THE EVALUATION OF CRITICAL COMPONENTS

IN THE CHECK-IN/CHECK-OUT INTERVENTION

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Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
DOCTOR OF PHILOSOPHY
May, 2019

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ACKNOWLEDGEMENTS

There are a number of people who have contributed to and encouraged the completion of this dissertation. I would like to thank the district, school, teachers and parents who allowed me to work with their students and implemented a large portion of the work necessary for the data collection process. Similarly, this project was made possible with the help of School Psychology graduate students who dedicated their time to ensure the completion of all aspects of the study. A special thanks to Tracie Neenan, Lindsay Allenbach, Ivy Boyce, Nicole McCurry, Kelsey Koblitz and Stephanie Smith.

I would also like to thank my committee members, Dr. Gary Duhon, Dr. Sara Rich, Dr. Brian Poncy, and Dr. Candace Gann. I am immensely grateful for their feedback and perspectives on the design and execution of the study. I am indebted to Dr. Rich and Dr. Duhon for their long-term mentorship and assistance in the cultivation of this research study. In addition, the School Psychology faculty have provided me with invaluable guidance and opportunities for training and professional growth throughout my dissertation and graduate career at Oklahoma State University (OSU). Finally, heartfelt thanks go to my fantastic cohort for their sincere and encouraging feedback and for allowing me to vent during the nerve-wracking aspects of data collection. Thank you to my family and friends who regularly supported me and provided me with much-needed comic relief. I am profoundly grateful for each of you for your constant reminders to stay to the course and never doubt my abilities.

Name: MEREDITH A. WEBER

Date of Degree: MAY, 2019

Title of Study: THE EVALUATION OF CRITICAL COMPONENTS IN THE CHECK-IN/CHECK-OUT INTERVENTION

Major Field: EDUCATIONAL PSYCHOLOGY (OPTION: SCHOOL PSYCHOLOGY)

Abstract: Literature has emphasized a need to improve the efficient and effective allocation of school resources (e.g. Scott, Rosenberg & Borgmeier 2010; Sugai et al., 2000; Sugai & Horner, 2009). Despite an emphasis on schoolwide and individualized behavior management practices, less is known about the utilization of Tier 2, or targeted, supports. Check-in/Check-out (CICO) is one of the most commonly utilized and well-established Tier 2 interventions (OSEP PBIS; 2007). Specifically, CICO is effective in reducing problem behavior when it contains check-in, in-class feedback, check-out, and a take-home component (e.g. Campbell & Anderson, 2011; Crone et al., 2010). Evaluation of CICO is necessary to address the concerns of educators and their ability to implement adequate prevention and intervention services for students at risk of developing more severe problem behaviors. The current study utilized a multiple baseline design to examine the minimum amount of feedback necessary to reduce student problem behavior and increase appropriate behaviors for three 5th grade students in the general education classroom. For all three participants, the first phase evaluated student response to the implementation of check-in and check-out only. Additional in-class feedback was provided for one participant. Results suggest that CICO may be effective in reducing student problem behavior without full implementation of in-class feedback.

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CHAPTER I

INTRODUCTION

Literature has sought to identify and improve methods for the efficient and effective allocation of school resources to meet student need (e.g. Scott, Rosenberg & Borgmeier, 2010; Sugai et al., 2000; Sugai & Horner, 2009). Despite efforts to bolster schoolwide and individualized behavior management strategies, less is known regarding specific methods for addressing student problem behavior at the Tier 2 or targeted level. One intervention commonly utilized to address student problem behavior is Check-in/Check-out (CICO). CICO has been validated as an effective, manualized intervention for students at risk of significant behavior problems (e.g. Campbell & Anderson, 2011; McIntosh et al., 2009; Miller et al., 2015). The manualized intervention currently necessitates implementation across multiple academic settings, by at least two school staff members (Crone et al., 2010). There is a lack of empirical evidence that indicates if full implementation of the multicomponent intervention is necessary to elicit change in student behavior. Identifying means to simplify intervention implementation and reduce

necessary resources complements the overarching objective of increasing efficiency in service provision. There is currently a general lack of understanding about the application of intervention components relative to student behavior and least invasive procedures to produce effective changes in behavior. Additional research is necessary to understand what intervention components are necessary to streamline the implementation of effective interventions for students at risk of developing more severe problem behaviors.

Multi-Tiered Systems of Support

Positive Behavior Intervention and Supports (PBIS) is the most commonly known multi-tiered model of service delivery to address student behavior. The PBIS model emphasizes the efficient and effective allocation of school resources, as determined by student data (Gresham, 2004; Horner, Sugai, & Anderson, 2010; Scott, Alter, Rosenberg, Borgmeier, 2010). Behavioral services are provided through a three-tiered framework, utilizing a continuum in which support is gradually increased to match student need. This framework consists of primary, or general education, supports such as explicit, school-wide behavioral expectations, secondary, or targeted, supports for students at risk of additional behavioral problems, and tertiary, or individualized, supports for students requiring function-based interventions (Sugai & Horner, 2009; Sugai et al., 2000). Empirical literature currently supports PBIS as an effective means to increase the utilization of data-based decisions to guide behavioral interventions, reduce the frequency of student problem behavior, and improve overall school climate (Gresham, 2004; Horner et al., 2010). While there has been a large-scale shift towards the implementation of PBIS and similar models throughout the United States (Horner, Sugai & Anderson, 2010), efforts are needed to further facilitate the

use of evidence-based behavioral practices and sustainable systems-level change in educational settings.

Although a framework exists by which teachers can provide behavioral supports, few teachers are adequately trained or supported in the implementation of classroom management strategies (Chesley & Jordan, 2012; Freeman, Simonsen, Brier, MacSuga-Gage, 2014). Freeman and colleagues (2014) found that fewer than 50% of general education teacher preparation programs include training in evidence-based classroom management practices and behavioral supports. In addition, teachers report that they do not feel prepared to manage classroom behavior upon entry into the field (Chesley & Jordan, 2012; Tillery, Varjas, Meyers, & Collins, 2010). Greater emphasis should be placed on methods to support teachers in utilizing effective classroom management skills, implement behavioral supports in the classroom and reduce the resources necessary for intervention implementation (Tillery et al., 2010; Sugai & Horner, 2010).

Tier 2 Interventions and Supports

The literature base for Tier 2 interventions is substantially smaller than that of primary or tertiary interventions. Targeted, Tier 2, interventions are those conceived to serve students that are at-risk for more chronic or severe behavior problems. These supports should be available for implementation similarly across small groups of students, following a manualized format by a general education teacher (Hawken & Horner, 2003). Prior to utilizing individualized and function-based interventions, educators should be able to implement targeted interventions to approximately ten to fifteen percent of the population, without sacrificing significant resources (Hawken & Horner, 2003; Horner et al., 2010). CICO, also known as the Behavior Education Plan, is one Tier 2 intervention that has

received significant attention in research and applied settings (Crone, Hawken, & Horner, 2010).

Check-In/Check-Out

CICO is a behavioral intervention utilized for students who require additional supports through Tier 2 services. The intervention utilizes behavioral principles to modify contingencies, increase structure and feedback for student behavior, and increase the saliency of cues. Specifically, students are able to receive frequent behavioral instruction, scheduled and structured monitoring of behavior by adults in the school setting, formal feedback on their behavior, and increased opportunities for practice and reinforcement of desirable behaviors (Hawken & Horner, 2003; Crone et al., 2010). The intervention begins with a daily check-in, in which students meet with a trusted adult in the school at the beginning of the school day to review behavioral expectations and receive their daily point card (DPC). The DPC is a point-based system by which students are provided feedback throughout the school day, receiving points based on complete, partial, or zero adherence to behavioral expectations. Students attend typical class activities and receive feedback from their teacher at the end of each class period. At the end of the day, students and their teacher or other school staff member review the points that they received throughout the day and determine if they met their goal. At this time, the student is provided with individualized feedback or praise for appropriate behavior from a school staff member, a tangible reward and a form to take to a parent or guardian to receive feedback in the home setting. This progression of intervention components is often considered the standard protocol for CICO implementation.

The CICO intervention has received empirical support as an effective intervention for improving student behavior and academic engagement (e.g. Campbell & Anderson, 2008;

Fairbanks, Sugai, Guardino, & Lathrop, 2007; March & Horner, 2002; McIntosh, Campbell, Carter, & Dickey, 2009). Specifically, the application of a CICO intervention has been associated with reductions in the variability and occurrence of problem behaviors, such as talking out, out of seat, noncompliance, disruptive behaviors, and inappropriate physical or verbal behaviors (Campbell & Anderson, 2011; Hawken & Horner, 2003; Todd, Campbell, Meyer, & Horner, 2008). CICO has also been evaluated with regard to the number of Office Discipline Referrals (ODRs) received by students before and after intervention implementation. Results from two studies indicated that the number of ODRs decreased for 66 to 75 percent of students when CICO was implemented as a Tier 2 intervention (Filter et al., 2007; Hawken, McLeod, & Rawlings, 2007). Specifically, Hawken et al. (2007) found evidence, across an eight-month time period, supporting the potential for maintenance of intervention effects and the ease of implementation for CICO.

Although CICO is implemented similarly across students receiving Tier 2 interventions, it is especially effective when utilized with children whose behaviors are maintained by adult attention (e.g. Campbell & Anderson, 2008; Hawken, O'Neill, MacLeod, 2011; Kilgus, Fallon & Feinberg, 2015; Lane et al., 2012; March & Horner, 2002; McIntosh et al., 2009). Initial data indicated that CICO effectively reduced problem behavior for all students referred for Tier 2 services, regardless of the function of their behavior (Hawken et al., 2011). Further studies identified that the manualized intervention, as outlined by Crone et al. (2010), could be modified to increase effectiveness using data from a functional behavior assessment (Campbell & Anderson, 2008; Kilgus et al., 2015). McIntosh et al. (2009) found additional evidence to suggest that the manualized CICO intervention provided the most effective reductions in problem behavior for students whose behavior is

maintained by peer or adult attention. These findings further demonstrate a functional relationship between the application of the CICO interventions and student behavior and illustrate the importance of considering the function of student behavior in intervention construction.

Component Analysis

While CICO is a well-established Tier 2 intervention, literature primarily addresses implementation in a packaged manner. Specifically, CICO is effective in reducing behavioral problems when it contains check-in, teacher feedback, check-out, and a take-home component (Crone et al., 2010). Research has established CICO works based on the behavioral principles of increased reinforcement for appropriate behavior and delivery of performance feedback for student behavior. In addition, the intervention is a composite of both antecedent and consequence procedures. Specific component analyses of these procedures, utilizing adult attention or feedback, have not been established.

While there are many different methods for increasing, or decreasing the frequency of feedback provided to students, research has not established any clear guidelines as to when or how these changes should be made. Furthermore, while the utilization of CICO across settings typically includes all standard intervention components, few studies have successfully implemented the take-home component with integrity (Filter et. al., 2007; Hawken & Horner, 2003; Hawken et al., 2007). Therefore, it is difficult to evaluate the contribution that this component of the intervention makes in reducing student problem behavior. These findings suggest that full implementation of this component is not necessary for behavior change to occur.

Campbell and Anderson (2011) utilized a component analysis, systematically removing teacher feedback sessions, to analyze the relative decrease in problem behavior and increase in academic engagement across phases of the intervention. Results further demonstrate a functional relationship between CICO and student behavior and provides evidence to suggest that the intervention may be effective utilizing fewer than two teacher feedback sessions. Specifically, similar variability and occurrence of problem behavior were observed between zero, one, or two teacher feedback sessions (Campbell & Anderson, 2011). The mechanism that produced this behavior change is not clear. It is possible that the fading procedures utilized allowed for maintenance of original behavioral reductions. Similarly, self-monitoring has also been investigated as a viable method for maintaining treatment effects (Miller, Dufrene, Olmi, Tingstrom, Filce, 2015). The minimal literature in this area necessitates further investigation of student responding relative to the application of Tier 2 intervention components. Identifying methods for improving appropriate behavior utilizing fewer components could also have implications for treatment integrity.

Research has indicated that behavioral interventions are often implemented with poor treatment integrity (Fryling, Wallace, & Yassine, 2012; Hagermoser Sanetti & Kratochwill, 2009). This is especially problematic due to the substantial impact that poor treatment implementation can have on student outcomes (Dart, Cook, Collins, Gresham, & Chenier, 2012; Noell, Greshman, & Gansle, 2002). Identifying and attending to the most effective components of an intervention may allow for improvements in treatment integrity in applied settings. In addition, it is essential to monitor and improve treatment integrity within a multi-tiered framework to ensure the validity of data-based decisions regarding need and the

allocation of resources (Hagermoser Sanetti & Kratochwill, 2009; National Association of State Directors of Special Education, 2008).

