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INTEGRATED BEHAVIORAL-HEALTH SUPPORTS:

COMBINING PBIS AND SEL AT TIER 2

by

Thomas K. Franzmann

A thesis defense submitted in partial fulfillment
of the requirements for the degree

of

MASTERS OF SCIENCE

in

Psychology

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2023

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ABSTRACT

INTEGRATED BEHAVIORAL-HEALTH SUPPORTS: COMBINING PBIS AND SEL
AT TIER 2

by

Thomas Franzmann, Master of Science

Utah State University, 2023

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Department: Psychology

Externalizing behavior problems present many difficulties for youth, families, and schools. Schools have adopted various frameworks of prevention and intervention meant to assist with such concerns. Two widely used frameworks for addressing externalizing problems in schools are Positive Behavioral Interventions and Supports (PBIS) and Social-Emotional Learning (SEL). Theoretically, integrating such frameworks should help to maximize protective factors and minimize risk-factors for youth in school. While some research supports this hypothesis, no research has been conducted to examine this for youth displaying externalizing behavior problems at the tier 2 level of service delivery.

The current study sought to examine the effectiveness of an integrated approach (PBIS + SEL) at tier 2 with youth exhibiting externalizing behavioral concerns using single-case experimental design. This was done using a common PBIS intervention, check-in/check-out (CICO), in conjunction with a common SEL intervention, mindful breathing.

Results suggest that both CICO and CICO + mindful breathing (CICO + MB) may be effective strategies for reducing externalizing as well as internalizing behavior problems in youth. Furthermore, results suggest that the mindful breathing component may add additional value in this endeavor compared to CICO alone. Future research should further investigate this value-added effect for both externalizing and internalizing concerns.

(79 pages)

PUBLIC ABSTRACT

INTEGRATED BEHAVIORAL-HEALTH SUPPORTS: COMBINING PBIS AND SEL
AT TIER 2

Thomas Franzmann

Childhood behavior problems present many challenges for youth, families, and schools. To assist in preventing and reducing such problems, schools have adopted various strategies to assist with such concerns. Two widely used strategies for addressing problem behavior in schools are Positive Behavioral Interventions and Supports (PBIS) and Social-Emotional Learning (SEL). While both have a plethora of evidence of their effectiveness independently, less is known as to whether they can complement one another for even better outcomes. The current study examined the effectiveness of an integrated approach (PBIS + SEL) to classroom intervention for elementary school students exhibiting behavior problems. This was done by using two commonly used interventions in schools, Check-In/Check-Out (CICO; PBIS) and mindful breathing (MB; SEL). Results showed a small value-added effect when both interventions were used together as opposed to using CICO only. Furthermore, this appeared to reduce behavior problems as well as anxious and depressive symptoms in several youth as well. These findings raise questions for advancing research into the value of integrated behavioral-health interventions in schools.

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CHAPTER I

INTRODUCTION

Externalizing behavior problems describe outer-directed behavior that generates conflict and discomfort in the surrounding environment (Forns et al., 2011). This is in contrast to internalizing behavior problems which are characterized as inner-directed, and referring to problems that generate unease, tension, and suffering in the individual (Forns et al., 2011). Common diagnostic subcategories of externalizing problems are conduct disorder (CD), oppositional defiant disorder (ODD), and attention-deficit/hyperactivity disorder (ADHD; Forns et al., 2011). Analysis of 2016 data from the National Survey of Children's Health (NSCH) suggests that approximately 7.4% of youth, ages 3–17, had current externalizing behavior problems (Ghandour et al., 2019). Other research suggests that ODD has a lifetime prevalence of up to 11% (Graham, 2018), CD affects about 3% of youth (Fairchild et al., 2019), and ADHD affects about 4% of children and adolescents (Mohammadi et al., 2019).

Outcome studies suggest that youth who experience externalizing issues are at a higher risk for arrest convictions; have lower life satisfaction; experience increased suicide attempts, self-harm, substance abuse, weight gain, social isolation; and have heightened chances of becoming a parent by the age of 18 (Wertz et al., 2018). Within childhood, many other issues have been shown to be associated with externalizing behavior. Youth with externalizing problems often experience lower academic achievement and competence (Moilanen, et al., 2010; Weeks et al., 2016), and many struggle in reading compared to their peers (Kremer, Flower, Huang, & Vaughn, 2016). Furthermore, externalizing problems often cascade, contributing to later internalizing

problems (e.g., depressive and/or anxious behaviors) and worsening academic issues in adolescence and adulthood (Masten et al., 2005; Moilanen et al., 2010; Weeks et al., 2016).

Considering the national prevalence of youth with at least 1 mental health disorder is 16.5% (Whitney & Peterson, 2019) and 58% of youth who received services accessed them in an educational setting (Ali et al., 2018), it is vital that educational professionals do what they can to increase protective factors and address externalizing problems within the context of the school environment. Currently, there are several prevention and intervention frameworks that are utilized in schools to address such issues. Two of the most popular frameworks are Positive Behavioral Interventions and Supports (PBIS) and Social-Emotional Learning (SEL). While both PBIS and SEL have an evidence base that supports their use independently, less is known about the effects of integrating these frameworks on youth outcomes in schools. To date, there is some evidence to suggest that integrated prevention may yield more improvement in externalizing behavior than either PBIS or SEL separately. Yet no study has yet to test an integrated approach to intervening with externalizing problems at Tier 2. The purpose of the present study was to empirically test whether there is value added in an integrated intervention approach (PBIS + SEL) at Tier 2 for addressing student externalizing problems, using CICO, which is a well-established classroom-based behavioral intervention, in conjunction with mindful breathing, which can be distilled into brief pre-recorded exercises that seem feasible for classroom implementation. Following are the research questions that guided this study:

1. Is there a functional relationship between CICO and reductions in student externalizing behavior?
2. Is CICO + mindful breathing (CICO + MB) more effective than CICO alone for reducing student externalizing behavior?
3. How socially valid is CICO for school staff?
4. How socially valid is CICO + MB for school staff?

CHAPTER II

REVIEW OF THE LITERATURE

Prevention and Intervention Frameworks

Positive Behavioral Interventions and Supports

Prevention and intervention research over the last few decades have provided schools with different approaches to supporting mental and behavioral health in schools. One approach, currently implemented in over 23,000 schools, is PBIS (Gage et al., 2018). PBIS is a three-tiered framework grounded in the behavioral tradition. It focuses on altering the school environment to prevent problem behavior from occurring through a continuum of evidence-based supports aligned with student needs (Bradshaw et al., 2008; Noltemeyer et al., 2018). Tier 1 consists of school-wide supports available to all students and is typically sufficiently effective for 80–90% of the student body. In other words, Tier 1 supposes that all students will receive a baseline of services and 80–90% will respond positively and not require additional assistance. For those not responding at the Tier 1 level (10–15%), targeted Tier 2 supports are put in place. This can be seen as an extension of Tier 1 supports, where those selected receive extra time/instruction on top of what they are already receiving in hopes of remediating the issue in the least intrusive way. The students that are still not responding well at Tier 2 support (1–5%) are provided supports at the Tier 3 level, which are intensive and individualized (Brown-Chidsey & Steege, 2010).

PBIS assumes that schools are most effective when they provide a safe, predictable, consistent, and supportive environment for supporting student behavior, in addition to delivering high quality teaching practices (Horner & Macaya, 2018). The

implementation of PBIS over time has shown to be beneficial for affecting a variety of outcomes, such as reduction in problematic behavior, improved social behavior and academic achievement, reduction in staff turnover, increased school attendance, reduction in student suspensions, and overall improvements in positive perceptions of school safety and climate for both students and staff (Horner & Macaya, 2018; Gage et al., 2018; Noltemeyer et al., 2018). In one randomized controlled trial (RCT), schools implementing PBIS displayed lower levels of disruptive behavior problems in comparison to controls (Bradshaw et al., 2012). Overall, evidence suggests that PBIS is a worthwhile approach for preventing and intervening with students' externalizing issues.

Social-Emotional Learning

Another commonly adopted approach to address behavioral health in schools is SEL. SEL is an intervention and prevention framework commonly guided by five interrelated cognitive, affective, and behavioral competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (Durlak et al., 2011). It focuses on the acquisition of skills to manage emotions, set and achieve goals, take others' perspectives, create positive relationships, make responsible decisions, and constructively handle interpersonal difficulties (Durlak et al., 2011). SEL assumes that by fostering these skills and competencies in schools, students will exhibit higher rates of prosocial behavior, more academic success, fewer behavioral problems, and less emotional distress (Taylor et al, 2017). Portnow et al. (2018) specifically looked at a classroom-based combined SEL and literacy program (4Rs) in relation to aggressive behavior among 531 third-fifth grade students across 35 different classrooms. Their results suggested that the intervention was successful in reducing teacher-reported

aggressive behavior (i.e. externalizing problems; Portnow et al., 2018). The implementation of SEL programs have shown to be effective for improving multiple outcomes, such as positive attitudes, positive social behavior, improved academic performance, increased high school graduation rates and college attendance, reductions in arrests and problematic behavior, and lower rates of internalizing problems (Durlak et al., 2011; Taylor et al., 2017). Additionally, meta-analyses show that many of these improvements were maintained for at least 6 months after intervention and were beneficial for students from diverse demographics to similar extents (Taylor et al., 2017).

