criterion design; when a student met his goal four out of five days the goal was changed. Goals, on average, increased from 60% to 70% to 85% for the students. Teacher social validity was measured before and after the intervention using the Intervention Rating Profile (IRP); student social validity was measured using the Children’s IRP. Results indicated all students demonstrated regardless of function of behavior (i.e., attention and escape) an increase in desired behavior with increasing goals during the intervention. However, during maintenance, students did not maintain the desired behaviors at the same levels of the intervention phases. In addition, the teachers and students rated the intervention positively. Thus, all students whom behaviors were maintained by attention and escape showed an increase in desired behaviors during the Behavior Education Program.

In summary, there is more support in the literature research suggesting that the CICO intervention is effective when utilized with students’ who display behaviors maintained by social attention when using indirect FBA procedures (Hawken & Horner, 2003; Hawken et al., 2011; Lane et al., 2012). Although there is some research suggesting that CICO intervention can be effective for reducing problem behaviors maintained by access to tangibles, escape, and combined attention and escape when using indirect FBA procedures, the representation of each of these functions of behavior is limited.
On the other hand, research in the area of the CICO intervention as part of the Behavior Education Program provides evidence to support that frequent contact and providing specific feedback is effective in reducing undesirable behavior and increasing desirable behavior in the educational system. As such, CICO may benefit a variety of students at the elementary and middle school levels who need behavioral programming at tier two level within the RTI framework.

**Daily Behavior Report Card**

Another EBI which can include a feedback component is the DBRC. The general concept of DBRC has been used, examined, and implemented by educators since the 1970s (Blechman, Taylor, & Schrader, 1981; Chafouleas et al., 2002; Schumaker et al., 1977; Vannest, Davis, Davis, Mason, & Burke, 2010). Early research studies involving DBRCs examined the effectiveness as a feedback intervention. As feedback intervention strategies in the educational system, DBRC has been utilized in a variety of situations to address students’ behavior concerns, such as a school counselor working with problematic behaviors of elementary students (Schumaker et al., 1977), teacher and parent collaboration to address problematic behaviors and homework completion (Dougherty & Dougherty, 1977); and parent/home reward system to address problematic behaviors (Lahey et al., 1977).

DBRC are appealing due to the simple, flexible, and inexpensive nature of the technique to provide frequent feedback to students and parents. Although widely used, DBRCs have not been directly defined in the literature. Instead, several defining characteristics have been identified: (a) specifications of behavior(s); (b) at least daily rating of the behavior(s) occurs; (c) sharing obtained information across individuals (e.g.,
parents, teachers, students); and (d) using the card to monitor the effects of an intervention and/or as a component of an intervention (Chafouleas, McDougal, Riley-Tillman, Panahon, & Hilt, 2005; Chafouleas et al., 2002; Riley-Tillman et al., 2007).

More recently, researchers have found utilizing the DBRC as a progress monitoring tool to be effective in changing student classroom behavior (Blechman et al., 1981; Fabiano, Vujnovic, Naylor, Pariseau, & Robins, 2009). Chafouleas and colleagues (2005) proposed that DBRCs are moderately similar to direct observation methods (e.g., the ‘gold standard’ of FBA), which further validates their usefulness and effectiveness. More specifically, DBRCs were rated as acceptable when used for assessment ratings and intervention (Chafouleas, Riley-Tillman, & Sassu, 2006). Therefore, the research on DBRC has focused on its effectiveness as an alternative or compliment to systematic direct observations.

In the past and to this day, systematic direct observations have been the model and preferred method to measure and provide information on student behavior. However, systematic direct observations require a significant amount of staff time and potential school resources (e.g., cost of observation sheets and/or software programs).

**Comparision of DBRC ratings with direct observations.** Chafouleas, McDougal, Riley-Tillman, Panahon, and Hilt (2005) examined the results of DBRC to direct observations in terms of accuracy in rating student behavior. Chafouleas and colleagues had 32 teachers across six elementary schools in one district identify one student in their classroom displaying target behaviors (i.e., noncompliance, disruptive behavior, and negative peer interaction). A DBRC was formulated based on the student’s target behaviors and teachers were to rate the student’s behavior across the school day.
using a 6-point Likert scale (e.g., 0 = no off-task behavior observed, 5 = student engaged in off-task behavior during the majority [81%-100%] of the period; Chafouleas et al., 2005). To compare the accuracy of the DBRC, direct observations were conducted. The direct observation consisted of a 20-second, momentary time sampling for a 15-minute time period. Graduate student training occurred for direct observation coding; a 90% criterion was established. During 33% of the conducted observations, a second observation was used to determine interobserver agreement. The results of the study found 82-87% of cases had either a 0 or 1-point discrepancy between DBRC and direct observation. Results found 45% of the variance was accounted for suggesting moderate similarity between direct observation and DBRC. The research suggests DBRCs are moderately accurate in rating student behavior and are ideally designed to complement the use of direct observations and can be more feasible for teacher and staff implementation (Chafouleas et al., 2005).

**DBRC with interventionist acceptability.** Another important question is whether DBRC are able to help educators make the same decisions that they would otherwise make with only direct observation information alone. In other words, will children’s educational programming (i.e., interventions) be the same or similar if only DBRC is available to help educators make decisions regarding student programming. Riley-Tillman, Chafouleas, Briesch, and Eckert (2008) sought to determine: (a) what is the reported acceptability of using DBRC and systematic behavior observation for the purposes of formative assessment of behavior; and (b) do school psychologists make the same intervention decisions when presented with graphed outcome data from a DBRC (i.e., discrete) as they would with outcome data systematic direct observations (i.e.,
continuous)? The study randomly selected school psychologists from the National Association of School Psychology database. The participants were provided with a packet to complete, which included demographic information, case information about a student, and the result of an intervention being in either systematic direct observations or DBRC form (Riley-Tillman et al., 2008). Results indicated systematic direct observations are still the preferred method by school psychologists over DBRC in rating and/or monitoring student behavior. However, decisions based on the presented data were similar across the raters (Riley-Tillman et al., 2008); suggesting, regardless of data collection method, similar educational decisions will be made for the child; adding a validity component to DBRCs.

**Comparison of DBRC ratings with trained raters and direct observations.** As the previous research has indicated, DBRCs are moderately effective at rating behavior and the decisions by school psychologists would be the same regardless of whether the data were collected through DBRC or systematic direct observations. However, in terms of implementation, who is more accurate in rating student behavior, a teacher or an outside observer? Using DBRC is an effective alternative to systematic direct observations due to the fact they can be completed by teachers or teacher aids already in the classroom; however, research looking at comparing teacher ratings and an outside observer was completed by Chafouleas, Riley-Tillman, Sassu, LaFrance, and Patwa (2007). Chafouleas and colleagues (2007) sought to examine the consistency of data collection across raters using either a DBRC or direct observation to understand the decision making reliability of DBRCs. Three student-teacher dyads were used in the study. The DBRC used on-task behavior (i.e., the student being oriented toward the
teacher or actively engaged in instruction activities) as the only behavior rated. Behavior was rated on a Likert-type scale 0-5, with descriptor (e.g., occasionally) and percentage (e.g., 1-20%) used with the rating. Direct observation used 15-minute momentary time sampling with 20-second intervals. Three doctoral graduate students were trained on data collection with 100% accuracy and 100% interobserver agreement (Chafouleas et al., 2007).

Teachers were introduced to and reviewed the DBRC. Teachers were told to simply rate the child over the 15-minute period using the provided scale. During the 15-minute observation period the teacher completed the DBRC, one independent observer completed the DBRC, and one independent observer completed a systematic observation. Following baseline data collection, the student being observed was introduced to the DBRC and student assent was obtained (no student interaction occurred during baseline; parent consent had been obtained). Then an intervention to increase student on-task behavior was introduced, although the intervention was not the focus of the study. The focus was only comparing DBRC ratings between teacher and outside observer. Students were told when the observation period would start and then the teacher’s DBRC data were reviewed with the student and one positive comment was shared. The intervention consisted of at least five observations for each student (Chafouleas et al., 2007).

The outcome of the study found similar results between both outside observers completing a DBRC and an outsider’s direct observation. When comparing the outside observer with teacher ratings of the 34 total rating session, 30 of the DBRC ratings fell within one point, which may be sufficient in decision-making, depending on the severity of the decision-making (e.g., special class placement; Chafouleas et al., 2007). Therefore,
the research suggests teachers can be effective at rating student behavior when given basic training on DBRC data collection. However, the research also supports the notion that DBRCs should be used in conjunction with periodic systematic direct observations to ensure accuracy of ratings and to ensure interobserver agreement when making educational decisions for students.

Chafouleas, Christ, Riley-Tillman, Briesch, and Chanese (2007) sought to determine the percentage of the variance accounted for in DBRC ratings of social behavior in preschool students across raters, time, and setting. Four teachers at a university-associated center had 15 student participants. The students’ ages ranged from 3 years, 9 months to 4 years, 9 months. The DBRC was created based on state curriculum. Target behaviors were: (a) works to resolve conflicts and (b) interacts cooperatively. Behavior was rated on a continuous line with 15 intervals as well as 0, 50, and 100% anchors provided. Before data collection took place, a researcher met individually with each teacher to review the definitions of the target behaviors, the actual DBRC, and data collection procedures. Data were collected daily over 13 consecutive school days in late spring with two 30-minute observation periods per day by all four raters. Sheets were given to teachers and the participant’s behavior was then rated. Results found time of day did not impact scores, suggesting the DBRC was not sensitive to changes in behavior across time or setting and/or the behavior of the student group was consistent across both days and settings. Reliability coefficients were found to meet or exceed .70 after 4 to 7 days of data collection; for high stakes decisions coefficients should be above .90, which in this study was after 10 days of data collection. Therefore, the results suggest teachers were able to rate behavior relatively well and after 10 days of rating and reliability of the
ratings exceeded best practice standards. As a result, applying a DBRC to preschool students can be reliable even across a relatively short time period of 4 to 7 days; however, support should be provided if similar number of students ($n = 15$) are to be rated effectively.

**DBRC with teacher acceptability.** Based on the presented research, DBRCs have been found to be effective with similar decisions being made as systematic direct observations and teachers are able to provide similar ratings as outside observers. Therefore, in order for DBRC to be used in the classroom, the acceptability and use of DBRCs by teachers should be explored. Chafouleas, Riley-Tillman, and Sassu (2006) indicated DBRCs can be used for various aspects from increasing homework completion or decreasing talking out behavior to simply monitoring behaviors. Consequently, the authors then sought to understand teacher acceptability in order to further understand how to incorporate DBRC into practices for future research. Survey data included information about how the participants designed DBRCs, how DBRCs were implemented, and how/with whom the DBRC data were shared. In addition, acceptability of DBRCs were evaluated through the use of the Assessment Rating Profile – Revised. Through surveying 1,000 teachers from a national teacher registry with 123 surveys returned and 64% of respondents indicated they had used some form of a DBRC. Overall, the DBRC was rated to be an acceptable tool for both assessment ratings and interventions by the teacher respondents (Chafouleas et al., 2006). Results suggest not only do the majority of teachers have experience with DBRCs, but they also find DBRCs to be effective in both data collection for assessment purposes and as an effective stand-alone intervention to address student behavior.
Summary

Since the 1970s DBRC have been found to be effective in addressing students’ problematic behaviors in the educational systems. DBRC have been found to provide similar ratings of student behaviors, regardless of who provides the ratings (e.g., teacher or outside observer). DBRC can be used to increase desired behaviors, decrease target behaviors, or monitor behavior within the school setting. Teachers find DBRCs as an acceptable tool within the classroom and even with limited training, can be used effectively over a relatively short period of time. DBRC can be used to prompt changes in behavior across ages and are easy to design, while minimizing school resources (e.g., time, additional support staff).

The use and design of daily progress reports in the CICO intervention is based on DBRCs. A CICO intervention has been found to decrease office discipline referrals and increase desired student behavior, yet daily progress notes that the Behavior Education Program suggests can vary in their design. The daily progress notes can be individually designed for each student, yet individual designing one for each student can be taxing. In addition, as previously mentioned, educators have struggled with creating tools to monitor the progress of behavior during interventions (Burke, Vannest, Davis, Davis, & Parker, 2009; Lembke & Stichter, 2006; Torres et al., 2012; Ysseldyke & Tardew, 2007). Therefore, the use of a DBRC that is standardized across participants may be an effective method to increase the efficiency of a CICO intervention due to reducing the complexity of a CICO intervention. Rating student behavior to monitor progress or as part of an intervention to increase desired behaviors, while decreasing behavior concerns, has been found to be effective in the form of DBRCs in the school environment.
Summary

Within the education system various interventions and supports for students to address academic, social, and behavior needs are frequently utilized. To specifically address target behaviors, behaviorism offers a theory suggesting only observable behavior change should be addressed through the use of interventions utilizing reinforcement and punishment techniques. The RTI framework has become part of the educational system due to the key legislation of IDEIA (2004), which indirectly supports an RTI approach to both academic and behavior interventions. The RTI framework and IDEIA suggests the use of FBAs, but does not clearly define the methods to take when conducting FBAs. Therefore, the use of FBAs (e.g., structured interviews and observations) can be used within the school setting. However, functional analyses are a more valid approach in research practices to determine the causal relationship between student behaviors and the functions or purpose of the target behaviors. Research has found that using both FBAs and functional analyses to inform implemented interventions increases the effect of those interventions (Lang et al., 2010). Two feedback intervention methods that have been found to be effective at both monitoring behavior and/or helping to change behavior are CICO and DBRC.

The CICO intervention and DBRC are tier two level interventions that have been found to be successful for students across elementary and middle school grade levels. Both interventions have been designed to be flexible in their implementation and require limited resources, which increases their treatment acceptability. However, the key to CICO is providing the frequent monitoring and feedback throughout the school day; whereas DBRCs may not provide feedback at all or may only provide reviews of the
rating once (e.g., when sent home). Often a CICO intervention is combined with some form of a DBRC to progress monitor students’ behavior, thus combining two of the more used and effective behavior interventions within the behavior RTI literature.

**Rationale for Study**

As has been demonstrated through the presented research, the two reviewed interventions strategies (e.g., CICO and DBRC) have been found to be effective with various grades levels of students (e.g., Atkeson & Forehand, 1979; Briesch, Chafouleas, & Riley-Tillman, 2010; Fober, 2006; Todd et al., 2008). Even with the documented success of the interventions (Blechman et al., 1981; Chafouleas et al., 2005; Chafouleas et al., 2002; Chafouleas et al., 2007; Crone et al., 2003; Hawken, 2006; Hawken et al., 2007; Hawken et al., 2011; Lane et al., 2012; McCurdy et al., 2007; Riley-Tillman et al., 2008; Schumaker et al., 1977; Skiba et al., 1997; Vannest et al., 2010), one key aspect was not found in any of the literature, when determining the success of a CICO intervention: is there a causal relationship between function of the behaviors displayed by students? In other words, are the student’s displayed behaviors maintained by escape or attention or a combination of escape and attention? Behaviorism clearly suggests feedback can be vital in changing behavior through the use of providing reinforcement (e.g., feedback). Therefore, due to the fact there is a large gap in the research on whether a functional relationship can impact the effectiveness of a CICO intervention, the current study will evaluate whether the a causal relationship exists between the displayed target behaviors and the function of those behaviors (i.e., combination of escape and attention, attention, and escape). The field of education may benefit from knowing if function of behavior responds more successful to a CICO intervention than another function as
indicated by a greater change of displayed student behavior. However, if there is no
difference when comparing different functions maintaining the behaviors, but the CICO
intervention results in a positive change in behavior, then educators can simply focus on
providing a CICO intervention with fidelity to students at a tier two level within a RTI
framework.
CHAPTER III

METHODOLOGY

Methodology

The purpose of the study was to determine if there was a difference in students’ behavioral responses to a CICO intervention as measured by a DBRC based upon the function of behavior (i.e., combined attention and escape, attention, and escape). As part of the methodology, the following sections will be discussed in the current chapter: (a) setting, (b) participants, (c) materials, (d) procedure, (e) interobserver agreement, (f) procedural integrity, (g) treatment integrity, (h) design, and (i) data analysis.

Setting

The current study took place in one elementary school located in a district located in the Southeastern United States. The school district’s approval was obtained prior to participation in the study. Observations and ratings occurred in the participants’ general education classroom. See CHAPTER IIITable 1 for demographic information for the participating district and specific school.
Table 1

*Participating District and School Demographics*

<table>
<thead>
<tr>
<th></th>
<th>Caucasian</th>
<th>African American</th>
<th>Native American</th>
<th>Hispanic American</th>
<th>Total Student Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>District</td>
<td>868 (31%)</td>
<td>1803 (66%)</td>
<td>32 (1%)</td>
<td>23 (1%)</td>
<td>2726</td>
</tr>
<tr>
<td>Specific School</td>
<td>118 (15%)</td>
<td>641 (85%)</td>
<td>4 (1%)</td>
<td>6 (1%)</td>
<td>769</td>
</tr>
</tbody>
</table>

*Note.* Percentages in parentheses are the approximate percentage of ethnic group of the total population.

Of the 769 students at the participating school, 93% of the students qualified for free and reduced meals. At the Kindergarten level, there were 196 students across eight classrooms. The four classrooms that participated in the study had one primary teacher and one teacher’s assistant and averaged 24 students per classroom (i.e., a 12:1 student to adult ratio). Teachers had classrooms arranged in groups with four to five students seated at one table.

**Participants**

In order to conduct the study in a naturalistic environment, the study obtained volunteers in the previously discussed school district as well as graduate students who volunteered to assist in the data collection from a large university graduate school program in the Southeastern United States. Four elementary level classroom teachers were selected across four separate classrooms. Across the four classrooms, six students were selected for participation. This section will review each group of volunteers. The following will be discussed: (a) classroom teachers; (b) students; and (c) trainers and observers.
Classroom teachers. Kindergarten, first, and second grade general education teachers were considered for selection in the current study to be the individuals implementing the CICO intervention. However, the school administrator recommended four Kindergarten teachers to be the final teachers as part of the study.

Teacher A was a Caucasian female between the ages of 50 and 53 with a Bachelors degree as the highest degree obtained. Teacher A had been teaching 9 years at the time of the study. Teacher A indicated she had been a teacher’s assistant and substitute teacher before teaching fulltime. Teacher A rated herself as having limited experience with FBA and working with classroom consultants.

Teacher B was a Caucasian female between the ages of 50 and 53 with a Masters degree +30 as the highest degree obtained. Teacher B had been teaching over 20 years at the time of the study. Teacher B rated herself as having limited experience with FBA, but above average experience working with classroom consultants.

Teacher C was a Caucasian female between the ages of 22 and 25 with a Bachelors degree as the highest degree obtained. The current school year was the first year teacher C had been employed as a fulltime teacher; she had previously worked at a day care. Teacher C rated herself as having limited experience with FBA and an average amount of experience working with classroom consultants.