Current Study

The current study sought to add to literature identifying the critical components to efficiently and effectively reduce student problem behavior using CICO. Specifically, components of the CICO intervention were conceptualized as the number of student-adult interactions. Within each component, including check-in, check-out, and teacher feedback, students are receiving prompts, specific praise, and feedback for their behavior. Within the framework of multi-tiered systems of support, services are increased relative to student need. The current study utilized this decision-making model to successively increase the number of feedback sessions received by students referred for Tier 2 services. The study evaluated student behavior relative to changes in specific behavioral feedback, beginning with the fundamental components of the intervention, check-in and check-out. In-class teacher feedback sessions were added, if necessary, until the intervention reached an effective level of behavior change, as determined by direct and indirect measures of student behavior. The aim was to identify the minimum amount of student-adult interaction components necessary to produce an effective behavioral change for students referred for targeted interventions and supports.

CHAPTER II

REVIEW OF LITERATURE

Multi-Tiered Systems of Support

Over 10,000 schools in the United States have adopted a multi-tiered approach to address student behavior (Horner, Sugai & Anderson, 2010). This shift in educational practices and literature has encouraged the discussion regarding what is deemed evidence-based educational practice (Horner, Sugai & Anderson, 2010). Positive Behavior Interventions and Supports (PBIS) is a term used to describe one framework utilized for the provision of behavioral services in schools. PBIS typically involves implementation of school-wide behavioral expectations, evaluation of student data, and the allocation of resources using data-based decision making. When implemented appropriately, PBIS has the ability to cultivate effective environments for learning to occur (Gresham, 2004; Horner et al., 2010). The fundamental principle underlying PBIS is to improve each student's experience in school by making problem behavior less effective and desired behavior more functional (Sugai et al., 2000). This can be achieved

by altering environmental variables that influence student behavior, such as the behavior of teachers and staff (Scott et al., 2010). The intent of schools using a multi-tiered model is to meet the needs of all students by identifying the necessary resources to create socially valid behavior change. Furthermore, this framework utilizes data-based decision making to provide evidence-based interventions that allow students to be successful.

Successful implementation of PBIS requires the establishment of a clear conceptual foundation for universal assessment and prevention (Sugai et al., 2000). PBIS is a framework for providing resources to students, not a prescribed list of strategies or interventions. Moderate resources are utilized for the general education population, while the most intensive resources are utilized with students who have the greatest documented need. Tier 1, or universal, supports typically include explicit instruction on schoolwide behavioral expectations, contingent praise for prosocial behaviors and contingent consequences for unacceptable behavior. This level of support should, conceptually, allow about 80% of students to be successful and demonstrate appropriate behaviors. Individuals who are not successful with Tier 1 supports are screened for Tier 2 or 3 supports. Tier 2, targeted, supports are utilized to increase the structure and success for students who are at-risk of more severe, non-dangerous behavior problems. The third and most intensive level of support is the Tier 3, individualized, supports. Tier 3 supports are designed for students with significant behavioral challenges, often requiring a functional assessment and an intensive, individualized intervention. As a student progresses through each tier, they receive more resources. It is crucial, for this reason, that schools utilize evidence-based, effective interventions at lower levels of support, to ensure the appropriate identification of students and designation of resources. This progression

allows schools to use data to verify student need, using peer comparisons and schoolwide behavior data.

While guidelines for implementation of tiered models of service for behavior have been evaluated and received empirical support, the PBIS model is complex and requires extensive efforts to fit into other, more traditional school practices (Horner, Sugai & Anderson, 2011). Additional research is critical to support the use of evidence-based instructional supports in schools with varying levels of implementation, including evaluation of the extent that practices generalize to settings with minimal implementation of PBIS or similar frameworks. The shift towards employing a multi-tiered system of support is arduous and costly. For this reason, it is worthwhile to consider opportunities to support small-scale shifts towards evidence-based practice, including intervention selection, implementation and decision-making.

Decision Making within Tiered Systems of Support

Decision-making within a multi-tiered model, such as PBIS, involves consideration of numerous variables. The goal of the framework is to identify the lowest level of support necessary to allow students to be successful in meeting school expectations and demonstrate socially acceptable behavior. To determine that a student is "not responding" to an intervention, four vital questions should be addressed: "what is predictable about student failure, what is the simplest effective intervention, how can implementation be achieved, and is it working (Scott et al., 2010, p. 513)?" The first question addresses the responsibility of the school to identify the occurrence of common problem behaviors and the patterns of these behaviors within their population. Furthermore, it is important to identify what behaviors students are exhibiting, when they

exhibit them, and if there is a common time that they occur. Utilizing this information can allow schools to match student need to resources and identify an effective intervention with greater accuracy. Schools must identify methods of data collection to guide the decision-making process and provide information on each of these aspects of student behavior.

The second question seeks to implore schools to utilize research-based interventions in their daily practice, using the minimal amount of resources necessary. Unfortunately, the selection of a research-based intervention does not, in itself, ensure that it will be effective (Scott et al., 2010). This ties to the third question that addresses the ability for interventions to be utilized with adequate treatment integrity, for a sustainable amount of time, by school personnel (Anderson & Borgmeier, 2010). Utilization of research-based interventions must also be accompanied by efforts to ensure the integrity of implementation. The fourth and final aspect to address is the evaluation of student progress after an intervention has been implemented. This component of a problem-solving model allows for continuation of the process and consistent pattern of program monitoring for all students within the school system, making data-based changes as necessary (Gresham et al., 2004).

Data collection procedures that are commonly utilized for identifying students for Tier 2 services, include (1) office discipline referrals (ODRs) and (2) teacher or parent nomination. Although ODR data has been found to be a reliable and valid outcome measure for school-based behavioral interventions, it is recommended to also utilize additional data at the individual-level (Hawken et al., 2011; Mong, Johnson, & Mong, 2011). Specifically, Irvin and colleagues (2004) suggest that each ODR represents a

complex sequence of student, teacher and administrator behavior and that caution should be taken to prevent the oversimplification of this interaction. Mong et al. (2011) utilized ODRs, direct observation of student problem behavior, and a measure of basic math skills to evaluate the effectiveness of the CICO intervention. Results indicated that all three measures were fairly convergent and demonstrated improvement, yielding reductions in ODRs and the percentage of problem behavior and a slight increase in students' basic math skills.

The most common method used for screening students for services is the frequency of ODRs. Specifically, schools establish "decision rules" that identify students for Tier 2 services after they receive a specific number of referrals in a designated timeframe. For example, many studies utilize a cut-point of greater than 2 to 5 ODRs received in a designated time period for inclusion in Tier 2 services (e.g. Filter et al., 2007; Hawken et al., 2007). For schools who do and do not have a PBIS model in place, teacher and parent nominations are commonly used. Both, parent and teacher nomination, rely on the perception of the problem behaviors through their observations across settings. In addition, ODR data and parent or teacher referral are commonly used together to identify students for targeted intervention services (e.g., Campbell & Anderson, 2008; Fairbanks et al., 2007; Todd et al., 2008). Data can not only be used to identify students but also, more importantly, determine their patterns of behavior to aid in intervention planning. The data from office referrals, for example, can provide basic information about the location, topography, and intensity of the behavior. This allows for a more cohesive transition between data collection and the provision of interventions that are tailored to student behavior in specific settings, times, and other environmental variables,

without conducting a formal functional behavior assessment.

Tier 2 Interventions and Supports

Although the research base for Tier 2 interventions is relatively small compared to other aspects of PBIS, it has recently received more attention (e.g. Crone et al., 2010; Fairbanks et al., 2007; Filter et al., 2007; Hawken & Horner, 2003; Lewis & Sugai, 1999; March & Horner, 2002). Tier 2 interventions are those intended for implementation within the general education setting, however, few teachers report receiving adequate training in classroom behavioral management strategies and interventions (Freeman, Simonsen, Briere, & MacSuga-Gage, 2014; Tillery, Varjas, Meyers & Collins, 2010). Instead, teachers often utilize reactive or punitive strategies to address behavioral problems, leading to a disproportionate amount of time spent addressing classroom management (Giallo & Little, 2003; Houghton, Wheldall, & Merrett, 1988). Literature on targeted, or Tier 2, supports is necessary to begin to address the concerns of educators and their ability to implement adequate prevention and intervention services for students at risk of developing more severe problem behaviors.

The purpose of Tier 2 interventions and supports is to assist teachers and school staff in providing more structure and instruction for specific, targeted groups of students who are not able to meet school expectations with school-wide supports alone. At a basic level, targeted interventions are constructed to allow for immediate implementation, similarly across small groups of students, and requiring the smallest amount of resources possible to address the needs of students (Bruhn, Lane & Hirsch, 2014; Mitchel, Stormont, & Gage, 2011). It is especially useful for schools to identify common behavior patterns in groups of students and apply Tier 2 services at this level, prior to moving to a

more intensive, individual level of support. These services are specifically intended to be a first line of support for problem behaviors, applied to about 10 to 15 percent of the school population (Campbell & Anderson, 2011; Hawken & Horner, 2002). This group of interventions and supports may include social skills training, First Steps to Success, peer mentors, small group instruction, and CICO (Hawken & Horner, 2003; Lewis & Sugai, 1999). Within each general education or small group intervention, schools may utilize a variety of modifications to identify the best match to student need before necessitating additional resources. Although schools typically implement a range of Tier 2 supports, Rodriguez and colleagues (2016) found that CICO and behavioral contracts are the most commonly implemented Tier 2 interventions, validating the need for additional research to guide implementation.

Check-In/Check-Out

A considerable amount of the literature on targeted interventions has focused on the CICO intervention. Specifically, the Office of Special Education Programs Center on Positive Behavior Interventions and Supports (OSEP PBIS; 2007) wrote a research brief in which 65% or more of the findings pertained to the CICO intervention (Crone et al., 2010), also called the *Behavior Education Plan.* The research base for CICO has grown substantially, validating the intervention as an effective tool for producing behavior changes, as measured by ODR data, direct observation of academic engagement or problem behavior, and teacher report. Furthermore, many of these studies have utilized CICO following a standard protocol approach, comprised of five key components. When applied utilizing all components, as outlined by Crone et al. (2010), CICO has decreased the variability and frequency of problem behavior (Campbell & Anderson, 2008, 2011;

Hawken & Horner, 2003; Fairbanks et al., 2007; Filter et al., 2007; March & Horner, 2002; Todd et al., 2008) and increased the percentage of points earned for appropriate behaviors (Lane, Capizzi, Fisher & Ennis, 2012; McCurdy et al., 2007). In addition, studies have also documented improvements in academic engagement as a result of implementing the CICO intervention (Campbell & Anderson, 2011; Hawken & Horner, 2003; March & Horner, 2002).

McIntosh and colleagues (2007) conducted one of the most intensive studies, determining through multivariate analysis of variance that the introduction of the CICO intervention produced statistically significant changes in student problem behavior, as measured by ODR and teacher report data. This is one of the only large-scale experimental studies conducted for the CICO intervention. The majority of research has been conducted using single-subject designs (Bruhn et al., 2014). Most of these studies utilized indirect behavior ratings, such as ODR or teacher referral data, and direct observations of problem behavior to measure the effectiveness of CICO.

Research further indicates that the CICO intervention is more effective when implemented with student whose behavior is maintained by adult attention (Campbell & Anderson, 2008; Hawken et al., 2011; Kilgus et al., 2015; Lane et al., 2012; March & Horner, 2002; McIntosh et al., 2009). Hawken et al. (2011) found evidence to support that the CICO intervention reduced the number of ODRs for all students, regardless of the hypothesized function of their behavior. Despite this finding, the preponderance of data indicates that there are meaningful differences in the effectiveness of the CICO intervention relative to the function of student problem behavior. One explanation for why this may have occurred in that particular study was because of the different types of

reinforcement contingencies that exist within the intervention, including adult attention and intermittent tangible reinforcement (Hawken et al., 2011). When information about function is available, modifications can be made to increase the intervention's effectiveness. Research by Campbell and Anderson (2008) and Kilgus et al. (2015) determined that the manualized implementation of CICO could be modified, utilizing data from a functional behavior assessment. Prior to adding this modification, data from both studies indicated that the manualized intervention was not effective in reducing the level or variability of escape-maintained problem behavior (Campbell & Anderson, 2008; Kilgus et al., 2015). These findings support the validity of data-based decision making and potential for effective modifications to the CICO intervention, while remaining at a Tier 2 level of support.

Similarly, McIntosh et al. (2009) utilized a large-n design and determined that there were differential treatment effects based on the function of student behavior. Simple effect analyses indicated statistically significant improvements across outcome measurements for students with attention-maintained behavior and that no significant improvement was detected with escape-maintained behavior (McIntosh et al., 2009). Although improvements were identified for all participants, the findings indicated that interaction effects should not be overlooked and that function of problem behavior had a critical role in the effectiveness of behavioral interventions (McIntosh et al., 2009). Lane et al. (2012) determined that the CICO intervention effectively improved student behavior, as measured by the percentage of points earned on the DPR, for four students with dual, attention and escape, maintained behavior. The preponderance of data regarding the role of function in the effectiveness of CICO suggests that when it is

implemented as a manualized intervention, it's generally effective for reducing problem behavior. However, it is generally less effective when utilized to address escape-maintained behaviors.