Integrated Prevention

Domitrovich et al. (2010) argued that an integrated prevention program (i.e., PBIS + SEL) could have a greater impact on student outcomes in comparison to school programming that focused on only one or the other framework (i.e., PBIS vs. SEL). Such an integration may occur both horizontally (i.e., occurring within tiers) and vertically (i.e. between tiers; Domitrovich et al., 2010). By integrating approaches both horizontally and vertically, educational professionals have the ability to target a greater number of protective factors as well as risk factors at various levels of service delivery (Domitrovich et al., 2010). It is important to note, however, that an integrated model is not simply the sum of two parts, but rather a blending of overlapping prevention components and combination of potentially unique elements to maximize the mechanisms of change within each model (Domitrovich et al., 2010). Theoretically, this would translate to better outcomes for youth exhibiting externalizing behavior problems, as risk factors would be lowered, and protective factors would increase. While the proposed mechanisms of change are different in PBIS and SEL, both appear to provide a host of benefits to

students. Additionally, the limitations of one approach appear to be the strengths of the other, providing a rationale for the usefulness of a combined approach.

PBIS works to alter the environmental context of the school to increase prosocial behavior and prevent problematic behavior from occurring in the first place (Bradshaw et al., 2008; Noltemeyer et al., 2018). While this is a useful approach, it is not without limitations. If the environmental changes are not constantly maintained, there is no guarantee that the desirable behavior change will be preserved, especially if this results in unwanted behaviors being indirectly or accidentally reinforced. As such, a limitation of the PBIS approach is that it relies heavily on school staff to implement and maintain protocols with consistency. Moreover, PBIS does not teach students specific regulatory skills to deal with difficult thoughts and feelings (i.e., private events). While PBIS does emphasize skill instruction, the skills taught through PBIS (e.g. social skills, organizational skills, etc.) primarily consist of ways of interacting with the outside environment, whereas self-regulation teaches skills for behaving within one's inner environment. The third-wave behavior therapy movement, which has a focus on both overt and private behavior and their relationship for promoting positive mental health outcomes (c.f. Hayes & Hofmann, 2017), acknowledges the importance of both environmental regulation and self-regulation and employs strategies from both approaches to promote behavior change (e.g., acceptance and commitment therapy; see Harris 2006, dialectical behavior therapy; see Rizvi et al., 2013). That said, traditional PBIS works from a first-wave behavior therapy approach, which is primarily focused with overt behavior. This heavy focus on overt, observable behavior ignores the influence that powerful thoughts and feelings may have on behavior.

In contrast, SEL focuses on the acquisition of skills to build a variety of intrapersonal competencies. SEL teaches students specific self-regulation skills that are usable across contexts but lacks the systematic structure of PBIS (i.e., graduated supports) and the subsequent targeted classroom intervention strategies associated with the framework. Without establishing supports that regulate the environment, SEL may therefore permit a continuation of problem behavior despite the acquisition of useful self-regulatory skills. Such an example would be a case where a student can do what is expected but does not due to the environment not adequately reinforcing that behavioral response (i.e. won't do rather than can't do; c.f. VanDerHeyden & Witt, 2007) . In this case, the addition of consistent cues, prompts, and differential reinforcement that come with PBIS should, theoretically, increase the likelihood that self-regulatory skills would be effectively and consistently used by the student.

Thus, the limitations of PBIS can be considered the strength of SEL, and vice versa. If educational professionals are attempting to maximize behavior change, then they may do so more effectively by teaching youth self-regulatory skills in addition to modifying the environment in a way that helps promote prosocial behavior. In turn, this should promote better outcomes for students. One example of such an integrated approach is offered by Domitrovich et al. (2010). The authors took the Good Behavior Game (GBG), a common Tier 1 PBIS intervention, and the PATHS program, which is a Tier 1 teacher taught SEL curriculum, and integrated the two. This was theorized to allow for an efficient means of managing and shaping student behavior via differential reinforcement (PBIS) that also allowed for the acquisition of self-regulatory skills.

Additionally, the GBG was hypothesized to provide an avenue for these behaviors to be continually reinforced, not only by teachers, but also by peers.

Cook et al. (2015) tested a similar integrated approach at Tier 1. For this study, there were four conditions: (1) SEL only, (2) PBIS only, (3) PBIS + SEL, (4) and a control condition (i.e. business as usual). SEL consisted of a curriculum that focused on teaching skills such as emotional management, empathy, self-regulation, interpersonal problem-solving, and future orientation (Cook et al., 2015). The specific curricula used was *Strong Kids* (Merrell et al., 2007). PBIS was operationalized as a proactive classroom management, which consisted of a model of teaching, modeling, cueing, and reinforcing observable behaviors while developing a system to systematically respond to problem behavior (Cook et al., 2015). The specific model was adapted from the BEST Behavior approach to PBIS (Sprague & Golly, 2004). Conditions were assigned using a matched quasi-randomized design. The result consisted of groups that did not differ statistically on baseline measures of internalizing and externalizing behaviors. For teachers in the combined condition (PBIS + SEL), they received training on the distinctiveness of each approach and how they complement one another. For example, the teachers received training on how to use cueing and reinforcement (PBIS) to promote the acquisition and maintenance of SEL skills (Cook et al., 2015). Results from the study showed that while both PBIS and SEL worked well independently, the combined approach produced the most significant improvements in overall mental health and reductions in problematic externalizing behavior.

The current study will continue in this area of inquiry but at the Tier 2 or targeted level of intervention. More specifically, this study will examine the functional

relationship of a widely used Tier 2 PBIS intervention, Check-in/Check-out (CICO), and a subtype of SEL intervention, mindful breathing, on students externalizing behavior concerns.

Tier 2 Approaches to Supporting Externalizing Problems

PBIS at Tier 2: Check-In, Check-Out

Within the PBIS framework, Tier 2 consists of targeted intervention efforts that may occur directly in the classroom or outside the classroom via pullout services. Classroom services primarily consist of teaching, cueing, and reinforcing desired responses while avoiding reinforcement of disruptive behavior. Pullout services primarily consist of direct skill instruction groups (e.g., social skills groups). One of the most widely used, classroom-based Tier 2 behavioral intervention packages is CICO (Hawken et al., 2014). CICO focuses on antecedent strategies, frequent positive and corrective feedback, as well as positive reinforcement to address problematic behavior (Bundock et al., 2019). Five core components are integral to the success of CICO: (a) daily check-in meeting with an adult, (b) the use of a daily progress report (DPR), (c) the target student carrying the DPR throughout the day to assist in monitoring behavior, (d) teacher(s) providing feedback on DPR regarding the student's behavior at predetermined intervals, and (e) home-school communication via DPR (Klingbeil et al., 2018).

CICO has been shown to decrease problem behaviors, assist in the reduction of office discipline referrals (ODRs), and increase appropriate classroom behavior (Hawken et al., 2014; Majeika et al., 2019; Todd et al., 2008). Research suggests that CICO is effective for 72% of students who receive it (Bundock et al., 2019). Additionally, it is a useful school-based intervention as it is consistent with the schoolwide behavioral

expectations established at Tier 1 (e.g., safe, respectful, responsible), it is quick and continuously available, flexible enough to support functional modifications, and teachers view it as easy to implement (Todd et al., 2008; Wolfe et al., 2015). CICO has been shown to be most effective with youth showing externalizing behavioral challenges. Currently, it is considered an evidence-based practice (EBP) for students whose problematic behavior is maintained by adult attention. Adapted versions of CICO may be beneficial for other behavioral functions (e.g., escape-maintained behavior), but these findings are mixed and require additional replications before CICO can be considered an EBP for other purposes (Bundock et al., 2019; Klingbeil et al., 2018; Maggin et al., 2015; Todd et al., 2008; Wolfe et al., 2015).

In its traditional Tier 2 form, CICO consists of the student meeting with a designated school staff member (e.g., school counselor) each morning to check-in. During check-in, the staff member reviews the 3-5 schoolwide expectations, provides a criterion-based performance goal tied to a reinforcer, and provides a DPR to the student (Wolfe et al., 2016). Throughout the day, the student receives frequent feedback from their teacher(s), typically after each subject period, in the form of points and direct instruction regarding how their behavior mapped onto expectations outline in the DPR. At the end of the school day, the student checks-out by reviewing their DPR with their designated staff member, who recognizes the student's accomplishments and delivers the previously agreed upon reinforcer (if the student met the goal). If the student does not meet their daily goal, the reinforcer is not provided and instead the staff member reminds them they will have another chance tomorrow. Afterwards, the student takes the DPR home to be signed by a caregiver and returned the following day (Wolfe et al., 2016). The

procedure then repeats the next day, and so on. The CICO process provides a structured approach for frequent feedback as well as increased opportunities for positive interactions with adults, which works to increase classroom engagement and reduce problem behaviors (Wolfe et al., 2016).

SEL at Tier 2: Mindful Breathing

SEL at Tier 2 is typically conducted within the context of pullout services. Similar to social skills groups, a small group of students is taken out of the general education for a brief period of time for direct SEL instruction targeting self-regulation skills. These services are often provided outside the classroom and are less likely to be integrated into the classroom environment. The benefit to this approach is that the students are pulled away to a less distracting area where they are provided more hands-on attention with developing and practicing the associated skills. The downside to this approach is that students are being pulled away from the general education setting, which often results in lost instructional time, a concern for many teachers and school administrators. This loss of instruction may potentially be overcome, however, by targeting pivotal self-regulation skills that could be extracted out of already existing SEL packages. These would then be taught and supported in the classroom by teachers. One such self-regulation skill that is amenable to this approach is mindfulness.

