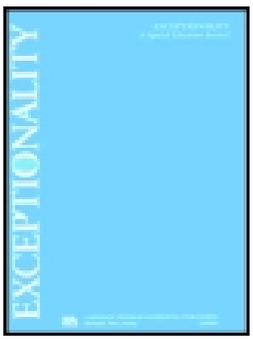

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Barriers and Facilitators to Implementation of BEST in CLASS

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ABSTRACT

The primary purpose of this paper is to review how BEST in CLASS, an evidence-based program targeting children at risk for emotional and behavior disorders, interacts with a diverse range of social ecological factors to promote successful implementation. Recent findings from two BEST in CLASS studies (BEST in CLASS-Prekindergarten and BEST in CLASS-Elementary) are reviewed in relation to barriers and facilitators of high quality implementation. The importance of taking into account factors associated with teacher delivery of interventions in classrooms, particularly for children with and at-risk for emotional and behavioral disorders, when designing and evaluating interventions is discussed. Implications for future research and practice are provided.

Classrooms are embedded in a social ecology in which aspects of the individual child, teacher, and classroom all influence one another (Bronfenbrenner, 1992). Learning about the extent to which these factors influence implementation quality will enhance our ability to design and refine interventions that more effectively match with contextual and individual level factors that may support high quality implementation (Durlak, 2010). This is particularly important when designing and assessing interventions that target children at risk for emotional and behavioral disorders (EBD).

Approximately 11.5 – 30% of children in the U.S. display symptoms of chronic problem behavior (e.g., disruptive behavior, inappropriate emotional responses, defiance) that place them at risk for developing EBD (Forness, Kim, & Walker, 2012; Qi & Kaiser, 2003; Ringeisen et al., 2017). Children who are at risk for or have EBD have difficulties with adjustment at school and these difficulties are likely to persist throughout child and adulthood (Phillips & Shonkoff, 2000). For instance, the early onset of behavior problems in young children predicts problems in adolescence including juvenile delinquency and school dropout (Webster-Stratton, 2000). Moreover, EBDs are predictive of a 57% likelihood of being arrested within 2 years of leaving high school, employment instability, and risk of requiring mental health treatment (Newman, Wagner, Cameto, & Knokey, 2009). Considering these adverse outcomes, it is no surprise identifying factors that promote or hinder psychosocial adjustment for children with and at risk for EBD is a national health priority.

High quality early childhood and elementary classroom environments can build resiliency that can serve as a protective mechanism to promote psychosocial adjustment for children with and at risk for EBDs (Curby, Rudasill, Edwards, & Pérez-Edgar, 2011; Mokrova et al., 2015; Rudasill et al., 2016). Children spend a large part of their day in early childhood or elementary school classrooms, and their experiences in the classroom have the potential to strengthen children's resilience from a myriad of risk factors (Pianta & Walsh, 1996). Sameroff's transactional model (Sameroff, 2009) helps us understand the classroom as a context in which teachers and children reciprocally influence one another through interactions, and these interactions influence subsequent behaviors and future interactions. This makes early childhood and elementary school classrooms an ideal context to support children with and at risk for EBD, and also highlights the salience of teachers' influence on

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children's development and school performance (Pianta, 1999; Wentzel, 2002). For instance, teacher-child relationships characterized by warmth and closeness are related to improvements in children's self-regulation skills at the end of the school year (Cadima, Verschueren, Leal, & Guedes, 2016). Additionally, high quality classroom interactions, characterized by high levels of emotional support and classroom organization, are associated with children's skills in inhibitory control, phonological awareness, and print knowledge (Hatfield, Burchinal, Pianta, & Sideris, 2016).

Given these findings, the primary purpose of this paper is to review how BEST in CLASS, an evidence-based program targeting children at risk for emotional and behavior disorders (EBD), interacts with a diverse range of social ecological factors to promote successful implementation in classrooms.