In order to identify the most appropriate intervention, literature supports the use of initial screening data and a brief functional behavior assessment (FBA) to match the manualized CICO intervention to attention-maintained problem behavior. Current findings indicate that careful and cautious consideration of FBA data is necessary when considering function-based modifications to interventions (Reinke et al., 2013). Specifically, Reinke et al. (2013) presented a case study in which the CICO intervention was not effective in reducing student problem, despite a prior FBA and modifications to the students DPR. The data indicate that, although CICO can be utilized to reduce student problem behavior with escape-maintained behavior, there are limitations to this practice (Hawken et al., 2011; McIntosh et al., 2009; Reinke et al., 2013). While CICO is commonly applied as a Tier 2 intervention, without the use of a formal functional behavior assessment, these findings indicate the potential utility for function-based modifications. Further literature on the essential components of the CICO intervention could serve to guide these modifications, improving upon the current empirical knowledge of CICO within the continuum of services in schools.

The key components of the intervention include: 1) a daily check-in meeting, 2) behavioral feedback from teachers, 3) a daily check-out meeting, 4) data collection for progress monitoring and 5) a parent feedback component. Other components, encompassed within those listed above, are token economies, a daily point card outlining behavioral expectations and school schedule, and specific behavioral feedback within

check-in, in-class, and check-out feedback sessions (Crone et al., 2010).

Check-in. This component of the intervention occurs at the start of the school day. Specifically, the student meets with a teacher or other school staff member, someone who has good rapport with the student and can provide the time commitment to assist with the intervention. This component of the CICO procedure is consistent across the literature, with the exception of one study who utilized peer tutors to mentor target students in check-in and check-out meetings (Sanchez, Miltenberger, Kincaid & Blair, 2015). During the check-in meeting, the student receives a new DPR for the current school day to be used throughout the day to track their behavior. The school staff member is responsible for conducting the check-in meeting in a positive and upbeat manner, providing encouragement for the student to have a great day and meet their behavioral goals. In addition, praise should be provided to each student for simply attending the meeting and for any instances of prosocial behavior. Check-in may also be utilized to review the student's strengths and encourage improvement on the behaviors for which they were not as successful the previous day. These meetings should take a maximum of 2-minutes per student, allowing time for the staff member to meet with all students receiving the intervention in a quick and efficient manner. This component of the intervention is conceptualized to alter antecedents, or cues, of student behavior to decrease the probability of problem behavior and increase the probability of appropriate behaviors (Crone et al., 2010).

Teacher feedback. After the check-in meeting, students are asked to attend their typical class or school activities. The teacher keeps the DPR and tracks the student's behavior throughout the day. The teacher meets with the students after each of the

designated time-periods, providing specific behavioral feedback to the student and encouraging their progress toward their daily goal. Teachers are instructed to keep their interactions with the student positive and goal-oriented, discussing target behaviors and moments in which the student did well in meeting class expectations and remaining neutral about any areas of weakness. Crone et al. (2010) suggests that feedback be provided to students after natural breaks in the school day, to ease implementation. Current literature suggests that standard implementation includes between 3 to 5 in-class feedback sessions (e.g. Campbell & Anderson, 2011; Miller et al., 2014, Filter et al., 2007). According to Crone et al. (2010), variations to standard implementation can be made at the student level. Examples include modifying a student's goal to allow them access to reinforcement or utilizing a preference assessment to identify specific preferred items or tasks for a student (Crone et al., 2010). While it is useful for applied setting, research is needed to improve upon the use of CICO, similarly across students, as a Tier 2, targeted intervention without necessitating individual modifications.

Check-out. The check-out meeting occurs at the end of the school day. During this time, the student and a school staff member or teacher review the DPR and determine if the students daily point goal was met. To do so, all points that the student received throughout the day are added and calculated as a percentage received. If the student is able to reach their goal, they typically receive some form of tangible or easily accessible reinforcement, including social praise. If the student does not reach their goal, the staff member should review their strengths from the day and provide encouragement for them to reach their goal the following day. The student's progress for the day is documented and sent home. This component of the CICO intervention is conceptualized as a

consequence procedure, in which the coordinator consistently provides reinforcement and performance feedback for appropriate behavior (Crone et al., 2010).

Data collection for progress monitoring. Another critical element of the CICO intervention is the use of data to make decisions. Data are collected on a daily basis, tracking the number of points that a student receives. Students earn points based on the degree to which they exhibit target behaviors, reflected by the actual points earned across all academic settings. Furthermore, students are only able to earn points for the time that they are in each academic setting. The percentage of points earned, calculated by dividing the actual points earned by the possible points, is tracked daily as a progress monitoring measure. Percentage of points is utilized to make modification or continuation decisions and is a measure that can be utilized to collect baseline levels of student classroom behavior. Specifically, teachers are able to begin tracking the points that a student would earn for each expectation prior to beginning the CICO intervention or training students. This allows teachers and school staff to evaluate the magnitude of change in student behavior due to the application of the intervention. Baseline data collection also acts as a method for validating behavioral concerns (Crone et al., 2010).

Criteria for determining the effectiveness of the intervention typically includes identification of the frequency that a student is able to consistently meet their goal (Crone et al., 2010). In addition, direct observation data is also useful to validate hypothesized changes in student behavior and improve the decision-making process. For example, schools may determine that the intervention is effective and ready to be faded when a student is able to meet their goal of 80% or more points across 4 to 6 weeks. Criteria for determining effectiveness has not been consistently established in literature, however,

Campbell and Anderson (2011) stated that a student yielded effective behavior change when they received 80% or more of the possible points for 15 consecutive days and at least an 80% reduction in the intervals observed with problem behavior, relative to the last three baseline points, for at least 5 days. In comparison, Miller et al. (2015) determined that the intervention would be deemed effective and faded when problem behavior was observed to occur in 20% or less intervals observed for at least 5 consecutive days.

Parent feedback. Students are responsible for delivering the completed DPR to a parent or guardian. Again, parents or guardians are instructed to remain positive, providing praise for the student's success and encouragement for the next day. The DPR should be signed and returned to the CICO coordinator the following day.

CICO has become one of the most commonly utilized Tier 2 interventions, effective with students at the elementary (e.g., Fairbanks et al., 2007; Hawken et al., 2007; Todd et al., 2008) and middle (Hawken, 2006; Hawken & Horner, 2003; March & Horner, 2002; McCurdy et al., 2007) school levels. However, not all participants in the CICO intervention have been successful. Furthermore, McIntosh and colleagues (2009) discovered that only students with attention-maintained behaviors demonstrated behavior changes, as reported by ODR and behavioral rating scales. Other studies have identified a relationship between the function of student behavior and the effectiveness of the CICO intervention (Hawken et al., 2011; March & Horner, 2002). Although CICO is applied in schools without tiered supports, a large amount of the research literature has been within a PBIS framework. Specifically, CICO has established success when implemented in schools with at least 80% on the School-wide Evaluation Tool's (SET) General Index for

implementation for PBIS Tier 1 supports (e.g. Fairbanks et al., 2007; Hawken et al., 2007; McIntosh et al., 2009; Todd et al., 2008). Although this limits the generalizability of findings, it suggests that CICO can be applied effectively within this framework and used as a Tier 2 intervention. Furthermore, the majority of CICO literature yields positive results and suggests the utilization of the intervention for students referred for Tier 2 supports.

Treatment Integrity

A critical aspect of Tier 2 interventions and utilizing a tiered framework is the implementation of interventions with fidelity, such that the intervention is delivered as intended (e.g. Sugai & Horner, 2010). Most of the current studies evaluating CICO have utilized permanent products as a measure of treatment integrity (Bruhn et al., 2014). Research indicates that the CICO intervention can be implemented, with adequate treatment integrity, by teachers and other school personnel (Fairbanks et al., 2007; Filter et al., 2007; Hawken & Horner, 2003; Todd et al., 2008). Although numerous studies document high levels of fidelity, there remain concerns about achieving adequate fidelity throughout all components in the school day. Specifically, Simonsen et al. (2011) identified limitations in the fidelity of implementation due to the necessity of students to receive feedback at each designated academic period, point cards being collected and reviewed at the end of each day, ad difficulties with sustained implementation across different staff members. Efforts to improve treatment integrity, in these instances, were utilized by retraining steps using modeling, training, and performance feedback (Simonsen et al., 2011). In addition, Rodriguez and colleagues (2016) surveyed 180 school-level interventionists on the implementation of CICO as a manualized intervention

and found that fidelity was a highlighted concern. Although responses indicated a general knowledge of the structure of the intervention, some also included the inclusion of punitive measures that were not in alignment with the procedures outlines by Crone, Hawken and Horner (2010).

These limitations create a significant hurdle for intervention research and the success of a tiered model of service delivery is predicated on remediating concerns with treatment integrity (Sanetti & Collier-Meek, 2015; Simonsen et al., 2011). Addressing these limitations not only requires the responsibility of the faculty implementing the CICO intervention, but changes the role that students fulfill in the receipt of the intervention. Minimization of student responsibility, increased emphasis on staff training and frequent checks of integrity could help to alleviate some of these difficulties. An increased emphasis on treatment integrity and the evaluation of the most appropriate methods for supporting adequate implementation is critical for improving student outcomes and the use of student intervention data to make decisions about service delivery (Sanetti & Collier-Meek, 2015). Although this is meaningful for improving the empirical support of CICO, primarily within a PBIS framework, more information should be sought to improve and strengthen the generalizability of findings.

Component Analysis

Although the majority of the literature has focused on CICO as a manualized intervention, it is not clear if all components are necessary for the intervention to be effective. Increased emphasis has been placed on potential modifications to the intervention, including methods to fade and reduce resources necessary for implementation (e.g., Campbell & Anderson, 2011; Miller et al, 2015). Tier 2

interventions, applied to small groups, often require a significant amount of time and resources. Therefore, it is worthwhile to determine the level of implementation and intervention components necessary to elicit similar, effective results. Identifying alternatives to the standard protocol approach bears the potential to improve the effective utilization and implementation of CICO within a PBIS framework. Specifically, improving the efficiency of targeted interventions could reduce the latency between referral and appropriate service provision and support reliable and meaningful changes to student interventions within time-limited models of service delivery. Appropriate modifications to the CICO intervention requires the identification of critical components and an understanding of the behavioral principles that underlie the intervention. Although CICO may not be the appropriate Tier 2 intervention for all students, more data is necessary to indicate the circumstances with which CICO is effective.

CICO is intended to increase the frequency of structured behavioral feedback, reinforcement for desired behaviors, and the saliency of cues for appropriate behaviors (e.g. Campbell & Anderson, 2008, 2011; Crone et al., 2010; Fairbanks et al., 2007; Sanchez et al., 2015). The intervention is a composite of empirically supported components commonly implemented to address problem behavior. One antecedent procedure, aimed to address attention-seeking behavior, utilizes the scheduled delivery of teacher or peer attention for appropriate behavior (Bambara & Kern, 2005; Kern & Clements, 2007). This procedure is supported by a strong literature base indicating that the delivery of praise to students when they engage in desired behaviors will increase the frequency that they exhibit desired behaviors in the future (e.g. Madsen, Becker & Thomas, 1968). In addition to scheduled attention, CICO aims to increase the saliency

and frequency of cues for appropriate behavior (Crone et al., 2010). This antecedent component informs students of the behaviors that will be reinforced in the school setting. Although antecedent interventions can be effective in isolation, it is often best to provide them in conjunction with other intervention components (Bambara & Kern, 2005; Kern & Clemens, 2007). Thus, the CICO intervention includes the delivery of social and tangible reinforcement for appropriate behaviors. Interventions utilizing these behavioral principles and procedures have been utilized in the school setting for numerous years.

Family involvement. One form of the daily report card that has been utilized provides parents with the opportunity to praise children for appropriate behaviors and ignore misbehaviors in order to ultimately reduce problem behavior and increase work completion in the school setting (Blechman, Taylor, & Schrader, 1981; Davies & McLaughlin, 1989; Dougherty & Dougherty, 1977). This was a preferred method for altering the intervention, as it required minimal resources on the behalf of the school. A similar study also established that a method of providing feedback for student behavior in the school setting, comparable to the at-home method, was effective when implemented in the school setting, with typical school staff (Schumaker, Hovell, & Sherman, 1977). The use of the home-school point card has been well-established to assist with student behavior and a favored aspect of the intervention because of the perception of improving parent-school communication (Chafouleas, Riley-Tillman, & McDougal, 2002; Galloway & Sheridan, 1994; Schumaker et al., 1977). The current CICO intervention expands this literature, however, a greater emphasis has been placed on the implementation by school staff rather than the parent-based feedback. This is especially relevant due to limited treatment integrity identified in the CICO literature for the home-school component

(Campbell & Anderson, 2011; Filter et al., 2007; Hawken et al., 2007). It is hypothesized that students referred for the CICO intervention often have more challenges at home and that it may be difficult for parents to participate in the intervention consistently (Crone et al., 2010).