Mindfulness-based intervention (MBI) and subsequently mindful breathing can be considered a subtype of SEL intervention as it targets two of the five SEL competencies (i.e., self-awareness and self-management) outlined by the Collaborative for Academic, Social, and Emotional Learning (CASEL; Klingbeil et al., 2017). Within the mindfulness literature, researchers have identified two components present throughout all definitions

of mindfulness: (1) *present moment awareness* (PMA) or the self-regulation of attention so that it is maintained on immediate experience (2) and *responding with acceptance* (RWA) or adopting an orientation towards one's experiences in the present moment that is curious, open, and accepting (Bishop et al., 2004; Renshaw 2020). That said, MBIs more specifically can be defined as “any treatment that intentionally trains mindfulness skills (i.e. present moment awareness and responding with acceptance) as the core therapeutic component for reducing problem behavior or increasing wellbeing” (Klingbeil et al., 2017).

Other research found that after an 8-week MBI, adolescents classified under the DSM-IV classification of ADHD showed significant reductions in problematic behavior at the 16-week follow-up period (van de Weijer-Bergsma et al., 2011). Meta-analyses of group-design studies on MBIs with youth have found small positive treatment effects across a variety of domains for both controlled and pre-post designs, including positive outcomes on academic achievement, externalizing and internalizing problems, prosocial behavior, positive emotions and self-appraisal, and physical health (e.g., Klingbeil et al., 2017). Furthermore, these effects were similar in both clinical and school settings (Klingbeil et al., 2017). Importantly, MBI with youth are effective for reducing externalizing behavior problems. One meta-analysis looking at single-case experimental designs indicated that MBIs have an average medium effect size on reducing disruptive behavior (i.e., physical aggression, request compliance, on-task classroom behavior; Klingbeil et al., 2016). Additionally, a recent meta-analysis on the effects of mindfulness-based therapies (MBT) on youth with ADHD indicated that mindfulness is effective in reducing the core symptoms of ADHD (i.e., hyperactivity and impulsivity; Cairncross &

Miller, 2020). An RCT conducted by Franco and colleagues (2016) also suggested that MBIs may produce significant reductions in impulsivity and aggressiveness in adolescent youth. Taken together, there is promising evidence to suggest that mindfulness training may be beneficial as a targeted (Tier 2) school-based intervention approach for reducing youth externalizing behavior concerns.

A key consideration at Tier 2 is that intervention is meant to be highly efficient and easily accessible (Mcdaniel et al., 2015). A key benefit of MBIs for schools is that they require few resources. Mindfulness practices have been implemented easily as group-based interventions within the general education classroom (Felter et al., 2015). There are scripts found in SEL curricula such as *Merrell's Strong Kids* (Merrell et al., 2007) and free to use protocols such as the *Soles on the Feet* intervention (Singh et al., 2003). There are free audio recordings available online for guiding mindfulness training exercises, such as those provided by the UCLA Mindfulness Awareness Research Center (2020), and a plethora of apps with mindfulness-based activities available via the Apple App Store and Google Play store, many of which offer free content. In the recent past, the app Calm (<https://www.calm.com>) implemented their Calm Schools initiative, which allowed free access to their application and all its content to interested schools (<https://www.calm.com/schools>). Beyond the potentially low financial cost, the availability of pre-recorded audio and written scripts give MBI the potential to be implemented with high degrees of fidelity. Considering all of these factors, mindfulness may be a useful SEL skill that is feasible to implement within the context of schools at Tier 2.

Purpose of the Current Study

The purpose of the current study was to empirically test whether there is value added in an integrated intervention approach (PBIS + SEL) at tier 2 for addressing student externalizing problems, using CICO, which is a well-established classroom-based behavioral intervention, in conjunction with mindful breathing, which can be distilled into brief pre-recorded exercises that seem feasible for classroom implementation.

The following research questions guided this study:

1. Is there a functional relationship between CICO and reductions in student externalizing behavior?
2. Is CICO + mindful breathing (CICO + MB) more effective than CICO alone for reducing student externalizing behavior?
3. How socially valid is CICO for school staff?
4. How socially valid is CICO + MB for school staff?

To answer these questions, we utilized a single-case experimental design consisting of an ABC design nested within a non-current multiple baseline design with four students nominated as exhibiting externalizing behavior problems at school. CICO was implemented in its standard format utilizing the school's Tier 1 behavior expectations as target behaviors. The mindful breathing component was a standardized, audio-recorded exercise of mindful breathing created by the author for youth populations. Daily behavior data was collected using the DPR as a part of CICO. Additionally, student and teacher reports of internalizing and externalizing behavior concerns were measured as the start and end of each phase. Based on the

theory by Domitrovich et al. (2010), we hypothesized that such an integrated approach would maximize protective factors producing a value added effect.

CHAPTER III

METHOD

Recruitment and Participants

Four general education students and four general education teachers in grades fourth through fifth at a single elementary school in northern Utah participated in this study. Additionally, three school staff members (two school counselors and one administrator) participated as positive adult mentors. By using only one school, Tier 1 supports remained consistent across participants. Teachers were selected for participation due to meeting the following criteria: (a) consent to involvement, (b) participate in a training for implementing the intervention strategies consisting of a tell, show, do, and review process, and (c) be a teacher for third, fourth, or fifth grade. Once teachers were selected, they nominated three students in their classes, rank-ordered based on perceived level of externalizing behavioral concern (Walker & Severson, 1992). The student nominated as the highest externalizing risk, was chosen and moved to the next stage. In two cases, the top nominated students did not meet subsequent inclusion criteria, the research team moved onto the next student nominated. Students were selected for participation due to meeting the following criteria: (a) have been nominated by their teacher for externalizing concerns, (b) have a perceived attendance history of 80% or greater by the classroom teacher, (c) caregiver consent, and (d) have assented to the process. Two students from each grade level were chosen, with only one per classroom. None of the participants were receiving services through a 504 plan or an individualized education plan (IEP). Adult mentors were recruited using the following criteria: (a) consent to participate, (b) availability at the beginning and end of the school day, (c) a

lack of involvement in punishment procedures for the selected students, and (d) participate in a training for the outlined intervention strategies.

Austen's teacher was a Caucasian female who had a bachelor's degree in education. She had taught for many years over 10 years ago but recently returned to teaching during the COVID-19 pandemic. Austen was nominated due to frequent off-task behavior such as talking with other students during instruction.

Sarah's teacher was a Caucasian female who had a master's degree in education and had been teaching general education for over five years. Sarah was a Caucasian female in the fifth grade. She was nominated due to consistent off-task behavior and inattention.

Kristine's teacher was a Caucasian female who had a bachelor's degree in education and was an early career general education teacher. Kristine was a Caucasian female in the fourth grade. She was nominated due to frequent off-task behavior, clutter in and around her desk, and blurting out in class.

Tim's teacher was a Caucasian female who had a bachelor's degree in education and was in her first year of teaching. Tim was a Caucasian male in the fourth grade. He was nominated due to frequent problems with blurting out in class, staying in his seat, staying on-task, using kind words with others, distracting other students, and constant clutter in and around his desk. Tim had a medical diagnosis of attention-deficit/hyperactivity disorder (ADHD) and was receiving medication at the time of the nomination and throughout the study.

The adult mentors facilitating the check-in and check-out processes consisted of two part-time school counselors and one school administrator (principal). Due to the part-

time nature of their role, but interest in facilitating the intervention for their school, the check-in/out process was divided between multiple participants for each student. Having multiple facilitators is not novel to this study and has been documented in the CICO literature (cf. Swoszowski et al., 2012, Hawkin et al., 2014). Both school counselors were Caucasian females who had a master's degree in school counseling. They had both been a school counselor for over five years and served as the school counselor for this site for multiple years. The principal of the school was a Caucasian female who had a master's degree in educational leadership and administration. She had worked for the district for over ten years and had been a principal at this site for four years. Furthermore, it was verified that she had no previous history of punishment procedures with the selected youth. School counselor A checked-in with the identified students on Monday, Tuesday, and Wednesdays and checked-out with them on Mondays and Tuesdays. School counselor B checked-in and out with students on Thursdays and Fridays. The school principal checked-out with students on Wednesdays due to the unavailability of either school counselor.

Measures

Daily Progress Report

Each participants' behavior was measured throughout the day, on a daily basis, using the DPR. The DPR is a built-in progress monitoring component within CICO and allows school personnel to easily track socially appropriate behavior to determine if the intervention is working, or not (Hawken et al., 2021). It is considered a standard element for providing assessment and feedback within the intervention. While the DPR measures prosocial behavior (e.g., tier 1 expectations) and not externalizing problem directly, it is

conceptually assumed that it measures behaviors that are considered positive opposites (i.e., incompatible behaviors) of externalizing problems. For example, if a student is engaging in on-task behavior, logic would assume that they are not engaging in disruptive behavior.

The DPR was completed by each student participant's teacher at regularly scheduled intervals during the day. Each teacher chose five to six intervals (i.e., class periods) that they thought the student struggled most in. These intervals were commonly 45-minutes long but varied student to student ranging 15-minutes to 45-minutes, depending on teacher preference. For instance, for one student, the teacher identified morning work as a difficult period. This interval was only 15-minutes in length but was deemed socially significant by the implementer. For another student, a 30-minute science window was selected. However, most intervals covered a core class period (e.g., math, reading, writing, etc.) and thus were closer to 45-minutes in length.

The DPR for each interval measured the Tier 1 behavior expectations of the selected school. These behaviors were standardized across all participants and consisted of the following behaviors: (a) Helping others with no strings attached, (b) Exceptional; I'm being my best self, (c) Responsible for choices, actions, and results, and (d) Optimistic in my thoughts, attitudes, and words (see Appendix A). These ratings measured the relative frequency the student engaged in that behavior on a 1–3 scale: 1 = *Try Again* (0-30% of the time), 2 = *Okay* (31-75% of the time), 3 = *Great* (75-100% of the time).

