



# Contexts and Mechanisms for Implementation Success: A Realist Evaluation of Behavior Checker in Integrated Primary Care

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## Abstract

Despite the increased knowledge of the contextual determinants of implementation, the mechanisms leading to implementation success are not well understood. Explicating and testing program theories underlying implementation strategies designed through participatory processes involving intervention users with the expert knowledge of the practice context can lead to a better understanding of strategies that work in a real-world implementation. The purpose of this study was to identify facilitating and interfering contexts and mechanisms in implementing a pilot parenting intervention, Behavior Checker, as a part of routine service delivery in a rural primary care facility in the USA. This study was an organizational case study informed by the realist evaluation paradigm. Multiple methods of data collection were used, including key informant interviews with organizational representatives, a focus group and surveys with healthcare staff, and direct observation. The results indicated that the following mechanisms were central to facilitating and interfering with Behavior Checker implementation in the participating clinic: (1) staff knowledge and confidence; (2) complexity compression; (3) perceptions of sustainability; (4) workflow efficiency; (5) a systematic method of prompting intervention delivery and documentation; (6) capability for ongoing performance evaluation; (7) perception of fit; and (8) innovation-specific and general organizational resources. Understanding mechanisms can contribute to identifying strategies that support successful implementation and sustainable adoption of interventions that may benefit society.

In the past several decades, the field of implementation science has made substantial progress in increasing the knowledge of various contextual determinants of implementation by developing theoretical frameworks and operationalizing relevant constructs in multiple domains (Damschroder et al., 2009; Proctor et al., 2009, 2011). Yet many unanswered questions remain about the mechanisms that lead to the successful implementation of an intervention (Powell et al., 2019). Program developers and adopters continue following the paths of failed implementation with limited evidence-informed guidance in developing effective implementation strategies (Fernandez et al., 2019).

Implementation strategies are methods and techniques used to enhance the adoption, implementation, and sustainability of interventions (Proctor et al., 2013). One way to

increase the knowledge of effective implementation strategies is to examine implementation strategies purposely designed based on theoretical models of implementation considering contextual determinants that are specific to the practice context (Powell et al., 2017; Proctor et al., 2013). Various models have been used to guide the process of developing tailored implementation strategies through participatory processes engaging community stakeholders (Powell et al., 2017), which have been increasingly used in implementation studies (Eldredge et al., 2016; Farley et al., 2013; Green et al., 2012).

Another strategy to build knowledge of effective implementation strategies, one that is less commonly utilized, is to conduct systematic inquiries into the implementation strategies designed collaboratively involving intervention adopters. Intervention adopters possess a wealth of knowledge regarding contextual barriers and facilitators of implementation owing to their proximity and ongoing exposure to the specific practice context. On many occasions, they are also the end-users and direct beneficiaries of the interventions to be adopted. Thus, implementation strategies designed through participatory processes involving intervention users

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are more likely to be acceptable and feasibly implemented in a specific practice context. Systematic inquiries into the rationales underlying implementation strategies designed by intervention users can lead to innovation and a better understanding of implementation strategies that work in practice (Evans & Scarborough, 2014; Pronovost et al., 2008).

In this study, we examined implementation strategies collaboratively designed by a team of practitioners, healthcare organizational leaders, program developers, and researchers to integrate an evidence-informed parenting intervention, Behavior Checker (BC) (Moon et al., 2021), into routine service delivery in a rural primary care clinic in the USA. The purpose of this study was to explore how the core implementation strategies shaped BC integration efforts in the unique context of the participating Federally Qualified Health Center (FQHC). Beyond examining whether or not the implementation strategies worked, we sought to identify contextual conditions and mechanisms that facilitated and/or hindered BC adoption, a type of inquiry systematically embedded within the Realist Evaluation approach.

