Are Breaks Better? A Direct Comparison of the Breaks are Better Program to Standard Protocol Check-in Check-out

By

Caitlyn Elizabeth Majeika

Dissertation

Submitted to the Faculty of the

Graduate School of Vanderbilt University

in partial fulfilment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

in

Special Education

August 9, 2019

Nashville, Tennessee

Approved:

Joseph H. Wehby, Ph.D.
Joseph Lambert, Ph.D.
Jennifer R. Ledford, Ph.D.
Blair P. Lloyd, Ph.D.
Daniel M. Maggin, Ph.D.

ACKNOWLEDGEMENTS

I am grateful for the financial support of Vanderbilt University's Peabody College Professional Development Funds, the Melvyn I. Semmel Award, and Grant #H325H140001 of the Office of Special Education Programs, U.S. Department of Education.

I am thankful for the school districts, administrators, and teachers who welcomed me into their classrooms and allowed me to work with their students. It is these positive school partnerships that help move the field of special education forward.

I am also grateful for the support and feedback from the members of my committee – Drs. Joe Wehby, Joe Lambert, Blair Lloyd, Jennifer Ledford, and Dan Maggin. I am especially for the guidance and encouragement from my advisor, Joe Wehby, throughout this entire project. Finally, I am extremely grateful for the many contributions of the research assistants who helped connect me with schools, conduct observations, and enter data – without all of you, the implementation of this project would not have been possible.

TABLE OF CONTENTS

Page

ACKNOWLEDGEMENTS ii

LIST OF TABLES vi

LIST OF FIGURES vii

Chapter

I. INTRODUCTION 1

Tiered Behavioral Supports 1
Function of Behavior 4
Function-based Tier 2 Supports 6
Rationale for This Study 10

II. METHOD 12

Inclusion Criteria 12
Participant Demographics 14
School Demographics 21
Measurement of Function 22
Primary Outcome Variables 22
Measurement Procedures 23
Study Design 25
Materials and Intervention Descriptions 26
Training 32
Procedural Fidelity 34
Data Analysis 35
Social Validity 37

III. RESULTS 38

Results Across Measures for Alexander 38
Results Across Measures for Emmanuel 46
Results Across Measures for Zoe 52
Results Across Measures for Jeremiah 58
Results Across Measures for Diego 64
Social Validity 70

IV. DISCUSSION 75

Are Breaks Better? A Summary of Results Across Cases 75

Data-based Decision Making 78
Limitations and Future Directions 81
Conclusion 83

REFERENCES 84

Appendix

A. Alexander's CICO Standard Protocol DPR 94

B. Emmanuel's CICO Standard Protocol DPR 95

C. Zoe's CICO Standard Protocol DPR 96

D. Jeremiah's CICO Standard Protocol DPR 97

E. Diego's CICO Standard Protocol DPR 98

F. Alexander's BrB DPR 99

G. Emmanuel's BrB DPR 101

H. Zoe's BrB DPR 103

I. Jeremiah's BrB DPR 105

J. Diego's BrB DPR 107

K. Mentor Script for CICO: Check-in 109

L. Mentor Script for CICO: Teacher Feedback 110

M. Mentor Script for CICO: Check-out 111

N. Mentor Scripts for Introducing CICO on Day One 112

O. BrB Planning Sheet 113

P. Mentor Script for BrB: Check-in 114

Q. Mentor Script for BrB: Teacher Feedback 115

R. Mentor Script for BrB: Check-out 117

S. Implementation Fidelity Checklist: Check-in 118

T. Implementation Fidelity Checklist: Break System 119

U. Implementation Fidelity: Teacher Feedback 120

V. Implementation Fidelity Checklist: Check-out 121

LIST OF TABLES

Table Page

1. SAEBRS Pre- and Post- Intervention Data 13
2. Student Demographics 16
3. Teacher and Mentor Demographics 17
4. Intervention Components 29
5. Alexander's Data Summary 40
6. Average Number of Breaks Taken Per Day 45
7. Emmanuel's Data Summary 48
8. Zoe's Data Summary 54
9. Jeremiah's Data Summary 60
10. Diego's Data Summary 66
11. Social Validity: Teacher Ratings for CICO on the IRP-15 71
12. Social Validity: Teacher Ratings for BrB on the IRP-15 72
13. Social Validity: Student Ratings of CICO on the CIRP 73
14. Social Validity: Student Ratings of BrB on the CIRP 74

LIST OF FIGURES

Figure Page

1. Problem behavior across intervention conditions for Alexander 38
2. Academic engagement across intervention conditions for Alexander 41
3. Daily percentage of DPR points earned across conditions for Alexander.....43
4. Average DPR point earned by condition for Alexander.....44
5. Problem behavior across intervention conditions for Emmanuel 46
6. Academic engagement across intervention conditions for Emmanuel.....49
7. Daily percentage of DPR points earned across conditions for Emmanuel 50
8. Average DPR point earned by condition for Emmanuel 51
9. Problem behavior across intervention conditions for Zoe 52
10. Academic engagement across intervention conditions for Zoe.....55
11. Daily percentage of DPR points earned across conditions for Zoe.....56
12. Average DPR point earned by condition for Zoe.....57
13. Problem behavior across intervention conditions for Jeremiah 58
14. Academic engagement across intervention conditions for Jeremiah 61
15. Daily percentage of DPR points earned across conditions for Jeremiah.....62
16. Average DPR point earned by condition for Jeremiah 63
17. Problem behavior across intervention conditions for Diego.....64
18. Academic engagement across intervention conditions for Diego 67
19. Daily percentage of DPR points earned across conditions for Diego 68
20. Average DPR point earned by condition for Diego 69

CHAPTER I

INTRODUCTION

Students with or at-risk for EBD have some of the poorest outcomes of all students with disabilities due to abundant academic, behavioral, and social risk factors. Specific examples of risk factors include maladaptive behavior (Algozzine, Wang, & Violette, 2011; Wagner, Kutash, Duchnowski, Epstein, & Sumi, 2005; Lane, Barton-Arwood, Nelson, & Wehby, 2008) and low academic achievement (McIntosh, Flannery, Sugai, Braun, & Cochrane, 2008; Morgan, Farkas, Tufis, & Sperling, 2008; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004). The combination of problem behavior and academic deficits often negatively impacts the classroom experience for students with or at-risk for EBD (Nelson & Roberts, 2000; Scott, Alter, & Hirn, 2011). As such, teachers must implement behavioral supports, often in the context of a multi-tiered system of support (MTSS; Sugai & Horner, 2002), to increase students' prosocial behavior and enhance their classroom experience.

Tiered Behavioral Supports

A MTSS is a framework of behavioral interventions organized along a continuum of intensity (Sugai & Horner, 2002; Sugai & Horner, 2009). Within an MTSS framework, universal school-wide and class-wide supports (Tier 1) are provided to all students. Students who continue to engage in at-risk behaviors, despite Tier 1 supports in place with fidelity, require targeted Tier 2 supports. Tier 2 supports are implemented in the form of standardized programs and applied to groups of students at once (Anderson & Borgmeier, 2010). Students who are nonresponsive to

Tier 2 supports and continue to engage in chronic and severe maladaptive behavior require Tier 3 supports. Tier 3 supports are highly intensive behavior support plans with components based on individual student profiles and the function of behavior (Lewis, Hatton, Jorgenson, & Maynard, 2017).

To support the efficiency and effectiveness of tiered supports, schools must implement evidence-based practices (EBPs) across all tiers. The need for EBPs is outlined in SWPBS guidelines (Sugai & Horner, 2009) and federal legislation (Every Student Succeeds, Act, 2015). Despite the policy-driven rationale for the establishment of and support for EBPs, most of the current research has focused on practices at Tier 1 (e.g., Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008) and Tier 3 (e.g., Gage, Lewis, & Stichter, 2012); far less attention has been given to Tier 2. Tier 2 acts as a necessary intermediate level within the MTSS continuum that provides a transition between universal (i.e., resource efficient) and highly individualized (i.e., resource intensive) supports. Therefore, continued identification and development of EBPs at the Tier 2 level is critical to the sustainability of MTSS and treatment of at-risk classroom behavior.

Tier 2. The foundation of Tier 2 programs is the standard protocol that outlines one manualized procedure, often scripted, to be implemented across all students in the same way. Other components of these programs include: (a) rapid access to the intervention, (b) explicit instruction in behavioral skills, (c) frequent feedback and praise for students, (d) a system for progress monitoring student response, and (e) a system for communicating with parents (Anderson & Borgmeier, 2010). While a wide variety of Tier 2 standard protocols exist (e.g., Check and Connect [Christenson et al., 2008]; Coping Power [Lochman, Wells, & Lenhart, 2008]; First Step to Success [Walker et al., 1997]; Incredible Years [Webster-Stratton, Jamila

Reid, Stoolmiller, 2008]; Strong Kids [Merrell, Whitcom, Parisi, 2009]), Check-in Check-out (CICO; Crone, Hawken, & Horner, 2010) is arguably the most commonly implemented (Bruhn, Lane, & Hirsch, 2014).

Check-in Check-out. Researchers have implemented CICO with at-risk students across grades K-12 (e.g., Swoszowski, Jolivette, Fredrick, and Heflin, 2012; Turtura, Anderson, & Boyd, 2014; Todd, Campbell, Meyer, & Horner, 2008) and can be used to increase expected classroom behavior (Dart et al., 2015) and decrease problem behavior (Hawken & Horner, 2003). The CICO standard protocol includes five components: (1) morning check-in with adult mentor, (2) use of a daily progress report (DPR) to track behavioral expectations, (3) teacher feedback on behavior regularly throughout the day, (4) afternoon check-out with adult mentor, and (5) parent communication (Crone et al., 2010). Similar to most other Tier 2 programs, components of the CICO standard protocol explicitly increase teacher attention and behavioral feedback (Crone et al., 2010).

Despite evidence of effectiveness, growing evidence suggests that a mismatch between CICO and function of behavior accounts for nonresponse from as many as 22% of students (Swoszowski, McDaniel, Jolivette, & Melius, 2013). In two studies explicitly exploring function as a moderator, researchers reported that CICO was more effective for students with attention-maintained behavior than students with escape-maintained behavior (March & Horner, 2002; McIntosh, Campbell, Carter, & Rossetto Dickey, 2009). However, in studies when specific supports were in place that directly addressed escape-maintained problem behavior, adapted CICO was effective for students with escape-maintained behavior (Kilgus, Fallon, & Feinberg, 2016; MacLeod, Hawken, O'Neill, & Bundock, 2016).

The aforementioned evidence has two potential implications for practice. First, student nonresponse to CICO may falsely be understood as a need for intensive Tier 3 supports, when in reality, nonresponse may be due to a misalignment between program and function. Second, since the components of CICO increase access to positive adult attention and feedback, students with escape-maintained behavior may not have sufficient access to functionally relevant Tier 2 supports. Addressing the needs to students with escape-maintained behavior is nontrivial given that a recent review of behavioral interventions for students with or at-risk for EBD points to nearly a third of the 196 participants had escape-maintained behavior (Majeika & Wehby, in preparation). Therefore, function is an important variable to assess and use at the Tier 2 level. Moreover, more research is needed to understand how at-risk students with escape-maintained behavior can be supported by Tier 2 supports in the classroom.

Function of Behavior

Drawing from the theoretical underpinnings of the field of applied behavior analysis, all behavior serves a function and is maintained by a sequence of antecedent events preceding it and consequences reliably following it (O'Neill, Albin, Storey, Horner, & Sprague, 2015). Functional behavioral assessment (FBA) is the process through which individuals assess environmental variables to hypothesize the function of a target behavior (Cooper, Heron, & Heward, 2007). Functions of behavior include (a) access to or escape from attention, (b) escape from task demands, (c) access to tangibles or activities, or (d) access to sensory stimulation. For students with or at-risk for EBD, given their characteristics of both social and academic difficulties, access to attention and escape from tasks are commonly reported functions of

behavior (see Anderson, Rodriguez, & Campbell, 2015; Majeika & Wehby, in preparation). However, the context of this study will focus on students with escape-maintained behavior.

Behavioral function in the classroom. Students may engage in problem behavior to escape or avoid activities or tasks (Wehby, Symons, Canale, & Go, 1998). Negative reinforcement is a key variable in the coercive cycle (Patterson, 1982). As applied to the classroom setting, the cycle begins when a teacher gives a student a task to complete, the student engages in problem behavior causing a disruption in the learning environment, the teacher removes the task or removes the student from the room, allowing the student to escape from the task or interaction with the teacher. This cycle often negatively reinforces, or increases, problem behavior as students learn to engage in problem behavior when they do not want to or cannot do a task. Therefore, students who engage in problem behavior may be exposed to less academic content and spend less time engaged in instruction than their peers, further increasing academic deficits (Baker, Clark, Maier, & Viger, 2008).

While problem behavior may occasion the removal of tasks, it may also influence teacher behavior that further inhibits student learning and increases problem behavior. Carr, Taylor, and Robinson (1991) reported that teachers spent less time instructing and provided a narrower breadth of instructional content to students who engaged in problem behavior. Additional research demonstrates that students who engage in problem behavior are provided with fewer opportunities to respond than their peers (Scott et al., 2011; Van Acker et al., 1996). Less instruction may limit the academic content students can access, further exacerbating academic skill deficits and increasing the likelihood of problem behavior for students with or at-risk for EBD.

To break the cycles of positive and negative reinforcement of problem behavior, interventions that change both teacher and student behavior should be implemented to reduce maladaptive behavior and increase prosocial behavior of students with or at-risk for EBD. Assessing the function of behavior can help identify how a student's behavior is reinforced and pinpoint the most salient variables that need to be addressed in the context of an intervention (e.g., escape/avoidance, extinction, skills training; Umbreit, Ferro, Liaupsin, & Lane, 2007).

Function-Based Tier 2 Supports

An FBA is a useful assessment to effectively plan and implement behavior supports generally for at-risk students (e.g., Briere & Simonsen, 2011; Bruni et al., 2017; Gage et al., 2012; Hurl et al., 2016) and specifically for students enrolled in CICO (e.g., Kilgus et al., 2016; MacLeod et al., 2016). While some researchers continue to recommend reserving an assessment of function for Tier 3 supports (Lewis et al., 2017), others advocate for functional thinking across all tiers of support (Crone, Hawken, & Horner, 2015; Stormont, Reinke, Herman, & Lembke, 2012; Wehby & Kern, 2014). A functional approach is particularly germane at the Tier 2 level of support, given that most evidence-based Tier 2 programs, particularly CICO, increase access to adult attention (Stormont et al., 2012) and often fail to specifically account for other functions at-risk students are likely to display (i.e., escape-maintained behavior).

Escape. Many students with or at-risk for EBD who may need Tier 2 supports have escape-maintained behavior (Majeika & Wehby, in preparation). There is preliminary evidence in the Tier 2 literature base to suggest that CICO can be successfully adapted for students with escape-maintained behavior to increase its effectiveness (Boyd & Anderson, 2013; Kilgus et al.,

2016; MacLeod et al., 2016). These adaptations can be classified in two categories: (a) individualized adaptations applied on a case-by-case level or (b) targeted, function-based standard protocols applied to groups of students.

Individualized adaptations. The literature base on Tier 2 behavioral interventions is replete with evidence of effective function-based adaptations to address escape-maintained behavior. These supports are provided on a case-by-case basis and similar to the development of an individualized behavior plan. Most common among the Tier 2 literature, adaptations have been made to CICO for students with escape-maintained behavior. In one example, Kilgus and colleagues (2016) adapted CICO for a participant with escape-maintained behavior by adding a task escape contingency as a reward for meeting the daily point goal. When comparing standard CICO to adapted CICO, results showed functional relations for increasing academic engagement and decreasing problem behavior.

While Kilgus and colleagues implemented the adaptations from the onset of intervention, others have used a data-based decision-making (DBDM) process to implement individualized function-based adaptations due to nonresponse. MacLeod and colleagues (2016) adapted CICO for students who did not consistently meet their daily goal and who had received at least one office discipline referral. Researchers implemented individualized, function-based adaptations for each participant, including adding practice for spelling words each week and self-monitoring for on-task behavior. Participants had reduced levels of problem behaviors during the implementation of the adapted version of CICO as compared to the implementation of the standard protocol.

Despite the effectiveness of applying individualized function-based adaptations in response to student data, these supports require additional resources (e.g., teacher time to select, train, and implement each adaptation per student) and training for DBDM. These barriers are especially important to consider because in practice, most teachers do not regularly graph and analyze data to make decisions about behavioral supports. Reasons for this include a lack of expertise in components of DBDM (e.g., data management, data analysis, graphing, and setting decision rules; Reeves & Burt, 2006; Scott & Martinek, 2006), lack of teacher buy-in (Meyer & Behar-Horenstein, 2015), and negative attitudes toward data collection (Reed, 2015). As a result, some may argue that using an FBA to plan individualized function-based supports to CICO is more closely aligned Tier 3 supports than Tier 2. One alternative to using individualized modifications is to use function-based standard protocols.

Function-based standard protocols. A function-based standard protocol is a program or curriculum that includes training in relevant replacement behaviors matched to function of behavior. The logic behind this type of Tier 2 intervention is that it will enhance the efficiency and effectiveness of Tier 2 supports when relevant variables are used to match a student to an intervention from the start of treatment rather than a wait-to-fail approach of a one-size-fits all standard protocol. Most Tier 2 programs functionally address adult-attention maintained behavior. However, researchers have experimented with the development of function-based CICO programs to more appropriately account for students with escape-maintained behavior. These programs require an assessment of function a priori to match a student with the appropriate intervention.

For elementary students, the only reported example of a function-based standard protocol with a manual is Breaks are Better (BrB; Boyd & Anderson, 2010). The BrB program is an adapted version of CICO tailored to address escape-maintained behavior by training students in a system for taking breaks throughout the day. The program contains all of the aforementioned components of the CICO standard protocol plus the following function-based modifications: DPR behavioral expectations defined for academic behaviors (e.g., completing work); instruction in a procedure for allowing students to take up to three breaks per class period; and behavioral feedback and reinforcement for taking breaks appropriately.

Boyd and Anderson (2013) tested the effects of BrB on three typically developing elementary school boys with escape-maintained problem behavior. The authors implemented BrB by teaching students how to request a break or ask for help. Results from the A-B-A-B design show, across all three participants, BrB led to decreases in off-task behavior as compared to a no-intervention baseline. Based on clear therapeutic changes in trend and level between conditions, the authors identified a functional relation between BrB and a reduction in off-task behavior for two participants. Evans (2016) conducted a study evaluating BrB with four typically developing males in elementary school with escape-maintained problem behavior. The results from the multiple baseline across participants design showed a functional relation between BrB and decreases in off-task behavior and increases in work completion. However, the authors used a nonconcurrent multiple baseline design which limits what we can infer from the results. While the results from these two BrB studies point to the potential of an effective intervention to support students with escape-maintained behavior at the Tier 2 level, more research is needed to enhance the literature base.

Rationale for This Study

Within the context of MTSS, schools are required to implement EBPs at each Tier. Horner et al. (2005) outlined the following requirements to classify an intervention as evidence-based: (a) the intervention is defined in replicable terms, (b) the context is clearly defined, (c) high fidelity, and (d) results that point to effectiveness. Further, when measured through single case design, an intervention must have been tested and show effective results in at least 5 studies, by three different research groups, across 20 or more participants. Despite the moderate presence of students with or at-risk for EBD who have escape-maintained behavior (Common et al., 2017; Majeika & Wehby, in preparation), there are no evidence-based Tier 2 programs designed to address escape-maintained behavior. This gap in the literature is particularly alarming given that function moderates the response to treatment at the Tier 2 level (McIntosh et al., 2009) and incorporating function-based components enhances intervention outcomes (MacLeod et al., 2016).

The goal of this study is to potentially expand the literature base in two ways. First, it adds to the evidence for BrB and expands on what we know about the potential effectiveness of function-based Tier 2 standard protocols. Currently, BrB is the only example of a function-based standard protocol for elementary students at the Tier 2 level. However, the evidence base for BrB requires replication and further testing to enhance the field's confidence in this program as effective for elementary students with escape-maintained behavior. Second, this study increases research on the effectiveness of function-based standard protocols as compared to the non—function-based versions of Tier 2 programs. The BrB program has only been tested by comparing to a no-treatment baseline condition. To confirm the effectiveness of a function-based standard protocol (i.e., BrB) above and beyond of the effects of a non—function-based standard

protocol (i.e., CICO), research is needed to directly compare these treatments for students with escape-maintained behavior.

To fill the aforementioned gaps, this study will answer the following research questions: (1) For at-risk elementary students with escape-maintained problem behavior, as compared to standard protocol CICO, does BrB decrease problem behavior? (2) For at-risk elementary students with escape-maintained problem behavior, as compared to standard protocol CICO, does BrB increase academic engagement? (3) For at-risk elementary students with escape-maintained problem behavior, as compared to standard protocol CICO, does BrB lead to higher daily points as measured by the DPR?

CHAPTER II

METHOD

Inclusion Criteria

All students were first nominated by a classroom teacher or school counselor for engaging in problem behavior and needing additional behavioral support. To be included in this study, participants had to meet three inclusion criteria. First, to confirm the need for intervention, students had to score in the at-risk range on the Social Behavior subscale of the Social, Academic, and Emotional Behavior Risk Screener (SAEBRS; Kilgus, Chafouleas, Riley-Tillman, & von der Embse, 2013; see Table 1 for SAEBRS data). The SAEBRS is a universal screener used to identify students with behavioral and emotional risk and can be used to assess overall risk on each of three subscales: Social Behavior, Academic Behavior, Emotional Behavior. For elementary students, this measure has high reliability and validity as evidenced by high internal consistency (0.89-0.94) and concurrent validity (0.79-0.90; Kilgus, Chafouleas, & Riley-Tillman, 2013; Kilgus, Sims, von der Embse, & Riley-Tillman, 2014; Von der Embse, Pendergast, Kilgus, & Eklund, 2016).

Table 1

SAEBRS Pre- and Post- Intervention Data

	Social Behavior		Academic Behavior		Emotional Behavior		Total Behavior	
Participant	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Alexander	1	4	4	4	10	8	15	16
Emmanuel	6	12	5	6	15	13	26	31
Zoe	4	7	4	13*	10	14	18	34
Jeremiah	5	8	2	10*	8	11	18	29
Diego	11	5	9	12*	17	8	37*	25

Note. * indicates not at-risk. At-risk ranges for subscales: Social Behavior = 0 - 12; Academic Behavior = 0 - 9; Emotional Behavior = 0 -17; At-risk range for Total Behavior on SAEBRS = 0 - 36.

The second inclusion criterion was that the topography of each student's problem behavior was non-dangerous. Tier 2 interventions are intended for students who display frequent problem behavior that interferes with their learning but does not pose a safety risk to themselves or others (Anderson & Borgmeier, 2010). Because the nature of this study focused on Tier 2 interventions, it was important that each participant's problem behavior fit under the umbrella of behaviors that could be appropriately addressed within this level of an intervention.

The final inclusion criterion was problem behavior hypothesized to be maintained by escape from tasks via the Functional Assessment Checklist for Teachers and Staff (FACTS; March & Horner, 2000). The FACTS is a 20 min interview conducted with a student's teacher to learn about events that are likely to precede and follow problem behavior. The FACTS is a descriptive measure and has been commonly used as the primary method for FBA for students with or at-risk for EBD in general education settings due to its feasibility (Majeika & Wehby, in preparation). Moreover, researchers have found the FACTS to be a reliable and valid measure to hypothesize function when the target behavior occurs frequently (McIntosh et al., 2008). Because the FACTS relies on clinical judgement and anecdotal information, it would not be

uncommon for results to point to multiple functions. Therefore, since CICO and BrB both include components that address attention-maintained behavior, students for whom the hypothesized function was both escape from task and access to attention were included.

Participant Demographics

Alexander. Alexander was a 4th grade male who received all of his instruction in the general education classroom (see Table 2 for additional demographics). Based on the Northwest Evaluation Association Measures of Academic Progress (MAP), Alexander ranked at the 10th percentile for reading and 1st percentile for math. He was referred by his general education teacher for engaging in disruptive behavior (e.g., calling out, refusal to do work, using inappropriate language) despite being enrolled in CICO for two months. Based on the FACTS, Alexander's teacher hypothesized his disruptive behavior was maintained by access to teacher/peer attention and escape from tasks. Direct observation data collected from the school behavior support specialist supported these functional hypotheses.