Behavior and Feelings Survey

The Behavior and Feelings Survey (BFS; Weisz et al., 2019) is a 12-item, free behavior rating scale measuring internalizing and externalizing symptoms (6 items each) for youths 7–15 years of age. The BFS rates items on a scale from 0 (not a problem) to 4 (a very big problem). Additional anchors included: 1 = small problem, 2 = medium problem, and 3 = big problem. This measure was designed as a progress monitoring tool used to inform clinical judgments regarding youths' response to interventions (Weisz et al., 2019). The measure is a valid and reliable progress monitoring tool when used frequently throughout treatment (Weisz et al., 2019). The measure can be used by youth via self-report as well as by their caregivers to provide alternate perspectives on the youth's progress. For the current study, the BFS youth report as well as teacher report was probed as a secondary outcome measure throughout the study (see Appendix B and C). Administration took place immediately after consent & assent was provided, prior to each phase change, and at the completion of the study.

Social Validity

The social validity of the intervention was evaluated using two measures: the Usage Rating Profile–Intervention, Revised (URP-IR; Chafouleas, et al., 2011) and the Children's Usage Rating Profile (CURP; Briesch & Chafouleas, 2009). The URP-IR is a 29-item, psychometrically valid measure on a 6-point Likert scale ranging from “Strongly Disagree” to “Strongly Agree”. This form measures teachers' perceptions of acceptability, understanding, home-school collaboration, feasibility, system climate, and system support for the specified intervention. Each teacher completed a modified URP-Intervention for each of the two protocols that consists of the acceptability, understanding, and feasibility items (see Appendix D). The home-school collaboration, system climate, and system

support factors were not included for the following reasons. CICO, by default, requires home school collaboration and system support. Additionally, the school (and district) for which this study was conducted utilized CICO as one of their core tier 2 intervention strategies. Thus, these three factors were considered redundant and likely to add no additional value to the interpretation. In other words, it is already known that CICO requires home-school collaboration and system support as well as the school climate was already in favor of CICO as they were utilizing it as a default tier 2 strategy school and district wide.

The CURP is a 21-item psychometrically valid measure on a 4-point Likert scale ranging from “I totally disagree” to “I totally agree”. This form measures students’ perceptions of personal desirability, feasibility, and understanding. Each student participant completed a 7-item modified version of the CURP at the completion of the study measuring only the personal desirability factor (i.e., did they like it?) for each strategy (see Appendix E). The feasibility and understanding factors were left out as the current study was only interested in those variables from the implementers (i.e., teachers) perspective. It was deemed more important to understand the student’s desirability for the outlined strategies and less so that they understood the strategy or found it feasible. This information was already being provided by the classroom teachers. Social validity was interpreted via average item scores on the URP.

Intervention Fidelity and Interobserver Agreement (IOA)

Intervention fidelity was measured using self-report fidelity checklists completed by all teachers (see Appendix F & G and Table 1). Each fidelity checklist consisted of 7-items that were scored as either completed/not completed. These were completed daily at

the end of school. Additionally, during IOA data collection, researchers indirectly observed intervention fidelity. While no formal data was collected, anecdotally, few, if any, fidelity issues were observed. When lapses in fidelity occurred, they were mostly due to not providing feedback immediately after an interval (e.g., forgetting to provide feedback and remembering it after the next period). This was noticed primarily at the beginning of the initial CICO only phase while teachers were still getting accustomed to the process.

IOA was collected for at least 21% of sessions (cf. Cooper et al., 2019a) for each phase across participants. This was done by researchers observing various intervals measured by the DPR and comparing their rating with that of the teachers. IOA ranged from 21% to 50% depending on the participant/phase. The research team consisted of the primary researcher and an undergraduate research assistant. Prior to collecting data, the research assistant underwent training with the primary researcher. This training consisted of a tell, show, do, and review process. The undergraduate research assistant was required to observe and provide separate ratings alongside the primary researcher. Their ratings had to match the primary researcher at or above 80% for three consecutive intervals in a row. Once this was completed, the research assistant was allowed to independently collect IOA data. Percentage agreement between the observers was calculated by adding the total score for each interval for both the research and teacher, then dividing the lower total by the higher total for each interval observed and multiplying by 100. For a session to count towards IOA, the total agreement had to be at least 80% for the interval.

For Austen, IOA was collected for 24% for baseline, 34% for CICO, and 31% for CICO + MB. The total mean of agreement was 93% (range 80-100%). Regarding Sarah,

IOA was collected for 28% of baseline, 21% for CICO, and 23% for CICO + MB. The total mean of agreement was 94% (range 80-100%). For Kristine, IOA was collected for 24% of baseline, 28% for CICO, and 50% for CICO + MB. The total mean of agreement was 95% (range 80-100%). Regarding Tim, IOA was collected for 25% of baseline and CICO intervals and 33% of CICO + MB intervals. The total mean of agreement was 91% across intervals (range 80-100%). See Table 2 and 3 for a breakdown of IOA collected.

Experimental Design and Procedure

To examine the functional relationship of CICO and the combination of CICO + MB on youth externalizing behavior problems, the present study utilized an ABC design nested within a non-concurrent multiple baseline across participants' design. There were three distinct phases in this study: baseline, CICO, and CICO + MB.

Phasing Protocol

Each student remained in each phase until stable or decreased responding was observed on the DPR and at least 20% IOA data at or above 80% agreement was collected. In line with a multiple baseline design, the introduction of the intervention phases were staggered with some participants engaging in a longer initial baseline phase. Post baseline, students were moved to the CICO only phase before moving to the final phase of CICO + MB.

Baseline

During baseline, the DPR was used to collect behavioral data in the classroom setting. Each classroom teacher provided ratings at regularly scheduled intervals throughout the day unbeknown to the student. Additionally, each student and teacher completed the BFS at least once prior to starting the intervention phase.

A reward menu was developed in consultation with the teacher participants prior to the start of any intervention phase. Rewards were chosen for inclusion if they were readily available in the natural classroom setting and could be completed in the last 10-minutes of the school day. Students could choose to (1) play a game with a friend, (2) free read, (3) tablet/computer time, (4) a rock, paper, scissors tournament, (5) listen to music, (6) color/draw, (7) lead a class game, or (8) work with shoes off for a day.

Check-In, Check-Out

Once stable or a decreasing trend was observed in baseline levels of points earned on the DPR, CICO was implemented. In the morning students checked-in with their adult mentor to obtain the DPR (see Appendix H), reviewed the outlined expectations, establish a goal, and pick a reinforcer for that day. The initial goal criteria was the average points on the DPR during baseline for each student. These points increased/decreased by 5% of the total points for every three successful/unsuccessful consecutive days. The students then went back to class and received immediate teacher feedback at the conclusion of each identified instructional period as well as prompting for the following period related to the behavioral goals. At the end of the day, the students met once again with their adult mentor to calculate the student's points, discuss their successes, provide feedback/problem-solving, and deliver the reinforcer, if applicable. The students then took the DPR home to be signed by a caregiver and returned the next day. Scripts were given to provide an outline as to how these interactions should go (see Appendix I).

Combined Check-In, Check-Out + Mindfulness Breathing

In the combined phase, student participants checked-in with their adult mentor, as per the CICO process. As an additional component to the check-in process, students

brought their classroom Chromebooks and headphones with them and would complete an on-demand mindful breathing activity prior to returning to class. This audio was the same recording each day and the participants participated in the activity every school day during this phase of the study. The mindful breathing activity consisted of a 5 minute and 40 second recording created by Annaka Harris titled “Mindful Breathing for Children” (Harris, 2019). Despite no knowledge that the audio has been used in any formal study, it was used due to its developmental appropriateness, simplicity, and feasibility. The audio is quick and easy to implement and requires no formal training in mindfulness to implement. For the initial session, the mentor pulled it up for the student and helped them bookmark the page to their Chromebook. For subsequent days, the mentor would check the students in and send them to a table approximately 5ft away to complete the activity before going back to class.

Data Analysis

Visual analysis was utilized to examine the variability, level, and trends of the data. In addition to visual analysis, Non-overlap of All Pairs (NAP) and Improvement Rate Difference (IRD) were calculated to estimate intervention effects using Pustejovsky et al.’s (2021) single-case effect size calculator. NAP is an estimate of the probability that a randomly selected data point from the intervention phase improves upon a randomly selected data point from the baseline (or previous phase; Parker & Vannest, 2009). Effect sizes between .50 and .65 are considered weak, .66 to .92 are considered moderate, and .93 to 1.0 are considered large. IRD measures the improvement of performance between phases (Parker et al., 2011). For IRD, effect sizes between 0 and .5 are considered small/questionable, .51 to .70 are considered moderate, and .71 to 1.0

are considered large. DPR means for each phase were also calculated and presented in a table.

CHAPTER IV

RESULTS

Figure 1 provides a visual display of student participants' DPR data as well as probe data from both student and teacher reports on the BFS. Table 4 presents intervention effect sizes comparing the following: (a) baseline compared to CICO, (b) baseline compared to CICO + MB, and (c) CICO compared to CICO + MB. Table 5 presents means for each phase across participants. Tables 6 and 7 present probe scores for the BFS student report as well as the BFS teacher report, respectively. Results for each student participant are described below.

Austen

Baseline

Baseline data found that Austen was earning an average of 77% of his daily total points on the DPR (see Table 5). Visual analysis shows stable responding followed by a steep decline in the undesired direction for the last data point (see Figure 1). The self-reported BFS probe indicated that Austen perceived big problems on the internalizing factor and medium problems on the externalizing factor. The teacher reported BFS probes suggested that internalizing and externalizing concerns were not a problem (see Tables 6 and 7).