Teacher D was a Caucasian female between the ages of 34 and 37 with a Bachelors degree as the highest degree obtained. Teacher D had been teaching 13 years at the time of the study. Teacher D rated herself as having limited experience with FBA and working with classroom consultants.
**Students.** Participants in the study consisted of six children enrolled in general education Kindergarten classes. Consistent with best practice in research ethics, pseudonyms were assigned for each participant to maintain confidentiality. The participants formed three groups (i.e., combined, attention, escape) based on the completion of *functional analysis* (see the procedure for the steps of the functional analysis). A minimum of two children were determined to match the function of each functional group. At the beginning of the study, participants’ mean age was 6 years, 1 month, and 17 days. Four participants were male, while two participants were female. See Table 2 for the demographic information of each individual student.

Table 2

*Participants’ Demographic Information*

<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Age</th>
<th>Gender</th>
<th>Ethnicity</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Byron</td>
<td>5.10</td>
<td>Male</td>
<td>African American</td>
<td>A</td>
</tr>
<tr>
<td>Belle</td>
<td>6.4</td>
<td>Female</td>
<td>African American</td>
<td>A</td>
</tr>
<tr>
<td>Sarah</td>
<td>6.1</td>
<td>Female</td>
<td>Caucasian</td>
<td>B</td>
</tr>
<tr>
<td>Symon</td>
<td>6.7</td>
<td>Male</td>
<td>African American</td>
<td>B</td>
</tr>
<tr>
<td>Patrick</td>
<td>5.8</td>
<td>Male</td>
<td>African American</td>
<td>C</td>
</tr>
<tr>
<td>Rex</td>
<td>6.10</td>
<td>Male</td>
<td>African American</td>
<td>D</td>
</tr>
</tbody>
</table>

Participants recruited for the study presented as students who had developed typically within the school setting and were in need of tier two behavioral interventions based upon current district universal screening procedures or by the nomination of school
staff. The nomination was for students with target behaviors such as noncompliance, out of seat, and/or off-task behaviors. Students who were nominated did not display physical and/or verbal aggression or pose a potential danger to self or others. None of the students selected were receiving special education services under IDEIA or were part of the district’s tier three process.

Trainers and observers. A doctoral level school psychology graduate student trained and had conducted numerous student observations in the educational setting served as the primary researcher of the study. One state-licensed doctoral school psychologist provided supervision throughout the study. The primary researcher provided appropriate information and obtained appropriate informed consents to parents, teachers, and school administration for the study. Twelve additional graduate students were trained to observe and code observation data by the primary researcher and assist with the completion of the study (e.g., interobserver agreement, treatment integrity, and functional analysis).

Materials

In order to collect data for the study in an efficient and effective, numerous forms were approved and utilized by the primary researcher as well as research assistants. This section will group as well as describe of each research material used. The following will be discussed: (a) screening; (b) progress monitoring; (c) intervention; (d) social validity; and (e) intervention integrity.

Screening. The following section will provide descriptions of the materials used to screen nominated students. The materials were used to determine if the student would
be appropriate for the study. The Functional Assessment Informant Record for Teachers – Second Edition and functional analysis recording form will be reviewed.

**Functional assessment informant record for teachers – second edition.** The Functional Assessment Informant Record for Teachers – Second Edition is an 8-page updated form based on the Functional Assessment Informant Record for Teachers. Similar to the Functional Assessment Informant Record for Teachers, the Functional Assessment Informant Record for Teachers – Second Edition has a place to record: (a) demographic information about the student, classroom setting, and schedule; (b) description of the target behaviors; (c) structural and environmental factors predictive of the target behaviors (triggers or antecedents); and (d) factors potentially maintaining the problem behaviors (maintaining consequences; Doggett, Mueller, & Moore, 2002). The Functional Assessment Informant Record for Teachers – Second Edition took approximately 20-minutes to complete in an interview format.

Previous researchers have suggested that the Functional Assessment Informant Record for Teachers demonstrates convergent validity with other FBA methods and are useful with several different topographies (e.g., escape behaviors, attention seeking behaviors) of problem behaviors and in identifying different functional relationships (Doggett, Edwards, Moore, Tingstrom, & Wilczynkski, 2001; Doggett et al., 2002; Moore, Doggett, Edwards, & Olmi, 1999). Specifically, the Functional Assessment Informant Record for Teachers has been used as part of comprehensive analyses of elementary students’ behavior in the general education setting in order to increase desired behavior od students with behavior maintained by teacher and peer attention (Doggett et al., 2001). The Functional Assessment Informant Record for Teachers has also been used
as part of a three-phase FBA procedure that led to intervention development and ultimately the reduction of problem behavior for elementary students diagnosed with Attention-Deficit/Hyperactivity Disorder (Moore et al., 1999). In addition, the Functional Assessment Informant Record for Parents-Checklist, which is based on the Functional Assessment Informant Record for Teachers was found to have a moderate test-retest reliability (r = .565, p < .05; Kazmerski, 2009). Please refer to APPENDIX B for a sample of the Functional Assessment Informant Record for Teachers – Second Edition.

**Functional analysis recording form.** To assist in collecting data to determine the potential function maintaining the participants’ target behaviors, a functional analysis recording form was utilized based on the recommendations of Carbone and Zecchin (n.d.) on how to conduct functional analyses. The functional analysis recording form had designations for identification information (e.g., beginning and end time of the observation, for the initials of the observer) and directions (e.g., operational definitions of the target behaviors; Carbone & Zecchin, n.d.). In addition, the functional analysis recording form had a place to record the frequency (i.e., a tally for each occurrence) of target behaviors (e.g., off-task) during the each observation condition and for the total frequency during the condition. Each condition had a color-coded box to increase the ease of data collection. Escape condition was assigned yellow, attention condition was assigned blue, and control condition was assigned clear. Please refer to APPENDIX C for a copy of the functional analysis recording form.

**Progress monitoring.** The following section provided descriptions of the materials used to monitor the progress of the study. The materials were used to support or
direct keep track of the various data identified as key to the study. The following will be described (a) DBRC; (b) point value sheet; (c) target behavior description sheet; and (d) partial interval observation form.

**DBRC.** Following the recommended steps in creating a DBRC by Riley-Tillman, Chafouleas, and Briesch (2007), a DBRC (see APPENDIX D for a sample DBRC) was designed and applied to all participants based on teacher interview and research observations of identified target behaviors with age-appropriate ratings. For the purposes of this study, the DBRC was broken into eight sections. The first section included identification information (e.g., a place to record the rater’s initials, the participant’s assigned number, and the date). The second section was the directions for the rater, including the operation definitions of all the face ratings: (a) a sad face (i.e., 🙁) was worth one point; (b) a calm face (i.e., 😊) was worth two points; and (c) a happy face (i.e., 😊) was worth three points. The total points ranged from 12 – 36 on the DBRC based on the teacher ratings of student performance across the identified target behaviors. The third section was a place to record the time for each observation period. The fourth section was a place for the rater to rate target behaviors based on the operational definition. The fifth section was an area to sum the total points and record the rater’s initials. The sixth section provided an area to record the reward for the day, if the participant earned the reward, and the time the rater checked in and checked out with the participant. The seventh area provided an area for rater acceptance each day. Finally, the eighth section provided the three target behaviors and the operational definitions.
**Point value sheet.** A point value sheet was provided to teachers to keep progress monitor each day’s total points earn for each participant. The point value sheet consisted of a place to record the participant’s assigned number as well as a place to record the total points earned for each date of the study. Please refer to APPENDIX E for a copy of the data value sheet.

**Target behaviors description sheet.** A sheet with the target behaviors was rated on the DBRC was provided to teachers and trained observers in an attempt to minimize observer drift. The sheet had the three target behaviors and their respective operational definitions. Please refer to APPENDIX F for a copy of the target behaviors description sheet.

**Partial interval observation form.** The partial interval observation form was used to record general display of target behaviors. The form included an area to record general observation data (e.g., the setting, people present, start and end time of the observation). The form also provided observation data areas (i.e., anecdotal information, target behaviors, and the total intervals for each of the target behaviors observed). The form included the operational definitions of the target behaviors (e.g., off-task, out-of-seat, noncompliance, on-task) to be observed. The recording table had 60 intervals with specific intervals used to rate the behavior of a peer comparison. The format of the table corresponds to current practice of listening to an audio recording (i.e., a beep tape) that signals every 10-seconds to indicate to the observer the interval is over and to record observed data. Please refer to APPENDIX G for a copy of the partial interval recording form.
**Intervention.** The following section will provide descriptions of the materials used as part of the direct intervention. The intervention materials were used to directly support the intervention. The following will be described: (a) forced-choice preference assessment form; (b) reward spinner; and (c) teacher CICO intervention scripts.

**Forced-choice preference assessment form.** The *preference assessment* form was designed to include a place to record the date, participant number, and six items to be assessed with corresponding numbers for presentation during the assessment. Instructions were provided to complete the assessment. Included as part of the form was a table with a list of the trials 1-30 and the paired item numbers to be presented. Finally, there was a summary with a place to indicate the number of times out of 10 the participant selected each item during the assessment. Please refer to APPENDIX H for a sample preference assessment form.

**Reward spinner.** One reward spinner was created for each participant during the intervention procedure. The reward spinner was made of laminated card stock paper with a circle divided into five sections. The sections varied in size from small to large. The smaller sections had high-preferred and more difficulty to provide (e.g., special lunch with a school administrator). The larger sections had low-preferred and easy to provide rewards (e.g., a ticket for an extra 5 minutes on the computer during the morning, a sticker of the participant’s choice). Each section had a different color and was labeled with each respective reward potentially earned for the day, based on the completed preference assessment. The reward spinner had an arrow that can be spun, secured by a
metal clip in the middle to determine which reward may be earned. Please refer to APPENDIX I for a sample reward spinner.

**Teacher cico intervention scripts.** Similar to Stevens, Sidener, Reeve, and Sidener (2011), in order to ensure teachers provide similar statements across participants, teachers were provided with specific scripts to read (e.g., check-in and check-out). The script had the outlined words to say during the morning check-in and the afternoon check-out. Please refer to APPENDIX J for a copy of the teacher CICO intervention scripts.

**Social validity.** The following section will provide a description of the material used to determine the social validity of the intervention. Teachers completed the following at the conclusion of the intervention. The following section will describe the IRP-15.

**IRP-15.** The IRP-15 is a 15 item questionnaire provided to individuals (e.g., teachers, support staff) who implement school-based interventions acceptability (Martens, Witt, Elliott, & Darveaux, 1985). The individual/teacher rates their agreement to the presented statement on a Likert-type scale of 1-6, with 1 *strong disagree* and 6 *strongly agree*. The 15 items’ scores are added to create 1-factor assessing the general acceptability of the intervention being rated. Total scores range from 15 – 90 with higher scores indicating a greater level of acceptability (Martens et al., 1985). Ratings above 52.50 are considered acceptable (Von Brock & Elliott, 1987). Internal consistency reliabilities have been found to range from .88 to .98 (Lane et al., 2009). Please refer to APPENDIX K for a copy of the IRP-15.
**Intervention integrity.** The following section will provide descriptions of the materials used to ensure the intervention was completed as designed. The integrity materials were used to directly support the accuracy of the implemented intervention. The following will be described: (a) CICO integrity checklist; (b) DBRC integrity checklist; and (c) interobserver agreement sheet for the DBRC.

**CICO integrity checklist.** An intervention integrity checklist and compliance document was used to ensure the intervention was being implemented as designed. The intervention was divided into 10 sections to create observable steps to be completed by the teacher. The CICO integrity checklist consisted of the following items: the observer’s initials, date of observation, time of observation, setting, and participant number. The 10 steps were listed and a place for the observer to record yes, no, or NA for each step based on the observation. A place to record the total number of steps marked with a yes was provided. The CICO integrity checklist then yielded a percentage of interval steps completed as designed (Roach & Elliott, 2008). Please refer to APPENDIX L for a CICO intervention integrity checklist.

**DBRC integrity checklist.** A DBRC integrity checklist document was used to ensure the DBRC was being completed as designed. The DBRC integrity checklist was divided into 12 sections to create observable steps to be completed by the teacher. The DBRC integrity checklist consisted of the following: evaluator’s initials, date of evaluation, and participant number. The 12 steps were listed and then a place for the observer to record yes, no, or NA for each step based on the observation. There was a place to record the total number of steps marked with a yes. The DBRC integrity
checklist yielded a percentage of interval steps completed as designed (Roach & Elliott, 2008). Please refer to APPENDIX M for a sample DBRC integrity checklist.

**Interobserver agreement sheet for the DBRC.** The same DBRC that was used by the teacher was used by observers to collect interobserver agreement with several alterations. The first alteration was there a place to circle if the person conducting the interobserver agreement was collecting the data on the teacher (i.e., primary) or collecting data on the observer (i.e., secondary). Then there was a place to circle N/A for information that may not available to the observer (e.g., total points for the entire day or the reward determined at the beginning of the day.). In addition, there was not a place to record if the observed liked the DBRC. Refer to APPENDIX N for a sample interobserver agreement sheet for the DBRC.

**Procedure**

All procedures in the study were be reviewed and approved by the Mississippi State University Institutional Review Board for the Protection of Human Subjects in Research (see APPENDIX O for Institutional Review Board approval letter). Parental consent and teacher consent as well as school administrator approval was obtained prior to the initiation of the procedures of the study.

The participants with parental consent were informed of the study. Participants were notified that his/her behavior was to be rated based on the designed DBRC. Participants were informed they would check-in at the beginning of each school day and then check-out at the end of the day (Hawken et al., 2007; Todd et al., 2008). Once the participant understood and had an opportunity to have his/her questions answered about
the study, the primary researcher obtained verbal assent. Seven students had parent consent forms returned and gave their assent. Six students were then randomly selected to participate in the study.

Upon participant assent, teachers were interviewed to determine the current classroom behavior management system and gain additional information regarding student behavior using the Functional Assessment Informant Record for Teachers – Second Edition. The Functional Assessment Informant Record for Teachers – Second Edition took approximately 20 minutes to complete. The primary goal of the interview was to confirm target behaviors were suitable for the study (e.g., off-task, out-of-seat, and noncompliance) as well as identify potential functions of the student’s behavior (e.g., escape, attention) prior to observation. The Functional Assessment Informant Record for Teachers – Second Edition assisted in collecting demographic information on the teachers implementing the intervention.

Participants were observed using a 10-second partial interval observation across a 10-minute period in order to confirm the nominated participant displays the target behaviors of off-task, out-of-seat, and noncompliance reported by the teacher and to ensure the participant did not display behaviors to be excluded from the study (e.g., physical and/or verbal aggression or are a potential danger to self or others; Chafouleas et al., 2007). All six students displayed target behaviors during the initial 10-second partial interval observation across the 10-minute period.

**Functional analysis.** Based on Iwata and colleagues (1994) and Carbone and Zecchin (n.d.) a functional analysis was conducted for all of the potential participants. Due to the research being mixed on the effectiveness of CICO in relation to student
behaviors being maintained by adult attention, peer attention, and escape student as determined by FBA procedures (e.g., Hawken et al., 2011; March & Horner, 2002), the study focused on the most common functions of behavior displayed by typically students (i.e., combined attention and escape, attention, and escape). In other words, access to tangibles and automatic reinforcement was not evaluated as part of the study due to the lower percentage of students maintained by the two functions. The order of presentation of the three conditions (i.e., contingent escape, contingent attention, control) was determined by random drawing. Three trials for each condition were part of the functional analysis, however, the same condition were not administered back to back (e.g., a contingent escape condition followed by a second contingent escape condition). See Table 3 for the order of the conditions for six participants. Each condition lasted approximately five minutes in length.

To conduct the functional analysis, the teacher was cued when to start and end each condition by the primary researcher via an agreed upon cue (e.g., a head nod and posted note indicating the condition). The procedure in the contingent attention condition was to withhold attention before target behaviors were displayed, but provide attention in the form light corrections contingent upon the display of target behaviors (e.g., “don’t do that, you might hurt someone”). In the contingent escape, task demands were be provided once per minute and cued to the teacher by the primary research via an agreed upon cue (e.g., a head nod). The demand was to be provided once, allow 10-second for compliance and if the participant did not comply, then the demand was to be repeated. Contingent upon the display of target behaviors, the demand was removed. However, when the participant complied with the demand, praise was provided (e.g., “good job”) and the
next demand was provided at the next predetermined interval. In the control condition, preferred toys and/or activities and random attention (e.g., “good job playing nicely”) were given approximately every 30 seconds without any demands and target behaviors were ignored or redirected in a neutral tone (Cihak et al., 2007; Cooper et al., 2006; Herzinger & Campbell, 2007). Throughout each condition, frequency data were collected on the target behaviors on the functional analysis recording form. The frequency data were then graphed and the conditions (e.g., contingent attention, contingent escape, control, alone) with higher frequency rates of target behaviors were assumed to be the function of the behaviors for the respective participant.

Table 3

*Order of Functional Analysis Conditions for Participants*

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*Note.* E = Escape; A = Attention; C = Control.

The target behaviors were as followed: off-task defined as the participant does not present as completing assignment/requested tasks and withdraws or takes a break (e.g.,
day dreams or converse on non-assignment related talk) for longer than five seconds; out-of-seat defined as the participant does not stay in assigned seat or within instructional area or the student leaves area for more than five seconds per rating period without permission; and noncompliance defined as the participant does not follow directions within 10 seconds of directive given by teacher.

Once the functional analysis was completed, participants and their respective teacher(s) were determined to fit their respective functional group based on the function likely maintaining the participant’s target behaviors (i.e., combined attention and escape, attention, and escape) before training took place. In addition, consistent with best practice in research ethics, participants’ identity was kept confidential. The participant’s DBRC was assigned a corresponding number in order to ensure permanent product data remains anonymous. Teachers were provided with a sheet with the student’s initials and corresponding assigned number (e.g., AB – 1) to ensure the intervention data were recorded on the appropriate DBRC at the start of each day. The sheet with the student’s initials was collected at the end of the study and destroyed by the primary researcher to maintain confidentiality.

**Teacher training session.** After the DBRC was created for all participants, teachers were trained on how to rate the behavior using the face scale (e.g., sad face, calm face, happy face) that corresponds to a 1 – 3 Likert-type scales (Chafouleas et al., 2007). Teachers participated in intervention trainings. They were given the opportunity to ask questions about the form and were given examples and non-examples of what constitutes a specific rating (i.e., what would be considered a 1, 2, or 3). Then the teachers worked through what four periods they would rate the student’s behavior to ensure accurate and
consistent rating occurs (i.e., so observers will know when to conduct interobserver agreement observations). Four periods were rated across the day in order to obtain an accurate representation of the participant’s behavior as well as to minimize the requirements of the teacher (e.g., two morning periods and two afternoon periods). Of the four rated periods, a minimum of two rating periods were during an academic-focused time. Each observation was 15 minutes to minimize the disruption of a typical school day (e.g., Kindergarten classrooms typically have 15-minute centers, which would then allow a Kindergarten teacher to rate during one center period). Teachers were then given practice using the specific DBRC they will be using over a 15-minute practice observation period (Steege, Darvin, & Hathaway, 2001). Additionally, they were given practice utilizing the scripts (i.e., check-in and check-out) with the primary researcher or another researcher. Practice continued until teachers were at a mastery level of 90% or more for DBRC rating and appropriate praise script usage (Steege et al., 2001). In addition, teachers were shown a behavior description sheet, which had the target behaviors’ operational definitions for a reference throughout the day. Teachers were exposed to the data value sheet, which served as a way to track all total data points earned by the participant throughout the study. Teachers were shown how to record data appropriately on the data point value sheet.