Alexander received all his education in Ms. Stratford's classroom with 21 other students (14 males). The classroom demographics included two students with an IEP, 15 English Language Learners, and 22 students eligible for free/reduced lunch (FRL). The desks were arranged in groups of six desks with a carpet in the front of the room by the board where large group teacher instruction occurred. See Table 3 for teacher demographic information.

Observation context. Observations occurred during Alexander's first period ELA block. The ELA block consisted of word work, grammar practice, a whole class reading lesson, and a writing task. Observations of Alexander occurred during grammar or the group reading lesson. During grammar, students worked independently to fix errors in various texts followed by a

group discussion of the answers. Alexander worked solo during this time at his desk which was in the back of a classroom and not attached to a group of other desks. During the whole class reading lesson, students sat on the carpet listening to text or watching a video clip related to the theme of the ELA unit. During the reading lesson, Alexander sat in the front row on the carpet right next to Ms. Stratford (see Table 3 for teacher demographics).

Table 2

Student Demographics

Name	Grade (Age)	Race	FRL	Disability	Services	Academics	Schools	ODRs	Risk	Behavior	Function
Alexander	4th (10)	Hispanic	Yes	No	Counseling	Below GL	5	3	At-risk	DB	AA, E
Emmanuel	4th (9)	Hispanic	Yes	No	T2 Math	Below GL	1	0	At-risk	DB, OT	AA, E
Zoe	1st (7)	Black	Yes	No	Social Work	Below GL	3	0	At-risk	DB, WC, SS	AA, E
Jeremiah	2nd (8)	Black	Yes	No	T3 Reading	Below GL	2	0	At-risk	DB, OT	E
Diego	1st (7)	Hispanic	Yes	No	NA	Above GL	1	0	At-risk	DB, OT	AA, E

Note. FRL = free/reduced lunch status; T2 = Tier 2; T3 = Tier 3; GL = grade level; Schools = # schools attended in lifetime; ODRs = office discipline referrals (received in last month); At-risk = risk status determined by scores on SAEBRS; DB = disruptive behavior; OT = off-task behavior; WC = work completion; SS = social skills; AA = access adult attention; E = escape from tasks.

Table 3

Teacher and Mentor Demographics

Teacher	Participant(s)	Role	Gender	Race	Years Teaching	Degree	Certification Area(s)
Ms. Stratford	Emmanuel, Alexander	Teacher	F	Multi	12	M.Ed. + 30	EE, ELL, Admin
Ms. Camden	Diego	Teacher	F	Asian	2	M.Ed.	ELL, ECE
Ms. Whitby	Jeremiah	Teacher	F	White	11	M.Ed.	EE, SpEd
Ms. Greenwich	Jeremiah	Student Teacher	F	Asian	0*	B.S.	Psychology
Ms. Nottingham	Zoe	Teacher	F	White	6	B.S.	ECE
Ms. Islington	Emmanuel	Mentor	F	White	16	M.Ed.	ELL; ECE
Ms. Hoxton	Alexander	Mentor	F	White	5	M.Ed.	PSC
Ms. Kensington	Diego, Zoe	Mentor	F	White	17	M.Ed.	ELL; ECE
Dr. Hammersmith	Jeremiah	Mentor	F	White	20	Ed.D.	LPC

Note. * = student teacher in full time placement working towards M.Ed.; EE = elementary education; ELL = English language learners; ECE =early childhood education; SpEd = special education; Admin = administration; LPC = licensed professional counselor; PSC = professional school counselor

Emmanuel. Emmanuel was a 4th grade male who received all instruction in the general education classroom (see Table 2 for additional demographics). Based on NWEA Measures of Academic Progress, Emmanuel ranked at the 1st percentile for reading and 14th percentile for math. He was referred for additional support by his general education teacher for engaging in off-task and disruptive behavior (e.g., calling out, talking with peers, playing with objects in or on desk) despite being enrolled in CICO for two months. According to the FACTS, his disruptive behavior was hypothesized to be maintained by access to teacher attention and escape from tasks. Emmanuel was in the same classroom as Alexander.

Observation context. Observations occurred during the word work section of Emmanuel's first period ELA class. This section of ELA included a whole class mini lesson followed by independent word sorting tasks. Students completed word work while seated at their desks. Emmanuel sat in a group with five other students.

Zoe. Zoe was a 1st grade female who did not have a diagnosed disability (see Table 2 for additional demographics). Based on FastBridge assessments, Zoe was below grade level and ranked in the 8th percentile for math and the 15th percentile for reading. Zoe was referred by her general education ELA teacher for engaging in disruptive behavior, poor work completion, and poor social skills. Zoe's teacher hypothesized that her behavior was maintained by access to adult attention (in the form of redirects/reprimands) and by escape from difficult tasks, especially during writing. Prior to this study, Zoe had never been enrolled in CICO.

Zoe spent her ELA and writing blocks in Ms. Nottingham's 1st grade general education classroom at School A with 24 other students (16 male). None of the students had an IEP and one was an English Language Learner (see Table 3 for teacher demographics). The classroom

included tables where groups of five students sat. There was a carpet in the front of the room by the whiteboard where whole group instruction occurred. Zoe received math instruction with her homeroom teacher in another 1st grade general education classroom.

Observation context. Observations of Zoe occurred during writing. The writing block typically began with whole group instruction that included mini lessons on writing structure or a review of key readings. The lesson was followed by an independent writing task (e.g., responding to a text, creating a graphic organizer for writing, or writing a paragraph). During independent work, Zoe worked at her table or at a small group table with two or three other students. The classroom teacher monitored student work or met with a small group during this time. There were no other adults present in the room during writing.

Jeremiah. Jeremiah was a 2nd grade male in Ms. Whitby's grade general education class (see Table 2 for student demographics and Table 3 for teacher demographics). Based on FastBridge assessments at the start of the study, Jeremiah was significantly below grade level and ranked in the 1st percentile for reading. He was referred for support by Ms. Whitby for engaging in off-task and disruptive behavior (e.g., talking to peers, arguing with teachers). According to the FACTS, his problem behavior was hypothesized to be maintained by escape from tasks. Prior to this study, Jeremiah had never been enrolled in CICO.

Jeremiah spent each day in a general education classroom with 17 other students (9 males). The class included six students with an IEP, five English Language Learners, and 17 students who are eligible for FRL. The classroom was arranged with five student tables, a carpet, and a small group teacher table. The carpet in the front of the room faced the SMART Board and was where morning meetings and whole group academic instruction occurred. During the time of

our study, there was a full-time student teacher providing whole group instruction (see Table 3 for demographics).

Observation context. Observations of Jeremiah occurred during his afternoon math class. Math began with a whole group mini lesson led by the student teacher and then transitioned to centers. Observations usually occurred during the end of the whole group lesson and the beginning of centers when Jeremiah was at the iPad station. He sat at a table with two other students in the same center. During this time, Ms. Whitby instructed a small group at her teacher table while simultaneously monitoring student behavior. The student teacher and a paraprofessional were also present and walked around the room to monitor students.

Diego. Diego was 1st grader who spent his entire day in a general education classroom. Based on FastBridge assessments, Diego scored in the 61st percentile for math and according to his Guided Reading Level, he was reading one year above grade level (i.e., 2nd grade level). Diego was referred by his general education teacher for engaging in off-task behavior (e.g., talking to peers, refusal to do work). According to the FACTS, Diego's off-task behavior was hypothesized to be maintained by escape from tasks. Prior to this study, Diego had never been enrolled in CICO.

Diego spent his homeroom and math blocks in Ms. Camden's 1st grade general education classroom with 21 other students (13 males). The class included four students with an IEP, 13 English Language Learners, and 22 students who are eligible for FRL. The classroom was arranged with five large student tables, a small group teacher table, a large carpet for whole group instruction, and a small carpet area used during centers. Diego received ELA and writing instruction in another 1st grade classroom.

Observation context. Observations of Diego occurred during the number talk section of math. During this time, the teacher presented the class with a problem, provided a mini review of content, and then asked the students to turn and discuss the solution with the rest of the class. Diego and the other students sat on the carpet and discussed their solutions with a partner for 4 min. After this time, the teacher led a whole group discussion of student solutions and strategies.

School Demographics

This study took place in two schools in an urban school district in middle Tennessee. Emmanuel, Alexander, Diego, and Zoe attended School A, which served 603 students in Pre-K to grade 4. The school was highly diverse and the student population included 56.2% Hispanic/Latino, 24.2% White, 18.7% Black, 0.7% Asian, and 0.2% Native Hawaiian or Pacific Islander students. The school included 57.5% males and a little over half were considered economically disadvantaged (55.4%). In the school, 55 students were diagnosed with a disability (9.1%) and 60.9% had Limited English Proficiency. The school implemented PBIS and received a score of 33% implementation of Tier 1 practices for the past two school years as measured by the Tiered Fidelity Inventory (TFI; Algozzine et al., 2014).

Jeremiah attended School B which served 333 students in Pre-K to grade 4. The student population included 19.8% Hispanic/Latino, 13.8% White, 64.9% Black, and 1.5% Asian students. Nearly half of the student body was male (52.8%) and 52.3% were considered economically disadvantaged. In the school, 58 students were diagnosed with a disability (17.4%) and 14.7% had Limited English Proficiency. The school implemented PBIS and received a score of 70% implementation of Tier 1 and 77% for Tier 2 practices for the past school year as measured by the TFI (Algozzine et al., 2014).

Measurement of Function

After each potential student was nominated by his or her teacher or counselor, the first author conducted the FACTS interview with the primary classroom teacher (March et al., 2000). During the interview, the teacher was asked to describe (a) the primary problem behavior(s), (b) the setting events likely to occur before the problem behavior, and (c) events likely to occur as a consequence directly after the problem behavior. The information gathered was used to create a summary statement and help the first author collaboratively hypothesize the function(s) of behavior with the teacher (see Table 2 for hypothesized functions across participants).

Primary Outcome Variables

Research assistants (RAs) directly observed each participant's problem behavior and academic engagement multiple times each week. The class period and context in which we observed remained consistent across all observation sessions and conditions. These times were chosen by the teacher as the most challenging time of day for the student.

Problem behavior. The primary outcome variable was problem behavior, defined as follows: any action made by a target child that interferes with participation and productive classroom activity for the target child or his/her peers. This definition includes physical/motor off-task/disruptive behaviors and verbally off-task/disruptive behaviors; gestures that intend to provoke others, draw attention to oneself, use classroom materials inappropriately, or self-stimulate in a disruptive manner; or verbal statements that have the intent to provoke, annoy, pester, mock, whine, complain, tattle, or make fun of another, and are provocative in nature.

Academic engagement. The secondary outcome variable was academic engagement, defined as follows: a student working on the assigned/approved activity or appropriately waiting for directions. This includes (a) responding to a question directed at student, (b) volunteering oral information to the lesson after raising hand, (c) providing an answer when teacher requests choral response, (d) making appropriate motor responses (writing, following rules of a game), (e) reading aloud, (f) reading silently with signs of scanning or page turning, (g) writing or solving problems during independent activity, (h) answering during small or large group academic talk, project, or discussion, and (i) participation in centers/stations.

Daily report card points. A tertiary outcome variable was the daily percentage of points on each participant's DPR. This variable was assessed using permanent product data from each student's DPR. While the direct observation measures were context dependent estimates of student behavior during a specific 15 min part of the day, collecting DPR data allowed for the analysis of generalized student behavior as measured across the entire school day in multiple settings.

The percentage of points earned was calculated by totaling the number of points earned and dividing it by the number of points possible for that day. During BrB, students were eligible to earn bonus points for taking breaks. These points were not included in our calculations and reporting of the daily percentage of points earned during BrB. In addition to the number of points, the number of breaks taken (as indicated by the break tracker on the DPR) was reported.

Measurement Procedures

Direct observation procedures. RAs collected direct observation data for measures of problem behavior and engagement using the Multiple Option Observation System for Experimental Studies (MOOSES) program (Tapp & Wehby, 2000). The MOOSES program is an observational program that uses timed event recording to measure count or duration data and has been successfully used in behavioral observations of engagement and disruptive behavior (e.g., Kamps, Conklin, & Wills, 2015; Reinke, Herman, & Stormont, 2013). RAs collected data on the frequency of problem behavior using timed event coding in vivo using handheld tablets. The measure of behavioral disruptions is intended to capture discrete events of problem behavior. Using MOOSES allowed coders to feasibly collect timed event data, which is more likely to provide an accurate representation of behavioral disruptions than an interval system. RAs also collected data on academic engagement using total duration recording. This measurement system provides a total proportion of the session the student was or was not engaged.

Training. Master's level RAs served as the primary coders and the first author served as reliability coder for the majority of sessions. The first author and a project coordinator with extensive experience using MOOSES trained the RAs during a 1 hr in-person training session. After the training session, all coders took a paper pencil quiz on the codebook definitions and had to meet a criterion of 100% accuracy to move on to video training. For video training, coders practiced coding using two 15 min videos of live classrooms interactions. The videos had master code files developed by expert level researchers familiar with direct observation procedures. All coders had to meet a criterion of at least 85% agreement with the master code across both disruptive behavior and academic engagement for three consecutive sessions for each video.

After the coders met criterion for the video coding, they conduced live observations in an elementary classroom with an expert level researcher. The coders were required to have at least 85% agreement with the expert level coder for two consecutive classroom sessions before being considered reliable and able collect data independently in the classroom.

IOA. To ensure direct observation data were reliable, interobserver-agreement (IOA) was measured for at least 16% of sessions across each condition for each participant. During IOA sessions, two data collectors were present in the classroom. They stood together to synchronously start the MOOSES timers and then stood at least 3 ft apart to collect data simultaneously. After the observations, coders used the MOOSES program to calculate IOA using a point-by-point method, making it possible to determine exact agreement on occurrence and nonoccurrence of behavioral instances. We set MOOSES to calculate all IOA calculations using a 5 s window of agreement between coders. This window of agreement is important given that (a) multiple disruptive behaviors may happen at once and (b) the initial onset and offset of academic engagement may be difficult to capture.

Study Design

Treatment response was measured using multi-treatment comparison designs (Wolery, Gast, & Ledford, 2018) to directly compare standard protocol CICO to BrB. To detect and rule out sequence effects, the phase order across participants was randomly sequenced when possible. A randomization table was developed and used to make a priori decisions as to which participants were randomized to which starting condition. However, because two participants were already enrolled in CICO and due to the randomization order, four out of five participants

started with CICO. The primary outcome variable, disruptive behavior, was used to make all decisions about phase changes.

Alexander and Emmanuel. Alexander and Emmanuel were already enrolled in CICO at the start of my study so B-C-B-C treatment comparison design was utilized. Data were collected across four conditions: B_1 = CICO, C_1 = BrB, B_2 = CICO, C_2 = BrB.

Zoe and Diego. Zoe and Diego were randomly assigned to begin with the CICO condition. To compare the effectiveness of CICO and BrB across each variable, an A-B-C-B-C treatment comparison design was used for these participants. Data were collected across the following five conditions: A = Baseline. B_1 = CICO, C_1 = BrB, B_2 = CICO, C_2 = BrB.

Jeremiah. Jeremiah was randomly assigned to begin with the BrB intervention. Therefore, to compare the effectiveness of CICO and BrB across each variable, an A-C-B-C-B treatment comparison design was used that included the following five conditions: A = Baseline. C_1 = BrB, B_1 = CICO, C_2 = BrB, B_2 = CICO.

Materials and Intervention Descriptions

Baseline. Alexander and Emmanuel were already enrolled in CICO at the start of this study and they did not participate in a no-treatment Baseline phase. During Baseline for Zoe, Jeremiah, and Diego, all typical classroom procedures and instructional routines remained intact and unchanged by the research team (see description of observational contexts above). In school A, PBIS practices included praise paired with awarding students points on Class Dojo. At School

B, the teachers paired praise with PBIS tickets. In addition, Jeremiah's classrooms had a "Calm Down Corner" where students could take a break. Students could choose to use this space or a teacher could prompt a student to take a break. However, students did not have a specific routine for requesting breaks nor were appropriate breaks reinforced. Jeremiah was able to access it during baseline and all other phases.

Standard protocol CICO. The standard protocol of check-in check-out for this study included the following components for each participant: (1) daily morning check-in with an assigned adult mentor, (2) use of a DPR listing two to three behavioral expectations and a rating scale, (3) behavioral feedback from teachers throughout the day, and (4) afternoon check-out with the mentor. Alexander and Emmanuel's mentors were chosen prior to the start of the study. Their mentors remained unchanged during the study. For Zoe, Jeremiah, and Diego, the classroom teachers selected a preferred adult in the building to serve as the mentor for the duration of the study.

Check-in. Each morning, students checked in with their mentors. During check-in sessions, mentors provided the student with a new DPR and filled in the date, daily goal, and reinforcer. Students could choose the reward each day (e.g., candy, iPad time, reading). Then, the mentor provided a precorrection by going over the behavioral expectations listed on the DPR. Next, the mentor reviewed the rating scale system and reminded the student how to earn points. Finally, the mentor provided the student with a positive statement of encouragement ("You are going to have a great day!").

DPR. The DPR consisted of the schoolwide behavioral expectations and a system for rating behavior (see Table 4 for DPR info; see Appendices A – E for participant CICO DPRs).

As outlined in the manual, the daily point goal for the standard protocol is typically 80% but each school used their own system for setting goals. In School A, the common practice was for students to work with mentors each morning to choose a point goal. Typically, the goal was based on the percentage of points earned the previous day. At School B, it was the common practice to set CICO goals at 75% and for mentors to not send home point sheets or behavior notes. To ensure my study has the necessary ecological validity, I did not attempt to change any long-standing school practices.

Table 4

Intervention Components

Participant	DPR Goals	Points Possible	Daily Goal	Break Activity Choices
Alexander	1. Use appropriate language 2. Complete work	36	Chosen each day	Water fountain Read Draw Use play-doh
Emmanuel	1. Follow directions 2. Speak when appropriate 3. Complete work	54	Chosen each day	Water fountain Read Draw Use play-doh
Zoe	1. Complete work to teacher's expectations 2. Keep a friendly face 3. Raise hand to ask for help	60	75%	Water fountain Read Draw
Jeremiah	1. Be on-task; Stay awake 2. Follow directions 3. Keep hands to self; Use kind words	60	75%	Water fountain Read Draw
Diego	1. Be Responsible: Stay on-task and focus on my work 2. Be Respectful: Listen to whoever is speaking; Raise hand to speak 3. Be Safe: Keep hands, feet, and objects to self	48	75%	Water fountain Read Draw in notebook Play with blocks

Teacher feedback. After each class period, the student provided his or teacher with his DPR to get feedback. The teacher marked off points earned for each behavioral expectation, communicated the number of points earned with the student, and provided praise or corrective feedback. While the manual recommends providing feedback after each individual academic block, teachers in this study often provided feedback every couple of hours as this was deemed a more manageable schedule by the teachers.

Check-out. At the end of each day, the student returned to his mentor for the check-out session. During this time, the mentor tallied up the total number of points earned and determined if the student met his goal. If the student met the goal, the mentor provides him with the reward. If not, the mentor conducted problem solving to talk about difficult areas of the day. The session ended with the mentor providing the student with behavior specific praise and corrective feedback for areas of improvement the next day.

Breaks are Better. During BrB, core components of the CICO cycle listed above remained in place with the addition of a few procedures and materials tailored to provide functionally appropriate behaviors for students who engage in problem behavior to avoid or escape from their work.

Check-in. Students checked in with his or her mentor each morning as they did in CICO. When the mentor set the daily goal, she also reminded the student that taking breaks would earn bonus points. Then, the mentor reviewed the break system by asking the student for an example of an appropriate time to request a break during class or encouraging the student to take breaks during the day.

DPR. Each participant's BrB DPR included a break tracker. The symbols, represented by the letter 'B', provided a visual to show how many breaks each student was allowed during each period and to track when a break had been taken. The DPR also included an additional column for teachers to provide a rating as to whether a student did or did not take breaks in an appropriate way. The back of the DPR included a visual listing the steps for requesting a break, steps to take if a break was denied, and the activities a student could engage in during a break (see Table 4 for DPR info; see Appendices F – J for BrB DPRs).

Break procedures. During BrB, each student was allowed to take up to three breaks during each class period using the protocol described below.

Appropriate way to ask for a break. To take a break, students were trained to first silently raise the break card in the air while not disturbing others around the room. Next, the student made eye contact with the teacher and waited for a response. If the student asked appropriately and the teacher approved of the break, she gave the student a thumbs up. If it was not a good time for a break (e.g., timed break, fire drill), the teacher temporarily denied a break with a thumbs down and gave the student an explanation. At this point, the student set the timer for 2 min and continued to work. Once the time was up, the student able to request a break in an appropriate manner.

Inappropriate ways to ask for a break. If a student asked for a break in an inappropriate manner, the teacher denied the break request. Examples of behaviors that signified an inappropriate way to ask for a break include talking/calling out, distracting peers, or waving the break card around. If the student inappropriately requested a break, the teacher gave the student a thumbs down. At this point, the student set the timer for 2 min and continued to work. Once the time was up, the student was able to request a break in an appropriate manner.

Taking a break. Once the teacher gave the student a thumbs up signal to take a break, the student set a timer (i.e., sand timer or digital timer) for 2 min. During this time, the student could engage in break activities as previously agreed upon by him and the teacher (e.g., drawing, reading, playing with blocks). When time was up, the student marked off one 'B' on his or her DPR and immediately returned to work.

Teacher feedback. During BrB, each student continued to receive feedback on the DPR from his/her teacher after each class period. However, during BrB, the teacher also provided a rating on breaks. The student earned a bonus point if he asked for and took breaks in an appropriate manner during that period. If he did not take a break or did so inappropriately, he did not earn any bonus points.

Check-out. At the end of each day, each student checked out with his or her mentor. During this meeting, the mentor collected the DPR, tallied the points, and determined if the student met his or her goal. The final tally of points also considered any bonus points for taking breaks the right way (this number was added to the numerator only). If the student met his goal, he was provided with praise and the predetermined reward. If the student did not meet his goal, the mentor provided neutral but behavior specific feedback. The mentor also provided general feedback on the breaks taken that day.

Training

Prior to starting CICO or BrB, teachers met with the first author for training. Since all teachers had previous experience with CICO, these trainings took the form of coaching sessions rather than behavioral skills training. As such, they were brief (no more than 20 min) and served as a review of essential components.

Check-in Check-out. For students not currently enrolled in CICO, prior to starting, each teacher was asked to select a mentor (see Table 3 for mentor demographics) and define three behavioral expectations for the student. A DPR was drafted using the student's schedule and the selected behavioral expectations. Once the materials were created, the first author met with both the teacher and mentor in their classrooms for a 20 min coaching session. During this session, the check-in, feedback, and check-out procedures was briefly modeled, and teachers were allowed to ask questions as needed. Training fidelity was 100% across all participants as gathered by self-report data. Scripts for check-in, feedback, and check-out sessions were provided to both mentors and teachers (see Appendices K - M).

On the first day of implementation, the mentors were given an additional script (see Appendix N) to introduce the student to CICO and practice the procedures. The first author observed the initial sessions to be sure the student was provided with information on all components of the intervention. For Emmanuel and Alexander who were already enrolled in CICO at the start of my study, the CICO components were observed to ensure they were being implemented according to the standard protocol.

Breaks are Better. Prior to the start of BrB, the first author met with both the teachers and mentors in their classrooms to conduct a 20 min in-person planning and training session. During this session the team made a list of activities a student may engage in during a break (e.g., drawing, reading, playing with blocks) and chose a timer (e.g., digital or sand; see Appendix O for BrB Planning Sheet). Finally, explicit instruction and modeling of procedures were provided before the teachers practiced. The first author provided behavioral feedback as needed. After this meeting, a new DPR was drafted with break tracking and the break routine

printed on the back. All materials for this condition were blue to help students and teachers differentiate between interventions. Again, mentors and teachers were provided with scripts for check-in, feedback, and check-out sessions (see Appendices P - R).