Feedback procedures. The behavioral principle that has received the most attention in recent CICO literature is the inclusion and manipulation of specific behavioral feedback in the school setting. Within current CICO literature, students commonly receive feedback from their teachers during natural transitions between academic settings (Hawken & Horner, 2003; Miller et al., 2015; Sanchez et al., 2015, Simonsen et al., 2011; Todd et al., 2008). Therefore, the frequency of feedback is dependent on the school schedule. Campbell and Anderson (2008, 2011) documented the lowest frequency of feedback, with three in-class sessions throughout the day, regardless of the transitions between academic setting.

The specific content and procedure for providing feedback is also variable in literature and applied settings. Schools frequently conduct in-class feedback sessions in which they provide points and specific praise for appropriate behaviors or corrective feedback for misbehaviors (Hawken et al., 2007; Miller et al, 2015; Todd et al., 2008). In comparison, some schools refrain from providing any form of corrective feedback, focusing solely on the reinforcement of appropriate behaviors (Campbell & Anderson, 2008; March & Horner, 2002). Furthermore, one study defined feedback as the provision of points without specific verbal praise or performance feedback (Campbell and Anderson, 2011).

Fading procedures. Campbell and Anderson (2011) conducted one of the preliminary studies that evaluated the relative contribution of teacher feedback sessions. The full CICO intervention was implemented until students were able to establish a consistent level of appropriate behavior, reaching their behavioral goal of 80% points received on the point card, for 15 consecutive days. Once students received this criterion and were observed with similar reductions in direct observation of problem behavior, the component analysis began, systematically reducing the frequency and latency of feedback for student behavior. The frequency of teacher feedback was reduced, beginning with morning feedback, then noon feedback, and then the final, afternoon feedback. Once teacher feedback sessions were completely removed in the classroom setting, the check-in and check-out meetings were held, with students receiving points solely for attendance at CICO meetings. Findings further supported CICO as an effective intervention for targeted supports within a PBIS framework. The application of the intervention led to reductions in problem behavior with general maintenance of reductions throughout the removal of feedback sessions. Findings should be interpreted with caution due to the short duration of phases, especially for the final phase without feedback.

Miller and colleagues (2015) further sought to identify a mechanism to assist in the maintenance of behavior changes after the CICO intervention has been fully implemented to result in reductions of problem behavior, similar to the goals of Campbell and Anderson (2011). This study began by replicating previous findings, implementing the intervention to effectively produce behavior changes. Once the CICO intervention demonstrated effective, a self-monitoring phase was implemented. This phase involved a

method of self-monitoring in which students slowly received less teacher feedback and monitored their own behavior using a point card. Results indicate that self-monitoring may be an appropriate and effective method for fading out the CICO intervention with elementary school students, once effective behavioral change occurs. Furthermore, these findings suggest that the intervention was potentially effective as a result of a few basic behavioral principles, such as increasing the saliency of cues, reinforcing target behaviors, and providing performance feedback (Miller et al., 2015). A significant limitation, however, was the inability to fully remove the CICO intervention.

Current Study

In 2011, Campbell and Anderson wrote an article that was intended to spark research on the essential components of the CICO intervention. However, the majority of the CICO research that has been produced has focused on the packaged use of intervention components rather than the contribution of each component entailed. The current study is intended to extend the component analysis literature by examining the minimum number of feedback sessions necessary to produce effective reductions in problem behavior. Specifically, the study will alter the number of specific behavioral feedback sessions to improve the understanding of the behavioral principles that underlie the efficacy of CICO as a Tier 2 intervention. Research has been conducted to analyze intervention components using fading procedures, however, this study will examine student responding to the systematic application of intervention components. Specifically, student data was evaluated, using single case design methodology, to apply intervention components, until the intervention was effective in producing the desired behavior change.

Research Questions

1. What is the minimum amount of adult-student interaction components necessary to meet an individualized point goal?
2. What is the minimum amount of adult-student interaction components necessary to decrease problem behavior over baseline?

CHAPTER III

METHODOLOGY

Research Design

A single-case multiple baseline design across students design was utilized to demonstrate experimental control of the treatment condition and the repetition of the treatment effect for all students. Treatment phases proceeded in an additive nature until the designated criterion was reached. Therefore, all students did not receive all treatment levels.

Participants and Setting

Participants for the current study were three fifth-grade students from a school district in the southern region of the United States. Approximately 81% of students at the target school were eligible for free/reduced lunch and 19% of the school population received English Language Learner services. The school's schoolwide behavioral services consisted of behavioral expectations and a range of consequences outlined for inappropriate behaviors, however, the school did not formally implement a schoolwide

system of behavioral supports, such as PBIS. Students were recruited for the study upon teacher referral for targeted behavioral intervention services, in accordance with the school's current referral procedures. The intervention took place in the general education classroom and was implemented by school staff. The target population for Tier 2 interventions are students who are at risk of developing chronic or more severe behavioral problems. All three students were in the fifth grade and referred for disruptive behavior. Ryan was an 11-year-old biracial student who was referred primarily for talking out of turn during group instruction and inappropriate vocalizations towards peers and adults. Michael was a 10-year old African American student who was referred for failure to complete assignments, making inappropriate noises during instruction and off-task behavior during independent work including being out of seat and engaging in other preferred activities. Dylan was a 10-year-old Native American student who was referred for failure to complete assignments, being out of seat and talking during instruction.

Materials

All intervention materials were provided to the school staff throughout all phases of the study. A Daily Progress Report (DPR) was created for all three students, aligning with the school-wide behavioral expectations that were already in place. Each expectation was matched with a target replacement behavior and modified to be developmentally appropriate for student participants. Expectations utilized for all three students included, "be focused and on task," "be in the right place and ready for class" and "follow directions the first time." Point cards were divided into three time-periods, concurrent with the typical academic schedule. Each student's DPR remained the same across all phases to ensure functional control of the treatment. Prior to starting the study, a

preference assessment was conducted to ensure that the selection of tangible rewards in the Prize Box were of value to the students. Based on these results, a similar selection of rewards was provided and held constant across all phases.

Independent Variable

The independent variable utilized in this study was conceptualized as the student-adult interaction components of the CICO intervention. In the treatment phases of the study, student-adult interaction components were applied in an additive nature. Specifically, the primary independent variable in the component analysis was the number of times that a student attended a meeting with an adult to review their point card. Specifically, the students began Phase 1 of the intervention by attending check-in, receiving antecedent prompts for behavioral expectations, and check-out, consisting of the delivery of consequences contingent on student behavior throughout the day. Additional treatment levels included the application of in-class feedback until student data indicated performance at designated criterion levels. The first in-class feedback session addition occurred after the second time-period of the day (Phase 2), aligning with the order of fading procedures utilized by Campbell and Anderson (2011).

Dependent Variables

Two dependent variables were measured in the current study. The primary dependent variable was the percentage of points received on the DPR. This measure reflects common practice in applied literature, citing that Tier 2 interventions are most frequently evaluated utilizing data from daily point cards (Rodriguez et al., 2016). The percentage of points was calculated by dividing the total number of points received by the student by the total number of points possible for that day. The daily percentage of points

was the predominant indicator used to determine phase changes. Specifically, student response was first evaluated using the primary dependent variable of percentage of points and solely validated by the secondary variable.

The secondary dependent variable was the percentage of observation intervals with problem behavior via systematic direct observation. This measure was utilized to validate phase change decisions made based on the percentage of points. Problem behavior was measured across phases using 5s partial interval recording for 15-min data collection sessions a minimum of three days per week in the target classrooms. To assist with agreement between the DPR and direct observation data, problem behavior was defined in reference to the school's Tier I expectations and utilized for referral. Although there is a moderate correlation between data collected from teacher ratings of student behavior and direct observations, literature indicates that convergence is improved when operational definitions are clearly identified (Chafouleas et al., 2005; Miller et al., 2015). Trained graduate students in school psychology conducted all direct observations.

Procedures

Functional assessment. Upon referral, a brief functional behavior assessment (FBA) was conducted, which a teacher interview and three 10-minute direct observations across settings. The target school had three fifth-grade classrooms and utilized a rotating schedule across the three primary academic blocks. Therefore, one teacher taught all 5th grade students Reading, another taught Math, and the third teacher taught Science, Social Studies and Writing. For this reason, referrals and teacher interviews were conducted as a grade-level team and problem behaviors were discussed across all academic blocks. Teacher referral data and interviews provided validation of the frequency of problem

behavior across more than one academic setting and the topography of the referral concerns. In addition, referral data yielded information about hypothesized antecedent events, maintaining consequences and other contributing environmental variables to aid in the prediction of the occurrence and nonoccurrence of future behavior (March et al., 2000; Todd et al., 2008). Across participants, problem behavior was observed in each of the three classrooms. Data indicated the greatest frequency of problem behavior for Ryan in Social Studies and for Michael and Dylan in Reading.

Students were eligible for inclusion in the study if they demonstrated problem behavior at a frequency of at least 20% of intervals observed and if their behavior was hypothesized to occur as a function of peer or adult attention. We know of no criteria to determine student match to Tier 2 interventions utilizing the percent of intervals observed with problem behavior. For the current study, a criterion of at least 20 percent of intervals observed with problem behavior was utilized to ensure an appropriate magnitude for change was probable.

Results of the FBA are presented in Figure 1. Conditional probabilities were calculated as the probability that a given consequence occurred during the same or subsequent 5-s interval as the problem behavior by dividing the number of intervals that problem behavior was followed by a given consequence by the total number of intervals scored with problem behavior (Campbell & Anderson, 2011). For all participants, a greater proportion of problem behavior was followed by adult attention than by escape or peer attention. Ryan exhibited problem behavior for an average of 27% of intervals observed (range, 24% to 32%). Michael exhibited problem behavior for an average of

33% of intervals observed (range, 18% to 42%). Dylan exhibited problem behavior for an average of 35% of intervals observed (range, 34% to 36%).

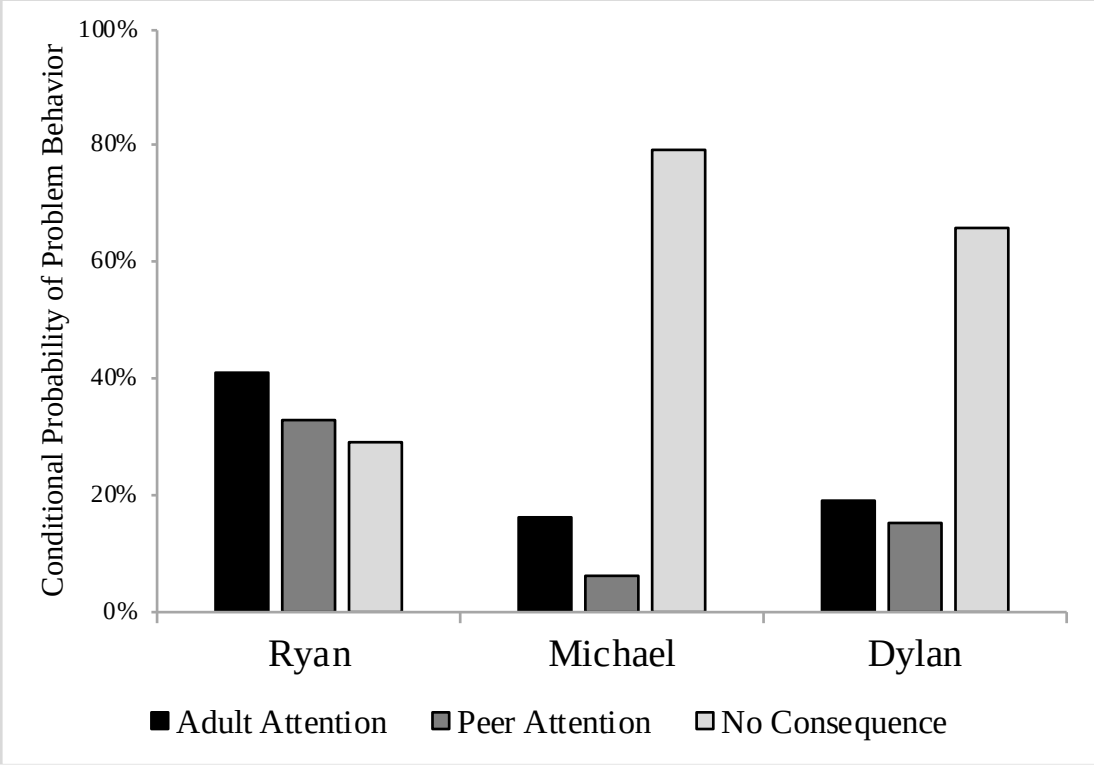

Figure 1. Conditional probability of problem behavior.