**Researcher assistant training.** Researcher assistants (e.g., individuals checking for interobserver agreement, procedural integrity, and treatment integrity) were given practice on how to rate student behavior using the developed DBRCs, which then served as a check for interobserver agreement using the DBRC integrity checklist over a 15-minute practice observation period (Chafouleas et al., 2005; Chafouleas et al., 2007).
Additionally, selected research assistants were given practice on how to check for treatment integrity using the CICO integrity checklist. For example, assistant researchers were taught how to ensure teachers were checking in during the morning and determining the daily reward and checking out in the afternoon, while using the provided script. Practice continued until assistant researchers were at a mastery level of 90% or more for DBRC rating interobserver agreement and treatment integrity interrater agreement (Chafouleas et al., 2005; Chafouleas et al., 2007). Selected research assistants were also given practice on how to check for procedural integrity using the DBRC integrity checklist.

**Baseline.** Upon completion of training, teachers were given a behavior description sheet containing the operational definitions of the target behaviors to be rated on the DBRC. The behavior description sheet served as a reference for the teacher throughout the day as he or she rates the participant’s behavior during the four periods. Teachers were also given a data value sheet to record the total points earned each day by the participant across the entire study. Then the collection of baseline data on the display of target behaviors by the participants began. The target behaviors collected on the DBRC were incompatible with the target behaviors identified by school staff members that were of concern. For example, in-seat behavior being rated on the DBRC was incompatible with out-of-seat behavior that was rated during the functional analysis. Teachers and objective observers collected baseline data on the participants for a minimum of a three-day-period (i.e., one data point equaled 1 day’s total points on the DBRC for a participant; the total points ranging from 12 – 36 on the DBRC based on the teacher ratings of student performance across the identified target behaviors) during the
agreed-upon time periods (Chafouleas et al., 2007). Teachers did not check-in or check-out with participants during baseline; only data were obtained during the baseline period.

Objective observers also rated participant behavior at a minimum of 33% of the observation periods across the baseline period (Cooper et al., 2006; Hunley & McNamara, 2010; Kennedy, 2005). Original teacher and objective observer baseline DBRC sheets were gathered at least twice per week and kept by the primary researcher; data were graphed and recorded electronically by the primary researcher.

**Treatment.** When baseline DBRC data had been collected and completed, participants assisted in determining the rewards to be potentially earned based on the points earned each day (based on teacher feasibility; Hawken, 2006; Hawken & Johnston, 2007). Participants participated in a forced-choice preference assessment to determine appropriate and preferred rewards. Paired method or forced-choice involved the simultaneous presentation of two items or activities. All items were paired systematically with every other item in a random order to ensure completeness. For each pair of items, the individual was asked to choose one. Six items were assessed for the child for potential use as reinforcement based on teacher and participant input of preferred and accessible items. The participant completed 30 trials of a paired forced choice preference assessment. During each trial, two items were presented at the same time by the primary researcher. The first item was placed on the researcher’s left and the second on the right. The participant was then asked to select the item he or she prefers from the two presented items. The selection was recorded for each trial. After all 30 trials had been completed, the percentage of trials each item was selected was calculated. Items were ranked 1 – 6 in order of preference upon completion of the preference assessment. Research suggests the
most frequently selected item will likely be the most potent reinforcer. Since all objects and activities were paired together, the forced-choice assessment method takes significantly longer than the single method, but researchers found that the paired method was more accurate than the single item method (Pace et al., 1985; Paclawskyj & Vollmer, 1995). Upon completion and analysis of the preference assessment, a spinner for each participant was designed to determine what reward he/she will earn at the end of each day (Hawken et al., 2007).

The treatment phase of the study began in a multiple-baseline across participants design (see the design section for additional information on the multiple baseline design to be implemented; Todd et al., 2008). Each phase was identical except for the participants’ function maintaining their target behaviors. At the start of each day during the treatment phase, students used their individualized spinner to determine what reward they could earn if they earn 75% or more of the points on the DBRC. Teachers then recorded the potential reward on the DBRC for the respective day.

Teachers rated the same amount of observation periods per day: four. Teachers used their training with the DBRC in combination with the operational definitions, qualitative descriptions, and percentages to rate the student’s behavior in each respective area during each period. The total points ranging from 12 – 36 on the DBRC based on the teacher ratings of student performance across the identified target behaviors. Teachers checked-in during the morning and checked-out during the afternoon (e.g., 8:00 a.m. and 2:15 p.m.). During the CICO intervention, teachers used the same script (e.g., Teachers provided at least one praise to the participant and one statement to indicate how the student could have improved in future observation periods.) to provide appropriate and
standardized communication (Chafouleas et al., 2007) based on the rated observation periods. If at least 75% of total points were earned at the end of the day, then the participant earned the predetermined reward from the morning spinner during the check-out session with his/her teacher (Hawken et al., 2007; McGoey, Prodan, & Condit, 2007; Schumaker et al., 1977; Todd et al., 2008). Teachers recorded the period during which they rated student behavior (e.g., morning carpet time, 8:15 a.m. – 8:45 a.m.) and when the check-in and check-out was provided (e.g., 8:00 a.m. and 2:00 p.m., respectively) on the DBRC.

Simultaneously, objective observers rated *student performance* during the same days as teachers using the exact same DBRC. However, objective observers collected data on a minimum of 33% of the total rated periods.

Data collection in the treatment phase continued until six data points had been collected by the teacher for each participant, then one day of withdrawal (i.e., teacher will not check-in or check-out), followed by another six days of intervention at which point the intervention was stopped. Then a follow-up datum was collected at an average of five days after the conclusion of the final treatment data. Following the study teachers were given the IRP-15 in order to assess their general acceptability of the intervention.

**Interobserver Agreement**

Objective observers were utilized to ensure ratings were accurate based on the operational definitions as per the Likert-type scale with descriptors and percentage using the interobserver agreement sheet for the DBRC. During the study, a minimum of 33% of the teacher rated time periods (i.e., 27 rated periods out of the estimated 80 total periods per participant) were simultaneously rated by trained observers (Cooper et al., 2006;
Interobserver agreement was obtained by dividing the number of rated periods across the three target behavior agreements by the total number of agreements plus disagreements and then multiplying by 100. A disagreement was defined as not having an exact match on the 1-3 Likert-type scale. If interobserver agreement data fell below 80% between objective observers and teachers, then teachers would participate in another training until mastery (i.e., 90% of ratings) was obtained during the training (Cooper et al., 2006). In addition, a secondary objective observer conducted observations at a minimum of 33% of the objective observer periods (i.e., nine rated periods of the estimated 27 rated periods). If the objective observers and secondary observers agreement data fell below 80%, then objective observes would participate in another training until mastery (i.e., 90% of ratings) was obtained during the training.

**Procedural Integrity**

Similar to McGoey and colleagues (2007), teachers would complete DBRCs to ensure the procedural integrity, or correct implementation of designed intervention variables, of daily rating and the designed CICO had been given, as indicated by date and initials of teacher. Copies of the completed DBRCs served as a permanent product to aid in the determination of the procedure integrity. In addition, trained evaluators selected a minimum of 33% of the DBRC and conducted procedural integrity using the DBRC integrity checklist. To compute the percentage of steps completed correctly the observers: (1) added up the number of steps correctly carried out during the checklist as indicated by a yes on the checklist, (2) divided that sum by 10 (i.e., the total number of steps), and (3) multiplied the quotient by 100 to calculate the percentage of steps of the DBRC.
completed in an acceptable manner (Roach & Elliott, 2008). If the procedural integrity data indicated a percentage below 90, then teachers would be retrained on the steps to complete the DBRC.

**Treatment Integrity**

Trained observers selected a minimum of 33% of the rated time periods by teachers to ensure teachers were following the outlined CICO intervention steps. The observers used the CICO integrity checklist to evaluate the integrity of the treatment being implemented by the teachers. To compute the percentage of integrity completed correctly, the observers (1) added up the number of steps correctly carried out during the checklist as indicated by a yes on the checklist, (2) divided that sum by the total number of steps, and (3) multiplied the quotient by 100 to calculate the percentage of steps of the CICO intervention were done in an acceptable manner (Roach & Elliott, 2008). If the procedural integrity data indicated a percentage below 90, then teachers would be retrained on the steps to conduct the CICO intervention.

**Design**

Participants were determined to fit into functional groups based on the function maintaining their target behaviors (i.e., combination of escape and attention, attention, and escape) as a modified between groups design with a component of a multiple-baseline across participants design of baseline (i.e., A), treatment (i.e., B), withdrawal (i.e., A), treatment (i.e., B), and at a minimum of five days after the last treatment day a minimum of a datum was collected as a follow-up (i.e., A; Todd et al., 2008). All phases were conducted in the school the participants are enrolled (i.e., no observations or
conditions were conducted outside of the typical school environment). Following three baseline data points, randomly selected one-half of the participants or three students (i.e., one determined to fit into the escape group, one determined to fit the attention group, and one determined to fit the combined escape-attention group), entered into the treatment phase while the remaining participants continued to have baseline data collected. Once five total data points across phases have been collected, the second half of the participants (i.e., one determined to fit into the escape group, one determined to fit into the attention group, and one determined to fit into the combined escape-attention group), entered into the treatment phase. Treatment continued until a minimum of six data points were collected for all participants. When six data points had been collected for each participant, the treatment was withdrawn for one day, while data is collected (i.e., no check in and check out). Treatment was then be reinstated for six days. When a minimum of 18 data points had been collected across phases for all participants, treatment and data collection ceased. A follow-up datum was collected an average of five days after the last day of treatment implementation; treatment was not implemented during the follow-up, rather only a DBRC datum was collected.

**Independent variable.** The primary independent variable was comparing the effects of the CICO with feedback treatment with a withdrawal phase. Following the collection of six data points the intervention was then removed for a minimum of one day. The intervention was then reintroduced following the withdrawal of the intervention.

A secondary independent variable was the function maintaining the target behaviors of students (i.e., combined attention and escape, attention, and escape). The teachers were given scripts to follow (see APPENDIX J) with specific steps and rated
behaviors. **Attention** was defined as any behavior that results in a response provided by a teacher or peer in response to a behavior by the target student (e.g., smile, laugh, correction, praise statement). **Escape** was defined as a student engaging in behavior that results in the student being able to escape or avoid a difficult or unpleasant task, activity, or interaction (e.g., academic worksheet, attending gym class, nap time). **Combination** was defined as student behavior being maintained by both attention and escape as defined previously; one function could not be separated as maintaining the student’s behavior(s). Therefore, the secondary independent variable was comparing the CICO with feedback intervention among the three functional groups of participants with different functions maintaining their (i.e., combined attention and escape, attention, and escape).

**Dependent variable.** The dependent variable was the total points ranging from 12 – 36 on the DBRC based on the teacher ratings of student performance across the identified target behaviors. In addition, objective observers conducted similar ratings across a minimum of 33% of the total rated periods. The following provided additional information of the performance areas to be rated by teachers and objective observers. All performance goals were rated using a face scale (e.g., sad face, calm face, happy face) with a corresponding 1-3 Likert-type scale, with descriptors (e.g., below average) and percentage (e.g., 1-25%) used with the rating (Chafouleas et al., 2007).

**Target behaviors.** On-task behavior was defined as the student presenting as doing assignment/requested tasks and did not withdraw or take a break (e.g., day dream or converse on non-assignment related talk) for longer than 5 seconds. In-seat behavior was defined as the student staying in assigned seat or within instructional area; student
did not leave area for more than 5 seconds per rating period without permission. Compliance was defined as following directions within 10 seconds of directive given by teacher.

**Total student performance.** All target behaviors rated by the teacher (i.e., on-task, in-seat, compliance) loaded into total points earned each day for each participant. For each target behavior, students could have earned 3 points per rated period or 9 total points per observation day. For each day, students could have earned up to 36 total points. Rewards were provided to participants based on the number of points earned (see the procedure section for additional reward information).

**Data Analysis**

In order to ensure more than the primary researcher interpreted potential participant functional analysis data, three additional raters were recruited from the research team, including the supervisor of the study, to indicate function based on the graphed data of the functional analysis. If all the raters agreed on a likely function of behavior for a participant based on visual analysis alone, then the participant would be determined to fit into the respective functional group. However, if there were disagreements among the raters, then additional raters would be recruited from the research team to analyze the data or the respective participant would be thrown out of the potential research pool. The process of three raters evaluating the data would continue until six participants or two participants were determined to fit into each functional group.
The data were analyzed through visual analysis as per single subject best practice methods (Hunley & McNamara, 2010; Olive & Franco, 2008). The level of the data was visually reviewed; level is defined as average or mean differences across phases. The researcher expects the level of the data (e.g., total DBRC points earned) during baseline and withdrawal phase (i.e., no teacher CICO) to be lower than the data (e.g., total DBRC points earned) during the treatment phases (i.e., when teacher provides a check-in and check-out) across the three functional groups, on average. In addition, the differences in the level of total points earned between the three functional groups (i.e., combined attention and escape, attention, and escape) provided the researcher with valid information as to the function of behavior that responds best to a CICO intervention. In other words, if the attention group has a higher level, on average, compared to the escape and the combined groups, then the researcher can then surmise that students with behaviors maintained by attention are likely to respond more positively to a CICO intervention than students with behaviors maintained by escaped or combined attention and escape (Hunley & McNamara, 2010; Olive & Franco, 2008).

Combined with visual analysis the effect size $d$-index and percentage of non-overlapping data (PND) were calculated for each individual participant and functional group. To compute the $d$-index the researcher first calculated the means for each phase (i.e., baseline and treatment), then calculated the standard deviation for all the data (i.e., baseline and treatment combined), and then computed the actual $d$-index by subtracting the baseline and withdraw mean from the intervention mean and then divide the result from the standard deviation of all the data. To interpret the results, Cohen suggests using .2 as small, .5 as moderate, and .8 as a large effect size (Hunley & McNamara, 2010).
To compute PND two methods are commonly used. The first method by Hunley and McNamara (2010) recommends taking the most extreme data point in the desired direction in baseline phase and drawing a horizontal line across the entire data collection figure. Then take the most extreme data point in the undesired direction in the treatment phase and draw horizontal a line across the entire data collection figure. The data points on or between these lines are considered overlapping. Then add the number of non-overlapping data points across both phases (i.e., those above the upper line and those below the lower line). Then add all data points across the baseline and intervention phases. Take the number of non-overlapping data and multiply by 100 and then divide by the total number of data points across the baseline and intervention phases. A second method to calculate PND is by Beretvas (2006). Beretvas recommends taking the most extreme data point in the desired direction in baseline phase and drawing a horizontal line across the entire data collection figure. Then any lines on or above/below the line in the undesired directions in the intervention phase only are considered overlapping data. The data above/below the line in the desired direction are considered non-overlapping data. Then add all data points in intervention phase(s). To calculate the PND divide the non-overlapping data by the total data points in the intervention phase and multiple by 100.

Due to the inclusion of baseline data in the Hunley and McNamura calculation and the variability in the current study’s baseline data, their calculation method for PND was used for the current study.

Scruggs and Mastropieri (1998) provided suggestions for interpretation of PND, which is used by Hunley and McNamura and Beretvas methods. They suggest a percentage at or above 90 is a highly effective treatment, a percentage between 70 to 89
is considered a moderately effective treatment, a percentage between 50 to 69 is considered a questionably effective treatment, and a percentage at or below 49% is considered an ineffective treatment (Hunley & McNamura, 2010; Olive & Fanco, 2008; Scruggs & Mastropieri, 1998).
CHAPTER IV
RESULTS

The purpose of the study was to evaluate if the effectiveness of a CICO intervention varies based on the function maintaining students’ target behaviors as determined by functional analyses prior to the implementation of the intervention. Specifically, the study examined the differences between participants with target behaviors maintained by combined attention and escape, attention, and escape. Additionally, the study compared the effects of the CICO intervention on student performance based on the ratings of a DBRC.

As part of the results, the following sections will be discussed in the current chapter: (a) functional analyses data for each participant; (b) CICO intervention data for each participant; (c) results of the combined functional group analyses of the CICO intervention; and (d) treatment integrity data including interobserver agreement, procedural integrity, and treatment integrity as well as the results of the IRP.

**Participant Functional Analysis**

In order to identify the functional group each participant would be determined to fit into for the intervention, a functional analysis of the displayed targeted behaviors was conducted for each participant. As described in the methodology section, the conditions of the functional analysis were randomized for each participant who was conducted...
across two days. See APPENDIX P for a table of the six participants’ data from the completed functional analyses. The results of the completed functional analyses found no one teacher had two students with the same function.

**Symon**

During the functional analysis, Symon obtained an average frequency of target behaviors during the control of 1.00 (range = 0.00 – 2.00). During the attention condition, Symon had an average of 4.00 (range = 3.00 – 6.00) observed target behaviors. In the escape condition, Symon had an average frequency of 7.00 (range = 6.00 – 8.00) of observed target behaviors. Therefore, based on the agreement of the three raters who completed visual analysis of the functional analysis data, the suggested function of behavior for Symon was a combination of attention and escape. See Figure 1 for a visual display depicting the results of Symon’s functional analysis.

![Figure 1](image.png)

*Figure 1.* Results of Symon’s functional analysis across conditions (i.e., C = Control; A = Attention; and E = Escape).
Byron

During the functional analysis, Byron obtained an average frequency of target behaviors during the control of 1.00 (range = 1.00 – 1.00). During both the attention and escape conditions, Byron obtained an average of 6.67 (range = 5.00 – 8.00 for escape; 5.00 – 9.00 for attention) for observed target behaviors. Therefore, based on the agreement of the three raters who completed visual analysis of the functional analysis data, the suggested function of behavior for Byron was a combination of attention and escape. See Figure 2 for a visual display depicting the results of Byron’s functional analysis.

![Figure 2](image)

*Figure 2.* Results of Byron’s functional analysis across conditions (i.e., C = Control; A = Attention; and E = Escape).

Sarah

During the functional analysis, Sarah obtained an average frequency of target behaviors during the control of 0.67 (range = 0.00 – 2.00). During the attention condition,
Sarah had an average of 7.33 (range = 6.00 – 8.00) observed target behaviors. In the escape condition, Sarah had an average frequency of 0.67 (range = 0.00 – 2.00) of observed target behaviors. Therefore, based on the agreement of the three raters who completed visual analysis of the functional analysis data, the suggested function of behavior for Sarah was attention. See Figure 3 for a visual display depicting the results of Sarah’s functional analysis.

**Figure 3.** Results of Sarah’s functional analysis across conditions (i.e., C = Control; A = Attention; and E = Escape).