Student training for break system. The teachers or first author trained each student in the procedures for taking a break using scripts (see Appendix S). Using teachers as trainers was intended to enhance the authenticity of the instruction and provided the student an opportunity to practice with the person from whom he or she will be requesting a break. Teachers were given a training guide and fidelity check-list to self-report fidelity. However, due to schedule constraints, the first author served as a trainer for Diego and Zoe.

During the training session, the trainer provided explicit instruction to participants in procedures for requesting a break, procedures for taking a break, procedures for when the break is over, and procedures for when a teacher denies a break request. The student added to the list of pre-approved break activities in consult with the teacher. Then, the teacher and student practiced three times. Student training fidelity was 100% across all participants as measured from self-report data collected from the trainers.

Procedural Fidelity

Intervention components. Fidelity data were collected across the following components across all treatment conditions: (a) check-in sessions, (b) teacher feedback sessions, (c) break requests, and (d) check-out sessions. Each component was measured as a dichotomous yes or no (see Appendices T – W for fidelity forms). Total fidelity was calculated by summing the total number of yeses and dividing that by the total number of components.

Measurement procedures and IOA. RAs and or the first author collected fidelity data via direct observation. This approach provided a more objective measure of fidelity than relying on the DPR permanent product as is done in many CICO studies (e.g., Maggin et al., 2015; Wolfe et al., 2017). Fidelity information was collected on at least one component of the CICO cycle for at least 42.86% of days in each condition across participants. Data were aggregated to calculate mean overall across each condition and mean fidelity across check-in, feedback, break system, and check-out across each condition. To assess IOA on fidelity, a second observer collected data in addition to the primary data collector. IOA data are reported by participant in Tables 5 - 9.

Observer training. Prior to the start of data collection, the first author trained all RAs on the components of fidelity during a 1 hr in person session. During this session, main components of CICO and BrB were reviewed, RAs were shown the data collection forms, and the first author defined and described each item.

Data Analysis

Visual analysis. Consistent with procedures to analyze results for single case design research, all observational data were graphed and analyzed via visual analysis. Formative visual analysis was used to make decisions regarding phase changes (Barton, Lloyd, Spriggs, & Gast, 2018). As a summative measure of visual analysis, the existence of a functional relation was determined by assessing the change in level, consistency, and stability within and between each condition. The median was chosen as a measure of level due to the variability of student data and presence of outliers in each condition that were likely to skew mean calculations. To report the

variability, the median value was used to calculate an envelope of stability with upper and lower bounds at 20% of the median. Collectively, these data, in combination with the immediacy of effect and similarity of data patterns across similar condition, was used to determine if the data showed experimental control. Any design with data demonstrating one effect with two additional replications of an effect was identified as having a functional relation.

Effect size. While visual analysis is the cornerstone of single case research, it does not provide any indication of the magnitude of an effect. Therefore, as an additional descriptive and quantitative method for evaluating an effect size, the log response ratio (LRR; Pustejovsky, 2015) was calculated. The LRR is a single case effect size metric calculated by taking the natural log of the change in mean between two conditions (e.g., between CICO and BrB). The resultant LRR is an integer, but can be transformed into a percent change that is more commonly interpretable. The first author used an online calculator (https://jepusto.shinyapps.io/SCD-effect-sizes/; Pustejovsky & Swan, 2018) to calculate the LRR values and associated confidence intervals for data on disruptive behavior and academic engagement across all participants.

For the results of this study, the LRR was used to find the overall percent change between adjacent phases (CICO and BrB) across each design for each participant for each outcome. To account for varying directions of therapeutic changes across outcomes, both the LRR decreasing (LRRd) for problem behavior data and the LRR increasing (LRRi) for academic engagement were calculated using the raw data for adjacent phases. There was one exception to this analytic approach. Since Jeremiah was randomly assigned to start with BrB and the design used was C-B-C-B, where we expect countertherapeutic changes when switching to CICO, his data were transformed and the first author used the inverse of each phase to calculate the LLRd for problem

behavior and LRRi for engagement. This allowed the reporting of LRR to be consistent across participants.

Social Validity

After the implementation of the intervention, each participant's classroom teacher completed the Intervention Rating Profile-15 (IRP-15; Witt & Elliott, 1985). This scale is a 15-question assessment that asks the rater to rank intervention goals, procedures, and outcomes on a Likert-type scale ranging from Strongly Disagree (1) to Strongly Agree (6), with high scores indicating high social validity. Teachers were provided with two forms and asked to rank CICO and BrB separately.

After the study concluded, the first author met with participants to complete the Children's Intervention Rating Profile (CIRP; Witt, & Elliot, 1985). This scale is a 5-question assessment that asks students to rank their thoughts about the intervention on a 6-point Likert-type scale ranging from Strongly Disagree (1) to Strongly Agree (6). Before answering questions, the rating scale was described and the students practiced answering non-study related questions to ensure they understood how to use the rating scale.

CHAPTER III

RESULTS

Results Across Measures for Alexander

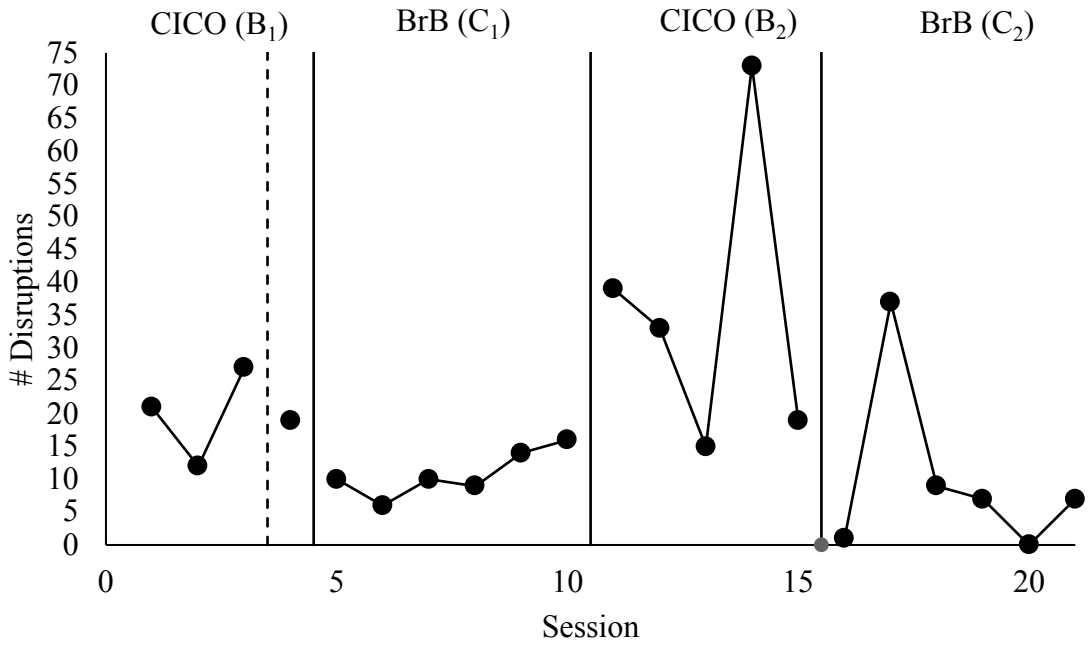

Figure 1. Alexander's problem behavior as measured by a count of disruptions during each 15 min observation session. The dashed line represents a slight variation made to CICO by the mentor who added in a midday point goal.

Problem behavior. During CICO, Alexander's problem behavior was relatively stable with 50% of data points falling within 20% of the median (20; range: 12 - 27; see Table 5). When BrB was introduced, the level of disruptions immediately decreased. BrB data were low and stable for the duration of the condition with a slight upward trend (median: 10; range: 6-16).

The LRR values indicate BrB led to a 45% decrease in disruptions (see Table 5). In condition B_2, the reintroduction of CICO led to an immediate increase in level of disruptions (median: 33) and variability (range: 15 - 3) similar to condition B_1. During the final BrB condition, as predicted, disruptions immediately decreased and remained low and stable for five out of six data points (median: 7; range: 1 - 37). The LRR values indicate the second BrB condition led to a 68% decrease in disruptions.

Table 5

Alexander's Data Summary

	Condition			
Measure	CICO	BrB	CICO	BrB
Problem Behavior				
Median	19.75	10.83	35.8	10.17
IOA (% sessions)	84.74% (50)	81.71% (42.86)	91.77% (40)	64.86% (50)
LRR (% change)	-	-0.604 (-45.34)	-	-1.15 (-68.34)
LRR SE [CI]	-	0.207 [-1.01, -0.20]	-	0.618 [-2.36, 0.06]
Academic Engagement				
Median	54.2%	74.15%	21.30%	33.60%
IOA (% sessions)	98.97% (50)	97.55% (42.86)	84.75% (40)	88.40% (50)
LRR (% change)	-	0.112 (11.85)	-	0.524 (68.88)
LRR SE [CI]	-	0.335 [-0.54, 0.77]	-	0.438 [-0.34, 1.38]
DPR Point Data				
Overall Mean	66.21%	75.76%	65.97%	76.25%
Appropriate Language	63.33%	69.86%	63.69%	71.16
Completes Work	68.94%	81.65%	68.25%	81.34%
Fidelity				
Dosage (days)	6*	8	9	12
Check-in (IOA %)	88.89 (100)	97.78 (96.67)	100 (93.33)	77.78 (100)
Break System (IOA %)	0 (100)	100 (100)	0 (100)	100 (100)
Feedback (IOA %)	100 (100)	75 (100)	74.28 (100)	100 (100)
Check-out (IOA %)	33.33 (100)	66.67 (100)	79.17 (100)	80 (100)

Note. The number of completed DPR sheets was used as a proxy for dosage. * = Alexander was enrolled in CICO for two months before the study started. Data in this table reflect those used during the study. DPR = daily progress report; IOA = interobserver agreement (% agreement between observers); LRR = log response ratio; CI = confidence interval; SE = standard error

Due to the immediacy of effects, similar data patterns across similar conditions, and the presence of three demonstrations of an effect, it was concluded that there is a functional relation. More specifically, BrB led to predictable and therapeutic changes in problem behavior than CICO for Alexander. IOA was collected during at least 40% of sessions across all conditions and IOA was above 81% for three conditions. Due to low rates of disruptive behavior, IOA was low during one session and resulted in IOA for phase C_2 BrB to be 64.8% (see Table 5 for mean IOA).

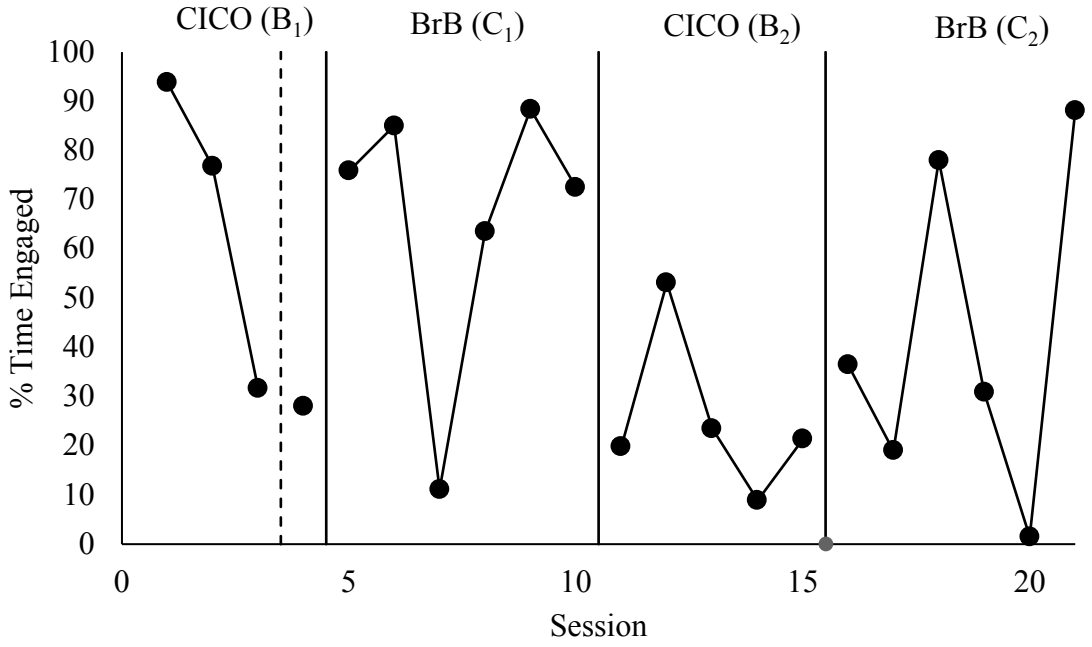

Figure 2. An estimate of Alexander's academic engagement as measured by duration of engagement during 15 min observation sessions. The dashed line represents a slight variation made to CICO by the mentor who added in a midday point goal.

Academic engagement. Alexander's engagement data during the first CICO condition had a steep decelerating trend (median: 54.2%; range: 28 - 93.8%; see Table 5). When BrB was

introduced, engagement immediately increased (median: 74.15%; range: 11 - 88.40%) and remained stable with 83% of data points falling within 20% of the median. The LRR indicates an 11% increase in engagement during BrB (see Table 5). In condition B_2, the reintroduction of CICO led to an immediate decrease in engagement (median: 21.3%). During the final BrB condition, engagement immediately increased but was highly variable across the duration of the condition. The LRR indicates that BrB led to a 68% increase in engagement during this condition.

Overall, the data show immediacy of effects between adjacent conditions. However, high variability led to significant overlap between adjacent conditions and dissimilar patterns between similar conditions. Therefore, the data show improved outcomes during BrB but insufficient experimental control to confidently determine a functional relation to determine BrB was a superior intervention. IOA was assessed during at least 40% of sessions across all conditions and IOA averaged 92.77% across all conditions (see Table 5 for mean IOA across conditions).

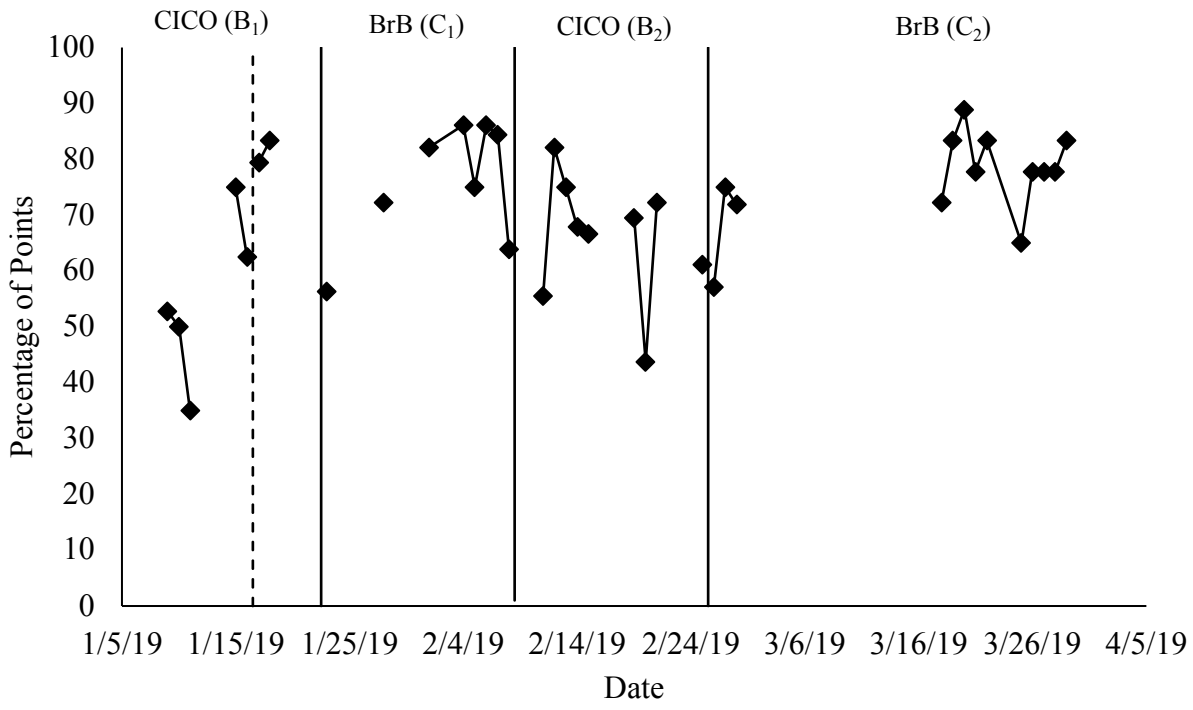

Figure 3. The percentage of points Alexander earned on his DPR each day.

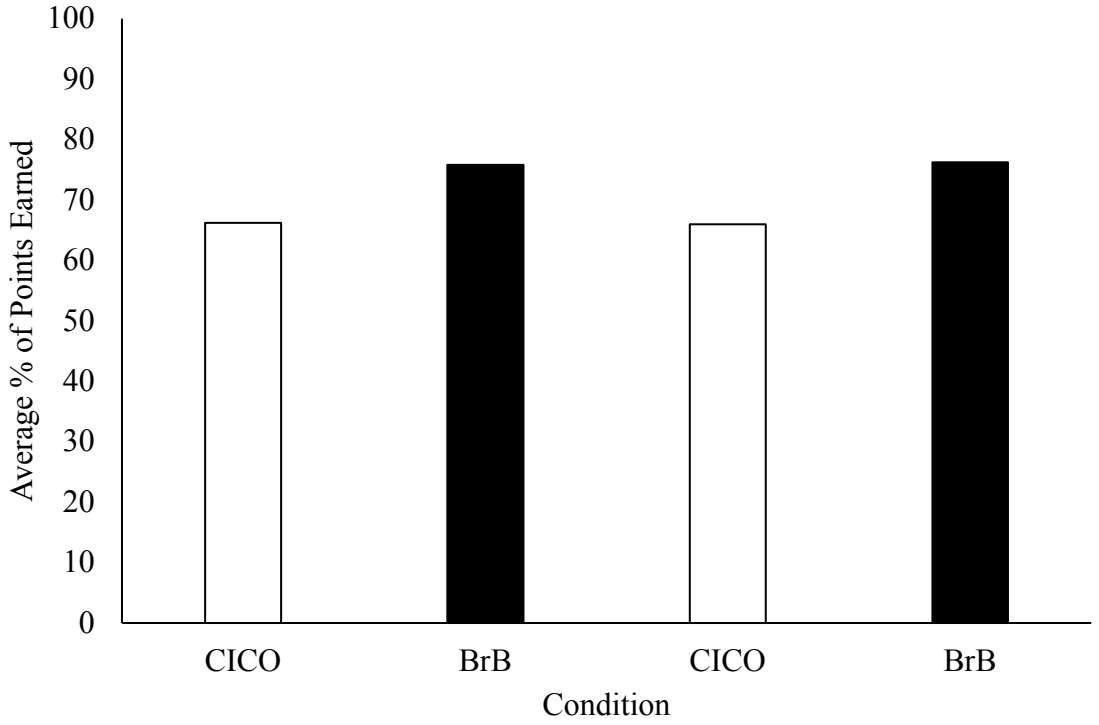

Figure 4. The average percentage of DPR points Alexander earned by condition.

DPR data. Alexander's DPR data show that the percentage of points earned daily was highly variable across all conditions (range: 35 - 88.89%; see Figure 3). While his daily goal varied, he earned more than 80% of points on 32.36% of days. Despite the variability, he earned nearly 10% more points, on average, during BrB than during CICO (see Figure 4). This pattern was most noticeable for his work completion expectation, where he earned, on average, 20% more points for this expectation during BrB than CICO. Individual means across each condition and by each behavioral expectation are reported in Table 5. Alexander did not take many breaks during BrB, most often taking 0 breaks per day (see Table 6).

Table 6

Average Number of Breaks Taken Per Day

	BrB (C_1)			BrB (C_2)		
Participant	Mean	Range	Mode	Mean	Range	Mode
Alexander	0.6	0-2	0	1.2	0-3	0
Emmanuel	1.2	0-3	1	0.4	0-1	0
Zoe	1.3	0-2	1	0.7	0-1	1
Jeremiah	1.5	0-4	0	1.5	0-3	3
Diego	1.2	0-4	1	0.9	0-2	1

Treatment fidelity. Treatment fidelity data were collected for at least 58.3% of days of treatment in each condition. During the first CICO condition, treatment fidelity across all components averaged 92.71% (range: 85.71% - 100%; see Table 5 for means across components). No elements of BrB were in place during any day of CICO. During the C_1 condition, across all components, treatment fidelity for BrB averaged 92.14% (range: 81.82 - 100%). During the B_2 condition, treatment fidelity for CICO averaged 93.32% across all components (range: 75 - 100%). During the final BrB condition, across all components, treatment fidelity averaged 84.12% (range: 0 - 100%). The low fidelity average for this condition is due, in part, to one check-in and one check-out session that did not occur, resulting in 0% fidelity for those days.

Results Across Measures for Emmanuel

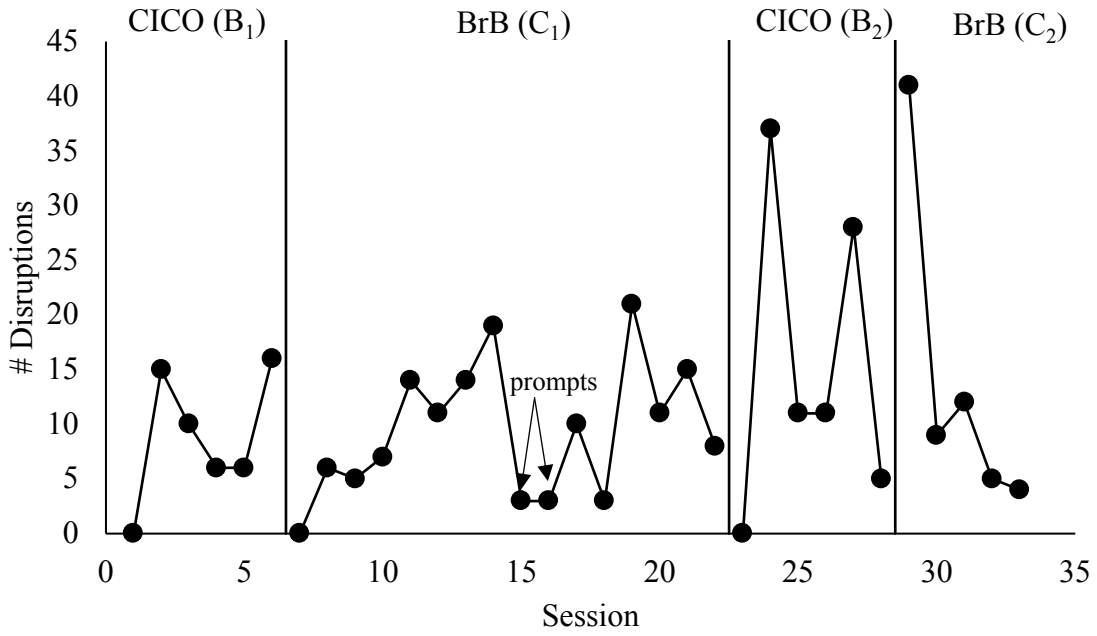

Figure 5. An estimate of Emmanuel's problem behavior as measured by the number of disruptions during each 15 min observation session.

Problem behavior. During CICO, Emmanuel's problem behavior was highly variable with 0% of data points falling within 20% of the median (8; range: 0 – 16; see Table 7). Upon the introduction of BrB, problem behavior immediately decreased but then steadily increased during the first half of the condition. At this point, the classroom teacher reported and data from his DPR showed that Emmanuel was not taking many breaks. The first author encouraged the teacher to prompt him to take breaks across the day for two consecutive days. During prompting, disruptions immediately decreased but then became variable for the second half of the phase. The LRR shows BrB led to a 3% decrease in problem behavior (see Table 7). When CICO was reintroduced, disruptions immediately decreased and were moderately variable with 33% of data

falling within 20% of the median (11). During the final implementation of BrB, problem behavior immediately increased. Data remained low and stable with a decelerating trend for the last four data points. The LRR indicates a 27% decrease in problem behavior during the final BrB condition.