## Realist Evaluation

Realist evaluation (RE) is a type of program evaluation that emerged at the turn of the century, rooted in the philosophical tradition of critical realism that recognizes the social world “as an open system or a constellation of structure, mechanisms, and contexts” (Kazi, 2003, p. 804). As such, RE is based on the propositions that outcomes follow from “*mechanisms acting in context*” (Pawson & Tilley, 1997, p. 58) and that intervention effectiveness is rooted in the social reality constructed by an interplay between the program and the context. RE assumes that the implementation of an intervention introduces resources that interact with the practice context, activating mechanisms that are unique to the context, which lead to various intended and unintended outcomes. Therefore, the purpose of a realist evaluation study is to uncover these pathways by identifying the Context-Mechanism-Outcome (CMO) configurations, a heuristic used to expound the pathways of an intervention leading to outcomes (Ebenso et al., 2019).

Pawson and Tilley (1997), the pioneers of the realist evaluation approach, described context as the conditions present when interventions occur, which encompass *individual capabilities of key actors, the interpersonal relationships supporting the intervention, and the institutional settings* (Pawson & Tilley, 1997). Later, scholars expanded on this initial definition, considering wider contexts such as policies, rules, and regulations (Maluka et al., 2011) as well as culture (De Souza, 2013).

Mechanisms are the processes through which various intervention elements lead to outcomes through the interactions with the context, i.e., the central processes of what makes an intervention work (Pawson & Tilley, 1997). Mechanisms are the combination of the “stakeholders’ choices (reasoning) and their capacity (resources) (Pawson & Tilley, 1997, p. 66), which are constrained and shaped by external structures (Dalkin et al., 2015). Outcomes are the results of interventions such as successful social change, limited social change, or strengthened preexistent structures (De Souza, 2013).

## Realist Evaluation in Implementation Science

Realist evaluation is an emerging approach to Implementation Science research, particularly well-suited to elucidate mechanisms working in context during real-life implementation (Dalkin et al., 2015). Identifying mechanisms of implementation success has been increasingly emphasized as an important agenda to further advance the field of implementation science by contributing to the knowledge of why and how particular implementation strategies do or do not work under what contextual conditions (Lewis et al., 2020). Most recent implementation studies are informed by theoretical frameworks of implementation such as the Consolidated Framework for Implementation Research (CFIR), Theoretical Domains Framework (TDF), and the Active Implementation Framework (AIF), reflecting an important advancement in the field. However, studies of mechanisms in implementation research are still relatively new albeit growing lately (Lewis et al., 2020). The realist evaluation approach can provide a conceptual foundation as well as the structure for mechanistic research in implementation science, opening the *black box* of what works, for whom, and under what circumstances (Salter & Kothari, 2014; Scriven, 1994).

## Program Theories in Realist Evaluation

Constructing Context-Mechanism-Outcome (CMO) configurations in a realist evaluation study is a central process of refining *program theories*, i.e., theories of how a program, intervention, or policy is expected to generate intended outcomes (Rogers et al., 2000). Those who design implementation strategies have their rationales or hypotheses regarding how their strategies would work, which are often implicitly embedded within their implementation design. Leeuw (2003) proposed methods of constructing program theories, suggesting that the following statements made by the stakeholders provide some insights in explicating the program theories underlying programs to be adopted:

“In our opinion, the best way to go about this problem is to...”

“The only way to solve this problem is to...”

“Our institution’s x years of experience tells us that...”

When these statements are written as conditional propositions of “if–then”, they can reveal the hypotheses that link the strategies with the expected outcomes. Thus, explicating program theories underlying implementation strategies, which are collaboratively designed with intervention users can be beneficial as they can point to the users’ rationale for the chosen strategies in the given practice context.

