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Statewide Implementation of Child-Adult Relationship Enhancement (CARE) in Early Childhood Educational Centers: Examination of Implementation Determinants

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctorate in Psychology

by

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Abstract

To expand reach of evidence-based strategies for the treatment and prevention of childhood mental health issues, implementation efforts have been focused on educational settings. However, little is known about what facilitates the success of these programs. Implementation determinants provide insight about processes impacting success at the administrative and individual provider level. The current investigation examined data collected from a statewide implementation of Child-Adult Relationship Enhancement (CARE) in early childhood education centers and preschools. Two-hundred, seventeen teachers from 10 early childhood centers and preschools provided ratings of their students' behavior for several weeks before and after participating in CARE training. Participants also completed measures of their attitudes towards evidence-based practice (EBP) and use of CARE skills. School directors completed ratings of their organization's readiness to make changes needed to adopt EBP. Results indicated that school directors with lower self-rated efficacy and influence had teachers that felt more supported implementing CARE. Among teachers, openness to EBP before training was related to higher use of CARE after training and at follow-up (all p's $< .01$). Higher openness was also related to greater skill knowledge before training. Results of structural equation modeling revealed the effect of teacher attitudes on the change in their students' behaviors from pre- to post-training. Economic analysis demonstrated the cost-effectiveness of CARE training for reducing students' disruptive behavior. In general, results indicated that both school directors' readiness and teachers' attitudes towards EBP significantly affected teachers' use of CARE, as well as the potential benefit their students would receive from CARE. Outcomes were considered in the context of enhancing the scientific literacy of teachers to facilitate uptake of prevention and intervention.

Acknowledgement

"All we have to decide is what to do with the time that is given us." — **Gandalf**

This dissertation marks the penultimate step in my journey towards a PhD. I am fortunate to have had the support of my mentors, supervisors, friends, and family. I wish I could name every person who impacted my growth, alas, here are the highlights.

First, I would like to thank Dr. Lauren Quetsch who adopted me when I needed to join a new lab to call home after my second year in the program. Lauren has been the best cheerleader and fastest editor of my work. Not only did she provide advising and chaired five of my six research milestones in the program, but she also set the standard for being supportive of my choices to start a family in grad school.

Before coming to the University of Arkansas, I had little formal knowledge of dissemination and implementation, but I was fascinated by how well this new branch of science described my own research interests. I have Dr. Alex Dopp to thank for accepting me into the program at UA and introducing me to implementation science methodology. I have remained inspired ever since.

My *ex officio* mentor and friend, Dr. Dustin Sarver, has been instrumental in my completion of this dissertation project. Dustin recruited me to work as his research coordinator almost 7 years ago, and I could not pass up the opportunity to help disseminate my favorite clinical intervention, PCIT. Dustin has been incredibly generous by dedicating many hours of his time this past semester to teaching me advanced analytic techniques. Dustin is a true quant nerd and always has an interesting resource to share. I have learned so much more than I expected on this project and feel even more prepared to flex my skills in the field.

I would also like to thank Drs. Behrend and Cavell for serving on my dissertation advisory committee. Your input has been valuable and has challenged me during this process.

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Finally, I would like to thank my parents and family. I am so lucky to have been surrounded by others who forged the path before I arrived. For the many hours of supportive discussion about navigating academia, I thank my sister, Dr. Sarah Fischer. To my husband, Aron, who will join me in relocating for a third time for my residency, you are the best. After what we have endured in the past, I don't think anything could shake us.

"*I think I'm quite ready for another adventure.*" — **Bilbo Baggins**

On y va!

Dedication

Dedicated to Cooper and Revan. May you find your own labors of love.

Table of Contents

Statewide Implementation of Child-Adult Relationship Enhancement (CARE) in Early Childhood Educational Centers: Examination of Implementation Determinants

Growing interest in school-based interventions to address common mental health concerns (e.g., child disruptive behavior, trauma) has led to a nation-wide increase in implementation efforts (Lyon & Brun, 2019). However, adopting evidence-based interventions and practices (EBP) is a large investment by schools, requiring extensive time, money, energy, and resources (Fabiano & Pyle, 2019). Even if school boards are interested in investing in an EBP, director attitudes or school readiness to make changes may impact program uptake and dissemination efforts. Assessing and addressing factors at the inner setting (Bruns et al., 2019) to facilitate EBP implementation has been shown to be cost beneficial (Lovell et al., 2017; Sonuga-Barke et al., 2018) and enhance implementation outcomes (Beidas et al., 2015; Fernandez et al., 2018; Lyon et al., 2018); therefore, research initiatives in this area have implications for improved child mental health outcomes as well as large-scale rollout and possible policy development (Stahmer et al., 2018). This dissertation examined the relationship of factors at the inner setting (i.e., teacher attitudes, school readiness, and cost) with uptake and effectiveness of an EBP (i.e., Child-Adult Relationship Enhancement), as well as provides considerations for future implementation and training efforts in school settings.

Evidence-Based Practices in Schools

It is estimated that less than half of children with psychiatric disorders (e.g., oppositional defiant disorder, post-traumatic stress disorder) receive specialty mental health care (Costello et al., 2014). Nearly half of children with a mental health disorder in the United States fail to receive services for their mental health each year (Whitney & Peterson, 2019), thus school-based mental health care has been proposed as a viable alternative to the standard outpatient model

(Lyon & Brun, 2019). Indeed, because children spend more time in school than in any other formal institution, schools are an ideal natural environment in which to target children's psychosocial and emotional health. Furthermore, in primary school where children spend most of their day with one teacher, classrooms are well-suited for prevention and intervention programs to enhance children's mental health functioning (Gaastra et al., 2016; Lyon et al., 2009). Early childhood education provides teachers the opportunity to shape children's socio-emotional skills (Gregoriadis & Grammatikopoulos, 2014; Hughes et al., 2014), impacting children's early behavior and risk for both internalizing and externalizing disorders (Cadima et al., 2016; Hartz et al., 2017). These classrooms usually have one teacher with whom children develop a personal relationship and thus teachers are well-poised to provide reinforcement that facilitates change in student behaviors (Fernandez et al., 2015; Quin, 2017).

To enhance mental health outcomes of youth, schools are increasingly interested in adopting EBP. Teachers have been targeted given that school psychologists are overburdened with testing and assessment requirements, and teachers spend a great deal of time with students throughout the day (meaning more opportunities for change to take place). Additionally, substantial personnel shortages of school counselors and school psychologists are expected to persist until 2025 (Castillo et al., 2014; HRSA et al., 2015). Teachers also may have the ability to effectively identify mental health problems in students, making them poised to be gatekeepers and referral sources for mental health care (Mazzer & Rickwood, 2015). Programs which coach the teacher may have the most potential. Some research suggests that the impact of interventions on student outcomes may be similar regardless of whether a professional or a teacher is delivering the intervention (Franklin et al., 2012).

The dissemination of evidenced-based mental health approaches corresponds to a tiered

approach, in which **universal** prevention methods are delivered to all students, **selective** prevention programs are provided for at-risk groups, and referrals for **indicated** interventions are available for children who require community-based individual or family therapy (National Research Council and Institute of Medicine, 2009). Research has demonstrated that more children may be reached with universal preventative approaches (Lendrum et al., 2013), and that these approaches spark referrals for selective and indicated interventions (Multisite Violence Prevention Project, 2014), both within their classrooms or via community-based services (Lee et al., 2017). This multitiered system of support promotes student well-being with universal programs demonstrating academic and long-term health benefits such as decreased risk for internalizing and externalizing symptoms (Feinberg et al., 2014) and substance misuse (O'Reilly et al., 2018; Spoth et al., 2017). Even with the positive outcomes gained from universal approaches, some children still require indicated individual and family psychological interventions. Fortunately, clinical researchers have developed multi-tiered systems of support (MTSS, August et al, 2018) which can bridge these levels of intervention, providing coordinated options for each tier within a school system (e.g., positive behavior support, Menzies & Lane, 2011; MTSS for depression, Arora et al., 2019; MTSS for refugee children, Ellis et al., 2013). This spectrum of tiered services ranging from promotion to recovery is depicted in Figure 1.

Continuum of CARE

To enhance the uptake of EBP, mental health service agencies and providers are increasingly forming community partnerships with schools. For referrals, an indicated intervention like Parent-Child Interaction Therapy (PCIT), a parent-training EBP focused on reducing problem behaviors in children ages 2 through 7 years (McNeil & Hembree-Kigin, 2010), may serve as a resource when children are at risk of daycare/preschool removal or have

frequent disruptions in the classroom. Families who have completed PCIT demonstrate increased positive parenting skills, improved family relationships with less parental stress, increased child compliance, reduced levels of child problem behaviors, and decreased parent negativity (Mapes et al., 2021). While PCIT works directly with caregivers, Teacher-Child Interaction Training (TCIT) is a universal or selective prevention program which trains teachers in behavioral skills to improve teachers' classroom management techniques and improve children's classroom development (Lyon et al., 2009).

Finally, the positive interaction skills of PCIT and TCIT have been further expanded for youth ages 2-17 years in a universal prevention approach called Child-Adult Relationship Enhancement (CARE). CARE is an evidence-informed approach often implemented in school settings to be used by any adult in a professional role interacting with a child (e.g., teachers, principals, bus drivers, cafeteria staff). CARE has been shown to enhance relationships between children and adults, increase child compliance, and is endorsed by the National Child Traumatic Stress Network (Gurwitch et al., 2016). CARE has also demonstrated success in decreasing disruptive behavior and parenting stress among parents in primary health care settings (Schilling et al., 2017; Scott et al., 2021) and in improving parent-reported child behavior problems and parenting skills among foster parents (Messer et al., 2018; Wood et al., 2017). CARE also has the potential to extend the principles and inherent benefits of a rigorously tested clinical intervention like PCIT to a larger number of youths, thus creating a continuum of mental healthcare services (Parisi et al., 2017).

TCIT involves extensive training via active coaching, typically 2-3 times per week for 10-12 weeks. Whereas CARE is less time intensive and is typically delivered in a workshop-style training that emphasizes adult learning concepts to ensure gains. This is due to evidence

that general workshops tend to increase trainee knowledge, but not demonstrate gains in observed skills. Whereas workshops tend mostly to focus on didactic/lecture content only, the adult learning and behavioral principles we include in CARE are: role playing, active direct coaching, immediate feedback on skills demonstration, case discussion, reminder prompts following training, and elements of just-in-time learning discussions. behavioral principles we include in CARE are: role playing, active direct coaching, immediate feedback on skills demonstration, case discussion, reminder prompts following training, and elements of just-in-time learning discussions.

Past studies have shown that PCIT, TCIT, and CARE are all effective at reducing externalizing behaviors (Thomas et al., 2017; Ward et al., 2016), decrease interfering disruptive behavior (Sarver et al., in preparation; Schilling et al., 2017, Schilling et al., 2020; Scott et al., 2021), and increasing skill acquisition of caregivers/teachers (Davidson et al., 2021; Lindheim et al. 2014; Sarver et al., 2019). However, PCIT and TCIT have limitations, including high costs of training, demand for fidelity monitoring, high clinician turnover, and high attrition (Blair et al., 2019; Onken et al., 2014; Webb et al., 2017). CARE provides a feasible alternative with decreased training requirements (one training day with 1-3 follow up coaching sessions) and simplified training goals focusing on the most impactful skills from the PCIT and TCIT models. CARE is also highly disseminable, processes for clinicians who have been trained in a number of different EBIs may become CARE Facilitators and train other staff within their home agencies (icarecollaborative.org). A large network of providers already trained in PCIT may therefore increase feasibility of CARE implementation and scalability.

However, financial investment of large-scale CARE dissemination has yet to be formally established, making research investigating determinants of CARE implementation important for

future efforts. the potential value and cost-effectiveness of Providing training that may improve behaviors even slightly amongst many children via universal approaches relative to selective or indicated interventions may produce relatively large effects like indicated interventions (e.g., PCIT), though with a much broader reach.

Implementation Determinants

Some recent research has examined predictors of successful implementation, as implementation failures are extremely common in school-based mental health (Lyon & Bruns, 2019). The Consolidated Framework for Implementation Research (CFIR) was created to unite implementation theories (Damschroder et al., 2009) and describes five major domains under which implementation constructs are organized. These domains include intervention characteristics, outer setting, inner setting, characteristics of the individuals involved, and the process of implementation. Researchers have determined that implementation factors at the inner setting (i.e., school climate) as well as within individuals (e.g., teachers, students) or interventions (e.g., TCIT, CARE) are important to successful EBP delivery (Bruns et al., 2019; Proctor et al., 2011). Findings suggest that implementation efforts that address more than one of these levels (i.e., outer setting, inner setting, individuals, interventions) often prove to enhance effectiveness over those which only target one of these contexts (Beidas & Kendall, 2010). Previously explored factors that provide insight on implementation processes include organizational readiness for (Bast et al., 2021; Wang et al., 2020), practitioner use of (Reinke et al, 2014; Stormont & Reinke, 2012) and attitudes towards (Locke et al., 2019; Monahan et al., 2014; Stahmer & Aarons, 2009) an EBP. For instance, school coordinator's perceptions of organizational readiness have been associated with implementation fidelity (Bast et al., 2020) and teacher attitudes have been shown to predict their implementation of an EBI above and

beyond leadership and organizational climate (Locke et al., 2019). In general, research indicates that assessment of these factors is best practice and provides valuable insight when implementing a new intervention or prevention program. For example, assessment of a school's organizational readiness for change can inform the implementation team of where individuals and the organization are at in terms of preparedness to start the program. Understanding readiness facilitates implementation by not giving schools too much before they are ready or too little when they seem ready to get started (Flaspohler et al., 2012).