**Patrick**

During the functional analysis, Patrick obtained an average frequency of target behaviors during the control of 0.33 (range = 0.00 – 1.00). During the attention condition, Patrick had an average of 7.33 (range = 5.00 – 9.00) observed target behaviors. In the escape condition, Patrick had an average frequency of 1.67 (range = 1.00 – 3.00) of observed target behaviors. Therefore, based on the agreement of the three raters who
completed visual analysis of the functional analysis data, the suggested function of behavior for Patrick was a combination of attention. See Figure 4 for a visual display depicting the results of Patrick’s functional analysis.

Figure 4. Results of Patrick’s functional analysis across conditions (i.e., C = Control; A = Attention; and E = Escape).

Belle

During the functional analysis, Belle obtained an average frequency of target behaviors during the control of 0.33 (range = 0.00 – 1.00). During the attention condition, Belle had an average of 2.00 (range = 1.00 – 4.00) observed target behaviors. In the escape condition, Belle had an average frequency of 9.00 (range = 6.00 – 11.00) of observed target behaviors. Therefore, based on the agreement of the three raters who completed visual analysis of the functional analysis data, the suggested function of behavior for Belle was escape. See Figure 5 for a visual display depicting the results of Belle’s functional analysis.
Rex

During the functional analysis, Rex obtained an average frequency of target behaviors during the control of 0.33 (range = 0.00 – 1.00). During the attention condition, Rex had an average of 0.67 (range = 0.00 – 1.00) observed target behaviors. In the escape condition, Rex had an average frequency of 6.33 (range = 6.00– 7.00) of observed target behaviors. Therefore, based on the agreement of the three raters who completed visual analysis of the functional analysis data, the suggested function of behavior for Rex was escape. See Figure 6 for a visual display depicting the results of Rex’s functional analysis.
Individual CICO Data by Student

Following the completion of the functional analysis and the determination of the function of each student’s displayed target behavior, baseline data were collected using a multiple baseline design (i.e., 3-day and 5-day periods) for each function group (i.e., combined attention and escape, attention, and escape). Twelve days of intervention were delivered to each student with a one day withdrawal after the sixth day. All students participated in follow up five days after the last day of intervention.

Symon

The following section will present the intervention data for Symon. Symon’s baseline, intervention phase one, one day of withdrawal, intervention phase two, and follow-up data will be presented. A graphical depiction and summary analysis of Symon’s results is offered.
**Baseline.** The primary dependent variable was the total points earned each day on the DBRC. During the baseline phase, Symon was rated across three days using the DBRC. When examining baseline data, Symon received an average of 27.33 (range = 24.00 – 31.00) points out of a possible 36.00 points (75.93% of total points). Visual analysis revealed a downward trend in the data and no variability with regard to total points earned each day on the DBRC (see Figure 7).

**Intervention phase one.** During the first intervention phase, Symon was rated across six days. With the implementation of the CICO intervention during the first intervention phase, Symon earned an average of 30.33 (range = 26.00 – 35.00) points out of 36.00 (84.26% of total points). Visual analysis revealed an overall upward trend with some variability with regard to total points earned each day on the DBRC (see Figure 7).

**Withdrawal phase.** After six days of implementing the CICO intervention, Symon did not participate in the intervention to facilitate a withdrawal phase. During the one day withdrawal phase, Symon obtained 35.00 points on the DBRC (97.22% of total points). Visual analysis revealed an increase in level of the datum (see Figure 7). The withdraw datum was 7.67 points higher than the average of the baseline data.

**Intervention phase two.** Symon was rated across six days during the second intervention phase. With the implementation of the second phase of the CICO intervention, Symon earned an average of 33.33 (range = 27.00 – 35.00) points out of 36.00 (92.59% of total points). Visual analysis revealed a slight upward trend with regard to total points earned each day on the DBRC with the exception of a datum that occurred during day 13 (see Figure 7).
Follow-up phase. A follow-up datum was collected five days after the last day of the second intervention phase. During the follow-up phase, Symon obtained a rating of 34.00 for the one day out of 36.00 (94.44% of total points). Visual analysis revealed a stable datum when compared to intervention phase two data (see Figure 7).

Phase change impact. No observable changes in data were observed for Byron, the other participant in the combined condition, when phase one of the CICO intervention was implemented for Symon. Similarly, no observed changes were noted in the data for Byron, when the second phase of the CICO intervention was implemented for Symon (see Figure 7).

Summary analysis. As can be seen in Figure 7, following a downward trend in baseline data and the implementation of the CICO intervention for phase one and phase two, the intervention data suggest an upward trend and even a leveling off due to earning most of the daily points in response to the CICO intervention. The high level is maintained even during withdrawal and follow-up. Based on the data obtained from Symon there was a positive change from baseline to intervention as indicated by a $d$-index of 1.14. Based on Cohen’s recommended guidelines, the intervention had a large effect on Symon’s behavior. The PND for Symon also indicated a positive change across baseline to intervention, with a PND of 53.33%, which is considered questionably effective (see Table Q1 for complete PND data).

Byron

The following section will present the intervention data for Byron. Byron’s baseline, intervention phase one, one day of withdrawal, intervention phase two, and
follow-up data will be presented. A graphical depiction and summary analysis of Byron’s results is offered.

**Baseline.** The primary dependent variable was the total points earned each day on the DBRC. During the baseline phase, Byron was rated across five days using the DBRC. When examining baseline data, Byron received an average of 29.00 (range = 25.00 – 31.00) points out of a possible 36.00 points (80.56% of total points). Visual analysis revealed a slight decrease in trend and no variability with regard to total points earned each day on the DBRC (see Figure 7).

**Intervention phase one.** During the first intervention phase, Byron was rated across six days. With the implementation of the CICO intervention during the first intervention phase, Byron earned an average of 31.33 (range = 29.00 – 32.00) points out of 36.00 (87.04% of total points). Visual analysis revealed an upward trend and little variability with regard to total points earned each day on the DBRC (see Figure 7).

**Withdrawal phase.** After six days of implementing the CICO intervention, Bryan did not participate in the intervention to facilitate a withdrawal phase. During the one day withdrawal phase, Byron obtained 35.00 points on the DBRC (97.22% of total points). Visual analysis revealed an increase in level trend when compared to phase one intervention data (see Figure 7). The withdraw datum was 6.00 points higher than the average of the baseline data.

**Intervention phase two.** Byron was rated across six days during the second intervention phase. With the implementation of the second phase of the CICO
intervention, Byron earned an average of 32.33 (range = 28.00 – 35.00) points out of 36.00 (89.81% of total points). Visual analysis revealed a general upward trend and some variability with regard to total points earned each day on the DBRC (see Figure 7).

**Follow-up phase.** A follow-up datum was collected five days after the last day of the second intervention phase. During the follow-up phase, Byron obtained a rating of 35.00 for the one day out of 36.00 (97.22% of total points). Visual analysis revealed a stable datum when compared to intervention phase two data (see Figure 7).

**Summary analysis.** As can be seen in Figure 7, following a downward trend in baseline data and the implementation of the CICO intervention for phase one and phase two, the intervention data suggest an upward trend in response to the CICO intervention. However, there is a slight change in variability in the data, particularly following the one day of withdrawal. Based on the data obtained from Byron there was a positive change from baseline to intervention as indicated by a $d$-index of 1.13. Based on Cohen’s recommended guidelines, the intervention had a large effect on Byron’s behavior. The PND for Byron did not suggest the intervention was effective, with a PND of 41.18%, which is considered ineffective.
Figure 7. Symon and Byron’s multiple baseline data across the CICO intervention phases (baseline [i.e., A], treatment [i.e., B], withdrawal [i.e., A], treatment [i.e., B], and follow-up [i.e., FO]).

Sarah

The following section will present the intervention data for Sarah. Sarah’s baseline, intervention phase one, one day of withdrawal, intervention phase two, and
follow-up data will be presented. A graphical depiction and summary analysis of Sarah’s results is offered.

**Baseline.** The primary dependent variable was the total points earned each day on the DBRC. During the baseline phase, Sarah was rated across three days using the DBRC. When examining baseline data, Sarah received an average of 28.33 (range = 22.00 – 32.00) points out of a possible 36.00 points (78.70% of total points). Visual analysis revealed an upward trend in the data and no variability with regard to total points earned each day on the DBRC (see Figure 8).

**Intervention phase one.** During the first intervention phase, Sarah was rated across six days. With the implementation of the CICO intervention during the first intervention phase, Sarah earned an average of 29.67 (range = 26.00 – 35.00) points out of 36.00 (82.41% of total points). Visual analysis revealed an overall upward trend with variability with regard to total points earned each day on the DBRC (see Figure 8).

**Withdrawal phase.** After six days of implementing the CICO intervention, Sarah did not participate in the intervention to facilitate a withdrawal phase. During the one day withdrawal phase, Sarah obtained 26.00 points on the DBRC (72.22% of total points). Visual analysis revealed a drop in level when compared to the CICO phase one intervention data (see Figure 8). The withdraw datum was 2.33 points lower than the average of the baseline data.

**Intervention phase two.** Sarah was rated across six days during the second intervention phase. With the implementation of the second phase of the CICO
intervention, Sarah earned an average of 31.00 (range = 28.00 – 33.00) points out of 36.00 (86.11% of total points). Visual analysis revealed a level trend with some variability in the data with regard to total points earned each day on the DBRC (see Figure 8).

**Follow-up phase.** A follow-up datum was collected five days after the last day of the second intervention phase. During the follow-up phase, Sarah obtained a rating of 26.00 for the one day out of 36 (72.22% of total points). Visual analysis revealed a decrease when compared to the CICO phase two intervention data (see Figure 8).

**Phase change impact.** A significant change in level was observed for the second baseline datum for Patrick, the other participant in the attention condition, when phase one of the CICO intervention was implemented for Sarah. However, the baseline data for Patrick was already in a downward trend. Conversely, no overall observed changes were noted in the data for Patrick, when the second phase of the CICO intervention was implemented for Sarah (see Figure 8). The reader should note, although changes were noted for Patrick’s data in relation to the implementation of the CICO intervention, Patrick’s data were consistently variable across the entire study.

**Summary analysis.** As can be seen in Figure 8, following an upward trend in baseline data and the implementation of the CICO intervention for phase one and phase two, the intervention data suggest a variable pattern with consistent level and trend. However, when the intervention was withdrawn and at follow-up, there was a drop in points earned. Based on the data obtained from Sarah there was a positive change from baseline to intervention as indicated by a $d$-index of 0.60. Based on Cohen’s
recommended guidelines, the intervention had a medium effect on Sarah’s behavior. The PND for Sarah did not suggest the intervention was effective, with a PND of 26.67%, which is considered ineffective.

Patrick

The following section will present the intervention data for Patrick. Patrick’s baseline, intervention phase one, one day of withdrawal, intervention phase two, and follow-up data will be presented. A graphical depiction and summary analysis of Patrick’s results is offered.

**Baseline.** The primary dependent variable was the total points earned each day on the DBRC. During the baseline phase, Patrick was rated across five days using the DBRC. When examining baseline data, Patrick received an average of 29.40 (range = 20.00 – 35.00) points out of a possible 36.00 points (81.67% of total points). Visual analysis revealed a general downward trend after the initial datum and limited variability with regard to total points earned each day on the DBRC (see Figure 8).

**Intervention phase one.** During the first intervention phase, Patrick was rated across six days. With the implementation of the CICO intervention during the first intervention phase, Patrick earned an average of 31.67 (range = 26.00 – 36.00) points out of 36.00 (87.96% of total points). Visual analysis revealed an overall upward trend with some variability with regard to total points earned each day on the DBRC (see Figure 8).

**Withdrawal phase.** After six days of implementing the CICO intervention, Patrick did not participate in the intervention to facilitate a withdrawal phase. During the
one day withdrawal phase, Patrick obtained 24.00 points on the DBRC (66.67% of total points). Visual analysis revealed a drop off in the level when compared to the CICO phase one intervention data (see Figure 8). The withdraw datum was 5.40 points higher than the average of the baseline data.

**Intervention phase two.** Patrick was rated across six days during the second intervention phase. With the implementation of the second phase of the CICO intervention, Patrick earned an average of 30.33 (range = 26.00 – 34.00) points out of 36.00 (84.26% of total points). Visual analysis revealed an overall slight upward trend with variability in regard to total points earned each day on the DBRC (see Figure 8).

**Follow-up phase.** A follow-up datum was collected five days after the last day of the second intervention phase. During the follow-up phase, Patrick obtained a rating of 33.00 for the one day out of 36.00 (91.67% of total points). Visual analysis revealed a stable datum when compared to intervention phase two data (see Figure 8).

**Summary analysis.** As can be seen in Figure 8, following a downward trend in the baseline data and upon implementation of the CICO intervention, an upward trend in the intervention data were noted. However, there is variability within the data during both intervention phases. Based on the data obtained from Patrick there was a positive change from baseline to intervention as indicated by a $d$-index of 0.36. Based on Cohen’s recommended guidelines, the intervention had a small to medium effect on Patrick’s behavior. The PND for Patrick did not suggest the intervention was effective, with a PND of 17.65%, which is considered ineffective.
Figure 8. Sarah and Patrick’s multiple baseline data across the CICO intervention phases (baseline [i.e., A], treatment [i.e., B], withdrawal [i.e., A], treatment [i.e., B], and follow-up [i.e., FO]).
Belle

The following section will present the intervention data for Belle. Belle’s baseline, intervention phase one, one day of withdrawal, intervention phase two, and follow-up data will be presented. A graphical depiction and summary analysis of Belle’s results is offered.

Baseline. The primary dependent variable was the total points earned each day on the DBRC. During the baseline phase, Belle was rated across three days using the DBRC. When examining baseline data, Belle received an average of 21.67 (range = 17.00 – 26.00) points out of a possible 36.00 points (60.19% of total points). Visual analysis revealed an overall slight downward trend in the data with variability with regard to total points earned each day on the DBRC (see Figure 9).

Intervention phase one. During the first intervention phase, Belle was rated across six days. With the implementation of the CICO intervention during the first intervention phase, Belle earned an average of 30.17 (range = 25.00 – 35.00) points out of 36.00 (83.80% of total points). Visual analysis revealed an overall upward trend with variability with regard to total points earned each day on the DBRC (see Figure 9).

Withdrawal phase. After six days of implementing the CICO intervention, Belle did not participate in the intervention to facilitate a withdrawal phase. During the one day withdrawal phase, Belle obtained 28.00 points on the DBRC (77.78% of total points). Visual analysis revealed a decrease in level when compared to intervention phase one data (see Figure 9). The withdraw datum was 6.33 points higher than the average of the baseline data.
**Intervention phase two.** Belle was rated across six days during the second intervention phase. With the implementation of the second phase of the CICO intervention, Belle earned an average of 30.00 (range = 23.00 – 32.00) points out of 36.00 (83.33% of total points). Visual analysis revealed an overall flat trend with regard to total points earned each day on the DBRC with an exception of a datum, which was collected on day 13 (see Figure 9).

**Follow-up phase.** A follow-up datum was collected five days after the last day of the second intervention phase. During the follow-up phase, Belle obtained a rating of 29.00 for the one day out of 36 (80.56% of total points). Visual analysis revealed a leveling off of the datum when compared to intervention phase two data (see Figure 9).

**Phase change impact.** A significant change in level was observed for the second baseline datum for Rex, the other participant in the escape condition, when phase one of the CICO intervention was implemented for Belle. Similarly, the second day of the implementation of the CICO for Belle for phase two, resulted in a significant drop in level for one datum for Rex. However, following the initial drop in level, the data were observed to return to a higher level (see Figure 9).

**Summary analysis.** As can be seen in Figure 9, following an variable trend in baseline data and the implementation of the CICO intervention for phase one and phase two, the intervention data suggest an increase in the overall level, with some variability in the data in response to the CICO intervention. Based on the data obtained from Belle there was a positive change from baseline to intervention as indicated by a $d$-index of 1.69. Based on Cohen’s recommended guidelines, the intervention had a large effect on
Belle’s behavior. The PND for Belle also indicated a positive change across baseline to intervention, with a PND of 80.00%, which is considered moderately effective.

**Rex**

The following section will present the intervention data for Rex. Rex’s baseline, intervention phase one, one day of withdrawal, intervention phase two, and follow-up data will be presented. A graphical depiction and summary analysis of Rex’s results is offered.

**Baseline.** The primary dependent variable was the total points earned each day on the DBRC. During the baseline phase, Rex was rated across five days using the DBRC. When examining baseline data, Rex received an average of 30.00 (range = 25.00 – 34.00) points out of a possible 36.00 points (83.33% of total points). Visual analysis revealed an upward trend, except for the last baseline datum and limited variability with regard to total points earned each day on the DBRC (see Figure 9).

**Intervention phase one.** During the first intervention phase, Rex was rated across six days. With the implementation of the CICO intervention during the first intervention phase, Rex earned an average of 33.67 (range = 28.00 – 36.00) points out of 36.00 (93.52% of total points). Visual analysis revealed an overall downward trend with some variability with regard to total points earned each day on the DBRC (see Figure 9).

**Withdrawal phase.** After six days of implementing the CICO intervention, Rex did not participate in the intervention to facilitate a withdrawal phase. During the one day withdrawal phase, Rex obtained 34.00 points on the DBRC (94.44% of total points).
Visual analysis revealed a leveling off of the datum when compared to intervention phase one data (see Figure 9). The withdraw datum was 4.00 points higher than the average of the baseline data.

**Intervention phase two.** Rex was rated across six days during the second intervention phase. With the implementation of the second phase of the CICO intervention, Rex earned an average of 33.17 (range = 25.00– 36.00) points out of 36.00 (92.13% of total points). Visual analysis revealed a slight upward trend with limited variability (i.e., a datum outside the range of 33.00 – 36.00) with regard to total points earned each day on the DBRC (see Figure 9).

**Follow-up phase.** A follow-up datum was collected five days after the last day of the second intervention phase. During the follow-up phase, Rex obtained a rating of 36.00 for the one day out of 36.00 (100.00% of total points). Visual analysis revealed a leveling off of the datum when compared to intervention phase two data (see Figure 9).