In summary, the data show changes in Emmanuel's behavior immediately after changes in programing (e.g., intervention or prompting). This could be due to the interventions procedures but we cannot discount other factors that may also be at play. Overall, there is a lack of differentiation of level across conditions. As such, there are insufficient data to determine experimental control and identify a functional relation. RAs collected IOA data for at least 16.67% of observation sessions per condition and agreement averaged 77.68% (range: 65.48 - 100%; see Table 7 for IOA reported by condition).

Table 7

Emmanuel's Data Summary

	Condition			
Measure	CICO	BrB	CICO	BrB
Problem Behavior				
Median	8	9	11	9
IOA (% sessions)	90.47% (50)	65.48% (50)	100% (16.67%)	88.89% (40)
LRR (% change)	-	-0.0332 (-3.27)	-	-0.319 (-27.31)
LRR SE [CI]	-	0.325 [-0.603, 0.669]	-	0.613 [-1.234, 1.170]
Academic Engagement				
Median	72.55%	69.20%	82.45%	80.70%
IOA (% sessions)	93.23% (50)	95.78% (50)	99.38% (16.67)	93.73% (40)
LRR (% change)	-	0.0356 (3.62)	-	0.031 (3.14)
LRR SE [CI]	-	0.128 [-0.216, 0.287]	-	0.116 [-0.196, 0.258]
DPR Point Data				
Overall Mean	95.16%	87.72%	91.09%	92.90%
Follows Directions	97.61%	77.36%	83.08%	83.61%
Speak When Appropriate	91.67%	93.10%	95.39%	99.21%
Completes Work	96.19%	92.72%	94.82%	95.99%
Fidelity				
Dosage (days)	5*	28	11	7
Check-in (IOA %)	83.33% (100)	89.62% (96.25)	91.67% (100)	92.50% (100)
Break System (IOA %)	0% (100)	100% (100)	0% (100)	100% (100)
Feedback (IOA %)	100% (72.72)	87.60% (94.55)	66.67% (100)	100% (100)
Check-out (IOA %)	100% (100)	90.91% (100)	50% (100)	100% (100)

Note. The number of completed DPRs per condition served as a proxy for dosage. * = Emmanuel was enrolled in CICO for two months before the study started. Data in this table reflect those used during the study. DPR = daily progress report; IOA = interobserver agreement (% agreement between observers); LRR = log response ratio; CI = confidence interval; SE = standard error

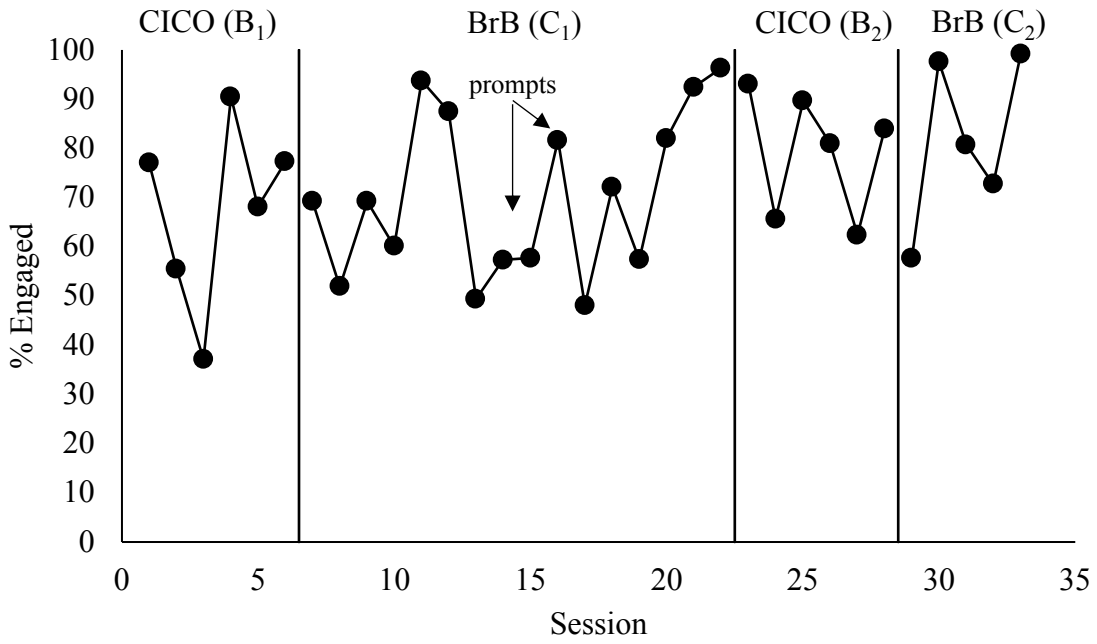

Figure 6. An estimate of Emmanuel's academic engagement as measured by duration of engagement during 15 min observation sessions.

Academic engagement. During B_1, CICO Emmanuel displayed moderately variable engagement with 50% of data points falling within 20% of the median (72.55%). The condition had an overall accelerating trend with the last three data points decelerating. When BrB was introduced, data became stable for four data points and then had a cyclical pattern throughout the condition. Overall, 56% of data points fall within 20% of the mean and have a decreasing trend, however, the last four data points of the condition have a sharp accelerating trend. The LRR shows BrB led to a 3% increase in engagement (see Table 7). When CICO was put back into place, engagement immediately decreased and remained moderately stable with 66.7% of data falling within 20% of the median (82.45%). When the final BrB condition began, engagement immediately decreased and then became variable for the remainder of the condition (median:

80.70%). Similar to the first BrB condition, LRR shows the second BrB condition led to a 3% increase in engagement.

Overall, there is a lack of consistent and predictable changes in therapeutic direction, large ranges, and dissimilar patterns between similar conditions. As such, data are insufficient to determine a functional relation for academic engagement. IOA for engagement averaged 93.15% (range: 65.48 - 100%) across all conditions as collected for at least 16.67% of sessions across all conditions (see Table 7 for IOA averages by condition).

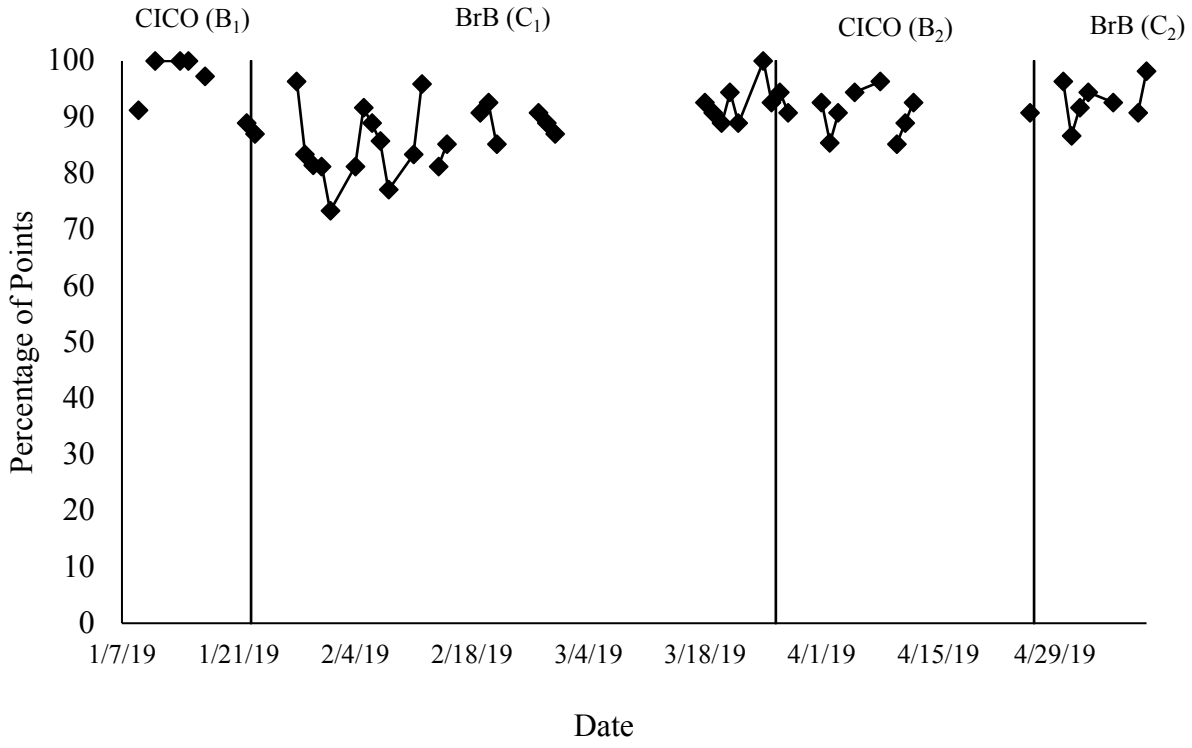

Figure 7. The average percentage of DPR points Alexander earned each day.

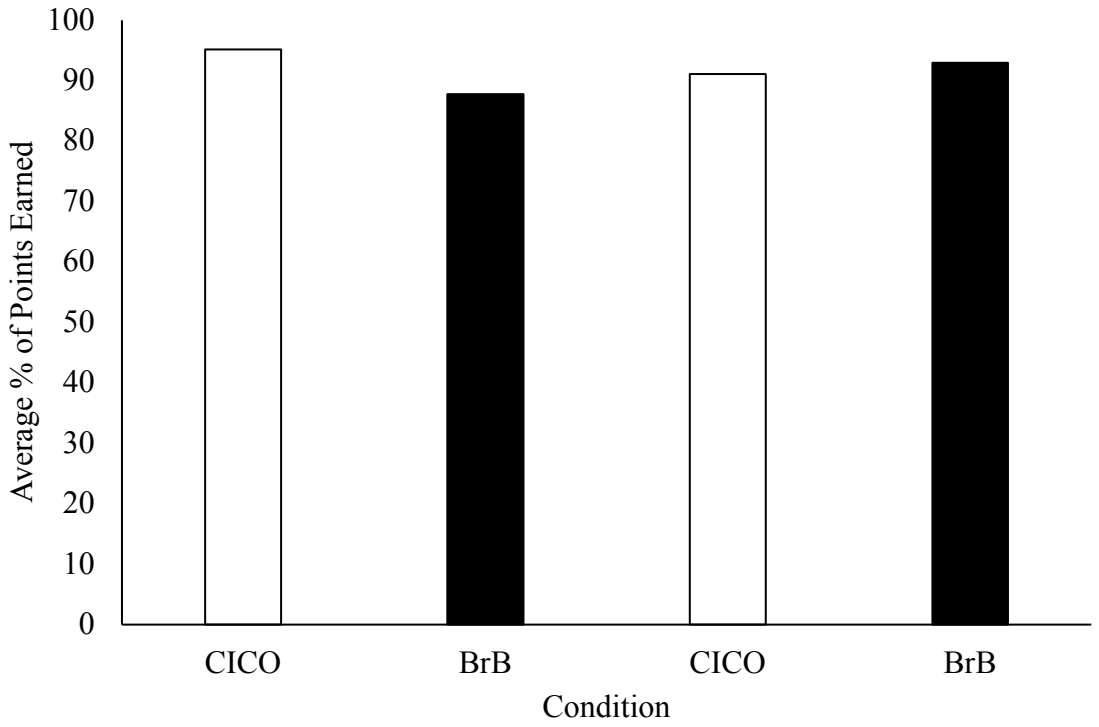

Figure 8. The average percentage of DPR points Alexander earned across each condition.

DPR data. For 96.15% of days, Emmanuel earned at least 80% of points. For more than half of the days (57.7%), Emmanuel earned at least 90% of his points. He earned a similar average percentage of points across interventions and the graphed data do not show experimental control to determine that BrB led to a higher number of points earned during those conditions. Overall, Emmanuel did not take many breaks during BrB. On average, he took more breaks per day during the first BrB condition (see Table 6).

Treatment fidelity. Treatment fidelity data were collected across all conditions for at least 54.5% of days of treatment in each condition. During implementation of CICO, the average treatment fidelity for B_1 and B_2 were 94.07% (range: 83.33 - 100%) and 71.67% (range: 0 -

100%), respectively. During the B_2 condition, two check-out sessions and one feedback session did not occur, resulting 0% fidelity for those components. No elements of BrB were in place during any day during CICO. During the C_1, across all components, treatment fidelity for BrB averaged 89.08% (range: 66.67 - 100%). During the final BrB condition, treatment fidelity across all components and categories averaged 94.95% (range: 88.89 - 100%). The results for average fidelity for check-in, break system, feedback, and check-out are in Table 7

Results Across Measures for Zoe

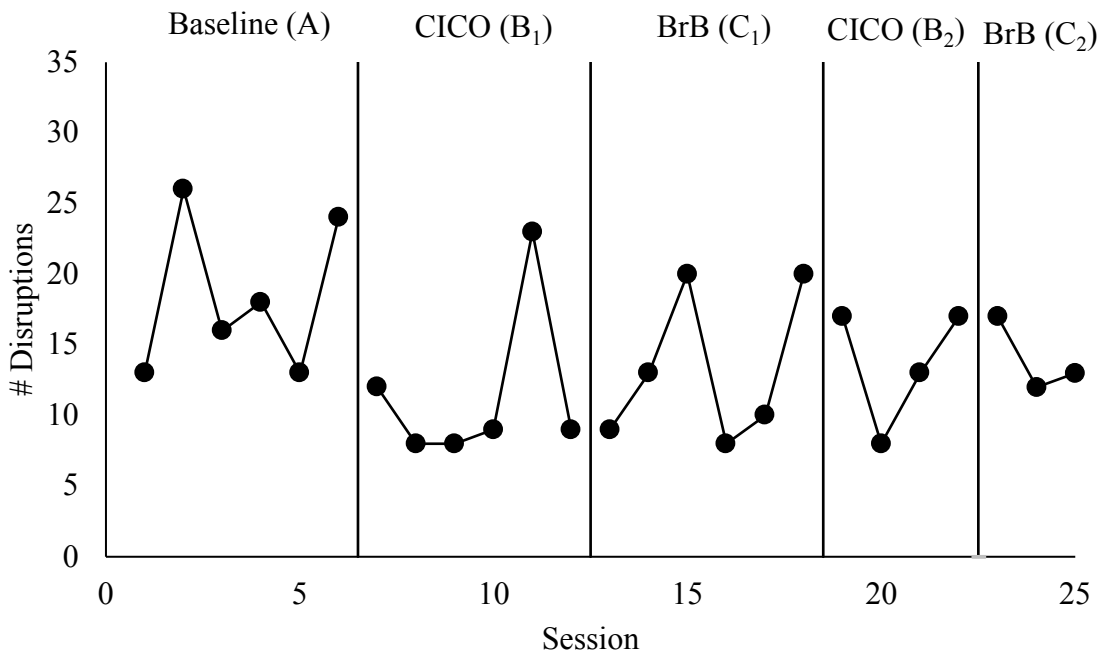

Figure 9. An estimation of Zoe's problem behavior as measured by a count of disruptions per 15 min observation session.

Problem behavior. During Baseline, the median number of disruptions across observations was 17. Data had an overall decelerating trend but were highly variable, with 33.3%

of data points falling within 20% of the median (see Table 8). When CICO was put into place, disruptions immediately decreased and remained low and stable. The introduction of BrB did not immediately change the level of disruptions. During this condition, the overall median was slightly higher than during CICO (median: 11.5) and the data were variable. The LRR shows that BrB led to a 13% decrease in problem behavior (see Table 8). When CICO was put back into place, disruptions immediately decreased and remained stable with 75% of data points falling within 20% of the median (15). During the final BrB condition, there was not an immediate change in level. Data overlapped completely with the previous condition but were highly stable. Due to the end of the school year, we were unable to collect more than three data points. The LRR show that BrB led to 1% decrease in problem behavior.

In summary, while the level and variability decreased during both CICO and BrB conditions as compared to baseline, the lack of immediacy in change and countertherapeutic trends prohibit the identification of experimental control. The research team collected IOA for at least 33.33% of sessions, which averaged 88.04% across all conditions (see Table 8 for IOA means per condition).

Table 8

Zoe's Data Summary

	Condition				
Measure	Baseline	CICO	BrB	CICO	BrB
Problem Behavior					
Median	17	9	11.5	15	13
IOA (% sessions)	86.06% (50)	75.93% (33.33)	90.47% (33.33)	100% (50)	89.47% (33.33)
LRR (% change)	-	0.453 (57.30)	-0.14 (-13.06)	-	-0.0119 (-1.18)
LRR SE [CI]	-	0.241 [-0.02, 0.92]	0.265 [-0.66, 0.38]	-	0.19 [-0.39, 0.36]
Academic Engagement					
Median	88.05%	67.3%	69.20%	72.40%	87.80%
IOA (% sessions)	94.04% (50)	94.98% (33.33)	97.04% (33.33)	98.25% (50)	96.49% (33.33)
LRR (% change)	-	-0.236 (-21.02)	-0.0147 (-1.46)	-	0.179 (19.60)
LRR SE [CI]	-	0.0672 [-0.37, -0.10]	0.0678 [-0.15, 0.12]	-	0.137 [-0.09, 0.45]
DPR Point Data					
Overall Mean	-	93.03%	90.64%	89.93%	94.51%
Completes Work	-	85.14%	89.50%	88.00%	94.44%
Friendly Face		91.16%	88.00%%	88.89%	92.78%
Raise Hand	-	96.52%	94.50%	93.00%	96.26%
Fidelity					
Dosage (days)	-	12	10	5	3
Check-in (IOA %)	-	100 (-)	100 (-)	91.67 (100)	96.29 (90)
Breaks (IOA %)	-	0 (100)	100 (100)	0 (100)	100 (100)
Feedback (IOA %)	-	100 (100)	100 (100)	100 (100)	-
Check-out (IOA %)	-	100 (100)	100 (100)	100 (100)	-

Note. The number of completed DPR forms served as a proxy of dosage. DPR = daily progress report; IOA = interobserver agreement (% agreement between observers); LRR = log response ratio; CI = confidence interval; SE = standard error

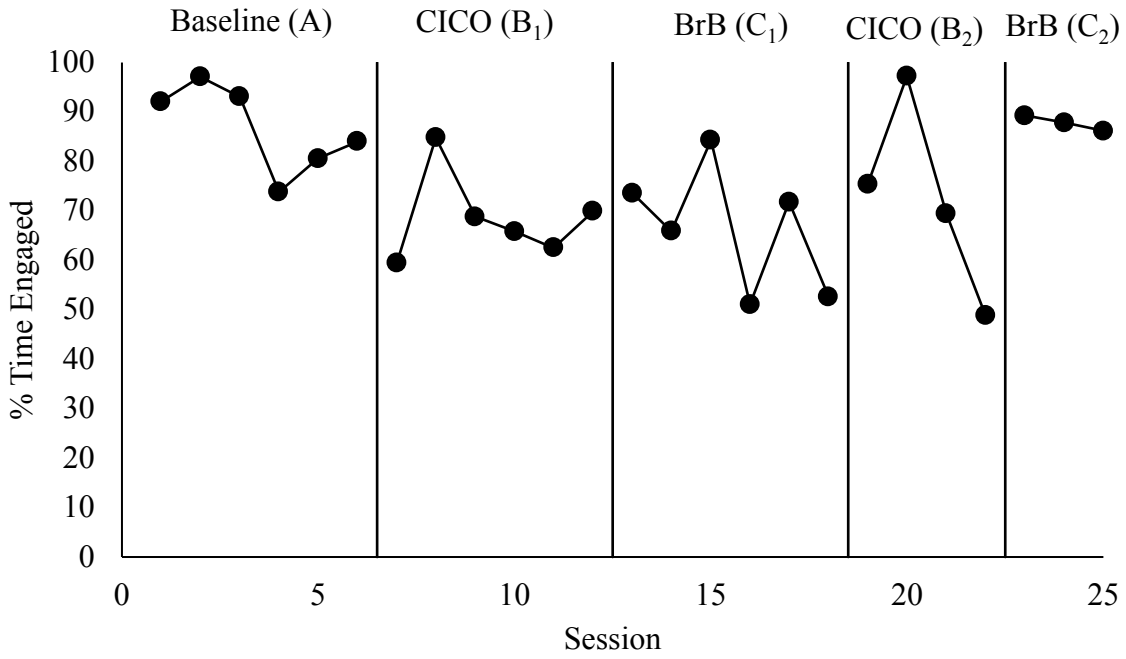

Figure 10. An estimation of Zoe's academic engagement as measured by the percentage of time she was engaged during each 15 min observation session.

Academic engagement. Zoe's engagement during Baseline was high and stable (median: 88.1%; see Table 8). Upon the introduction of CICO, engagement immediately decreased in a countertherapeutic direction and remained at a level lower than baseline (median: 67.3%). The data were stable with 83.3% of data points falling within 20% of the median. There was very little change when BrB was introduced and the stability and level (median: 69.2%) mirrored those of CICO. The LRR shows that BrB led to a countertherapeutic 1.4% decrease in engagement (see Table 8). When CICO was reintroduced, Zoe's engagement immediately increased but grew more variable than any previous condition with only 50% of data points falling within 20% of the median (72.4%). During the final BrB condition, engagement

immediately increased and stayed high and stable (median: 87.80%; range: 86.2 - 89.3%). According to the LRR, the final BrB condition led to a 19% increase in engagement.

Collectively, the data show high overlap and lack of therapeutic changes in level and trend between adjacent conditions. Therefore, the data do not provide sufficient evidence of a predictable pattern of response to determine a functional relation and neither intervention was superior for increasing academic engagement. The overall IOA for engagement averaged 96.18% across all conditions (see Table 8 for IOA means per condition).

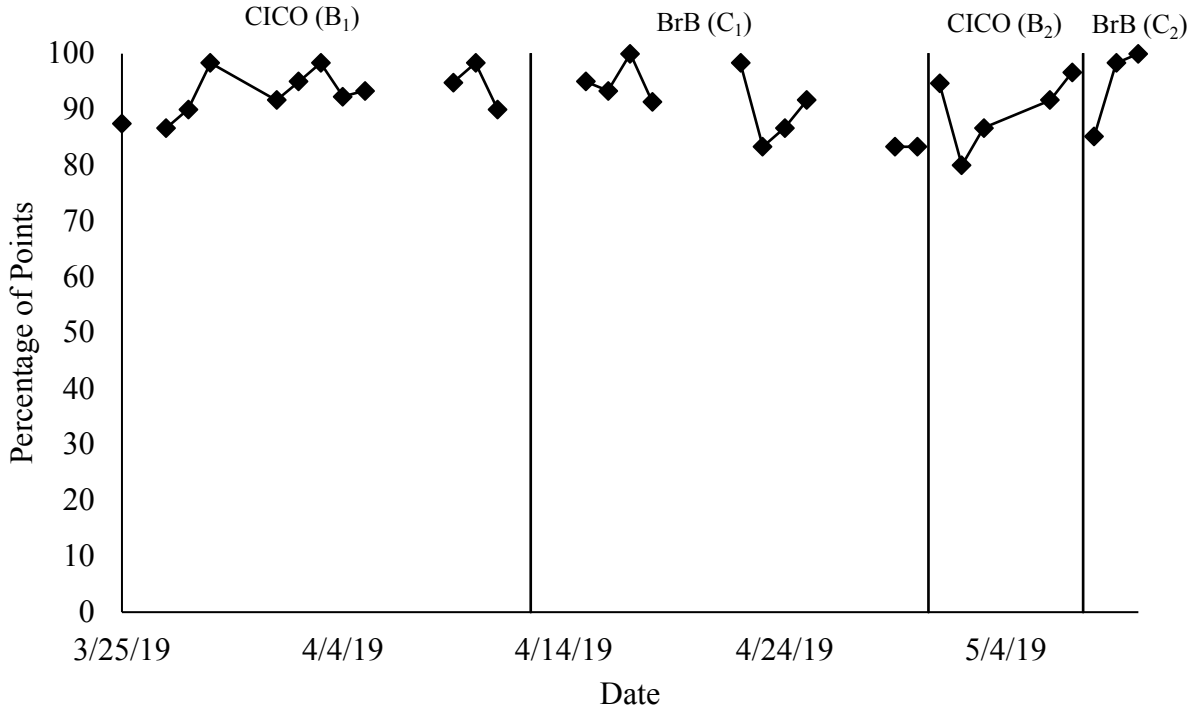

Figure 11. The percentage of DPR points Zoe earned each day on her DPR.