Teacher training. Teachers were provided with brief intervention training, including a review of operational definitions of problem behavior and the use of the DPR in accordance with the protocol. Following training, specific feedback on implementation of each intervention component was provided. Inter-rater reliability of teachers' ratings of student behavior utilizing the DPR were examined during baseline. Specifically, inter-observer agreement was calculated to establish inter-rater reliability of at least 90%. Observation procedures were reviewed with respect to pre-determined operational definitions and rating criteria prior to additional data collection.

Baseline. Baseline measures of both dependent variable measures were obtained for each student prior to implementing any components of the CICO intervention.

Students were not aware that teachers or observers were tracking their behaviors and teachers were explicitly prompted to refrain from providing specific behavioral feedback to students during the baseline phase. Teachers utilized a new DPR each day, filling out the points that the student received for each time period with respect to the designated replacement behaviors. Completed DPRs were submitted at the end of each day and data was graphed daily.

Phase 1: Check-in and check-out. This phase was the first application of the intervention from baseline and included the implementation of adult-student interaction components during CICO, excluding the implementation of all in-class feedback. The first day of this phase, students received training on CICO during check-in at the beginning of the school day. Students were asked to review and demonstrate all behavioral expectations and the point system was explained. Once the student demonstrated understanding of intervention procedures by scoring 80% on a brief quiz of procedures,, typical check-in procedures were conducted (see Appendix for sample intervention protocol). Daily check-in procedures consisted of a positive greeting to each student upon attending check-in, a brief review of the student's DPR and verbal encouragement for meeting behavioral expectations during the school day. After the check-in, students attended typical day activities while their teachers continued to track their behavior, using the DPR, across each 90-minute academic block. Due to the rotating schedule, students were rated by each teacher once per day, during the academic block that they were in their specific classroom. The point card was passed between teachers following the target students' class schedules, and teacher ratings were provided according to each student's behavior during that academic block. During check-out, the

student and teacher calculated their percentage of points earned and contingent verbal feedback was provided. If a student met their individualized goal criteria, they were able to choose an item from the Prize Box, which included a range of preferred tangible rewards. Tangible rewards were only accessible to students during check-out throughout the duration of the intervention.

Phase 2: CICO with teacher feedback 1. This phase continues to utilize all procedures from Phase 1, with the addition of one in-class feedback session. Between check-in and check-out, there are three possible times for teachers to provide feedback, replicating procedures from Campbell & Anderson (2011). The first feedback session implemented was after the second timeslot, from 12:30 to 1:00 pm, and teacher feedback was based on all behavior to occur since check-in. The content of the teacher feedback was contingent on the general ratings of student behavior for the first two time-periods and, in accordance with the protocol (see Appendix for sample intervention protocol), included specific praise for appropriate behaviors and neutral feedback for misbehaviors.

Withdrawal. This phase replicated baseline procedures for data collection and a cessation of intervention implementation. Due to potential carryover effects of the intervention, this phase does not reflect a pure baseline measure. Specifically, students were not made aware that teachers or observers were tracking their behavior and teachers were explicitly prompted to refrain from providing feedback to students. However, prior exposure to the intervention may limit comparison between student response to the withdrawal and baseline phases.

Treatment Integrity

Treatment integrity was self-measured by teacher participants on 100% of the days that the intervention was implemented and reported as a percentage of steps completed. Daily treatment integrity data was collected daily using a checklist of procedures documenting the occurrence of key features outlined for each phase of the intervention. The number of procedures necessary varied between phases as the independent variable was manipulated. Steps included: (1) the student was greeted by a school staff member at the start of the school day, (2) the student and school staff member met and the current date was written on a new DPR, (3) the student was reminded of at least one expectation from the DPR, (4) the student attended typical classroom procedures, (5) the teacher rated the student at the end of each indicated academic period, (6) the teacher provided in-class feedback to the student regarding their behavior and points received, (7) a school staff member verifies that the DPR is completed entirely, (8) the percentage of points received on the DPR is calculated at the end of the day, (9) the student and school staff member met and reviewed the student's DPR, (10) the student is provided with the appropriate consequences for their goal attainment and (11) the student is provided with praise for attending check-out and dismissed.

Across students and phases, treatment integrity levels averaged 98% (range, 97% to 99%). Interobserver agreement of treatment integrity was calculated for 43% days for each student and averaged 94% (range, 90% to 97%). Agreement was calculated by dividing the total number of steps that were scored the same by the total number of steps possible and multiplying by 100%. Despite overall strength in integrity of

implementation across students and phases, in-class feedback was not implemented on Day 27 or 28 during Phase 2 of treatment for Ryan. Data indicated that Ryan received 67% of his points on both days, aligning with performance of Phase 1. Due to the lack of in-class feedback on these two days, the data was more indicative of the CICO only phase. For this reason, data from these two days were removed in order to more accurately reflect intervention effects.

Interobserver Agreement

Interobserver agreement (IOA) of direct observation was measured by two independent observers simultaneously collecting data during 45% of observations across all three participants. Total interval IOA was calculated to account for any significant changes in the frequency of behavior between phases by dividing the number of intervals in which both observers agreed a response did occur by the number of total intervals and multiplying by 100% (Allday, Bush, Ticknor & Walker, 2011; Cooper, Heron & Heward, 2007). For problem behavior, agreement coefficients were 95% (range, 87% to 100%) for Ryan, 91% (range, 78% to 100%) for Michael and 92% (range, 72% to 100%) for Dylan. Total interval IOA was calculated to account for any significant changes in the frequency of behavior between phases (Cooper, Heron & Heward, 2007). The IOA scores reported across all observations were moderately high considering that 80% is commonly reported as acceptable in the literature (Kazdin, 2011). Although percentage of agreement may be an inflated measure of agreement, it is the most widely utilized method for calculating IOA for direct observation data (Adamson & Wachsmuth, 2014). Similarly, while IOA is commonly utilized to discuss the reliability of measurement, rather than simple agreement that two observers record the occurrence of a behavior, this practice should be

interpreted and considered carefully.

Data Analysis

Visual analysis and the percentage of points received on the DPR was utilized to determine the minimum number of CICO components necessary to improve student behavior and determine phase changes. The percentage of intervals observed with problem behavior was utilized to answer the second research question and validate teacher ratings and the decision to change phases. For example, during the CICO only phase, Ryan exhibited three data points below the criterion of 80% of points received from teacher ratings; however, there was a downward trend in his direct observation data. For this reason, we continued in the CICO only phase. A criterion of three days was set to indicate nonresponse to each treatment level or phase.

The first question addresses the minimum amount of student-adult interaction components necessary to produce an effective change in percentage of points. The second question examines the minimum amount of student-adult interaction components necessary to reduce student problem behavior. Visual analysis was used to examine the number of components necessary for each student to meet their goal and to reduce problem behavior. Furthermore, the percentage of points earned on the DPR in baseline and treatment phases was compared to determine if the phase produced meaningful change in the observed effect, indicated by the receipt of at least 80% of points received on the DPR (Crone et al., 2010). If the 80% criteria was calculated to be more than a 25% increase over the student's baseline data, an alternative goal was determined. Specifically, student baseline percentage of points data were averaged and a 25% increase was calculated. This procedure was utilized to ensure that the behavior change

necessary to access rewards was similar across students. Only one student, Michael, had an initial goal that was less than 80%. However, this student met the 80% criterion consistently once the intervention phase was initiated.

CHAPTER IV

FINDINGS

Data for all three participants are presented in Figure 2, Table 1 and Table 2. Figure 2 includes student data across both dependent variables, the percentage of points received on the DPR and direct observation data. Tables 1 and 2 include the mean scores for percentage of points received on the DPR and problem behavior for each student by phase. Baseline data indicated that all three students had rates of problem behavior greater than an average of 20% across three observations.

Daily Progress Report

Ryan. As shown in Figure 2, Ryan's DPR score averaged 54% (range, 22% to 72%) during baseline. Following Phase 1 implementation, scores on his DPR increased to an average of 73% (range, 50% to 100%) when check-in and check-out procedures were implemented. The scores on all three DPRs increased to 83% when a teacher feedback

session (Phase 2) was included with the initial check-in and check-out sessions. When DPR scores stabilized above the predetermined goal, the participant's CICO protocol was scaled back to Phase 1, with DPR scores averaging 86% (range, 78% to 92%).

Michael. During baseline, Michael's DPR score averaged 36% (range, 33% to 67%), increasing to 81% (range, 50% to 100% upon implementation of Phase 1 CICO. Due to variability of DPR scores, he remained in Phase 1 until the intervention was withdrawn. Upon withdrawal of CICO procedures, Michael's DPR scores increased to an average of 97% (range, 92% to 100%) with scores becoming less variable in the withdrawal phase.

Dylan. Baseline levels for Dylan, as indicated by DPR scores, averaged 65% (range, 28% to 89%). Upon implementation of Phase 1 CICO, Dylan's DPR scores increased to an average of 89% (range, 83% to 100%). Intervention was withdrawn, and DPR scores dropped slightly to an average of 86% (range, 78% to 100%) and became more variable. Once Phase 1 of CICO was reimplemented, DPR scores stabilized, but the average score dropped to 79% (range, 72% to 83%).

Problem Behavior

Ryan. As shown in Figure 2, Ryan's problem averaged 38% of intervals (range, 32% to 49%) during baseline. Upon implementation of Phase 1 CICO, his problem behavior dropped to 12% of intervals (range, 3% to 21%) and decreased once again to 6.5% of intervals (range, 6% to 7%) following the addition of a teacher feedback session during Phase 2. Upon return to Phase 1, Ryan's problem behavior increased to 16% of intervals (range, 13% to 18%).

Michael. Michael's level of problem behavior averaged 36% of intervals (range, 18% to 62%) during baseline. Upon implementation of Phase 1 CICO, problem behavior decreased to 11% of intervals (range, 0% to 26%). When intervention was withdrawn, problem behavior increased slightly to 14% of intervals (range, 3% to 26%); however, these levels remained lower than those observed during baseline.

Dylan. During baseline, Dylan's problem behavior occurred during an average of 32% of intervals (range, 14% to 52%) and decreased to 18% of intervals (range, 9% to 34%) upon implementation of Phase 1 CICO. When intervention was withdrawn, problem behavior returned commensurate with baseline levels at 33% of intervals (range, 6% to 51). Due to this increase in problem behavior, Phase 1 CICO was reintroduced and problem behavior decreased to an average of 14% of intervals (range, 3% to 24%).

Across all 3 students, problem behavior was reduced by an average of 38.5% (range, 31% to 56%) from baseline to the application of Phase 1, Check-In and Check-Out only. With the application of in-class feedback during Phase 2, Ryan demonstrated an additional 1% reduction in problem behavior. Similarly, the initial percentage of points received by students during baseline was, on average, 59% (range, 54% to 68%). Across all 3 students, percentage of points received for appropriate behaviors was increased by an average of 28% (range, 26% to 30%). With the application of Phase 2, Ryan demonstrated a final percentage of increase over baseline of 35%, including an additional increase of 12% over Phase 1 levels of behavior.

Table 1 *Mean Percentage of Points Received on the Daily Progress Report*

	Baseline	Phase 1	Phase 2	Withdrawal	Phase 1
Michael	57%	81%	--	97%	--
Dylan	65%	89%	--	86%	79%
Ryan	54%	73%	83%	--	86%

Table 2 *Mean Percentage of Intervals Observed with Problem Behavior*

	Baseline	Phase 1	Phase 2	Withdrawal	Phase 1
Michael	36%	11%	--	14%	--
Dylan	32%	18%	--	33%	14%
Ryan	38%	12%	7%	--	16%

Due to the scheduling of the schools' winter break, the data collection was ended after only a few days in the final phases for each student. At the conclusion of the study, experimental control was shown with this set of three students, as demonstrated by changes in level and variability in both dependent variables between baseline and intervention phases. Across all students, percentage of points received for appropriate behaviors increased and the percentage of intervals observed with problem behavior was reduced with the application of Check-In and Check-Out meetings only. All three participants were able to meet criterion levels of the percentage of points received and reductions in problem behavior with the application of Phase 1 of the intervention.