**Summary analysis.** As can be seen in Figure 9, following an overall upward trend, except for the last datum in the baseline data, once the CICO intervention was implemented for phase one and phase two, the intervention data suggest an increase in the level of the data in response to the CICO intervention with limited variability. Based on the data obtained from Rex there was a positive change from baseline to intervention as indicated by a $d$-index of 0.93. Based on Cohen’s recommended guidelines, the intervention had a large effect on Rex’s behavior. The PND for ex did not suggest the intervention was effective, with a PND of 35.29%, which is considered ineffective.
Figure 9. Belle and Rex’s multiple baseline data across the CICO intervention phases (baseline [i.e., A], treatment [i.e., B], withdrawal [i.e., A], treatment [i.e., B], and follow-up [i.e., FO]).
Table 4

Summary Statistics for All Participants

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<td>4.23</td>
<td>24.00</td>
<td>33.00</td>
<td>0.36</td>
<td>SE</td>
<td>17.65</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>29.00</td>
<td>30.67</td>
<td>30.84</td>
<td>30.63</td>
<td>3.78</td>
<td></td>
<td></td>
<td>0.43</td>
<td>ME</td>
<td>21.87</td>
</tr>
<tr>
<td><strong>Escape</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belle E</td>
<td>A</td>
<td>E</td>
<td>21.67</td>
<td>30.17</td>
<td>30.00</td>
<td>30.08</td>
<td>4.97</td>
<td>28.00</td>
<td>29.00</td>
<td>1.69</td>
<td>LE</td>
<td>80.00</td>
</tr>
<tr>
<td>Rex D</td>
<td>D</td>
<td>E</td>
<td>30.00</td>
<td>33.67</td>
<td>33.17</td>
<td>33.42</td>
<td>3.68</td>
<td>34.00</td>
<td>36.00</td>
<td>0.93</td>
<td>LE</td>
<td>35.29</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>26.88</td>
<td>31.92</td>
<td>31.59</td>
<td>31.75</td>
<td>4.72</td>
<td></td>
<td></td>
<td>1.03</td>
<td>LE</td>
<td>56.25</td>
</tr>
</tbody>
</table>

*Note.* T = Teacher. FG = Function Group; C = Combined; At = Attention; E = Escape; QD = Qualitative Description; LE = Large Effect; ME = Medium Effect; SE = Small Effect; ME = Moderately Effective; QE = Questionably Effective; I = Ineffective.
Functional Groups Results

Based on the hypothesized function of behavior as determined by three members of the research team in their review of the functional analysis data via visual analysis resulted in the first six participants considered for the study being determined to fit into three equal groups. Sarah and Patrick were determined to be in the attention group. Belle and Rex were determined to be in the escape group. Byron and Symon were determined to be in the combined group. Refer to Table P1.

The following section will review the results of the three functional groups, which was designed to address the first research question of: Is there a difference in respond to a CICO intervention based on the function of behavior (i.e., combined attention and escape, attention, and escape) as measured by a DBRC? The combined data of the two participants’ in each functional group were analyzed as discussed in the methodology section (i.e., visual analysis, $d$-index, and PND).

**Combined.** When evaluating the combined results of Symon and Byron in the combined group, a positive change from baseline to intervention was found. When looking at the combined baseline of the intervention for Symon and Byron, they earned an average of 28.38 points out of a possible 36.00 points (78.83% of total points). With the implementation of CICO intervention Symon and Byron earned an average of 31.83 points out of 36.00 (88.42% of total points). Visual analysis showed a decrease in trend during baseline, then an increase in trend and level with variability during intervention phases. More specifically, with a $d$-index of 1.08, a large effect was found for the participants with target behaviors determined to be maintained by both attention and
escape. In addition, the PND was found to be 46.87% suggesting the intervention was ineffective for participants with target behaviors maintained by both attention and escape.

**Attention.** When evaluating the combined results of Sarah and Patrick in the attention group, a positive change from baseline to intervention was found. When looking at the combined baseline of the intervention for Sarah and Patrick, they earned an average of 29.00 points out of a possible 36.00 points (80.56% of total points). With the implementation of CICO intervention, Sarah and Patrick earned an average of 30.63 points out of 36.00 (85.08% of total points). Visual analysis showed a decrease in trend for Patrick and an increase in trend for Sarah during baseline, then an increase in trend and level with variability during intervention phases. More specifically, with a $d$-index of 0.43, a medium effect was found for the participants with target behaviors determined to be maintained by attention. In addition, the PND was found to be 21.87% suggesting the intervention was ineffective for participants with target behaviors maintained by attention.

**Escape.** When evaluating the combined results of Belle and Rex in the escape group, a positive change from baseline to intervention was found. When looking at the combined baseline of the intervention for Belle and Rex, they earned an average of 26.88 points out of a possible 36.00 points (74.67% of total points). With the implementation of the CICO intervention Belle and Rex earned an average of 31.75 points out of 36.00 (88.19% of total points). Visual analysis shows a decrease in trend for Belle and an increase in trend for Rex during baseline with variability, then an increase in trend and level with variability during intervention phases. More specifically, with a $d$-index of
1.03, a large effect was found for the participants with target behaviors determined to be maintained by escape. In addition, the PND was found to be 56.25% suggesting the intervention had questionable effectiveness for participants with target behaviors maintained by escape.

In sum, all three functional groups increased in the demonstration of positive behavior as indicated by an increase in the average number of points earned from baseline to intervention as well as by positive $d$–indices for all three functional groups. As can been reviewed in Table 4, the combined group was found to have an average increase of 3.45 points, which was then calculated to have the largest $d$–increase of 1.08, which is considered to be a large effect. The escape group also had a large effect as indicated by a $d$-index of 1.03, with an average increase in points earned of 4.87. The attention group also increased in average points by 1.63; resulting in a Medium $d$-index of 0.43. However, when looking at the PND, the escape group was the only group to suggest questionable effectiveness (i.e., other two groups were considered ineffective).

**Interobserver Agreement**

During the study, trained observers simultaneously rated teacher ratings during the same time periods in order to determine primary interobserver agreement. In addition, trained observed rated time periods simultaneously for secondary interobserver agreement. Interobserver agreement data initially fell below 80% and therefore teachers were retrained. Following the retraining, interobserver agreement data did not fall below 80%, therefore only one teacher retraining was completed. The following section will present the results of the primary and secondary interobserver agreement results by overall results, by individual participant, and by teacher.
Primary. Across the six participants during the first 2-weeks of the CICO intervention, primary (i.e., objective rater and teacher) interobserver agreement was 62.68%. Therefore, due to the percentage falling below 80%, retraining occurred on the ninth day of the intervention for all four teachers. Following the retraining, the interobserver agreement across the four teachers was 81.07%. Overall, across the four teachers for the entire intervention, the total interobserver agreement was 71.29%. The following will present the primary interobserver agreement data collected for the individual participants. The primary researcher collected 48.52% of the total interobserver agreement data across participants.

Symon. Overall, the teacher for Symon had an interobserver agreement of 78.21%. Initially, before the retraining, Symon’s teacher had an interobserver agreement of 66.67%. However, following the retraining the teacher had an interobserver agreement of 93.94%.

Byron. Overall, the teacher for Byron had an interobserver agreement of 58.89%. Initially, before the retraining, Byron’s teacher had an interobserver agreement of 42.75%. However, following the retraining the teacher had an interobserver agreement of 76.19%.

Sarah. Overall, the teacher for Sarah had an interobserver agreement of 62.67%. Initially, before the retraining, Sarah’s teacher had an interobserver agreement of 45.45%. However, following the retraining the teacher had an interobserver agreement of 76.19%.

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**Patrick.** Overall, the teacher for Patrick had an interobserver agreement of 86.67%. Initially, before the retraining, Patrick’s teacher had an interobserver agreement of 86.67%. Following the retraining the teacher had an interobserver agreement of 86.67%.

**Belle.** Overall, the teacher for Belle had an interobserver agreement of 61.29%. Initially, before the retraining, Belle’s teacher had an interobserver agreement of 56.86%. However, following the retraining the teacher had an interobserver agreement of 66.67%.

**Rex.** Overall, the teacher for Rex had an interobserver agreement of 78.21%. Initially, before the retraining, Rex’s teacher had an interobserver agreement of 72.22%. However, following the retraining the teacher had an interobserver agreement of 91.67%.

Table 5

*Mean Primary Interobserver Agreement Summary Table Across Participants*

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Function Group</th>
<th>Initial</th>
<th>Post Second Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher A</td>
<td>Byron Combined</td>
<td>42.75</td>
<td>76.19</td>
</tr>
<tr>
<td>Teacher A</td>
<td>Belle Escape</td>
<td>56.86</td>
<td>66.67</td>
</tr>
<tr>
<td>Teacher B</td>
<td>Symon Combined</td>
<td>66.67</td>
<td>93.94</td>
</tr>
<tr>
<td>Teacher B</td>
<td>Sarah Attention</td>
<td>45.45</td>
<td>76.19</td>
</tr>
<tr>
<td>Teacher C</td>
<td>Patrick Attention</td>
<td>86.67</td>
<td>86.67</td>
</tr>
<tr>
<td>Teacher D</td>
<td>Rex Escape</td>
<td>72.22</td>
<td>91.67</td>
</tr>
<tr>
<td>Across All Teachers</td>
<td></td>
<td>62.68</td>
<td>81.07</td>
</tr>
</tbody>
</table>

**Secondary.** Across the six participants during the entire CICO intervention, secondary (i.e., objective rater and a second objective rater) interobserver agreement was
91.67%. At no point did the secondary interobserver agreement fall below 80%, therefore no retraining took place for the trained observers during the intervention. Please refer to Table 6 for a list of the individual percentages for the secondary interobserver agreement for each participant. The primary researcher collected 0.00% of the total secondary interobserver agreement data across participants.

Table 6

**Secondary Interobserver Agreement and Integrity Results**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Function Group</th>
<th>Secondary Interobserver Agreement Percentage</th>
<th>Procedural Integrity Percentage(^a)</th>
<th>Treatment Integrity Percentage(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symon</td>
<td>Combined</td>
<td>97.44</td>
<td>96.43</td>
<td>100.00</td>
</tr>
<tr>
<td>Byron</td>
<td>Combined</td>
<td>92.31</td>
<td>100.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Sarah</td>
<td>Attention</td>
<td>91.67</td>
<td>100.00</td>
<td>98.73</td>
</tr>
<tr>
<td>Patrick</td>
<td>Attention</td>
<td>83.33</td>
<td>96.51</td>
<td>98.73</td>
</tr>
<tr>
<td>Belle</td>
<td>Escape</td>
<td>86.67</td>
<td>97.78</td>
<td>100.00</td>
</tr>
<tr>
<td>Rex</td>
<td>Escape</td>
<td>100.00</td>
<td>98.85</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Note.\(^a\) All participants’ total intervention integrity was evaluated across eight of the study days. Therefore, for Sarah, Symon, and Belle 47.06% of the potential DBRCs were evaluated; for participants Byron, Patrick, and Rex 42.11% of the potential DBRCs were evaluated.\(^b\) All participants’ total treatment integrity was evaluated across eight out of the possible twelve days (i.e., 66.67% of all intervention days).*

**Procedural Integrity**

Across the six participants during the entire CICO intervention, DBRC procedural integrity was 98.26%. At no point did the procedural integrity fall below 80%; therefore, no retraining took place for the teachers on how to complete the DBRC. Please refer to Table 6 for a list of the individual percentages for the procedural integrity for each participant. Of the nine steps not completed across all six participants, three incomplete steps were not recording the check-out time and two were not indicating whether the
The teacher liked the DBRC for the given day. The primary researcher collected 81.25% of the total DBRC procedural integrity data across participants.

**Treatment Integrity**

Across the six participants during the entire CICO intervention, treatment integrity was 99.58%. At no point did the procedural integrity fall below 80%, therefore no retraining took place for the teachers on how to implement the CICO intervention. Please refer to Table 6 for a list of the individual percentages for the procedural integrity for each participant. The only two steps not completed by teachers were in regards to the timing of check-in and check-out. One participant came late, so the teacher checked-in just after 8:30; while the other participant left early, so the teacher checked-out before 2:00p.m. and not during nap. The primary researcher collected 70.83% of the total CICO treatment integrity data across participants.

**Intervention Rating Profile**

The teacher for Symon endorsed an average of 4.53 (i.e., 8 fours, 6 fives, and 1 six on the 1 – 6 Likert Scale) for a total score of 68 on the 15 IRP questions. The teacher for Byron endorsed an average of 4.93 (i.e., 1 four and 14 fives on the 1 – 6 Likert Scale) for a total of 74 on the 15 IRP questions. The teacher for Sarah endorsed an average of 4.53 (i.e., 8 four, 6 fives, and 1 six on the 1 – 6 Likert Scale) for a total of 68 on the 15 IRP questions. The teacher for Patrick endorsed an average of 1.47 (i.e., 13 ones, 1 four, and 1 five on the 1 – 6 Likert Scale) for a total of 22 on the 15 IRP questions. The teacher for Belle endorsed an average of 4.80 (i.e., 3 fours and 12 fives on the 1 – 6 Likert Scale) for a total of 72 on the 15 IRP questions. The teacher for Rex endorsed an average of 5.80
(i.e., 3 fives, and 12 sixes on the 1 – 6 Likert Scale) for a total of 87 on the 15 IRP questions.

Table 7

*Intervention Rating Profile -15 Results*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Function</th>
<th>Average</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symon</td>
<td>Combined</td>
<td>4.53</td>
<td>68.00</td>
</tr>
<tr>
<td>Byron</td>
<td>Combined</td>
<td>4.93</td>
<td>74.00</td>
</tr>
<tr>
<td>Sarah</td>
<td>Attention</td>
<td>4.53</td>
<td>68.00</td>
</tr>
<tr>
<td>Patrick</td>
<td>Attention</td>
<td>1.47</td>
<td>22.00</td>
</tr>
<tr>
<td>Belle</td>
<td>Escape</td>
<td>4.80</td>
<td>72.00</td>
</tr>
<tr>
<td>Rex</td>
<td>Escape</td>
<td>5.80</td>
<td>87.00</td>
</tr>
</tbody>
</table>
CHAPTER V
DISCUSSION

Overview

The purpose of the current study was to evaluate if the effectiveness of a CICO intervention differs based on the function maintaining students’ target behaviors as determined by functional analyses using teachers’ ratings from a DBRC. The results of the present study are discussed in this chapter. First, findings regarding the research question are discussed outlining each functional group (i.e., combined, attention, and escape) followed by a comparison of all functional groups. Second, implications for the results of the current study are reviewed. Third and final, this chapter concludes with a discussion of limitations and future research.

Overall, no difference was found in the responding to the CICO intervention between the three functional groups. Although the current study revealed that the CICO intervention led to an increase in the display of desired behavior as measured by points earned on the DBRC ratings across baseline and intervention phases across participants, the differences were not significant. All functional groups displayed a slight increase in average points earned from baseline phase across intervention phases. These results support previous research which suggest that CICO increases the occurrence of appropriate behaviors (Hawken, 2006; Hawken et al., 2007; McCurdy et al., 2007) that
are linked to target behaviors with a variety of functions (e.g., attention, escape, and access to tangibles; Hawken & Horner, 2003; Hawken et al., 2011; Lane et al., 2012).

**Combined**

According to the functional analyses conducted during the current study, Symon and Bryon’s target behaviors were maintained by both attention and escape; therefore, suggesting a dually maintained function. Based upon visual analyses and \(d\)-index, the results revealed that the combined-function group displayed an overall slight increase in the display of desirable behaviors. Symon’s PND results suggest the CICO intervention had questionable effectiveness, while Byron’s PND results suggest the CICO intervention was ineffective. The overall combined PND results for the combined group, suggest the CICO intervention was ineffective for students with dual attention and escape maintaining target behaviors. For the combined-function group, the students were able to not only escape classroom interaction when they were checking in/out with the teacher, but they also received one-on-one adult attention. These components of the CICO intervention may serve to provide reinforcement of appropriate behaviors and meet the individual needs of students. Also, the CICO intervention may allow opportunities for the combined-function group of students to learn more appropriate behaviors in the classroom.

Thus, the results of the combined group had inconclusive results when reviewing the graphed data (i.e., visual analysis), averages across phases, \(d\)-index, and PND. Although some change was noted in three out of the four analytic methods, actual effectiveness of the CICO intervention cannot be determined by the current study. As will be discussed later in the current chapter, the impact of variable baseline data and a lack of
experimental control (i.e., not true withdrawal phase), limited interpretation can be
generalized from the obtained data.

**Attention**

The functional analysis conducted in the current study revealed that Sarah and
Patrick’s target behaviors were maintained by attention. Based upon visual analyses and
d-index, the results revealed that the attention-function group displayed a slight increase
in desirable behaviors from the baseline phase across intervention phases. Both Sarah and
Patrick’s PND results suggest the CICO intervention was ineffective. The overall
combined attention group PND results suggest the CICO intervention was ineffective for
students with attention maintaining target behaviors.

Unlike the present study, researchers (Hawken & Horner, 2003; Hawken et al.,
2011) examined the relationship of peer and adult attention on students’ target behaviors
and found the CICO intervention to be effective for improving outcomes for both
attention-function groups with some variability within the adult attention groups. In 2003,
Hawken & Horner examined the occurrence of problem behaviors measured by direct
observation using the CICO intervention to address students’ behavior maintained by
teacher and peer attention. As mentioned previously, unlike the current study and
Hawken & Horner (2003), Hawken and colleagues (2011) used the DBRC as an
intervention strategy while monitoring office disciplinary referrals. Overall, the current
and previous research included the use of CICO intervention to address students’ problem
behavior and increasing positive outcomes for students’ behavior maintained by
attention, whether peer or adult. The process of checking in/out with the teacher provided
opportunities for students to receive social attention from adults. However, the PND
results suggest the CICO intervention was ineffective. It is important note that one of the attention-function students’ results demonstrated variability across the intervention phases. One explanation for this variability could be that this study only focused on adult attention, which has been shown to have variability in previous research (Hawken & Horner, 2003; Hawken et al., 2011). Another explanation for the variability of the results for this student could be the low treatment acceptability scores on the IRP-15 for the teacher. Specifically, the participant’s teacher indicated dissatisfaction for the intervention, lacking benefit for the student, not willing to use this intervention again, and does not recommend the intervention to other teachers to address problem behaviors of students (refer to Table 7).

Thus, the results of the attention group had inconclusive results when reviewing the graphed data (i.e., visual analysis), averages across phases, $d$-index, and PND. Although some change was noted based on the average data, visual analysis, $d$-index, and PND, the results call into question the actual effectiveness of the CICO intervention. In addition, the fact there was some experimental control due to the relative return to baseline during the withdrawal phase, the substantial variability across phases limits the amount of data interpretation that can be generalized from the obtained data.

**Escape**

According to the functional analyses conducted during the current study, Belle and Rex’s target behaviors were maintained by escape; therefore suggesting an escape maintained function. Based upon visual analyses and $d$-index, the results revealed that the escaped-function group displayed an overall slight increase in the display of desirable behaviors. Belle’s PND results suggest the CICO intervention had moderate
effectiveness, while Rex’s PND results suggest the CICO intervention was ineffective. The overall combined PND results for the combined group, suggest the CICO intervention had questionable effectiveness for students with escape maintaining target behaviors. Similar to the combined-function and attention-function groups, the CICO invention produced positive changes in students’ behavior as measured by the DBRC for the escape-function group. Again, the checking in/out process with the teacher allowed opportunities for the participants to escape classroom activities meeting the individualized needs of the students.

Thus, the results of the combined group had inconclusive results when reviewing the graphed data (i.e., visual analysis), averages across phases, $d$-index, and PND. Although some change was noted in three out of the four analytic methods, actual effectiveness of the CICO intervention cannot be determined by the current study. As will be discussed later in the current chapter, the impact of variable baseline data and a lack of experimental control (i.e., not true withdrawal phase), limited interpretation can be generalized from the obtained data.

