Evaluating the effects of virtual professional development and teleconsultation in teachers' implementation of check-in/check-out

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Evaluating the Effects of Virtual Professional Development and Teleconsultation in Teachers’ Implementation of Check-In/Check-Out

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Abstract

Check-in/check-out (CICO) is one of the most researched and implemented Tier 2 interventions, and there is ample research to indicate that it is efficient and effective. It has been noted that teachers typically do not successfully implement evidence-based practices (EBPs) after participating in traditional models of professional development (PD); however, research indicates that consultation improves teachers’ implementation of EBPs. Teleconsultation is new within schools, but there is evidence that it is an acceptable replacement for face-to-face consultation.

The purpose of this study was to determine the effects of a virtual PD on teachers’ (a) knowledge of CICO, (b) teachers’ implementation of CICO as measured by an implementation checklist interview, and (c) teleconsultation on teachers’ implementation of CICO as measured by an implementation checklist interview. It was hypothesized that teachers who participated in a virtual PD event about CICO would increase their CICO knowledge; that teachers who participated in a virtual PD about CICO without additional teleconsultation supports would have low rates of self-reported implementation; and that teachers who participated in a virtual PD and were provided with weekly teleconsultation would have higher rates of self-reported implementation of CICO compared to when they were not provided with weekly teleconsultation.

This study found that participants increased their scores on the post-test assessment after participating in the virtual CICO PD, when compared to their scores on the pre-test assessment; participants did not implement CICO after participating in the PD; and participants implemented components of CICO once weekly teleconsultation sessions were provided.
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Chapter 1: Introduction

Prevention Models

Education reform mandates have contributed significantly to how students are taught and how school systems are approaching the challenge of meeting a diverse population of students’ needs (Eagle et al., 2015). These reforms have served as the impetus for the emergence of multitiered systems of supports (MTSS) models, which are tiered models that provide a continuum of supports to meet all students’ needs within a school system (Bruhn et al., 2014; Freeman et al., 2017; Lane et al., 2012; Sanetti & Collier-Meek, 2015). MTSS is grounded in behavioral theory, in which the framework provides students the opportunity to learn skills through modeling, guided practice with immediate feedback, behavioral prompting, and reinforcement (Freeman et al., 2017). Additionally, it uses techniques in prevention science and implementation research to make meaningful changes in the school setting and, consequently, in student behavior (Hess et al., 2012).

MTSS is efficient and effective in identifying students who are at-risk for developing behavioral challenges and students who are currently experiencing behavioral challenges (Lane et al., 2015). The framework promotes the use of data-based decision making and uses a problem-solving model to address students’ behavioral needs (Eagle et al., 2015). The interventions that are used within MTSS are layered and additive (August et al., 2018). There are typically three tiers in which interventions are delivered and which increase in intensity (Eagle et al., 2015). Tier 1 interventions are used with all students in a selected population, Tier 2 interventions are used with students who have been identified as being at-risk or experiencing difficulties in meeting behavioral and/or academic expectations, and Tier 3 interventions are used with students who are exhibiting difficulties in meeting behavioral and/or academic
expectations (Sonju et al., 2019; Stormont et al., 2012). Students’ progress within tiers determines the intensity of interventions and informs decisions regarding whether students should receive interventions from a different tier (Freeman et al., 2017).

The purpose of Tier 2 interventions is to give students a time-limited opportunity to build skills in an area in which they are demonstrating difficulty (Fuchs et al., 2017). Tier 2 interventions characteristically include: (a) the objective definition of the skill or behavior that the intervention is intended to target, (b) direct skill instruction, (c) frequent opportunities for students to practice the skill, (d) feedback that is regularly and frequently given to the students, and (e) the collection of data to monitor student progress during the intervention (Anderson & Borgmeier, 2010; McIntosh et al., 2009).

Tier 2 is crucial because of its position between Tiers 1 and 3. Tier 2 interventions are important because they are implemented with the goal of preventing students from developing further difficulties and needing additional intensive supports, such as Tier 3 interventions (McIntosh et al., 2009; Rodriguez et al., 2016). Compared to Tier 3 interventions, Tier 2 interventions are not as intensive, require less time and resources, and can easily be implemented by teachers and/or school staff during the school day (Bruhn et al., 2014; Oakes et al., 2012). Tier 3 interventions are typically only used with a small percentage of students who are not responsive to Tier 1 and Tier 2 interventions with the intent to reduce the severity of students’ skills deficits (Lane et al., 2015; McIntosh et al., 2009; Mitchell et al., 2011).

Because school systems are often confined by time and resource limitations in their attempts to help students, it is essential that Tier 2 interventions are implemented to prevent students from continuing to struggle and, possibly, require Tier 3 interventions or special education services (Lane et al., 2015). This is essential as Tier 3 interventions are costly in terms
of the resources and time that is required for these interventions to work (Oakes et al., 2014). Furthermore, an overarching goal of MTSS frameworks is to reduce the number of students who need Tier 3 interventions which can be achieved with efficient and effective Tier 2 interventions (Bruhn et al., 2014). Tier 2 interventions are resource-effective and can be used to help students with supports that can address a range of behavioral challenges; therefore, they are useful for school systems which may have fewer resources to assist in a wide scope of student behavioral needs (Rodriguez et al., 2015).

The amount of Tier 2 interventions that have been developed has increased over the past 10 years (Newcomer et al., 2013). Despite the increase in the variety of Tier 2 interventions, there is a lack of research, currently, investigating the effects of Tier 2 interventions (Carter et al., 2012; McIntosh et al., 2009; Newcomer et al., 2013; Rodriguez et al., 2016). Comparatively, there is ample empirical support for Tier 1 and Tier 3 interventions (Campbell et al., 2013; McIntosh et al., 2009; Oakes et al., 2012; Stormont & Reinke, 2013). While there is a gap in the literature regarding the effectiveness of Tier 2 interventions, there are a few interventions that have empirical evidence supporting their use in schools (Oakes et al., 2012).

**Check-In/Check-Out (CICO)**

One Tier 2 intervention that is evidence-based and has been effective in improving student behavior is Check-In/Check-Out (CICO; Crone et al., 2010). In general, CICO consists of a morning check-in session between mentor and student, behavior ratings throughout the day at specified times, an afternoon check-out session, and a home component in which the student shares their behavior ratings with a caregiver and obtaining a signature indicating that the ratings were reviewed at home (Crone et al., 2010).
CICO is grounded in applied behavior analysis (ABA; Mitchell et al., 2017). Behavioral techniques such as reinforcement, prompting behaviors, giving appropriate feedback, modeling desired behaviors, and providing students with ample opportunities to practice are evident in CICO (Baer et al., 1968; Leaf et al., 2016; Trump et al., 2018). Additionally, CICO is commonly used within the context of MTSS (Andrews et al., 2017). CICO has been used primarily at the Tier 2 level and is intended to be a preventative measure implemented to decrease the likelihood that students’ behaviors will worsen (Maggin et al., 2015).

CICO is a flexible intervention that has been used with different populations, including with students in general education and special education, and students in alternative and/or residential education settings (Fallon & Feinberg, 2017; Hunter et al., 2014; Kittelman et al., 2018; Swoszowski et al., 2012). There are empirical studies that provide support for CICO’s effectiveness at the preschool, elementary school, middle school, and high school settings (Boden et al., 2018; Campbell & Anderson, 2008; Sobalvarro et al., 2016; Turtura et al., 2014). Furthermore, researchers have examined the effects of CICO on acting-out behaviors (e.g., talking out in class) in addition to internalized behaviors (e.g., anxiety; depression; Hunter et al., 2014). The perceptions and utility of CICO among teachers has been evaluated and found to be positive (Mitchell et al., 2017; Wolfe et al., 2016). CICO interventionists have reported that the intervention is cost-effective, efficient, and is typically implemented appropriately by school staff, even when researchers are not present during the implementation (Filter et al., 2007).

**Intervention Implementation**

There is significant research which indicates that teachers fail to implement evidenced-based practices (EBPs) after receiving professional development regarding such practices (Sawka et al., 2002). Teachers typically do not implement EBPs after they receive training that
was delivered which intended to build teachers’ skills for the purpose of implementation (Pas et al., 2002). While there is a substantial body of evidence that supports the use of and efficacy of CICO, an EBP, the ongoing challenges with teachers’ implementation of interventions needs to be addressed through research.

**Professional Development (PD) & Consultation**

Traditionally, PD is delivered to a large group of teachers through a lecture-style presentation of information and is intended to help build the skills needed for teachers to adopt effective practices to support students’ learning (Holdaway & Owens, 2015; Mason et al., 2019; Mayworm et al., 2016). Previous research has indicated that there are practices within PD that may improve effectiveness (Holdaway & Owens, 2015; Kraft et al., 2018; Mason et al., 2019; Mayworm et al., 2016). One of these practices includes consultation, which is the process through which a consultee is supported by a consultant with the end goal of building the consultee’s skills (Kratochwill et al., 2014; Mayworm et al., 2016; Preast & Burns, 2019).

One derivative of consultation is teleconsultation, which is the adoption of typical and traditional face-to-face consultative practices to videoconferencing technologies (Kratochwill et al., 2014). Currently, there is minimal research which explores the effectiveness of teleconsultation on consultee’s EBP implementation skills; however, there is some evidence to suggest that teleconsultation provides unique benefits to the traditional, face-to-face consultation process (Fischer et al., 2016). Therefore, further research needs to be conducted that focuses on how teleconsultation can be provided to educators to improve their implementation of interventions (Hagermoser Sanetti et al., 2015; Hazel et al., 2016). To date, there are no studies which examined the effectiveness as teleconsultation as a way to support teachers’ knowledge and skills in implementing CICO. Teleconsultation may be a more valuable practice, given the
effects observed due to the global COVID-19 pandemic and the subsequent virtual learning environments most students and teachers experienced.

**Statement of the Problem**

In general, Tier 2 behavioral interventions are an understudied subject when compared to the number of studies that have been conducted investigating Tier 1 and Tier 3 interventions; therefore, research on the effects of Tier 2 interventions ought to be conducted (Carter et al., 2012; McIntosh et al., 2009; Newcomer et al., 2013; Rodriguez et al., 2016). Furthermore, because educators rely on the use of PD to improve teachers’ skills, additional research should be conducted to determine which components of PD and practices that accompany PD to best accomplish this goal (Brock & Carter et al., 2017; Kraft et al., 2018). Consultation has been identified as one practice that best supports teachers’ skill development after their participation in PD events (Holdaway & Owens, 2015). Teleconsultation is a somewhat new concept and there is, to date, minimal research on the effectiveness of this mode of service deliver on support teachers’ skill development (Fischer et al., 2016). Additionally, there are no studies, of those reviewed, which investigated the effects of teleconsultation on teachers’ knowledge and implementation of CICO.

**Purpose of the Study**

The purpose of this study was, first, to determine the effects of a virtual PD on teachers’ knowledge of CICO, as measured by a pre- and post-test.

Secondly, the purpose of this study was to determine the effects of teleconsultation on teachers’ implementation of CICO, as measured by the implementation checklist used during weekly teleconsultation sessions.

**Importance of the Study**
This study was important because it extended what is known about the effects of virtual PD and the effects of teleconsultation on teachers’ CICO implementation. Considering the number of resources that are dedicated to educators’ development of skills via PD events and inservice events, school districts may benefit from additional information about effective practices. Furthermore, teachers often cite that a lack of training and/or skills as a reason for why they experience challenges in implementing interventions (Holdaway & Owens, 2015).

This study may also benefit teachers and students because CICO is an EBP and there is ample research to indicate that CICO has numerous benefits, when implemented (Bruhn et al., 2014; Hunter et al., 2014; Kilgus et al., 2016; McIntosh et al., 2009; Miller et al., 2015; Swoszowski et al., 2012). CICO may prevent students from developing behavioral challenges in the school setting which may then result in the use of intensive behavioral interventions. For instance, CICO may address behavioral challenges and may forego the need for functional behavioral assessments (FBAs) and the subsequent formulation of behavior intervention plans (BIPs), which are time- and resource-heavy (Cook et al., 2015). It may be argued that by decreasing the likelihood that these students will develop behavioral difficulties through the implementation of CICO, the school system may conserve resources if behavioral difficulties were to continue or intensify.