The Current Study

The current study explored a statewide implementation of CARE. Preschool and early childhood teachers and school directors were trained in CARE in daycare centers and preschools across Mississippi. Mississippi has endured a dearth of EBP and efforts to impact the continuum of care for children with behavioral problems was recently initiated (Parisi et al., 2017). The following project assessed implementation factors found in the literature to greatly impact EBP success (i.e., organizational readiness, teacher attitudes) to determine their role in the implementation of CARE. Further, the cost to change a child/student's behavior was determined by calculating training expenses per unit of child behavior change. The specific aims of this investigation therefore included:

A. Determine how implementation factors at the school level impact CARE training uptake.

   Hypothesis 1: Subscales of Organizational Readiness (i.e., Motivation/Needs for Change, Staff Attributes, Organizational Climate) will be related to teacher usage (i.e., Acceptability, Understanding, Feasibility, Systems Support). For example, Staff Attributes, such as higher director-rated Efficacy and Influence, will predict higher

teacher Usage of CARE. Organizational Climate, such as one with decreased stress, will predict increased teacher Usage of CARE.

B. Examine teacher attitudes and associated factors and their link to teachers' use of the CARE skills.

   Hypothesis 2: Teacher demographic characteristics (i.e., experience, education, student age profiles) will predict teacher Attitudes (i.e., Openness, Appeal, Requirements, Divergence).

   Hypothesis 3: Teacher attitudes will predict teachers' CARE skills, Usage (i.e., Acceptability, Understanding, Feasibility, Systems Support), and satisfaction with training.

   Hypothesis 4: Teacher attitudes (i.e., Openness, Appeal, Requirements, Divergence) will mediate the effect of CARE training on pre- to post-training change in student behaviors (i.e., Attention, Conduct, Emotional, and Social Problems).

C. Present information about the average cost of implementation via a cost-effectiveness analysis.

Method

Procedure

With initial funding from the Mississippi Council for Developmental Disabilities, the larger study from which the current investigation is drawn included a statewide implementation of CARE in various settings and diverse providers (e.g., medical residents, psychology interns, occupational/physical/speech therapists, preschool teachers). Beginning at the University of Mississippi Medical Center (UMMC), the dissemination project recruited Jackson area childcare facilities and eventually reached additional rural counties across Mississippi. Teachers completed

measures while waiting for training to begin (pre-training), immediately following training (post-training), and 6 to 8 weeks after training (follow-up). Further, teachers were observationally coded approximately 2 weeks before and 2 weeks after training for their CARE skills.

CARE Training

All trainings were presented in-person, approximate or average trainer ratio to trainees (you should have that info). Teachers participated in didactics and role-playing activities during training, incorporating immediate feedback from the trainers Didactics included direct lectures, video reviews, role play, and practice of CARE skills. Trainings were conducted as 4- to 6-hour single day workshops within the teachers' facility and were considered professional development days. Trainings were facilitated by the primary investigators and by clinicians within UMMC's outpatient PCIT clinic. CARE trainers utilized dynamic adult learning elements to enhance uptake and integration of skills, incorporating the seven adult learning principles of self-direction, transformation, experience, mentorship, mental orientation, motivation, and readiness to learn.

Participants

Participants in the current study were drawn from CARE trainings that occurred in educational settings only (e.g., daycares, preschools, early developmental centers). Data for a total of 217 teachers and 10 total directors, each from a different school or care center, were collected and included in the current study. The study was approved by the UMMC IRB (UMMC protocol 2019-0272).

Measures

Via a rigorous and innovative mixed-method approach called concept mapping (CS Global Max™), the Expert Recommendations for Implementing Change (ERIC) have been rated

and compiled by expert stakeholders (Waltz et al., 2014). This highly vetted list of implementation strategies was developed to inform implementation efforts in diverse settings, such as schools (Powell et al., 2015). Specifically, academic-community partnerships, which corresponds to one of the ERIC strategies, are well-poised to facilitate successful implementation of EBP in schools. These partnerships have the potential to incorporate many other ERIC strategies including: assessing for readiness and identifying barriers and facilitators, conducting educational meetings, conducting ongoing training, creating new clinical teams, developing a formal implementation blueprint, allowing for quality monitoring, making trainings dynamic, allowing for ongoing consultation, and establishing a reminder system for providers (Powell et al., 2015). Information about the cost of implementation (e.g., cost-per-unit-change) can also provide insight on implementation determinants. The research team utilized ERIC strategies to appropriately evaluate the effectiveness of CARE in Mississippi preschool settings for the current project.

Demographics

Participants reported on their gender, age, race/ethnicity, degree of education, discipline/profession (e.g., director, supervisor, teacher, staff), and years of experience. Only teachers and directors of educational centers were utilized in the current study. Participating teachers were also surveyed about the ages of their students (Table 1). The sample was nearly entirely female, non-Hispanic, majority Black with moderate teaching experience and education. Students of teachers were 3.39 years old on average and 49% female.

School Readiness

Organizational Readiness to Change - Director (ORC-D4). The ORC-D4 (Institute for Behavioral Research, 2009) is an assessment of organizational factors and dynamics completed

by the director of a school or education center. The ORC-D4 is composed of three scales (each with several subscales, see Table 2): Motivation/Needs for Change (26 items), Staff Attributes (31 items), and Organizational Climate (30 items). Scores on the ORC-D4 range from 10-50. Higher scores (i.e., above 30) represent *stronger agreement*, and lower scores (i.e., below 30) represent *stronger disagreement*. The ORC has demonstrated strong psychometric properties (Lehman et al., 2002). Needs for Change, Staff Attributes, and Organizational Climate were used in the present study. The program-level coefficient alpha for each scale has been explored for the current study and is reported for evaluated subdomains: Motivation/Needs for Change ($\alpha = .91$), Staff Attributes ($\alpha_{range} = .83$), and Organizational Climate ($\alpha_{range} = .54$). The ORC remains one of the most rigorously tested and used measures of organizational readiness currently available.

Teacher Measures

CARE Skills Evaluation. Before CARE training began, teachers were asked five questions about their ability to manage their students' disruptive or negative behavior, as well as their ability to foster specific skills for positive behaviors, communication, and a better relationship. For example, teachers were asked the extent to which they agreed with the statement, "I have knowledge of specific skills which develop or increase my patients' positive behaviors." After training, teachers were asked about their knowledge of the CARE skills (i.e., praise, point-out, paraphrase, and language to avoid) and their comfort in using new approaches they had learned. For example, "I have learned new approaches to using praise (i.e., making praises labeled, praising behaviors I want to see more of) that I have not previously used."

Response options for both pre- and post-training evaluations were based on a 4-point Likert scale (1 = *Strongly Disagree* to 4 = *Strongly Agree*). Scores could range from 5 to 20 at pre-training and 7-35 at post-training. (Table 2).

Evidence-Based Practice Attitude Scale (EBPAS). The 15-item Evidence-Based Practice Attitudes Scale (EBPAS; Aarons, 2004) was developed to assess clinicians' attitudes towards using treatment manuals, empirically supported interventions, and EBP on a 5-point Likert scale (0 = *not at all* to 4 = *a very great extent*). It produces four subscales: Openness (willingness to use new treatment types), Appeal (clinician use of a new treatment if it makes intuitive sense or if colleagues approve of it), Requirements (clinician use of a new intervention if it was an agency or state requirement), and Divergence (clinician perception of EBP as neither important nor useful). The EBPAS was administered to teachers at the pre-training timepoint, during the first 15 minutes of CARE training. The EBPAS has adequate ecological validity, content validity, and factor structure (Aarons, 2004; Aarons et al., 2007; Aarons et al., 2010). Reliability estimates for the current study were calculated for the subscales of Openness (α = .81), Appeal (α = .84), Requirements (α = .91), and Divergence (α = .78). See Table 2.

Teacher Attitude Inventory (TAI). Adapted from a parent satisfaction survey used in PCIT called the Therapy Attitude Inventory (Eyberg & Johnson, 1974), the TAI used in the present study is a 10-item measure assessing teacher attitudes of CARE interaction techniques. Teachers completed the TAI at post-training, during the last 15 minutes of CARE training. Teachers were asked, "Regarding child interaction techniques, I feel I have learned... *nothing* (1)/ *very many useful techniques* (5)." Responses are based on a 5-point Likert scale (1 = *much less confident* to 5 = *much more confident*). Cronbach's alpha for the TAI has been determined to be excellent (.91) with high stability after 4 months (.85; Brestan et al., 1999). Reliability of the TAI for the current sample of teachers was estimated at α = .92 (Table 2).

Usage Rating Profile -Intervention (URP-I). The URP-I (Chafouleas et al., 2009) is a 36-item provider-report measure on the adoption and use of a specific EBP. Ratings are recorded

on a 6-point Likert scale (0 = *Strongly Disagree* to 5 = *Strongly Agree).* The URP-I continues to be utilized in large-scale implementation efforts with elementary school teachers (Briesch et al., 2013; Fabiano et al., 2018). Teachers completed the URP-I at post-training. Reliability estimates revealed the following for the measure's four subscales in the current study: Acceptability (teacher's perception of CARE as appropriate, fair, and reasonable; α = .89), Understanding (teacher's knowledge of what CARE is and how to implement it; α = .90), Feasibility (is it possible and worth using CARE considering the time, effort, and resources available to use it; α = .89), and Systems Support (whether teachers believe that external support would be needed in order to implement CARE; α = .84); Table 2.

Child Outcome Measure

Behavioral Interference in Teaching Scale (BITS). Adapted by the research team from the Annoying Behavior Inventory (Brestan et al., 2003), the BITS surveyed CARE teachers about the degree to which disruptive behaviors interfered with accomplishing session goals. Teachers completed BITS ratings of their students for several weeks before and after CARE training. Participants rated the frequency of 20 different interfering behaviors on a four-point Likert scale (0 = *not interfering* to 3 = *very interfering*). Subscales, each with five items, measured problems in the domains of Attention, Conduct, Emotion, Social, and Overall BITS total score. Scores for the four problem domains range from 0-20 possible points, with 0-88 total points possible. The BITS also includes one question about the ability to accomplish instructional goals and one question about the degree to which student behavior interfered with instruction, both rated on Likert scales. Initial reliability for the overall BITS was estimated at α = .92 (Table 2).

Measures of Cost

Records of trainers' salaries and time devoted to all activities (e.g., preparation, trainings, travel) related to CARE training were maintained for accountability to funding sources. To measure the cost of CARE trainers, salary for each trainer was divided by their total hours dedicated for each training at each educational center, which included time spent engaging in administrative activities related to the training. For example, if the clinical psychologist devoted 9 hours to training, including preparation time, the trainer cost equals $95,000 salary per year divided by 52, 40-hour weeks = $45.67/hour. The hourly rate was then multiplied by hours dedicated to training, e.g., $45.67/hour * 9 hours = $411.06. For the trainer who is a clinical social worker and provided 8 hours for a training, their trainer cost would be ($68,640 per year/52 weeks/40 hours) * 8 hours devoted to CARE training activities = $264. Records of the training team at each of the ten educational centers were maintained and thus, trainer costs are a direct reflection of itemized individual salaries and precise time commitments. Also included in overall costs was the cost for the two main CARE trainers to be trained ($1500/each). These two trainers then trained four additional trainers *gratis* (without charge). Additional costs in this study included supplies and equipment (e.g., toys, paper office supplies, printing, postage). Finally, travel and lodging for trainings at a distance from the state medical center were included in this analysis. Costs typically associated with similar evidence-based interventions (e.g., clinic rent, construction of playrooms, audio equipment) were not necessitated due to trainings occurring in schools. Teacher salary and time were also not included due to trainings occurring during regularly scheduled professional development. Thus, time was not "lost" due to attendance at training.

Analytic Strategy

The relationship between organizational readiness and teacher skills usage (hypothesis 1) was examined through stepwise general linear models with Bonferroni-adjusted *p* values to estimate the relationship between subscales of the ORCD (i.e., Motivation/Needs for Change, Organizational Climate) and teacher usage as rated by the URP-I subscales (i.e., Acceptability, Understanding, Feasibility, Systems Support).

The second (i.e., teacher demographic characteristics will predict teacher attitudes) and third hypotheses (i.e., teacher attitudes will predict teachers' CARE skills, usage, and satisfaction with training) were evaluated through stepwise general linear models as well as correlation tables with Bonferroni-adjusted *p* values. Teacher characteristics were measured using demographic variables of teacher years of experience, years of education, and student age profiles; Attitudes factors were measured using the EBPAS subscales (i.e., Openness, Appeal, Requirements, Divergence); Usage was measured using the URI-P subscales (i.e., Acceptability, Understanding, Feasibility, Systems Support); and satisfaction was measured using the TAI. Statistical analyses were performed with SPSS software, Version 26.0 (IBM Corp., Armonk, NY) and JASP Version 0.16.1. Statistical significance was defined as $p < .05$ with appropriate controls for experiment-wise error rate. A post-hoc power analysis based on the sample of 217 teachers and directors was conducted using G*Power Version 3.1.9.7 (Erdfelder et al., 1996) to compute potential effect size with $\alpha = .05$ for the sample of 217 teachers at 80% power. Results of this sensitivity test using 8 predictors would have 80% power to detect effects of $f = .07$ or higher (i.e., a small effect).

The fourth hypothesis (i.e., teacher attitudes will mediate the effect of CARE training on pre- to post-training change in student behaviors) was assessed with a series of nested structural

equation models. Significance of parameters was established at $p < .05$. Models were fit using maximum likelihood estimation with JASP Version 0.16.1. Overall goodness-of-fit for all models was evaluated using measures of global fit (e.g., Confirmatory Fit Index (CFI), Tucker-Lewis Index (TLI), Non-normed Fit Index (NNFI)). Additional fit indices included in model fit evaluation were Root Mean Squared Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR). For the CFI, TLI, and NNFI, values ≥ .90 are indicative of adequate and good fit (Wang & Wang, 2019). Values ≤ .05 and ≤ .08 indicated adequate and good fit for the RMSEA and the SRMR, respectively (Merle, 2021; Sarver et al., 2012; Wang & Wang, 2019). When indicated by Modification Indices, parameter constraints on specific paths were added or removed and the nested models were compared using a chi-squared difference test. This evaluates whether a more complex model is justified by concurrent increases in model fit relative to the lesser complex model. Teacher attitudes was measured using the EBPAS subscales (i.e., Openness, Appeal, Requirements, Divergence). Student behaviors were measured using the BITS subscales (i.e., Attention, Conduct, Emotional, and Social Problems).