CICO vs. Baseline

Upon entering the CICO phase, a slope change was observed heading in the desired direction alongside a level change with very stable responding (see Figure 1 and Table 5). NAP and IRD for points earned indicated medium significant effect size differences from baseline (see Table 4).

Austen's self-reports on the BFS suggest that internalizing problems were reduced to small for the first probe and not a problem for the second. Related to externalizing problems, these reduced from medium in baseline to not a problem for both CICO probes. Austen's teacher continued to rate both factors as not a problem (see Tables 6 & 7).

CICO + MB vs. Baseline

Upon entering the CICO + MB phase, a change in slope was noted as there was a neutral slope in comparison to a downward trend observed in baseline (see Figure 1). There was a notable level change with stable responding (see Figure 1 and Table 5). NAP and IRD for points earned indicated large significant effect size differences from baseline (see Table 4).

Austen's self-reports on the BFS suggest that internalizing and externalizing concerns were a small problem for all probes, suggesting a decrease from baseline. Austen's teacher continued to report no problems across either factor (see Tables 6 and 7)

CICO vs. CICO + MB

Upon entering the CICO + MB phase, no change in slope was observed, nor additional stability in responding (see Figure 1). However, a small level change from CICO was noted (see Figure 1 and Table 5). NAP and IRD for points earned indicated moderate effect size differences from baseline (see Table 4)

Austen reported an increase from no problems to small problems on both factors for both probes. A shift in the undesired direction. Austen's teacher continued to report that both factors were not a problem (see Tables 6 and 7).

Social Validity

For CICO alone, Austen's teacher *slightly agreed* to acceptability and feasibility, and *agreed* to understanding (see Table 8). Austen indicated he *kind of agreed* that the intervention was personally desirable (see Table 9). Related to CICO + MB, Austen's teacher *slightly agreed* to acceptability, feasibility, and understanding (see Table 10). While Austen still rated the combined intervention personally desirable, he rated it similarly to CICO alone with *I kind of agree* (see Table 9). However, it is worth noting that his overall score for CICO + MB was slightly higher than CICO alone (see Table 9).

When asked if she had any follow up comments, Austen's teacher made note that she has a rule that she never answers, "Strongly Disagree/Agree" to anything, potentially skewing her ratings. Additionally, she shared that she rated the understandability portion of CICO + MB as slightly lower than CICO alone because she does not know what the activity looks like, considering she is not directly implementing it. She only knew that it was an audio he listened to on his Chromebook before he came back to class.

Sarah

Baseline

Baseline data found that Sarah was earning an average of 83% of her daily total points on the DPR (see Table 5). Visual analysis shows a stable trend with no slope change across baseline data points (see Figure 1). Self-reported BFS probes suggested that internalizing problems were a big problem initially and were a medium problem on the second baseline probe. For externalizing problems, Sarah reported small problems across both probes. Teacher-reported BFS probes indicated that internalizing problems were a big problem on the first probe and a medium problem on the second. She also

reported that Sarah displayed a small number of externalizing problems for both probes (see Tables 6 and 7).

CICO vs. Baseline

Upon entering the CICO phase, a moderate slope change in the desired direction and small level change was observed (see Figure 1 and Table 5). NAP and IRD for points earned indicated a moderate significant effect size difference from baseline (see Table 4).

Sarah's self-reports on the BFS suggest that internalizing concerns were a medium problem and externalizing concerns were a small problem for the provided probe. Sarah's teacher's report on the BFS suggests that internalizing and externalizing concerns were not a problem. While no change in student self-report ratings occurred, a shift in teacher perception for both factors was observed (see Tables 6 and 7).

CICO + MB vs. Baseline

Upon entering the CICO + MB phase, a small slope change was observed moving in the desired direction (see Figure 1). However, a large level change from baseline was noted (see Table 5). NAP and IRD for points earned indicated large significant effect size differences from baseline (see Table 4)

Sarah's self-reports on the BFS suggest that internalizing concerns were a medium problem on the first probe and a small problem on the last. For externalizing concerns, Sarah noted small problems on the first probe and no problems on the second. Sarah's teacher reported no problems across both probes for both factors. This marks a decline from baseline for both parties (see Tables 6 and 7).

CICO vs. CICO + MB

Upon entering the CICO + MB phase from the CICO phase, no change in slope was observed however a small change in level occurred (see Figure 1 and Table 5). NAP for points earned indicated moderate significant effect size differences from CICO. IRD for points earned indicated large significant effect size differences from CICO (see Table 4).

Sarah's self-reports on the BFS suggest that internalizing concerns continued to be a medium problem initially and then reduced to small problems by the second probe of this phase. Externalizing concerns continued to be a small problem initially before dropping to not a problem by the last probe. Sarah's teacher reported a continued lack of problems across probes. Thus, the only notable change was a slight shift in student perception of internalizing problems from medium to small (see Tables 6 and 7).

Social Validity

For CICO alone, Sarah's teacher *slightly agreed* to acceptability, *slightly agreed* to feasibility, and *agreed* to understanding (see Table 8). Sarah indicated she *kind of agreed* that the intervention was personally desirable (see Table 9). Related to CICO + MB, Sarah's teacher *slightly agreed* to acceptability and feasibility, and understanding (see Table 10). While Sarah still rated the combined intervention personally desirable, she rated it similarly to CICO alone with *I kind of agree* (see Table 9). However, it is worth noting that her overall score for CICO + MB was slightly higher than CICO alone (see Table 9).

Kristine

Baseline

Baseline data found that Kristine was earning an average of 78% of her daily total points on the DPR (see Table 5). Visual analysis shows an initial stable trend for the first three data points and then a subsequent slope increases to stable responding (see Figure 1). The self-reported BFS probe suggested that internalizing and externalizing were considered small problems. Teacher-reported BFS probes indicated that internalizing problems were a medium problem and externalizing concerns were not a problem (see Tables 6 and 7).

CICO vs. Baseline

Upon entering the CICO phase, initial stable responding was observed followed by a sharp decline in slope and subsequent steep incline before dropping slightly and stabilizing (see Figure 1). It is worth noting that on day 11, when the initial decline happened, the teacher modified her point expectation for the *Exceptional* behavior. She expressed that she believed she had been providing 3-points (i.e., Great!) for this behavior too generously. On day 11, she shared with a researcher that she was going to be more rigorous with her ratings. However, it was unclear whether this revelation influenced the ratings of the other three behavioral targets as well considering the steep decline on this day. NAP for points earned indicated a moderate significant effect size difference from baseline while IRD suggested a large significant effect size difference from baseline (see Table 4).

Kristine's self-reports on the BFS suggest that internalizing concerns were not a problem across both probes and externalizing concerns were considered small problems. Kristine's teacher's report on the BFS suggests that internalizing concerns were no longer a concern and externalizing problems were initially small, an increase from baseline, but

then went back to not being a problem by the second probe. Taken together, it appeared that Kristine had a reduction in internalizing problems with the introduction of the CICO intervention (see Tables 6 and 7).

CICO + MB vs. Baseline

Upon entering the CICO + MB phase, a small, continued slope increase was observed, moving in the desired direction (see Figure 1). Notably, a large level change from baseline was noted (see Table 5). NAP and IRD for points earned indicated large significant effect size differences from baseline (see Table 4).

Kristine's self-reports on the BFS suggest that internalizing and externalizing concerns were no longer a problem. Kristine's teacher also reported a lack of problems across probes (see Tables 6 and 7).

CICO vs. CICO + MB

Upon entering the CICO + MB phase from the CICO phase, a smaller, but still positive, slope was observed in the desired direction with a small change in level (see Figure 1 and Table 5). Additionally, responding was more stable (see Figure 1). NAP for points earned indicated moderate significant effect size differences from CICO. IRD for points earned indicated no significant effect size differences from CICO (see Table 4).

Kristine's self-reports on the BFS suggest that internalizing concerns continued to not be a problem. Externalizing concerns were small in the CICO phase and in the CICO + MB phase they were both reduced to not a problem. Kristine's teacher's report on the BFS suggests that internalizing concerns continued to not be a problem. The teacher reported a reduction to no problems on the externalizing factor compared to small during the initial probe in the CICO only phase (see Tables 6 and 7).

Social Validity

For CICO alone, Kristine's teacher *agreed* to acceptability and feasibility, and *strongly agreed* to understanding (see Table 8). Kristine indicated she *totally agreed* that the intervention was personally desirable (see Table 9). Related to CICO + MB, Kristine's teacher *strongly agreed* to acceptability and understanding, and *agreed* to feasibility (see Table 10). While Kristine still rated the combined intervention personally desirable, she rated it similarly to CICO alone with *I totally agree* (see Table 9). However, it is worth noting that her overall score for CICO + MB was slightly higher than CICO alone (see Table 9).

Tim

Baseline

Baseline data found that Tim was earning an average of 75% of his daily total points on the DPR (see Table 5). Visual analysis shows a significant slope change in the undesired direction throughout baseline (see Figure 1).

Self-reported BFS probes suggested that internalizing problems were a small concern initially and were not a problem on the second baseline probe. For externalizing problems, Tim reported medium problems in the first probe and small in the second. Teacher-reported BFS probes indicated that internalizing problems were a small problem, and that Tim displayed a medium number of externalizing problems across both probes (see Tables 6 and 7).

CICO vs. Baseline

Upon entering the CICO phase, a steady slope change in the desired direction and subtle level change was observed (see Figure 1 and Table 5). NAP and IRD for points earned indicated no significant effect size difference from baseline (see Table 4).