Finally, the effects of the global COVID-19 pandemic were consequential to students’ learning and to teachers’ development of skills. This research extended what is known about teleconsultation and the effects of teleconsultation on teachers’ knowledge of interventions and implementation of interventions. Teleconsultation may be a resource that school systems may need to rely on to support teachers’ skill development and to subsequently support students’ learning and growth.
Chapter 2: Review of the Literature

Multi-tiered systems of support (MTSS) are being increasingly used in schools to more effectively and efficiently prevent and respond to a variety of academic and behavioral problems exhibited by students in schools, based on individual student need and skill level (Kilgus & von der Embse, 2019). Within an MTSS framework, three distinct but overlapping tiers of support are typically provided. Tier 1 interventions are provided for all students in a population, Tier 2 interventions are provided to students considered at-risk, and Tier 3 interventions are provided to students already exhibiting severe problems that could not be adequately resolved with less intensive supports. Although significant attention has been given to supports provided at Tiers 1 and 3, recent years have witnessed an increased interest in providing academic and behavioral supports at Tier 2 for at-risk students (Sonju et al., 2019; Stormont et al., 2012).

Tier 2 interventions are designed to help at-risk students build the skills they need to be successful in meeting behavioral expectations set by school personnel (Simonsen et al., 2011). Such interventions also serve as a diagnostic indicator of the need for more intensive supports, such as those provided at Tier 3. There are a variety of interventions that can be used in Tier 2 within an MTSS framework (Boyd & Anderson, 2013). These interventions may differ in the skills in which they target but still share common characteristics (Boyd & Anderson, 2013; Campbell & Anderson, 2008; Wolfe et al., 2016). These shared characteristics of Tier 2 interventions include being (a) implemented in the same way across different students, (b) available throughout the school year, and (c) and monitored using collected progress data (Wolfe et al., 2016). The current research literature supports the use of Tier 2 interventions and provides evidence of their effectiveness for improving students’ behavior in the school setting (Bruhn et al., 2014).
One of the most researched and widely implemented Tier 2 interventions for improving students’ behavior in school is Check-In/Check Out (CICO; Bruhn et al., 2014; Hunter et al., 2014; Kilgus et al., 2016; McIntosh et al., 2009; Miller et al., 2015; Swoszowski et al., 2012). Within school systems using MTSS models, CICO is typically used to help students who are not responding to the behavioral supports that are being implemented at the Tier 1 level (Melius et al., 2015). Moreover, it has been implemented across a variety of students and settings (McDaniel & Bruhn, 2016; Ross & Sabey, 2015; Swoszowski et al., 2017).

CICO is implemented by a mentor to help students who have been identified as demonstrating at-risk behaviors (Andrews et al., 2017; Hawken et al., 2007). The goal of CICO is to provide behavioral support efficiently and effectively to reduce the frequency of students’ at-risk behavior (Fallon & Feinberg, 2017; Hawken et al., 2011; Sobalvarro et al., 2016). It is a multicomponent intervention that uses a daily progress report (DPR) to rate student behavior and to monitor students’ progress (Boden et al., 2018). Students are taught appropriate behavior and receive constructive feedback on their behavior throughout the school day from their mentor (Smith et al., 2015).

**CICO Origin**

CICO was originally and primarily designed for students who demonstrated at-risk problem behaviors, but ones that were not so severe that they were considered dangerous (Campbell & Anderson, 2011). Originally referred to as the Behavior Education Program (BEP), the development of CICO was influenced by research conducted on the use and effectiveness of DPR interventions (Campbell & Anderson, 2008; Swoszowski et al., 2012). Although CICO makes use of DPR, it is distinct from other behavior report card interventions in that it uses school-based contingencies rather than the home-based contingencies used in other behavior
report cards, and it is implemented similarly across students whereas behavior report cards are typically individualized to meet students’ specific needs (Campbell & Anderson, 2008).

Additionally, behavioral challenges across students can potentially be improved with the implementation of CICO because it is assumed that students’ behavioral challenges often serve the same function (Crone et al., 2010). This is a unique characteristic of CICO because Tier 2 interventions typically consider the function of students’ behaviors, which are thought to be unique to an individual student (McDaniel & Bruhn, 2016). Finally, in addition to improving students’ daily behavior, CICO was designed to improve student academic engagement (Melius et al., 2015). The rationale for this is that students’ who engage in problem behaviors are likely to miss instruction and, conversely, that students who engage in less problem behaviors are likely to be more academically engaged. As such, a reduction in students’ problem behaviors may increase the amount of instruction that they receive and, subsequently, enhance their academic behaviors.

CICO Core Components

Before CICO can be implemented, students are nominated and selected to participate in the process, although there is some variability in the way this occurs (Crone et al., 2010). For example, schools may use teacher nominations, parent nominations, office discipline referral (ODR) data, and/or attendance data to select students to participate in CICO (Filter, 2019). The intervention begins with a check-in session with the mentor and the student, followed by teacher evaluation of a student’s behavior throughout the day using a DPR, and ends with a check-out session with the mentor and the student (Bunch-Crump & Lo, 2017; Fallon & Feinberg, 2017; Ross & Sabey, 2015; Boden et al., 2018). CICO consists of a five-step cycle, including (1)
check-in, (2) point feedback, (3) check-out, (4) home component, and (5) return DP (Rodriguez et al., 2015; Swoszowski et al., 2017), discussed in detail below.

**Check-In**

The first step in CICO is the morning check-in (Ross & Sabey, 2015). During the check-in session, the pre-identified CICO mentor meets with a student who has been nominated for the intervention. This session typically occurs before the start of the school day and usually lasts approximately five minutes (Swoszowski, 2013). During the morning check-in, the CICO mentor provides the student with a DPR and both review the behavioral expectations listed on it (Fallon & Feinberg, 2017). The morning check-in session is also a time in which the CICO mentor and student review the goal set for the day (Smith et al., 2015; Turtura et al., 2014). An essential component of the check-in session is the positive interaction between the CICO mentor and the student, as this has been identified as being a motivating factor for students who are reinforced by adult attention (Kittelman et al., 2018).

**Point Feedback**

After the CICO mentor and the student meet during the morning check-in, the student then carries the DPR provided to them throughout the day (Swoszowski, 2013). As a part of the intervention, students’ behaviors are rated numerically by the teacher during predetermined times during the school day (Bunch-Crump & Lo, 2017). DPRs include the explicit target behaviors and the criteria for the numbers on the rating scale (Karhu et al., 2019). The DPR is divided into the times of the day in which a teacher is to rate students’ behaviors (Hunter et al., 2014). Overall, the DPR provides students with (a) behavioral prompts throughout their day, (b) constructive adult feedback, (c) a visual reminder of the goal set for the day, (d) a method to
monitor their progress during the school day, and (e) an easy way for students and teachers to communicate with students’ caregivers about their daily behavior (Todd et al., 2008).

Students’ behavior is rated by teachers using a numerical rating scale (Hawken & Johnston, 2007). Crone et al. (2010) promotes the use of a three-point rating scale. The scale typically ranges from zero-to-two points wherein a zero is given when the student did not exhibit appropriate target behaviors, a one is given when the student exhibited appropriate target behaviors for a portion of the time-period, and a two is given when a student exhibited the appropriate target behaviors for the duration of the time-period (Hawken et al., 2015; Sanchez et al., 2015). The numerical rating scale provides a way for CICO mentors and students to set goals (McDaniel & Bruhn, 2016). Research suggests that the use of a goal that is equivalent to 80% of the maximum daily points should be considered appropriate (McDaniel & Bruhn, 2016). However, Crone et al., (2010) supports modifying the goal to increase the likelihood that a student meets their goal and not become frustrated with the intervention process. That is, continually adjust the goal to an achievable level in line with prior reports (e.g., 10% from last week’s ratings).

Research on DPRs support their use as a reliable way to measure student behaviors and to provide adult feedback to students during the school day (Maggin et al., 2015; Swoszowski et al., 2012). Moreover, the data that are collected from the DPR is an effective and efficient method for school personnel to monitor student progress and to make instructional decisions based on the data (Ross & Sabey, 2015).

**Behavioral Expectations**

When students participate in CICO, the appropriate behaviors listed on the DPR are operationally defined and explicitly taught (Lane et al., 2015). This has been theorized to be
beneficial for students who are struggling to meet behavioral expectations and is a way for school staff to correct behavior rather than punishing the student (Ruiz et al., 2014). The behavioral expectations are listed on the DPR and serves as a visual prompt for the student throughout the day, which is thought to help remind the students about what skills they are trying to develop (Hunter et al., 2014).

**Positive Reinforcement**

There is ample evidence supporting the use of CICO in improving students’ behaviors. Several underlying theories are used to explain why the intervention is successful with many students. One of the most important aspects of the intervention is the feedback that the students receive from their teachers throughout the day, which is provided frequently and presented immediately after the behavior is observed (Sobalvarro et al., 2016). The increased positive adult attention is thought to reinforce students’ behaviors and increase the frequency of their appropriate behaviors (Ross & Sabey, 2015). Consequently, it has been hypothesized that the CICO intervention is best suited for students who value adult attention (Swoszowski et al., 2012).

In addition to the immediate reinforcement through feedback that students receive from teachers throughout the day, students can receive delayed reinforcement based on their accrual of points earned on their DPR (Haraway, 2012). CICO uses a token economy to deliver reinforcement. A token economy is a method of providing reinforcement to a group of students based on the premise that points earned can be turned into a tangible reward if they meet their predetermined goal (Myers et al., 2010). It is important the rewards that are used to reinforce a student’s behavior are meaningful and desirable to that student to ensure that the student is motivated to work toward earning them (Miller et al., 2015). Typically, the numerical goal is set
at 80% of the total number of points possible to earn. However, in situations in which students earn a low number of points during the day, it is important that the goal set for each student participating in CICO is individualized so that each student feels appropriately challenged to change their behavior, without feeling overwhelmed or frustrated (McDaniel & Bruhn, 2016).

**Precorrections**

Precorrections are one of the core principles of CICO (Mitchell et al., 2017). Precorrections are defined as the instances in which teachers and/or CICO mentors remind the students of the appropriate behaviors before the students engage in problem behaviors (Hunter et al., 2014). Additionally, the DPR may be utilized as a precorrection of students’ behaviors as it is a visual reminder of the appropriate behaviors that they need to demonstrate to earn points (Miller et al., 2015).

**Increased Structure**

The literature on CICO has shown that it is effective partly because of the increased structure it provides for students (Ruiz et al., 2014). CICO is designed to be implemented with high degrees of frequency and consistency, which helps students better understand their daily expectations (Hawken et al., 2015). One of the ways in which it provides more structure is through the DPR (Todd et al., 2008). Because the DPR specifies the times in which the students will receive feedback from their teacher(s), the students’ days are broken down into smaller intervals, rather than the teacher delivering feedback to the students at the end of the school day (Karhu et al., 2019; Maggin et al., 2015).

**Check-Out**

At the end of the school day the CICO mentor and the student meet for approximately five minutes (Fallon & Feinberg, 2017). During the afternoon check-out session, the CICO
mentor and student review the DPR together (Bunch-Crump & Lo, 2017). During this time, the CICO mentor and student identify whether the student earned points equivalent to the student’s goal (Ross & Sabey, 2015). If the student did not meet their goal, the CICO mentor and student may reflect on what was difficult for the student to accomplish during that day and think about any changes the student could make to improve their scores (Crone et al., 2010). If the student did meet their goal, they earn points and/or tickets to trade for a small reward based on the school’s token economy (Boden et al., 2018; Turtura et al., 2014). Similar to the morning check-in, positive feedback should be provided to the student by the mentor during the afternoon check-out to praise students for what they did correctly during the day to increase their motivation for the following day (Smith et al., 2015).