BEST in CLASS

BEST in CLASS is framed by the transactional model (Sameroff, 2009) and is a teacher delivered intervention that capitalizes on the potential of supportive classroom environments to improve children's psychosocial adjustment through teacher-child interactions. BEST in CLASS promotes teachers' increased use of effective instructional practices through professional development, including individualized practice-based coaching, which promote the key mechanisms of change: positive teacher-child interactions and improved teacher-child relationships. BEST in CLASS is a Tier-2 (secondary) intervention as teachers are trained and coached to increase their frequency of use and quality of delivery of BEST in CLASS instructional practices with children systematically identified as at risk for EBD. BEST in CLASS has been shown to be effective at improving child (Conroy et al., 2015; Sutherland, Conroy, Algina et al., 2018) and teacher outcomes and has been named an effective program by the National Institute of Justice (see https://www.crimesolutions.gov). Currently, there are two versions of BEST in CLASS: BEST in CLASS-Prekindergarten (BEST in CLASS-PK) and BEST in CLASS Elementary (BEST in CLASS-E).

Both BEST in CLASS-PK and BEST in CLASS-E are Tier-2 prevention programs designed to reduce problem behavior of children with and at risk for EBD who are not responsive to Tier-1 (i.e., universal) supports. Children are systematically screened and identified as being at an increased risk for EBD. For screening, within each classroom, teachers identified one to three children to participate based on externalizing problem behavior that interfered with participation in the classroom and risk for EBD using the Early Screening Project (ESP; see Feil, Severson, & Walker, 1998) for BEST in CLASS-PK or the Systematic Screening for Behavior Disorders (SSBD; Walker, Severson, & Feil, 2014) in BEST in CLASS-E. BEST in CLASS is designed to be delivered intentionally by teachers to these focal students (who have met screening criteria) during typically occurring instructional activities in the classroom. Both BEST in CLASS-PK and BEST in CLASS-E include a one-day interactive teacher training on the key instructional practices. At this training teachers are given a teacher manual that summarizes training content on the practices and serves as a reference guide for teachers throughout the program. BEST in CLASS–PK is comprised of six key practices: (a) *Rules*, (b) *Behavior-Specific Praise*; (c) *Precorrection*; (d) *Opportunities to Respond*; (e) *Corrective Feedback*; and (f) *Instructive Feedback*. A final module, *Linking and Mastery*, helps teachers efficiently and effectively link practices together to maximize the effect of the practices. Each of the six practices includes a framework and strategies to facilitate positive communication and engagement with children's family members. Following the one-day training, teachers begin 14 weeks of practice-based coaching (see Conroy et al., 2015; Sutherland, Conroy, Vo, & Ladwig, 2015 for details of the training and coaching procedures).

BEST in CLASS–PK has demonstrated efficacy at improving desirable teacher behaviors, reducing focal children's problem behaviors, and increasing focal children's desirable social and behavioral outcomes. Results from an efficacy trial that employed a multi-site cluster randomized design (Spybrook & Raudenbush, 2009) conducted with 186 teachers and 469 children randomly assigned to BEST in CLASS – PK or business as usual indicated (a) significant increases in teachers' use of instructional practices, self-efficacy, and overall classroom quality (Conroy, Sutherland, Algina et al.,

2019), and (b) reductions in problem behavior and improvements in teacher-child interactions and relationships (Conroy, Sutherland, Algina, Werch, & Ladwig, 2018; Sutherland, Conroy, Algina et al., 2018). Improvements in observed child behavior noted in a previous study (Conroy, Sutherland, Vo, Carr, & Ogston, 2014) were supported by teachers' reports of decreased problem behavior (*ES* = − .42) and externalizing problems (*ES* = − .42) associated with BEST in CLASS–PK. In addition, positive effects on all three dimensions of the CLASS (Pianta, La Paro, & Hamre, 2008) were noted (*ESs* of .47 for Emotional Support, .58 for Classroom Organization, and .65 for Instructional Support), highlighting the benefits of the program for all children in the classroom.

BEST in CLASS-E was adapted from the initial framework of BEST in CLASS-PK. While results from the initial investigations of BEST in CLASS–PK confirm the efficacy of the intervention, the educational needs of early elementary-aged students and the professional development needs of their teachers are different from those in preschool (Pianta & Rimm-Kaufman, 2006; Rathus, 2008). BEST in CLASS–E involved several key changes from BEST in CLASS-PK. These adaptations are detailed below in reference to barriers and facilitators of implementation. However, most notably BEST in CLASS-E includes some different practices (described below as practice elements; Sutherland, Conroy, McLeod, Kunemund, et al., 2019) deemed more developmentally appropriate for elementary-aged students: *(a) Supportive Relationships, (b) Rules, (c) Precorrection, (d) Opportunities to Respond, (e) Behavior-Specific Praise, and (f) Home-School Partnership*.