Tim's self-reports on the BFS suggest that internalizing and externalizing concerns were "not a problem" for both probes. For externalizing concerns, this presents a shift from small and medium problems to no problems. Tim's teacher's report on the BFS suggest that internalizing concerns were "not a problem" and externalizing concerns were a small problem across both probes. Thus, in comparison with baseline, a shift from small to no problem in internalizing as well as a change for externalizing problems from medium to small was noted for both probes (see Tables 6 and 7).

CICO + MB vs. Baseline

Upon entering the CICO + MB phase, a small slope change was observed with slightly more stable responding (see Figure 1). Additionally, a moderate level change from baseline was noted (see Table 5). NAP and IRD for points earned indicated moderate effect size differences from baseline (see Table 4).

Tim's self-reports on the BFS suggest that internalizing concerns were not a problem for both probes. For externalizing concerns, Tim noted small problems on the first probe and no problems on the second, a reduction from baseline. Tim's teacher's report on the BFS suggest that internalizing concerns were a not a problem across both probes. For externalizing concerns, Tim's teacher noted small problems for both probes. This marks a decline from baseline across both problem domains (see Tables 6 and 7).

CICO vs. CICO + MB

Upon entering the CICO + MB phase from the CICO phase, a positive, but small magnitude slope was observed with more stable responding (see Figure 1). Additionally, a small level change was noted (see Table 5). NAP and IRD for points earned indicated moderate effect size differences from the CICO phase (see Table 4).

Tim's self-reports on the BFS suggest that internalizing concerns continued to not be a problem while externalizing concerns went from not a problem to a small problem on the first probe and then back down to not a problem on the second. Tim's teacher's report on the BFS suggests that internalizing concerns continued to not be a problem across both probes and externalizing concerns continued to be a small problem. Thus, a slight shift in the student's perception of externalizing problems occurred but then went back to not being a problem. All other probe ratings stayed the same (see Tables 6 and 7).

Social Validity

For CICO alone, Tim's teacher *agreed* to acceptability, *slightly agreed* to feasibility, and *strongly agreed* to understanding (see Table 8). Tim indicated he *totally agreed* that the intervention was personally desirable (see Table 9). Related to CICO + MB, Tim's teacher *slightly agreed* to acceptability and feasibility, and *strongly agreed* to understanding (see Table 10). While Tim still rated the combined intervention personally desirable, he rated it lower than CICO alone with *I kind of agree* (see Table 9). When asked if he had any follow up comments, he stated that he did not like the mindful breathing activity. He stated that he would rather do math than do the breathing exercise (and that he hates math).

CHAPTER V

DISCUSSION

Externalizing behavior problems in youth are linked to a host of negative outcomes in youth and adulthood (Moilanen et al., 2010; Weeks et al., 2016; Wertz et al., 2018). Given that 58% of youth who receive social, emotional, and behavioral health services do so via the educational system, it appears to be worthwhile to maximize protective factors and minimize risk factors within school-based intervention (Ali et al., 2018). Two popular frameworks for prevention and intervention in schools are PBIS and SEL. PBIS primarily focuses making changes to the environment as its primary mechanism of change while SEL focuses on the development of intrapersonal skills and competencies to make change from the inside out. Thus, the limitations of PBIS could be considered a strength of SEL, and vice versa. PBIS works to change the individual's outer environment while SEL focuses on changing one's inner environment. Therefore, an integrated prevention program (i.e., PBIS + SEL; cf. Domitrovich et al., 2010) could have a more significant impact on positive student outcomes than programs that simply focus on one or the other. The current study sought to see if such an approach at the tier 2 level of service delivery produced greater reductions in student externalizing behavior problems than simply using one in isolation. This was done via adding a mindful breathing component (i.e., SEL) to a well-established tier 2 classroom intervention package, CICO (i.e., PBIS). Specifically, the study investigated if there was a functional relationship between CICO alone and reductions in student externalizing behavior as well as if CICO + MB was more effective than CICO alone for reducing student externalizing

behavior problems. The study also sought to examine the social validity of each approach.

Interpretation of Results

Primary Intervention Effects

In relation to using CICO alone, the results of the current study suggest there is a functional relationship between CICO and reductions in externalizing behavior problems. Visual analysis demonstrates a distinct change in the number of points earned on the DPR (a proxy for externalizing concerns) in the CICO phase compared to baseline for all four participants. Medium effect sizes were found for points earned on the DPR for three participants for both NAP and IRD, with one student's data suggesting a large effect size for IRD. The only exception to this was Tim, for whom no meaningful effect sizes were found for either NAP or IRD. Moreover, BFS probes for each student suggest reductions in externalizing behavior problems for two students via teacher report and for two students via student self-report. In sum, results from the current study match the current literature on CICO showing that the intervention can decrease problem behavior and increase appropriate classroom behavior (cf. Bundock et al., 2019; Hawken et al., 2014; Majeika et al., 2019; Todd et al., 2008).

Looking at CICO + MB compared to CICO alone, the current study found that there does appear to be a functional relation between CICO + MB and reductions in student externalizing behavior. However, the effect of the combined intervention may be stronger than CICO alone. Visual analysis demonstrates a small level change for all four participants following the introduction of the mindful breathing component from CICO alone. Medium effect sizes were noted for most participants when comparing points

earned for CICO alone compared to points earned for the integrated approach. The only exception was Kristine, for whom a medium effect size was produced via NAP, but no effect was found for IRD. Teacher-reported BFS probes suggest no changes in externalizing problems for any student compared to the CICO phase. However, three of the four students had already fallen into the “not a problem” range during CICO, suggesting a floor effect preventing this measure from capturing further improvements during the combined intervention phase. Student self-report probes showed reductions in their externalizing behavior problems for two of the four participants. Overall, findings from the current study suggest that there may be a small value-added effect to CICO with the inclusion of the mindful breathing component. Conceptually, this fits the literature as MBIs are typically known for producing small treatment effects (cf. Klingbeil et al., 2017). Thus, the important question is if the value added is worth the addition of the component into CICO. Considering the mindful breathing component required no training for the school to implement, was free to use, was readily available, had a low time commitment (approx. 5-minutes), and fit easily within the check-in process, it seems to be worth using in order to optimize prevention and intervention efforts at tier 2.

Secondary Intervention Effects

In addition to the primary intervention effects described above, post-hoc analyses were conducted to explore the magnitude of effects between baseline and CICO + MB. While CICO alone produced medium effect sizes in points earned on the DPR for all four students compared to baseline, CICO + MB produced large effects for three students and a medium effect for one student. These effects sizes were observed for both for NAP and IRD. It is worth noting that for Tim, the only student for whom CICO produced no

meaningful effect, CICO + MB produced medium effect sizes when compared to baseline. Additionally, visual analysis of the data shows moderate level changes when comparing CICO + MB to baseline. That being said, it is not clear what influence CICO alone had on this combined intervention effect, considering everyone went through this phase prior to the combined phase. Thus, causal conclusions cannot be made.

While the current study was primarily focused on student externalizing behavior problems, data were also collected on student internalizing concerns via the BFS. Results from the student self-report BFS probes suggest that CICO alone reduced self-reported internalizing problems for all four participants when compared to baseline. Additionally, this effect was noted across teacher ratings for three of the four students. In the case of Austen, his teacher rated he had no internalizing problems across the study, including during baseline, indicating a floor effect. Thus, the current study lends support to the idea that CICO may be a worthwhile intervention strategy to assist with internalizing problems as well. This is not a novel finding as several other studies have explored this idea and found evidence of a functional relation between CICO and internalizing problems (cf. Hunter et al., 2014; Kladis et al., 2020; Mitchell et al., 2020).

When comparing CICO vs. CICO + MB for internalizing problems, one of the four students, Sarah, self-reported a reduction from medium problems during CICO to small problems by the conclusion of her participation in the combined intervention phase. For the rest of the students, however, both teacher-reports and self-reports on the BFS had floor effects and thus were unable to capture change in internalizing problems between CICO and CICO + MB phases. Taken together, it is unclear whether a mindful breathing component adds value to CICO for reducing internalizing behavior problems. While the

potential value added appeared to be small in nature, given the low time and resources of the additional component, it may be worth considering. Additionally, given the fact that MBIs typically produce small effects across a wide variety of outcome domains (cf. Klingbeil et al., 2017), this additional component may help to increase protective factors and reduce risk factors in a highly cost-efficient manner. Findings from the current study suggest this may be worth exploring in future studies. Additionally, the potential additive value of an integrated approach for internalizing problems follows parallel findings. For instance, the Resilience Education Program (REP; cf. Allen et al., 2019) integrates CICO with cognitive-behavior instruction (CBI) via small group pull-out services. Initial findings support its potential utility in reducing internalizing problems with youth in schools (Allen et al., 2019). However, if the incorporation of a mindfulness component can result in similar or better treatment effects, this may be preferable to REP as it provides services in a less restrictive environment. Future studies should explore this.

Social Validity

Overall, both intervention strategies (CICO and CICO + MB) appeared to be socially valid for classroom teachers, who generally had positive perceptions of the acceptability, understanding, and feasibility of each approach. Scores range from *slightly agree* to *strongly agree* for each of the aforementioned domains. It is worth noting that responses related to understanding were slightly lower for Sarah and Austen's teachers for the CICO + MB strategy compared to CICO alone. Both reported that because they are not the ones who implemented the mindful breathing activity (CICO adult mentors do), that they did not have a strong idea as to how it worked. They only knew that it was an audio the students pulled up on their Chromebooks that they would listen and engage

with. Additionally, as mentioned before, Austen's teacher reported that she never provides ratings of "strongly" on any rating form. However, it is worth noting that she was currently utilizing CICO for another student in her class outside of the study and anecdotally reported to the researcher that she thought it was a useful intervention. Additionally, two other teachers were utilizing CICO in their classrooms with students outside of the study. Another teacher requested to continue the study with another student after their target student's release from the study. That said, although no classroom teacher was actively utilizing the mindful breathing component, they all suggested it would be useful if the student participants continued to go to their adult mentor's office in the morning and do this activity.