**Home Component**

The DPR is a useful procedure for teachers and CICO mentors to communicate with the caregivers of students participating in a CICO intervention (Hawken, 2006). The home component is included in CICO with the intent that the student will receive positive and/or constructive feedback from their caregiver(s) based on the DPR (Swoszowski, 2013). Caregivers are supposed to sign the DPR to signify to the CICO mentor that they reviewed it with their child (Smith et al., 2015).

**Return DPR**

The final step of the CICO procedure is having the student return the previous day’s DPR to the CICO mentor for the purpose of data collection (Swoszowski, 2013). The data collected from the DPRs are used to determine (a) if the intervention is working, (b) if the intervention components need to be changed or modified, and (c) if the student no longer needs the intervention (Hawken, 2006; McDaniel & Bruhn, 2016). The student typically returns the DPR
during the morning check-in session (Smith et al., 2015). Once the student returns the DPR from the previous day, they are given a new DPR and the CICO cycle starts again (Bunch-Crump & Lo, 2017; Crone et al., 2010).

**CICO Implementation**

CICO has been implemented with a variety of students and across different settings (Swoszowski et al., 2011). Research has been conducted with CICO procedures with preschool, elementary, middle, and high school students (Sobalvarro et al., 2016). Both students who receive general education curricula and special education curricula have benefited from CICO (Boden et al., 2018). Additionally, there is evidence to support the effectiveness of CICO in alternative education settings and residential settings, even when modified and delivered by peers (Melius et al., 2015; Swoszowski et al., 2011).

One of the primary benefits of CICO is that it is implemented similarly across the students who are selected to participate in the intervention (Mitchell et al., 2017). Therefore, CICO fits well in an MTSS model in school systems as it serves as a targeted support for students to assist them in developing the behaviors/skills they need to meet behavioral expectations in school (Sobalvarro et al., 2016). Typically, the target behaviors included on the DPR are the school-wide expectations that are the same as Tier 1 behavioral expectations (Campbell & Anderson, 2011). Furthermore, CICO may be implemented with high fidelity because it is considered a packaged intervention that CICO implementers can learn and apply without a learning curve (Crone et al., 2010; Filter et al., 2007).

**CICO Effectiveness**

There is an ample evidence base that supports the effectiveness of CICO (LaBrot et al., 2016; Maggin et al., 2015; Myers et al., 2010). Most of the research that has been conducted on
CICO and its effect on improving at-risk students’ behaviors is in elementary and middle school settings (Rodriguez et al., 2015). Additionally, CICO has been shown to be an effective intervention when implemented in the context of a school’s MTSS model (Mitchell et al., 2017). There is also evidence to suggest that the intervention may be effective in school settings without MTSS models in place (Miller et al., 2015).

Previous research has also been conducted on the effects of CICO on students’ behaviors in alternative educational and residential settings, although the number of these studies is limited (Ennis et al., 2012; Fallon & Feinberg, 2017; Swoszowski et al., 2017). Researchers found that students in alternative educational and residential settings may benefit from the additional structure, explicit instruction, and feedback on behavior that is inherent to CICO (Ennis et al., 2012). Modifications to CICO and the DPR have also been found to be effective in improving students’ problem behaviors in alternative and residential settings (Fallon & Feinberg, 2017).

Researchers have relied on a variety of dependent measures as evidence for demonstrating changes in students’ behavior after CICO has been implemented. For example, CICO has been found to reduce the frequency of problem behaviors and the number of office discipline referrals (ODRs) that are given to students by school staff (Andrews et al., 2017; Hawken et al., 2007). Direct observations of students’ problem behaviors and appropriate behaviors have also been used to monitor changes in students’ behaviors (Sobalvarro et al., 2016). Other studies have used the behavior ratings from DPRs (Swoszowski et al., 2011). There is also some evidence to support the use of CICO in reducing internalizing behavior problems (e.g., depression; anxiety), which suggests that CICO can be used with both externalizing and internalizing problems (Green, 2016; McIntosh et al., 2009).
Prior research investigating the effects of CICO has found that it may work best for students whose behavioral problems are largely maintained by attention from adults and/or peers (Campbell & Anderson, 2011; Hawken et al., 2011; Kilgus et al., 2016). There is also some evidence to suggest that CICO may be effective in improving students’ task-avoidance and/or escape behaviors. For example, one study found that students who engage in task-avoidance and/or escape behaviors may respond to CICO if reinforcers are effective and individualized (Campbell et al., 2013). Overall, the research that has been conducted on CICO indicated that students are more likely to respond to the intervention when the function of their behavior has been determined prior to its implementation (Hawken et al., 2011; Kilgus et al., 2016).

CICO has been evaluated by researchers using a variety of research methodologies including single-subject designs, quasi-experimental research designs, and experimental designs (McDaniel & Bruhn, 2016). Additionally, several meta-analytic reviews have been conducted evaluating the effectiveness of CICO (Collins et al., 2016). These meta-analytic reviews have concluded that CICO contributes to an improvement in students’ behaviors and should be considered an evidence-based intervention (McDaniel & Bruhn, 2016; Ross & Sabey, 2015).

Furthermore, previous studies have examined the social validity of CICO, which refers to how appealing the intervention is to those who are implementing and participating in it (Swoszowski et al., 2011). Research suggests that teachers and other school staff who have used CICO find it to be useful because it is resource and time efficient (Dart et al., 2015). A seminal study conducted by Hawken & Johnston (2007) on the effects of CICO found that it was rated by teachers as (a) an effective in reducing students’ problem behaviors, (b) a simple intervention, and (c) worth the resources that were invested in it. Because CICO has been shown to have positive effects on students’ problem behaviors in addition to reducing the number of students...
who are referred for more intensive interventions and/or special education services, the time
invested by school settings in its implementation may be worthwhile to school systems (Hawken
& Johnston, 2007).

Finally, it should be noted that studies have found that school personnel typically
implement CICO with high fidelity, even without the presence of research staff in the school
setting (Collins et al., 2016). In summary, there is evidence to suggest that CICO is viewed
favorably by teachers and that it can be implemented with high fidelity without additional
support from research personnel.

**CICO Flexibility**

One of the merits of CICO is that it can be modified and adapted to fit the context in
which it is implemented and the students for whom it is implemented (Dart et al., 2015; Drevon
et al, 2018). CICO can be context specific, which indicates that the intervention components,
such as the DPR, the number of times feedback is given, and the reinforcers, can be changed
from the standard, manualized form (Myers et al., 2010). For example, CICO is frequently used
within an MTSS framework in which DPRs in these settings reflect that service delivery model
and typically have three-to-five school-wide behavioral expectations (Mitchell et al., 2017).
However, in school systems without MTSS models, behavioral expectations can be tailored to
groups of students based on their problem behaviors instead of relying upon school-wide
behavioral expectations (McDaniel & Bruhn, 2016).

CICO was originally designed to support students whose problem behaviors appeared to
be a function of adult attention (Crone et al., 2010). However, components of the intervention
have been changed to address a variety of challenging behaviors that extend beyond those driven
by adult attention (Boden et al., 2012). Prior research has also investigated the modifications that
have been made to CICO and its effects on student behavior (Andrews et al., 2017; Boden et al., 2012; Collins et al., 2016; Dart et al., 2015; Hunter et al., 2014; Kilgus et al., 2016; Ross & Sabey, 2015; Swoszowski, 2013). Some examples of the modifications that have been made include (a) using peers as CICO mentors, (b) conducting Functional Behavioral Assessments (FBAs) prior to identify the function of problem behavior, (c) using additional check-in times with CICO mentors throughout the day, and (d) conducting the intervention in an alternative education setting (Andrews et al., 2017). Two of the most commonly researched modifications are peer-mediated CICO and CICO in alternative education settings.

**Peer-Mediated CICO**

Several authors have researched the effects of peer-mediated CICO on student behaviors (Collins et al., 2016; Dart et al., 2015; Melius et al., 2015; Sanchez et al., 2015; Smith et al., 2015). Peer-mediated CICO differs from traditional CICO procedures in that the CICO mentor is a student rather than an adult. In peer-mediated CICO, a student is responsible for providing the morning check-in and the afternoon check-out for another student (i.e., the recipient of the CICO intervention). The students’ teachers rated students’ behavior using daily behavior report cards (DBRC). The participants in these studies included paired elementary school students and paired students in an alternative education setting. One of the studies examined the effects of peer-mediated CICO with an elementary student and a high school student who served as the CICO mentor (Smith et al., 2015). Across studies, the researchers found that peer-mediated CICO improved CICO mentee behavior (Collins et al., 2016; Dart et al., 2015; Melius et al., 2015; Sanchez et al., 2015; Smith et al., 2015). Researchers also found that the agreement between the student mentors and the researchers on treatment integrity was 100%, which indicates that students were completing treatment integrity checklists similarly to researchers (Melius et al.,
This suggests that CICO can be implemented by classroom peers effectively, with some evidence of fidelity, and that, by using peers as CICO mentors, school and alternative education staff can provide the intervention with limited personnel.

**Function-Based CICO**

One common method of examining the effects of CICO on students’ behaviors is conducting a functional behavioral assessment (FBA) prior to implementing the intervention (Campbell & Anderson, 2008; Campbell & Anderson, 2011; Hawken et al., 2011; Kilgus et al., 2016; McIntosh et al., 2009). Bunch-Crump and Lo (2017) and Fairbanks et al. (2007) conducted FBAs with students who did not respond to the original, unmodified CICO intervention. Bunch-Crump and Lo (2017) modified traditional CICO procedures because the participant’s behavioral challenges were determined to be a function of teacher attention. Modifications included explicit teaching of how to appropriately gain teacher attention (e.g., participant raises hand and waits for teacher to call on them) and a self-monitoring component in which a mobile device reminded the participant to follow the rules every three minutes and to ask for help every 10 minutes during a targeted 30-minute session (Bunch-Crump & Lo, 2017).

Similarly, Fairbanks et al. (2007) investigated the effectiveness of CICO preceded by data collected through the administration of the Functional Assessment Checklist for Teachers and Staff (FACTS) on the disruptive behaviors of students who did not originally respond to traditional CICO. The authors found that the information regarding antecedents, setting events, and maintaining consequences that was gathered after the FACTS was administered used in combination with CICO decreased students’ disruptive behaviors, overall (Fairbanks et al., 2007). Both studies concluded that FBAs were useful in increasing the effectiveness of the
intervention, with participants improving their behavior once the function of their problem behavior was identified (Bunch-Crump & Lo, 2017; Fairbanks et al., 2007).

**CICO in Alternative, Preschool, Elementary, Middle, and High Schools**

CICO has been evaluated in alternative, preschool, elementary, middle, and high school, settings. The research literature on CICO indicates that it can be effective in increasing appropriate behaviors and teaching new skills while decreasing instances of problem behaviors among a diverse range of students. A summary of some of the significant studies conducted in preschool, elementary, middle, and high school settings is provided below.

**Alternative Education Settings**

As noted previously, CICO has been evaluated in typical school settings and in alternative education settings. In a study conducted by Swoszowski et al. (2012), the authors used a non-concurrent multiple baseline design across participants design to examine the effects of CICO on attention-maintained problem behaviors and on escape-maintained problem behaviors. A total of six students, all diagnosed with emotional/behavioral disorders (EBD), responded positively to the standard CICO intervention, regardless of whether their behavior was maintained by attention or escape (Swoszowski et al., 2012).

Elementary-aged students in a residential education setting participated in another study, which examined the impact of a modified CICO intervention on their off-task behavior (Swoszowski et al., 2013). CICO was modified to include an additional, midday check-in due to the variability in DPR that was collected, which suggested that the student did not immediately respond to the intervention (Swoszowski et al., 2013). Overall, the participants’ off-task behavior decreased upon the implementation of CICO with an additional, midday check-in (Swoszowski et al., 2013).
Fallon and Feinberg (2017) conducted a similar study with three high school students who received education in a residential setting and who were identified as having emotional and behavioral disorders (EBD). Instead of using the standard CICO procedures, the authors added an additional midday check-in to the intervention. As a result of the intervention, there was an increase in the points earned on DPR by students, increased direct observation of appropriate behaviors, and a decrease in the number of ODRs students received (Fallon & Feinberg, 2017).