In a small pilot study, BEST in CLASS-E demonstrated promise at improving teacher-child interactions and increasing focal students' desirable behavioral outcomes (Sutherland Conroy, McLeod, Granger, et al., 2020). The pilot study was conducted with 45 kindergarten to 3rd grade students (identified at risk for the development of EBD) and their 26 teachers from three elementary schools located in an urban school district. Teachers and students were randomly assigned to BEST in CLASS – E or business as usual. Results indicated BEST in CLASS-E decreased teacher reported student problem behavior (*ES* = − .32) and increased teacher-student closeness (*ES* = .55). In addition, teachers reported reductions in emotional exhaustion (ES = − .35; Conroy et al., 2019). Results suggest the promise of BEST in CLASS-E as a Tier-2 intervention delivered by teachers in elementary classrooms.

Implementation of BEST in CLASS

Implementation is conceptualized as the way a program is put into practice and delivered to participants (McLeod, Kunemund, Nemer & Lyon, 2019). The assessment of implementation integrity can capture the dissonance between the theory or design of a program and what the program looks like when it is being implemented (Sutherland, McLeod, Conroy, & Cox, 2013). The assessment of implementation has an important influence on interpreting associated program outcomes. For instance, poorly implemented programs are often found to have little to no positive influence on outcomes (Durlak, 2010; Durlak & DuPre, 2008). Additionally, when the same program has a different influence on outcomes in different settings (e.g., across teachers, schools), the assessment of implementation can signal reasons for varying levels of program success across settings. Therefore, measuring and evaluating implementation quality is an essential indicator needed for the future development, evaluation, and sustainability of evidence-based interventions (Durlak, 2010, 2016).

Treatment integrity is a measure of the degree to which core elements of an evidence-based intervention were implemented as intended (McLeod, Southam-Gerow, Tully, Rodriguez, & Smith, 2013; Sutherland et al., 2013). While there are different conceptual models of treatment integrity measurement (e.g., stages of implementation; Fixsen, Blase, Naoom, & Wallace, 2005; observational assessments; Mowbray, Holter, Teague, & Bybee, 2003), we focus on four common dimensions of treatment integrity proposed in a conceptual model of program implementation for young children at risk for EBD (Figure 1): treatment adherence, competence of delivery, treatment differentiation, and relational factors (Sutherland et al., 2013). Treatment adherence is the extent to which an

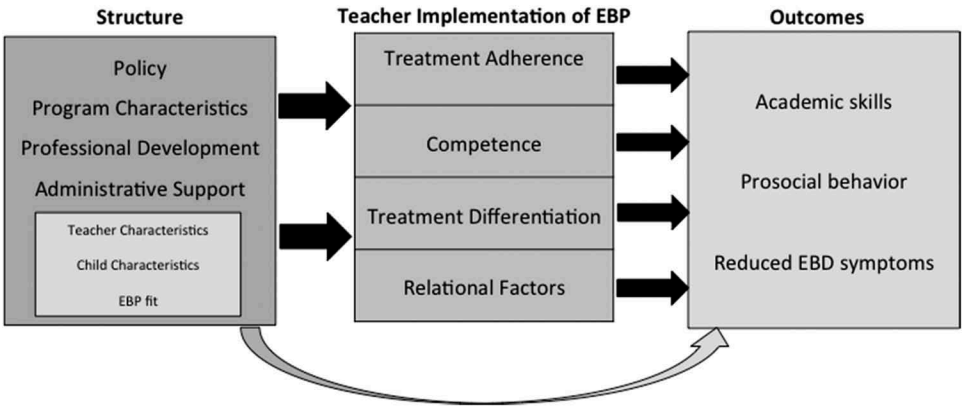

Figure 1. Conceptual model of treatment implementation.
EBP = Evidence-based practice. EBD = Emotional behavioral disorder

evidence-based practice is delivered as designed (i.e., the delivery of prescribed interventions). Treatment competence is the level of skill and degree or responsiveness demonstrated by a participant (e.g., a teacher) when delivering the prescribed intervention. Treatment differentiation is the extent to which the implementation of the intervention differed along appropriate lines defined by the protocol, while relational factors involve aspects of the intervention receipt (e.g., teacher-child closeness, child engagement). Measuring each of these integrity components allows researchers to answer important questions about the program validity needed to support program evaluation (Carroll et al., 2000). For instance, assessing adherence and competence allows researchers to establish if a program was delivered as designed and if there was variation in delivery across teachers, classrooms, or schools.