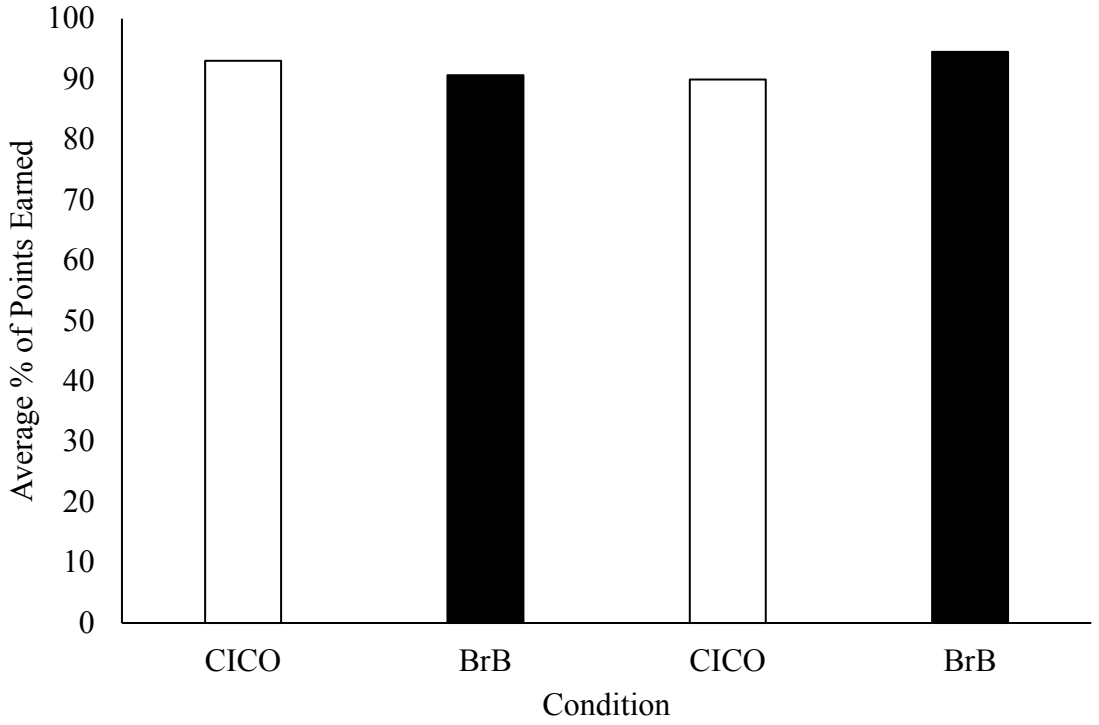

Figure 12. The average percentage of points Zoe earned across conditions.

DPR data. Overall, Zoe earned an average of 91.85% of points on her DPR across all conditions (range: 80 - 100%; mode: 98.33%). Zoe met her 75% goal every day of implementation for both CICO and BrB. In fact, she earned at last 90% or more of points for 70% of days. There is not a large discrepancy in averages by condition or by individual behavioral expectations, providing insufficient evidence to conclude BrB was a superior intervention for increasing the percentage of points earned on the DPR. The mean number of DPR points, by behavioral expectation, are reported in Table 8. Across both BrB conditions, the most common number of breaks taken by Zoe was one (mode: 1; see Table 6).

Treatment fidelity. Treatment fidelity data were collected across all conditions for at least 66.67% of days of treatment in each condition. During B_1 CICO and C_1 BrB conditions,

across all components, treatment fidelity averaged 100% (see Table 8 for IOA and average fidelity across components). During the B_2 condition, across all components, treatment fidelity for CICO averaged 94.67% (range: 83.33 - 100%). No elements of BrB were in place during any day during CICO. During the final C_2 condition, across all components, treatment fidelity for BrB averaged 96.29% (range: 88.89 - 100%).

Results Across Measures for Jeremiah

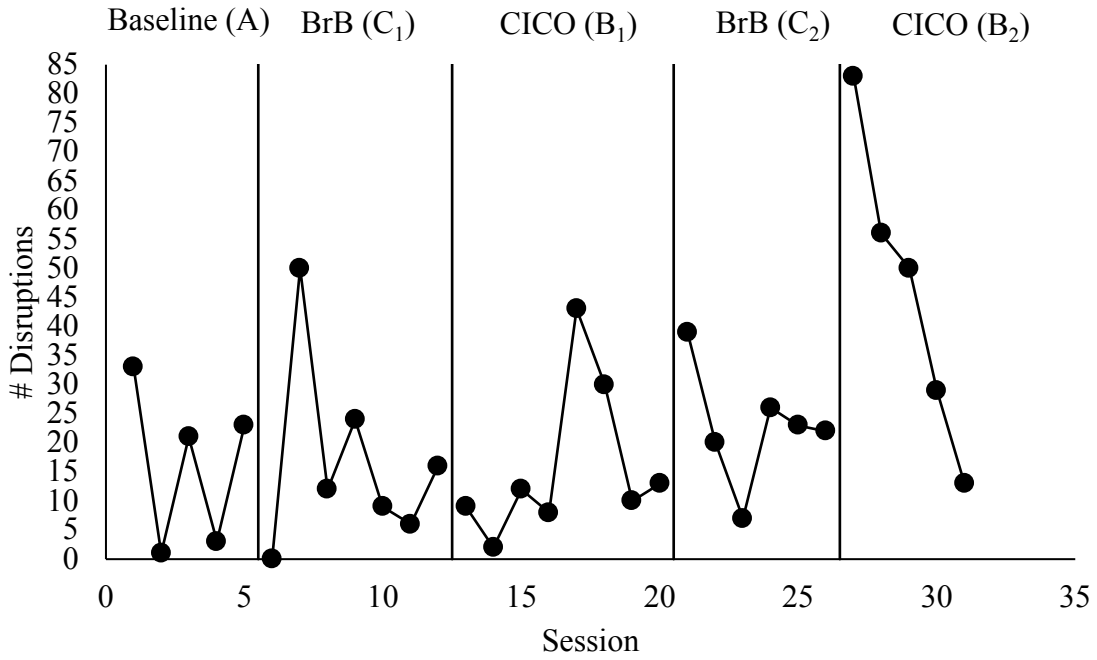

Figure 13. An estimate of Jeremiah's problem behavior as measured by a count of disruptions per 15 min observation session.

Problem behavior. During Baseline, Jeremiah had a median of 21 disruptions across sessions (see Table 9). Data were variable with 40% of data points falling within 20% of the median. Jeremiah was randomly assigned to start with BrB. When BrB was first put into place,

problem behavior immediately decreased and was highly variable. When CICO was put in place, disruptions immediately decreased, grew more stable with 50% of data points within 20% of the median (11). When BrB was put back into place, disruptions immediately increased and remained at levels higher than any previous condition, including Baseline (median: 22.5). During the final CICO condition, disruptions immediately increased and remained high for three data points. Due to this, the overall median was 50 and 40% of the data points fell within 20% of this value.

In summary, the data do not show any improvement over baseline or predictable patterns of response across interventions. As such, the data do not support the determination of a functional relation. IOA data were collected during at least 28.57% of session and averaged 88.13% across all conditions (see Table 9 for IOA means by condition).

Table 9

Jeremiah's Data Summary

	Condition				
Measure	Baseline	BrB	CICO	BrB	CICO
Problem Behavior					
Median	21	12	11	22.5	50
IOA (% sessions)	81.06% (40)	100% (28.57)	69.68% (37.5)	97.93% (50)	96.49% (40)
LRR (% change)	-	0.006 (0.60)	-0.0754 (-7.27)	-	0.721 (105.65)
LRR SE	-	0.105 [-0.21, 0.20]	0.481 [-1.02, 0.87]	-	0.318 [0.098, 1.34]
Academic Engagement					
Median	51.9%	58.3%	66.55%	68.85%	62.8%
IOA (% sessions)	97.25% (40)	96.79% (28.57)	94.19% (37.5)	94.19% (50)	98.41% (40)
LRR (% change)	-	-0.0033 -0.33)	-0.381 (-31.68)	-	0.478 (61.28)
LRR SE [CI]	-	0.207 [-0.41, 0.40]	0.278 [-0.93, 0.16]	-	0.306 [-0.12, 1.08]
DPR Point Data					
Overall Mean	-	62.89%	58.93%	50.83%	64.64%
Be On-Task	-	66.38%	57.76%	54.53%	63.80%
Follow Directions	-	59.36%	58.50%	46.92%	63.54%
Hands to Self	-	67.38%	59.54%	50.70%	66.58%
Fidelity					
Dosage (days)	-	21	10	10	7
Check-in (IOA %)	-	97.22 (80)	100 (100)	95.92 (100)	100 (100)
Breaks (IOA %)	-	100 (100)	0 (100)	100 (100)	0 (100)
Feedback (IOA %)	-	100 (-)	100 (-)	100 (-)	-
Check-out (IOA %)	-	96.67 (100)	100 (100)	83.33 (100)	100 (100)

Note. The number of completed DPR forms served as a proxy of dosage. DPR = daily progress report; IOA = interobserver agreement (% agreement between observers); LRR = log response ratio; CI = confidence interval; SE = standard error

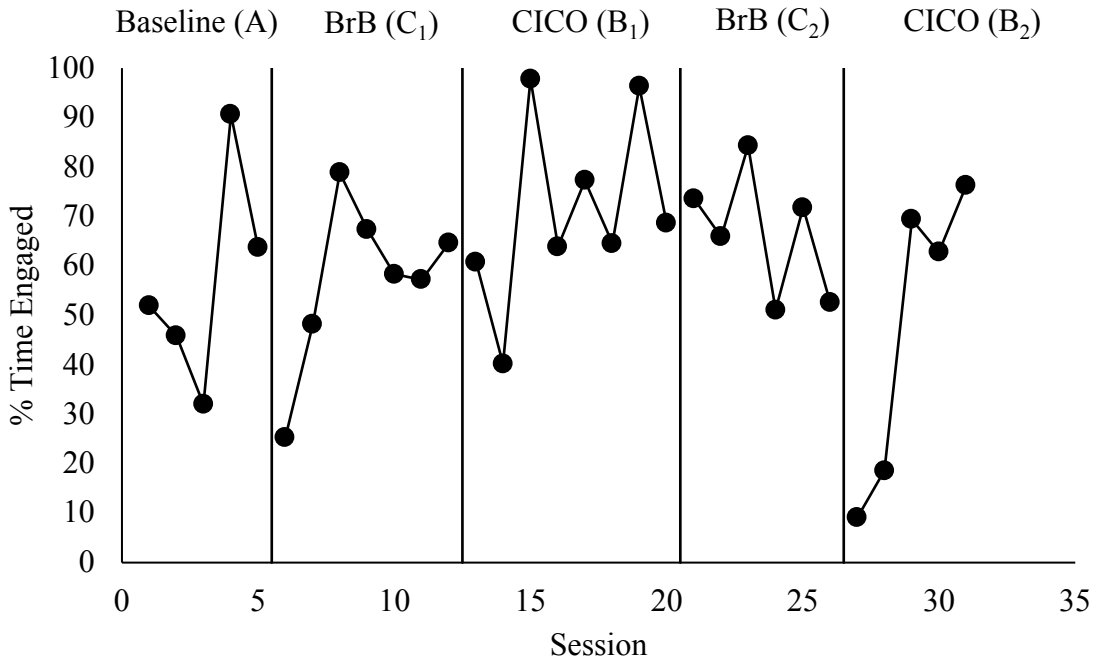

Figure 14. An estimate of Jeremiah's academic engagement as measured by the percentage of session he was engaged during each 15 min observation session.

Academic engagement. During Baseline, Jeremiah's median level of engagement was 51.9% (range: 32 - 90.6%; see Table 9). When BrB was introduced, engagement immediately decreased in a countertherapeutic direction but became more stable with 71.4% of data points falling within 20% of the median (58.3%). When CICO was put into place, the Jeremiah's engagement decreased for two data points and then increased to levels higher than the previous condition (median: 66.55%), remaining stable throughout the condition. When BrB was reintroduced, level (median: 68.9%) and variability (50% of data points falling within 20% of the median) remained similar to that of the previous CICO condition. When the final CICO condition was put in place, the level of engagement immediately dropped to a level lower than

baseline and then sharply increased for the remainder of the phase. Data were highly variable with 40% of data points falling within 20% of the median (62.8%).

Collectively, the lack of predictable patterns within and across conditions fails to demonstrate experimental control. While levels of engagement during treatment were superior to baseline, there are insufficient demonstrations of an effect to determine either treatment is superior for increasing academic engagement for Jeremiah. IOA for engagement data averaged 96.35% across all conditions and were collected for at least 37.5% of sessions (see Table 9 for IOA means by condition).

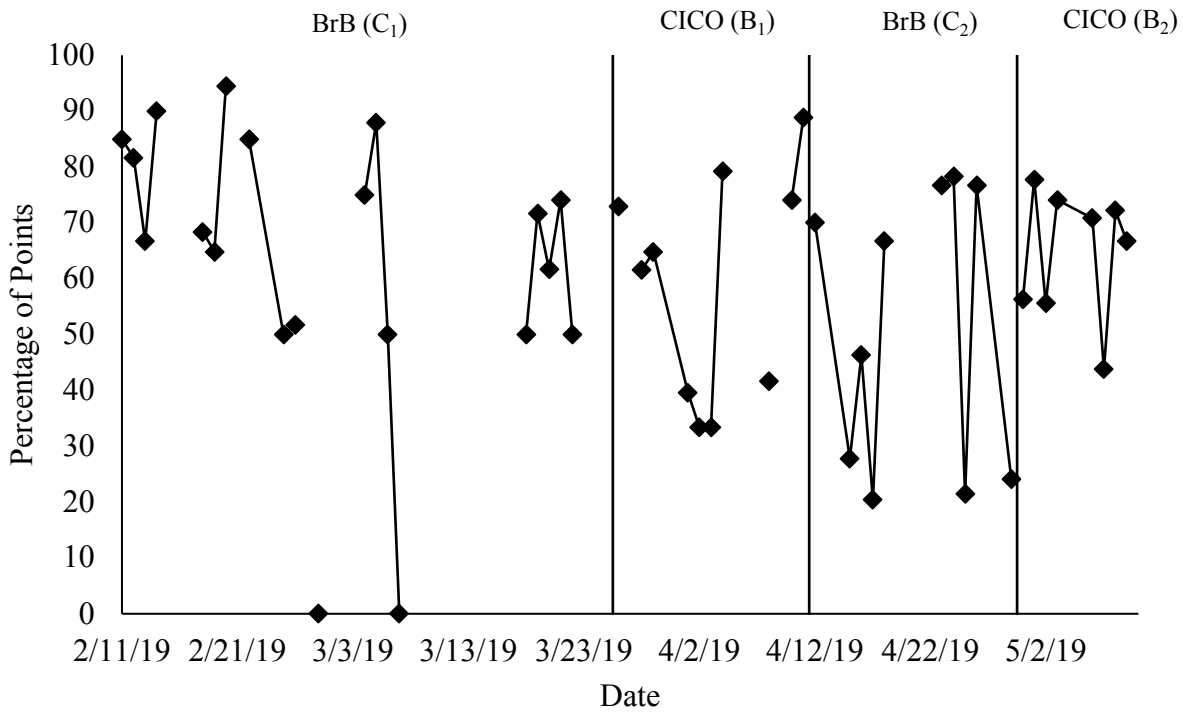

Figure 15. The percentage of points Jeremiah earned on his DPR each day.

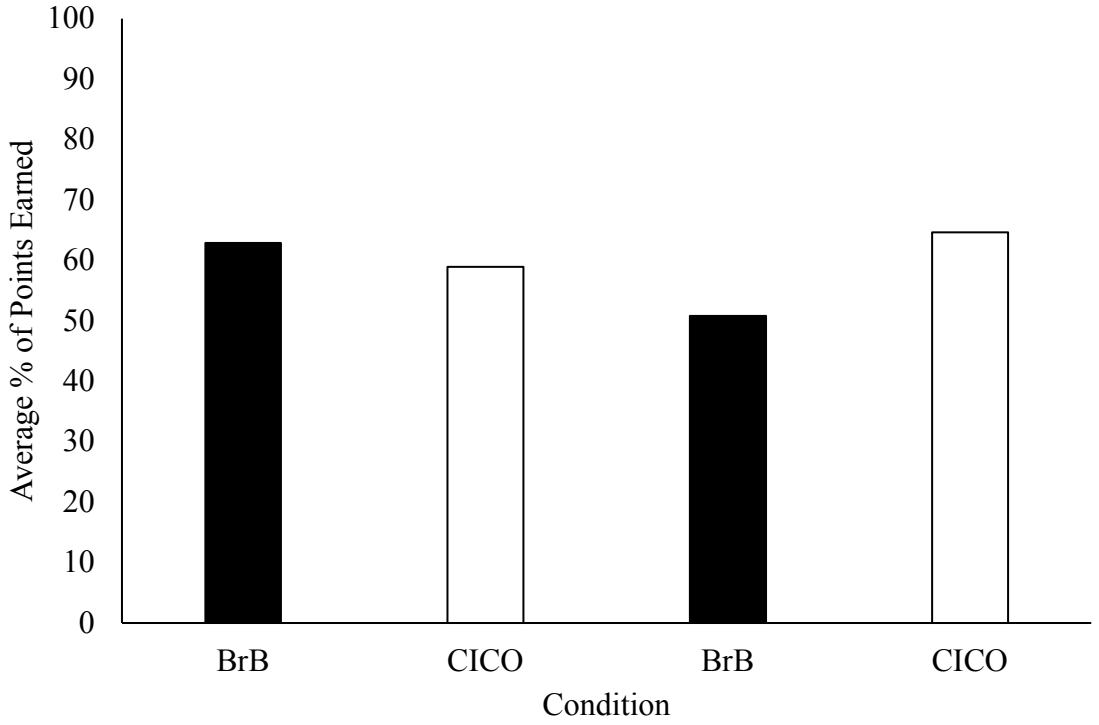

Figure 16. The average percentage of DPR points Jeremiah earned across each condition.

DPR data. Similar to academic engagement data, Jeremiah's DPR data are highly variable across all conditions with no clear distinctions between interventions. He met his 75% goal for 27% of days. DPR averages were calculated by condition and by behavioral expectation and can be found in Table 9. The graphed data and averages by condition do not provide evidence of a functional relation to individuate that either intervention is superior and consistently led to a higher percentage of points earned on the DPR. The average number of breaks taken by Jeremiah remained unchanged across both BrB conditions. However, he took more breaks per day during the second BrB condition (mode: 3; see Table 6).

Treatment fidelity. Treatment fidelity data were collected across all conditions for at least 42.86% of days of treatment in each condition. During the B_1 BrB condition, across all components, treatment fidelity averaged 97.62% (range: 92.86 - 100%). See Table 9 for IOA and

means across components. During the B_2 BrB condition, across all components, treatment fidelity averaged 87.04% (range: 83.33 - 100%). During both CICO conditions, fidelity across all components averaged 100%. No elements of BrB were in place during any day during these conditions.

Results Across Measures for Diego

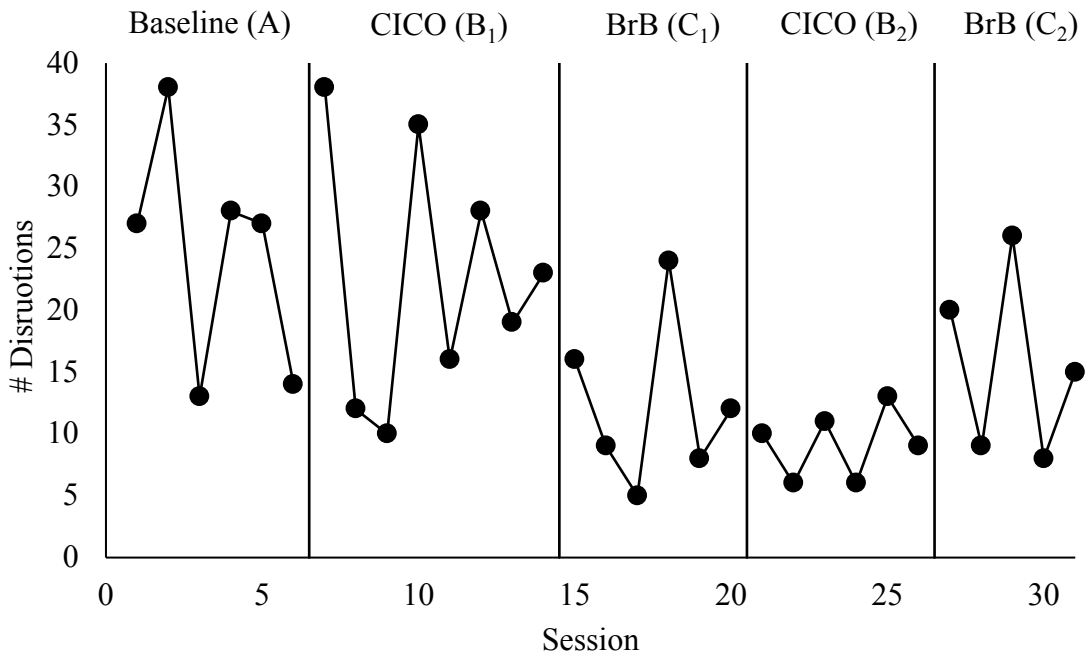

Figure 17. An estimate of Diego's problem behavior as measured by the count of disruptions per 15 min observation session.

Problem behavior. During Baseline, Diego's disruptions were high (median: 27) and moderately variable with only 50% of data falling within 20% of the median (see Table 10). When CICO was introduced, disruptions immediately increased for one data point and then decreased. Overall, data had an overall accelerating trend across the condition and were highly

variable with only 25% of data falling within 20% of the median (21). When BrB was implemented, disruptions immediately decreased and remained low with an overall decreasing trend. The data continued to be highly variable with 33% of data falling within 20% of the median (10.5). The LRR shows that BrB led to a 44% decrease in problem behavior. During the second CICO condition, disruptions decreased slightly (median: 9.5) and data increased in stability with an overall increasing trend. When BrB was reintroduced, problem behavior decreased and remained slightly lower than baseline throughout but remained considerably variable. The LRR indicates that the second implementation of BrB led to a countertherapeutic increase in problem behavior of 72%.

In summary, data show that both interventions reduced the median level of disruptions as compared to baseline. However, problem behavior decreased for three conditions regardless of the intervention before increasing during the final BrB condition. As such, there are insufficient patterns of predictable responses between adjacent conditions to show experimental or determine BrB is a superior intervention. RAs collected IOA across at least 33.33% of sessions across conditions and it averaged 84.5% across all conditions (see Table 10 for IOA means by condition).