Ennis et al. (2012) extended the literature on the effects of CICO on the behavior of students in alternative education settings by conducting an FBA prior to implementing the intervention. A total of six students, some of whom were in middle school and some of whom were in high school, participated in the study at a residential facility. After the researchers implemented the standard CICO intervention, all six students improved their behavior in their most problematic classes, and that students’ behaviors improved regardless of whether they were maintained by attention or by escape (Ennis et al., 2012).

Modifications may be important to the effectiveness of CICO when it is determined that a student is not responding adequately to the intervention (Boden et al., 2018; Kilgus et al., 2016; Ross & Sabey, 2015; Sobalvarro et al., 2016; Swoszowski et al., 2016). Given that CICO is typically implemented in a uniform, standard manner across students, one reason that a student may not respond to it is that it does not address their specific problem behaviors (Hunter et al., 2014). By individualizing CICO for students who have not adequately responded to it, students may improve their behavior (Kilgus et al., 2016; Rodriguez et al., 2015). For example, students’ whose behavior is a function of adult attention may benefit from additional check-in during their day to gain adult attention more frequently (Swoszowski et al., 2013; Swoszowski et al., 2017). Similarly, and as noted previously, students whose behavior is a function of attention may
benefit from having peer models serve as check-in and check-out mentors (Andrews et al., 2017). Furthermore, students whose behavior is a function of escape or avoidance behaviors may benefit from accessing a structured time to take a break from class (Swoszowski et al., 2012). Specifically, research supports modifying standardized CICO procedures that align with the individual student’s function of the behavior (Ross & Sabey, 2015). Overall, it may be beneficial for school systems to choose to modify CICO to reduce the number of students who are referred for intensive interventions or for special education services (Boden et al., 2018).

**Preschool**

LaBrot et al. (2016) evaluated the effects of a modified CICO intervention with three preschool students using a changing criterion design. According to the results of the study, the researchers concluded that a modified CICO intervention was effective in improving preschool students’ behaviors, and that a functional relationship was demonstrated between the CICO intervention and the changes observed across the three changes in the criterion (LaBrot et al., 2016).

**Elementary School**

Most of the studies to date that have examined the effects of CICO have been conducted in elementary schools. For example, Todd et al. (2008) used a multiple baseline design across subjects to provide evidence of a functional relationship between the intervention implementation and a decrease in the number of problem behaviors observed. Overall, the researchers found that the four students’ problem behaviors decreased after CICO was implemented. Similarly, Hawken et al. (2007) found that there was a reduction in problem behaviors and the number of ODRs students received following CICO implementation. Campbell et al. (2013) found similar results in their study and concluded that there was
functional relationship between CICO and the reduction of problem behavior. Sobalvarro et al. (2016) looked not only at the frequency of problem behaviors but also examined the effect of the CICO intervention on students’ on-task behaviors. The authors found that both students improved their on-task behaviors and reduced their off-task behaviors (Sobalvarro et al., 2016). Karhu et al. (2019) found similar results in their study, finding a functional relationship between CICO and an increase in on-task behaviors.

Several authors examined the effects of modified versions of CICO. Boyd and Anderson (2013) used a pre-/post-comparison design to evaluate the effects of CICO combined with break cards that students were instructed to use when they needed a break. They found that using CICO and break cards served as an effective way for students to improve their behaviors among those who are motivated to escape from tasks in the classroom (Boyd & Anderson, 2013). Ross and Sabey (2015) also examined the effectiveness of CICO when it was combined with direct social skills lessons. Like Boyd and Anderson (2013), the authors found that combining CICO and direct social skills lessons may be useful in improving the behaviors of students who do not originally respond to the traditional CICO procedures (Ross & Sabey, 2015). Participants first were provided with CICO to increase their social skills. Data collected indicated that the participants did not respond to traditional CICO. After traditional CICO was implemented, CICO and social Skills (CICO + SS) intervention was introduced. As a result of the study, the authors found that CICO + SS may be effective for students who have social skills deficits and who do not respond to traditional CICO.

Moreover, Hunter et al. (2014) examined the effects of CICO when the behavioral expectations were tailored and individualized to meet the unique needs of each student. The authors administered the Student Internalizing Behavior Screener (SIBS) to teachers identify
students who may be at-risk for internalizing behavior problems and the Student Risk Screening Scale (SRSS) to ensure that students who were identified for being at-risk for internalizing behavior problems did not also exhibit at-risk externalizing behavior problems (Hunter et al., 2014). The researchers used information provided by the SIBS to operationalize target behaviors for each of the participants (Hunter et al., 2014). The results of the study suggested that CICO can reduce students’ internalizing behavior problems when behavioral expectations are individualized based on results from the SIBS (Hunter et al., 2014).

Other modifications to CICO have also demonstrated positive effects. For example, a mystery motivator, which is a classroom management technique that is used to motivate all students within a class to abide by behavioral expectations by having the class earn points towards an unknown reward, has been used in combination with CICO (Miller et al., 2015). The authors also used fading techniques in which they gradually removed CICO supports and replaced them with self-monitoring techniques to help students maintain the progress they had made (Miller et al., 2015). The results of the study indicated that CICO reduced problem behaviors and increased appropriate behaviors among participants and that these effects were maintained after the intervention was faded and self-monitoring was implemented (Miller et al., 2015).

Mong et al. (2011) examined the effects of CICO on the number of ODRs students received in addition to their performance on math curriculum-based measures (CBMs). The authors found that the intervention was effective in reducing the number of ODRs students received and that students generally improved their performance on math CBMs (Mong et al., 2011).

*Middle School*
Simonsen et al. (2011) used a pretest-posttest control group design to evaluate the effectiveness of CICO and compared it to the standard practices implemented among middle school students. Overall, the researchers found that participants within the CICO group reduced their off-task behaviors and that they improved their behavior more than students who participated in a group that received the school’s standard behavioral intervention practices (Simonsen et al., 2011). These results are similar to those found by Hawken and Horner (2003), who examined the effects of CICO on high school students’ problem behavior and found that there were overall levels of reduction among participants. McDaniel and Bruhn (2016) used a changing-criterion withdrawal design to provide evidence of a functional relation between CICO and changes in middle school students’ behaviors. The authors found that participants’ behavior improved when the intervention was implemented, and that their behavior regressed when the intervention was withdrawn (McDaniel & Bruhn, 2016).

**High School**

To date, there has been limited research conducted on the effectiveness of CICO in high school settings. Only two empirical studies were found that used high school students as participants in a CICO intervention. Toms et al. (2018) used a concurrent multiple baseline design across participants design to examine the effects of CICO when it was combined with academic planning social skills. Three high school males in the ninth grade, who received special education services under the classification of EBD, participated in the intervention. The authors found that there was a functional relationship between the modified CICO intervention and improvement in participants’ behaviors, as evidenced by an increase in the scores they received on their DPRs (Toms et al., 2018). Additionally, the authors were interested in the social validity
of the modified intervention as it was perceived by teachers, students, and staff members and found that all respondents rated the intervention as being favorable (Toms et al., 2018).

In a study conducted by Boden et al. (2018), high school students receiving special education services, and who participated in vocational training, took part in a modified CICO intervention. The participants were diagnosed with moderate intellectual disability and were nominated to participate in the intervention by their teachers due to their off-task behaviors during vocational training (Boden et al., 2018). The standard CICO intervention was modified to include a midday check-in with the CICO mentor. Other modifications included a simplified DPR, which used visual prompts and pictures as a reminder for the appropriate behaviors that the students were expected to display (Boden et al., 2018). The students’ classroom teachers served as the parent component, in lieu of the standard home component that is typically completed by a student’s caregiver. According to the authors, this was done to increase the communication between staff at the vocational training site and the teachers at the classroom to support students’ behavior in both settings (Boden et al., 2018). Overall, the authors found that all participants displayed a decrease in off-task behaviors after the modified CICO intervention was implemented (Boden et al., 2018).

Although both studies found that high school students benefitted from CICO, more research is needed with this student population to evaluate its effectiveness. CICO has been evaluated primarily with elementary students to date, with fewer studies evaluating its effectiveness among middle school students. However, by far the largest gap in the literature is the lack of studies examining the utility of CICO with preschool and high school students. As previously mentioned, only one study investigating the effectiveness of CICO in the preschool setting has been conducted and only two studies investigating the effectiveness of CICO in the
high school settings (Boden et al., 2018; LaBrot et al., 2016; Toms et al., 2018). Moreover, few studies at any level (i.e., elementary, middle, or high school) have examined CICO among students with disabilities, and, therefore, there is a significant need for more studies with this student population.

Summary

CICO is an evidence-based Tier 2 behavioral intervention (Toms et al., 2018; Crone et al., 2010; Filter, 2019). It has been evaluated with preschool, elementary, middle, and high school students and in general education, special education, and alternative education settings (Andrews et al., 2017; Green, 2016; LaBrot et al., 2016; McDaniel & Bruhn, 2016; Sobalvarro et al., 2016; Toms et al., 2018; Turtura et al., 2014). CICO has been used to improve a range of student behaviors in school, including acting-out behaviors (e.g., calling out) and internalizing behaviors (e.g., anxiety; Boyd & Anderson, 2013; Hunter et al., 2014; Karhu et al., 2019; McDaniel & Bruhn, 2016). Furthermore, CICO’s social validity has been evaluated by teachers and has been rated positively (Hawken & Johnston, 2007; Turtura et al., 2014). Reasons for its favorable ratings include that it is cost-effective, efficient, and can be implemented by school staff appropriately (Kilgus et al., 2016).

Intervention Implementation

Despite research suggesting that teachers can implement CICO with high implementation fidelity (Crone et al., 2020; Collins et al., 2016), there is an overwhelming amount of research indicating that teachers fail to implement evidenced-based practices (EBPs) after receiving professional development regarding such practices (Sawka et al., 2002). Research has consistently found that teachers do not implement EBPs and that they do not implement EBPs with fidelity (Pas et al., 2020). This is concerning because even evidence-based interventions
will not be effective if they are not implemented as intended (i.e., with appropriate treatment fidelity; Johnson et al., 2018). When teachers do not follow intervention protocols to ensure that the intervention is implemented as intended, the intervention can no longer be considered supported by research (Brock & Carter, 2017). Thus, although there is a substantial body of evidence that supports the use of and efficacy of CICO, challenges associated with the implementation of EBPs needs to be considered when implementing it.

**Professional Development**

Teachers often cite lack of training as a primary reason for why interventions are not implemented in the classroom or are not implemented with high fidelity (Sawka et al., 2002). School systems spend significant amounts of time and money on teacher training and teacher professional development (PD; Holdaway & Owens, 2015). PD among educators is important because it helps teachers develop necessary skills and promotes more effective practices to better support students’ learning (Mayworm et al., 2016; Shapiro et al., 1999).

PD typically is delivered to a large group of teachers through a lecture-style presentation of information (Mason et al., 2019). Often, there is little support offered after a PD in-service training (Holdaway & Owens, 2015). Research on the traditional model of delivering PD to teachers indicates it is generally not successful in changing teacher behavior, as teachers often fail to implement the strategies presented in the in-service in the classroom (Holdaway & Owens, 2015). This is important to note because teachers need effective PD to improve their knowledge and skills regarding best practices in delivering high-quality, evidence-based interventions to effectively improve student outcomes (Brock & Carter et al., 2017; Kraft et al., 2018).