To date, evaluations of most evidence-based programs have lacked adequate measurement for evaluating and monitoring program implementation and teacher training (Sanetti, Dobey, & Gritter, 2012; Sutherland et al., 2013). In response to this need, in BEST in CLASS we developed observational treatment integrity measures, one for BEST in CLASS-PK and another for BEST in CLASS-E, in order to assess teacher implementation of BEST in CLASS practices. The BEST in CLASS Adherence and Competence Scale (BiCACS; Sutherland, McLeod, Conroy, Abrams, & Smith, 2014) was developed as a treatment integrity measure to assess the *adherence* and *competence* of delivery of BEST in CLASS–PK practices by teachers. Both subscales (Adherence and Competence) assess the six teacher-delivered components core to the BEST in CLASS-PK model (Rules, Precorrection, Opportunities to Respond, Behavior-Specific Praise, Corrective Feedback, Instructive Feedback) using a seven-point Likert-type scale ranging from "'1 = Not At All'" to "'7 = Very Extensive'" for the Adherence Scale and "'1 = Very Poor'" to "'7 = Excellent'" on the Competence Scale. Scores for both adherence and competence were created by calculating the mean score for all observations of the BiCACS items then averaging together the items on each subscale with higher scores indicating higher levels of adherence and competence.

The Treatment Integrity Instrument for Elementary School Classrooms (TIES) was developed for use in BEST in CLASS-E. This observational measure aligns closely with the previously developed BiCACS with three key differences. First, it was adapted for the practices included in BEST in CLASS-E (i.e., Supportive Relationships, Rules, Precorrection, Opportunities to Respond, Praise). Second, it includes items that address the relational factors of treatment integrity: Disruptions and Student Responsiveness; Figure 1). Finally, it includes items not included as part of BEST in CLASS but that have some evidence of importance for the outcomes and developmental trajectories of students. Specifically, McLeod, Kunemund, Nemer, and Lyon (2019) used a practice elements distillation approach to identify common practice elements from evidence-based programs and

interventions, and these common practice elements comprise the TIES measure. To illustrate, additional items that are not part of BEST in CLASS include self-management, peer tutoring, and error correction. Importantly, this adaptation to the TIES will allow for the assessment of an additional integrity dimension, treatment differentiation (Figure 1).

In addition to the initial psychometric study of the BiCACS, both measures have been used reliably and have shown to be sensitive to change. To illustrate, using Cicchetti's (1994) criteria, Adherence item intraclass correlation coefficients (ICCs) on the BiCACS in the BEST in CLASS–PK trial (Sutherland et al., 2018) ranged from "'fair'" to "'excellent'" (ICCs ranged from .40 to .83 [M = .71, SD = .13]), while for the Competence subscale item ICCs ranged from "'poor'" to "'good'" (ICCs ranged from .12 to .62 [M = .37, SD = .15]). Effect sizes at posttest for Adherence (*ES* = 1.30) and Competence (*ES* = 2.88) were large. In the BEST in CLASS–E pilot study (Sutherland, Conroy, McLeod, Granger et al., 2019), the mean ICC for the Adherence scale of the TIES was .82 (*SD* = 0.10; range .68 to .92), with all items reflecting "good" to "excellent" agreement. The mean ICC for the Competence scale was .61 (*SD* = .11; range .52 to .77), with items representing "fair" to "excellent" agreement. Effect sizes at posttest were moderate to large (.67 and 1.70) for Adherence and Competence prescribed items, respectively.

The development of the BiCACS and the TIES were important as we conceptualized how to assess teacher delivery of the BEST in CLASS practices in early childhood and elementary school classrooms. In the development of these instruments, we considered a theoretical model of treatment implementation (see Figure 1), which proposes pre-treatment conditions, such as school characteristics, child characteristics, and teacher characteristics, influence the extent to which treatment implementation occurs. In turn, treatment implementation is thought to link with post treatment outcomes, such as behavioral, emotional, social, and academic outcomes for students. This model has guided recent work investigating the barriers and facilitators of BEST in CLASS implementation.