Table 10

Diego's Data Summary

	Condition				
Measure	Baseline	CICO	BrB	CICO	BrB
Problem Behavior					
Median	24.5	22.63	12.33	9.17	15.6
IOA (% sessions)	70.83% (33.33)	90.62% (37.5)	75.63% (33.33)	82.35% (33.33)	100% (40)
LRR (% change)	-	-0.0791 (-7.6%)	-0.594 (-44.79%)	-	0.548 (72.98%)
LRR SE [CI]	-	0.226 [-0.52, 0.36]	0.278 [-1.14, -0.05]	-	0.25 [0.06, 1.04]
Academic Engagement					
Median	71.18%	82.91%	89.68%	81.22%	74.14%
IOA (% sessions)	94.89% (33.33)	97.14% (37.5)	96.74% (33.33)	96.10% (33.33)	
LRR (% change)	-	0.15 (16.18%)	0.0783 (8.14%)	-	-0.0829 (-7.96%)
LRR SE [CI]	-	0.0987 [-0.04, 0.34]	0.059[-0.04, 0.19]	-	0.137 [-0.35, 0.19]
DPR Point Data					
Overall Mean	-	94.31%	93.20%	87.02%	83.38%
Be Responsible	-	91.11%	90.78%	84.64%	82.27%
Be Respectful	-	94.57%	93.90%	83.93%	85.36%
Be Safe	-	97.27%	94.92%	92.50%	82.50%
Fidelity					
Dosage (days)	-	15	11	10	7
Check-in (IOA %)	-	90 (100)	100 (-)	96.67 (90)	85.19 (100)
Breaks (IOA %)	-	0 (100)	100 (100)	0 (100)	100 (100)
Feedback (IOA %)	-	81.67 (96.97)	100 (100)	100 (100)	100 (100)
Check-out (IOA %)	-	95 (100)	100 (100)	100 (100)	100 (100)

Note. The number of completed DPR forms served as a proxy of dosage. DPR = daily progress report; IOA = interobserver agreement (% agreement between observers); LRR = log response ratio; CI = confidence interval; SE = standard error

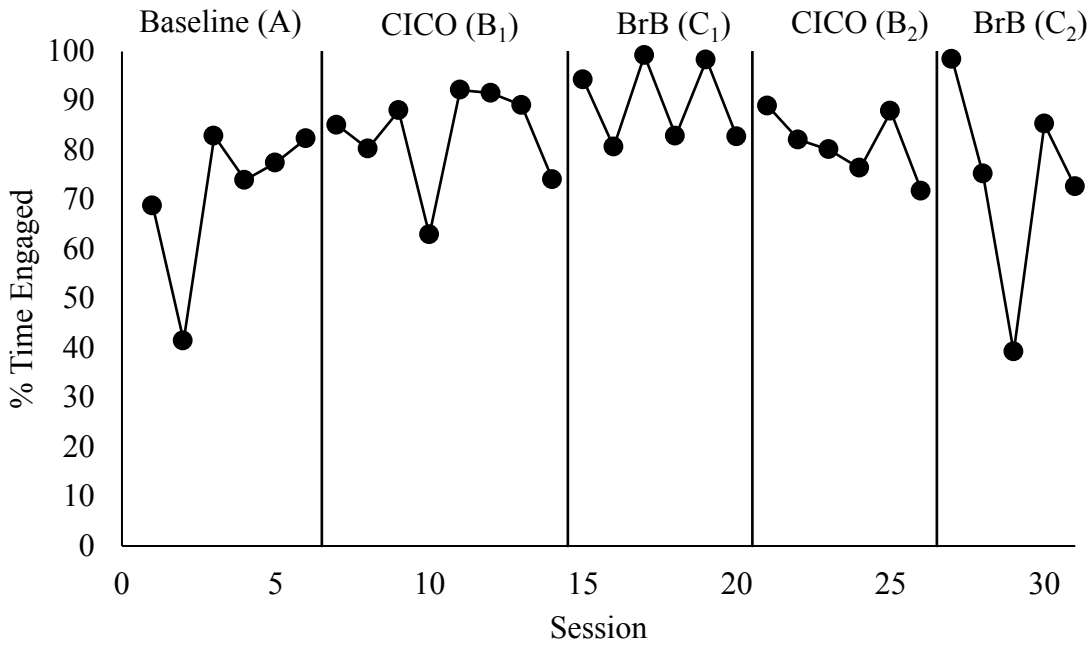

Figure 18. An estimate of Diego's academic engagement as measured by the percentage of time he was engaged during each 15 min observation session.

Academic engagement. Diego's academic engagement data were highly stable across all conditions, with most having more than 80% of data points within 20% of the median. During Baseline, Diego's engagement data were high (median: 75.8%) and stable with an overall accelerating trend. When CICO was put in place, the level and stability increased and 87.5% of data points falling within 20% of the median (86.55%). When BrB was introduced, Diego's engagement immediately increased and remained high and stable with 100% of data points falling within 20% of the median (88.6%). The LRR shows that BrB led to an 8% increase in engagement. When CICO was put back in place, engagement remained stable but the level decreased (81.1%). During the final BrB condition, engagement immediately increased but became more variable and reduced in a countertherapeutic direction to a level similar to that of

Baseline (median: 75.2%). The LRR shows that the second implementation of BrB led to a 7.9% decrease in engagement.

Similar to the data for problem behavior, Diego's engagement became better for the first phase of each intervention but then steadily decreased over time. As such, the data do not show experimental control or sufficient demonstrations of an effect to determine a functional relation. As collected IOA across at least 33.33% of sessions across conditions and it averaged 96.2% across all conditions (see Table 10 for IOA means by condition).

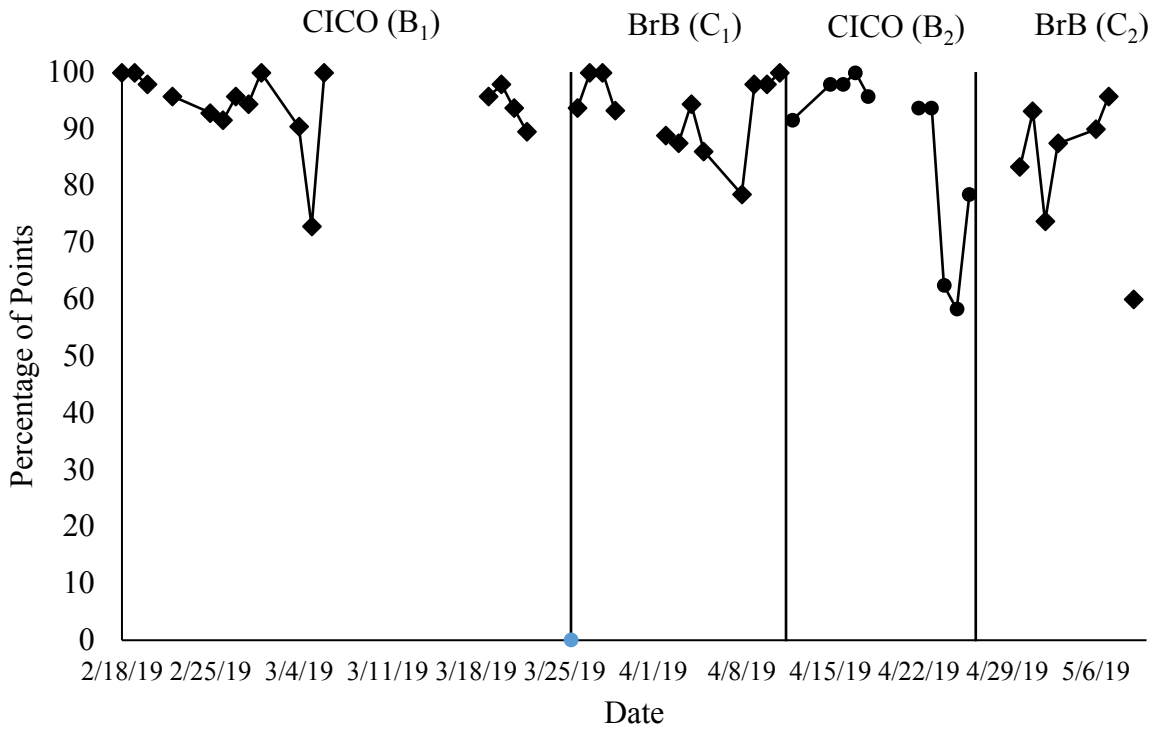

Figure 19. The percentage of DPR points Diego earned each day.

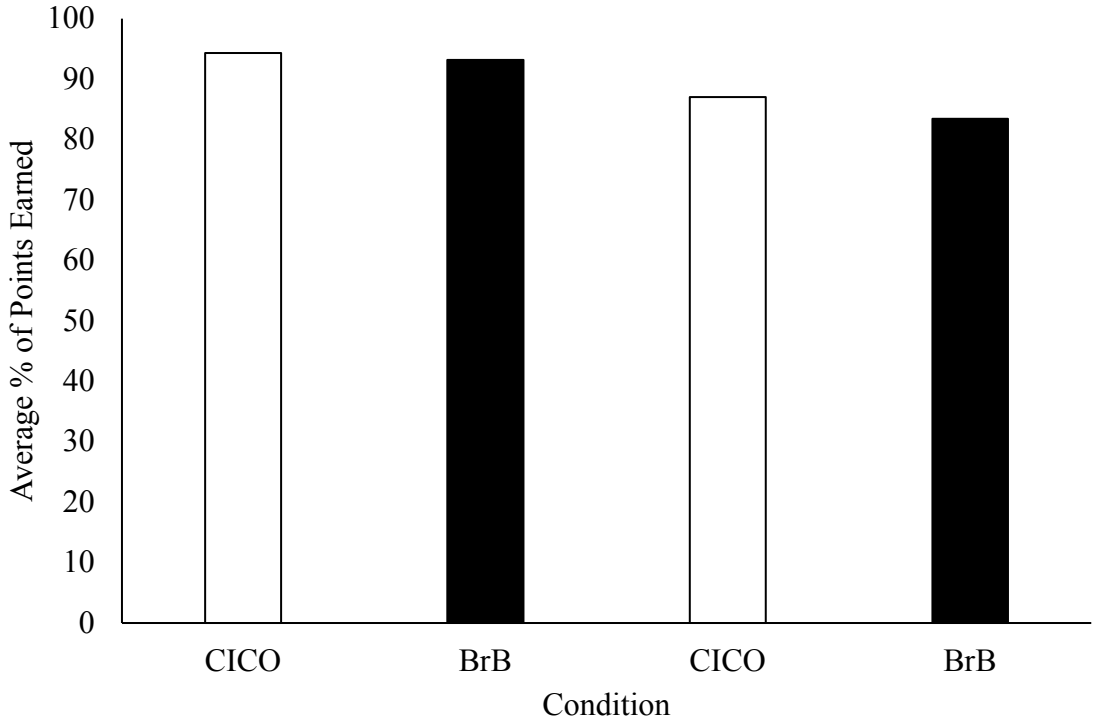

Figure 20. The average percentage of DPR points Diego earned across each condition.

DPR data. Diego's DPR data had a decreasing trend and level across time, regardless of the intervention in place. While he met his 75% goal on all but four days, his average percentage of points earned steadily decreased over time, mirroring the worsening behavior over time as measured by disruptions and engagement. These data lack any form of experimental control. Averages by condition and by behavioral expectation are reported in Table 10. Across both BrB conditions, the most common number of breaks taken by Diego was one (mode: 1; see Table 6).

Treatment fidelity. Fidelity of treatment data were collected across all conditions for at least 53.33% of days of treatment in each condition. During implementation of CICO in the B_1 condition, across all components, treatment fidelity averaged 84.61% (range: 40 - 100%). During one observation session of feedback, the teacher marked off points but did not tell the student

when he earned nor did she provide praise or feedback, resulting in low fidelity. No elements of BrB were in place during either CICO condition. During BrB in the C_1 phase, across all components, treatment fidelity for averaged 100%. When the CICO intervention was back in place, average treatment fidelity was 99.24% (range: 95.45 - 100%). Finally, during the second BrB condition, treatment fidelity across all components averaged 91.11% (range: 77.78 - 100%). See Table 10 for IOA and average fidelity across components.

Social Validity

Teacher perceptions. Teachers rated CICO as having moderate social validity with an average rating of 4.6 (out of 6; see Table 11). The average rating across teachers ranged from 3.67 to 5.27 and the average rating across questions ranged from 4 to 5.5. The question with the lowest average rating (4) was “CICO was effective in changing the student's problem behavior”. When asked, most teachers reported that CICO was not enough for the student. Teachers rated BrB slightly more favorable with an average rating of 4.92 (out of 6; see Table 12) across teachers (range: 3.27 - 5.6). Most teachers reported that they liked the break system and felt student behavior was improved with BrB. Diego’s teacher rated BrB and did not agree that it (or CICO) helped his behavior.

Table 11

Social Validity: Teacher Ratings for CICO on the IRP-15

Statement	Stratford (Alexander)	Stratford (Emmanuel)	Nottingham (Zoe)	Whitby (Jeremiah)	Camden (Diego)	Average
CICO was an acceptable intervention for the student's problem behavior.	2	4	5	5	4	4.5
Most teachers would find CICO appropriate for other behavior problems besides the problem behavior my student exhibited.	5	5	5	5	2	5
CICO was effective in changing the student's problem behavior.	3	4	4	4	3	4
I would suggest the use of CICO to other teachers.	5	5	6	5	5	5.5
The child's behavior problem was severe enough to warrant the use of CICO.	5	5	5	5	2	5
Most teachers would find CICO suitable for my student's problem behavior.	3	5	5	5	4	5
I'd be willing to use CICO in the classroom again.	5	5	6	5	5	5.5
CICO didn't result in negative side-effects for this student.	5	5	6	5	2	5.5
CICO would be appropriate for a variety of students.	5	5	6	5	5	5.5
CICO was consistent with those I have used in classroom settings.	5	5	5	5	3	5
CICO was a fair way to handle the student's problem behavior.	4	5	5	5	4	5
CICO was reasonable for the student's problem behavior.	4	5	5	5	4	5
I liked the procedures used in CICO.	5	5	6	5	5	5.5
CICO was a good way to handle this student's behavior problems.	4	4	5	5	4	4.5
Overall, CICO was beneficial for the student.	5	5	5	5	3	5
Average	4.33	4.80	5.27	4.93	3.67	

Table 12

Social Validity: Teacher Ratings of BrB on the IRP-15

Statement	Stratford (Alexander)	Stratford (Emmanuel)	Nottingham (Zoe)	Whitby (Jeremiah)	Camden (Diego)	Average
BrB was an acceptable intervention for the student's problem behavior.	5	5	6	5	3	4.75
Most teachers would find BrB appropriate for other behavior problems besides the problem behavior my student exhibited.	5	5	4	5	2	4
BrB was effective in changing the student's problem behavior.	4	5	6	4	2	4.25
I would suggest the use of BrB to other teachers.	6	6	5	6	4	5.25
The child's behavior problem was severe enough to warrant the use of standard BrB.	6	5	5	5	3	4.5
Most teachers would find BrB suitable for my student's problem behavior.	5	5	5	5	4	4.75
I'd be willing to use standard BrB in the classroom setting again.	6	6	6	6	5	5.75
BrB didn't result in negative side-effects for this student.	5	5	5	6	1	4.25
BrB would be appropriate for a variety of students.	5	5	5	6	4	5
This intervention was consistent with those I have used in classroom settings.	4	5	5	6	3	4.75
BrB was a fair way to handle the student's problem behavior.	5	5	6	6	4	5.25
BrB was reasonable for the student's problem behavior.	5	6	6	6	4	5.5
I liked the procedures used in BrB.	5	6	6	6	5	5.75
BrB was a good way to handle this student's behavior problems.	4	5	6	6	3	5
Overall, BrB was beneficial for the student.	5	5	6	6	2	4.75
Average	5.00	5.27	5.47	5.60	3.27	

Student perceptions. Students rated CICO as having moderate social validity with an average rating of 4.12 across participants (range: 2.6 - 5; see Table 13). Collectively, they gave the lowest rating to the questions "CICO was easy to participate in". When asked, many noted that it was difficult to not be able to take breaks during CICO. Students rated BrB as having high social validity with an average rating of 5.56 across participants (range: 4.6 – 6; see Table 14). Anecdotally, all participants noted that they liked being able to take breaks and that the breaks helped them calm down.

Table 13

Social Validity: Student Ratings of CICO on the CIRP

Statement	Alexander	Emmanuel	Zoe	Jeremiah	Diego	Average
CICO was easy to participate in.	2	4	3	2	1	2.4
CICO was a fair way to help me.	4	4	5	6	6	5
CICO helped me be successful in class.	5	3	4	6	3	4.2
CICO helped me feel better about myself.	6	1	4	5	5	4.2
I would recommend CICO to other students.	6	1	5	6	6	4.8
Average	4.6	2.6	4.2	5	4.2	

Table 14

Social Validity: Student Ratings of BrB on the CIRP

Statement	Alexander	Emmanuel	Zoe	Jeremiah	Diego	Average
BrB was easy to participate in.	6	5	6	6	5	5.6
BrB was a fair way to help me.	6	6	5	6	6	5.8
BrB helped me be successful in class.	6	3	6	6	4	5
BrB helped me feel better about myself.	6	3	6	6	6	5.4
I would recommend BrB to other students.	6	6	6	6	6	6
Average	6	4.6	5.8	6	5.4	

CHAPTER IV

DISCUSSION

Tier 2 behavioral supports are intended to be efficient means of addressing at-risk classroom behavior and decrease the need for intensive Tier 3 supports. Recently, researchers have developed frameworks that advocate for the assessment of student-level variables to better match and select Tier 2 programs (Kern & Wehby, 2014; McDaniel & Bruhn, 2015). Function of behavior is one example of a key variable that may impact response to intervention (Gage et al., 2012; Kilgus et al., 2016) and thus is important to consider when implementing Tier 2 supports. The goal of this study was to determine if students with escape-maintained problem behavior would benefit more greatly from a function-based version of CICO across two context specific outcomes (problem behavior and academic engagement) and one generalized behavioral outcome (DPR points). Collectively, results varied across participants and measures but did not point to the differential effectiveness of BrB above and beyond CICO for the sample of students included in this study.

The subsequent sections include a summative evaluation of results across measures, a description of explanations for the findings, a discussion of the potential impact DBDM may have on future BrB research, and finally an overview of limitations.

Are Breaks Better? A Summary of Results Across Cases

While all participants, and the majority of teachers, ranked BrB as having higher social validity than CICO, the results from direct observations provide only one example of a

functional relation to support BrB as more effective at reducing problem behavior than CICO. Across the remainder of the cases and variables, there were indiscernible differences between the implementation of CICO and BrB. This may point to carry-over effects between interventions. However, in some cases, student behavior during implementation of either intervention was similar in variability and level to behavior during Baseline. This may indicate that neither intervention was effective for reliably decreasing problem behavior or increasing academic engagement.

Interestingly, the participants did not take breaks very often during the BrB phases. While they each had the opportunity to take three breaks per class period, most averaged around one per day. So while BrB includes functionally relevant components, the participants did not access the breaks frequently, which may help explain the lack of differential effectiveness of BrB over CICO. The low number of breaks requested may signify a need for enhanced instruction on the process of taking breaks. Students in this study were exposed to a training that was focused on the procedures for taking a break. So while this training taught students *how* to take breaks, students may have lacked the skills needed to self-identify *when* a break was necessary. Self-regulation is an individual's ability to monitor and manage their own behavior. Self-regulation skills, often through the use of self-monitoring, can successfully be used by students to increase prosocial behavior and decrease problem behavior (see Bruhn, McDaniel, & Kreigh, 2015 for a review). Future research on BrB may benefit from incorporating self-regulation training into the break procedures.

Another potential explanation for the findings is that BrB does not address academic skill deficits. The majority of participants in this study were performing below grade level. This is unsurprising given that these students were identified to be at risk based on scores from the

Academic Behavior scale of the SAEBRS. Moreover, other research points to more severe academic deficits for students with escape-maintained behavior (McIntosh, Horner, Chard, Dickey, & Braun, 2008). When students escape from tasks, they lose access to instructional content that helps promote successful academic skills. Future intervention studies focused on students with escape-maintained behavior, including BrB, may find more positive changes in student behavior when incorporating academic supports (e.g., mini lessons, review, peer tutoring, self-monitoring).

Aside from results on direct observation measures, results for the DPR show that only one participant (Alexander), on average, earned a higher percentage of points on the DPR during BrB than CICO. For the other participants, average DPR points earned were consistent across conditions. DPR data represent a generalized measure of teacher perception of student behavior across an entire day. However, DPR data collected in this study did not always reflect direct observation data. For example, despite variable or decaying behavior observed via direct observation, students consistently met their daily DPR goal. In other words, despite our observations in the classroom indicating high rates of problem behavior and low academic engagement, teachers often rated students as having acceptable behavior across the entire day.

Regardless of the measure, the results of the study show highly variable student behavior across conditions, even when a function-matched intervention is in place. Thus, given the results, it cannot be concluded that BrB leads to reliable and predictive changes in the level and variability of problem behavior, academic engagement, or DPR points. In other words, for this sample of participants, BrB was not a more effective intervention than CICO. The LRR values further corroborate these findings. While the percent change values provide some evidence of socially significant changes in behavior during BrB, the wide confidence intervals around the

LRR values (most of which contain zero) limit our confidence in the statistical significance of the changes in behavior between conditions.

Given the potential explanations for the findings, more research on BrB is needed to determine for whom and under what conditions BrB may be effective. The results suggest that even with a function-based standard protocol in place, at-risk students may require more or different support. In practice, when an intervention is not successful at changing behavior, teachers may be likely to make changes to the intervention. As such, it may be important for future research to embed a DBDM process during the implementation of BrB to more effectively account for student nonresponse.

Data-based Decision Making

DBDM during the implementation of Tier 2 supports includes the collection and evaluation of student data to select interventions, monitor progress, and adapt interventions due to nonresponse. Three components of DBDM that may enhance future implementation of BrB include: (a) monitoring student progress, (b) adaptation timing, and (c) adaptation selection.

Monitoring progress. A core component of DBDM is the collection of data to determine if students are responding favorably to the intervention in place. However, DBDM relies on the notion that the data collected reliably captures the target behavior of interest. One benefit of Tier 2 interventions like CICO or BrB is having daily data from the DPR as a standardized feature. However, if teachers and researchers invest time into graphing and evaluating data, they need to ensure it is done in the most useful way. The results of this study show that some students met their daily goal despite observations indicating worsening classroom behavior. On the contrary,

some students had low levels of observed problem behavior, but failed to meet their daily goal on the DPR. These discrepancies reflect the nature of the DPR as a measure of teacher perception of behavior that may not always reflect actual student behavior. To combat the aforementioned concerns, DPR data during the implementation of BrB in future studies can be graphed and analyzed by individual class periods or by specific behavioral expectation to capture specific areas in need of additional intervention. Moreover, it seems essential that DPR data be paired wth direct observation data so future research can help evaluate the extent to which teacher perception and direct observation data are correlated.

Adaptation timing. In addition to using a DBDM approach to monitor progress, DBDM also promotes the use of adaptations that tailor interventions to specific student characteristics. Sometimes, these adaptations can be made on the front end (i.e., selecting a function-based standard protocol like BrB) or during implementation (i.e., modifying interventions components in response to student data collected during implementation). This study selected an adapted CICO protocol to determine if it led to more significant and reliable changes in behavior than CICO for students with escape-maintained behavior. From the results, we learned (a) at-risk students have variable behavior, with and without intervention and, (b) some students are nonresponsive even to a matched, function-based standard protocol. These findings may point to the continued need for research on how to adapt Tier 2 protocols *during* implementation when student behavior has not changed or improved.

Adaptation selection. Incorporating function-based components enhances intervention effectiveness but only when adaptations are selected based on relevant student variables.

Function of behavior is one such variable. Understanding the function of behavior can help teachers choose an intervention and choose adaptations that target prosocial replacement behaviors. However, there are many nuances associated with the assessment of and intervention for various functions that may help explain the limited findings of this study and guide the future of adaptation selection.

To begin, most of the students were hypothesized to have problem behavior motivated by both access to attention and escape from demands. While it is possible for students to be motivated by both functions, these results may also be a direct product of using a purely descriptive measure of function (i.e., FACTS) that relied heavily on teacher recall. Therefore, we cannot be confident that all students needed intervention components that addressed escape from tasks; this may partially explain why there were mixed results for the effectiveness of BrB. However, other explanations also exist.

Researchers in the ABA field have studied the combined function of escape-to-attention (Beavers, Iwata, & Lerman, 2013; Mueller, Sterling-Turner, & Moore, 2005; Sarno et al., 2011). In other words, a student engages in behavior to escape from a task in order to then access attention. A measure like the FACTS may be insufficient at identifying this complex function. On the surface, BrB accounts for both access to attention and escape from task. However, the breaks do not simultaneously provide access to attention so they may have been hugely unmotivating and ineffective. This may be another potential explanation for why the majority of students did not take many breaks and why the results for BrB did not show larger discrepancies in outcomes when compared to CICO. To address this nuance, future studies should include FBAs that have the capacity to identify and treating this function. If a student engages in behavior for both escape and attention or escape-to-attention, teachers can incorporate attention

(teacher or peer) into the break routine or include contingent breaks with attention as reinforcement for meeting the daily DPR goal.