## Positive Parenting in Primary Care

In this study, we sought to uncover the CMO configurations pertaining to the effort to implement a parenting intervention, Behavior Checker, as a part of routine service delivery in an integrated primary care clinic located in an under-resourced rural community in the USA. While positive effects of behavioral parenting interventions have been well documented, beneficiaries have been typically limited to parents with identified needs such as families involved with child protective services or parents of children with physical and mental disabilities (Barth & Liggett-Creel, 2014). Primary care has been increasingly recognized as an ideal platform to further disseminate evidence-based positive discipline strategies considering parents’ ongoing access to primary care with no stigma as well as the perception toward healthcare providers as a trustworthy source of information regarding positive discipline strategies (Leslie et al., 2016; Perrin et al., 2016). Several studies have examined the effects of primary care-based parenting with varied types, dosage, intensity, providers, and, delivery format (Moon et al., 2020). While these studies reported promising results (Shah et al., 2016), little has been studied regarding implementation strategies that take into account such issues as the limited resources, staffing, space, and time constraints within the highly structured organizational context of primary care (Moon et al., 2020).

Behavior Checker is one of the few parenting interventions with explicit implementation strategies that are designed to integrate the intervention into the primary care system (Moon et al., 2021). The developers of Behavior Checker packaged evidence-based positive discipline strategies, which are collectively referred to as the Mind-S.E.T. skills, including self-talk (S), empathy (E), and teaching (T), into a routinely accessible tool in primary care (Unell & Wyckoff, 2016). *Self-talk* helps parents to regulate their own emotions through positive self-talk before intervening to manage difficult behaviors of children (Unell & Wyckoff, 2016; Wyckoff & Unell, 2019). *Empathy* focuses on

increasing parents’ empathy toward children exhibiting challenging behaviors by developing realistic expectations according to their developmental stage. Lastly, *Teaching* skills equip parents with tools to teach positive behaviors proactively instead of reacting to challenging behaviors (Moon et al., 2021, 2021; Unell & Wyckoff, 2016; Wyckoff & Unell, 2019).

While primary care staff often encounter parents asking questions, expressing concerns, and seeking advice regarding behavioral issues of children, they feel inadequately equipped to address them, which are missed opportunities to further disseminate evidence-based positive parenting strategies (Moon et al., 2021). Thus, the primary goal of Behavior Checker is to help primary care staff to educate parents in positive discipline strategies using the scripts (i.e., behavioral prescriptions) written based on Mind-S.E.T. skills. A pilot study conducted in an urban academic-affiliated pediatric clinic reported promising results regarding Behavior Checker staff training on improving staff knowledge and confidence in parenting education in primary care (Moon et al., 2021).

## The Objectives of the Study

The present study sought to identify the contexts and mechanisms that facilitated and interfered with the Behavior Checker implementation through the following objectives; (1) explicating the initial program theories underlying Behavior Checker implementation strategies; (2) identifying contextual conditions of the participating rural FQHC (contexts) that uniquely shaped Behavior Checker implementation as well as the mechanisms (mechanisms) that influenced Behavior Checker adoption (outcomes) in the given context; and (3) refining the initial program theories by formulating CMO configurations based on the contexts and mechanisms identified. This study was approved by the Institutional Review Board of the University of Kansas Medical Center.

## Method

### Background

This study was conducted through a community partnership comprised a university-affiliated Research and Development (R&D) center, a non-profit parenting organization, and a FQHC where Behavior Checker was implemented. The FQHC was in a Health Professional Shortage Area in a Midwestern state of the USA, a community characterized by high rates of poverty and other adversities as well as limited

access to healthcare. Approximately, 40% of clients served by this clinic were pediatric populations.

Core implementation strategies of Behavior Checker include (1) organization-wide staff education and training; (2) workflow mapping; (3) Electronic Health Record (EHR) system integration; and (4) environmental interventions including the strategic use of promotional materials such as brochures and posters to create an organizational culture and climate that is conducive positive parenting promotion (Moon et al., 2021). These strategies were developed based on input from healthcare providers, organizational leaders, information technology (IT) specialists prior to this study.

To ensure the implementation strategies fit the specific clinic context of the participating FQHC, an implementation team was formed, which comprised organizational representatives, clinical directors, healthcare providers representing multiple disciplines as well as non-clinical support staff. Monthly check-in meetings were held in addition to other meetings scheduled as needed to discuss implementation challenges and brainstorm solutions.