Economic Analysis

Additionally, a cost-effectiveness analysis was performed in Microsoft Excel. Following steps outlined by Yates (2020), the dollar amount of training-cost per teacher was first derived by dividing the total cost of training by the number of attendees for each site, then taking the average across sites. Therefore, it should be noted that the costs presented here must be contextualized in the state of Mississippi and actual costs of CARE training in other states may vary based on size of trainings (e.g., CARE trainer to teacher ratio), location of trainings (e.g., local versus at a distance), local salary costs, or other factors. The average cost of training, both with and without a research coordinator, was then divided by the mean (standardized effect size)

decrease in student behavior outcomes (i.e., BITS). Effect sizes were calculated using Cohen's *d*, indicating the effect from pre- to post-training. For example, if the effect for pre- to post-training decrease in BITS corresponded to $d = 0.30$ and CARE training cost $100 per teacher ($100/0.3), then it would cost $333.33 for each unit of behavior change. Once derived, both the effect (*d*) for pre- to post- CARE training changes in interfering behavior and the cost-effectiveness of CARE for reducing interfering behavior problems will be compared in context to the cost-effectiveness of other school-based prevention and intervention programs which target disruptive behavior (Hare & Graziano, 2021; Washington Institute for Public Policy, 2014).

Results

Demographics

Table 1 summarizes participant demographic data. Teachers ($N = 217$) were primarily female (97%) and Black (69%) or White (31%) and not Hispanic (96%), averaging 43 years of age ($SD = 14.28$). Most had a college degree (years of education $M = 3.95$, $SD = 1.62$). Teachers included both classroom teachers, teachers' assistants, and substitute teachers. Additional demographic information for students may be found as part of the original study from which the current analyses are drawn (Sarver et al., in preparation).

Participants were asked about the ages of the children with whom they worked in the past 6 months. On average, teachers had a minimum of 15 students and a maximum or 28 students with whom they worked each week. Teachers in this sample had primarily 0–3-year-old children in their classrooms (55%), followed by 4–6-year-old children (41%). They also provided information about the percent of these children that present with clinically significant oppositional behavior (20%), those with oppositional or challenging behaviors (24%), and

developmental delays (24%). When asked what percent of the time they work with parents and children together, the average response was 16%.

School-level Factors and CARE Training Uptake

Hypothesis 1: Organizational Readiness and Usage

Director-rated Organizational Readiness factors (ORCD-4 subscales: Motivation/Needs for Change, Staff Attributes) was related to teachers' CARE Usage at follow-up (URP-I subscales: Acceptability, Understanding, Feasibility, Systems Support). Table 3 displays regression coefficients. Specifically, teachers' perceived Feasibility of the CARE approach several months after training was significantly associated with the Staff Attribute of greater director *Efficacy* (β = -3.31, $p < .01$), such that teachers from schools whose directors were more likely to feel confidence in their own abilities found CARE to be *less* feasible. Similarly, teachers at schools with directors with higher *Efficacy* had lower Acceptability (β = -4.69, $p < .01$) and Understanding of CARE (β = -2.56, $p < .01$). Acceptability (β = -.82, $p = .05$), Understanding (β = -.53, $p = .02$), and Feasibility (β = -.72, $p = .01$) of CARE were also significantly associated with lower director-rated *Staff and Program Needs* for support, training, and leadership. Teacher rated Systems Support for CARE was significantly related to higher director-rated *Training Needs* (β = -1.14, $p < .01$) and lower levels of the Staff Attribute *Influence* (β = -1.01, $p < .01$), which is the degree to which directors believe they are considered an experienced and knowledgeable resource for their teachers.

Teacher Attitudes and Associated Factors

Hypothesis 2: Teacher Characteristics and Attitudes

Teacher Attitudes (EPAS subscales: Openness, Appeal, Requirements, Divergence) were associated with their years of experience and education (Table 4). Specifically, Openness to EBP

(r = -.29, p = .04) was significantly correlated with years of experience such that those with more years of experience were less open to implementing EBP. Additionally, more years of experience was significantly associated with lower endorsement of EBP in general if it was Required (i.e., Requirements; r = -.18, p = .04). Appeal of EBP (r = -.26, p = .05) was significantly and negatively correlated with years of education, such that those with less education found EBP to be more appealing.

Correlations between average student age profile and attitudes were also examined (Table 4). Results indicated associations between teacher attitudes and their student age profiles. Specifically, Divergence from EBP was correlated with having a higher proportion of 0–3-year-old students (r = .29, p = .04). Teachers with a higher proportion of 4-6-year-old students appeared to be most approving of EBP, which included Appeal of EBP (r = .29, p = .03) and willingness for EBP if it was Required (i.e., Requirements; r = .25, p = .05).

Hypothesis 3: Teacher Attitudes and CARE Skills, Usage, and Satisfaction

Results indicated that teacher Attitudes were related to teachers' Satisfaction with CARE (TAI) and Usage of CARE (URP-I subscales: Acceptability, Understanding, Feasibility, System Support) (Table 5). Specifically, greater Openness to EBP before training was associated with higher Satisfaction (TAI) with CARE (β = 1.07, p = .02), as well as higher perceived Acceptability (β = 1.37, p < .01), Understanding (β = .67, p < .01), and Feasibility (β = .27, p = .03) of CARE at follow-up. Endorsing EBP because it was Required (i.e., Requirements) was related to lower perceived level of System Support for CARE (β = -.27, p = .03). Thus, teachers who felt lower system support were also less willing to use EBP if they were required to by their employers.

Analysis revealed associations between teacher Attitudes and CARE Skills both pre- and post-training. Specifically, results indicated significant correlations between pre-training CARE Skills and Appeal of EBP ($r = .20$, $p < .01$), indicating that with increased skills, teachers had higher appeal of EBP. Pre-training CARE Skill was also associated with endorsing EBP because it was Required (i.e., Requirements; $r = .20$ $p < .01$). Those with less pre-training CARE Skill diverged significantly from EBP (i.e., Divergence; $r = -.34$, $p < .01$). In terms of skills learned in CARE training, results indicated significant correlations between CARE Skills post-training and Openness ($r = .44$, $p < .01$), Appeal ($r = .38$, $p < .01$), and Requirements ($r = .26$, $p < .01$).

Hypothesis 4: Mediation of Teacher Attitudes on Student Behavior

Results of structural equation modeling (SEM) demonstrated the mediating effect of teacher Attitudes (i.e., Openness, Appeal, Requirements, Divergence) on the change in their students' Behavior (BITS subscales: Attention, Conduct, Emotional, and Social Problems) from pre- to post-CARE training. The model development process which provided these results is detailed in this section. Data for students was first reduced to include a maximum of three BITS administrations for each student at pre-training and three at post-training, totaling 2,785 independent ratings of interfering behavior across 217 teachers for 1,206 children. Nested structural equation models (SEM) were created via an iterative process in JASP in which a hierarchical series of constraints were applied and then assessed for impact on indices of model fit. To evaluate whether increasing model complexity was warranted, differences in chi-square values were tested to contrast nested models. Table 6 displays summary information for model fit statistics. With each iteration of model testing, chi-square difference tests indicated significant change and improvement of fit (all $p < .001$).

Model 1. To understand the unique contribution of teacher attitudes on student behavior change following CARE training, the initial model established the mediating effect of teacher attitudes on the pre- to post-CARE training change in an overall BITS total score latent variable. The measurement component of the models describes the relationships among manifest variables (e.g., Openness, Appeal, Requirements, Divergence) and their respective latent constructs (e.g., Attitudes). The internal consistencies of these components may be evaluated by their factor loadings. In the first iteration of model 1, interfering subscale scores were first combined as latent indicators to create pre-training and post-training BITS total score latent variables. Attitude scores (i.e., Openness, Requirements, Appeal, Divergence) were also combined to as indicators of an overall Attitudes latent factor. First, the full model was estimated by allowing all hypothesized pathways to be freely estimated. Model convergence was achieved; however, fit indices were below recommended cutoffs for adequacy (e.g., CFI, TLI, and NNFI < .80, RMSEA > .05, SRMR > .08). Thus, for the second iteration of model 1, Divergence was removed from model due to lack of an association with the Attitudes factor. With this change, inspection of factor loadings revealed high multicollinearity between multiple administrations of BITS. Residual correlations between individual administrations within each BITS subscale construct were then specified within the third iteration of model syntax, as well as in successive models. This means that first, second, and third administrations of pre- or post-training BITS subscales were highly consistent and thus, their correlations were specified within the model. In other words, if pre-training attention problems were evaluated on three occasions for the same child, these scores were specified to correlate with each other to add the proportion of variance explained by their residual correlations to the model. Results of the third iteration continued to yield fit indices below acceptable limits (CFI, TLI, and NNFI ≤ .80, RMSEA = .08, SRMR =

.09). The association between pre-training BITS and pre-training Attitudes was not significant (β = .006, p = .87) and thus, it was concluded that student interfering behavior pre-CARE training did not predict Openness, Appeal, or Requirements scores.

Model 2. The third iteration of model 1 indicated weak associations between pre-training BITS scores and pre-training Attitudes; thus, in model 2, the association between the latent Attitudes score and BITS subscale scores at pre-training were constrained to 0. In the first iteration of model 2, fit indices improved, approaching acceptability (e.g., CFI, TLI, and NNFI > .80 but still less than the acceptable ≥ .90; RMSEA = .07, SRMR = .10). Inspection of modification indices (MI) revealed the potential for associated variables (e.g., BITS individual subscales of Attention, Conduct, Emotional, and Social Problems) in the model to yield improved model fit if model parameters were modified (all MIs > 100). Thus, in the second iteration of model 2, the BITS overall scores were removed from the model and the manifest Attitudes variable was treated as a mediator of pre- to post-training improvement in individual BITS problems areas. Attitude subscale constructs were treated as individual manifest variables in additional tests; however, fit indices indicated these models did not contribute significantly to overall goodness-of-fit as demonstrated by chi-square difference tests and fit indices that were outside of acceptable limits.

Model 3. The final model included student Behavior subscale scores (i.e., Attention, Conduct, Emotional, and Social Problems) and an overall Attitudes latent variable. Based upon inspection of modification indices, suggested variables with high multicollinearity were specified to correlate in the model (viz., ADHD symptoms measured at pre-training), yielding adequate and acceptable estimations of fit (CFI = .90, TLI and NNFI = .88, RMSEA = .06, SRMR = .08). Results of chi-square difference tests revealed a significantly improved model (p < .001) relative

to Model 2. Table 6 displays the regression coefficients for Model 3, which utilizes a latent teacher Attitude score to mediate the change in pre- to post-training student Behavior problem areas. The latent Attitudes variable was a significant predictor of post-training Attention (p = .05, β = -.08, Confidence Interval (CI): -.29 - .0003), Conduct (p = .03, β = -.08, CI: -.29 - -.02), Emotional (p < .01, β = -.13, CI: -.29 - -.07), and Social Problems (p <.01, β = -.18, CI: -.32 - -.12). Figure 3 displays the path diagram for the final model for the relationship between teachers' Attitudes towards EBP at pre-training and post-training student Behavior.

Economic Analysis

The training team provided CARE training at 10 different early childhood education centers for a total of 599 hours. Costs totaled $11,798.55 that included trainer pay, cost for the trainers to be trained in CARE, supplies, equipment, and travel. For the sample of 217 teacher who completed ratings of their students' behavior, the cost per teacher was $53.39. Table 7 contains the cost-effectiveness calculations for BITS Total interfering behavior and behavior by subscale. CARE training appeared to be the most cost-effective for reducing interfering problems of Attention ($173.90 per unit decrease in Attention Problem score), followed by instructional goals achievement ($189.99), Total interfering behaviors ($192.73), and Conduct problems ($194.13). CARE was less cost-effective for Social ($253.02) and Emotional Problems ($249.47).

Discussion

The current study examined implementation determinants of a statewide effort to disseminate CARE in early childhood education centers. Results demonstrate the influence of organizational readiness and teacher attitudes on the outcomes of CARE training for both teachers and their students. In general, results indicated that teachers' attitudes towards EBP

significantly affected their use of CARE, as well as the potential benefit students received from CARE. The presentation of an economic analysis for CARE training also contributes meaningfully to future CARE implementation efforts.

The sample of teachers was majority middle-aged, Black women who taught young children in low income, southern, rural communities. Thus, results may generalize to several important populations often over-looked in implementation research (e.g., Black, rural, southern sample; Century & Cassata, 2016). Further, including Black teachers of Black students is an important consideration given racial bias that may arise when White teachers report on child behavior (McGrady & Reynolds, 2013). Specifically, past research indicates that White teachers perceive Black students more negatively than their non-Black peers and often demonstrate implicit and racial biases against Black children (Starck et al, 2020). Studies which seek to explore the effectiveness of EBP implementation in predominantly Black, disinvested communities need to consider possible racial bias in teacher ratings of youth behavioral outcomes (especially in unmatched samples). Our results extend external validity of EBPs in Black communities and how CARE may affect teachers and schools which serve Black youth.

Organizational Readiness and Usage

The hypothesis that director-rated organizational readiness would be positively related to teachers' reported use of the CARE approach several months after training was not supported in the present study. Rather the directional nature of the association was contrary to predictions, that higher director-rated *Efficacy* and *Influence* (ORCD) would be related higher teacher Usage (URP-I). Organizational readiness was negatively related to feasibility and acceptability of CARE. Additionally, these directors also had teachers who reported lower knowledge (before/after/both) care training which may indicate lower understanding of the CARE approach.