**Functional Groups Comparison**

As previously mentioned, the current study examined the effect of the CICO intervention for three functional groups (i.e., combined attention and escape, attention, and escape) with the goal of evaluating its relationship with the function of behavior. When comparing the combined results of the $d$-indices and PND (see CHAPTER IVTable 4), the results suggest no difference among the three groups. In addition, a lack of return to baseline during withdrawal and variability in data across phases considerably impacts interpretation of the obtained data. The current study suggests that the CICO
intervention with the use of DBRC as progress monitoring tools produced similar outcomes for students in each function group (i.e., combined attention and escape, attention, and escape). Those results found a slight increase in average points earned from baseline to intervention phases, however effectiveness cannot be determined due to the variability in the data and lack of experimental control due to a lack of return to baseline data during the withdrawal phases in four out of the six participants. Again, key components of the CICO intervention require the students to check in/out with the teacher which may serve as an opportunity to escape classroom activities and to receive social attention from the teacher. These components of the CICO intervention may serve to provide reinforcement of appropriate behaviors and meet the individual needs of students with combined, attention and escape functions. Also, the CICO intervention may allow opportunities for group of students to learn more appropriate behaviors in the classroom. However, clear evidence from the current study was not obtained.

**Intervention Phase Comparison**

When looking at the average total points earned in phase 1 of the CICO intervention to phase 2, following the one day of withdrawal, half of the participants improved (i.e., increased by one point or more), two participants stayed the same (i.e., increase or decrease of .50 or less), and one participant decreased by one point (Patrick). The increase in points earned could have been due to the increase in interobserver agreement following the second training of teachers. In other words, the teachers were rating the students more accurately. Also, students may have been responding due to understanding and accepting the intervention, compared to phase 1 where the participants may not have always understood expectations. The fact the two participants with no
change were both in the escape group, which was the only overall group to suggest questionable effectiveness based on the PND (i.e., other two groups were considered ineffective), may lend further support the CICO intervention is effective for students with target behaviors maintained by escape because of the actual response in both intervention phases. Patrick may have decreased in his total points earned due to his teacher not buying into the intervention, although her interobserver agreement (i.e., accuracy of ratings) were the most consistent among teacher, she may have not have as encouraging or showed signs she did not buy into the intervention, which Patrick responded to. Overall, there was mixed results when reviewing changes in phase 1 and phase 2 intervention data, further supporting mixed results over the overall data.

**Interobserver Agreement and Integrity**

In regards to interobserver agreement, three of the four teachers were able to demonstrate accurate ratings on the DBRC above the 80.00% threshold for best practice following the second training (see Table 5). However, teacher A, the teacher for Byron (combined; 76.19%) and Belle (escape 66.67%) may have also impacted the results of the CICO intervention data. The lack of interobserver agreement may have led to inaccuracy in the data, which may have impacted a lack of experimental control (i.e., higher ratings during baseline). The teacher’s ratings were often more generous (i.e., ratings were higher than should have been), therefore an elevation in scores likely skewed the data. Although all the teachers had high levels of treatment and procedural integrity (see Table 6), the low interobserver agreement impacts the interpretation of the obtained data.
Teacher Acceptability

In regards to teacher acceptability for the intervention, three out of the four teachers rated the intervention as acceptable (i.e., IRP-15 scores above 52.50; see Table 7). Overall, the teachers reported to enjoy the implementation of the intervention. The primary comments by the teachers included that the CICO intervention itself was highly valued, appreciated, and easy to implement based on the IRP-15, which is consistent with Chafouleas (2006), Hawken et al. (2007), and Hawken et al. (2011). Only one teacher (i.e., first-year teacher), attention-function group, reported a dislike for the intervention and would be unlikely to implement the intervention in the future. Limited experience for this teacher may have impacted her acceptability of the CICO intervention.

In summary, the current study provides evidence that the CICO intervention does increase average points earned across baseline to intervention phases across all individual participants and function-groups. However, due to the lack of experimental control, poor interobserver agreement, and low PND a difference was not observed across function groups and the overall CICO intervention was found to be ineffective. Nevertheless, on average the CICO appears to be highly accepted by teachers.

Implications

The current study found the CICO intervention to have similar results for students across functions of behavior. The CICO intervention was not individually tailored to each student, which would then qualify as a tier two leveled intervention within a RTI framework when addressing student behavior. The results of the current study have implications within the educational systems for selecting interventions within the RTI
framework, utilizing functional analyses for the CICO intervention, and acceptability of EBI.

Selecting Interventions Within the RTI Framework

As previous discussed, interventions selected within the RTI framework varies from universal to targeted to intensive (i.e., based on a child study). The CICO is considered a standard protocol, due to the specific steps outlined in the procedure without the completion of FBA procedures. The current study results suggest that the CICO intervention can be utilized as a small group, targeted intervention within a tier two level due to similar positive results across functions maintaining target behaviors for students. Other intervention strategies may be considered for more intensive and individualized at the tier three level. The results found a CICO intervention can obtain data through the use of a DBRC to determine monitor the effectiveness of a CICO intervention and upon review of the collected data determine whether to have the student participate in a more intensive tier of interventions (i.e., tier three) where the completion of FBA procedures would be required.

Utilizing Functional Analyses for CICO interventions

Previous research found a CICO intervention to be effective across functions using FBA procedures, but the majority of the determined functions were attention (Hawken & Horner, 2003; Hawken et al., 2011). The current results found FBA procedures, including the most resource intensive functional analysis, were unnecessary due to the same level of responsiveness across common functions of children (i.e., combined attention and escape, attention, and escape). Therefore, school systems can
implement a CICO intervention regardless of a suspected function maintaining behavior due to the success of the current study. While school systems constantly monitor how to effectively use their resources when addressing student behavior, the current study provides school systems with data to save personnel and resources (e.g., conducting interviews and observations) for children that have not responded to a CICO intervention. The school can then move on to consider the children for a more intensive intervention (i.e., individualized and function-based).

Acceptability of EBI

As previously discussed, EBI have two key elements establishment of positive relationships and feasibility (Torres et al., 2012; Walker, 2004). The current study met the two EBI requirements by having all participants respond with similar results and three out of the four teachers rating the intervention as effective and feasible within a general education setting. In addition, the participants’ behaviors were rated to improve, suggesting some responsiveness by the participants, which is important to future application of any intervention. The combination of positive results, acceptance by teachers, and overall ease to ensure treatment fidelity in the current study adds to the notation that a CICO intervention is an EBI.

Limitations

Although the current study revealed a CICO intervention increases the average display of positive behaviors regardless of the function of target behaviors, there are some limitations that must be mentioned. When reviewing the results of the current study, internal and external validity concerns must be reviewed in order to be able to
speak with confidence and disseminate the findings to other populations. Internal validity reviews how well the study was run and how confident one can conclude that the change in the dependent variable (i.e., total points on the DBRC) was produced solely by the independent variable (i.e., CICO intervention) and not extraneous ones. Similarly, external validity evaluates to what extent a study’s results can be generalized to others that were not part of the specific study. Both internal and external validity concerns will be discussed in relation to the current study based on the identified areas in the seminal book by Campbell and Stanley (1966).

**Internal Validity**

The first internal validity concern is the lack of experimental control. The fact that the baseline data of the participants started out high (i.e., average of 28.09; range of 26.88 to 30.00) participants had a limit amount to points that could be earned above and beyond their baseline data. Similarly, only the attention participants had their withdrawal phase datum return below baseline levels, while the other two groups had a higher datum point in each withdrawal condition. Therefore, true experimental control could not be established when the CICO intervention was withdrawn, which then limits the amount of confidence in the results of the current study. Likewise, the poor interobserver agreement percentage by teacher A after the second training may have impacted the results of the current study, further limited the confidence in the results.

The second internal validity concern is that of maturation. The participants in the study began the study over the last weeks of the school year. The teachers were less motivated to engage in an intervention, while at the same, the amount of academic demands being placed on the participants were likely decreasing as the school year was

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coming to a close. Therefore, some of the increase in the rated participant behavior may have been a result of the decrease of demands.

A third validity concern is that of the instrumentation. Human observers were used to rate the participant behavior, which may have changed over-time. Although operational definitions and explicit training was provided, as the study progressed teachers and objective raters may have changed their ratings as they became more familiar with each participant was as more comfortable with the intervention. Similarly, the current study measured the positive behaviors displayed by participants based on a scale of sad face, neutral face, and happy face (i.e., a 1 – 3 Likert-type Scale) due to the participant’s ages. However, due to the simplicity in the scale, there was likely a decrease in sensitivity in the tracking of behaviors. Observations and teacher feedback suggested a more sensitive scale would have been more appropriate. Due to the limited sensitivity, the actual results of the study may be inflated due to the scaling of the DBRC. Moreover, as with any long-term (i.e., longer than one class period or one school day) intervention tool conducted within a school setting scheduling can have an impact on research outcomes. Various school activities (e.g., assembly, field trip, Friday’s are test and relax days for Kindergarten classrooms) likely inflated participant ratings to be more positive.

A fourth internal concern is the selection of the participants. Kindergarten teachers were selected by the school administrator based on the receptiveness of the teachers, which may have impacted the effectiveness of the intervention due to the level of cognition of the kindergarten participants. In addition, the six participants were spread across four teachers, rather than having the six participants in the same classroom, which
would have led to the participants experiencing as close to the same school demands, environment, and teacher interactions.

**External Validity**

The setting of the study likely impacted the results. Specifically, although teachers reported conducting the functional analyses as relatively easy with limited impact on the typical classroom routine, the mere fact the functional analysis was conducted in the classroom during typical classroom instruction, participants were likely impacted by the change in routine (i.e., change in the environment). In addition, the fact the participants knew they were participants due to giving assent and participating in the preference assessment also likely impacted their behavior. Relatedly, although teachers were given extensive training about the intervention and to only give feedback when checking in and checking out, teachers were noted to occasionally remind participants to behave in order to earn the reward for a given day. The combination of teacher prompting and reactivity to researchers may have also led to an increase in the participants being rated more favorably, because the participants were being prompting to behavior by aspects not a part of the study design. Consequently, the results of the CICO intervention may not have been as successful if having observers did ensure reliability throughout the study. In addition, the use of multiple treatments (e.g., CICO intervention and potential reinforcement) may have impacted the results of the study, particularly since access to tangibles was not evaluated as one of the potential functions of behavior maintaining the participants’ target behaviors. The results also cannot be generalized beyond Kindergarten students.
Directions for Future Research

Due to the limited research available on the effectiveness of a CICO intervention based on the function of student’s target behaviors as determined by functional analysis (i.e., experimental control), which is the only method that is accepted within the field of behavioral psychology to actual determine the function of behavior (Cooper et al., 2006), there is much that still needs to be explored. Recommendations for future research will be discussed in two general areas, those for increasing efficacy in research design and utility within the school setting.

Efficacy in Research Design

Ensuring baseline data displays a consistent level and trend before introducing intervention phases should be explored. A substantial limitation of the study is the variability within the baseline data, which impacted the utility and interpretation of the $d$-index statistic as well as the PND. Therefore, future researchers should look to collect baseline data until there is stability, rather than set the number of data points to be collected a priori.

In relation to the attention functional potentially maintain student behavior in the current study, only adult attention was reviewed. However, peer attention is likely to maintain student behavior as well. During some observations for interobserver agreement, some observers noted the participants would seek out peer attention. Therefore, future researchers may consider evaluating if there is a difference in the effectiveness of a CICO intervention between among participants whose target behaviors are determined to be maintained by adult attention versus peer attention during a functional analysis.
To address participant reactivity when collect interobserver agreement, future researchers may consider videotaping classrooms throughout the study and then reviewing the tapes to collect interobserver agreement data. Researchers could also consider priming students to data collectors before the research begins. Data collectors could provide support to teachers or simply enter the room for various times before data collection is completed. Then, when data are collected, participants are less likely to react to the observer, thus not changing their behavior simply due to an observer in the classroom.

**Utility within School Systems**

The component parts of the intervention package should be systematically explored in an effort to ascertain the effect of the spinner, DBRC, timing of obtaining assent, and number of rated periods on the effective of the CICO intervention based on function. The investigator of this study was unable to manipulate the various components due to the time of the data collection and specificity of the obtained Institutional Review Board approval. Variations of the intervention package would provide additional information to professionals practicing in the schools.

Evaluating the impact of teacher experience may also be an area to be explored, based on the results of the IRP-15 and informal comments; do veteran teachers’ participants respond more positively to the implementation of a CICO intervention over first year teachers’ participants? Generalization studies in additional grades, using functional analyses to determined function could also be explored.

Future researchers may wish to explore the effectiveness of a CICO intervention with a DBRC as the data collection tool with an expanded scale to rate behavior. Is there
a difference in respond among functions of behavior when there is an increase in sensitivity to behavior? Are young students still able to understand the scaling when more than three ratings are implemented?

Due to the busy nature of a school setting and changing schedules or teachers, conducting a trial-based functional analysis may provide more accurate and natural results within a school setting. As found in the research by Bloom, Iwata, Fritz, Roscoe, and Carreau (2011), trial-based functional analysis may provide to be an appropriate method when a standard, clinic-based functional analysis are unavailable. The functional analysis in the current study, although effective and minimally invasive, likely still had an impact on teacher and participant behavior. Therefore, a studying looking at the comparison of a traditional functional analysis and trial-based functional analysis in regards to the effectiveness of a CICO intervention would likely provide the school psychology field with practical information. If teachers are able to complete and approve of a trial-based functional analysis, which indicated the CICO intervention is more effective for one function of behavior over another, then school psychologists may be able to provide training to increase the effectiveness of interventions based on function.

Summary

The purpose of the study was to evaluate if the effectiveness of CICO varies based on the function maintaining students’ target behaviors as determined by functional analyses prior to the implementation of the intervention. Through analysis of the data collected in the study, the results found a CICO intervention increased from baseline to intervention regardless of the function determined to maintain target behaviors. Thus, the current study contributes to the CICO literature and expands upon the use of FBA
procedures used to determine the function of behavior of students who respond to a CICO intervention. In addition, the study adds support to the use of a CICO intervention within an RTI framework as well as being considered an EBI.
REFERENCES


APPENDIX A

GLOSSARY OF TERMS
The following is a list of terms with explanations that are used throughout this paper:

1. **Antecedent** – action preceding a student behavior; may increase or decrease behavior.

2. **Attention** – behavior that results in any response provided by a teacher or peer in response to a behavior by the target student (e.g., smile, laugh, correction, praise statement).

3. **Automatic reinforcement** - self-stimulating behavior, often repetitive behavior including hand flapping, rocking, body rocking, that produce sensory stimulation that the child enjoys.

4. **Combination** - behavior being maintained by both attention and escape as defined previously; one function cannot be separated as maintain the student’s behavior(s).

5. **Consequence** – action or item following a student behavior; may increase or decrease behavior.

6. **Escape** - behavior that results in the student being able to escape or avoid a difficult or unpleasant task, activity, or interaction (e.g., academic worksheet, attending gym class, nap time).

7. **Frequency** – the number of target behaviors occurring during a functional analysis condition; one mark will represent one observed occurrence of the behavior.

8. **Functional analysis** – A functional behavior assessment method that is also referred to as an experimental analysis; systematically manipulates
conditions to confirm hypotheses about a participant’s environmental events and target behaviors. The only functional assessment method that can determine a causal relationship.

9. **Functional Behavior Assessment (FBA)** – systematic strategies used to determine the function of displayed behavior; the impact of antecedents and consequences maintaining or causing the behavior to be displayed. FBA is often used to develop hypothesis and then interventions developed to replace desired behaviors with similar desired antecedent or consequences.

10. **Interval observation** - an observer records if target behavior occurred at any time during the interval.

11. **Multiple-baseline design** - an experimental design that begins with collecting baseline data on two or more set of participants across varying conditions, followed by the application of the treatment variable to one set of participants across conditions, while data for the other set of participants continue to be collected. After a set period has been noted for the first set of participant’s condition, the treatment variable is applied in sequential fashion to each of the other set of participants in the study.

12. **Preference assessment** – method of presenting two stimuli in varying order and requesting the person select their most preferred item each time a pair of stimuli is presented; aids in determining a hierarchy of what stimuli may serve as reinforcement to increase desired behavior.
13. **Response to intervention** – a 3-tier model (universal, targeted, intensive) used to identify students how need varying level of supports from few supports to individualized-intensive supports.

14. **Spinner** – a tool used to determine the daily rewards if a set goal is reached. Preferred items are listed in a divided circle, the student spins a pointer and whatever the pointer lands on is the reward listed on the DBRC for the day.

15. **Student performance** – total points earned based on teacher observation of student behavior.

16. **Tangible** – desirable items that can be touched and possessed (i.e., candy, toy).

17. **Target behaviors** - identified student performance areas on the Daily Behavior Report Card (e.g., on-task, in-seat, and compliance).
APPENDIX B

FUNCTIONAL ASSESSMENT INFORMANT RECORD FOR TEACHERS –
SECOND EDITION
Functional Assessment Informant Record for Teachers - II  

Teacher Information

Teacher Name: ___________________  School: ___________________

Please Circle One:

Gender:
- Male
- Female

Area:
- General Education
- Special Education

Race/Ethnicity:
- African American
- Asian
- Caucasian
- Hispanic
- Native American
- Other ___________________

Age:
- 22-25
- 26-29
- 30-33
- 34-37
- 42-45
- 46-49
- 50-53
- 54-57
- 58-61
- 62-65
- 66+

Years Teaching:
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20+

Grade Level You Are Teaching (If you teach more than one grade, please circle all that apply):

K  1  2  3  4  5  6  7  8  9  10  11  12

Highest Degree:
- Bachelors
- Masters
- Masters +30
- Specialist
- Doctorate

Experience with Functional Behavior Assessment:

1  2  3  4  5  1 = No Experience  5 = Very Experienced

Experience with Classroom Consultants:

1  2  3  4  5  1 = No Experience  5 = Very Experienced

Student Information

Assigned Student Number: ___________

Briefly list below the student's typical daily schedule of activities.

<table>
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<tr>
<th>Time</th>
<th>Activity</th>
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Please indicate good days and times to observe. (At least two observations are needed.)

Observation #1  
Date: __________
Time: __________

Observation #2  
Date: __________
Time: __________

Observation #3 (Back-up)  
Date: __________
Time: __________
### Student Information

<table>
<thead>
<tr>
<th>Gender:</th>
<th>Male</th>
<th>Female</th>
<th>Grade:</th>
<th>Age:</th>
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<tr>
<th>Race/Ethnicity</th>
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<th>Asian</th>
<th>Caucasian</th>
<th>Hispanic</th>
<th>Native American</th>
<th>Other</th>
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<tr>
<th>Classification:</th>
<th>General Education</th>
<th>Special Education</th>
<th>Ruling:</th>
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</table>

Please do not reference the student by name. Please put "he" or "she" or the student's initials.

1. Describe the referred student. What is he/she like in the classroom? [Write down what you believe is the most important information about the referred student.]

2. Pick a second student of the same sex who is also difficult to teach. What makes the referred student more difficult than the second student?

3. a. On what grade level is the student reading? 
   b. On what grade level is an average student in the class reading?

4. a. On what grade level is the student performing in math? 
   b. On what grade level is an average student in the class performing in math?

5. a. What is the student's classwork completion percentage (0 - 100%)? 
   b. What is the student's classwork accuracy percentage (0 - 100%)?