**Effective PD**
Research on PD has identified several ways to improve the effectiveness of in-service training (Holdaway & Owens, 2015; Kraft et al., 2018; Mason et al., 2019; Mayworm et al., 2016). For example, Mayworm and colleagues (2016) found that PD in-services that improved teachers’ skills provided (a) experiential learning and practice, (b) content about how students learn, (c) a clear link between the training and teachers’ knowledge and/or belief, (d) training over the length of a semester for approximately 20 hours, and (e) opportunities for teachers to work with and interact with one another. Ongoing support and feedback on teachers’ performance on the skills targeted during PD in-services was also found to support long-term effects (Mason et al., 2019).

Consultation was found to be a key component of PD in-services which enhanced teachers’ skills over time in a study conducted by Holdaway and Owens (2015). Holdaway and Owens (2015) used a within-subjects design and vignettes to examine the effects of four training conditions. Overall, the results of the study indicated that consultation with content-experts produced significantly higher ratings than the other training conditions.

School systems rely on PD in-services to train teachers. PD in-services can be effective if they include aspects that have been supported by research in changing teacher behavior and improving their skills. Consultation is often listed as one of the characteristics that supports teacher training and produces positive effects in the long term (Holdaway & Owens, 2015; Kraft et al., 2018; Mason et al., 2019; Mayworm et al., 2016).

**PD Limitations**

The provision of PD in-services for teachers is necessary for helping teachers learn about EBPs; however, traditional, lecture-style PD is not sufficient in isolation to ensure that EBPs will be implemented (Sawka et al., 2002). Teachers who lack foundational knowledge and skills need
continued support after PD in-services to make an effective change in their behavior and, therefore, to improve student outcomes (Reinke et al., 2007). It may be unreasonable to expect teachers to implement EBPs after a traditional PD in-service (Holdaway & Owens, 2015), particularly in the absence of contingencies to bring about behavioral change. Because teacher training is crucial, and because schools have limited time and resources to invest in PD for teachers, it is important for research to investigate how to deliver PD to successfully assist in the skill development of teachers and their implementation of interventions (Kraft et al., 2018; Lemons et al., 2016). One of the best procedures for doing this is through consultation.

Consultation

Consultation is a process through which a consultant provides supports to a consultee to improve the consultee’s skills to benefit a student, a group of students, or a class (Kratochwill et al., 2014; Mayworm et al., 2016; Preast & Burns, 2019). In school systems, a consultant is often a school psychologist, intervention coach, or other specialist who has expertise in the EBP offered in the PD in-service and the consultee is a teacher (Farmer et al., 2018; Newman et al., 2015). The goal of consultation is to help teachers implement strategies and EBPs in the classroom with high-fidelity through ongoing problem-solving and skill development (Farmer et al., 2018; Minnaert et al., 2017).

Consultation Characteristics

Consultation is an indirect service delivery, meaning that the consultant works with the consultee and not directly with those who will receive services from that same consultee (Kratochwill et al., 2014). There are several advantages to an indirect service delivery model, especially in school systems since many students can be supported and student outcomes can be improved (Pas et al., 2020). Consultation is collaborative, in that a consultant and a consultee
work together to problem-solve and troubleshoot challenges (Mayworm et al., 2016). In the school setting, a consultant may work with a teacher (i.e., consultee) to provide real-world assistance and problem solving to implement evidence-based interventions. The consultant may help the teacher identify problems associated with the implementation of the intervention, provide ongoing feedback, and assist in designing a way to monitor the fidelity and the effectiveness of the intervention being implemented (Minnaert et al., 2017).

Through consultative services, a consultant and a teacher may collaborate to design an implementation plan (Minnaert et al., 2017). Implementation is defined as the use of an intervention actively by the consultee (Holdaway & Owens, 2015). Implementation planning consists of a consultant and consultee creating a list of steps for the consultee to complete, planning the logistics of the intervention, hypothesizing potential barriers prior to the implementation of an intervention (Hagermoser Sanetti et al., 2015).

One aspect of consultation that has ample research findings that support its use in improving teachers’ implementation of interventions is feedback (Brock & Carter, 2017; Holdaway & Owens, 2015). Used after observing a teacher implement an intervention (Holdaway & Owens, 2015), feedback can be delivered in multiple ways, including through brief, consistent meetings held between the consultant and the teacher (Gage et al., 2018). Research suggestions that feedback is effective in improving teachers’ implementation of interventions because it provides opportunities for teachers’ skills to be strengthened and reinforced and to help teachers implement interventions with greater fluency (Reinke et al., 2007). Other positive effects of teacher feedback include an increase in the knowledge and skills needed to implement interventions with high fidelity and a self-reported increase in teachers’
confidence in overcoming challenges associated with the implementation of interventions (Newman et al., 2015).

Another way to support teachers’ implementation of interventions is through reviewing data. By reviewing the data, the consultant can help the teacher monitor their own level of treatment fidelity (Hagermoser Sanetti et al., 2015). Furthermore, feedback can help enhance teachers’ skills in frequently reviewing intervention data to more effectively monitor students’ progress (Farmer et al., 2018).

Consultation and Training

An important finding in the consultation literature is that providing information to teachers in the form of didactic training (e.g., in-service training) will often not generalize to behavioral change by teachers unless it is followed by consultative support. For example, Shapiro et al. (1999) examined in-service training and consultation processes in facilitating the inclusion of students with emotional or behavioral disorders (EBD) into general education classrooms. A total of 25 school districts were randomly assigned to one of three conditions. Participants from one group of districts received an intensive experiential in-service program followed by six-to-eight weeks of on-site consultation to help implement specific intervention strategies learned through the in-service for enhancing inclusionary practices for students with EBD.

Participants in the second group also received the in-service but their consultation was delayed by six-to-eight weeks, during which time they were instructed to also implement the interventions for targeted students. The third group served as a wait-list control. Results showed that immediate implementation of the consultation process was needed for districts to implement learned interventions effectively. Despite extensive in-service training, the large majority of
school districts were not able to implement and evaluate interventions without follow-up consultative support.

Similarly, Sawka et al. (2002) developed a training model for special education teachers named the Strengthening Emotional Support Services (SESS) and measured the teachers’ knowledge, acceptability of the training model, and students’ behavior in the classroom. The SESS model provided four training modules to 64 special education teachers on four school days over a three-month period (Sawka et al., 2002). After the first training module, on-site consultative support was offered once per week for a total of 12 weeks to the special education teachers (Sawka et al., 2002). The consultation services provided included activities such as observing teachers, giving teachers feedback, modeling skills in the classroom setting, and providing more instruction if necessary (Sawka et al., 2002). Participation in the project was broadly associated with increased staff knowledge, although successful implementation of skills at the classroom level occurred only after follow-up consultative support was provided. Overall, these two studies provide evidence that traditional PD provided to teachers is often ineffective unless consultative support is provided as well (Sawka et al., 2002; Shapiro et al., 1999).

Consultation also helps facilitate teachers’ problem-solving skills to better meet the needs of individual students who may not be responding to the intervention supports as expected (Wilkinson, 2005). Furthermore, when teachers are provided with consultative support, students’ academic learning and behavior improve (Mayworm et al., 2016; Minnaert et al., 2017). This is significant because student populations and needs are becoming increasingly diverse (Mayworm et al., 2016). Consequently, to effectively prepare teachers to meet the ever-increasing diversity of student needs and increase the probability of both treatment implementation and fidelity, PD
opportunities need to incorporate consultative supports to make the most positive effects on students in schools (Hagermoser Sanetti et al., 2015).

**Teleconsultation**

Most studies conducted on consultation focus on the face-to-face delivery of this type of service and support. Teleconsultation is relatively new and involves the use of videoconferencing technologies to deliver consultative services (Kratochwill et al., 2014). The minimal research that has reviewed the effects of teleconsultation services suggests that its effectiveness is comparable to face-to-face consultation and that it may be a way to overcome some of the challenges associated face-to-face consultation (Fischer et al., 2016). Teleconsultation may provide teachers with the training and support necessary in rural settings, in low-resource settings, and in settings where there may be a lack of properly trained consultants (Leighton et al., 2018). Other benefits of teleconsultation include that it can be delivered with immediacy and convenience (Van Der Linden et al., 2019) and can be a useful strategy for overcoming the limited time school systems have to offer these services (Lemons et al., 2016).

There have been few research studies examining the usefulness of teleconsultation in school systems. Fischer and colleagues (2016) investigated the acceptability of the use of teleconsultation among teachers. The researchers completed problem identification interviews (PIIs) with classroom teachers in either a face-to-face condition or in a teleconsultation condition. The teachers completed the Fast Form of the Technology Acceptability Model (FF-TAM) and the Distance Communication Comfort Scale (DCCS) to those in the teleconsultation condition to measure the acceptability of the service delivery. The researchers found that teachers rated teleconsultation as being “highly acceptable.”
Schultz et al. (2018) found similar results. The researchers delivered a survey to assess the acceptability of teleconsultation among school psychologists, school psychology trainers, and school psychology trainees. The researchers found that teleconsultation was most appealing to consultants who experienced long travel commutes and to those who knew that teacher consultants are comfortable with videoconferencing technologies (Schultz et al., 2018).

Future research needs to focus on how teleconsultation can be provided to teachers to improve their ability to implement interventions (Hagermoser Sanetti et al., 2015; Hazel et al., 2016). To date, no studies were identified which used teleconsultation as a means for supporting teachers’ knowledge and implementation of CICO. As noted, teleconsultation has reported benefits, such as being a time- and resource-efficient way to provide consultative support to teachers and when there are long distances between consultants and consultees. Additionally, research on the use of teleconsultation with teachers should be a particular focus for future studies considering the unprecedented disruption to education caused by the COVID-19 global pandemic in 2020. The school closures that occurred due to the coronavirus led to many teachers providing academic and behavior support to students virtually. Similarly, support that was provided to teachers by administrators and other school staff was also delivered virtually. If school closures occur in the future, further limiting opportunities for in-person consultation, there needs to be more evidence to suggest that teleconsultation is effective.

Summary

There is ample evidence that supports the use of consultation after teacher PD to improve the implementation of interventions by teachers (Shapiro et al., 1999). Consultation has been identified as a meaningful way to enhance teacher PD (Minnaert et al., 2017). Studies suggest that teachers who are provided consultative supports are more likely to implement interventions
compared to teachers who are not provided consultative supports (Hagermoser Sanetti et al., 2015; Johnson et al., 2018; Preast & Burns, 2019).

Teleconsultation is a relatively new modality for provided support to teachers and has potential benefits such as convenience, immediacy, and that the services are not confined to geographic locations (Hazel et al., 2016). School-based teleconsultation research is limited; therefore, research should be conducted on the effects of teleconsultation on teachers’ use of evidence-based interventions and their treatment fidelity of those interventions (Hagermoser Sanetti et al., 2015).

**Limitations of Existing Research**

The extant literature on CICO indicates that it is predominately used with elementary and middle school populations, in urban and suburban communities, and with students in the general education setting (Hawken et al., 2014). There is a lack of research investigating the effects of CICO on high school students, within rural school communities, and with students with disabilities who receive their special education curriculum via a self-contained classroom (Boden et al., 2018; Simonsen et al., 2010; Sobalvarro et al., 2016; Toms et al., 2018). Most notably, given the unprecedented educational conditions due to the COVID-19 global pandemic, is the lack of research that investigates the effects of teleconsultation on teachers’ implementation of CICO. It should be noted that there were no journal articles that were available that investigated the effects of teleconsultation on teachers’ implementation of CICO.

Prior research conducted by Schultz et al. (2018) and Fischer et al. (2016) provided evidence that teleconsultation is an acceptable way to provide consultative services to teachers. However, additional research is needed to examine the effects of teleconsultation on teachers’ knowledge of CICO and their implementation of CICO. The benefits of teleconsultation
identified by past research should also be examined further to provide further support of this modality during a natural disaster, such as the COVID-19 global pandemic.

**Research Questions**

The purpose of this study was to determine the effects of a virtual PD on teachers’ (a) knowledge of CICO, (b) teachers’ implementation of CICO as measured by an implementation checklist interview, and (c) teleconsultation on teachers’ implementation of CICO as measured by an implementation checklist interview.