A review of mental healthcare staff perceptions of organizational readiness to change found that staff influence had an important role in the process of innovation adoption (Kelly et al., 2017). In contrast to our results, studies in this review found that greater staff efficacy and influence predicted staff who were more inclined towards trainings which were evidence-based. These staff were also those who found scientifically supported treatments to be useful and who had higher support for integrated treatment manuals. This research was conducted with adult-serving mental healthcare providers; thus, our results may indicate differences between staff in outpatient clinics, inpatient detoxification, and residential rehabilitation facilities who treat patients with substance-use disorders and teachers who work with young children. The current study makes an important an novel contribution to the literature, as research on readiness to change among elementary teachers has not used the ORCD-4 measure previously, and thus, results may extend knowledge of implementation determinants in schools. However, previous studies have found that factors such as job satisfaction and trust in school leadership were predictive of readiness to change (Kondakci et al., 2015). These results are in alignment with the hypotheses of the current study; however, our results may reflect that teachers' use of CARE in our study was impacted by factors unrelated to school readiness, such as teachers' individual preferences and attitudes towards using a new approach.

Additionally, directors who rated themselves as *less* influential (URP-I *Influence*) had teachers who rated their System Support for CARE higher (ORCD-4), which may suggest the existence of internal structures or processes for change in these schools which make it more difficult for directors to effect or influence change. This may point to the importance of director openness to change and willingness to learn as being an important facilitator of their teachers' adoption of EBP (Wang et al., 2020; Wanless & Domitrovich, 2015). However, research on

readiness of preschool and early education centers for adoption of EBP is extremely limited. Indeed, continuing professional education among teachers has been found to be predicted by factors at the inner setting (e.g., external motivation, Linveh & Linveh, 1999). However, it is unclear whether school climate or teacher characteristics have the most impact on adoption of EBP, as extant research has found mixed results (Kallestad & Olweus, 2003; Mathews et al., 2014; McIntosh et al., 2016; McIntosh et al., 2018)

Feasibility, Acceptability, and Understanding of CARE (URP-I) were also related to lower *Staff and Program Needs* for support, training, and leadership, possibly indicating that teachers felt more support for CARE when other areas of staff and program need were addressed or well-managed. Previous research on school readiness has found that having the capacity to make adoption of EBP a priority via professional development of staff is associated with schools' uptake of interventions (Bast et al., 2021). Furthermore, research conducted with high school teachers has found that their efficacy for EBP was predicted by perceptions of support from their directors (Johnson et al., 2017). Future dissemination and consultation efforts may consider surveying directors before trainings and providing feedback to work towards solutions to address capacity to maximize benefits of teacher trainings. A previous meta-analysis of performance feedback for teachers suggests that providing feedback is moderately effective for increasing integrity to newly introduced skills (Solomon et al., 2012). CARE trainings in the current study did not provide ongoing performance feedback (i.e. coaching after the training); evidence for performance feedback may support recent efforts to embed at least brief coaching within CARE implementation. Another review has found that performance feedback has improved teachers' use of praise in the classroom, which is one of the same skills that is taught in CARE (Cavanaugh, 2013). Research which combines CARE training with feedback following

skills coding may provide additional insight about the potential benefits of feedback in teachers' adoption of an EBP.

To enhance fidelity to EBP in the classroom, one study had directors nominate teachers for an intervention in which they were coached to reduce stress and also improve evidence-based classroom management (Larson et al., 2018). Results of this study indicated that lowering stress improved implementation of EBP with fidelity. Our results did not find significant relationships for director-rated stress of the school climate (ORCD *Stress*) and teacher use of CARE (URP-I); however, we did not measure teacher-rated stress. Implications for teacher education and training may include exploring how to enhance attitudes and consideration of EBP favorably (Frey et al., 2013), as well as decreasing teacher stress and enhancing well-being.

Teacher Characteristics and Attitudes

Compared to prior research with predominantly White high school teachers in the southeastern US (Monahan et al., 2014), our sample of teachers had relatively lower willingness to engage in EBP if required to do so (Requirements), lower Appeal, and similar levels of Openness (EBPAS). However, teachers in our study had high levels of Divergence from EBP, meaning they were likely to feel that their experience teaching was more valuable than research evidence. In our sample of predominantly Black teachers, our results are consistent with other research on multicultural healthcare professionals – although anti-racist perspectives are important when interpreting these findings (Aarons et al., 2010). For example, institutionalized racism has likely led to widespread distrust in scientists (Ramšak, 2020). Recognition of global perspectives leads us to the understanding that most EBP have been designed by and for White people and children. Given our sample of predominantly Black preschool teachers from impoverished, rural counties, explanations for differences in teacher support for EBP must be

contextualized in the communities where our research was conducted and may help explain the differences seen with our outcomes.

Consistent with prior research on attitudes towards EBP among mental health service providers, our sample reflected the trend that with more years of experience, teachers were less open to EBP (Openness) and were less willing to engage in EBP if it was required (EBPAS - Requirements; Aarons et al., 2010; Dynia et al., 2020; Monahan et al., 2014; Parisi et al., 2021). This may suggest that more experienced teachers are more likely to make independent decisions which rely on their experience and prior acquired knowledge than research evidence. Higher openness and appeal among less experienced teachers may also indicate more recent exposure to EBP, research, or scientific tenants via their education and training or may reflect a greater desire for direction given their lack of experience (Aarons et al., 2010; Egeland et al., 2016; Monahan et al., 2014, van Sonsbeek et al., 2015). Results support the promise of embedding these skills practices into training curriculums before teachers enter the workforce. Future consultation efforts may consider communicating this evidence to school directors before implementation and focus on promoting the benefits of EBP among teachers and staff who are poised to adopt an innovation. Efforts such as these may help bolster their scientific literacy and preparedness for change. These findings point to the importance of assessing inner context factors in schools prior to implementation to best facilitate uptake (Bruns et al., 2019).

Our study focused specifically on early childhood educators, comparing those who taught children 0-3 years to those who taught mainly 4–6-year-old students. Teachers with more 4–6-year-old students also were more open to EBP (Openness), thought EBP had more appeal (Appeal), and were willing to engage in EBP if it was required (Requirements – EBPAS). This may point to the challenging nature of managing young children who tend to have higher levels

of externalizing behavior than other age groups (Holtz et al., 2020). Alternatively, these outcomes may also reflect the utility of behavioral approaches with this age group, given that CARE is highly influenced from PCIT, which was primarily developed to address behavior problems for this age range. Indeed, observational research of preschool teachers has found that they generally employ preventative strategies, self-regulation, and techniques that have been recommended by research, although they may not be aware of the evidence (Ritz et al., 2013). However, this research also observed that teachers may need additional support or psychoeducation around reinforcing compliance. Additional research has found that preschool teachers prioritize different outcomes for their students (e.g., challenging behavior, communication, and social skills) than K-12 teachers (Brock et al., 2014; Dynia et al., 2020). Taken together, results of the association between attitudes and teacher characteristics in our sample suggest assessment of these characteristics to ensure that both trainers and teachers are prepared for training in a new EBP.

Teacher Attitudes and CARE Skills, Usage, and Satisfaction

To better understand predictors of CARE skills, Usage, and satisfaction, the relation between these factors and teacher attitudes (i.e., Openness, Appeal, Requirements, Divergence) toward EBP were examined. Openness to EBP appeared to be especially predictive across outcome variables, including higher satisfaction with CARE (TAI) and higher CARE Usage (i.e., URP-I Acceptability, Understanding, and Feasibility) at follow-up. These results demonstrate the salience of openness to EBP in dissemination among lay professionals. Although mainly studied in middle and high school teachers, previous research on openness to change among teachers has found it predicted 22% of the variance in teachers' use of new technology for teaching (Blau & Peled, 2012). Although attitudes are not necessarily a valid predictor of teachers' behavior

(Fishman et al., 2020; Merle, 2021), openness to EBP appears to be especially important for teachers who are tasked with adopting an innovation. Future dissemination efforts may focus on assessing and employing strategies that increase openness to change among both directors and teachers prior to introducing a new program or intervention.

Teachers in our study who had lower System Support scores on the URP-I also had lower Requirements scores on the EBPAS, meaning that with less support, teachers were less likely to use EBP if they were required to by their employers, threatening the effectiveness of implementation. In a revision of the URP-I, a 2013 investigation by Briesch and colleagues administered the measure to 1005 elementary school teachers and found that support is not the same as whether a teacher likes an intervention (Briesch et al., 2013). These results are encouraging, as teachers vary significantly in their appeal of EBP. According to these and the current findings, those who have lower appeal or openness may still successfully adopt an EBP with adequate support from their school system directors and administrators. Therefore, training teams may wish to focus their efforts on the director and administrative team within schools for EBP trainings to have the largest impact on teachers' behavior with their students.

At pre-training, some teachers in our sample had exposure to CARE skills. For teachers who had these prior skills, EBP appealed more, and these teachers were also more likely to endorse EBP if it was required of them. Those with less pre-training knowledge of CARE skills diverged significantly from EBP. These results may point to prior introduction to EBP; future implementation efforts may seek to measure teacher exposure to EBP and provide additional pre-training exposure to and knowledge of skills to enhance openness and readiness for adoption. Results suggest that CARE training increased CARE skills considerably (see Sarver et al., *in preparation* for more information). Among our teachers, CARE skills after training were

associated with pre-training teacher attitudes, including Openness, Appeal, and Requirements on the EBPAS. Again, attitudes appeared to have an influence on teachers' readiness to learn a new technique. Large-scale efforts to promote scientific literacy among professionals outside of science and academia may impact how our workforce is able to maximize trainings in new EBP like CARE (Stahmer et al., 2018).

Mediation of Teacher Attitudes on Student Behavior

To understand whether teacher attitudes impacted their use of CARE and student outcomes, a series of nested SEM were conducted examining the mediating effect of teacher attitudes towards EBP on changes in students' interfering behaviors from pre- to post-training. The SEM model revealed that positive attitudes towards EBP (i.e., openness, appeal, and requirements) were significantly associated with greater decreases in students' problem behaviors. Including Divergence as a latent indicator of teacher EBP attitudes did not produce adequate model fit so it was then removed from further model-building. Indeed, recent recommendations for using the EBPAS with teachers have suggested selecting EBPAS subscales based on context and theory to refine adaptation of the measure for school settings (Merle, 2021).

Through model building and refinement, a final model was constructed that fit the data well. In this model, positive attitudes towards EBP were significantly predictive of the effectiveness of CARE training for managing students' interfering behavior in the classroom. Specifically, greater teacher openness, appeal, and requirements of EBP were predictive of less interfering behavior in the domains of attention, concentration, emotional, and social problems. Although causal relations may not be confirmed, teachers who were more open to EBP may have listened and paid attention in training and then tried to use CARE skills more frequently with

their students. It is possible that teachers who were more open to EBP utilized CARE skills more frequently, which in turn was effective in decreasing disruptive behavior in their classrooms and increasing their ability to accomplish instructional goals. Thus, teachers' use of CARE skills would have been reinforced. Results indicated teachers with less endorsement of EBP if they were Required to use it were also those for whom EBP was less Appealing. Future research may wish to utilize longitudinal approaches, randomize teachers to either receive CARE or not and then compare their outcomes, and utilize a stepped-wedge design (Brown & Lilford, 2006) to determine if the temporal predictive association observed here reflects a causal pathway to improving students' classroom behavior.

Teachers with students who did not experience a decrease in problem behaviors may not have been using CARE skills at a high rate and therefore did not see the value in utilizing EBP, which is consistent with school-based research on early educators' adoption of technology in the classroom (Blackwell et al., 2013). Results from that study demonstrated that teachers' belief that technology helps children strongly predicted the use of technology. Other research on teacher use of EBP in schools has shown that elementary school teachers who work with children with autism had higher use of EBP (e.g., discrete trial training) when they rated EBP as more appealing and that this was the only factor more predictive of EBP use than other measured organizational factors (e.g., knowledgeable and supportive leadership, educational support or incentive for EBP training; Locke et al., 2019). Alternatively, qualitative research among teachers has explored more deeply the nuances that may contribute to how teachers feel about EBP for their students with developmental disabilities (Greenway et al., 2013). Results identified that teachers' qualification of the "evidence" on which they make teaching and curricular decisions contrasted to more traditional academic definitions. Teachers were suspicious of

marketing campaigns using the term "research-based" and considered "evidence" to frequently incorporate observational, behavioral, and anecdotal information from students and parents. This may point to the need to include specific examples of teachers using CARE skills in CARE training materials and demonstration videos, which may enhance openness among teacher trainees. Taken together, results of extant research indicate a complex interplay between teachers' attitudes and their use of EBP that has both positive and negative implications.

Previous research has also used SEM to explore associations between organizational climate, teacher efficacy, and teacher openness (Johnson et al, 2017). Outcomes of this study found similar results to the current study. Interestingly, the samples varied on several factors, including different student populations (e.g., high school versus preschool) and demographics (e.g., predominantly White teachers in Maryland vs. southern Black teachers). However, consistency across our studies may demonstrate a universal experience in that teachers who reported greater openness to EBP were also those who had greater efficacy for changing their students' behaviors (Johnson et al., 2017). Considering the significant and unique contribution of teacher's attitudes to teacher efficacy, measurement of these factors should be included in future research on dissemination of EBP amongst teachers, from preschool to high school. Assessment of these factors may inform the implementation team about how to tailor training to ensure best uptake and use of resources (Bast et al., 2021; Beidas & Kendall, 2010; Fernandez et al., 2018; Powell et al., 2017).