## Study Design

This study was a single organizational case study informed by the realist evaluation paradigm. Case studies ask “how” and “why” questions regarding complex social phenomena over which researchers have limited ability to control (Yin, 2003). In contrast to the traditional evaluation studies that seek to generate population inference from representative samples through statistical generalization, a case study contributes to knowledge building through analytic generalization by validating and refining theories based on empirical data (Webb, 2012). Thus, the case study design embedded within the realist evaluation approach provided frames of inquiry that uniquely fit the purpose of the current study.

## Participants

We conducted a total of 16 interviews and one focus group (dyad). Eleven interviews were conducted with the representatives and administrators of the three organizations that participated in the study, 2 with physicians, 2 with healthcare support staff, and 1 with an Information Technology (IT) specialist. The focus group was originally scheduled with clinical and non-clinical staff but only 2 non-clinical staff were able to attend due to a clinic issue on the day of the scheduled focus group.

Among the 22 staff who attended Behavior Checker training, 13 participants submitted the knowledge and confidence surveys. All survey participants were female, and 9 of them were parents. Participants represented multiple disciplines, including medicine, nursing, dental, behavioral health,

administration, case management, and care coordination. The average age of the participants was 35.

Direct observations of 15 meetings (formal implementation planning meetings, the debrief meeting for Behavior Checker in-person training, and monthly online check-in meetings with staff members) and one account of natural observation of the routine clinic workflow were made.

## Phases of Study and Procedures

The present study was conducted over 18 months from August 2017 through February 2019 throughout three phases including (1) pre-training phase; (2) post-training phase; and (3) initial implementation phase. Each phase had a different focus aligned with a specific objective of this study, which dictated the choice of the data sources and data collection as well as the analysis methods.

### Pre-Training Phase

The pre-training phase focused on the first objective of the study, which was to explicate program theories underlying Behavior Checker implementation strategies. Data sources and data collection strategies included a review of the Behavior Checker program manual, interviews with the implementation team members, and the observation of the natural clinic workflow. Interviewees were selected through the purposive sampling approach, which included hospital administrators, department directors, organizational representatives, as well as other opinion leaders who were identified through leadership recommendations. The opinion leaders included healthcare staff including nurses, social workers, dental hygienists, physicians, and other support staff who provided diverse perspectives according to the different roles they would play in implementing Behavior Checker.

The interview guide, meeting observation template, and the codebook were developed based on the Consolidated Framework for Implementation Research (CFIR), one of the most comprehensive frameworks that contain various contextual determinants of implementation at the individual, organizational, and environmental levels (Damschroder et al., 2009). The CFIR was ideal to provide a backbone for the framework that guided this study due to its breadth and comprehensiveness, encompassing various contextual determinants of implementation in multiple domains including the inner setting, outer setting, intervention characteristics, and key processes domains. Several domains and subdomains from an integrated healthcare framework, the Context and Capabilities for Integrating Care (CCIC) (Evans et al., 2016), were also added to capture contexts that are specific to the integrated healthcare setting. More details regarding the domains and subdomains in the integrated framework



that guided this study can be found elsewhere (Moon & Ballard, 2020).

During the first half of the semi-structured interviews, participants were asked to openly share their anticipation as to what would facilitate and/or interfere with Behavior Checker implementation. The second half of the interviews were conducted using the graphic elicitation technique (Crilly, 2006), showing a diagram depicting the CFIR dimensions to participants to draw their attention to all relevant domains of implementation.

The analysis of data focused on explicating the initial program theories underlying Behavior Checker implementation strategies, which were implicitly or explicitly indicated by the program manual and interviewee's rationale. The interview data were transcribed by a professional transcription company and imported into Dedoose, an online software that allows real-time collaboration among multiple researchers (Salmona et al., 2019). Data were analyzed using the thematic analysis technique utilizing both deductive and inductive approaches while iteratively revising the codebook based on new or conflicting themes.