Teachers who participated in this study first completed a pre-test questionnaire about their knowledge on CICO and how to implement it. The participants then attended a virtual PD about CICO and how to implement it. After the virtual PD, participants were provided with a post-test questionnaire to measure their knowledge of CICO and how to implement it.

After the virtual PD, teachers were asked to implement CICO without additional support or consultation. Four weeks later, teachers participated in an implementation checklist virtual interview to determine if they implemented CICO and, if so, which components of the intervention they implemented.

Next, teachers were provided with weekly teleconsultation support for an additional four weeks to assist in the implementation of CICO. Finally, at the end of the four weeks of teleconsultation, teachers again participated in an implementation checklist interview to determine if they implemented CICO and the degree to which they implemented specific intervention components.

Analyses were conducted and interpreted to answer the following research questions: (a) Does a virtual PD in-service increase teachers’ CICO knowledge? (b) Do teachers implement
CICO after participating in a virtual PD in-service? and (c) What effects does weekly teleconsultation have on teachers’ implementation of CICO?

**Hypotheses**

It was hypothesized that teachers who participated in a virtual PD event about CICO would increase their CICO knowledge; that teachers who participated in a virtual PD about CICO without additional teleconsultation supports would have low rates of self-reported implementation; and that teachers who participated in a virtual PD and were provided with weekly teleconsultation would have higher rates of self-reported implementation of CICO compared to when they were not provided with weekly teleconsultation.
Chapter 3: Methodology

Overview

This chapter describes the methods that were used in the study. Information is provided on the participants, primary dependent variable, materials, interventionists, virtual CICO PD and teleconsultation procedures, experimental design, and data analysis procedures.

Participants

A virtual PD on CICO and teleconsultation support was provided to teachers who are employed in the District of Columbia Public School (DCPS) system at an urban elementary school in the southeast part of the District of Columbia.

Participants were selected to participate in this study using the following inclusion criteria. First, participants were currently employed by DCPS. Second, participants were licensed teachers in the District of Columbia who teach grades ranging from kindergarten through fifth grade. Third, the virtual PD opportunity was advertised via email to elementary school teachers within an elementary school in the DCPS system with a hyperlink to sign up for the PD. Those who indicated that they were interested in participating in the PD were contacted by this researcher to review expectations and explain informed consent. Finally, participants were selected contingent upon informed consent.

A total of five participants completed the pre-test, four of whom completed the pre-test and post-test. Three out of the five participants who completed the pre-test and three out of the four who completed the post-test also participated in weekly teleconsultation. Participants 1, 2, and 3 completed the pre-test, post-test, and participated in teleconsultation.
Participant 1 identified as an African American woman whose highest degree was a master’s degree, who taught first grade, and who has been teaching for over 10 years. Participant 1 implemented CICO with a seven-year-old African American male student in the first grade.

Participant 2 identified as an African American woman whose highest degree was a master’s degree, who taught fourth grade, and who has been teaching for six years. Participant 2 implemented CICO with a nine-year-old African American male student in the fourth grade.

Participant 3 identified as a White woman whose highest degree was a master’s degree, who taught kindergarten, and who has been teaching for two years. Participant 3 implemented CICO with a six-year-old African American male student in kindergarten.

**Primary Dependent Variables**

The primary dependent variables in this study were teachers’ acquisition of CICO knowledge and teachers’ implementation of CICO. CICO knowledge was measured using a pre-test and a post-test which teachers completed before and after participating in the virtual PD, respectively. The pre-test was administered to participants immediately before they attended the virtual CICO PD. One post-test was administered to participants immediately after they attended the virtual CICO PD.

Four weeks after the virtual CICO PD, participants were interviewed to determine whether they have or have not implemented CICO. An implementation checklist was used to determine which intervention components, as outlined in the virtual CICO PD, the participants reported as successfully implementing. After the first interview with participants, the implementation checklist was used during each subsequent consultation session to review which intervention components participants implemented.

**Materials**
Materials that were used for this study included access to a videoconferencing platform, internet access, and a device that supports videoconferencing and internet access. A virtual presentation was used to train participants on CICO and how to implement CICO using a videoconferencing platform (see Appendix A). The virtual presentation was created by the researcher conducting the study. Information about MTSS and Tier 2 interventions was gathered through a review of literature and summarized by the researcher for the virtual presentation. Research from Sonju et al., (2019), Stormont et al., (2012), and Wolfe et al. (2016) were the primary sources used to develop the presentation. The information about CICO’s origin and theoretical grounding was summarized by the researcher from research conducted by Campbell & Anderson (2008) and Swoszowski et al. (2012). The overview of CICO and the steps of the intervention was developed by the researcher from Crone et al. (2010).

A pre-test and two post-tests were needed to measure teachers’ acquisition of CICO knowledge and CICO implementation (see Appendix B). The pre-test and post-test were created by the researcher using the information that was included in the virtual PD PowerPoint presentation. Test items were created based on the information on MTSS and Tier 2 interventions, CICO origins, CICO overview, and CICO steps and were directly taken from the written information presented in the PowerPoint presentation.

Finally, an implementation checklist was used during each consultation session with participants to track changes in intervention components that they implemented (see Appendix C). The implementation checklist was created by the researcher based on the summarization of CICO steps and components as outlined by Crone et al. (2010), which were also summarized in the virtual PD presentation and the pre-test and post-test test items.

**Researcher and Participants**
The primary researcher for this study was a full-time doctoral student in school psychology who was a full-time school psychologist in the DCPS. The researcher has received previous training and coursework in behavioral interventions and has provided both consultation and teleconsultation services to teachers. The participants in the study were DCPS teachers at an elementary school in the southeast DC area.

**Intervention**

This study followed some of the procedures outlined for effective teacher training by Shapiro et al. (1999) and Sawka et al. (2002). First, a virtual CICO PD and teleconsultation was advertised to teachers within the elementary school. Then, teachers who agreed to the terms of the study, and who provided informed consent, were considered participants.

Immediately prior to the virtual CICO PD, participants were administered a pre-test. The goal of the pre-test was to measure how much knowledge participants already have about CICO and the implementation of CICO. After the pre-test, participants then participated in a virtual CICO PD, during which they were provided information about the components of CICO as well as guidance on how to implement it. Immediately following the virtual CICO PD, participants were administered a post-test to measure how much knowledge participants gained about CICO and the implementation of it.

Once participants participated in the virtual CICO PD and completed the pre-test and post-test, participants were asked to implement CICO with at least one student. Participants were expected to implement CICO using the information that was provided during the virtual CICO PD and were expected to implement CICO without additional consultation support.

Next, after approximately four weeks, participants received a follow-up interview during which the implementation checklist was used to quantify which components of CICO were
implemented. After participants were interviewed using the implementation checklist, participants continued to implement CICO with the identified student(s) and were offered weekly teleconsultation support to help support skills and concepts pertinent to CICO and to help implement CICO as outlined in the virtual PD. During each weekly consultation session, the implementation checklist was used to collect data on the intervention components implemented over time.

**Virtual CICO PD**

Information on CICO provided during the virtual PD and was primarily based on research by Crone et al. (2010). Participants were informed that students who were selected to participate in CICO would attend one morning check-in session and one afternoon check-out sessions five days per week. Furthermore, the virtual PD included information about the details of the morning check-in sessions and the afternoon check-out sessions. For example, during the morning check-in sessions participants learned that the CICO interventionist would (a) engage in a positive conversation with the student, (b) determine if the student is prepared for the day (e.g., has necessary materials for the day), (c) give the student a blank DPR, (d) review the behavioral expectations listed on the DPR, and (e) review the numerical goal for the day.

Next, participants were given information on how to use the DPR. Participants learned that interventionists would rate students’ behavior and provide feedback to the student about the rating that they received, throughout the day, and at the designated time points. Participants received information about how a CICO interventionist would provide positive verbal praise when students demonstrated the desired behavior listed on their DPRs and would provide constructive feedback when students did not demonstrate the desired behavior listed on their DPRs.
Finally, participants learned the essential components that were recommended to be completed during the afternoon check-out sessions. Participants learned that, at the end of the school day, the interventionists would meet with the students to complete the check-out session. Additionally, participants learned that during the check-out session, the interventionist and student would (a) add how many points the student earned, (b) determine if the student met their goal, and, if so, the reward that the student would like to receive, and (c) discuss any challenges that the student experienced during the day and briefly identify ways that the student could improve their behavior. Participants learned that Crone and colleagues (2010) recommended that numerical goals for CICO be achievable for students. Therefore, participants learned that students’ goals were recommended to be set at a 10% increase from the baseline level of DPR data. Lastly, participants learned what a CICO interventionist should do after a student meets their numerical goal on the DPR. They learned that, once a student has reached their goal, a new goal would be set at a 10% increase from the previous goal level of DPR data.

Pre-Intervention Procedure

Virtual CICO PD Contents

Prior to the implementation of CICO, the participants were trained on the following: (a) expectations of morning check-ins and afternoon check-outs, (b) using DPRs to objectively rate students’ behaviors, (c) providing students positive feedback and corrective feedback, and (d) collecting DPR data.

Research Design and Analysis

A pre- and post- test was administered immediately before and after the virtual PD, respectively. The number of correct responses was calculated and divided by the total number of questions to determine the percentage for both the pre- and post-tests completed by each of the
participants. The average score was calculated for the pre-test and was compared to the calculated average score on the post-test.

Next, after approximately four weeks from the date of the virtual PD, the participants were interviewed using the intervention checklist. The intervention checklist consisted of 14 items. Each participant was rated as to which elements of the CICO intervention they implemented after the virtual PD, which then was divided by the total number of items on the implementation checklist.

Finally, each of the participants were interviewed using the implementation checklist during the subsequent four weeks of weekly virtual consultation. The total number of CICO components implemented reported was calculated each week of virtual consultation for each participant. The total number of implemented components for each participant was divided by the total number of items/components on the implementation checklist to determine the percentage. The percentage of reported components implemented over time for each percentage was compared across all four weeks of virtual consultation to examine possible changes over time.
Chapter 4: Results

Pre-Test/Post-Test Results

Participants were administered a 10-question pre-test prior to their participation in the virtual CICO PD. A total of five participants completed the pre-test and the average score was 6.2 out of 10 possible points, or 62%. Immediately after the virtual CICO PD, participants were administered a 10-question post-test, which contained the same questions that were included on the pre-test. A total of four participants completed the post-test and the average score on the post-test was 8.5 out of 10 possible points, or 85%. Overall, the average score on the post-test was slightly higher than the score on the pre-test, which indicates that participants increased their knowledge on CICO after participating in the virtual CICO PD. Table 1 provides information on the percentage of correct responses on each of the 10 items on the pre-test and post-test. Overall, participants increased their correct responses on eight out of 10 items on the post-test.

Table 1

Comparison of Percentage of Correct Responses on Pre-Test and Post-Test Items

<table>
<thead>
<tr>
<th>Pre-Test and Post-Test Questions</th>
<th>Percentage of Correct Responses on Pre-Test</th>
<th>Percentage of Correct Responses on Post-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Of the following, which is not associated with Tier 2 interventions?</td>
<td>60%</td>
<td>50%</td>
</tr>
<tr>
<td>Select the correct order of the steps in the CICO cycle.</td>
<td>60%</td>
<td>100%</td>
</tr>
<tr>
<td>Research on the effects of CICO has been conducted in which of the following settings?</td>
<td>40%</td>
<td>100%</td>
</tr>
<tr>
<td>What is one component of the morning check-in?</td>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>During point feedback, which of the following is true?</td>
<td>60%</td>
<td>50%</td>
</tr>
<tr>
<td>Daily report cards provide students with:</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>At the end of the day, the CICO meets with the students for check-out and:</td>
<td>60%</td>
<td>100%</td>
</tr>
<tr>
<td>What is one function of the home component in CICO?</td>
<td>40%</td>
<td>100%</td>
</tr>
<tr>
<td>How are data collected during CICO?</td>
<td>60%</td>
<td>75%</td>
</tr>
<tr>
<td>What is the recommended goal to set for daily points on the report cards?</td>
<td>60%</td>
<td>75%</td>
</tr>
</tbody>
</table>
A total of three participants completed the pre-test and post-test and participated in teleconsultation sessions. The average pre-test scores of the three participants who engaged in all components of the study was 6 points out of 10 possible points, or 60%. The average post-test scores of the three participants who engaged in all components of the study was 8 points out of 10 possible points, or 80%.