6. a. What percentage of adult instructions will the student follow the first time? 
   b. What percentage of adult instructions will the student eventually follow? 
   c. What is the student's accuracy for compliance with adult instructions?

7. Is the student taking any medications that might affect their behavior?  
   YES  NO  If yes, briefly explain:

8. Do you have any specific health concerns regarding this student?  
   YES  NO  If yes, briefly explain:

9. Please describe the student's strengths.

10. What have you tried in the past to deal with this student's problem behavior?
11. Describe your current classroom behavior management plan.

12. When during the day (two academic activities and times) does the student's problem behavior(s) typically occur?
   Academic Activity #1: ____________________________ Time: ________________
   Academic Activity #2: ____________________________ Time: ________________
### Problem Behaviors

Please circle **1 to 3** problem behaviors only and rank the behaviors in order of severity with 1 being the most severe and 3 being the least severe.

### Potential Problem Behaviors (only circle 3; rank in order of severity 1= most; 3 = least )

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Rank Order</th>
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<tbody>
<tr>
<td>Off-task behavior (e.g., looking away from academic work/ teacher; failing to complete work)</td>
<td>1 2 3</td>
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<tr>
<td>Inappropriate Vocalizations (e.g., talking without permission; making sounds; calling out)</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Fidgeting or playing with objects (e.g., tapping pencil; playing with toys)</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Out of Seat or Area (e.g., leaving assigned seat or area; student leaves classroom)</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Non-complaint behavior (e.g., failing to follow adult instructions)</td>
<td>1 2 3</td>
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<tr>
<td>Disrespectful behavior (e.g., arguing with adults, using profanity)</td>
<td>1 2 3</td>
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<tr>
<td>Aggressive Behavior (e.g., hitting, kicking, biting others; throwing objects at others)</td>
<td>1 2 3</td>
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<tr>
<td>Self-injurious Behavior (e.g., hurting oneself)</td>
<td>1 2 3</td>
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<tr>
<td>Bullying (e.g., picking on peers; making fun of others; coercive comments)</td>
<td>1 2 3</td>
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<tr>
<td>Tantrum (e.g., yelling, screaming, crying, throwing oneself on the floor)</td>
<td>1 2 3</td>
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<tr>
<td>Inappropriate social behavior (e.g., staring at others; too close in physical proximity)</td>
<td>1 2 3</td>
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<tr>
<td>Failure to speak/talk in class (e.g., will not talk to others despite ability to do so)</td>
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<tr>
<td>Emotional behavior (e.g., student shuts down; student cries excessively outside of tantrums)</td>
<td>1 2 3</td>
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<tr>
<td>Sleeping in class (e.g., student lays head down or sleeps during instruction)</td>
<td>1 2 3</td>
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<td>Other behavior:</td>
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1. Rate how **manageable** the behavior is:
   
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<td>Unmanageable</td>
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2. Rate how **disruptive** the behavior is:

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3. How often does the behavior occur **per day** (please circle)?

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<tbody>
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<td>&lt; 1 - 5</td>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavior</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 - 6</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavior</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 - 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavior</th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 - 12</td>
<td></td>
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<table>
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<tr>
<th>Behavior</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

149
4. How many months has the behavior been present?

<table>
<thead>
<tr>
<th>Problem Behavior</th>
<th>Present 1</th>
<th>Present 2</th>
<th>Present 3</th>
<th>Present 4</th>
<th>Entire School Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>&lt;1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>&lt;2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>&lt;3</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

5. How long does the problem behavior last in duration?

<table>
<thead>
<tr>
<th>Problem Behavior</th>
<th>Duration</th>
<th>Present 1</th>
<th>Present 2</th>
<th>Present 3</th>
<th>Present 4</th>
<th>Entire School Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>&lt;1 min</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>&lt;2 min</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>&lt;3 min</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

6. For each problem behavior, provide an appropriate replacement behavior that you would like the student to perform instead of the current problem behavior.

<table>
<thead>
<tr>
<th>Problem Behavior</th>
<th>Replacement Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>_____________________</td>
</tr>
<tr>
<td>b.</td>
<td>_____________________</td>
</tr>
<tr>
<td>c.</td>
<td>_____________________</td>
</tr>
<tr>
<td>Antecedents:</td>
<td>Behavior 1</td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>I.</strong> Academic Task Demand</td>
<td></td>
</tr>
<tr>
<td>1. Does the behavior occur during a certain type of task?</td>
<td>0</td>
</tr>
<tr>
<td>2. Does the behavior occur during easy tasks?</td>
<td>0</td>
</tr>
<tr>
<td>3. Does the behavior occur during difficult tasks?</td>
<td>0</td>
</tr>
<tr>
<td>4. Does the behavior occur during certain subject areas?</td>
<td>0</td>
</tr>
<tr>
<td>5. Does the behavior occur during new subject material?</td>
<td>0</td>
</tr>
<tr>
<td><strong>II.</strong> Transitions</td>
<td></td>
</tr>
<tr>
<td>6. Does the behavior occur when a request is made to stop an activity?</td>
<td>0</td>
</tr>
<tr>
<td>7. Does the behavior occur when a request is made to begin a new activity?</td>
<td>0</td>
</tr>
<tr>
<td>8. Does the behavior occur during transition periods (academic, subject, or locations)?</td>
<td>0</td>
</tr>
<tr>
<td><strong>III.</strong> Academic Settings</td>
<td></td>
</tr>
<tr>
<td>9. Does the behavior occur in certain settings?</td>
<td>0</td>
</tr>
<tr>
<td>10. Does the behavior occur in large group?</td>
<td>0</td>
</tr>
<tr>
<td>11. Does the behavior occur in small group?</td>
<td>0</td>
</tr>
<tr>
<td>12. Does the behavior occur in independent areas?</td>
<td>0</td>
</tr>
<tr>
<td>13. Does the behavior occur in other areas?</td>
<td>0</td>
</tr>
<tr>
<td><strong>IV.</strong> Non- Classroom Settings</td>
<td></td>
</tr>
<tr>
<td>14. Does the behavior occur in the bathroom?</td>
<td>0</td>
</tr>
<tr>
<td>15. Does the behavior occur in the cafeteria?</td>
<td>0</td>
</tr>
<tr>
<td>16. Does the behavior occur on the bus?</td>
<td>0</td>
</tr>
<tr>
<td>17. Does the behavior occur in other situations? (Specify other:</td>
<td>0</td>
</tr>
<tr>
<td><strong>V.</strong> Presentation Style</td>
<td></td>
</tr>
<tr>
<td>18. Does the behavior occur when items are presented visually?</td>
<td>0</td>
</tr>
<tr>
<td>19. Does the behavior occur when items are presented auditorily?</td>
<td>0</td>
</tr>
<tr>
<td>20. Does the behavior occur when items are presented auditorily or visually?</td>
<td>0</td>
</tr>
<tr>
<td><strong>VI.</strong> Time of Day</td>
<td></td>
</tr>
<tr>
<td>21. Does the behavior occur in the morning (before lunch)?</td>
<td>0</td>
</tr>
<tr>
<td>22. Does the behavior occur in the afternoon (after lunch)?</td>
<td>0</td>
</tr>
<tr>
<td><strong>VII.</strong> Physiological</td>
<td></td>
</tr>
<tr>
<td>23. Does the behavior occur when the student is having complications with a medical condition?</td>
<td>0</td>
</tr>
<tr>
<td>24. Does the behavior occur if the student appears to be hungry?</td>
<td>0</td>
</tr>
<tr>
<td>25. Does the behavior occur if the student appears to be tired?</td>
<td>0</td>
</tr>
</tbody>
</table>
VIII Other

26. Does the behavior occur when a disruption occurs in the normal routine? 0 1 2 3 0 1 2 3 0 1 2 3

27. Does the behavior occur when the student’s request has been denied? 0 1 2 3 0 1 2 3 0 1 2 3

28. Does the behavior occur when a specific person is in the room? 0 1 2 3 0 1 2 3 0 1 2 3

29. Does the behavior occur when a specific person is absent from the room? 0 1 2 3 0 1 2 3 0 1 2 3

30. Are there any other behaviors that usually precede the problem behavior? What? 0 1 2 3 0 1 2 3 0 1 2 3

31. Is there anything you could do that would prevent the occurrence of the behavior? What? 0 1 2 3 0 1 2 3 0 1 2 3

32. Are there any events occurring in the child’s life that might precede the occurrence of the behavior at school? What? 0 1 2 3 0 1 2 3 0 1 2 3

33. Does anything else precede the problem behavior that is likely to “set it off”? 0 1 2 3 0 1 2 3 0 1 2 3

Consequences:

FAIR/INE 6

<table>
<thead>
<tr>
<th>Behavior 1</th>
<th>Behavior 2</th>
<th>Behavior 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = never happens</td>
<td>1 = happens a little</td>
<td>2 = happens some</td>
</tr>
</tbody>
</table>

Please circle the corresponding number for each of the three behaviors listed.

---

1. Positive Reinforcement: Access to Preferred Activities or Items

<table>
<thead>
<tr>
<th>Behavior 1</th>
<th>Behavior 2</th>
<th>Behavior 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>

2. Positive Reinforcement: Access to Preferred Activities or Items

<table>
<thead>
<tr>
<th>Behavior 1</th>
<th>Behavior 2</th>
<th>Behavior 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>

3. Positive Reinforcement: Access to Preferred Activities or Items

<table>
<thead>
<tr>
<th>Behavior 1</th>
<th>Behavior 2</th>
<th>Behavior 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>

4. Positive Reinforcement: Access to Preferred Activities or Items

<table>
<thead>
<tr>
<th>Behavior 1</th>
<th>Behavior 2</th>
<th>Behavior 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>

5. Positive Reinforcement: Access to Preferred Activities or Items

<table>
<thead>
<tr>
<th>Behavior 1</th>
<th>Behavior 2</th>
<th>Behavior 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>

6. Positive Reinforcement: Access to Preferred Activities or Items

<table>
<thead>
<tr>
<th>Behavior 1</th>
<th>Behavior 2</th>
<th>Behavior 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>

---

11. Positive Reinforcement: Attention from Peers and Teacher Attention

<table>
<thead>
<tr>
<th>Behavior 1</th>
<th>Behavior 2</th>
<th>Behavior 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>

12. Positive Reinforcement: Attention from Peers and Teacher Attention

<table>
<thead>
<tr>
<th>Behavior 1</th>
<th>Behavior 2</th>
<th>Behavior 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>

---

15. Negative Social Reinforcement: Escape, Delay, Reduction or Avoidance of Demands

<table>
<thead>
<tr>
<th>Behavior 1</th>
<th>Behavior 2</th>
<th>Behavior 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>

16. Negative Social Reinforcement: Escape, Delay, Reduction or Avoidance of Demands

<table>
<thead>
<tr>
<th>Behavior 1</th>
<th>Behavior 2</th>
<th>Behavior 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>

17. Negative Social Reinforcement: Escape, Delay, Reduction or Avoidance of Demands

<table>
<thead>
<tr>
<th>Behavior 1</th>
<th>Behavior 2</th>
<th>Behavior 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>
### V. Automatic Reinforcement

21. Does the student display the behavior when alone without interaction from others?  
   0  0  0  0  1  2  3  0  0  0  1  2  3  0  1  2  3

22. Does the student appear to be calm or relaxed as a result of performing the behavior?  
   0  1  2  3  0  1  2  3  0  1  2  3

23. Does the student appear to be excited or aroused as a result of performing the behavior?  
   0  1  2  3  0  1  2  3  0  1  2  3

24. Does the student appear to obtain pleasure or enjoyment from performing the behavior itself?  
   0  1  2  3  0  1  2  3  0  1  2  3

25. Does the student appear to obtain stimulation (visual, auditory, motor) as a result of performing the behavior?  
   0  1  2  3  0  1  2  3  0  1  2  3

### VI. Other Problems

26. Are there other problem behaviors that often occur after the behavior is exhibited? If yes, describe:  
   ___________________________________________________________________ 0  1  2  3  0  1  2  3  0  1  2  3

### VII. Intervention

27. Does the student typically receive praise or any positive consequence when behavior occurs that you would like to see instead of the problem behavior? If yes, describe:  
   ___________________________________________________________________ 0  1  2  3  0  1  2  3  0  1  2  3
### V. Automatic Reinforcement

<table>
<thead>
<tr>
<th>Question</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>22. Does the student display the behavior when alone without interaction from others?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>23. Does the student appear to be calm or relaxed as a result of performing the behavior?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>24. Does the student appear to be excited or aroused as a result of performing the behavior?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>25. Does the student appear to derive pleasure or enjoyment from performing the behavior?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

### VI. Other Problems

<table>
<thead>
<tr>
<th>Question</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>26. Are there other problem behaviors that often occur after the behavior is exhibited? If yes, describe:</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

### VII. Intervention

<table>
<thead>
<tr>
<th>Question</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>27. Does the student typically receive praise or any positive consequence when behavior occurs that you would like to see instead of the problem behavior? If yes, describe:</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
APPENDIX C

SAMPLE FUNCTIONAL ANALYSIS RECORDING FORM
**Functional Analysis Recording Form**

Date __________ From __________ To __________ Participant Number: ________

Setting ________ Activity __________________ Observer Initials: ___________

<table>
<thead>
<tr>
<th>Function Analysis Condition: Escape</th>
<th>Begin Time: ______</th>
<th>End time: ______</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target Behavior</strong></td>
<td><strong>Frequency</strong></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>Off-task</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noncompliance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Out-of-seat</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Overall total of behaviors of concern:**

<table>
<thead>
<tr>
<th>Function Analysis Condition: Attention</th>
<th>Begin Time: ______</th>
<th>End time: ______</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target Behavior</strong></td>
<td><strong>Frequency</strong></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>Off-task</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noncompliance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Out-of-seat</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Overall total of behaviors of concern:**

- **Off-task**: participant does not present as completing assignment/requested tasks and withdraws or takes a break (e.g., daydreams or converse on non-assignment related talk) for longer than 5 seconds.

- **Out-of-seat**: participant does not stay in assigned seat or within instructional area; student leaves area for more than 5 seconds per session without permission.

- **Noncompliance**: participant does not follow directions within 10 seconds of directive given by teacher.
Function Analysis Condition: **Control**

<table>
<thead>
<tr>
<th>Target Behavior</th>
<th>Frequency</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off-task</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noncompliance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Out-of-seat</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Overall total of behaviors of concern:**

**Off-task** – participant does not present as completing assignment/requested tasks and withdraws or takes a break (e.g., daydreams or converse on non-assignment related talk) for longer than 5 seconds.

**Out-of-seat** – participant does not stay in assigned seat or within instructional area; student leaves area for more than 5 seconds per session without permission.

**Noncompliance** – participant does not follow directions within 10 seconds of directive given by teacher.
APPENDIX D

SAMPLE DAILY BEHAVIOR REPORT CARD
Daily Behavior Report Card

Rater/Observer Initials: _____  Observed Participant Number: ___  Date: ___/___/2013

Rater: Please indicate the student’s behavior during each class period on the following scale:

 (1 point) ➔ Does not demonstrate target behavior; well below average (< 25% of time rated)

 (2 points) ➔ Does not meet stated criteria; is below average (approximately 26%-75% of time rated)

 (3 points) ➔ Meets stated goal; is average (76% – 100% of time rated)

Please record the times each observation was completed (e.g., 8:15a.m. – 8:45a.m.)

<table>
<thead>
<tr>
<th>Behaviors</th>
<th>Period 1</th>
<th>Period 2</th>
<th>Period 3</th>
<th>Period 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time: <em><strong>-</strong></em></td>
<td>Time: <em><strong>-</strong></em></td>
<td>Time: <em><strong>-</strong></em></td>
<td>Time: <em><strong>-</strong></em></td>
</tr>
<tr>
<td>- On-task</td>
<td>  </td>
<td>  </td>
<td>  </td>
<td>  </td>
</tr>
<tr>
<td>- In-seat</td>
<td>  </td>
<td>  </td>
<td>  </td>
<td>  </td>
</tr>
<tr>
<td>- Compliance</td>
<td>  </td>
<td>  </td>
<td>  </td>
<td>  </td>
</tr>
</tbody>
</table>

Total Points /9 /9 /9 /9

Rater Initials

Overall Total Points at Program /36

Goal: 75% = 27 total points

Reward for day (based on spinner results of morning): ________________________________

Reward earned for the day? YES (time reward given_______)       NO

Initial:        Check-in:_______ (time:_______)   Check-out:_______(time:_______)

I like the Daily Behavior Report Card:   Yes   NO

Operational Definitions of Target Behaviors:

- On-task ➔ presents as doing assignment/requested tasks and does not withdraw or take a break (e.g. day dream or converse on non-assignment related talk) for longer than 5 seconds

- In-seat ➔ stays in assigned seat or within instructional area; student does not leave area for more than 5 seconds per session without permission

- Compliance ➔ Follows directions within 10 seconds of directive given by teacher.
Participant number: _____

**Daily Point Data Value Sheet**

Please the total points earned in each respective date cell.

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/15/13</td>
<td>4/16/13</td>
<td>4/17/13</td>
<td>4/18/13</td>
<td>4/19/13</td>
</tr>
<tr>
<td>4/29/13</td>
<td>4/30/13</td>
<td>5/1/13</td>
<td>5/2/13</td>
<td>5/3/13</td>
</tr>
<tr>
<td>5/6/13</td>
<td>5/7/13</td>
<td>5/8/13</td>
<td>5/9/13</td>
<td>5/10/13</td>
</tr>
<tr>
<td>5/13/13</td>
<td>5/14/13</td>
<td>5/15/13</td>
<td>5/16/13</td>
<td>5/17/13</td>
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<tr>
<td>5/20/13</td>
<td>5/21/13</td>
<td>5/22/13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX F

TARGET BEHAVIORS DESCRIPTION SHEET
**Operational Definitions of Target Behaviors:**

- **On-task** → presents as doing assignment/requested tasks and does not withdraw or take a break (e.g. day dream or converse on non-assignment related talk) for longer than 5 seconds.

- **In-seat** → stays in assigned seat or within instructional area; student does not leave area for more than 5 seconds per session without permission.

- **Compliance** → Follows directions within 10 seconds of directive given by teacher.
APPENDIX G

PARTIAL INTERVAL OBSERVATION FORM
10-second Partial Observation Across 10-minutes

<table>
<thead>
<tr>
<th>Tasks</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>Total</th>
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<tbody>
<tr>
<td>On-Task</td>
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<td>Off Task</td>
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<tr>
<td>Out-of-Seat</td>
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<tr>
<td>Noncompliance</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>On-Task</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>4*</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>5*</td>
<td>21</td>
<td>22</td>
<td>23</td>
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<tr>
<td>Off Task</td>
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<tr>
<td>Out-of-Seat</td>
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<td>Noncompliance</td>
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<tr>
<td>On-Task</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>7*</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>32</td>
<td>8*</td>
<td>33</td>
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<td>35</td>
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<td>Off Task</td>
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<td>Out-of-Seat</td>
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<tr>
<td>On-Task</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>40</td>
<td>10*</td>
<td>41</td>
<td>42</td>
<td>43</td>
<td>44</td>
<td>11*</td>
<td>45</td>
<td>46</td>
<td>47</td>
</tr>
<tr>
<td>Off Task</td>
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<tr>
<td>Out-of-Seat</td>
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</tbody>
</table>

Anecdotal Info.