Another nuance associated with escape functions is the divide between escape due to lack motivation (i.e., will not do) or lack of requisite skills (i.e., cannot do). While the FBA methods in this study did not include any assessments of these deficits, four participants were below grade level in reading and math. One may argue that the break system within BrB is more likely to account for a motivational deficit than a skill deficit. In future studies, teachers and researchers can use academic information to help determine if motivation or skill deficits are maintaining variables associated with escape from tasks; resultant intervention components can be tailored to address both situations. For example, for students with skill deficits, teachers can implement a homework tracker, add academic mini lessons during check-in, or allow breaks contingent on work completion. For students with motivational deficits, teachers can build in breaks contingent on work accuracy, increase opportunities for student choice, or build in self-monitoring components (Geiger et al., 2010).

Limitations and Future Directions

The results of this study must be interpreted with a few limitations in mind. To begin, the method used to hypothesize function was purely descriptive and relied on anecdotal teacher recall. As such, for most participants in this study, the teachers hypothesized that problem behaviors were maintained by both access to teacher/peer attention and escape from tasks. Future work that evaluates BrB should use a more technically sound and experiential method to confirm the function to more confidently identify students and confirm that student behavior is maintained by escape from tasks. Once BrB is studied on these students, if results are more

favorable, then additional research can help transform the FBA process into one more pragmatic for classroom teachers.

A second limitation is the measurement systems used. We used a 15 min observation session a couple times per week as an estimate of problem behavior and academic engagement. However, with longer sessions we may have come closer to a more accurate estimate of these behaviors. In addition, our measurement systems may not have fully captured the constructs of behavior that teachers find most problematic. While most teachers anecdotally reported that BrB let to more positive behavior than CICO, the majority of our data did not support this conclusion. Therefore, outcomes for CICO or BrB may have been more divergent if we have measured other variables.

A third limitation is the change in Alexander's CICO protocol shortly before BrB was implemented. The decision to add this procedure was made by the mentor independent of the study procedures. The mentor added of a midday point goal tied to an opportunity for reinforcement. During the afternoon check-out, the mentor determined if one or both goals were met. If Alexander met his midday goal, he earned one reward. If he also met his afternoon goal, he earned the reward linked with the goal. If he met only one goal, he received one reward. While this change did not increase the time spent with the mentor or increase the dosage of feedback throughout the day, it did add an additional schedule of reinforcement. As such, this change may be a confound that impacts confidence in the determination of a functional relation.

A final limitation is the timing of the study. Data were collected in the spring semester right up until the end of the academic year. Often multi-treatment designs require extended phases and more data than an alternating treatment design or a withdrawal design requires (Wolery, Gast, & Hammond, 2010). This process is due to slow sequence effects (in part due to

multi-treatment interference) and variable data. However, because data were collected in the spring semester, we had to make phase change decisions based on patterns in data in conjunction with the amount of time left in the school year. This timing likely impacted the ability to keep the interventions in place longer and collect more data points for Jeremiah, Zoe, and Diego. In addition, data collection for these participants ended during the last month of school and precluded implementation of additional phases to account for student preference or additional adaptations to enhance treatment effects.

Conclusion

As teachers continue to grow increasingly frustrated and burned out from challenging classroom environments, student behavior has never been a more salient variable for intervention. Moreover, intervening early for students who are at-risk for developing EBD is essential at improving academic, behavioral, and social outcomes. For targeted Tier 2 interventions that address at-risk behavior, incorporating function-based thinking into intervention selection and implementation may be important. But more research is needed to determine the most effective components to address escape-maintained behavior and the extent to which function-based supports should be implemented within a DBDM framework.

REFERENCES

Algozzine, B., Barrett, S., Eber, L., George, H., Horner, R., Lewis, T., Putnam, B., Swain-Bradway, J., McIntosh, K., & Sugai, G (2014). School-wide PBIS Tiered Fidelity Inventory. OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports. www.pbis.org.

Algozzine, B., Wang, C., & Violette, A. S. (2011). Reexamining the relationship between academic achievement and social behavior. *Journal of Positive Behavior Interventions, 13*, 3-16.

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

Anderson, C. M., Rodriguez, B. J., & Campbell, A. (2015). Functional behavior assessment in schools: Current status and future directions. *Journal of Behavioral Education, 24*, 338-371.

Baker, J. A., Clark, T. P., Maier, K. S., & Viger, S. (2008). The differential influence of instructional context on the academic engagement of students with behavior problems. *Teaching and Teacher Education, 24*, 1876-1883.

Barton, E. E., Lloyd, B. P., Spriggs, A. D., & Gast, D. L. (2018). Visual analysis of graphic data. In Ledford, J.R., & Gast, D.L. (Eds.) *Single case research methodology: Applications in special education and behavioral sciences* (3rd ed.) (pp. 179-214). Routledge. New York, NY: Routledge.

Beavers, G. A., Iwata, B. A., & Lerman, D. C. (2013). Thirty years of research on the functional analysis of problem behavior. *Journal of Applied Behavior Analysis, 46*, 1-21.

Boyd & Anderson.(2010). Breaks are Better Implementation Manual.

Boyd, R. J., & Anderson, C. M. (2013). Breaks are better: A tier II social behavior intervention. *Journal of Behavioral Education, 22*, 348–365.

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

Bruhn, A. L., Lane, K. L., & Hirsch, S. E. (2014). A review of tier 2 interventions conducted within multitiered models of behavioral prevention. *Journal of Emotional and Behavioral Disorders, 22*, 171-189.

Bruhn, A., McDaniel, S., & Kreigh, C. (2015). Self-monitoring interventions for students with behavior problems: A systematic review of current research. *Behavioral Disorders, 40*, 102-121.

Bruni, T. P., Drevon, D., Hixson, M., Wyse, R., Corcoran, S., & Fursa, S. (2017). The effect of functional behavior assessment on school-based interventions: A meta-analysis of single-case research. *Psychology in the Schools, 54*, 351-369.

Carr, E. G., Taylor, J. C., & Robinson, S. (1991). The effects of severe behavior problems in children on the teaching behavior of adults. *Journal of Applied Behavior Analysis, 24*, 523-535.

Christenson, S. L., Thurlow, M. L., Sinclair, M. F., Lehr, C. A., Kaibel, C. M., Reschly, A. L., ... & Pohl, A. (2008). Check & Connect: A Comprehensive Student Engagement Intervention Manual. Institute on Community Integration (NJ3).

Common, E. A., Lane, K. L., Pustejovsky, J. E., Johnson, A. H., & Johl, L. E. (2017). Functional assessment–based interventions for students with or at-risk for high-incidence disabilities: Field testing single-case synthesis methods. *Remedial and Special Education, 38*, 331-352.

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). Applied behavior analysis. Upper Saddle Ridge, NJ: Pearson, Inc.

Crone, D. A., Hawken, L. S., & Horner, R. H. (2010). Responding to problem behavior in schools: The behavior education program. New York, NY: Guilford Press.

Crone, D. A., Hawken, L. S., & Horner, R. H. (2015). Building positive behavior support systems in schools: Functional behavioral assessment. New York, NY: Guilford Press.

Dart, E. H., Furlow, C. M., Collins, T. A., Brewer, E., Gresham, F. M., & Chenier, K. H. (2015). Peer-mediated check-in/check-out for students at-risk for internalizing disorders. *School Psychology Quarterly, 30*, 229-243.

Evans, K. (2016). Breaks are better: Guide to improving off-task behavior and task completion for students who engage in escape-maintained behavior (Doctoral Dissertation).

ESSA (2015). Every Student Succeeds Act of 2015, Pub. L. No. 114-95 § 114 Stat. 1177 (2015-2016).

Gage, N. A., Lewis, T. J., & Stichter, J. P. (2012). Functional behavioral assessment-based interventions for students with or at risk for emotional and/or behavioral disorders in school: A hierarchical linear modeling meta-analysis. *Behavioral Disorders, 37*, 55-77.

Geiger, K. B., Carr, J. E., & LeBlanc, L. A. (2010). Function-based treatments for escape-maintained problem behavior: A treatment-selection model for practicing behavior analysts. *Behavior Analysis in Practice, 3*, 22-32.

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

Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children, 71*, 165-179.

Kamps, D., Conklin, C., & Wills, H. (2015). Use of self-management with the CW-FIT group contingency program. *Education and Treatment of Children, 38*, 1-32.

Kilgus, S. P., Chafouleas, S. M., & Riley-Tillman, T. C. (2013). Development and initial validation of the Social and Academic Behavior Risk Screener for elementary grades. *School Psychology Quarterly, 28*, 210-226.

Kilgus, S. P., Chafouleas, S. M., Riley-Tillman, T. C., & von der Embse, N. P. (2014). Social, academic, and emotional behavior risk screener (SAEBRS). Minneapolis, MN: Theodore J. Christ & Colleagues.

Kilgus, S. P., Fallon, L. M., & Feinberg, A. B. (2016). Function-based modification of check-in/check-out to influence escape-maintained behavior. *Journal of Applied School Psychology, 32*, 24-45.

Kilgus, S. P., Sims, W. A., von der Embse, N. P., & Taylor, C. N. (2016). Technical adequacy of the Social, Academic, and Emotional Behavior Risk Screener in an elementary sample. *Assessment for Effective Intervention, 42*, 46-59.

Lane, K. L., Barton-Arwood, S. M., Nelson, J. R., & Wehby, J. (2008). Academic performance of students with emotional and behavioral disorders served in a self-contained setting. *Journal of Behavioral Education, 17*, 43-62.

Lewis, T. J., Hatton, H. L., Jorgenson, C., & Maynard, D. (2017). What beginning special educators need to know about conducting functional behavioral assessments. *TEACHING Exceptional Children, 49*, 231-238.

Lochman, J. E., Wells, K., & Lenhart, L. A. (2008). Coping Power: Child group facilitator's guide (Vol. 2). Oxford University Press.

MacLeod, K. S., Hawken, L. S., O'Neill, R. E., & Bundock, K. (2016). Combining Tier 2 and Tier 3 supports for students with disabilities in general education settings. *Journal of Educational Issues, 2*, 331-351.

Majeika C. E., & Wehby, J. H. (in preparation). Evaluating the use of function-based assessment in the context of intervention planning for students with or at-risk for EBD.

March, R. E., Horner, R. H., Lewis-Palmer, T., Brown, D., Crone, D., Todd, A. W., et al. (2000). Functional Assessment Checklist: Teachers and Staff (FACTS). Eugene, OR: Educational and Community Supports.

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

McDaniel, S. C., Bruhn, A. L., & Mitchell, B. S. (2015). A tier 2 framework for behavior identification and intervention. *Beyond Behavior, 24*, 10-17.

McIntosh, K., Borgmeier, C., Anderson, C. M., Horner, R. H., Rodriguez, B. J., & Tobin, T. J. (2008). Technical adequacy of the Functional Assessment Checklist: Teachers and Staff (FACTS) FBA interview measure. *Journal of Positive Behavior Interventions, 10*, 33-45.

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

McIntosh, K., Flannery, B., K., Sugai, G., Braun, D. H., & Cochrane, K. L. (2008). Relationships between academics and problem behavior in the transition from middle school to high school. *Journal of Positive Behavior Interventions, 10*, 243-255.

McIntosh, K., Horner, R. H., Chard, D. J., Dickey, C. R., & Braun, D. H. (2008). Reading skills and function of problem behavior in typical school settings. *The Journal of Special Education, 42*, 131-147.

Merrell, K. W., Whitcomb, S. A., & Parisi, D. M. (2009). Strong Start, Pre-K: A Social & Emotional Learning Curriculum. Paul H. Brookes Publishing.

Meyer, M. M., & Behar-Horenstein, L. S. (2015). When leadership matters: Perspectives from a teacher team implementing response to intervention. *Education and Treatment of Children, 38*, 383-402.

Morgan, P. L., Farkas, G., Tufis, P. A., & Sperling, R. A. (2008). Are reading and behavior problems risk factors for each other?. *Journal of Learning Disabilities, 41*, 417-436.

Mueller, M. M., Sterling-Turner, H. E., & Moore, J. W. (2005). Towards Developing a Classroom-Based Functional Analysis Condition to Assess Escape-to-Attention as a Variable Maintaining Problem Behavior. *School Psychology Review, 34*, 425-431.

Nelson, J. R., & Roberts, M. L. (2000). Ongoing reciprocal teacher-student interactions involving disruptive behaviors in general education classrooms. *Journal of Emotional and Behavioral Disorders, 8*, 27-37.

O'Neill, R. E., Albin, R. W., Storey, K., Horner, R. H., & Sprague, J. R. (2015). Functional assessment and program development. Stamford, CT: Cengage Learning.

Patterson, G. R. (1982). Coercive family process (Vol. 3). Eugene, OR: Castalia Publishing Company.

Pustejovsky, J. E. (2015). Measurement-comparable effect sizes for single-case studies of free-operant behavior. *Psychological Methods, 20*, 342-359.

Pustejovsky, J. E. & Swan, D. M. (2018). Single-case effect size calculator (Version 0.5) Web application. Retrieved from https://jepusto.shinyapps.io/SCD-effect-sizes/

Reeves, P. L., & Burt, W. L. (2006). Challenges in data-based decision-making: Voices from principals. *Educational Horizons, 85*, 65-71.

Reid, R., Gonzalez, J. E., Nordness, P. D., Trout, A., & Epstein, M. H. (2004). A meta-analysis of the academic status of students with Emotional/Behavioral disturbance. *The Journal of Special Education, 38*, 130-143.

Reinke, W. M., Herman, K. C., & Stormont, M. (2013). Classroom-level positive behavior supports in schools implementing SW-PBIS: Identifying areas for enhancement. *Journal of Positive Behavior Interventions, 15*, 39-50.

Sarno, J. M., Sterling, H. E., Mueller, M. M., Dufrene, B., Tingstrom, D. H., & Olmi, D. J. (2011). Escape-to-attention as a potential variable for maintaining problem behavior in the school setting. *School Psychology Review, 40*, 57-71.

Scott, T. M., Alter, P. J., & Hirn, R. G. (2011). An examination of typical classroom context and instruction for students with and without behavioral disorders. *Education and Treatment of Children, 34*, 619-641.

Scott, T. M., Bucalos, A., Liaupsin, C., Nelson, C. M., Jolivette, K., & DeShea, L. (2004). Using functional behavior assessment in general education settings: Making a case for effectiveness and efficiency. *Behavioral Disorders, 29*, 189-204.

Scott, T. M., & Martinek, G. (2006). Coaching positive behavior support in school settings: Tactics and data-based decision making. *Journal of Positive Behavior Interventions, 8*, 165-173.

Simonsen, B., Fairbanks, S., Briesch, A., Myers, D., & Sugai, G. (2008). Evidence-based practices in classroom management: Considerations for research to practice. *Education and Treatment of Children, 31*, 351-380.

Stormont, M., & Reinke, W. M. (2013). Implementing Tier 2 social behavioral interventions: Current issues, challenges, and promising approaches. *Journal of Applied School Psychology, 29*, 121-125.

Sugai, G., & Horner, R. (2002). The evolution of discipline practices: School-wide positive behavior supports. *Child & Family Behavior Therapy, 24*, 23-50.

Sugai, G., & Horner, R. H. (2009). Responsiveness-to-intervention and school-wide positive behavior supports: Integration of multi-tiered system approaches. *Exceptionality, 17*, 223-237.

Swoszowski, N. C., Jolivette, K., Fredrick, L. D., & Heflin, L. J. (2012). Check in/check out: Effects on students with emotional and behavioral disorders with attention-or escape-maintained behavior in a residential facility. *Exceptionality, 20*, 163-178.

Swoszowski, N. C., McDaniel, S. C., Jolivette, K., & Melius, P. (2013). The effects of tier II check-in/check-out including adaptation for non-responders on the off-task behavior of elementary students in a residential setting. *Education and Treatment of Children, 36*, 63-79.

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

Turtura, J. E., Anderson, C. M., & Boyd, R. J. (2014). Addressing task avoidance in middle school students: Academic behavior check-in/check-out. *Journal of Positive Behavior Interventions, 16*, 159-167.

Umbreit, J., Ferro, J., Liaupsin, C.J., & Lane, K.L. (2007). Functional behavioral assessment and function-based intervention: An effective, practical approach. Upper Saddle River, NJ: Pearson Merrill Prentice Hall.

Van Acker, R., Grant, S. H., & Henry, D. (1996). Teacher and student behavior as a function of risk for aggression. *Education and Treatment of Children, 19*, 316-334.

Von der Embse, N. P., Pendergast, L. L., Kilgus, S. P., & Eklund, K. R. (2016). Evaluating the applied use of a mental health screener: Structural validity of the Social, Academic, and Emotional Behavior Risk Screener. *Psychological Assessment, 28*, 1265-1275.

Wagner, M., Kutash, K., Duchnowski, A. J., Epstein, M. H., & Sumi, W. C. (2005). The children and youth we serve: A national picture of the characteristics of students with emotional disturbances receiving special education. *Journal of Emotional and Behavioral Disorders, 13*, 79-96.

Wehby, J. H., & Kern, L. (2014). Intensive behavior intervention: What is it, what is its evidence base, and why do we need to implement now? *Teaching Exceptional Children, 46*, 38-44.

Walker, H. M., Kavanagh, K., Stiller, B., Golly, A., Severson, H. H., & Feil, E. G. (1998). First step to success: An early intervention approach for preventing school antisocial behavior. *Journal of Emotional and Behavioral Disorders, 6*, 66-80.

Webster-Stratton, C., Jamila Reid, M., & Stoolmiller, M. (2008). Preventing conduct problems and improving school readiness: evaluation of the incredible years teacher and child training programs in high-risk schools. *Journal of Child Psychology and Psychiatry, 49*, 471-488.

Wehby, J. H., Symons, F. J., Canale, J. A., & Go, F. J. (1998). Teaching practices in classrooms for students with emotional and behavioral disorders: Discrepancies between recommendations and observations. *Behavioral Disorders, 24*, 51-56.

Witt, J.C. & Elliott, S.N. (1985). Acceptability of classroom intervention strategies. In Kratochwill,T.R. (Ed.), *Advances in school psychology,* Vol. 4, 251 – 288. Mahwah, NJ: Erlbaum.

Wolery, M., Gast, D. L., & Hammond, D. (2010). Comparative intervention designs. In Gast, D. L. *Single subject research methodology in behavioral sciences* (329-381). New York, NY: Routledge.

Appendix A

Alexander's CICO Standard Protocol DPR

	Use appropriate language within the classroom	Complete Work	Total	Earned Reward	Teacher's initials
Arrival and Breakfast	0 1 2	0 1 2		Yes No	
Reading	0 1 2	0 1 2		Yes No	
Centers	0 1 2	0 1 2		Yes No	
Intervention	0 1 2	0 1 2		Yes No	
Lunch	0 1 2	0 1 2		Yes No	
Specials	0 1 2	0 1 2		Yes No	
Math	0 1 2	0 1 2		Yes No	
Recess	0 1 2	0 1 2		Yes No	
Science	0 1 2	0 1 2		Yes No	

Morning Check in:
My goal for each block is _____.
My goal for the end of the day is _____.
End of the day Reinforcement: _____

Afternoon Check Out:
Total Points Earned for the end of the day: _____
Met Goal? Y N

Appendix B

Emmanuel's CICO Standard Protocol DPR

	Follows Directions	Speaking When Appropriate	Completes Work	Total	Points Earned	Teacher's initials
Arrival and Breakfast	0 1 2	0 1 2	0 1 2		Yes No	
Reading	0 1 2	0 1 2	0 1 2		Yes No	
Centers	0 1 2	0 1 2	0 1 2		Yes No	
Intervention	0 1 2	0 1 2	0 1 2		Yes No	
Lunch	0 1 2	0 1 2	0 1 2		Yes No	
Specials	0 1 2	0 1 2	0 1 2		Yes No	
Math	0 1 2	0 1 2	0 1 2		Yes No	
Recess	0 1 2	0 1 2	0 1 2		Yes No	
Science	0 1 2	0 1 2	0 1 2		Yes No	

Morning Check in:
My goal for each block is _____.
My goal for the end of the day is _____.
End of the day Reinforcement: _____

Afternoon Check Out:
Total Points Earned for the end of the day: _____
Met Goal? Y N

Appendix C

Zoe's CICO Standard Protocol DPR

Zoe's Amazing Day!!

Check-in

Date:_____
Daily Point Goal (%):_____
Reward I am working toward:_____

How I earn points:

- *2 = I met all expectations.*
- *1 = I met some expectations & I needed some reminders.*
- *0 = I met no expectations & needed a lot of reminders.*

	Complete Work to My Teacher's Expectations	Keep a Friendly Face	Raise Hand for Help
Morning Meeting	2 1 0	2 1 0	2 1 0
ELA Whole Group	2 1 0	2 1 0	2 1 0
Writing	2 1 0	2 1 0	2 1 0
ELA Centers	2 1 0	2 1 0	2 1 0
Lunch	2 1 0	2 1 0	2 1 0
Recess	2 1 0	2 1 0	2 1 0
Math	2 1 0	2 1 0	2 1 0
Intervention	2 1 0	2 1 0	2 1 0
Transitions	2 1 0	2 1 0	2 1 0
Related Arts	2 1 0	2 1 0	2 1 0

Check-out

Points Earned: _____ out of _____ = _____%

Goal Met: Yes No

Today, I did well remembering to:

Tomorrow, I will work on:

Appendix D

Jeremiah's CICO Standard Protocol DPR

Jeremiah's Great Day!

Check-in

Date:_____

Daily Point Goal (%):_____

Reward I am working toward:_____

How I earn points:

- *2 = I met all expectations.*
- *1 = I met some expectations & I needed some reminders.*
- *0 = I met no expectations & needed a lot of reminders.*

	Be Responsible	Be Respectful	Be Safe
Morning Meeting	2 1 0	2 1 0	2 1 0
Shared Reading	2 1 0	2 1 0	2 1 0
Centers/Phonics	2 1 0	2 1 0	2 1 0
PLT	2 1 0	2 1 0	2 1 0
Lunch/Recess	2 1 0	2 1 0	2 1 0
Math	2 1 0	2 1 0	2 1 0
Science/SS/Writing	2 1 0	2 1 0	2 1 0
Transitions	2 1 0	2 1 0	2 1 0
Related Arts	2 1 0	2 1 0	2 1 0

Check-out

Points Earned: _____ out of _____ = _____%

Goal Met: Yes No

Today, I did well remembering to:

Tomorrow, I will work on:

Appendix E

Diego's CICO Standard Protocol DPR

Diego's Great Day!

Check-in

Date:_____
Daily Point Goal (%):_____
Reward I am working toward:_____

How I earn points:

- *2 = I met all expectations.*
- *1 = I met some expectations & I needed some reminders.*
- *0 = I met no expectations & needed a lot of reminders.*

	Be Responsible Stay on-task Focus on my work	Be Respectful Listen to whoever is speaking Raise hand to speak	Be Safe Keep hands, feet, and objects to self
Morning Meeting	0 1 2	0 1 2	0 1 2
Specials	0 1 2	0 1 2	0 1 2
ELA Centers	0 1 2	0 1 2	0 1 2
ELA Whole Group	0 1 2	0 1 2	0 1 2
Recess	0 1 2	0 1 2	0 1 2
Math	0 1 2	0 1 2	0 1 2
Transitions	0 1 2	0 1 2	0 1 2
Intervention	0 1 2	0 1 2	0 1 2

Check-out

Points Earned: _____ *out of* _____ = _____*%*

Goal Met: Yes No

Today, I did well remembering to:

Tomorrow, I will work on:

Appendix F

Alexander's BrB DPR (Front)

	Use appropriate language within the classroom	Complete Work	# of Breaks Allowed	BONUS: Breaks requested and taken in an appropriate way	Total	Points Earned	Teacher's initials
Arrival and Breakfast	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Reading	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Centers	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Intervention	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Lunch	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Specials	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Math	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Recess	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Science	0 1 2	0 1 2	B B B	0 1 NA		Yes No	

Morning Check in:
My goal for each block is _____.
My goal for the end of the day is _____.
End of the day Reinforcement: _____

Afternoon Check Out:
Total Points Earned for the end of the day: _____
Met Goal? Y N

Alexander's Break Routine (Printed on back of DPR)

How I Take a Break:

1. Hold up my Break Card

2. Wait for a thumbs-up or thumbs-down
3. After a thumbs-up, give my teacher the Break Card
4. Start my timer

5. Take my break quietly
6. Go back to work when timer ends

What if I get a thumbs-down?