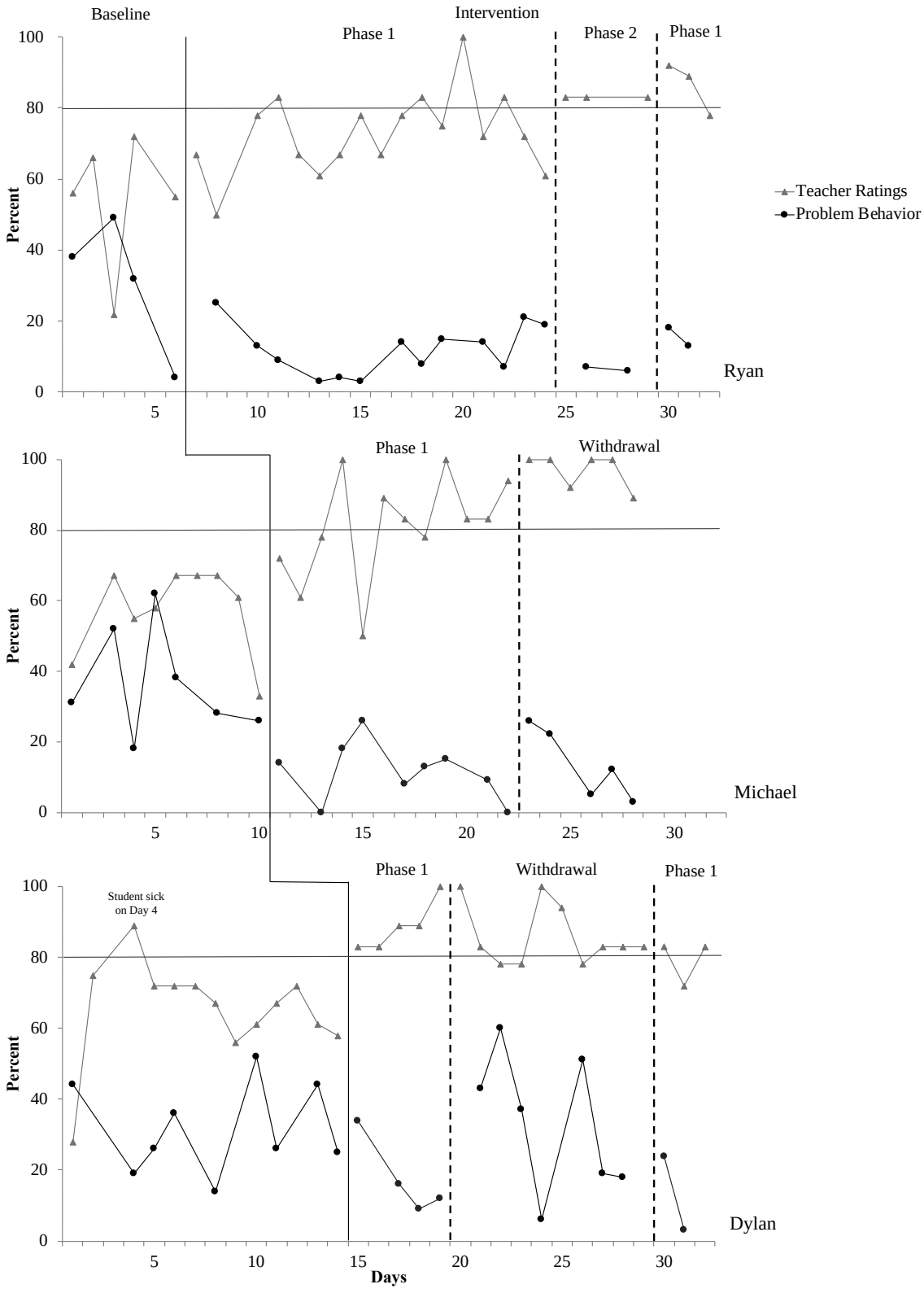

Figure 2. Intervention results as measured by DPR and partial-interval recording of problem behavior.

Teacher Ratings of Acceptability

Teachers' perceptions of the intervention for each student were assessed using the Intervention Rating Profile–15 (IRP-15; Martens, Witt, Elliott, & Darveaux, 1985). The IRP-15 is a survey consisting of 15 items that utilizes a 6-point Likert-type scale (1 = strongly disagree, 6 = strongly agree). Possible scores range from 15 to 90, with higher scores indicating higher social validity. All three teachers completed the IRP-15, for each of the three students at the conclusion of the study (Table 3). The mean score on the IRP-15 was 77, indicating a high level of acceptability. This aligns with previous findings indicating that CICO was reported to improve problem behavior at school, improve academic performance, be worth the time and effort to implement, and be easy to implement (Campbell & Anderson, 2011; Hawken & Horner, 2003; Hawken et al., 2007; Fairbanks et al., 2007; Filter et al., 2007; Simonsen et al., 2011; Todd et al., 2008). Findings from the current study align with current literature supporting the social validity of CICO.

Table 3 *Teacher Ratings of Acceptability using the IRP-15*

	Teacher A	Teacher B	Teacher C
Michael	87	69	87
Dylan	86	53	89
Ryan	82	68	75

The CICO intervention was found to be acceptable based primarily on the ratings from Teacher A and Teacher C, however, Teacher B reported the lowest scores across all three students. This may reflect variations in the presentation of student behavior in that setting or other classroom-level variables. Simonsen et al. (2011) found that, although the CICO intervention was more effective in reducing student problem behavior when

compared to standard practice, teachers would not recommend the intervention to others. One hypothesis for this is that the teachers rated their participation in CICO as part of a research study, rather than just the intervention itself (Simonsen et al., 2011). Specifically, participation in the study required them to tolerate outside observers and fill out behavior rating scales throughout implementation (Simonsen et al., 2011). Although these tasks are not commonly viewed as intrusive, it is possible that it affected the teachers' ratings of social validity.

CHAPTER V

CONCLUSION

Despite the wide range of studies demonstrating the effectiveness of CICO as a manualized Tier 2 intervention (e.g. Campbell & Anderson, 2008; Fairbanks, Sugai, Guardino, & Lathrop, 2007; March & Horner, 2002; McIntosh, Campbell, Carter, & Dickey, 2009), few studies have evaluated the specific components necessary for the intervention to be effective. This study sought to expand upon the work of Campbell & Anderson (2011), who determined that the intervention could be systematically faded to be effective at lower levels of implementation. The purpose of the current study was to examine student response to CICO and identify critical components necessary to efficiently and effectively reduce student problem behavior. Components of CICO were conceptualized as the number of adult-student interaction components, added successively until students were able to demonstrate meaningful change in behavior. Single-case analysis and a decision-making model were utilized to document a functional relationship between the implementation of CICO and a reduction in problem behavior, aligning with current research on the intervention (Campbell & Anderson, 2008; Hawken, 2006; Hawken & Horner, 2003; Hawken, MacLeod & Rawlings, 2007; March

& Horner, 2002; McCurdy, Kunsch, & Reibstein, 2007; Todd et al., 2008).

The study utilized a multiple baseline across students design to evaluate student behavior relative to changes in the frequency of student-adult interactions, beginning with the fundamental components of CICO. Data suggests that CICO may be effective without full implementation. For the three student participants, the minimum number of student-adult interaction components necessary to decrease student behavior is CICO, without additional in-class feedback. One in-class teacher feedback session was added for one student, resulting in a reduction in variability in the points received on the DPR. However, the addition of this component did not result in meaningful change in student behavior based on a direct observation of student behavior. In this case, once initial feedback was implemented, there was a decrease in problem behavior. Therefore, this study indicates the that only the check-in and check-out components of CICO may be necessary to improve student behavior.

Further, results observed in the withdrawal phase for two students indicated that there may be some maintenance of treatment effects. Although withdrawal procedures were implemented exactly like baseline procedures, there is likely that the withdrawal phase was impacted by a carry-over effect. Specifically, the student's data may be influenced by the previously implemented intervention and potential cognizance that teachers were rating their behavior.

Implications for Practice

The findings of this study add to the growing body of evidence supporting CICO as a Tier 2 intervention. There is an emphasis in the literature on methods to improve the effective and efficient allocation of school resources in a socially valid way to meet

students' needs in the school environment (e.g. Scott, Rosenberg & Borgmeier 2010; Sugai et al., 2000; Sugai & Horner, 2009). Common themes of current research in multi-tiered systems of support include bolstering schoolwide and individualized behavior management. Despite this emphasis, there continues to be a need for research addressing Tier 2 behavioral interventions and services. Tier 2 services are typically the first line of support added when class wide or schoolwide efforts are deemed ineffective. The current study allows for additional understanding of methods to increase behavioral supports in an efficient method, ensuring that a model of least to most intensive resources and materials are utilized. Prior to implementation, schools should consider resources such as the materials required, necessary training, teacher time for delivery and student time required for improvement. Although a wealth of research is necessary to adequately investigate these systems-level aspects, the current study suggests that there are possible methods to consider when utilizing CICO that require less teacher time and training for delivery and possibly less training for implementation. In addition, the findings from the current study highlight one applied method to gradually increase resources, adhering to a model of least to most intensive support, to meet student needs.

In order to reduce unnecessary allocation of teacher's time, schools should consider implementing CICO only, utilizing student data to determine the need for additional feedback sessions prior to adding the full intervention. Although CICO is design as a manualized intervention that provides in-class feedback at natural breaks throughout an entire school day (Crone et al., 2010), data suggests that less intense modifications may be effective for some students. The implementation of two student-adult interaction components requires less teacher time for delivery than typical

implementation of the CICO intervention, which has commonly been evaluated with at least five components (e.g. Campbell & Anderson, 2011; Fairbanks et al., 2007; Todd et al., 2007). This is a critical consideration of resources for Tier 2 interventions, which may require implementation for 10-15% of a school population (e.g. Sugai & Horner, 2010).

Maximizing the efficiency of teacher time and evaluating the effectiveness of these efforts are critical to supporting sustainable practices for behavior management. Behavioral interventions are commonly implemented with poor treatment integrity (Fryling, Wallace, & Yassine, 2012; Hagermoser Sanetti & Kratochwill, 2009). This is a critical problem due to the impact that it can have on student outcomes (Dart, Cook, Collins, Gresham, & Chenier, 2012; Noell, Greshman, & Gansle, 2002). In addition, research indicates that few teachers are trained or supported to implement classroom management strategies (Chesley & Jordan, 2012; Freeman et al., 2014). By reducing the complexity of interventions, teachers will likely spend less time implementing possibly ineffective components and receive training to attend to the most important aspects of an intervention.

The current study suggests that the CICO intervention may be effective with fewer components. This is meaningful for implementation of the intervention within a multi-tiered framework that requires adequate treatment integrity for evaluation of student data and response to intervention (Hagermoser Sanetti & Kratochwill, 2009; National Association of State Directors of Special Education, 2008). In addition, the proposed methodology may support teachers to be more effective in changing student behavior and implement interventions with increase treatment integrity.

Limitations and Future Directions

While there has been a large-scale shift towards the implementation of PBIS and similar models throughout the United States (Horner, Sugai & Anderson, 2010), efforts are needed to further facilitate the use of evidence-based behavioral practices and sustainable systems-level change in educational settings. There is a substantial body of literature to support multi-tiered systems and the CICO intervention; however, there are few findings to indicate if full implementation of the multicomponent intervention is necessary to elicit change in student behavior. Simplifying Tier 2 supports and reducing resources necessary for effective services complements the overarching goal of increasing efficiency in service provision. Similarly, while there are many different methods for altering the frequency of feedback provided to students, prior research has established few guidelines as to when or how these changes should be made. There continues to be limited knowledge of the application of intervention components relative to student behavior and least invasive procedures to produce effective changes in behavior.

Although the findings from the current study provide evidence towards these initiatives, there are notable limitations. First, the teachers participating in the study rarely utilized principals of PBIS within their classrooms and, instead, relied primarily on response cost or punitive consequences. For this reason, generalization of results to other settings with varied levels of multi-tiered intervention implementation is limited. In addition, maintenance of student behavior change after the CICO intervention was removed may have been limited due to the relatively weak Tier 1 level of support.

Second, student data suggests that there was some maintenance of treatment effects, aligning with previous studies of CICO (e.g. Hawken et al, 2007). However, there was not an evaluation of maintained intervention effects following complete intervention withdrawal. There is a lack of literature evaluating this aspect of CICO (Mitchell et al., 2011), and this study falls into that category. Future research should seek to identify the extent to which CICO components can be faded to transition students to Tier 1 and the variables that contribute to successful generalization of student outcomes.

Third, all participants were fifth grade males with similar referral concerns, limiting the generalizability of the findings. The intervention is built upon providing additional behavioral feedback, which is not age-specific; therefore, CICO may work well for other populations. Research is necessary to analyze if similar outcomes result when the current study is replicated with different populations, including across student variables, target behaviors, geographical locations and school-level variables. Fourth, because we were aiming to control internal validity, the teachers did not receive as much performance feedback on their implementation of the intervention throughout the study. Although specific performance feedback was not implemented, teachers adhered to the protocol and were supported to improve fidelity of implementation when necessary. Evaluation of performance feedback, professional development and other methods to improve teacher's utilization of behavior management strategies is imperative to bridge the gap between teacher education and applied practice.