Economic Analysis

At face value, the universal prevention approach of CARE has clear advantages for training lay professionals: CARE does not require rigorous training and certification to deliver, nor does it require many materials, construction, rent, or more than one day of "lost" time (that

can be integrated into existing professional development days). Conversely, indicated intervention programs such as PCIT, upon which CARE is based, or the selective prevention program of TCIT requires more extensive preparation (e.g., five to seven days of training, construction of back-up rooms, audiovisual equipment, toys) and time commitment (e.g., ongoing supervision and consultation to obtain certification). CARE has the benefit of training all school staff who interact with children with the possibility of reducing staff burnout, creating educational consistency in recognizing and managing child behavioral concerns, and preventing some disruptive behavior before it occurs. This in turn promotes generalization of behavior, particularly if students are in environments where PCIT is being implemented. Alternatively, selective interventions such as TCIT and indicated interventions like PCIT are also not able to address all students in need due to lack of service access, high cost to train providers, and intense commitment by families (Fernandez et al., 2015; Goldfine et al., 2008). While initial costs for CARE may yield pause for school administrators considering the investment, it may fulfill an important need in our educational system and have the potential to reach more children than selective or indicated interventions (Gurwitch et al., 2016).

Indeed, even when implemented in a small group to save on costs, recent estimates of PCIT costs exceed $320 for each unit of change in disruptive behavior (Hare & Graziano, 2021). Additionally, one clinician trained in PCIT may only serve 15-20 clients per year; a single community-based PCIT clinic was estimated to see 50 clients a year (Naidoo et al., 2015). Furthermore, TCIT requires intensive training and consultation with the goal of creating champions within schools who can continue dissemination; however, costs are estimated to exceed $60,000 per school for implementation and maintenance. On the other hand, our study found a medium effect for decreasing child behavioral problems and found that CARE cost $174

to change attention problems in students. The range of costs per unit change across the domains of conduct, emotional, and social problems ranged from $193 to $253. Moreover, these acquired skills may allow a teacher to manage the behavior of 15-25 of children at a time during a single day. Teachers also rated being able to accomplish goals of instruction, which CARE was able to address at a rate of $190 per unit *increase* in effectiveness. As schools and their personnel are increasingly being more rigorously monitored for student achievement and progress, this evidence suggests that dissemination of CARE may be cost-effective for improving student outcomes.

Indicated intervention services like PCIT serve an important and unique purpose; however, universal programs like CARE may also have large-scale effects such as the potential for reducing drop-out and increasing high school completion or decreasing youth crime involvement with the installation of a prosocial adult support (Clements-Nolle & Waddington, 2019; Sciaraffa et al., 2018). Rigorous evaluations of long-term outcomes are recommended to determine whether universal prevention programs such as CARE reduce referrals for selective and indicated interventions (Washington Institute for Public Policy, 2014). Investing in CARE may reduce the bottleneck which more intensive services currently experience in the US when integrated as one component in an overall continuum of behavioral health supports integrated within the school setting. Comprehensive, well-designed studies comparing universal, selective, and indicated interventions are therefore warranted, as well as studies which determine the long-term effectiveness of CARE.

The effect for a decrease in attention problems following CARE training was medium (d = .31) among teachers in our sample. This is quite remarkable for a change that occurred over the course of 2 months, as comparable programs such as community-based mentoring for children

with disruptive behavior have similar medium effect sizes, albeit conducted with children in middle childhood (Washington Institute of Public Policy, 2014). These effects have been shown to decrease after several years; thus, future economic evaluations may seek to measure fidelity and program effects at regular intervals to determine when voltage drop and drift occur (Chambers et al., 2013). A recent meta-analysis of universal social-emotional learning programs across 33 preschools found small to medium effects for reductions of problem behaviors (Murano et al., 2020). These results reflect the comparability of CARE to currently employed programs in preschools; however, studies which combine program effects with economic evaluations of school-based prevention programs for mental health are virtually nonexistent.

Indirectly, CARE has the potential to train many teachers at once who could then reach hundreds of children, especially if teachers can maintain skills with subsequent classes of students. Future research may examine the sustainability of CARE in schools and after how long skill drift occurs. Of all the short-term, behavioral outcomes explored in the current study, CARE is most cost-effective in addressing attention problems and increasing the number of goals teachers completed. In the current study, the costs of training included overall training for employees at centers for teachers as well as staff who were *not* teachers. These providers did not provide ratings of child behavior; however, costs should be considered in the context of funding training for additional individuals such as directors, support staff, school nurses, custodians, bus drivers, parents, and more. Speech/Physical/Occupational therapists (SPOTs) and other support therapists were also trained at many of these centers; however, their ratings were not included in this analysis as these providers have additional training and experience with EBP when compared to teachers. Nevertheless, the costs of training in this study constitute training for more

personnel than just the teachers and could thus be considered to cost *even less* per teacher than what is presented here.

Limitations

Although the present study had many strengths (e.g., sample size, diverse characteristics), it should be considered within the context of its limitations. Specifically, results from the current project may not generalize to regions outside of the Southern United States or to predominantly White populations of teachers. Many of the centers where CARE training was disseminated in this implementation effort were located in areas where rates of trauma and poverty were relatively high; thus results are likely not applicable to more affluent communities. However, our study is a good example of dissemination of an EBP in communities with little resources, and implementation in more well-resourced areas with White teachers may yield different results.

It also must be considered that other teacher factors unmeasured in the current project may have contributed to the outcomes found in the present study. To provide reinforcement of skills and assess teachers' continued use of CARE, six emails were sent at regular intervals following the training, inquiring about use of CARE skills with students. Teachers also provided responses to open-ended questions about a behavior management vignette. This check-in approach was used to encourage teacher engagement and problem-solve any issues in implementation but were not explored as an outcome variable. Future qualitative research efforts may examine responses to better understand whether CARE is easily sustained. Other limitations to generalization include the fact that teachers were not randomized to either receive CARE or not, thus limiting between group comparisons. This means that in the current study, only within-group comparisons were conducted, rather than between group comparisons of change in skills and student behavior which precludes stronger claims regarding the effectiveness and cost-

effectiveness of CARE. In the current study, only child behavior and teacher self-report of skills and their use were examined. Future investigations may incorporate observations of teacher skill use and student behaviors. Finally, influence of the students' parents, home life, or system-level factors at the outer context may have impacted our outcomes (Bruns et al., 2019) but were not explored in the current project.

Future Directions

Future studies which seek to improve generalizability of CARE and compare it to other interventions may use a stepped-wedge design in which some teachers receive training before others (Brown & Lilford, 2006). Like a randomized waitlist condition, a staggered approach in which behavior ratings of students are compared based on training status may allow for more causal conclusions about determinants of CARE implementation such as teacher attitudes. Pragmatic trials that include estimations of cost-effectiveness are needed to establish the potential of CARE in schools, including its potential as a universal prevention program which can screen students and connect them to appropriate selective or indicated interventions in the community (Anderson et al., 2018). Indeed, the first randomized trials of CARE have demonstrated its potential to reduce internalizing symptoms in both children and their foster caregivers (Messer et al., 2018) and reduce challenging behavior problems when implemented by social workers in an integrated primary care setting (I-CARE, Scott et al., 2020). The current study contributes significantly to the literature by providing evidence for implementation determinants that may facilitate or impede CARE uptake among a novel population of teachers.

Since the time of this study's data collection, other researchers have attempted to measure attitudes among teachers more specifically. The development of the School-Adapted EBPAS provides a new option for measuring attitudes among teachers, as the original EBPAS used in the

current study was validated among health service providers (Merle et al., 2023). This research suggests that instruments validated in one implementation context may need to undergo revision and adaptation to be valid for use in other service settings, such as schools (Merle, 2021). Despite this discrepancy, future research should not avoid translating EBPs that have been shown to be effective in one clinical setting to novel, nonclinical settings like schools (Aarons et al., 2017). The current study also provides support for targeted assessment of implementation determinants among teachers adopting a universal EBP approach. Developing targeted assessments is one of several implementation considerations supported in the current study which have implications for educational policy decision-making. For example, the cost-effectiveness of CARE and its teacher-rated feasibility support its use as a universal intervention. While this study was initiated by funding from the MSCDD, additional avenues for the dissemination of EBP may correspond to bridging factors and financing strategies explored in previous research (Dopp et al., 2021; Stahmer et al., 2019).

Conclusion

The current study was the first to investigate how implementation determinants, including teacher attitudes and characteristics, impact teachers' use of CARE following training. This investigation also includes a novel, real-world economic analysis which can inform future implementation efforts. Combined with our results on organizational readiness, findings have implications for the future study of EBP implementation in schools, as well as the measurement of attitudes among teachers.

References

Aarons, G. A. (2004). Mental health provider attitudes toward adoption of evidence-based practice: the Evidence-Based Practice Attitude Scale (EBPAS). *Mental Health Services Research, 6*(2), 61-74. https://doi.org/10.1023/B:MHSR.0000024351.12294.65

Aarons, G. A., Glisson, C., Hoagwood, K., Kelleher, K., Landsverk, J., & Cafri, G. (2010). Psychometric properties and US National norms of the Evidence-Based Practice Attitude Scale (EBPAS). *Psychological Assessment, 22*(2), 356-365. https://doi.org/10.1037/a0019188

Aarons, G. A., McDonald, E. J., Sheehan, A. K., & Walrath-Greene, C. M. (2007). Confirmatory factor analysis of the Evidence-Based Practice Attitude Scale (EBPAS) in a geographically diverse sample of community mental health providers. *Administration and Policy in Mental Health and Mental Health Services Research, 34*(5), 465-469. https://doi.org/10.1007/s10488-007-0127-x

Arora, P. G., Collins, T. A., Dart, E. H., Hernández, S., Fetterman, H., & Doll, B. (2019). Multi-tiered systems of support for school-based mental health: A systematic review of depression interventions. *School Mental Health, 11*(2), 240-264. https://doi.org/10.1007/s12310-019-09314-4

August, G. J., Piehler, T. F., & Miller, F. G. (2018). Getting "SMART" about implementing multi-tiered systems of support to promote school mental health. *Journal of School Psychology, 66*, 85-96. https://doi.org/10.1016/j.jsp.2017.10.001

Bast, L. S., Andersen, H. B., Andersen, A., Lauemøller, S. G., Bonnesen, C. T., & Krølner, R. F. (2021). School coordinators' perceptions of organizational readiness is associated with implementation fidelity in a smoking prevention program: Findings from the X: IT II study. *Prevention Science, 22*(3), 312-323. https://doi.org/10.1007/s11121-020-01197-1

Beidas, R. S., & Kendall, P. C. (2010). Training therapists in evidence-based practice: A critical review of studies from a systems-contextual perspective. *Clinical Psychology: Science and Practice, 17*(1), 1-30. https://doi.org/10.1111/j.1468-2850.2009.01187.x

Beidas, R. S., Marcus, S., Aarons, G. A., Hoagwood, K. E., Schoenwald, S., Evans, A. C., Hurford, M. O., Hadley, T., Barg, F. K., Walsh, L. M., Adams, D. R., & Mandell, D. S. (2015). Predictors of community therapists' use of therapy techniques in a large public mental health system. *JAMA Pediatrics, 169*(4), 374–382. https://doi.org/10.1001/jamapediatrics.2014.3736

Blackwell, C. K., Lauricella, A. R., Wartella, E., Robb, M., & Schomburg, R. (2013). Adoption and use of technology in early education: The interplay of extrinsic barriers and teacher attitudes. *Computers & Education, 69*, 310-319. https://doi.org/10.1016/j.compedu.2013.07.024

Blair, K., Topitzes, J., & Mersky, J. P. (2019). Brief, group-based parent-child interaction therapy: Examination of treatment attrition, non-adherence, and non-response. *Children and Youth Services Review, 106*(August), 104463. https://doi.org/10.1016/j.childyouth.2019.104463

Blau, I., & Peled, Y. (2012). Teachers' openness to change and attitudes towards ICT: Comparison of laptop per teacher and laptop per student programs. *Interdisciplinary Journal of E-Learning and Learning Objects, 8*(1), 73-82. https://www.learntechlib.org/p/44762/

Brestan, E., Eyberg, S. M., Algina, J., Johnson, S. B., & Boggs, S. R. (2003). How annoying is it? Defining parental tolerance for child misbehavior. *Child & Family Behavior Therapy, 25(2*), 1-15. https://doi.org/10.1300/J019v25n02_01

Brestan, E. V., Jacobs, J. R., Rayfield, A. D., & Eyberg, S. M. (1999). A consumer satisfaction measure for parent-child treatments and its relation to measures of child behavior change. *Behavior Therapy, 30*(1), 17-30. https://doi.org/10.1016/S0005-7894(99)80043-4

Briesch, A. M., Chafouleas, S. M., Neugebauer, S. R., & Riley-Tillman, T. C. (2013). Assessing influences on intervention implementation: Revision of the Usage Rating Profile-Intervention. *Journal of School Psychology, 51*(1), 81–96. https://doi.org/10.1016/j.jsp.2012.08.006

Brock, M. E., Huber, H. B., Carter, E. W., Juarez, A. P., & Warren, Z. E. (2014). Statewide assessment of professional development needs related to educating students with autism spectrum disorder. *Focus on Autism and Other Developmental Disabilities, 29*(2), 67–79. https://doi.org/10.1177/1088357614522290.