Barriers and facilitators of implementation of BEST in CLASS

Domitrovich et al. (2008) proposed a multi-level framework of factors that may influence the quality of program implementation in schools. This model is consistent with a socio-ecological framework (Bronfenbrenner, 1977) and takes into consideration the influences of macro-level, school-level, and individual-level factors. Macro-level factors are conceptualized as the broadest set of factors that have the potential to influence the quality of implementation within schools (e.g., government policies, community supports, funding). The second, school-level, recognizes the school is an organization in which teachers, children, and staff are embedded in a shared environment with the potential to influence program implementation. Factors at this level can include school policies, school climate, and school resources. The final level, individual-level, represents teacher or child level factors that can promote or undermine the quality of intervention implementation in schools. Examples of individual level factors that may influence implementation include teachers' characteristics (e.g., self-efficacy, level of education), psychological functioning (e.g., stress, depression), and perception and attitudes toward the intervention (e.g., intervention acceptability).

In Domitrovich et al.'s (2008) model, factors at each level are conceptualized as interdependent with the potential to influence the quality with which interventions are implemented, although proximal factors are thought to be more influential than distal factors. Considering the dynamic interplay of these factors highlights the complexity and difficulty of implementing evidenced-based practices in authentic settings such as classrooms. Classrooms are complex settings in which interventions must adapt to fit the multidimensional needs of both teachers and children. Therefore, in order to create and adapt future teacher-delivered intervention programs that are feasible and sustainable, it is critically important to gain a better understanding of the barriers and facilitators of implementation in classroom settings. In the next section we describe the barriers and facilitators of implementation of BEST in CLASS-PK and BEST in CLASS-E.

BEST in CLASS-PK

In light of the complexities inherent in school based programs and teacher delivery of interventions, Sutherland, Conroy, McLeod et al. (2018) explored classroom and teacher factors that influence the treatment integrity of BEST in CLASS-PK. Drawing on Domitrovich et al.'s (2008) conceptual model, which suggests proximal factors may influence implementation, these researchers examined the extent to which observations of classroom quality (i.e., CLASS), and levels of child problem behavior influenced teacher delivery of BEST in CLASS-PK. Additionally, they examined the extent to which teachers' self-efficacy and educational background influenced their implementation of BEST in CLASS-PK.

The classroom, teacher, and treatment integrity data came from the treatment group (n = 92 teachers; n = 231 children) in the efficacy trial of BEST in CLASS-PK (Sutherland, Conroy, Algina et al., 2018). Results revealed both adherence and competence increased across the 14-week coaching process, as expected. Teachers with higher levels of education (i.e., categorized as high school diploma or associates degree, bachelor's degree, or master's degree or higher) delivered the program with more adherence and competence initially, suggesting teachers with more education and training are more capable of implementing a Tier-2 intervention such as BEST in CLASS than teachers with less education and training. However, teachers with lower levels of initial competence exhibited more growth in competence over time than teachers with higher levels of initial competence. Teachers with higher initial scores on the Classroom Organization subscale of the CLASS exhibited lower growth in adherence across time, while teachers with higher initial scores on the Emotional Support subscale implemented the program with greater competence and had higher growth in both adherence and competence across time. Contrary to hypotheses teacher self-efficacy did not predict adherence, and teachers who reported higher initial levels of Student Engagement self-efficacy exhibited lower growth in competence over time. Finally, child problem behavior was not associated with teacher implementation of BEST in CLASS practices.

These findings highlight the importance of considering connections between classroom, teacher, and child-level factors and teacher implementation of prevention programs. In regards to classroom factors, Sutherland, Conroy, McLeod et al. (2018) theorize it is plausible teachers with higher ratings of Classroom Organization were already performing many of the BEST in CLASS practices related to Classroom Organization (e.g., Rules, Praise, OTR) and had less need (and capacity) for growth in these areas. However, teachers with higher initial ratings of Emotional Support delivered the program with greater competence initially and had greater growth in both adherence and competence over time, suggesting teachers with higher initial levels of Emotional Support may have attempted to improve the quality of delivery of BEST in CLASS practices because they anticipated the practices would exert a positive impact on children's social and emotional development (i.e., they were more attuned to the needs of their children).