1. Put Break Card back on desk
2. Keep working
1. Wait at least 5 minutes before asking for another break

My Break Choices Are:

- Read
- Draw
- Use Play Doh
- Walk to Water Fountain

Appendix G

Emmanuel's BrB DPR (Front)

	Follows Directions	Speaking When Appropriate	Completes Work	# of Breaks Allowed	BONUS: Breaks requested and taken in an appropriate way	Total	Points Earned	Teacher's initials
Arrival and Breakfast	0 1 2	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Reading	0 1 2	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Centers	0 1 2	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Intervention	0 1 2	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Lunch	0 1 2	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Specials	0 1 2	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Math	0 1 2	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Recess	0 1 2	0 1 2	0 1 2	B B B	0 1 NA		Yes No	
Science	0 1 2	0 1 2	0 1 2	B B B	0 1 NA		Yes No	

Morning Check in:
My goal for each block is _____.
My goal for the end of the day is _____.
End of the day Reinforcement: _____

Afternoon Check Out:
Total Points Earned for the end of the day: _____
Met Goal? Y N

Emmanuel's Break Routine (Printed on back of DPR)

How I Take a Break:

1. Hold up my Break Card

2. Wait for a thumbs-up or thumbs-down
3. After a thumbs-up, give my teacher the Break Card
4. Start my timer

5. Take my break quietly
6. Go back to work when timer ends

What if I get a thumbs-down?

1. Put Break Card back on desk
2. Keep working
1. Wait at least 5 minutes before asking for another break

My Break Choices Are:

- Read
- Draw
- Use Play Doh
- Walk to Water Fountain

Appendix H

Zoe's BrB DPR (Front)

Zoe's Great Day!

Check-in

Date:_____
Daily Point Goal (%):_____
Reward I am working toward:_____

How I earn points:

- *2 = I met all expectations.*
- *1 = I met some expectations & I needed some reminders.*
- *0 = I met no expectations & needed a lot of reminders.*

	Complete Work to My Teacher's Expectations	Keep a Friendly Face	Raise Hand for Help	Break Tracker	Breaks Taken in Right Way?
Morning Meeting	2 1 0	2 1 0	2 1 0	B B B	1 0
ELA Whole Group	2 1 0	2 1 0	2 1 0	B B B	1 0
Writing	2 1 0	2 1 0	2 1 0	B B B	1 0
ELA Centers	2 1 0	2 1 0	2 1 0	B B B	1 0
Lunch	2 1 0	2 1 0	2 1 0	B B B	1 0
Recess	2 1 0	2 1 0	2 1 0	B B B	1 0
Math	2 1 0	2 1 0	2 1 0	B B B	1 0
Intervention	2 1 0	2 1 0	2 1 0	B B B	1 0
Transitions	2 1 0	2 1 0	2 1 0	B B B	1 0
Related Arts	2 1 0	2 1 0	2 1 0	B B B	1 0

Check-out

Points Earned: _____ out of _____ = _____%

Goal Met: Yes No

Today, I did well remembering to:

Tomorrow, I will work on:

How I Take a Break:

1. Hold up my Break Card

2. Wait for a thumbs-up or thumbs-down
3. After a thumbs-up, give my teacher the Break Card
4. Start my timer
5. Take my break quietly
6. Go back to work when timer ends

What if I get a thumbs-down?

1. Put Break Card back on desk
2. Keep working
1. Wait at least 5 minutes before asking for another break

My Break Choices Are:

- Read
- Draw
- Walk to Water Fountain

Appendix I

Jeremiah's BrB DPR (Front)

Jeremiah's Great Day!

Check-in

Date:_____
Daily Point Goal (%):_____
Reward I am working toward:_____

How I earn points:

- *2 = I met all expectations.*
- *1 = I met some expectations & I needed some reminders.*
- *0 = I met no expectations & needed a lot of reminders.*

	Be On-Task Stay Awake	Follow Directions	Keep Hands to Self Use Kind Words	Break Tracker	Breaks Taken in Right Way?
Morning Meeting	2 1 0	2 1 0	2 1 0	B B B	1 0
Shared Reading	2 1 0	2 1 0	2 1 0	B B B	1 0
Centers/Phonics	2 1 0	2 1 0	2 1 0	B B B	1 0
PLT	2 1 0	2 1 0	2 1 0	B B B	1 0
Lunch	2 1 0	2 1 0	2 1 0	B B B	1 0
Recess	2 1 0	2 1 0	2 1 0	B B B	1 0
Math	2 1 0	2 1 0	2 1 0	B B B	1 0
Science/SS/Writing	2 1 0	2 1 0	2 1 0	B B B	1 0
Transitions	2 1 0	2 1 0	2 1 0	B B B	1 0
Related Arts	2 1 0	2 1 0	2 1 0	B B B	1 0

Check-out

Points Earned: _____ out of _____ = _____% **Goal Met**: Yes No

Today, I did well remembering to: **Tomorrow, I will work on**:

Jeremiah's Break Routine (Printed on back of DPR)

How I Take a Break:

1. Hold up my Break Card

2. Wait for a thumbs-up or thumbs-down
3. After a thumbs-up, give my teacher the Break Card
4. Start my timer
5. Take my break quietly
6. Go back to work when timer ends

What if I get a thumbs-down?

1. Put Break Card back on desk
2. Keep working
1. Wait at least 5 minutes before asking for another break

My Break Choices Are:

- Read
- Draw
- Walk to Water Fountain

Appendix J

Diego's BrB DPR (Front)

Diego's Awesome Day!

Check-in

Date:_____
Daily Point Goal (%):_____
Reward I am working toward:_____

How I earn points:

- *2 = I met all expectations.*
- *1 = I met some expectations & I needed some reminders.*
- *0 = I met no expectations & needed a lot of reminders.*

	Be Responsible Stay on-task Focus on my work	Be Respectful Listen to whoever is speaking Raise hand to speak	Be Safe Keep hands, feet, and objects to self	Break Tracker	BONUS: Breaks taken in an appropriate way?
Morning Meeting	0 1 2	0 1 2	0 1 2	B B B	0 1
Specials	0 1 2	0 1 2	0 1 2	B B B	0 1
ELA Centers	0 1 2	0 1 2	0 1 2	B B B	0 1
ELA Whole Group	0 1 2	0 1 2	0 1 2	B B B	0 1
Recess	0 1 2	0 1 2	0 1 2	B B B	0 1
Math	0 1 2	0 1 2	0 1 2	B B B	0 1
Transitions	0 1 2	0 1 2	0 1 2	B B B	0 1
Intervention	0 1 2	0 1 2	0 1 2	B B B	0 1

Check-out

Points Earned: _____ *out of* _____ = _____*%* **Goal Met**: Yes No

Today, I did well remembering to: **Tomorrow, I will work on**:

Diego's Break Routine (Printed on back of DPR)

How I Take a Break:

1. Hold up my Break Card

2. Wait for a thumbs-up or thumbs-down
3. After a thumbs-up, give my teacher the Break Card
4. Start my timer
5. Take my break quietly
6. Go back to work when timer ends

What if I get a thumbs-down?

1. Put Break Card back on desk
2. Keep working
1. Wait at least 5 minutes before asking for another break

My Break Choices Are:

- Read a book
- Draw or write in my notebook
- Walk to water fountain
- Play with blocks

Appendix K

Mentor Script for CICO: Check-in

	Procedure	Example Wording	Completed?
1	Initiate Feedback	Good morning. It's great to see you today!	Yes No
2	Provide New DPR	Here is your CICO sheet for today.	Yes No
3	Review Behavior Expectations	Let's review the behavior expectations on your point sheet. [Go over each expectation]	Yes No
4	Review How to Earn Points	You can earn 2 points for each of these expectations in your classes. You will earn 2 points if you meet the expectation. You will earn 1 point if your teacher has to give you a reminder about the expectation. You will earn 0 points if you do not meet the expectation, even after a reminder.	Yes No
5	Inform Student of Point Goal	Your point goal for today is 80% or ____ points.	Yes No
6	Provide Positive Statement	You're ready for a great day! I know you can meet your point goal.	Yes No

Appendix L

Mentor Script for CICO: Teacher Feedback

	Procedure	Example Wording	Completed?
1	Initiate Feedback	Let's talk about how many points you earned during math today!	Yes No
2	Expectation 1: Points Earned	You earned a 2 for staying in your seat the whole time.	Yes No
3	Expectation 1: Feedback	You stayed on your carpet spot the whole time we were working!	Yes No
4	Expectation 2: Points Earned	You earned 1 point for raising your hand. This means you raised your hand for some of our math block.	Yes No
5	Expectation 2: Feedback	You did a great job raising your hand on the carpet. Remember to also raise your hand your desk. I know you will get 2 points next block!	Yes No
6	Expectation 3: Points Earned	You didn't get your points for using kind words.	Yes No
7	Expectation 3: Feedback	I know this is hard to do when you are upset. Remember, you can ask to go to the calm down zone. I know you will get your points next block!	Yes No
8	Total Points Earned	You earned 3 points in math! Great job staying in your seat, I know you can earn all of your points next time.	Yes No

Appendix M

Mentor Script for CICO: Check-out

	Procedure	Example Wording	Completed?
1	Initiate Check-Out	Hello! How was your day? Let's look at your sheet.	Yes No
2	Determine if Student Met Point Goal	You earned _____ points today.	Yes No
3	Provide Positive or Neutral Feedback	MET GOAL: Way to go! You met your goal! You did a really nice job showing your teachers how you_____. OR DID NOT MEET GOAL: You just missed your goal today. It looks like you had trouble _____. I know you can earn those points tomorrow.	Yes No
4	Provide Reinforcer (if earned)	You met your goal so you earned [name reward]. Here you go! OR You earned lunch with a teacher tomorrow! Excellent. We will meet at 12:00 tomorrow. • If reinforcer is something they will earn the next day (e.g., lunch with teacher or computer time in morning), announce that they will get it tomorrow.	Yes No
5	Provide Positive Statement	Have a great afternoon! See you in the morning.	Yes No

Appendix N

Mentor Scripts for Introducing CICO on Day One

1. Today we are going to start a new program! This is going to help you be more responsible, be more respectful, and be safer in school.

2. Every morning, you will come to my room and check in with me. During check-in, you will get a new point sheet.

3. Here is the point sheet [show student the point sheet]
    a. Explain Expectations: Here are the behaviors your teachers expect you to show every day:
        i. You will Be Responsible by staying on task and focusing on your work.
        ii. You will Be Respectful by listening to whoever is speaking and by raising your hand to speak.
        iii. You will Be Safe by keeping your hands, feet, and objects to yourself.

    b. Explain Point System: After each class, your teachers will rate you on how well you meet each expectation.
        i. If you meet the expectation fully, you will earn 2 points.
        ii. If you need a couple reminders to meet the expectation, you will earn 1 point.
        iii. If you do not meet the expectation, even with lots of reminders, you will not earn any points for that time block.

4. Each morning we will set a point goal. If you meet your goal, you get a reward at the end of the day. Some kids like snacks, others like time on the computer, or time with toys.
    a. What are some things you would like to work towards?

5. So let's get started! Here is your first point sheet.
    a. Write date
    b. Write point goal (80%)
    c. Mark down reward

6. Give folder to student.

7. I know you are going to have a great day! I can't wait to check out with you this afternoon.

Appendix O

BrB Planning Sheet

Planning Sheet for BrB

Define Expectations In Academic Terms
Expectation #1:_____
Academic Definition:_____

Expectation #2:_____
Academic Definition:_____

Expectation #3:_____
Academic Definition:_____

Plan for Timer
Type of Timer to Use (circle one):

Kitchen Timer Sand Timer Watch

Plan for How Student Will Request Break
Will the student be able/want to use a break card to ask for a break?

Yes No

If no, what is another way the student can ask for a break?_____
_____

Plan Break Activities
List the activities a student may do during a break:

Appendix P

Mentor Script for BrB: Check-in

	Procedure	Example Wording	Completed?
1	Initiate Feedback	Good morning. It's great to see you today!	Yes No
2	Provide New DPR	Here is your point sheet for today.	Yes No
3	Review Behavior Expectations	Let's review the behavior expectations on your point sheet. [Go over each expectation]	Yes No
4	Review How to Earn Points	You can earn 2 points for each of these expectations in your classes. You will earn 2 points if you meet the expectation. You will earn 1 point if your teacher has to give you a reminder about the expectation. You will earn 0 points if you do not meet the expectation, even after a reminder.	Yes No
5	Check for Timer	Do you have your timer?	Yes No
6	Review Break Procedures	Remember, you can ask to take up to 3 breaks per class. Let's go over the break routine on your point sheet.	Yes No
7	Bonus Points	Remember, if you ask to take breaks in an appropriate way, you can earn bonus points!	Yes No
8	Inform Student of Point Goal	Your point goal for today is ____ % or ____ points.	Yes No
10	Provide Positive Statement	You're ready for a great day! I know you can meet your point goal.	Yes No

Appendix Q

Mentor Script for BrB: Teacher Feedback

	Procedure	Example Wording	Completed?
1	Initiate Feedback	Let's talk about how many points you earned during math today!	Yes No
2	Expectation 1: Points Earned	You earned a 2 for staying in your seat the whole time.	Yes No
3	Expectation 1: Feedback	You stayed on your carpet spot the whole time we were working!	Yes No
4	Expectation 2: Points Earned	You earned 1 point for raising your hand. This means you raised your hand for some of our math block.	Yes No
5	Expectation 2: Feedback	You did a great job raising your hand on the carpet. Remember to also raise your hand your desk. I know you will get 2 points next block!	Yes No
6	Expectation 3: Points Earned	You didn't get your points for using kind words.	Yes No
7	Expectation 3: Feedback	I know this is hard to do when you are upset. Remember, you can ask to go to the calm down zone. I know you will get your points next block!	Yes No
8	Break tracker	Did you take breaks the right way? <u>If yes</u>: Let's mark these off here [mark off the number of breaks taken]. You took breaks appropriately so you earned a bonus point! [mark off Bonus point]. <u>If no</u>: You did take some breaks [mark off the number of breaks taken]. But you forgot to ask me to take a break/you	Yes No

		forgot to set your timer/you talked to a friend while you took a break. Next time, let's try to take a break the right way [go over routine] and then you can earn a bonus point! N/A: You didn't take any breaks. Remember, you can take a break when you feel frustrated, confused, or just need time to yourself. If you take breaks, you can earn bonus points that will help you meet your goal.	
9	Total Points Earned	You earned 3 points in math! Great job staying in your seat, I know you can earn all of your points next time.	Yes No

Appendix R

Mentor Script for BrB: Check-out

	Procedure	Example Wording	Completed?
1	Initiate Check-Out	Hello! How was your day? Let's look at your point sheet.	Yes No
2	Ask about Breaks	Did you take breaks today? If so, did you earn any bonus points?	Yes No
3	Determine if Student Met Point Goal	You earned _____ points today.	Yes No
4	Provide Positive or Neutral Feedback	MET GOAL: Way to go! You met your goal! You did a really nice job showing your teachers how you_____. OR DID NOT MEET GOAL: You just missed your goal today. It looks like you had trouble. _____I know you can earn those points tomorrow.	Yes No
5	Provide Positive Statement	Have a great afternoon! I can't wait to see you tomorrow!	Yes No

Appendix S

Training Manual for Teaching BrB to Students

Adapted from Anderson & Boyd, 2010

Materials Needed:

- BrB DPR with break routine printed on back
- Break cards
- Timer
- Work/Worksheets for role play

Describe how points are awarded and what the points can be redeemed for

We want to help you do better in school by helping you remember the school expectations and being sure you can take breaks when you need them. You will be able to earn points throughout the day for _____ expectations). [ask for examples and non-examples of each expectation]. This part of the meeting should be just like in CICO but the expectations include academic behaviors.

Part I: Requesting a Break the Right Way

1. Identify and describe the skill

Now, in addition to earning points for doing the right thing you get something else that very special. You're going to be allowed to ask for short breaks during class time. If you take a break, that means you can stop class work you are doing and do something else at your desk instead." When you ask for a break you will be able to stop working for a little bit and no one will be mad or bug you to get back to work. The reason for this is we all get frustrated with our work sometimes and need a break.

Things you could do during your break are: look at a book or read a book, draw in a notebook, or just put your head down and relax. fill in break examples for this student). So, if the teacher is having the class work on a worksheet and you want to stop working on the worksheet for a few minutes, you can take a break – and stop working.

2. Discuss the importance and consequences of the skill

Students can answer, the adult can provide answers or both), for the following questions/prompts.

Now, it is going to be very important that you ask for a break the right way. If you ask for a break the right way:

- The teacher will probably let you have a break
- You will be showing that that you are responsible and respectful
- You will get to earn lots of points on your point card

"If you don't ask for your breaks the "right way"

- The teacher won't know you want a break

- The teacher might not let you take a break right away
- You might not get to earn lots of points on your point card for that period

Show the student the back of the point card with the break request steps

3. Define/discuss the skill steps with examples/non-examples

The right way to ask for a break is to raise your hand with a #1, like this model for the student and show the visual aid on the point card), and wait for the teacher to give you a thumbs up or a thumbs down.

A "thumbs up" showing student) means that you can take a break, and a "thumbs down" showing student), means that you can't take a break. If the teacher gives you a "thumbs down", it's no big deal, it just means that you should keep doing the right thing and you can ask for a break again later. If you think you will want a break soon then set your timer for 2 minutes but keep working. When the timer goes off you can ask for a break again.

Review: So, to ask for a break you. . .

- Raise your hand with a #1
- Wait quietly and patiently
- If the teacher gives you a "thumbs up", can you take your break?
- If the teacher gives you a "thumbs down", what should you do?

4. Model the skill and role play with examples/non-examples

Now watch me carefully. I'm going to pretend to be working and I'm going to show you the right way, to ask for a break – I'm even going to let you pretend to be the teacher and you can give me a "thumbs up".

Right Way: Adult pretends to be working for a few seconds and then models <u>asking for a break the right way</u>, allowing the student to give a "thumbs up"

You gave me a "thumbs up", so can I take a break?
Did I ask for a break the right way?

Let's try again and you give me a "thumbs down" adult pretends to be working for a few seconds and then models asking for a break the right way, allowing the student to give a "thumbs down"

You gave me a "thumbs down", so can I take a break?
No big deal. So, should I just keep working?

Wrong Way: Adult models a non-example (wrong way) such as talking out while they are raising their hand

Is this the right way to ask for a break?

Do you think that the teacher would give me a "thumbs up"?
Do you think I would earn lots of points on my card if I asked for breaks the wrong way?

5. Student practice with feedback *Students only practice the "right way"
Now it's your turn to show me that you can ask for a break

I'm going to pretend to be your teacher and I want you pretend that you are working (like I did) and then show me how you will ask for a break, the right way (practice2-3 times; give a thumbs-up at least once and a thumbs-down at least once).

Show the student how the card depicts steps for taking a break —remind the student to look at the card for help.

PART II: Tracking Breaks

Now I want to explain the rest of the BrB card and show you how to keep track of your breaks and take them the right way, okay?

Adult shows and explains the rest of the BrB card to the student.

1. Identify and describe the skill

After you ask for a break and the teacher gives you a "thumbs up" (just like we practiced), it's important that you take your break the right way.

2. Discuss the important and consequences of the skill
Taking a break the right way means that you are respectful while you' re taking a break by keeping your voice and body calm and quiet so that you don't disturb others.

If you take your breaks the right way, you will be able to keep earning your BrB points on your point card and you'll be able to take breaks when you want to

3. Define/discuss the skill steps with examples and non-examples; ask student to generate examples and non-examples of the skill

Good, so if you ask for a break (like we practiced, already) and the teacher gives you a thumbs up. I'm going to show you what to do.

The adult uses the back of the BrB card to explain the steps to the student.

- First, you mark off a circle on your card
- Next, you start your timer for 2 minutes
- Then, you take your break the "right way" until the timer goes off

When the timer goes off you should get back to work and do your best to keep doing the right thing and following the rules. This way, you can get to take breaks and keep earning lots of points on your card

Now I want to show you the right way – but remember, you would be taking your break the wrong way if you:

- Got out of your seat and walked around during your break
- Started talking to other students
- Didn't use your timer
- Or - Didn't get back to work when your timer goes off and your break is over

4. Model the skill and role play with examples and non-examples; and have student to label them as either appropriate or inappropriate

Watch me carefully. I'm going to show you the right way to take a break when the teacher gives you a "thumbs up". So, I'm going to ask for break and I want you to pretend to be the teacher and give me a "thumbs up". [request and take a break appropriately and inappropriately; ask for feedback after each step]

5. Student practices with feedback

Now I want you to practice with me and show me that you can take a break the right way. I'll pretend to be your teacher and I want you to pretend to be working (like I did) and ask for a break. When I give you a "thumbs up", I want you to show me the right way to take a break. Can you do that; can you show me the right way to take a break? [Have the student request and take a break — be sure to practice the right way and wrong way to take breaks at least once; provide feedback for each step.]

Appendix T

Implementation Fidelity Checklist: Check-in

Check-in Evaluation Component	Observed?
1. Student and mentor met to initiate CICO cycle.	Y N
2. The mentor asked student for the signed behavior note from the previous day.	Y N NA
3. Student received correct DPR form [white if standard protocol CICO and blue for BrB].	Y N
4. If given blue BrB DPR, it includes the break routine printed on it (may be on the back).	Y N NA
5. During the blue BrB phase, mentor checks/asks student if he or she has the timer.	Y N NA
6. Mentor reviewed the school-wide behavioral expectations outlined on the DPR.	Y N
7. If blue BrB phase, mentor asked the student for examples of how to take a break or what to do it a teacher denies a break request.	Y N NA
8. Mentor reviewed how points may be earned by mentioning the rating scale.	Y N
9. Mentor identified the student's CICO point goal for the day.	Y N
10. CICO mentor identified student's reinforcer.	Y N
TOTAL NUMBER OF COMPONENTS OBSERVED	____ /____

Appendix U

Implementation Fidelity Checklist: Break System

Break Component	
1. The student has timer.	Y N
2. During the blue BrB phase, if a student asks for breaks, he or she does so in an appropriate manner according to the break routine printed on the DPR	Circle one: Always Sometimes Never NA
3. During the blue BrB phase, if a student asks for breaks, the teacher responds to all break requests by saying yes or not right now/no.	Circle one: Always Sometimes Never NA
Tally Breaks Requested: Tally Breaks Allowed: Tally Breaks Denied:	

Appendix V

Implementation Fidelity: Teacher Feedback

Teacher Feedback Component	Goal 1	Goal 2	Goal 3
1. The teacher obtains DPR from student or the student gives the DPR form to the teacher.	Y N NA		
2. The teacher records the points earned or uses a comparable system (e.g., smiley, neutral, or sad faces.	Y N NA	Y N NA	Y N NA
3. The teacher indicates to the student what he/she earned (i.e., points or verbally states)	Y N NA	Y N NA	Y N NA
4. The teacher provides specific praise or corrective feedback at the end of the class period.	Y N NA	Y N NA	Y N NA
5. During the blue BrB phase, the teacher marks a score for taking breaks appropriately.	Y N NA		

Appendix W

Implementation Fidelity Checklist: Check-out

Check-out Evaluation Component	Observed?
1. Student and mentor met to conclude CICO cycle.	Y N
2. Mentor reviewed the student's DPR for the day, determining with the student whether the student's daily point goal was met.	Y N
3. During blue BrB phase, mentor added in any bonus points student earned for taking breaks.	Y N NA
4. Mentor praised the student if the point goal was met or provided neutral feedback, reminding the student how points may be earned, if the point goal was not met	Y N
5. Mentor provided student with reinforcer if the point goal was met or withheld reinforcer if point goal was not met.	Y N NA
6. Student's reinforcer announced if delayed	Y N NA
7. Mentor gave student behavior note to bring home	Y N NA
TOTAL NUMBER OF COMPONENTS OBSERVED	____ /____