Brown, C. A., & Lilford, R. J. (2006). The stepped wedge trial design: a systematic review. *BMC Medical Research Methodology, 6*(1), 1-9. https://doi.org/10.1186/1471-2288-6-54

Bruns, E.J., Parker, E.M., Hensley, S. et al. (2019). The role of the outer setting in implementation: associations between state demographic, fiscal, and policy factors and use of evidence-based treatments in mental healthcare. *Implementation Science, 14*, 96. https://doi.org/10.1186/s13012-019-0944-9

Cadima, J., Verschueren, K., Leal, T., & Guedes, C. (2016). Classroom interactions, dyadic teacher–child relationships, and self–regulation in socially disadvantaged young children. *Journal of Abnormal Child Psychology, 44*(1), 7-17. https://doi.org/10.1007/s10802-015-0060-5

Castillo, J. M., Curtis, M. J., & Tan, S. Y. (2014). Personnel needs in school psychology: A 10-year follow-up study on predicted personnel shortages. *Psychology in the Schools, 51*(8), 832-849. https://doi.org/10.1002/pits.21786

Chafouleas, S. M., Briesch, A. M., Riley-Tillman, T. C., & McCoach, D. B. (2009). Moving beyond assessment of treatment acceptability: An examination of the factor structure of the Usage Rating Profile—Intervention (URP-I). *School Psychology Quarterly, 24*(1), 36–47. https://doi.org/10.1037/a0015146

Chafouleas, S. M., Koriakin, T. A., Roundfield, K. D., & Overstreet, S. (2019). Addressing childhood trauma in school settings: A framework for evidence-based practice. *School Mental Health, 11*(1), 40-53. https://doi.org/10.1007/s12310-018-9256-5

Clements-Nolle, K., & Waddington, R. (2019). Adverse childhood experiences and psychological distress in juvenile offenders: The protective influence of resilience and

youth assets. *Journal of Adolescent Health*, *64*(1), 49-55. https://doi.org/10.1016/j.jadohealth.2018.09.025

Costello, E. J., He, J. P., Sampson, N. A., Kessler, R. C., & Merikangas, K. R. (2014). Services for adolescents with psychiatric disorders: 12-month data from the National Comorbidity Survey–Adolescent. *Psychiatric Services*, *65*(3), 359-366. https://doi.org/10.1176/appi.ps.201100518

Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implementation Science, 4*(1), 1–15. https://doi.org/10.1186/1748-5908-4-50

Davidson, B. C., Davis, E., Cadenas, H., Barnett, M., Sanchez, B. E. L., Gonzalez, J. C., & Jent, J. (2021). Universal Teacher-Child Interaction Training in early special education: A pilot cluster-randomized control trial. *Behavior Therapy*, *52*(2), 379-393. https://doi.org/10.1016/j.beth.2020.04.014

Dynia, J. M., Walton, K. M., Brock, M. E., & Tiede, G. (2020). Early childhood special education teachers' use of evidence-based practices with children with autism spectrum disorder. *Research in Autism Spectrum Disorders*, *77*, 101606. https://doi.org/10.1016/j.rasd.2020.101606

Egeland, K. M., Ruud, T., Ogden, T., Lindstrøm, J. C., & Heiervang, K. S. (2016). Psychometric properties of the Norwegian version of the Evidence-Based Practice Attitude Scale (EBPAS): to measure implementation readiness. *Health Research Policy and Systems*, *14*(1), 1-10. https://doi.org/10.1186/s12961-016-0114-3

Ellis, B. H., Miller, A. B., Abdi, S., Barrett, C., Blood, E. A., & Betancourt, T. S. (2013). Multi-Tier Mental Health Program for Refugee Youth. *Journal of Consulting and Clinical Psychology, 81*(1), 129–140. https://doi.org/10.1037/a0029844

Eyberg, S. M., & Johnson, S. M. (1974). Multiple assessment of behavior modification with families: effects of contingency contracting and order of treated problems. *Journal of Consulting and Clinical Psychology*, *42*(4), 594. https://doi.org/10.1037/h0036723

Fabiano, G. A., & Pyle, K. (2019). Best practices in school mental health for attention-deficit/hyperactivity disorder: A framework for intervention. *School Mental Health, 11*(1), 72-91. https://doi.org/10.1007/s12310-018-9267-2

Fabiano, G. A., Reddy, L. A., & Dudek, C. M. (2018). Teacher coaching supported by formative assessment for improving classroom practices. *School Psychology Quarterly, 33*(2), 293. https://doi.org/10.1037/spq0000223

Feinberg, M. E., Jones, D. E., Roettger, M. E., Solmeyer, A., & Hostetler, M. L. (2014). Long-term follow-up of a randomized trial of family foundations: Effects on children's emotional, behavioral, and school adjustment. *Journal of Family Psychology*, *28*(6), 821–831. https://doi.org/10.1037/fam0000037

Fernandez, M. A., Gold, D. C., Hirsch, E., & Miller, S. P. (2015). From the clinics to the classrooms: A review of teacher-child interaction training in primary, secondary, and

tertiary prevention settings. *Cognitive and Behavioral Practice, 22*(2), 217-229. https://doi.org/10.1016/j.cbpra.2014.01.004

Fernandez, M. E., Walker, T. J., Weiner, B. J., Calo, W. A., Liang, S., Risendal, B., Friedman, D.B., Tu, S.P., Williams. R.S, Jacobs, S., Herrmann, A.K., & Kegler, M. C. (2018). Developing measures to assess constructs from the inner setting domain of the consolidated framework for implementation research. *Implementation Science, 13*(1), 1-13. https://doi.org/10.1186/s13012-018-0736-7

Fishman, J., Lushin, V., & Mandell, D. S. (2020). Predicting implementation: Comparing validated measures of intention and assessing the role of motivation when designing behavioral interventions. *Implementation Science Communications*, *1*(1), 1-10. https://doi.org/10.1186/s43058-020-00050-4

Flaspohler, P. D., Meehan, C., Maras, M. A., & Keller, K. E. (2012). Ready, willing, and able: Developing a support system to promote implementation of school-based prevention programs. *American Journal of Community Psychology*, *50*(3), 428-444. https://doi.org/10.1007/s10464-012-9520-z

Franklin, C. G., Kim, J. S., Ryan, T. N., Kelly, M. S., & Montgomery, K. L. (2012). Teacher involvement in school mental health interventions: A systematic review. *Children and Youth Services Review, 34*(5), 973-982. https://doi.org/10.1016/j.childyouth.2012.01.027

Frey, A. J., Lee, J., Small, J. W., Seeley, J. R., Walker, H. M., & Feil, E. G. (2013). The Motivational Interviewing Navigation Guide: a process for enhancing teachers' motivation to adopt and implement school-based interventions. *Advances in School Mental Health Promotion*, *6*(3), 158-173. https://doi.org/10.1080/1754730X.2013.804334

Gaastra, G. F., Groen, Y., Tucha, L., & Tucha, O. (2016). The effects of classroom interventions on off-task and disruptive classroom behavior in children with symptoms of attention-deficit/hyperactivity disorder: A meta-analytic review. *PloS one, 11*(2), e0148841. https://doi.org/10.1371/journal.pone.0148841

Goldfine, M. E., Wagner, S. M., Branstetter, S. A., & Mcneil, C. B. (2008). Parent–child interaction therapy: An examination of cost- effectiveness. *Journal of Early and Intensive Behavior Intervention, 5*(1), 119. http://dx.doi.org/10.1037/h0100414

Goodman, R. (2001). Psychometric properties of the strengths and difficulties questionnaire. *Journal of the American Academy of Child & Adolescent Psychiatry*, *40*(11), 1337-1345. https://doi.org/10.1097/00004583-200111000-00015

Greenway, R., McCollow, M., Hudson, R. F., Peck, C., & Davis, C. A. (2013). Autonomy and accountability: Teacher perspectives on evidence-based practice and decision-making for students with intellectual and developmental disabilities. *Education and Training in Autism and Developmental Disabilities*, *48*, 456-468. http://www.jstor.org/stable/24232503

Gregoriadis, A., & Grammatikopoulos, V. (2014). Teacher–child relationship quality in early childhood education: The importance of relationship patterns. *Early Child Development and Care*, *184*(3), 386-402. https://doi.org/10.1080/03004430.2013.790383

Gurwitch, R. H., Messer, E. P., Masse, J., Olafson, E., Boat, B. W., & Putnam, F. W. (2016). Child–Adult Relationship Enhancement (CARE): An evidence-informed program for children with a history of trauma and other behavioral challenges. *Child Abuse & Neglect, 53*, 138-145. https://doi.org/10.1016/j.chiabu.2015.10.016

Hartz, K., Williford, A. P., & Koomen, H. M. (2017). Teachers' perceptions of teacher–child relationships: Links with children's observed interactions. *Early Education and Development, 28*(4), 441-456. https://doi.org/10.1080/10409289.2016.1246288

Health Resources and Services Administration (HRSA)/National Center for Health Workforce Analysis; Substance Abuse and Mental Health Services Administration/Office of Policy, Planning, and Innovation. 2015. National Projections of Supply and Demand for Behavioral Health Practitioners: 2013-2025. Rockville, Maryland.

Holtz, C. A., Fox, R. A., & Meurer, J. R. (2015). Incidence of behavior problems in toddlers and preschool children from families living in poverty. *The Journal of Psychology, 149*(2), 161-174. https://doi.org/10.1080/00223980.2013.853020

Hughes, K., Bullock, A., & Coplan, R. J. (2014). A person-centred analysis of teacher–child relationships in early childhood. *British Journal of Educational Psychology, 84*(2), 253-267. https://doi.org/10.1111/bjep.12029

Institute of Behavioral Research. (2009). TCU Organizational Readiness for Change (ORC-D4). Fort Worth: Texas Christian University, Institute of Behavioral Research. Available at ibr.tcu.edu

Johnson, S. R., Pas, E. T., Loh, D., Debnam, K. J., & Bradshaw, C. P. (2017). High school teachers' openness to adopting new practices: The role of personal resources and organizational climate. *School Mental Health, 9*(1), 16-27. https://doi.org/10.1007/s12310-016-9201-4

Kallestad, J. H., & Olweus, D. (2003). Predicting teachers' and schools' implementation of the Olweus bullying prevention program: A multilevel study. *Prevention & Treatment, 6*(1), 21a

Kelly, P., Hegarty, J., Barry, J., Dyer, K. R., & Horgan, A. (2017). A systematic review of the relationship between staff perceptions of organizational readiness to change and the process of innovation adoption in substance misuse treatment programs. *Journal of Substance Abuse Treatment, 80*, 6-25. https://doi.org/10.1016/j.jsat.2017.06.001

Kondakci, Y., Beycioglu, K., Sincar, M., & Ugurlu, C. T. (2017). Readiness of teachers for change in schools. *International Journal of Leadership in Education, 20*(2), 176-197. https://doi.org/10.1080/13603124.2015.1023361

Larson, M., Cook, C. R., Fiat, A., & Lyon, A. R. (2018). Stressed teachers don't make good implementers: Examining the interplay between stress reduction and intervention fidelity. *School Mental Health, 10*(1), 61-76. https://doi.org/10.1007/s12310-018-9250-y

Lee, Y. Y., Barendregt, J. J., Stockings, E. A., Ferrari, A. J., Whiteford, H. A., Patton, G. A., & Mihalopoulos, C. (2017). The population cost-effectiveness of delivering universal and indicated school-based interventions to prevent the onset of major depression among

youth in Australia. *Epidemiology and Psychiatric Sciences, 26*(5), 545-564. https://doi.org/10.1017/S2045796016000469

Lehman, W. E., Greener, J. M., & Simpson, D. D. (2002). Assessing organizational readiness for change. *Journal of Substance Abuse Treatment, 22*(4), 197-209. https://doi.org/10.1016/S0740-5472(02)00233-7

Lehman, W. E. K., Simpson, D. D., Knight, D. K., & Flynn, P. M. (2011). Integration of treatment innovation planning and implementation: Strategic process models and organizational challenges. *Psychology of Addictive Behaviors, 25*(2), 252-261. https://doi.org/10.1037/a0022682

Lendrum, A., Humphrey, N., & Wigelsworth, M. (2013). Social and emotional aspects of learning (SEAL) for secondary schools: implementation difficulties and their implications for school-based mental health promotion. *Child and Adolescent Mental Health, 18*(3), 158-164. https://doi.org/10.1111/camh.12006

Lindhiem, O., Higa, J., Trentacosta, C. J., Herschell, A. D., & Kolko, D. J. (2014). Skill acquisition and utilization during evidence-based psychosocial treatments for childhood disruptive behavior problems: A review and meta-analysis. *Clinical Child and Family Psychology Review, 17*(1), 41-66. https://doi.org/10.1007/s10567-013-0136-0

Livneh, C., & Livneh, H. (1999). Continuing professional education among educators: Predictors of participation in learning activities. *Adult Education Quarterly, 49*(2), 91. https://doi.org/10.1177/074171369904900202

Locke, J., Lawson, G. M., Beidas, R. S., Aarons, G. A., Xie, M., Lyon, A. R., Aubyn Stahmer, Max Seidman, Lindsay Frederick, Cristine Oh, Christine Spaulding, Shannon Dorsey & Mandell, D. S. (2019). Individual and organizational factors that affect implementation of evidence-based practices for children with autism in public schools: A cross-sectional observational study. *Implementation Science, 14*(1), 1-9. https://doi.org/10.1186/s13012-019-0877-3

Lovell, K., Bower, P., Gellatly, J., Byford, S., Bee, P., McMillan, D., Arundel, C., Gilbody, S., Gega, L., Hardy, G., Reynolds, S., Barkham, M., Mottram, P., Lidbetter, N., Pedley, R., Molle, J., Peckham, E., Knopp-Hoffer, J., Price, O., … & Roberts, C. (2017). Clinical effectiveness, cost-effectiveness and acceptability of low-intensity interventions in the management of obsessive–compulsive disorder: the Obsessive–Compulsive Treatment Efficacy randomised controlled Trial (OCTET). *Health Technology Assessment, 21*(37), 1-132. https://doi.org/10.3310/hta2137

Lyon, A. R., & Bruns, E. J. (2019). From evidence to impact: Joining our best school mental health practices with our best implementation strategies. *School Mental Health, 11*(1): 106–114. https://doi.org/10.1007/s12310-018-09306-w

Lyon, A. R., Cook, C. R., Brown, E. C., Locke, J., Davis, C., Ehrhart, M., & Aarons, G. A. (2018). Assessing organizational implementation context in the education sector: confirmatory factor analysis of measures of implementation leadership, climate, and citizenship. *Implementation Science, 13*(1), 1-14. https://doi.org/10.1186/s13012-017-0705-6

Lyon, A. R., Gershenson, R. A., Farahmand, F. K., Thaxter, P. J., Behling, S., & Budd, K. S. (2009). Effectiveness of Teacher-Child Interaction Training (TCIT) in a preschool setting. *Behavior Modification, 33*(6), 855-884. https://doi.org/10.1177/0145445509344215