### Post-Training Phase

This phase focused on examining the effects of staff training and exploring staff perspectives of their training experiences, which were relevant to the second and the third objectives of this study. The staff training was one of the core strategies for Behavior Checker implementation. Additionally, as will be discussed in more detail when presenting the initial program theories underlying BC implementation strategies in the results section, improved knowledge and level of confidence around parenting education among staff as a result of the staff training was expected to be an important facilitating mechanism. Therefore, examining the impact of training was deemed necessary to formulate CMOs.

Data sources and data collection methods included pre- and post-training surveys for healthcare and support staff who participated in the Behavior Checker training. The survey included items related to their level of knowledge and confidence around parenting education with slight modifications from the original survey used in a previous study of Behavior Checker staff training in another clinic setting (Moon et al., 2021). Another source of data came from observing a 90-min training de-brief meeting.

The analysis of the post-training data focused on supporting or refuting the initial program theory related to staff training. Following the mixed method approach (Creswell et al., 2011), the analysis of the data collected during this phase involved merging both quantitative and qualitative data with the intention to report both results reflecting convergence (agreement) or dissonance (contradictions) (Farmer et al., 2006; Hopf et al., 2016; O'Cathain et al.,

2010). Survey data were analyzed using descriptive methods and paired samples t-tests to compare mean differences between pre- and post-training knowledge and confidence scores using SPSS. The training de-brief meeting was transcribed verbatim by a professional transcription company and was analyzed using the thematic analysis technique based on the same codebook developed for the interviews and the focus group.

### Initial Implementation Phase

This phase focused on the objectives of identifying contexts and mechanisms that shaped Behavior Checker implementation and refining the initial program theories by formulating CMO configurations underlying each core strategy of Behavior Checker implementation. Data sources and collection methods included interviews with organizational leaders, healthcare providers, and staff represented in the implementation team as well as an IT specialist. Additionally, a focus group was conducted with non-clinical staff, and implementation check-in meetings and other relevant meetings continued to be observed. The focus group primarily addressed the same questions as the interviews with a few additional questions related to Behavior Checker delivery.

The same interview guides and the observation template used during the pre-training data collection phase were utilized with slight modifications to fit the purpose of constructing CMOs around the core implementation strategies. Observation data were collected using a variety of different methods such as Zoom recording for virtual meetings, narrative documentation of the real-time events attended in person, and note-taking.

Data were imported into Dedoose along with the observation data, which was imported in the form of transcriptions of virtual meetings and notes taken during in-person observation. Data were analyzed using the thematic analysis technique as described earlier, but the data analysis during this phase also involved mapping the themes and categories that emerged through the thematic analysis onto the CMO configurations.

A doctoral student who had taken courses in qualitative research and was experienced in qualitative data analysis assisted the coding process. The training center feature in the Dedoose software was used to ensure coding inter-rater reliability until the pulled Cohen's Kappa values between the two researchers consistently stayed within the range of good agreement (Kappa value of 65–80). The initial CMO configurations were presented to the interviewees for confirmation and feedback, based on which the configurations were further refined. Informed consent was obtained from all participants prior to data collection.

During this phase, the transfer of the in-person training contents into the online platform was completed, and staff

who did not take the in-person training were invited to take the self-paced online training. Three more staff completed the training and the feedback survey, which was identical to the survey administered following the in-person training and added to the analysis of the survey results. Table 1 provides a summary of the data collection methods used in each data collection phase.