Fifth, observations occurred for 15 minutes per day in one class, representing a limited sample of the school day. The decision was made to observe students during the time identified as the most problematic, however, future researchers may probe other

times during the day to determine the extent of CICO's impact on behavior across settings. In addition, the direct observation measure utilized was appropriate for measuring overt aspects of student behavior; however, it may have been less effective as a measure of passive off-task or covert problem behaviors. It is suggested that future studies measure additional variables, such as task engagement and investigate the best method of capturing student behavior for the purpose of evaluating treatment effects. Finally, while visual analysis of the data in this study supports the effectiveness of CICO, there was some variability of student behavior during baseline and intervention phases, primarily for Dylan. As a result, this may temper some of the results.

The current study caters to the analysis of CICO in applied settings. Additional theoretical questions remain to be asked regarding the other environmental variables that are altered, including teacher behavior, as a result of the implementation of CICO. There are a number of questions regarding the specific variables in the environment that elicit change within behavioral interventions and additional research is necessary to support the use of prescriptive methods within multi-tiered systems of support. This aligns with the need for future studies to analyze intervention effects with methods of direct assessment and data collection, including change in student behavior at the individual and class wide level, and teacher behavior. Literature suggests that CICO works based on the behavioral principles of increased reinforcement for appropriate behavior and delivery of performance feedback for student behavior; however, sufficient component analyses of these procedures have not been conducted to provide additional interpretation of the intervention. Despite limitations, this study provides an important addition to the Tier 2 behavioral intervention literature, specifically related to treatment integrity and

intervention intensity. Although CICO is commonly utilized, additional research is needed to identify best practices and support decision-making for utilizing CICO within multi-tiered systems of support.

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APPENDICES

APPENDIX A

Parent Permission Form

Parent Permission Form
Oklahoma State University

Research Project Title:
The Evaluation of Critical Components in the Check-in/ Check-out Intervention

Principal Investigator:
Meredith Weber, M.S. Doctoral Student at Oklahoma State University

Your child has been identified by his/her teacher as a student who would benefit from participation in a research project that is designed to increase school success. This consent form contains important information to help you decide if it is in your child's best interest to take part in this study.

Purpose:

The study will be examining the best methods for promoting appropriate classroom behavior. The purpose of this study is to examine what level of support enables students to be successful in meeting the behavioral expectations at school. Specifically, the study will be examining the most efficient and effective method for increasing appropriate behavior and academic engagement in the classroom.

Procedures:

For the study, your child will be receiving instruction and support for the behavioral expectations in the school. Your student will receive additional educational supports regardless of their inclusion in the current research study. Specifically, they will meet with school staff for about 2-5 minutes each day to set goals for their school day and receive feedback for appropriate behavior. The study should last approximately 4 -6 weeks. Once permission has been signed, the study will begin. The study will not occur during your child's core classroom instruction, or other important educational activities. Also, as part of the study, your child will be able to earn rewards or praise for improving his or her performance. This project has been approved by your child's school district and the administration at your child's school.

Confidentiality:

All identifiable data will be housed within Stillwater Public Schools and only the Principal Investigators and the research assistants working on the project will have access to it. At the end of the study, the results will be made available for both you and the students' parents. The records of this study will be kept private. Any written results will discuss group findings and will not include information that will identify you or your students.

Risks of Participation:

Students within this study will be receiving the CICO intervention one component at time, therefore there may be a delay in implementation of an effective tier 2 intervention for subjects.

Benefits:

The benefit of the study is that it may also help your student by improving his or her performance in the classroom. The study may lead to an improvement in behavior and academic engagement for your students. Additionally, the results of this study may provide the principal and teachers feedback about the effectiveness of this intervention and may lead to strategies for instructing students.

Participant Rights:

Your child's involvement in this project is completely voluntary. In addition, you may choose to withdraw your child from the project at any time without penalty.

If you have any questions with regard to your child's involvement in this study, please contact us at your earliest convenience. For information on subjects' rights, contact Dr. Hugh C. Crethar, IRB Chair, 223 Scott Hall, Stillwater, OK 74078, (405) 744-3377. or irb@okstate.edu

Contact Information:

If you have any questions with regard to you or your students' involvement in this study, please contact us at your earliest convenience:

Meredith Weber
Doctoral Student
Oklahoma State University
(402) 310-7734

Dr. Gary Duhon
Associate Professor
Oklahoma State University
(405) 744-9436

____ **I give my permission for my child to be included in the research project.**

____ **No, I prefer that my child not be included in the research project.**

Parent/Guardian Signature: _____ Date: _____

Student's Name: _____

APPENDIX B

Teacher Consent Form

Teacher Consent Form
Oklahoma State University

Research Project Title:
The Evaluation of Critical Components in the Check-in/ Check-out Intervention

Principal Investigator:
Meredith Weber, M.S., Doctoral Student at Oklahoma State University

Purpose:

The investigators of this research project are requesting to work with you in conducting a targeted intervention that will examine the most efficient and effective amount of support needed in order to improve student behavior in the classroom. If you choose to participate in this project, your student(s) will be receiving a Tier 2 behavioral intervention to decrease problem behavior and increase academic engagement.

Procedures:

This project will involve a behavioral intervention utilized to address problem behavior for students at risk of developing in the classroom. The investigator will begin implementation of the Tier 2 behavioral intervention with each student participant. Each student involved will attend all typical school day activities. Students will be asked to attend short meetings with the intervention coordinator at the beginning and/or end of the day and will be taught specific behavioral expectations and feedback for their behavior. Teachers will be asked to utilize an in-class points system to document student's compliance with behavioral expectations. The study is anticipated to last approximately 4-6 weeks.

Confidentiality:

All identifiable data will be housed within Stillwater Public Schools and only the Principal Investigators and the research assistants working on the project will have access to it. At the end of the study, the results will be made available for both you and the students' parents. The records of this study will be kept private. Any written results will discuss group findings and will not include information that will identify you or your students.

Risks of Participation:

There are no known risks associated with this study.

Benefits:

A benefit of this study is that it will provide necessary Tier 2 interventions and behavioral supports for students who demonstrate need in the classroom. The study may lead to an improvement in behavior and academic engagement for your students. Additionally, the results of this study may provide the principal and teachers feedback about the effectiveness of this intervention and may lead to strategies for instructing students.

Compensation:

No monetary compensation is offered for participation in the study. The benefits provided by the study are explained above.

Participant Rights:

Participation in this study is voluntary and you may choose to withdraw from the assessment and/or intervention at any time.

If you have questions about your rights as a research volunteer, you may contact Dr. Hugh C. Crethar, IRB Chair, 223 Scott Hall, Stillwater, OK 74078, (405) 744-3377.

Contacts:

If you have any questions with regard to you or your students' involvement in this study, please contact us at your earliest convenience:

Meredith Weber
Doctoral Student
Oklahoma State University
(402) 310-7734

Dr. Gary Duhon
Associate Professor
Oklahoma State University
(405) 744-9436

Signatures:

I give my permission for faculty and/or students from Oklahoma State University to work with me in assessing, developing and implementing an intervention in my classroom for the purposes of this research.

_____ _____
Signature of Teacher Date

I certify that I have personally explained this document before requesting that the participant sign it.

_____ _____
Signature of Researcher Date

APPENDIX C

Direct Observation Form

Subject Initials:				***Observer Initials:***			***_____ /180 = _____ % of Intervals Observed with Problem Behavior***				
Date:		**Time:**		Teacher and Activity:				Notes:			
DV: Percentage of 5-s observation intervals with problem behavior				*Partial Interval Recording: If the subject exhibits a problem behavior at ANY point during the interval, record with an **X**. If no behavior, / through interval.*							
0:00 - 0:05	**0:06- 0:10**	0:11 - 0:15	**0:16 - 0:20**	0:21 - 0:25	**0:26 - 0:30**	0:31 - 0:35	**0:36 - 0:40**	0:41 - 0:45	**0:46 - 0:50**	0:51 - 0:55	**0:56 - 1:00**
1:01 - 1:05	**1:06- 1:10**	1:11 - 1:15	**1:16 - 1:20**	1:21 - 1:25	**1:26 - 1:30**	1:31 - 1:35	**1:36 - 1:40**	1:41 - 1:45	**1:46 - 1:50**	1:51 - 1:55	**1:56 - 2:00**
2:01 - 2:05	**2:06- 2:10**	2:11 - 2:15	**2:16 - 2:20**	2:21 - 2:25	**2:26 - 2:30**	2:31 - 2:35	**2:36 - 2:40**	2:41 - 2:45	**2:46 - 2:50**	2:51 - 2:55	**2:56 - 3:00**
3:01 - 3:05	**3:06- 3:10**	3:11 - 3:15	**3:16 - 3:20**	3:21 - 3:25	**3:26 - 3:30**	3:31 - 3:35	**3:36 - 3:40**	3:41 - 3:45	**3:46 - 3:50**	3:51 - 3:55	**3:56 - 4:00**
4:01 - 4:05	**4:06 - 4:10**	4:11 - 4:15	**4:16 - 4:20**	4:21 - 4:25	**4:26 - 4:30**	4:31 - 4:35	**4:36 - 4:40**	4:41 - 4:45	**4:46 - 4:50**	4:51 - 4:55	**4:56 - 5:00**
5:01 - 5:05	**5:06- 5:10**	5:11 - 5:15	**5:16 - 5:20**	5:21 - 5:25	**5:26 - 5:30**	5:31 - 5:35	**5:36 - 5:40**	5:41 - 5:45	**5:46 - 5:50**	5:51 - 5:55	**5:56 - 6:00**
6:01 - 6:05	**6:06- 6:10**	6:11 - 6:15	**6:16 - 6:20**	6:21 - 6:25	**6:26 - 6:30**	6:31 - 6:35	**6:36 - 6:40**	6:41 - 6:45	**6:46 - 6:50**	6:51 - 6:55	**6:56 - 7:00**
7:01 - 7:05	**7:06- 7:10**	7:11 - 7:15	**7:16 - 7:20**	7:21 - 7:25	**7:26 - 7:30**	7:31 - 7:35	**7:36 - 7:40**	7:41 - 7:45	**7:46 - 7:50**	7:51 - 7:55	**7:56 - 8:00**
8:01 - 8:05	**8:06- 8:10**	8:11 - 8:15	**8:16 - 8:20**	8:21 - 8:25	**8:26 - 8:30**	8:31 - 8:35	**8:36 - 8:40**	8:41 - 8:45	**8:46 - 8:50**	8:51 - 8:55	**8:56 - 9:00**
9:01 - 9:05	**9:06- 9:10**	9:11 - 9:15	**9:16 - 9:20**	9:21 - 9:25	**9:26 - 9:30**	9:31 - 9:35	**9:36 - 9:40**	9:41 - 9:45	**9:46 - 9:50**	9:51 - 9:55	**9:56 - 10:00**
10:01 - 10:05	**10:06- 10:10**	10:11 - 10:15	**10:16 - 10:20**	10:21 - 10:25	**10:26 - 10:30**	10:31 - 10:35	**10:36 - 10:40**	10:41 - 10:45	**10:46 - 10:50**	10:51 - 10:55	**10:56 - 11:00**
11:01 - 11:05	**11:06- 11:10**	11:11 - 11:15	**11:16 - 11:20**	11:21 - 11:25	**11:26 - 11:30**	11:31 - 11:35	**11:36 - 11:40**	11:41 - 11:45	**11:46 - 11:50**	11:51 - 11:55	**11:56 - 12:00**
12:01 - 12:05	**12:06- 12:10**	12:11 - 12:15	**12:16 - 12:20**	12:21 - 12:25	**12:26 - 12:30**	12:31 - 12:35	**12:36 - 12:40**	12:41 - 12:45	**12:46 - 12:50**	12:51 - 12:55	**12:56 - 13:00**
13:01 - 13:05	**13:06- 13:10**	13:11 - 13:15	**13:16 - 13:20**	13:21 - 13:25	**13:26 - 13:30**	13:31 - 13:35	**13:36 - 13:40**	13:41 - 13:45	**13:46 - 13:50**	13:51 - 13:55	**13:56 - 14:00**
14:01 - 14:05	**14:06- 14:10**	14:11 - 14:15	**14:16 - 14:20**	14:21 - 14:25	**14:26 - 14:30**	14:31 - 14:35	**14:36 - 14:40**	14:41 - 14:45	**14:46 - 14:50**	14:51 - 14:55	**14:56 - 15:00**

IOA Calculation: _____ / _____ = ._____ x 100 = _____%

Definitions of 'Problem Behavior'

Disruption: making inappropriate noises, talking out of turn, using objects in a manner for which they were not designed (e.g., banging the desk, slamming a book, laying on desk) or using objects unrelated to school tasks (fidget spinners, toys, etc.).
Out of Seat/Location: the student's buttocks not within 6" of the seat when the expectation is to be seated or not appropriately in the location they're supposed to be in.
Noncompliance: the student does not initiate a task after an observed command or verbally refuses to follow an adult direction.
Inappropriate Physical: hitting, kicking, pinching or throwing objects at a person.
Inappropriate Language: using inappropriate words or making a derogatory/unfavorable comment about or towards another individual.