**Participant 1**

On the pretest, Participant 1 answered the following items correctly: (a) Of the following, which is not associated with Tier 2 interventions, (b) Select the correct order of the steps in the CICO cycle, (c) What is one component of the morning check-in?, (d) During point feedback, which of the following is true?, (e) Daily report cards provide students with:, and (f) What is one function of the home component in CICO?. Participant one’s average score was six points out of 10 possible points, or 60%.

On the post-test, Participant 1 answered the following items correctly: (a) Of the following, which is not associated with Tier 2 interventions, (b) Research on the effects of CICO has been conducted in which of the following settings?, (c) Select the correct order of the steps in the CICO cycle, (d) What is one component of the morning check-in?, (e) Daily report cards provide students with:, (f) At the end of the day, the CICO mentor meets with the students for check out and:, (g) What is one function of the home component in CICO?, (h) How are data collected during CICO?, and (i) What is the recommended goal to set for daily points on the report cards?. Participant 1’s post-test average score was nine points out of 10 possible, or 90%. Overall, Participant 1’s performance on the post-test increased by 30% after engaging in the virtual PD presentation.

**Participant 2**
On the pre-test, Participant 2 answered the following items correctly: (a) Of the following, which is not associated with Tier 2 interventions?, (b) Research on the effects of CICO has been conducted in which of the following settings?, (c) What is one component of the morning check-in?, (d) During point feedback, which of the following is true?, (e) Daily report cards provide students with:, (f) At the end of the day, the CICO mentor meets with the students for check-out and:, (g) What is one function of the home component in CICO?, (h) How are data collected during CICO?, and (i) What is the recommended goal to set for daily points on the report cards?. Participant 2’s post-test average score was nine points out of 10, or 90%.

On the post-test, Participant 2 answered the following items correctly: (a) Research on the effects of CICO has been conducted in which of the following settings?, (b) Select the correct order of the steps in the CICO cycle, (c) What is one component of the morning check-in?, (d) During point feedback, which of the following is true?, (e) Daily report cards provide students with:, (f) At the end of the day, the CICO mentor meets with the students for check-out and:, (g) What is one function of the home component in CICO?, (h) How are data collected during CICO?, and (i) What is the recommended goal to set for daily points on the report cards?. Participant 2’s post-test average score was nine points out of 10, or 90%. Overall, Participant 2 maintained an average score of a 90%.

Participant 3

Participant 3 earned an average score of three points out of 10 possible points on the pre-test. Participant 3 correctly answered the following items on the pre-test: (a) Daily report cards provide students with:, (b) At the end of the day, the CICO mentor meets with the students for a check-out and:, and (c) What is the recommended goal to set for daily points on the report cards?.

50
Participant 3 earned an average score of six points out of 10 possible points, or 60%, on the post-test. Participant 3 correctly answered the following items: (a) Research on the effects of CICO has been conducted in which of the following settings?, (b) Select the correct order of the steps in the CICO cycle, (c) What is one component of the morning check-in?, (d) Daily report cards provide students with:, (e) At the end of the day, the CICO mentor meets with the students for check-out and; and (f) What is one function of the home component in CICO?. Overall, Participant 3 increased their score by 30% from pre-test to post-test.

**Implementation Checklist Results**

The implementation checklist was used to measure what components of CICO that participants reported that they implemented during each weekly teleconsultation session. Week one teleconsultation occurred four weeks after the virtual CICO PD. During the first teleconsultation session participants were interviewed using the implementation checklist to determine which components of CICO participants reported as being implemented based on the information that they were given via their participation in the virtual CICO PD. A total of three participants agreed to continue with the study after the virtual CICO PD.

The week one average of the implementation checklist items of the three participants was zero out of 14 possible points. The week two average of the implementation checklist items of the three participants equaled 8.6 out of 14 possible points. The week three average of the implementation checklist items of the three participants equaled 8.3 out of 14 possible points. The week four average of the implementation checklist items of the three participants equaled 8.6 out of 14 possible points. The Figure 1 provides a visual representation of the change in implementation checklist items over the four weeks of teleconsultation support.

**Figure 1**
Participant 1

Participant 1 implemented zero components of CICO, per the teleconsultation checklist, which was completed during the first teleconsultation session, four weeks after the virtual CICO PD. During the second week of teleconsultation sessions, Participant 1’s score on the teleconsultation checklist increased from zero to eight components. During week two, Participant 1 reported implementing the following components of CICO: (a) CICO mentor greets student and has a brief, positive interaction with them, (b) the CICO mentor asks the student if they have materials for the day (e.g., pencil, paper, etc.), (c) the CICO mentor assists the student in locating any missing materials, (d) the CICO mentor provides the student with their daily report card for the day, (e) the CICO mentor and the student review the listed behavioral expectations on the daily report card, (f) the CICO mentor and the student review the goal for the day, (g) behavior ratings are provided within each of the predetermined times, and (h) constructive feedback is provided to student whenever behavior rating is assigned.
During the third week of teleconsultation, Participant 1 reported seven components out of 14 on the implementation checklist. Participant 1 reported implementing the following components of CICO: (a) CICO mentor greets student and has a brief, positive interaction with them, (b) the CICO mentor asks the student if they have materials for the day (e.g., pencil, paper, etc.), (c) the CICO mentor assists the student in locating any missing materials, (d) the CICO mentor and the student have a brief conversation about the day, (e) the CICO mentor asks the student if there were any challenges that day and asks the student what they could do differently in the future, (f) the CICO mentor and the student identify any homework that needs to be completed, and (g) and the CICO mentor ends the check-out by giving the student verbal praise for their efforts.

During the fourth week of teleconsultation, Participant 1 reported eight components out of 14 on the implementation checklist. Participant 1 reported implementing the following components of CICO: (a) CICO mentor greets student and has a brief, positive interaction with them, (b) the CICO mentor asks the student if they have materials for the day (e.g., pencil, paper, etc.), (c) the CICO mentor assists the student in locating any missing materials, (d) the CICO mentor provides the student with their daily report card for the day, (e) the CICO mentor and the student have a brief conversation about the day, (f) the CICO mentor asks the student if there were any challenges that day and asks the student what they could do differently in the future, (g) the CICO mentor and the student identify any homework that needs to be completed, and (h) and the CICO mentor ends the check-out by giving the student verbal praise for their efforts.

**Participant 2**

Participant 2 implemented zero components of CICO, per the teleconsultation checklist, which was completed during the first teleconsultation session, four weeks after the virtual CICO
During the second week of teleconsultation support, Participant 2’s score on the implementation checklist increased from zero points to four points. Participant 2 reported implementing the following components of CICO: (a) CICO mentor greets student and has a brief, positive interaction with them, (b) CICO mentor asks the student if they have materials for the day (e.g., pencil, paper, etc.), (c) CICO mentor assists the student in locating any missing materials, and (d) CICO mentor and the student have a brief conversation about the day.

During the third week of teleconsultation support, Participant 3’s score on the implementation checklist decreased from four points to zero points, when the implementation checklist from week two was compared to the implementation checklist from week three.

Participant 2’s score on the implementation checklist increased from zero points during week three to four points during week four. Participant 2 reported implementing the following components of CICO: (a) CICO mentor greets student and has a brief, positive interaction with them, (b) CICO mentor asks the student if they have materials for the day (e.g., pencil, paper, etc.), (c) CICO mentor assists the student in locating any missing materials, and (d) CICO mentor and the student have a brief conversation about the day.

**Participant 3**

Participant 3 reported that zero out of 14 components of CICO was implemented during the first week of teleconsultation supports. Participant 3’s score on the implementation checklist increased from zero to 14 points during week 2. Participant 3 scored 14 out of 14 possible points during the third and fourth weeks of teleconsultation.

Participant 3 reported that the following CICO components were implemented during weeks two, three, and four: (a) CICO mentor greets student and has a brief, positive interaction with them, (b) CICO mentor asks the student if they have materials for the day (e.g., pencil,
paper, etc.), (c) CICO mentor assists the student in locating any missing materials, (d) CICO mentor provides the student with their daily report card for the day, (e) CICO mentor and the student review the listed behavioral expectations on the daily report card, (f) CICO mentor and student review the goal for the day, (g) behavior ratings are provided within each of the predetermined times, (h) constructive feedback is provided to student whenever behavior rating is assigned, (i) CICO mentor and student have a brief conversation about the day, (j) CICO mentor and student review the daily report card and add up the points earned, (k) CICO mentor asks the student if there were any challenges that day and asks the student what they could do differently in the future, (l) CICO mentor and student determine whether student has earned a reward, based on the numerical daily points earned, (m) CICO mentor and student identify any homework that needs to be completed, and (n) CICO mentor ends the check-out by giving the student verbal praise for their efforts.
Chapter 5: Discussion

Summary of Key Findings

The results of this study provided information about the utility of virtual PD and the effects of weekly teleconsultation on participants’ implementation of CICO. The interpretation and implication of the results of this study are discussed within this chapter. Additionally, limitations of the study and, as well as suggestions for future research, are included.

Research Questions

The purpose of the study was to answer the following questions (a) Does a virtual PD in-service increase teachers’ CICO knowledge? (b) Do teachers implement CICO after participating in a virtual PD in-service? and (c) What effects does weekly teleconsultation have on teachers’ implementation of CICO?

Research Question 1

Participants increased their scores on the post-test assessment after participating in the virtual CICO PD, when compared to their scores on the pre-test assessment. This suggests that participants in this study gained knowledge after attending a virtual CICO PD.

Research Question 2

At the conclusion of the virtual PD, participants were asked to implement CICO with at least one student. Participants did not implement CICO after they attended the virtual CICO PD. Participants were given four weeks to implement CICO independently, without support or consultation. Based on the first teleconsultation session, all three participants scored a zero out of 14 possible points on the implementation checklist.

Research Question 3

The CICO implementation checklist was used to measure the effect that teleconsultation had on participants’ implementation of CICO. All three participants’ scores on the
implementation checklists increased significantly from zero after one session of teleconsultation, which suggests that teleconsultation improved participants’ implementation of CICO. Participants’ average score on the implementation checklist after four weeks of teleconsultation was 8.6 out of 14 possible points. This suggested that participants, on average, were able to implement about eight components of CICO when teleconsultation was provided.

**Interpretation & Implications**

**Research Question 1**

The result of this study suggests that participants’ score on the post-test improved as compared to their score on the pre-test, which was consistent with what was hypothesized. The increase in scores from pre-test to post-test is consistent with previously conducted research about the effectiveness of PD among educators (Mayworm et al., 2016).

Overall, there was a total increase of 23% when the average pre-test and average post-test scores were compared. Consequently, it may be assumed that participants did retain most information and did attend to most information that was presented. It should also be noted that participants’ pre-test scores averaged 62%. This may indicate that participants were already somewhat familiar with CICO and had a background knowledge about the intervention.

Participants 1, 2, and 3 completed all aspects of the study. They increased their average score when the average pre-test and average post-test scores were compared.

The difference between average pre-test and post-test scores was 20%. Additionally, the following post-test items were answered correctly by Participants 1, 2, and 3: (1) Research on the effects of CICO has been conducted in which of the following settings?, (2) Select the correct order of the steps in the CICO cycle, (3) What is one component of the morning check-in?, (4) Daily report cards provide students with:, (5) At the end of the day, the CICO mentor meets with
the students for check-out and; and (6) What is one function of the home component in CICO?. This suggests that Participants 1, 2, and 3 increased their knowledge of the key features of CICO as presented in the virtual PD presentation. Participants’ increase in knowledge of the key features of CICO may have increased their success in implementing CICO and their participation in the teleconsultation sessions.