Mapes, A. R., Quetsch, L. B., Parisi, K.E**.,** Girard, E., & McNeil, C.B. (2021). Evidence-based treatments in non-traditional settings: Examining a mobile unit vs. outpatient services. *Families, Systems, & Health, 39*(4), 588–598. https://doi.org/10.1037/fsh0000639

Mathews, S., McIntosh, K., Frank, J. L., & May, S. L. (2014). Critical features predicting sustained implementation of school-wide positive behavioral interventions and supports. *Journal of Positive Behavior Interventions, 16*(3), 168-178. https://doi.org/10.1177/10983007134840

Mazzer, K. R., & Rickwood, D. J. (2015). Teachers' role breadth and perceived efficacy in supporting student mental health. *Advances in School Mental Health Promotion, 8*(1), 29-41. https://doi.org/10.1080/1754730X.2014.978119

McGrady, P. B., & Reynolds, J. R. (2013). Racial mismatch in the classroom: Beyond black-white differences. *Sociology of Education*, *86*(1), 3-17. https://doi.org/10.1177/0038040712444857

McIntosh, K., Mercer, S. H., Nese, R. N., & Ghemraoui, A. (2016). Identifying and predicting distinct patterns of implementation in a school-wide behavior support framework. *Prevention Science*, *17*(8), 992-1001. https://doi.org/10.1007/s11121-016-0700-1

McIntosh, K., Mercer, S. H., Nese, R. N., Strickland-Cohen, M. K., Kittelman, A., Hoselton, R., & Horner, R. H. (2018). Factors predicting sustained implementation of a universal behavior support framework. *Educational Researcher*, *47*(5), 307-316. https://doi.org/10.3102/0013189X187769

McNeil C.B., Hembree-Kigin T.L. (2010) Overview of Parent-Child Interaction Therapy. In: Parent-Child Interaction Therapy. Issues in Clinical Child Psychology. Springer, Boston, MA. https://doi.org/10.1007/978-0-387-88639-8_1

Menzies, H. M., & Lane, K. L. (2011). Using self-regulation strategies and functional assessment-based interventions to provide academic and behavioral support to students at risk within three-tiered models of prevention. *Preventing School Failure: Alternative Education for Children and Youth*, *55*(4), 181-191. https://doi.org/10.1080/1045988X.2010.520358

Merle, J. L., Cook, C. R., Locke, J. J., Ehrhart, M. G., Brown, E. C., Davis, C. J., & Lyon, A. R. (2023). Teacher attitudes toward evidence-based practices: Exploratory and confirmatory analyses of the school-adapted evidence-based practice attitude scale. *Implementation Research and Practice, 4*, 26334895221151026.

Messer, E. P., Greiner, M. V., Beal, S. J., Eismann, E. A., Cassedy, A., Gurwitch, R. H., ... & Eiler-Sims, P. (2018). Child adult relationship enhancement (CARE): A brief, skills-building training for foster caregivers to increase positive parenting practices. *Children and Youth Services Review, 90*, 74-82. https://doi.org/10.1016/j.childyouth.2018.05.017

Monahan, K. E., McDaniel, H. L., George, M. W., & Weist, M. D. (2014). Assessing teachers' attitudes and willingness to adopt evidence-based practices in classrooms: A pilot study. *Emotional & Behavioral Disorders in Youth, 14*(2), 37-42.

Multisite Violence Prevention Project. (2014). Targeting high-risk, socially influential middle school students to reduce aggression: Universal versus selective preventive intervention effects. *Journal of Research on Adolescence, 24*(2), 364-382. https://doi.org/10.1111/jora.12067

Murano, D., Sawyer, J. E., & Lipnevich, A. A. (2020). A meta-analytic review of preschool social and emotional learning interventions. *Review of Educational Research, 90*(2), 227-263. https://doi.org/10.3102/0034654320914743

National Research Council and Institute of Medicine. (2009). Preventing Mental, Emotional, and Behavioral Disorders Among Young People: Progress and Possibilities. Committee on Prevention of Mental Disorders and Substance Abuse Among Children, Youth and Young Adults: Research Advances and Promising Interventions. Mary Ellen O'Connell, Thomas Boat, and Kenneth E. Warner, Editors. Board on Children, Youth, and Families, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

Onken, L. S., Carroll, K. M., Shoham, V., Cuthbert, B. N., & Riddle, M. (2014). Reenvisioning clinical science. *Clinical Psychological Science, 2*(1), 22–34. https://doi.org/10.1177/2167702613497932

O'Reilly, M., Adams, S., Whiteman, N., Hughes, J., Reilly, P., & Dogra, N. (2018). Whose responsibility is adolescent's mental health in the UK? Perspectives of key stakeholders. *School Mental Health, 10*(4), 450-461. https://doi.org/10.1007/s12310-018-9263-6

Parisi, K. E., Dopp, A. R., & Quetsch, L. B. (2021). Practitioner use of and attitudes towards videoconferencing for the delivery of evidence-based telemental health interventions: A mixed methods study. *Internet Interventions, 26*, 100470. https://doi.org/10.1016/j.invent.2021.100470

Parisi, K.E., Wong Sarver, N., Scattone, D., & Sarver, D.E. (2017). Establishing a continuum of care for evidence-based behavioral treatment for youth with disruptive behavior. *Journal of the Mississippi Medical Association, 58*(5), 158-161.

Powell, B. J., Waltz, T. J., Chinman, M. J., Damschroder, L. J., Smith, J. L., Matthieu, M. M., Proctor, E. K., & Kirchner, J. A. E. (2015). A refined compilation of implementation strategies: Results from the Expert Recommendations for Implementing Change (ERIC) project. *Implementation Science, 10*(1), 1–14. https://doi.org/10.1186/s13012-015-0209-1

Proctor, E., Silmere, H., Raghavan, R., Hovmand, P., Aarons, G., Bunger, A., Griffey, R., & Hensley, M. (2011). Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda. *Administration and Policy in Mental Health, 38*(2), 65–76. https://doi.org/10.1007/s10488-010-0319-7

Quin, D. (2017). Longitudinal and contextual associations between teacher–student relationships and student engagement: A systematic review. *Review of Educational Research, 87*(2), 345-387. https://doi.org/10.3102/0034654316669434

Ramšak, M. (2020). Medical racism. *Jahr: Europski Časopis za Bioetiku, 11*(1), 9-36. https://doi.org/10.21860/j.11.1.1

Reinke, W. M., Stormont, M., Herman, K. C., & Newcomer, L. (2014). Using coaching to support teacher implementation of classroom-based interventions. *Journal of Behavioral Education*, *23*(1), 150-167. https://doi.org/10.1007/s10864-013-9186-0

Ritz, M., Noltemeyer, A., Davis, D., & Green, J. (2014). Behavior management in preschool classrooms: Insights revealed through systematic observation and interview. *Psychology in the Schools*, *51*(2), 181-197. https://doi.org/10.1002/pits.21744

Sanchez, A. L., Cornacchio, D., Poznanski, B., Golik, A. M., Chou, T., & Comer, J. S. (2018). The effectiveness of school-based mental health services for elementary-aged children: A meta-analysis. *Journal of the American Academy of Child & Adolescent Psychiatry*, *57*(3), 153-165. https://doi.org/10.1016/j.jaac.2017.11.022

Sarver, D.E., Garrett, G., Cox, A.D., Cash, A.R., Karlson, C.W. & Masse, J. (2019). *Using Child-Adult Relationship Enhancement (CARE) to reduce behavioral difficulties and augment interventions for among allied health professionals*. Presentation to the annual meeting of the Parent-Child Interaction Therapy (PCIT) conference. Chicago, IL.

Sciaraffa, M. A., Zeanah, P. D., & Zeanah, C. H. (2018). Understanding and promoting resilience in the context of adverse childhood experiences. *Early Childhood Education Journal*, *46*(3), 343-353. https://doi.org/10.1007/s10643-017-0869-3

Scott, B., Gurwitch, R. H., Messer, E. P., Kelley, L. P., Myers, D. R., & Young, J. K. (2021). Integrated CARE: Adaptation of Child-Adult Relationship Enhancement (CARE) Model for use in integrated behavioral pediatric care. *Clinical Pediatrics*, *60*(2), 100-108. https://doi.org/10.1177/0009922820959938

Schilling, S., French, B., Berkowitz, S. J., Dougherty, S. L., Scribano, P. V., & Wood, J. N. (2017). Child–Adult Relationship Enhancement in Primary Care (PriCARE): A randomized trial of a parent training for child behavior problems. *Academic Pediatrics*, *17*(1), 53-60. https://doi.org/10.1016/j.acap.2016.06.009

Schilling, S., Ritter, V., Wood, J. N., Fine, J., & Zolotor, A. J. (2020). Child-adult relationship enhancement in primary care: a randomized trial of a skill-based parent training with parent mentor adaptation. *Journal of Developmental & Behavioral Pediatrics*, *41*(4), 272-280. https://doi.org/10.1097/DBP.0000000000000759

Solomon, B. G., Klein, S. A., & Politylo, B. C. (2012). The effect of performance feedback on teachers' treatment integrity: A meta-analysis of the single-case literature. *School Psychology Review*, *41*(2), 160-175. https://doi.org/10.1080/02796015.2012.12087518

Sonuga-Barke, E. J., Barton, J., Daley, D., Hutchings, J., Maishman, T., Raftery, J., Stanton, L., Laver-Bradbury, C., Chorozoglou, M., Coghill, D., Little, L., Ruddock, M., Radford, M., Yao, G. L., Lee, L., Gould, L., Shipway, L., Markomichali, P., McGuirk, J., …

Thompson, M. J. (2018). A comparison of the clinical effectiveness and cost of specialised individually delivered parent training for preschool attention-deficit/hyperactivity disorder and a generic, group-based programme: A multi-centre, randomised controlled trial of the New Forest Parenting Programme versus Incredible Years. *European Child & Adolescent Psychiatry, 27*(6), 797-809. https://doi.org/10.1007/s00787-017-1054-3

Spoth, R., Redmond, C., Shin, C., Greenberg, M. T., Feinberg, M. E., & Trudeau, L. (2017). PROSPER delivery of universal preventive interventions with young adolescents: long-term effects on emerging adult substance misuse and associated risk behaviors. *Psychological Medicine, 47*(13), 2246–2259. https://doi.org/10.1017/S0033291717000691

Stahmer, A. C., & Aarons, G. A. (2009). Attitudes toward adoption of evidence-based practices: A comparison of autism early intervention providers and children's mental health providers. *Psychological Services, 6*(3), 223- 234. https://doi.org/10.1037/a0010738

Stahmer, A. C., Dababnah, S., & Rieth, S. R. (2019). Considerations in implementing evidence-based early autism spectrum disorder interventions in community settings. *Pediatric Medicine, 2*, 18. https://doi.org/10.21037/pm.2019.05.01

Stahmer, A. C., Suhrheinrich, J., Schetter, P. L., & McGee Hassrick, E. (2018). Exploring multi-level system factors facilitating educator training and implementation of evidence-based practices (EBP): a study protocol. *Implementation Science, 13*(1), 1-11. https://doi.org/10.1186/s13012-017-0698-1

Starck, J. G., Riddle, T., Sinclair, S., & Warikoo, N. (2020). Teachers are people too: Examining the racial bias of teachers compared to other American adults. *Educational Researcher, 49*(4), 273-284. https://doi.org/10.3102/0013189X20912758

Stormont, M., & Reinke, W. M. (2012). Using Coaching to Support Classroom-Level Adoption and Use of Interventions within School-Wide Positive Behavioral Interventions and Support Systems. *Beyond Behavior, Win*, 11-19. https://eric.ed.gov/?id=ED540776

Thomas, R., Abell, B., Webb, H. J., Avdagic, E., & Zimmer-Gembeck, M. J. (2017). Parent-child interaction therapy: a meta-analysis. *Pediatrics, 140*(3). https://doi.org/10.1542/peds.2017-0352

van Sonsbeek, M. A., Hutschemaekers, G. J., Veerman, J. W., Kleinjan, M., Aarons, G. A., & Tiemens, B. G. (2015). Psychometric properties of the Dutch version of the evidence-based practice attitude scale (EBPAS). *Health Research Policy and Systems, 13*(1), 1-12. https://doi.org/10.1186/s12961-015-0058-z

Waltz, T. J., Powell, B. J., Chinman, M. J., Smith, J. L., Matthieu, M. M., Proctor, E. K., Damschroder, L. J., & Kirchner, J. A. E. (2014). Expert recommendations for implementing change (ERIC): Protocol for a mixed methods study. *Implementation Science, 9*(1), 1–12. https://doi.org/10.1186/1748-5908-9-39

Wang, T., Olivier, D. F., & Chen, P. (2020). Creating individual and organizational readiness for change: conceptualization of system readiness for change in school

education. *International Journal of Leadership in Education*, 1-25. https://doi.org/10.1080/13603124.2020.1818131

Wang, J., & Wang, X. (2019). *Structural equation modeling: Applications using Mplus*. John Wiley & Sons.