All students found both intervention strategies to be personally desirable to some extent, with some notable individual differences. Kristine preferred CICO + MB over CICO alone but wished there was more variety in the audio she engaged with (all students listened to the same audio every day of the combined intervention phase). Tim, on the other hand, did not appear to like the mindful breathing activity, stating that he much preferred CICO alone. Sarah and Austen also rated CICO + MB slightly higher than CICO alone but not to a significant amount. Overall, students appeared to like both intervention strategies, but some had preferences for one over the other. Considering the intent of assessing social validity is to enhance service delivery to the population of interest based on their preferences and desires (Luiselli et al., 2017), higher social validity, even without a meaningful effect on the dependent variable of interest, can still constitute a rationale to adapt strategies and adjust components.

Limitations and Future Directions

Findings from the current study should be considered within the context of several limitations. First, using the DPR as the primary outcome measure was found to be problematic. In addition to observed ceiling effects found at baseline (i.e., students were already earning 75-80% of their total prior to intervention), new research since the start of this study suggests that the DPR may not be psychometrically valid or reliable as a progress monitoring tool and in fact have poor validity and reliability (Kilgus et al., 2023). In addition to this, the goal on the DPR serves as a performance criterion for students to achieve. The logic of a changing-criterion design suggests that behavior should reliably match the criterion proposed (cf. Cooper et al., 2019b). Therefore, it potentially restricted the ability to notice subtle changes in behavior over time across phases. Future studies should consider using a primary data collection method that is independent of CICO. Potential options are Daily Behavior Ratings (DBRs; Christ et al., 2009) or applications such as BDataPro (Bullock et al., 2017), DataPal 1.0, or Countee (Countee, 2023). These may allow for the data collection on multiple relevant dependent variables in a manner that better captures change across phases.

An additional but related limitation involves the behavior targets used within the DPR. In line with traditional tier 2 CICO, the behavior targets chosen were the school's tier 1 PBIS expectations (Hawken et al., 2021b). While this school has continued to make exceptional growth in their PBIS efforts, PBIS is new, and they were in their second year at the time of the study. The current tier 1 behavior targets are not consistently defined in clear behavioral terms (see Table 12). For example, the expectation "*Exceptional; I'm being my best self*" is defined in the classroom as "*Always ready to learn, be honest, ask questions when unsure, and do my best*". These targets are problematic as they require a

high degree of inference. Additionally, while these behavioral targets are being regularly reviewed in the classroom/school setting, anecdotally the schedule of reinforcement is very thin in which students gain low amounts of tickets for engaging in the expectation and the prizes are handed out monthly. This is significant as schools are considered to be in a better position to successfully implement CICO with tier 1 prevention efforts securely in place in comparison to schools that do not (Hawken et al., 2021a). This will likely improve as time goes on, but for the purposes of the current study it was a limitation. Future studies should consider utilizing either specific idiographic behavioral targets or use the core three academic enabling behaviors (i.e., academically engaged, respectful, and disruptive behavior; Briesch & Chafouleas, 2016) while changing disruptive to a positive opposite such as “*remain quietly at assigned desk*”.

A third limitation involves the CICO mentors. In traditional CICO, each student is paired with an adult mentor who facilitates the check-in and check-out process. The school involved in the present study had two school counselors volunteer to be coaches but they both worked part-time and opposing days. Thus, on some days the check-in and check-out would be facilitated by one school counselor and on other days the other school counselor would facilitate. Additionally, one of the counselors did not have the ability to facilitate check-outs on Wednesdays due to other obligations. Thus, a third party, the school principal, facilitated this check-out. While it was confirmed that the principal had no history of punishment with any of the student participants, it is unclear whether this change in adult mentorship (when compared to traditional CICO) had any effect on the intervention. Thus, this contextual alteration introduced a potential confounding variable into the study.

Lastly, there is a potential limitation related to the primary measurement used. The current study used points earned on the DPR as a proxy for externalizing behavior problems. The rationale is that the behaviors on the DPR served as pseudo “positive opposites” for problem behaviors. Thus, conceptually these behaviors would be incompatible with one another. However, the primary measure did not capture externalizing problems directly and the only direct measurement of externalizing problems was through the BFS probes administered throughout the study. Future studies should include a primary measure of externalizing behavior specifically.

Conclusion

The current study sought to determine if there was a functional relationship between CICO and externalizing problems in youth as well as to determine if there is a value-added effect in incorporating a mindful breathing component within the CICO intervention. Additionally, the current study sought to assess the social validity of both strategies for both teachers and youth. Overall, findings suggest that implementation of CICO is functionally related to reductions in externalizing behavior problems in youth. Furthermore, adding a mindful breathing component to CICO showed a small but meaningful value-added effect in relation to reductions in externalizing concerns. Both strategies were considered socially valid to a similar extent across participants. Results of the study are limited, however, predominantly by the primary outcome measurement method. Using the DPR as the primary measurement tool resulted in potential ceiling effects, difficulty in parsing out the value-added portion of the mindful breathing component, and only served as a proxy for the dependent variable of interest, as it more accurately measured positive opposites of externalizing problems. Moreover, new

research into the psychometrics of the DPR as a progress monitoring tool suggests that it lacks validity and reliability and other, more psychometrically defensible measurement tools, such as DBRs (cf. Christ et al., 2009), should be utilized instead (Kilgus et al., 2023). It is also worth noting that, although not the original purpose of the study, the current findings suggest that CICO and CICO + MB may be effective classroom strategies for intervening on student internalizing problems in addition to externalizing problems. This finding is socially significant as it is common for students to present with multiple problems in schools. Thus, any intervention that can target multiple risk factors is highly valuable. To progress research and practice in this area, future research is needed to further delineate whether there is a value-added effect in adding a mindfulness component to CICO, for both externalizing and internalizing problems. And if so, how does this compare to other integrated intervention approaches such as REP (cf. Allen et al., 2019).

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Table 1*Teacher Reported Implementation Fidelity*

Phase	Tim	Sarah	Kristine	Austen
CICO	97%	100%	91%	94%
CICO + MB	100%	100%	94%	93%

Note. CICO = check-in, check-out. CICO + MB = check-in, check-out plus mindful breathing combined phase. Fidelity was calculated via teacher reported score for each interval multiplied by the number of days in each phase and then divided by the total number of intervals.

Table 2

Total Interobserver Agreement Intervals at or Above 80% Agreement for the CICO DPR

Phase	Tim	Sarah	Kristine	Austen
BL	25%	28%	24%	24%
CICO	25%	21%	28%	34%
CICO + MB	33%	23%	50%	31%

Note. BL = Baseline. CICO = Check-In/Check-Out. CICO + MB = CICO plus mindful breathing combined intervention phase.

Table 3*Interobserver Agreement Means and Range for the CICO DPR*

Phase	Tim		Sarah		Kristine		Austen	
	Mean	Range	Mean	Range	Mean	Range	Mean	Range
BL	87%	80-100%	89%	80-100%	92%	83-100%	94%	82-100%
CICO	94%	86-100%	96%	90-100%	95%	83-100%	91%	80-100%
CICO + MB	91%	80-100%	97%	82-100%	97%	80-100%	93%	83-100%
Total	91%	80-100%	94%	80-100%	95%	80-100%	93%	80-100%

Note. BL = Baseline. CICO = Check-In/Check-Out. CICO + MB = CICO plus mindful breathing combined intervention phase.

Table 4*Intervention Effect Sizes for DPR Outcomes by Phase Comparison*

Phase Comparison	Tim		Sarah		Kristine		Austen	
	IRD	NAP	IRD	NAP	IRD	NAP	IRD	NAP
CICO vs. BL	0.42	0.58	0.70*	0.72*	0.73**	0.85*	0.64*	0.85*
CICO+MB vs. BL	0.67*	0.90*	1.00**	1.00**	0.82**	0.93**	0.80**	0.96**
CICO vs. CICO+MB	0.60*	0.81*	0.78**	0.88*	0.40	0.68*	0.62*	0.81*

*medium effect size

**large effect size

Note. BL = baseline phase, CICO = Check-in/Check-Out alone intervention phase, CICO+MB = CICO plus mindful breathing combined intervention phase. NAP = Nonoverlap of All Pairs; IRD = Improvement MRate Difference.

Table 5*Mean % of Points Earned on the DPR for Each Participant by Phase*

Phase	Tim	Sarah	Kristine	Austen
BL	75%	83%	78%	77%
CICO	78%	88%	86%	87%
CICO + MB	85%	95%	92%	90%

Note. Note. BL = baseline phase, CICO = Check-in/Check-Out alone intervention phase, CICO+MB = CICO plus mindful breathing combined intervention phase.