Turning to teacher-level factors, results suggest more education may help teachers transfer information more rapidly from the initial training to their classroom and teachers with lower levels of professional preparation may benefit the most from professional development, such as the use of practice-based coaching supports. Indeed, teachers with lower levels of initial competence had greater growth in competence of delivery than did teachers with higher levels of initial competence. However, teachers with higher levels of self-efficacy did not exhibit higher initial implementation of BEST in CLASS. In fact, teachers with higher initial levels of Student Engagement self-efficacy exhibited lower growth in competence; it is possible teachers with higher Student Engagement self-efficacy were already aware of how their instructional behavior was related to engaging children in learning, and had less room for growth in terms of implementing the BEST in CLASS practices. Taken together, interventions such as BEST in CLASS may yield higher levels of implementation quality and subsequently better outcomes when working with teachers who have less education or lower initial quality of instructional practice delivery. However, more research is needed to better understand the relations between teacher self-efficacy and implementation.

Finally, at the child-level, child problem behavior was not associated with teacher implementation of BEST in CLASS. This may be due to a lack of variability in the problem behavior of the children; all children were screened into the study by meeting a threshold of problem behavior indicative of risk for EBDs. Thus, teachers in the study were focusing their practices on children with similar levels of problem behavior. Regardless, this is surprising given other interventions have demonstrated program effects were only present for children with high levels of problem behavior; for instance, significant reductions in aggression were found only for the high-risk, aggressive children (e.g., Conduct Problems Prevention Research Group, 2002). Similarly, other interventions with a focus on academic skills indicate the most significant effects of high quality care are among children with fewest socioeconomic resources who often enter preschool cognitively behind their peers (Peisner-Feinberg & Burchinol, 1997). This work suggests intervention efforts may be most helpful to children who begin at low levels of psychosocial functioning or high levels of problem behavior in the context of Tier-1 programs. However, less is known about the extent to which entry level skills or behaviors influence outcomes in the context of Tier-2 programs (e.g., Domitrovich et al., 2008; Pas, Cash, O'Brennan, Debnam, & Bradshaw, 2015). Future work is needed to understand differences in child-level barriers and facilitators to implementation across Tier-1 and Tier-2 programs.

BEST in CLASS-E

BEST in CLASS–E was adapted from the framework of BEST in CLASS-PK through an iterative process (see Sutherland, Conroy, McLeod, Granger et al., 2019). It was adapted to enhance the feasibility of implementation and sustainability in early elementary classroom settings (kindergarten-3rd grade). Through this iterative process we uncovered facilitators and barriers to implementation and made several adaptations to the BEST in CLASS-PK framework to be responsive to the needs of elementary school teachers and students. Next we discuss developmental and implementation considerations and data from a feasibility study that was used to inform the final implementation model (see Sutherland et al., 2019 for a full review of model adaptation).

The first implementation barrier we encountered in the initial adaptation was aligning BEST in CLASS-E with developmentally appropriate practices for elementary school teachers and students. Salient differences exist between early childhood and elementary school contexts, which required a shift from practices appropriate for early childhood teachers and an early childhood context to practices that fit elementary school teachers and classrooms. For instance, preschool-age curricula focus upon implementation of developmentally appropriate practices (Copple & Bredekamp, 2009; Wolery & Hemmeter, 2011) and elementary school maintains a stronger focus on academic achievement (Sutherland, Lewis-Palmer, Stichter, & Morgan, 2008). Therefore, a particular focus of BEST in CLASS–E intervention development, and a significant change from the focus of BEST in CLASS–PK, was the identification of evidence-based practice elements (i.e., *Supportive Relationships, Rules, Precorrection, Opportunities to Respond, Behavior-Specific Praise, and Home-School Partnership*; see Sutherland, Conroy, McLeod, Kunemund et al., 2019) that are associated not only with student social-emotional learning and growth but also with student academic growth.

In addition to the developmental needs of early elementary students, we also considered barriers to implementation in regards to differences between early childhood and elementary school contexts. Early childhood classrooms are often comprised of a range of teacher-led learning activities and child-directed learning activities throughout the day (e.g., center-time, play, art, music, small group activities), while elementary school classrooms are more structured, giving students less time for child-directed learning activities and more time for teacher-led academic content. Additionally, elementary school teachers tend to have more formal professional preparation and training, teaching credentials, and certifications than teachers in early childhood settings (Pianta & Rimm-Kaufman, 2006). Early childhood and elementary school teachers also may have different behavioral expectations for their students based in large part on the different developmental and ecological contexts of early childhood classrooms versus elementary school classrooms and their training backgrounds (Pianta & Rimm-Kaufman, 2006).