Wanless, S. B., & Domitrovich, C. E. (2015). Readiness to implement school-based social-emotional learning interventions: Using research on factors related to implementation to maximize quality. *Prevention Science*, *16*(8), 1037-1043. https://doi.org/10.1007/s11121-015-0612-5

Ward, M.A., Theule, J. & Cheung, K. (2016). Parent–Child Interaction Therapy for Child Disruptive Behaviour Disorders: A Meta-analysis. *Child Youth Care Forum, 45*, 675–690. https://doi.org/10.1007/s10566-016-9350-5

Washington Institute for Public Policy (2014). Benefit-cost

Webb, H. J., Thomas, R., McGregor, L., Avdagic, E., & Zimmer-Gembeck, M. J. (2017). An Evaluation of Parent–Child Interaction Therapy with and without motivational enhancement to reduce attrition. *Journal of Clinical Child and Adolescent Psychology, 46*(4), 537–550. https://doi.org/10.1080/15374416.2016.1247357

Whitney, D. G., & Peterson, M. D. (2019). US national and state-level prevalence of mental health disorders and disparities of mental health care use in children. *JAMA Pediatrics*, *173*(4), 389-391. https://jamanetwork.com/ on 10/13/2022

Wood, J. N., Kratchman, D., Scribano, P. V., Berkowitz, S., & Schilling, S. (2021). Improving child behaviors and parental stress: a randomized trial of child adult relationship enhancement in primary care. *Academic Pediatrics*, *21*(4), 629-637. https://doi.org/10.1016/j.acap.2020.08.002

Yates, B. T. (2020). Research on improving outcomes and reducing costs of psychological interventions: Toward delivering the best to the most for the least. *Annual Review of Clinical Psychology*, *16*, 125-150. https://doi.org/10.1146/annurev-clinpsy-071519-110415

Tables & Figures

Table 1
Educator Demographics

	Overall Sample *n* = 217
	M(*SD*) or *n*(%)
Gender (female)	214(97%)
Ethnicity (not Hispanic)	201(96%)
Race	
Native Hawaiian or Other: Pacific Islander	1(.4%)
Black	149(69%)
White	67(31%)
Age	43(14.28)
Years of Education	3.95(1.62)
Years of Experience	11.28(10.38)
Weekly Student Load	
Minimum	15.46(25.25)
Maximum	27.70(45.82)
Student Age (percentage)	
0-3 years	54.53% (38.46)
4-6 years	41.24% (34.35)
7-11 years	13.29% (29.68)
12-14 years	4.41% (16.25)
15-17 years	2.34% (8.90)
Students with Special Needs (percentage)	
Clinically Significant Opposition	19.99% (24.01)
Oppositional or Challenging Behavior	23.96% (26.44)
Developmental Delay	23.57% (34.39)
Time spent working with parents and children together (percentage)	15.46% (25.25)

Table 2
Mean Predictor and Outcome Scores

	Overall Sample *n* = 217		
	Pre-training	Post-training	Follow-Up
		M(*SD*)	
ORC-D4			
Motivation/Needs for Change			
Staff and Program Needs	43.08(4.83)	-	-
Training Needs	17.79(1.60)	-	-
Staff Attributes			
Growth	21.11(1.46)	-	-
Efficacy	20.32(1.20)	-	-
Satisfaction	25.81(2.86)	-	-
Influence	24.23(2.68)	-	-
Adaptability	15.34(2.28)	-	-
Organizational Climate			
Stress	13.01(3.01)	-	-
Autonomy	18.34(1.15)	-	-
Change	18.60(2.60)	-	-
CARE Skills	15.64(2.54)	47.37(4.82)	
EBPAS			
Openness	11.88(2.66)	-	-
Appeal	11.40(3.10)	-	-
Requirements	8.05(3.56)	-	-
Divergence	11.08(3.52)	-	-
Satisfaction (TAI)	-	43.45(5.25)	-
URP-I			
Acceptability	-	-	71.77(7.91)
Understanding	-	-	39.66(5.15)
Feasibility	-	-	40.00(4.81)
Systems Support	-	-	19.47(3.29)
Total score	-	-	171.19(17.34)
BITS (*n* = 1206)			
Attention Problems	3.85(4.12)	2.29(3.36)	-
Conduct Problems	3.60(4.57)	2.22(3.54)	-
Emotional Problems	2.29(3.46)	1.49(2.61)	-
Social Problems	2.36(2.83)	1.55(2.62)	-
Overall Score	10.94(12.34)	7.63(10.68)	
Goals Achievement	2.9(1.04)	3.24(0.98)	-
Interference	0.92(1.08)	0.62(0.87)	-

Note. BITS = Behavioral Interference with Teaching, CARE = Child-Adult Relationship Enhancement, EBPAS = Evidence-Based Practice Attitude Scale, ORCD = Organizational Readiness to Change-Director, TAI = Teacher Attitude Inventory, URP-I = Usage Rating Profile - Intervention

Table 3

Relation between Organizational Readiness and Use of CARE

	Usage Rating Profile - Intervention			
	Acceptability	Understanding	Systems Support	Feasibility
		β		
ORCD				
Motivation/Needs for Change				
Staff and Program Needs	-.82*	-.53*	-.07	-.72*
Training Needs	-.03	.68	1.14**	.76
Staff Attributes				
Growth	1.02	.08	-.01	.81
Efficacy	-4.69**	-2.56**	-.01	-3.31**
Satisfaction	.27	.02	-.03	.22
Influence	.32	.03	-1.01**	.26
Adaptability	.24	.02	.06	.20
Organizational Climate				
Stress	-.46	-.04	-.02	-.37
Autonomy	3.26	.27	.02	2.59
Change	.99	.09	-.01	.78

Note. ORCD = Organizational Readiness to Change-Director. * = $p < .05$, ** = $p < .01$.

Table 4

Correlations between Teacher Attitudes and Teacher Demographics

	Attitudes towards Evidence-Based Practice (EBPAS)			
	Openness	Appeal	Requirements	Divergence
		r		
Education	-.15	-.25	.11	-.12
Experience	-.29*	-.26*	-.18*	-.15
Student Age				
0-3 years	-.14	-.08	.21	.29*
4-6 years	.22	.29*	.25*	-.04

Note. BITS = Behavioral Interference with Teaching, EBPAS = Evidence-based Practice Attitude Scale, URP-I = Usage Rating Profile – Intervention, TAI = Teacher Attitude Inventory. * = $p \leq .05$, ** = $p < .01$.

Table 5

Relation between Teacher Attitudes and Use of CARE

	Attitudes towards Evidence-Based Practice (EBPAS)			
	Openness	Appeal	Requirements	Divergence
		β		
Satisfaction (TAI)	1.07*	.16	-.03	-.02
URP-I				
Acceptability	1.37**	.00	-.08	.22
Understanding	.66**	-.05	-.10	.18
Feasibility	.27*	-.16	-.13	.21
Systems Support	.12	-.11	-.27*	.03
		r		
Pretraining CARE Skills	.09	.20**	.20**	-.34**
Posttraining CARE Skills	.44**	.38**	.26**	-.00

Note. BITS = Behavioral Interference with Teaching, EBPAS = Evidence-based Practice Attitude Scale, URP-I = Usage Rating Profile – Intervention, TAI = Teacher Attitude Inventory. * = $p \leq .05$, ** = $p \leq .01$.

Table 6

Summary of Model Fit Statistics

	df	$\Delta\chi^2$	CFI	TLI	NNFI	RMSEA	SRMR
Model 1							
1.1	339	-	.78	.76	.76	.08	.09
1.2	313	105.82***	.79	.76	.76	.08	.09
1.3	297	146.21***	.80	.76	.76	.08	.09
Model 2							
2.1	304	922.60***	.86	.83	.83	.07	.10
2.2	288	160.01***	.87	.84	.84	.07	.09
Model 3	299	544.28***	.90	.88	.88	.06	.08

Note. CFI=Confirmatory Fit Index; *df*=degrees of freedom; GFI=Goodness of Fit Index; NNFI=Bentler–Bonnett Nonnormed Fit Index; RMSEA=Root Mean Squared Error of Approximation; SRMR = Standardized Root Mean Square Residual. ***$p \leq .001$.

Table 7

Cost-effectiveness of CARE for Reducing Interfering Behaviors (BITS) by Subscale

	Effect Size for Pre to Post Δ	Cost/unit Δ - coordinator	Cost/unit Δ + coordinator
BITS Total	0.277	$192.73	$315.43
Attention Problems	0.307	$173.90	$284.61
Conduct Problems	0.275	$194.13	$317.72
Emotional Problems	0.214	$249.47	$408.29
Social Problems	0.211	$253.02	$414.10
Goals		$189.99	$310.94
Achievement	-0.281		
Interference	0.261	$204.55	$334.77

Note. BITS = Behavioral Interference with Teaching, CARE = Child-Adult Relationship Enhancement

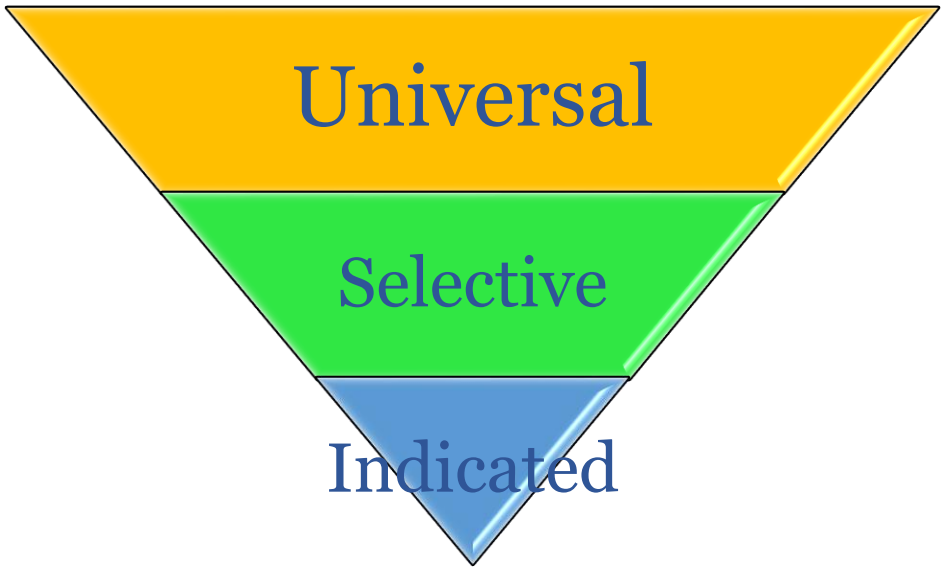


Figure 1. Levels of Prevention/Intervention

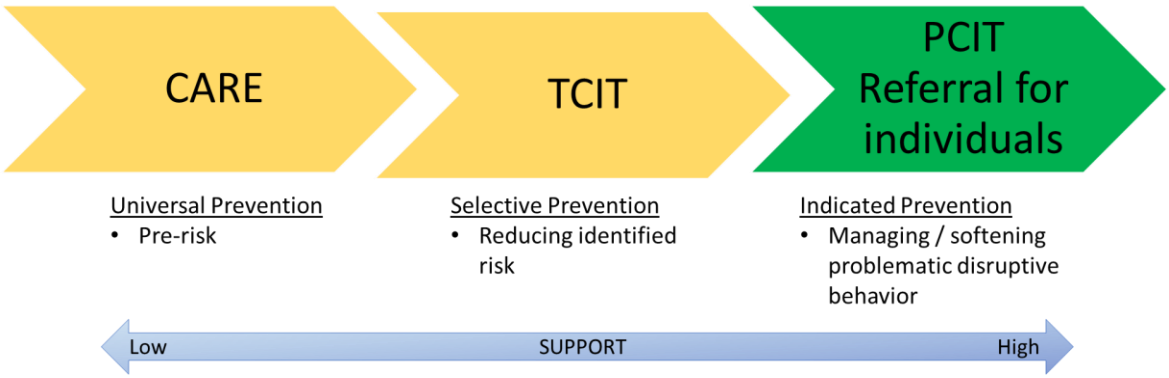
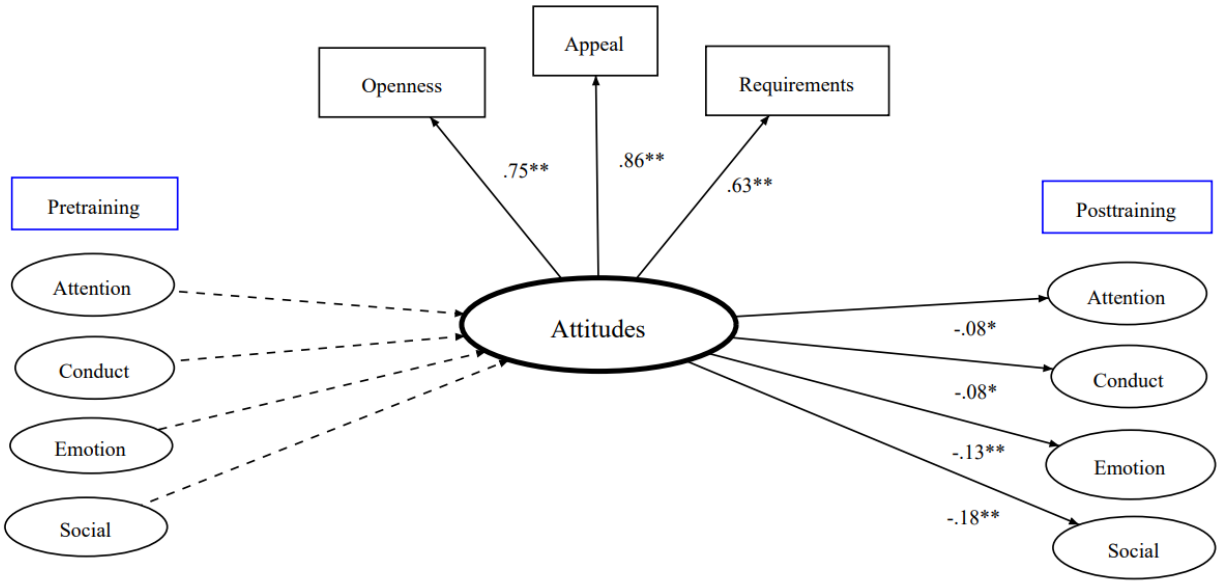


Figure 2. Continuum of Care for disruptive behaviors



Note. The three manifest variables for measurement of each behavior problem scale across time points and the direct effects of pre- on post- change for each behavior domain were omitted for visual clarity. Dashed lines represent pathways constrained to zero. *$p \leq .05$, ** $p < .01$.

Figure 3. Pathway Diagram for the Impact of Teacher Attitudes on Student Behavior Change from Pre- to Post-training