Table 6*BFS Probes—Youth Self-Report*

Participant	Phase	Internalizing Problems		Externalizing Problems	
		AI	Interpretation	AI	Interpretation
Tim	BL	3	Small Problem	12	Medium Problem
	BL	0	Not a Problem	7	Small Problem
	CICO	0	Not a Problem	0	Not a Problem
	CICO	0	Not a Problem	0	Not a Problem
	CICO + MB	0	Not a Problem	5	Small Problem
	CICO + MB	0	Not a Problem	0	Not a Problem
Sarah	BL	7	Big Problem	4	Small Problem
	BL	2	Medium Problem	6	Small Problem
	CICO	3	Medium Problem	3	Small Problem
	CICO + MB	4	Medium Problem	4	Small Problem
	CICO + MB	5	Small Problem	2	Not a Problem
Kristine	BL	6	Small Problem	7	Small Problem
	CICO	2	Not a Problem	7	Small Problem
	CICO	1	Not a Problem	4	Small Problem
	CICO + MB	0	Not a Problem	2	Not a Problem
	CICO + MB	0	Not a Problem	1	Not a Problem
Austen	BL	5	Big Problem	13	Medium Problem
	CICO	3	Small Problem	1	Not a Problem
	CICO	2	Not a Problem	2	Not a Problem
	CICO + MB	5	Small Problem	4	Small Problem
	CICO + MB	4	Small Problem	4	Small Problem

Note. AI = average-item score. 0–2 = Not a Problem, 3–8 = Small Problem, 9–14 = Medium Problem, 15–20 Big Problem, 21–24 Very Big Problem. Interpretations are based on average item scores and matching to correlating qualitative responses. CICO = Check-In/Check-Out. CICO + MB = Check-In/Check-Out plus Mindful Breathing. Int = Internalizing Problems. Ext = Externalizing Problems.

Table 7*BFS Probes—Teacher Ratings of Youth*

Participant	Phase	Internalizing Problems		Externalizing Problems	
		AI	Interpretation	AI	Interpretation
Tim	BL	3	Small Problem	11	Medium Problem
	BL	3	Small Problem	10	Medium Problem
	CICO	1	Not a Problem	6	Small Problem
	CICO	1	Not a Problem	3	Small Problem
	CICO + MB	1	Not a Problem	7	Small Problem
	CICO + MB	1	Not a Problem	5	Small Problem
Sarah	BL	18	Big Problem	5	Small Problem
	BL	3	Medium Problem	5	Small Problem
	CICO	2	Not a Problem	2	Not a Problem
	CICO + MB	2	Not a Problem	2	Not a Problem
	CICO + MB	1	Not a Problem	0	Not a Problem
Kristine	BL	7	Medium Problem	2	Not a Problem
	CICO	0	Not a Problem	3	Small Problem
	CICO	0	Not a Problem	2	Not a Problem
	CICO + MB	1	Not a Problem	0	Not a Problem
	CICO + MB	1	Not a Problem	0	Not a Problem
Austen	BL	0	Not a Problem	1	Not a Problem
	BL	0	Not a Problem	2	Not a Problem
	CICO	0	Not a Problem	1	Not a Problem
	CICO	0	Not a Problem	0	Not a Problem
	CICO + MB	0	Not a Problem	0	Not a Problem
	CICO + MB	0	Not a Problem	0	Not a Problem

Note. AI = average-item score. 0–2 = Not a Problem, 3–8 = Small Problem, 9–14 = Medium Problem, 15–20 Big Problem, 21–24 Very Big Problem. Interpretations are based on average item scores and matching to correlating qualitative responses. CICO = Check-In/Check-Out. CICO + MB = Check-In/Check-Out plus Mindful Breathing. Int = Internalizing Problems. Ext = Externalizing Problems.

Table 8*Teacher-Rated Social Validity for Check-In/Check-Out Alone*

Domain	Tim		Sarah		Kristine		Austen	
	AI	INT	AI	INT	AI	INT	AI	INT
Acceptability	4.7	Agree	3.8	Slightly Agree	5.3	Agree	3.8	Slightly Agree
Understanding	5.6	Strongly Agree	4.7	Agree	6.0	Strongly Agree	5.0	Agree
Feasibility	4.2	Slightly Agree	3.7	Slightly Agree	5.0	Agree	3.9	Slightly Agree

Note. AI = average-item score. INT = Interpretation. 0–1.4 = Strongly Disagree, 1.5–2.4 = Disagree, 2.5–3.4 = Slightly Disagree, 3.5–4.4 = Slightly Agree, 4.5–5.4 = Agree, 5.5–6.0 = Strongly Agree.

Table 9

Student-Rated Personal Desirability by Intervention Phases

Phase	Tim		Sarah		Kristine		Austen	
	AI	INT	AI	INT	AI	INT	AI	INT
CICO	3.6	I totally agree	2.6	I kind of agree	3.8	I totally agree	3.1	I kind of agree
CICO + MB	3.2	I kind of agree	2.8	I kind of agree	4.0	I totally agree	3.3	I kind of agree

Note. 0 – 1.4 = I totally disagree, 1.5 - 2.4 = I kind of disagree, 2.5 - 3.4 = I kind of agree, 3.5 - 4.0 = I totally agree. AI = Average Item Scores. INT = Interpretation. CICO = Check-in/Check-Out alone intervention phase, CICO+MB = CICO plus mindfulness combined intervention phase.

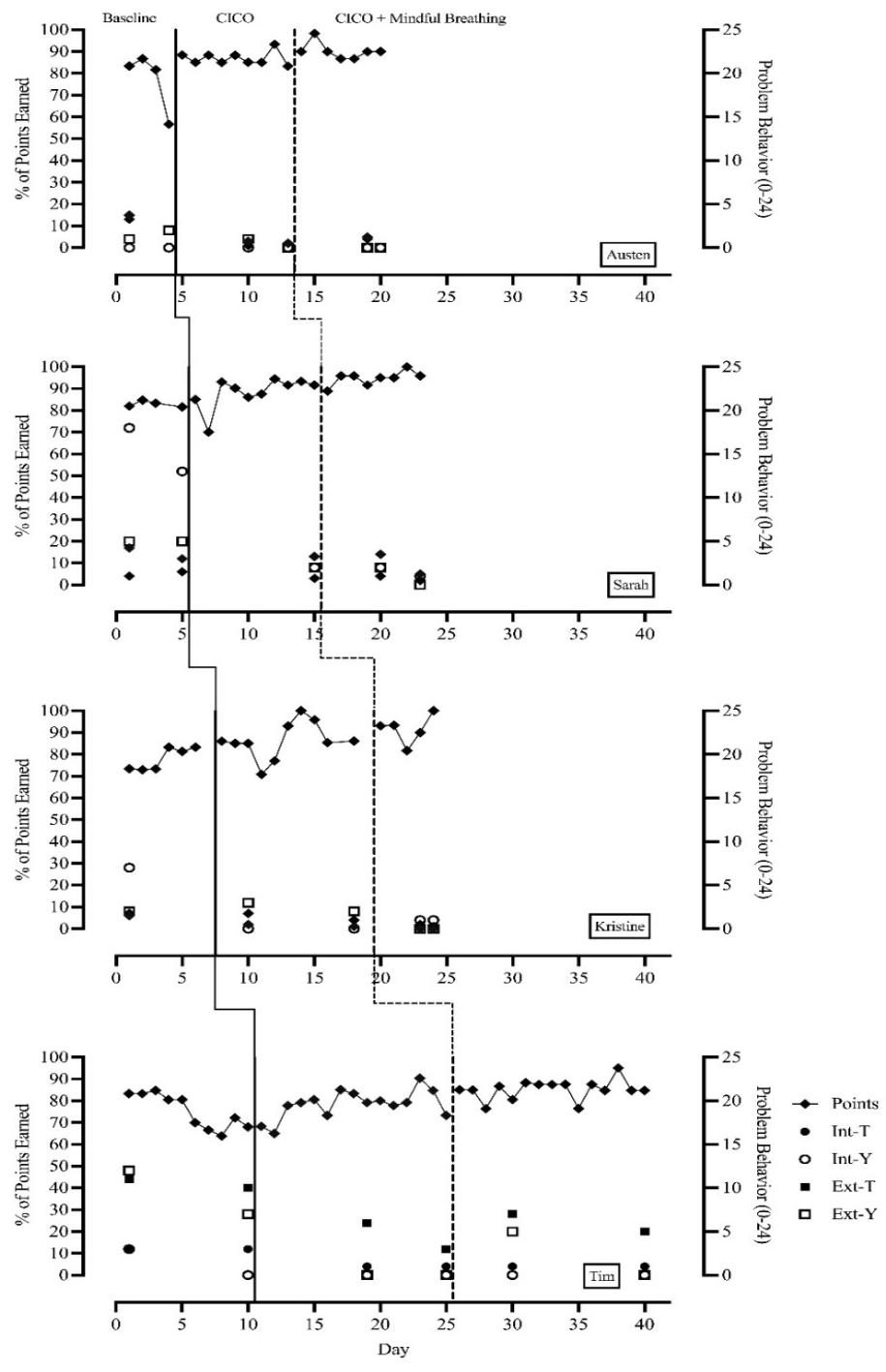
Table 10*Teacher-Rated Social Validity for Check-In/Check-Out + Mindful Breathing*

Domain	Tim		Sarah		Kristine		Austen	
	AI	INT	AI	INT	AI	INT	AI	INT
Acceptability	4.4	Slightly Agree	4.1	Slightly Agree	5.5	Strongly Agree	3.7	Slightly Agree
Understanding	6.0	Strongly Agree	3.7	Slightly Agree	6.0	Strongly Agree	3.7	Slightly Agree
Feasibility	3.9	Slightly Agree	3.9	Slightly Agree	4.9	Agree	3.9	Slightly Agree

Note. AI = average-item score. INT = Interpretation 0–1.4 = Strongly Disagree, 1.5–2.4 = Disagree, 2.5–3.4 = Slightly Disagree, 3.5–4.4 = Slightly Agree, 4.5–5.4 = Agree, 5.5–6.0 = Strongly Agree.

Figure 1

Visual Display of Intervention Data



Note. CICO = Check-In/Check-Out. Int-T = Teacher Report of Youth Internalizing Problems. Int-Y = Youth Self Report of Internalizing Problems. Ext-T = Teacher Report of Youth Externalizing Problems. Ext-Y = Youth Self Report of Externalizing Problems.