To test these adaptations to BEST in CLASS-E we conducted a feasibility study, including eight teachers who were trained and coached on BEST in CLASS–E with 14 focal students (one to two students per classroom). Data collection included (a) direct observations of teacher and student behavior, including teacher implementation integrity, (b) teacher reports of student behavior and teacher self-efficacy, (c) teacher and coach ratings of effectiveness and feasibility of the practice elements, (d) teacher and family structured interviews, and (d) a coach focus group. Results indicate teachers' adherence and competence to the BEST in CLASS–E practice elements improved from pretest to posttest, serving as an initial indicator that the adaptations to BEST in CLASS-E were responsive to the barriers raised in the iterative design process. Teachers also reported small mean increases on the three subscales of the Teacher Sense of Self-Efficacy Scale (Tschannen-Moran & Hoy, 2001) from pretest to posttest. Additionally, positive changes were noted across subscales of the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001) and Social Skills Improvement System (SSIS; Gresham & Elliott, 2008) for focal students. While these data suggest training and coaching in the BEST in CLASS–E practice elements led to increased and higher quality delivery and some promise on student outcomes, qualitative data also informed adaptations to finalize the BEST in CLASS-E model.

Following the feasibility study, we conducted interviews with the eight teachers involved in the feasibility test, three coaches and 11 of the 14 families of focal students identified as at risk for EBD. Family interviews revealed some families felt less satisfied than teachers with the quality of home-school communication and there was a general lack of trust between families and teachers (Miller et al., 2017; Sutherland, Conroy, McLeod, Granger et al., 2019). At the same time, some families highlighted supports for home-school partnerships that included culturally sensitive collaboration with teachers that contributed to positive communication, and several families noted improved communication with their child's teacher. Teacher interviews mirrored some of the family concerns including a lack of trust between teachers and families, as well as highlighting the critical role played by BEST in CLASS coaches in facilitating meetings and ongoing collaborative relationships between families and teachers. Last, both coach and teacher interviews highlighted challenges with scheduling coaching meetings, indicating finding time during the school day for these meetings was difficult. These findings highlighted the importance of coaching as an implementation support for teachers to deliver the practice elements with focal students with adherence and competence, while acknowledging implementation barriers that may inhibit this important component.

Relatedly, the feasibility study also signaled that program implementation and success was influenced by principal support. In schools where the principal encouraged a partnership with BEST in CLASS teacher participation rates were higher and teachers were more amendable to begin working with their BEST in CLASS coach. Additionally, principal support helped to protect teacher's time for coaching meetings during the school day and in turn supporting teachers' participation in BEST in CLASS, which is important considering that this was a barrier identified by teachers.

Importantly, social acceptability findings indicate teachers felt comfortable with the intervention and training they received through BEST in CLASS and reported the intervention was highly useful for their classrooms (Conroy et al., 2014). To illustrate, in BEST in CLASS-PK teachers reported the intervention to be only minimally difficult to implement and minimally disruptive to their classroom. Teachers also reported the intervention required minimal to moderate amounts of time. Finally, they indicated that the intervention was highly useful in improving their classroom atmosphere and decreasing classroom problem behavior and that they were highly likely to continue using the BEST in CLASS intervention.

Discussion

Overall, recent findings from both BEST in CLASS-PK and BEST in CLASS-E indicate a need for focused efforts on examining the individual child- and teacher-characteristics, as well as classroom contexts, that may be leveraged to increase the likelihood of effective and successful program implementation, with a particular focus on using these factors to counterbalance a tendency toward

poor implementation of programs in authentic school settings. Findings inform not only the future development, implementation, and testing of BEST in CLASS but may also be generalized to other Tier-2 interventions with similar groups of children with and at risk for EBD.

Importance of treatment integrity

First, findings from previous studies solidify the importance of measuring and assessing treatment integrity as part of program evaluation. Our knowledge about BEST in CLASS-PK and BEST in CLASS-E is greatly enhanced by intentionally including continuous measures of multiple dimensions of treatment integrity and assessing these dimensions at several time points throughout the intervention in both treatment and control conditions. By going beyond a checklist style of measuring treatment integrity, BEST in CLASS avoids truncating the variance needed to assess program implementation (Sutherland et al., 2013). Moreover, assessing treatment integrity opens the door for research questions about factors that may influence implementation such as why variation in implementation exists, why variation in program outcomes exists, and how to best support implementation and outcomes across a range of settings and participants. Finally, future work may look to examine thresholds at which implementation quality begins to influence program outcomes, and supports that promote or hinder teachers' ability to deliver programs at each threshold. Treatment integrity measures that allow for variability across dimensions of integrity, such as the BiCACS and TIES, allow for such research.