APPENDIX D

Sample Daily Progress Report

Daily Progress Report

Student: Date: _____ Phase: **BL** 1 2 3 4

Highlight the Points Earned below across each time period.

Target Behaviors	Teacher 1	Teacher 2	Teacher 3
☐ Be focused and on task	2 1 0	2 1 0	2 1 0
☐ Be in the right place and ready for class	2 1 0	2 1 0	2 1 0
☐ Follow directions the first time	2 1 0	2 1 0	2 1 0

_____ ÷ _____ = _____% of Points Received
(Points Earned) (Points Possible)

Notes: _____

Wow! = No reminders needed!	**OK** = 1-2 reminders needed	**Tough Time** = >2 reminders needed

APPENDIX E

Check-In/Check-Out Intervention Protocol

Check-In/Check-Out Daily Protocol

Thank you for your assistance in implementing the CICO Intervention!

Subject Initials: _____ Date: _____ Phase: BL 1 2

_____ ÷ _____ = _____.
(Steps Completed) (Total Steps) (% of Steps Completed)

During this phase of the study, students will attend AND receive feedback during the following times:
1: Check-in (***7:50 – 8:05)*** + Check-out ***(2:30 – 2:40)***
2: 1+ ***(12:50 – 1:00)***

Materials Needed:

☐Daily Progress Report ("Point Card")
☐Check-In/Check-Out Daily Protocol
☐Prize Box (P. 1-2 only)
☐Things to Say to Keep Students Motivated (P. 1-2 only)

Steps: Refer to procedures below and "Things to Say to Keep Students Motivated" for steps to complete. ***Did the following steps occur*? Circle, YES or NO.**

1. **YES/NO** Phases **1** & **2**: Pull the student aside for Check-in from 7:50 – 8:05.
   - If the student is absent for more than half of an academic period, write an "A" over that section of the DPR and do not rate student behavior.

2. **YES/NO** Phases **1** & **2**: At the start of Check-in, write the date on the DPR. Greet the student individually and include a positive statement, such as:

"It's great to see you today!" *"You're here on time again – great job!"*
"You look like you're ready for a good day!" *"Hope you're having a great morning!*

3. **YES/NO** Phases **1** & **2**: Provide the student with a reminder of at least one specific expectation from the DPR, using a statement such as:
   "*Remember, always do your best to …* (behavioral expectation 1, 2 and/or 3). *Have a great day!"*

4. **YES/NO** Phases **1** **&** **2**: After Check-in, students will continue with typical classroom procedures.

5. **YES/NO** Phases **BL, 1 & 2**: The Daily Progress Report is accessible by the teacher.

6. **YES/NO** Phases **BL, 1 & 2**: Observe student behavior, across three academic periods, with regard to the expectations listed on the Daily Progress Report. Refrain from providing any additional behavioral feedback and continue typical classroom procedures, unless otherwise indicated.

7. **YES/NO** Phases **BL, 1 & 2**: Between 9:10 – 9:20, rate student behavior on the Daily Progress Report. Ratings are based solely off of the behaviors that occurred in that timeslot. Mark the points received by the student and continue with the class.

8. YES/NO Phases **BL, 1 & 2**: Between 12:50 – 1:00, rate student behavior on the Daily Progress Report. Ratings are based solely off of the behaviors that occurred in that timeslot. Mark the points received by the student and continue with the class.

9. **YES/NO** Phases **BL, 1 & 2**: Between 2:20 – 2:30, rate student behavior on the Daily Progress Report. Ratings are based solely off of the behaviors that occurred in that timeslot. Mark the points received by the student and continue with the class.

10. **YES/NO** Phases **BL, 1 & 2**: Check that all blanks on the DPR are filled in (Student's Initials, Date, and Teacher Ratings).

11. **YES/NO** Phases **BL, 1 & 2**: Calculate and record the "% of Points Received" on the Daily Progress Report, following the steps below:

- Add up the student's "Points Earned" and the "Points Possible."
- Divide "Points Earned" by "Points Possible."
- Record this number as a percentage (i.e. .73 = 73%) under "% of Points Received"

12. **YES/NO Phases 1 & 2 ONLY**: Between 2:30 – 2:40, pull the student aside for Check-Out. Feedback will be provided to the student during Check-Out, using the protocol from 'Things to Say to Keep Students Motivated (attached).

13. **YES/NO** Phases **1** **&** **2**: Provide the student with praise for checking-out successfully.

"Looks like you're all set to go!" "Thanks for coming to check out!" "Have a great day!" "Thank you! See you later!"

*** Submit all data from completed DPRs & Protocols at the end of EVERY day. Thank you! ***

APPENDIX F

Verbal Feedback Protocol

Things to Say to Keep Students Motivated – In-Class Feedback

Feedback sessions are the only opportunity for the student to see their DPR in the classroom setting. ALWAYS show the DPR to the student when verbal feedback is provided.

For best possible scores (Mostly 3s), say:

"Wow, you got (almost all) 3's! I'm really impressed! You…"

(choose 2 examples that apply to the student)

…walked in the building."
...kept your hands and feet to yourself."
...followed directions."
...used kind words and actions."
...took care of yourself and your belongings."
...were in the right place and ready."

*When possible, include specific instances of behavior, such as **"**I liked the way you asked nicely for your book from Ashley!"

For good scores (Mostly 2s), say:

"You're doing well! Good job! I saw that you…"

(choose 2 examples that apply to the student)

…walked in the building."
...kept your hands and feet to yourself."
...followed directions."
...used kind words and actions."
...took care of yourself and your belongings."
...were in the right place and ready."

*When possible, include specific instances of behavior, such as "You got some 1's today because you were talking instead of doing your work, but you did a great job of…"

For low scores (Mostly 1s), say:

"It looks like you were having some trouble today. I know you can…

*(*choose 2 examples that apply to the student)

…walk in the building…

…keep your hands and feet to yourself…
…follow directions…
…use kind words and actions…
…take care of yourself and your belongings...
…be in the right place and ready...

, but I didn't see you do that today. I know you can do it next time! Let's make the rest of the day better!"

Things to Say to Keep Students Motivated – Check Out Feedback

Feedback sessions are the only opportunity for the student to see their DPR in the classroom setting. ALWAYS show the DPR to the student when verbal feedback is provided.

Feedback during check-out will be provided after the student's percentage of points received is calculated and compared to their daily goal.

If the student **MET THEIR GOAL** today, ***allow them to choose a prize from the Prize Box*** AND say one the following (A, B, or C):

(A) *"Great job today! I'm impressed! You were able to meet your goal because you…"*
(B) *"Wow! You did really well today! You were able to meet your goal because you…"*
(C) *"Good job meeting your goal today! You were able to meet your goal because you…"*

(choose 2 examples that apply to the student)

…walked in the building
…kept your hands and feet to yourself
…followed directions
…used kind words and actions
…took care of yourself and your belongings
…were in the right place and ready

If the student **DID NOT MEET THEIR GOAL** today**,** say one the following (A, B, or C):

(A) *"I know today was a tough day – You can meet your goal tomorrow if you…"*
(B) *"We all have bad days once and awhile – You can meet your goal tomorrow if you…"*
(C) *"It looks like today didn't go so well - You can meet your goal tomorrow if you…"*

(choose 2 examples that apply to the student)

…walk in the building
…keep your hands and feet to yourself
…follow directions
…use kind words and actions
…take care of yourself and your belongings
…are in the right place and ready

APPENDIX G

Student Training Protocol

CICO Student Training Protocol

Materials:

- ✓ Daily Progress Report
- ✓ Pencil

Steps:

1. Begin by saying: ***"We want you to be REALLY successful in school. Your teacher(s) are going to be watching and tracking when you're following each of the class expectations. We've come up with a few specific things that we're going to be looking for you to do. I'm going to practice each of them with you today so that you'll know how to be the best student and earn as many points as possible!"***

2. Show the student the DPR and say: ***"This is your point card. It has each of the classroom expectations. You can earn points (0, 1 or 2) based on how well you're following the expectations each day. The better you do in the classroom, the more points you can earn!***

   - ***For the expectation "Be focused and on task": '2' means that you (<u>what does it look like for the student to exhibit the behavior</u>)', '1' means that you did okay with those things, and '0' means that you didn't do those things. Can you tell me an example of what is looks like to "be focused and on task?"*** *Give the student explicit examples of what each target behavior will look like in their classroom to ensure that they understand and can perform the behavior.*

   - ***For the expectation "Be in the right place and ready for class": '2' means that you (<u>what does it look like for the student to exhibit the behavior</u>)', '1' means that you did okay with those things, and '0' means that you didn't do those things. Can you tell me an example of what is looks like to "Be in the right place and ready for class?"*** *Give the student explicit examples of what each target behavior will look like in their classroom to ensure that they understand and can perform the behavior.*

   - ***For the expectation "Follow directions the first time": '2' means that you (<u>what does it look like for the student to exhibit the behavior</u>)', '1' means that you did okay with those things, and '0' means that you didn't do those things. Can you tell me an example of what is looks like to "Follow directions the first time?"*** *Give the student explicit examples of what each target behavior will look like in their classroom to ensure that they understand and can perform the behavior.*

3. Ensure that the student can demonstrate their understanding of each behavior/expectation. They may either tell you an example or show you what it would look like.
Provide the student with A LOT of praise when they demonstrate the behavior.

*If the student struggles to demonstrate the behavior, try again with a different expectation or model an example for them.

4. Have the student watch as you circle the points for their behavior on the Daily Progress Report. You can say: "**Great job! Since you did such a good job "**(insert expectation)**," I'll circle the '2' on your point card!**

5. Tell the student when the intervention will start and that they will be meeting with their teacher briefly each day to see how they're doing. They should not ask their teacher about the point card.

6. Show the student how the points are added up to give a score for the day and what the student's goal will be. You can say: "**You will be given points throughout the school day! If you follow each of these expectations in your class, you will receive all of the points. If you don't follow the expectations, then you won't be able to receive points. Your goal for each day will be to get - _____ points! *If you can meet your goal, to get _____ points, you can get a prize!"* Do you have any questions?"**

7. To ensure understanding, ask the student the following questions:
**If the student answers incorrectly, tell them the answer, and ask the question again. Continue until they are able to demonstrate understanding and provide the correct answer.

- **What does it look like to** BE FOCUSED AND ON TASK?
  - CORRECT INCORRECT
  - Student example:
  -
- **What does it look like to** BE IN THE RIGHT PLACE AND READY FOR CLASS?
  - CORRECT INCORRECT
  - Student example:
  -
- **What does it look like to** FOLLOW DIRECTIONS THE FIRST TIME?
  - CORRECT INCORRECT
  - Student example:
  -
- **When will we start tracking your behavior?**
  - CORRECT INCORRECT
  - Student answer?
  -
- **When will you get to see your point card?**
  - CORRECT INCORRECT
  - Student answer?
  -
- **What do you need to do to earn points?**
  - CORRECT INCORRECT
  - Student answer?

8. Provide the student with a preference assessment of items included in the Prize Box to verify the reinforcing quality of the tangible items.

APPENDIX H

IRB Approval Form

Oklahoma State University Institutional Review Board

Date:	Tuesday, May 23, 2017
IRB Application No	ED1752
Proposal Title:	The Evaluation of Critical Components in the Check-in/Check-out Intervention
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 5/22/2020

Principal Investigator(s):

Meredith Weber
Stillwater, OK 74078

Gary J Duhon
423 Willard
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

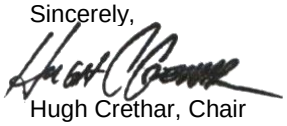
☐ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1.Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval. Protocol modifications requiring approval may include changes to the title, PI advisor, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2.Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3.Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of the research; and
4.Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Dawnett Watkins 219 Scott Hall (phone: 405-744-5700, dawnett.watkins@okstate.edu).

Sincerely,



Hugh Crethar, Chair
Institutional Review Board

VITA

Meredith A. Weber

Candidate for the Degree of

Doctor of Philosophy

Dissertation: THE EVALUATION OF CRITICAL COMPONENTS IN THE CHECK-IN/CHECK-OUT INTERVENTION

Major Field: School Psychology

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in School Psychology at Oklahoma State University, Stillwater, Oklahoma in May, 2019.

Completed the requirements for the Master of Science in Educational Psychology at Oklahoma State University, Stillwater, Oklahoma in 2015.

Completed the requirements for the Bachelor of Arts in Psychology at University of Nebraska, Lincoln, Nebraska in 2014.

Experience:

OTISS Support Coach for the Oklahoma Tiered Intervention System of Support grant.

Completed 1,200+ Practicum Hours in School, Clinical, and Outpatient Settings through Oklahoma State University

Graduate Teaching Assistant at Oklahoma State University in the School of Applied Health and Educational Psychology in the College of Education. Fall 2016 and Spring 2017

Graduate Research Assistant at Oklahoma State University in the School of Applied Health and Educational Psychology in the College of Education. Fall 2014 to Spring 2016