**Off-task** - participant does not present as completing assignment/requested tasks and withdraws or takes a break (e.g., daydreams or converse on non-assignment related talk) for longer than 5 seconds.

**Out-of-seat** - participant does not stay in assigned seat or within instructional area; student leaves area for more than 5 seconds per session without permission.

**Noncompliance** – participant does not follow directions within 10 seconds of directive given by teacher.

**On-task** - participant presents as completing assignment/requested tasks or is engaged in the assigned activity.

<table>
<thead>
<tr>
<th>Participant</th>
<th>On Task: ____/48 x 100 = ___%</th>
<th>Off Task: ____/12 x 100 = ___%</th>
<th>Out-of-seat: ____/12 x 100 = ___%</th>
<th>Noncompliant: ____/12 x 100 = ___%</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEER Comparison</td>
<td>On Task: ____/12 x 100 = ___%</td>
<td>Off Task: ____/12 x 100 = ___%</td>
<td>Out-of-seat: ____/12 x 100 = ___%</td>
<td>Noncompliant: ____/12 x 100 = ___%</td>
</tr>
</tbody>
</table>

Total Intervals

On Task: ____/48 x 100 = ___%
APPENDIX H

PREFERENCE ASSESSMENT
Preference Assessment Form

Date: ____________________ Student: ____________________

Items to be assessed

<table>
<thead>
<tr>
<th>Number</th>
<th>Item</th>
<th>Number</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Instructions:
1. Present both numbered items simultaneously. Place the first item on your left. The second item on your right.
2. If the student doesn’t select one, say, “take one.”
3. Block any attempts to touch both items simultaneously.
4. If no response is made in 10 seconds, record “NR” and move to the next trial.
5. Calculate the percentage of trials that each item was selected. Those items selected 80% or more of opportunities are most probably going to function as positive reinforcers.

<table>
<thead>
<tr>
<th>Trial</th>
<th>Left</th>
<th>Right</th>
<th>Trial</th>
<th>Left</th>
<th>Right</th>
<th>Trial</th>
<th>Left</th>
<th>Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>11</td>
<td>5</td>
<td>2</td>
<td>21</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>2</td>
<td>12</td>
<td>4</td>
<td>3</td>
<td>22</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>6</td>
<td>13</td>
<td>1</td>
<td>5</td>
<td>23</td>
<td>1</td>
<td>4</td>
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<tr>
<td>4</td>
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<td>14</td>
<td>5</td>
<td>3</td>
<td>24</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>5</td>
<td>15</td>
<td>4</td>
<td>1</td>
<td>25</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>6</td>
<td>16</td>
<td>2</td>
<td>5</td>
<td>26</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>3</td>
<td>17</td>
<td>4</td>
<td>2</td>
<td>27</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
<td>1</td>
<td>18</td>
<td>5</td>
<td>4</td>
<td>28</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>6</td>
<td>19</td>
<td>6</td>
<td>1</td>
<td>29</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
<td>6</td>
<td>20</td>
<td>3</td>
<td>4</td>
<td>30</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

Summary

Item 1 Selected ___ out of 10 or ___% of opportunities
Item 2 Selected ___ out of 10 or ___% of opportunities
Item 3 Selected ___ out of 10 or ___% of opportunities
Item 4 Selected ___ out of 10 or ___% of opportunities
Item 5 Selected ___ out of 10 or ___% of opportunities
Item 6 Selected ___ out of 10 or ___% of opportunities
APPENDIX I

REWARD SPINNER
APPENDIX J

TEACHER CHECK-IN/CHECK-OUT SCRIPT
**Morning Check-in Script.**

**Have a copy of the previous day’s DBRC.**

“Good morning _______ (student name)! Let’s spin the wheel to see what prize you can earn today.” *After spinning the rewards spinner, write the reward on the DBRC.*

“_________ (student name) look at how you did yesterday on the Daily Behavior Report Card. You earned ____ (total points earned) out of 60! Today I am going to rate you again during the same periods, let’s see if you can earn even more points. Remember I am rating you on staying on-task, which means doing class assignments when asked until you are done. I am also rating you on staying in your seat throughout the period. And on how well you listen when I tell you do something; I want you to follow my direction right away!

Remember, ___________ (student name) we will meet in the afternoon to review your performance, lets see if you can earn more points then you did yesterday! And if you earn more than 48 total points you will earn ___________ (whatever the spinner indicated that morning). I know you can earn a lot of points!”

**Afternoon Check-out Session**

**Show the child the DBRC**

“Today, __________ (student name), during the periods I rated your behavior you earned ____ (total points earned for the four periods; 15 points maximum in each) out of a possible 60 points.

“_________ (student name), you did a great job on _________ (provide one positive area in area; e.g., ‘you stayed on-task 90% or more during carpet time and therefore you earned a 5 out of 5 for on-task. Keep up the good work’). However, __________ (student name) you ________ (provide one area of improvement in an academic area; e.g., ‘You only were in your seat for about half the time during afternoon center time and earned 2 out of 5 points. Please try to stay in your seat so you can earn more points!’).

“_________ (student name), today you earned _____ (total points earned, maximum of 60).”

**If 80% or more:** “You earned ________ (name the reward identified in the morning), congratulations, I like how hard you are working to do well on your behavior. Tomorrow we will meet two times again, lets see if you can earn more (or the same if 60) points then you did today!”

**If less then 80%:** “You did not earn ________ (name the reward identified in the morning) because you only earned ______ (total number of points earned) and you needed to earn 48 points to earn the reward. I like how hard you are working to do well on your behavior. Tomorrow we will meet two times again to review your performance, lets see if you can earn more points then you did today. I know you can do better and can earn a reward.”

171
**Intervention Rating Profile (IRP-15)**

The purpose of this questionnaire is to obtain information that will aid in the evaluation of the intervention for ________. Please circle the number which best describes your agreement or disagreement with each statement.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>This was an acceptable intervention for the child's problem behavior.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Most teachers would find this intervention appropriate for problem behaviors.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>This intervention was effective in changing the child's problem behavior.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>I would suggest the use of this intervention to other teachers.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>The child's problem behavior was severe enough to warrant use of this intervention.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>Most teachers would find this intervention suitable for dealing with the child's problem behaviors.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>I would be willing to use this intervention again.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>This intervention did NOT result in any negative side-effects for the child.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
9. This intervention would be appropriate for a variety of children.

   1 2 3 4 5 6

10. This intervention was consistent with those I have used in the past.

   1 2 3 4 5 6

11. This intervention was a fair way to deal with the child's problem behavior.

   1 2 3 4 5 6

12. This was reasonable for the child's problem behavior.

   1 2 3 4 5 6

13. I liked the intervention.

   1 2 3 4 5 6

14. This intervention was beneficial in understanding this child's problem behavior.

   1 2 3 4 5 6

15. Overall, this intervention was beneficial for the child.

   1 2 3 4 5 6

Adapted from Martens, Witt, Elliot, & Darveaux, 1985.
Intervention Rating Profile (IRP-15)

Each teacher in the study was given the Intervention Rating Profile (IRP-15; Martens, Witt, Elliott, & Darveaux, 1985) to assess the acceptability rating of the intervention devised for each student. The IRP-15 (see Appendix D) is a reliable (Chronbach alpha = .98; Martens et al.) one-factor, 15-item Likert-type scale that assesses the general acceptability of interventions. Scores on the IRP-15 can range from 15-90 with higher scores indicating a greater level of acceptability. Ratings above 52.50 are considered acceptable (Ven Brock & Elliott, 1987).
APPENDIX L

INTEGRITY CHECKLIST
<table>
<thead>
<tr>
<th>Number</th>
<th>Statement</th>
<th>Yes</th>
<th>No</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>There is sufficient evidence to indicate that staff approaches student</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>to present the DFRRC in a calm and respectful manner.</td>
<td></td>
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<tr>
<td>2</td>
<td>There is sufficient evidence to indicate the student was able to</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>use the intervention spinner to determine the daily reward and the</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>reward was recorded on the DFRRC.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>There is sufficient evidence to indicate the teacher rated the student</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>at four distinct time periods (e.g., two in the morning; two in the</td>
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<td></td>
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<tr>
<td></td>
<td>afternoon).</td>
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<tr>
<td>4</td>
<td>There is sufficient evidence to indicate the teacher recorded the time</td>
<td></td>
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<tr>
<td></td>
<td>when the observations and ratings were conducted.</td>
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<tr>
<td>5</td>
<td>There is sufficient evidence to indicate the teacher checked in with the</td>
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<tr>
<td></td>
<td>participant daily in the school day (i.e., before 8:30 a.m.).</td>
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<tr>
<td>6</td>
<td>There is sufficient evidence to indicate the teacher checked out with the</td>
<td></td>
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<tr>
<td></td>
<td>participant at the end of the school day (i.e., after 2:00 p.m., or during</td>
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<td></td>
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<tr>
<td></td>
<td>lunch time).</td>
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<tr>
<td>7</td>
<td>There is sufficient evidence to indicate the teacher utilized the formal</td>
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<tr>
<td></td>
<td>CICO scales provided as part of the intervention.</td>
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<tr>
<td>8</td>
<td>There is sufficient evidence to indicate the teacher totaled all points</td>
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<tr>
<td></td>
<td>earned across the four observation periods to determine if the 50% daily</td>
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<tr>
<td></td>
<td>goal was obtained for the student.</td>
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<tr>
<td>9</td>
<td>There is sufficient evidence to indicate the teacher presented student</td>
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<tr>
<td></td>
<td>with predetermined positive incentives when earned.</td>
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<tr>
<td>10</td>
<td>There is sufficient evidence to indicate the teacher sent a copy of the</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>completed DFRRC home to the participant's parent.</td>
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<td></td>
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</tr>
</tbody>
</table>

Total Treatment/Intervention Compliance and Integrity: __/10

Total Percentage of Treatment/Intervention Compliance and Integrity: ____________
APPENDIX M

DBRC INTEGRITY CHECKLIST
# DBRC Integrity Checklist

Evaluator: __________________ Date of Evaluation: ____________ Participant #: ____________

1. **There is sufficient evidence to indicate a rater initiated the DBRC.**
   - Yes
   - No
   - NA

2. **There is sufficient evidence to indicate the date was recorded on the DBRC.**
   - Yes
   - No
   - NA

3. **There is sufficient evidence to indicate the rater filled in a time for each of the four periods to be rated.**
   - Yes
   - No
   - NA

4. **There is sufficient evidence to indicate the rater completed ratings for all three target behaviors and recorded the total points earned during period 1.**
   - Yes
   - No
   - NA

5. **There is sufficient evidence to indicate the rater completed ratings for all three target behaviors and recorded the total points earned during period 2.**
   - Yes
   - No
   - NA

6. **There is sufficient evidence to indicate the rater completed ratings for all three target behaviors and recorded the total points earned during period 3.**
   - Yes
   - No
   - NA

7. **There is sufficient evidence to indicate the rater completed ratings for all three target behaviors and recorded the total points earned during period 4.**
   - Yes
   - No
   - NA

8. **There is sufficient evidence to indicate the rater recorded the total points earned across the four periods.**
   - Yes
   - No
   - NA

9. **There is sufficient evidence to indicate the rater recorded the reward for the day.**
   - Yes
   - No
   - NA

10. **There is sufficient evidence to indicate the rater recorded if the reward was given and the time the reward was given.**
    - Yes
    - No
    - NA

11. **There is sufficient evidence to indicate the rater checked in and checked out and recorded the time of the check in and check out.**
    - Yes
    - No
    - NA

12. **There is sufficient evidence to indicate the rater recorded if they liked the DBRC.**
    - Yes
    - No
    - NA

---

**Total Treatment/Intervention Compliance and Integrity = ____ / 12**

**Total Percentage of Treatment/Intervention Compliance and Integrity = ____________**
APPENDIX N

INTEROBSERVER AGREEMENT SHEET FOR THE DBRC
Mississippi State University School Psychology - CJK

Daily Behavior Report Card – IOA Form

Observed Participant Number: ___ Date: ___/___/2013

Circle: Primary IOA or secondary IOA Rater/Observer Initials: _____

Rater: Please indicate the student’s behavior during each class period on the following scale:

รอย (1 point) → Does not demonstrate target behavior; well below average (< 25% of time rated)
รอย (2 points) → Does not meet stated criteria; is below average (approximately 26%-75% of time rated)
รอย (3 points) → Meets stated goal; is average (76% – 100% of time rated)

Please record the times each observation was completed (e.g., 8:15a.m. – 8:45a.m.)

<table>
<thead>
<tr>
<th>Behaviors</th>
<th>Period 1 Time: <em><strong>-</strong></em></th>
<th>Period 2 Time: <em><strong>-</strong></em></th>
<th>Period 3 Time: <em><strong>-</strong></em></th>
<th>Period 4 Time: <em><strong>-</strong></em></th>
</tr>
</thead>
<tbody>
<tr>
<td>- On-task</td>
<td>รอย รอย รอย รอย</td>
<td>รอย รอย รอย รอย</td>
<td>รอย รอย รอย รอย</td>
<td>รอย รอย รอย รอย</td>
</tr>
<tr>
<td>- In-seat</td>
<td>รอย รอย รอย รอย</td>
<td>รอย รอย รอย รอย</td>
<td>รอย รอย รอย รอย</td>
<td>รอย รอย รอย รอย</td>
</tr>
<tr>
<td>- Compliance</td>
<td>รอย รอย รอย รอย</td>
<td>รอย รอย รอย รอย</td>
<td>รอย รอย รอย รอย</td>
<td>รอย รอย รอย รอย</td>
</tr>
</tbody>
</table>

Total Points /9 /9 /9 /9

Rater Initials

Overall Total Points at Program: 36 N/A

Goal: 75% = 27 total points

Reward for day (based on spinner results of morning): ______________________________ N/A

Reward earned for the day? YES (time reward given ___) NO N/A

Observed: Check-in: ___ (time: ___) Check-out: ___(time: ___) N/A

Operational Definitions of Target Behaviors:

- On-task → presents as doing assignment/requested tasks and does not withdraw or take a break (e.g. day dream or converse on non-assignment related talk) for longer than 5 seconds

- In-seat → stays in assigned seat or within instructional area; student does not leave area for more than 5 seconds per session without permission

- Compliance → Follows directions within 10 seconds of directive given by teacher.
APPENDIX O

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER
RE: HRPP Study #13-098: An evaluation of the relationship between function of behavior and a modified check-in/check-out intervention

Dear Mr. Klein:

This email serves as official documentation that the above referenced project was reviewed and approved via administrative review on 4/12/2013 in accordance with 45 CFR 46.101(b)(1). Continuing review is not necessary for this project. However, in accordance with SOP 01-03 Administrative Review of Applications, a new application must be submitted if the study is ongoing after 5 years from the date of approval. Additionally, any modification to the project must be reviewed and approved by the HRPP prior to implementation. Any failure to adhere to the approved protocol could result in suspension or termination of your project. The HRPP reserves the right, at anytime during the project period, to observe you and the additional researchers on this project.

Please note that the MSU HRPP is in the process of seeking accreditation for our human subjects protection program. One of these changes is the implementation of an approval stamp for consent forms. The approval stamp will assist in ensuring the HRPP approved version of the consent form is used in the actual conduct of research. Your stamped consent form will be attached in a separate email. You must use copies of the stamped consent form for obtaining consent from participants.

Please refer to your HRPP number (#13-098) when contacting our office regarding this application.

Thank you for your cooperation and good luck to you in conducting this research project. If you have questions or concerns, please contact me at jroberts@research.mstate.edu or cell 662-325-2236.

Finally, we would greatly appreciate your feedback on the HRPP approval process. Please take a few minutes to complete our survey at http://www.surveymonkey.com/s/YZC7QJD.

Sincerely,

Jodi Roberts, Ph.D.
IRB Officer

cc: Tawny McCleon (advisor)
APPENDIX P

FUNCTIONAL ANALYSES DATA
### Table P1

**Result of the Functional Analyses Across Participants**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Control</th>
<th>Attention</th>
<th>Escape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Byron</td>
<td>1</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>1</strong></td>
<td><strong>6.67</strong></td>
<td><strong>6.67</strong></td>
</tr>
<tr>
<td>Sarah</td>
<td>0</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>0.67</strong></td>
<td><strong>7.33</strong></td>
<td><strong>0.67</strong></td>
</tr>
<tr>
<td>Symon</td>
<td>2</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>1.00</strong></td>
<td><strong>4.00</strong></td>
<td><strong>7.00</strong></td>
</tr>
<tr>
<td>Belle</td>
<td>0</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>0.33</strong></td>
<td><strong>2.00</strong></td>
<td><strong>9.00</strong></td>
</tr>
<tr>
<td>Patrick</td>
<td>0</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>0.33</strong></td>
<td><strong>7.33</strong></td>
<td><strong>1.67</strong></td>
</tr>
<tr>
<td>Rex</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>0.33</strong></td>
<td><strong>0.67</strong></td>
<td><strong>6.33</strong></td>
</tr>
</tbody>
</table>

*Note.* Table presents only the data of the functional analyses, not the order. Refer to Table 1 and Figures 1-6 for order of the functional analyses conditions.
APPENDIX Q

PERCENTAGE OF NONOVERLAPPING DATA
### Table Q1

**Percentage of Nonoverlapping Data Statistics Across Participants**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Teacher</th>
<th>Above Highest Datum</th>
<th>Below Lowest Datum</th>
<th>Total Points</th>
<th>PND</th>
<th>Qualitative Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Combined</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symon</td>
<td>B</td>
<td>7</td>
<td>1</td>
<td>15</td>
<td>53.33%</td>
<td>Questionably effective</td>
</tr>
<tr>
<td>Byron</td>
<td>A</td>
<td>6</td>
<td>1</td>
<td>17</td>
<td>41.18%</td>
<td>Ineffective</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>13</td>
<td>2</td>
<td>32</td>
<td>46.87%</td>
<td>Ineffective</td>
</tr>
<tr>
<td><strong>Attention</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sarah</td>
<td>B</td>
<td>3</td>
<td>1</td>
<td>15</td>
<td>26.67%</td>
<td>Ineffective</td>
</tr>
<tr>
<td>Patrick</td>
<td>C</td>
<td>1</td>
<td>2</td>
<td>17</td>
<td>17.65%</td>
<td>Ineffective</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4</td>
<td>3</td>
<td>32</td>
<td>21.87%</td>
<td>Ineffective</td>
</tr>
<tr>
<td><strong>Escape</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belle</td>
<td>A</td>
<td>10</td>
<td>2</td>
<td>15</td>
<td>80.00%</td>
<td>Moderately effective</td>
</tr>
<tr>
<td>Rex</td>
<td>D</td>
<td>6</td>
<td>0</td>
<td>17</td>
<td>35.29%</td>
<td>Ineffective</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>16</td>
<td>2</td>
<td>32</td>
<td>56.25%</td>
<td>Questionably effective</td>
</tr>
</tbody>
</table>