BEST in CLASS implementation and individual level factors

Second, consistent with Domitrovich et al.'s (2008) model, this review emphasizes the importance of considering the connection between individual-level factors and quality of implementation. Across both BEST in CLASS-PK and BEST in CLASS-E teacher education and training were related to program implementation. In the PK trial, teacher education level influenced initial adherence and competence to the practices, while in the development of the elementary program significant adaptations to the model were needed based on education and training differences between early childhood and elementary school teachers. These findings are consistent with prior work suggests a relation between professional characteristics of service providers and program implementation. For example, a higher level of education in mental health clinicians was associated with more positive attitudes toward evidence-based practices (Aarons, 2004). However, other extant literature suggests mixed findings, hinting that years of education or experience may not be related to program fidelity (Ringwalt et al., 2003, 2002). Because teachers can vary widely in their education, experience, and expertise, it is important to continue to examine the influence of teacher education on program implementation. It will also be important for future work to examine growth in adherence and competence over time and how individual teacher level factors such as initial scores on adherence and competence influence growth trajectories.

BEST in CLASS implementation and classroom contextual factors

In addition to teacher-level factors, classroom quality also appears to influence treatment integrity of BEST in CLASS. In the PK trial, higher initial classroom organization predicted lower growth in adherence across time and higher initial emotional support scores predicted greater growth in both adherence and competence across time. Findings underline the importance of considering classroom context as a facilitator of treatment implementation. That is, we may be better positioned to implement programs such as BEST in CLASS by screening teachers for indicators of classroom quality (e.g., levels of classroom organization and emotional support) prior to program implementation, and then tailor coaching supports for teachers based on initial scores of classroom quality. In our future work we intend to examine the extent to which classroom level risk may influence teacher delivery of the program; prior work suggests classroom contexts (e.g., poverty-level of the

surrounding community, teacher turnover) may influence implementation quality (Durlak & DuPre, 2008). Preliminary findings from BEST in CLASS-E document our student population faced a high level of cumulative risk factors (e.g., toxic stress; learning problems; see Sutherland, Conroy, McLeod, Granger et al., 2019). In future studies we plan to examine how classroom level risk composition may moderate teacher delivery of the BEST in CLASS practices and associated student outcomes.

BEST in CLASS implementation and school level factors

Finally, across both BEST in CLASS-PK and BEST in CLASS-E program implementation and success was influenced by school and program level factors such as principal support. To illustrate, schools in which principals were supportive and encouraged teacher participation and buy-in to program efforts were more likely to be amenable to scheduling coaching meetings and supporting training efforts. This is consistent with prior work supporting a significant main effect for principal support and a significant interaction between principal support and the fidelity of teacher's implementation on student outcomes in a school based mental health program; when both of these factors were high, students improved significantly on all outcomes (Kam, Greenberg, & Walls, 2003). Additionally, supportive principals with a general positive feeling toward the program help the program run smoothly in the school, rather than acting indifferently or even creating obstacles to implementation, resulting in higher quality implementation (Berends et al. 2002; Farrell, Meyer, & White, 2001; Kam et al., 2003; Payne, 2009; Payne, Gottfredson, & Gottfredson, 2006). In future work, researchers must recognize the importance of principal and teacher buy in for successful program outcomes and sustainability.

Conclusion

Sustaining high-quality levels of BEST in CLASS treatment integrity by teachers continues to be a challenge. Factors such as individual child- and teacher-characteristics, as well as classroom contexts are linked to both increases and decreases in the likelihood of effective and successful implementation. Continued research is needed to more fully understand connections between child, teacher, and classroom factors, treatment integrity, and implementation quality. The experiences implementing BEST in CLASS-PK and BEST in CLASS-E serve as a springboard from which future intervention work can consider barriers and facilitators to delivery and outcomes when designing effective programs. As such, the current paper is one more step forward in the process of better understanding these relations, and one that will hopefully lead to more efficient and sustainable models of program delivery in early childhood and elementary school settings.

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