**Research Question 2**

It was hypothesized that participants would not successfully implement CICO without teleconsultation support. The results of this study confirmed this hypothesis. As previously noted, participants did not implement CICO for four weeks after attending the virtual PD session.

Previous PD research reflects that the application of knowledge and concepts presented during PD sessions are often lacking (Brock & Carter et al., 2017; Kraft et al., 2018). The results of this study are consistent with the previous PD research and suggest that virtual PD sessions have similar limitations as in-person PD sessions.

**Research Question 3**

One of the goals of this study was to determine the effect that teleconsultation had on participants’ implementation of CICO after they attended a virtual PD. It was hypothesized that participants who attended the virtual PD and participated in teleconsultation would implement CICO. Based on the findings of this study, there is evidence to suggest that teleconsultation assisted participants with implementing CICO. The average implementation checklist at week one was zero points as compared to the average implementation checklist at week four was about eight points. These findings are similar to previous research studies, which suggest that PD without ongoing support is ineffective when compared to PD paired with ongoing support (Hagermoser Sanetti et al., 2015; Johnson et al., 2018; Preast & Burns, 2019).
This study extends what was previously researched about the effects of PD by utilizing teleconferencing technology. There is ample evidence to suggest that in-person PD and support is beneficial for participants to implement and/or apply content knowledge. The research about the use of teleconferencing technology and teleconsultation following PD, however, is scant. The findings of this study suggest that teleconsultation improved participants’ implementation of CICO. Based on the results of the study, teleconsultation may be viewed as a promising technological practice for enhancing the implementation of CICO and may be useful in implementing other interventions as well.

Limitations

One of the major limitations of this study was that it was completed during the ongoing COVID-19 global pandemic. The pandemic and the local district guidelines regarding student and staff quarantine requirements interfered with this study. Staff who participated in the virtual CICO PD and teleconsultation reported a lack of CICO data due to student quarantine procedures. Additionally, staff who were exposed to CICO were required to isolate or quarantine, which limited their time in implementing CICO. The absences of staff and students may have impacted the effectiveness of CICO, as it was not implemented consistently by all participants.

The absences of students and staff during this study may have impacted the implementation of CICO. Because students and staff were required to quarantine for at least 10 days after an exposure to COVID-19, there may have been difficulty with staff developing a routine to consistently deliver key components of CICO. Additionally, if a staff member returned to school after an exposure to COVID-19, there was an increased probability that the student with whom they worked might be absent, which would have further delayed the establishment of
a routine to implement CICO. Additionally, due to some of the inconsistencies in staff and student attendance, there may not have been as much as a noticeable difference in student behavior than may have been observed had CICO been implemented consistently.

Another limitation of this study was the small number of participants. There were three consistent participants in this study, which clearly the limits the generalizability of the results.

This study was conducted within an urban district that serves primarily African American/Black students. The results of this study may be limited to other similar school districts rather than disparate or more heterogeneous school districts.

This study was conducted during the end of the school year. The time constraints associated with the ending of the school year may have limited the results of the study and the data that were gathered.

The pre-test/post-test questions that were used to measure participants’ knowledge before and after, respectively, the virtual PD included questions that were theoretically based rather than application based. For example, the questions “Of the following, which is not associated with Tier 2 interventions?” and “Research on the effects of CICO has been conducted in which of the following settings?” are two questions that do not directly measure participants’ knowledge about the implementation of CICO.

Finally, the implementation checklist was completed via self-report in a semi-structured interview with participants, rather than through direct observation by an independent observer, which limits the conclusions that may be drawn regarding actual implementation of intervention components.

**Future Research**
The utilization of teleconferencing technologies may be a domain that future research within the field of school psychology should prioritize. Within teleconferencing technologies, further research should be conducted on the effects of teleconsultation. Previous research on teleconsultation is lacking, but there is some evidence to suggest that teachers and school psychologists identified teleconsultation practices as being an acceptable practice (Fischer et al., 2016; Schultz et al., 2018).

Further research is needed to better address the issues addressed in the current study. For example, studies with more participants would be helpful, as would studies which examine treatment implementation and integrity through direct observation rather than teacher self-report. Although the current study involved the implementation of CICO, future research should examine the utility of virtual training and teleconsultation with other interventions. Further research about the utility of ongoing support, through the use of teleconferencing technologies, should also be explored to ensure that educators and school personnel are being provided with the opportunity to learn and develop skills throughout their careers.
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Appendix A

Virtual CICO PD
Check Out

At the end of the school day the CID master works with student.

Home Component

Check documents as they are completed and sign.

Return DPI

The following day the DFTs works with the CID manager in the morning.

Data collected from the DPIs are used to determine:

- 60% decrease in
- Increased learning
- Increased behaviors
- Effective techniques
- The student is engaged
- The student is more independent
- Their other educational
- Positive outcomes are seen

Contact

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Appendix B

Check-In/Check-Out (CICO) Pre-Test & Post-Test

Check-In/Check-Out (CICO) Pre-Test

This pre-test is intended to measure what you already know about CICO.

1. Please enter your name:
   a. Answer:

2. Of the following, which is NOT true about Tier 2 interventions? (1 point)
   a. Tier 2 interventions are recommended for “at-risk” students.
   b. Tier 2 interventions are usually individualized for each student.
   c. Tier 2 interventions are available throughout the school year.
   d. Tier 2 interventions can serve as a “diagnostic indicator.”

3. Research on the effects of CICO has been conducted in which of the following settings? (1 point)
   a. Students in the general education setting.
   b. Students in the special education setting.
   c. Students in alternative education settings.
   d. All of the above.

4. Select the correct order of the steps in the CICO cycle (1 point).
   a. Check-in, point feedback, check-out, home component, return daily report card.
   b. Return daily report card, check-in, check-out, point feedback, home component.
   c. Check-in, check-out, point feedback, home component, return daily report card.
   d. Home component, return daily report card, check-in, check-out, point feedback.

5. What is one component of the morning check-in? (1 point)
   a. CICO mentor calls student’s parent(s) to provide an update.
   b. CICO mentor limits interactions with students.
   c. CICO mentor reviews the goal on students’ daily report card.
   d. CICO mentor provides caregivers with their student’s daily report card.

6. During point feedback, which of the following is true? (1 point)
   a. Daily report cards are not carried throughout the day by students.
   b. Students’ behaviors are rated, at random, throughout the day.
   c. Daily report cards have a list of the behaviors students should NOT be engaging in.
   d. The criteria for behavior ratings are written on the top of each student’s daily report card.

7. Daily report cards provide students with: (1 point)
   a. Behavioral prompts.
   b. Visual reminder of their numerical goal.
   c. Constructive adult feedback.
   d. All of the above.

8. At the end of the day, the CICO meets with the students for check-out and: (1 point)
   a. Helps the students organize their work.
   b. Provide the students with a positive interaction.
   c. Reviews the parent signature on the daily report card.
d. None of the above.

9. What is one function of the home component in CICO? (1 point)
   a. Caregivers can recommend their student(s) to special education.
   b. Caregivers can review the behavior ratings and appropriately assign a punishment based on their prompts.
   c. Caregivers can review the behavior ratings and sign the daily report card to acknowledge they have reviewed it.
   d. Caregivers can post their students’ daily report card on the refrigerator as a reminder of how hard they worked.

10. How are data collected during CICO? (1 point)
    a. Interviews with teachers.
    b. Progress reports/report cards.
    c. Daily report card ratings.
    d. Testing.

11. What is the recommended goal to set for daily points on the report cards? (1 point)
    a. 60% of the total points.
    b. 80% of the total points.
    c. 100% of the total points.
    d. 25% of the total points.
Check-In/Check-Out (CICO) Post-Test

This post-test is intended to measure what you have learned from the virtual training.

1. Please enter your name:
   a. Answer:

2. Of the following, which is not associated with Tier 2 interventions? (1 point)
   a. Tier 2 interventions are recommended for “at-risk” students.
   b. Tier 2 interventions are usually individualized for each student.
   c. Tier 2 interventions are available throughout the school year.
   d. Tier 2 interventions can serve as a “diagnostic indicator.”

3. Research on the effects of CICO has been conducted in which of the following settings? (1 point)
   a. Students in the general education setting.
   b. Students in the special education setting.
   c. Students in alternative education settings.
   d. All of the above.

4. Select the correct order of the steps in the CICO cycle (1 point).
   a. Check-in, point feedback, check-out, home component, return daily report card.
   b. Return daily report card, check-in, check-out, point feedback, home component.
   c. Check-in, check-out, point feedback, home component, return daily report card.
   d. Home component, return daily report card, check-in, check-out, point feedback.

5. What is one component of the morning check-in? (1 point)
   a. CICO mentor calls student’s parent(s) to provide an update.
   b. CICO mentor limits interactions with students.
   c. CICO mentor reviews the goal on students’ daily report card.
   d. CICO mentor provides caregivers with their student’s daily report card.

6. During point feedback, which of the following is true? (1 point)
   a. Daily report cards are not carried throughout the day by students.
   b. Students’ behaviors are rated, at random, throughout the day.
   c. Daily report cards have a list of the behaviors students should NOT be engaging in.
   d. The criteria for behavior ratings are written on the top of each student’s daily report card.

7. Daily report cards provide students with: (1 point)
   a. Behavioral prompts.
   b. Visual reminder of their numerical goal.
   c. Constructive adult feedback.
   d. All of the above.

8. At the end of the day, the CICO meets with the students for check-out and: (1 point)
   a. Helps the students organize their work.
   b. Provide the students with a positive interaction.
   c. Reviews the parent signature on the daily report card.
   d. None of the above.

9. What is one function of the home component in CICO? (1 point)
   a. Caregivers can recommend their student(s) to special education.
b. Caregivers can review the behavior ratings and appropriately assign a punishment based on their prompts.

c. Caregivers can review the behavior ratings and sign the daily report card to acknowledge they have reviewed it.

d. Caregivers can post their students’ daily report card on the refrigerator as a reminder of how hard they worked.

10. How are data collected during CICO? (1 point)
   a. Interviews with teachers.
   b. Progress reports/report cards.
   c. Daily report card ratings.
   d. Testing.

11. What is the recommended goal to set for daily points on the report cards? (1 point)
   a. 60% of the total points.
   b. 80% of the total points.
   c. 100% of the total points.
   d. 25% of the total points.
## Appendix C

### Implementation Checklist

**CICO Implementation Checklist**

Name:  
Date:  

<table>
<thead>
<tr>
<th>Morning Check-In</th>
<th>Intervention Component</th>
<th>Completed?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CICO mentor greets student and has a brief, positive interaction with them.</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>The CICO mentor asks the student if they have materials for the day (e.g., pencil, paper, etc.).</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>The CICO mentor assists the student in locating any missing materials.</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>The CICO mentor provides the student with their daily report card for the day.</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>The CICO mentor and the student review the listed behavioral expectations on the daily report card.</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>The CICO mentor and the student review the goal for the day.</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Point Feedback</td>
<td>Teacher provides behavior ratings within each of the predetermined times.</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>Teacher provides constructive feedback to student whenever behavior rating is assigned.</td>
<td>Yes/No</td>
</tr>
</tbody>
</table>
**Afternoon Check-Out**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes/No</th>
<th>Notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The CICO mentor and the student have a brief conversation about the day.</td>
<td></td>
<td>Total Number of Yes= 14</td>
</tr>
<tr>
<td>The CICO mentor and the student review the daily report card and add up the points earned.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The CICO mentor asks the student if there were any challenges that day and asks the student what they could do differently in the future.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The CICO mentor and the student determine whether the student has earned a reward, based on the numerical daily points earned.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The CICO mentor and the student identify any homework that needs to be completed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The CICO mentor ends the check-out by giving the student verbal praise for their efforts.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Number of Criteria = 14