## Results

### Initial Program Theories

The initial program theories underlying Behavior Checker implementation strategies, which were explicated based on the first phase of data collection are summarized below;

- Organization-wide staff education and training will improve staff knowledge and confidence in parenting education, thereby increasing Behavior Checker adoption.
- Workflow integration will increase the efficiency of Behavior Checker delivery, thereby, facilitating routine utilization and sustainable adoption of Behavior Checker.
- Electronic Health Record (EHR) system integration will support efficient and standardized delivery and documentation of Behavior Checker, thereby facilitating workflow integration and, in turn, routine utilization of Behavior Checker.
- Multi-component environmental interventions will shape clinic culture that normalizes and reinforces parenting education, thereby facilitating Behavior Checker adoption.

### Contexts-Mechanisms-Outcome (CMO) Configurations

In total, seven CMOs were configured based on the data collected during the post-training and the initial implementation phases, including four CMOs developed by refining the initial program theories underlying the four core implementation strategies and three CMOs that were newly constructed based on real-life implementation data.

### CMO #1: Staff Training

Although *Behavior Checker training* (program resources) *improved staff knowledge and confidence* (facilitating mechanism) in parenting education, *training delivered in a busy clinic environment within a limited timeframe* (context) *increased staff's complexity compression* (interfering mechanism), which negatively influenced *Behavior Checker adoption* (unintended outcome).

A paired samples t-test was conducted to compare the staff's level of confidence in educating parents in positive disciplines before and after participation in the Behavior Checker training. The results indicated that participants' post-training confidence scores were significantly higher ( $M = 10.46$ ,  $SD = 4.38$ ) than pre-training scores ( $M = 6.54$ ,  $SD = 2.90$ ) [ $t(12) = -6.117$ ,  $p < 0.001$ ]. Similarly, the staff's knowledge of positive discipline strategies at the post-training phase ( $M = 56.82$ ,  $SD = 4.38$ ) was significantly higher than their pre-training scores ( $M = 35.00$ ,  $SD = 10.29$ ) [ $t(10) = -8.701$ ,  $p < 0.001$ ].

Qualitative data analysis revealed a central theme of *complexity compression*, a phenomenon experienced by someone who is "expected to assume additional, unplanned responsibilities while simultaneously conducting their multiple responsibilities in a condensed time frame" (Krichbaum et al., 2007, p. 86). Complexity compression was evident among staff with limited prior knowledge in relevant topics, which was associated with the fast-paced and intensive clinic environment coupled with the training delivered within a condensed timeframe. Additionally, the training included limited implementation information, and staff members were unsure of what changes would follow, perceiving Behavior Checker as "one more thing" to do.

### CMO #2: Workflow Integration

While workflow integration *increased the efficiency of Behavior Checker delivery* (intended outcome), the processes were dictated by the *procedural norms rooted in the clinic culture* (context and mechanism),

**Table 1** Data collection phases and methods

Method	Phases				Data sources
	I	II	III	IV	
Key informant interviews	X			X	Organizational representatives, departmental directors, healthcare staff
Focus group				X	Organizational representatives, Healthcare staff
Direct observations	X	X	X	X	Meetings, informal interactions
Surveys		X		X	Healthcare staff

resulting in *unplanned adaptation of the Behavior Checker implementation* (unintended outcome).

Workflow integration efforts entailed re-defining staff roles, i.e., who will be doing what in the implementation of Behavior Checker. Data revealed that such processes reflect and are dictated by the procedural norms that are rooted in the organizational culture. Behavior Checker is designed to be delivered by all health professionals. However, most staff in the participating clinic believed that it was the physicians' job to deliver the intervention while others play supportive roles since that is "how things get done" in this clinic. Consequently, each staff used Behavior Checker in an individualized manner. For example, non-physician staff used Behavior Checker to share parenting resources:

"...I use a combination of the cards and direct the parents to the website to teach them how to utilize that [care coordinator]."

On the other hand, physicians and behavioral health specialists used Behavior Checker to discuss Mind-S.E.T skills with parents for specific behavioral issues.

"...when I have a parent who talks about a concern or I see an issue in the room then I will mention it. And we actually have the books covered in the room so I can go, 'Aha!' and I grab the book and I show them how to use it... [Physician]"

Thus, the pattern of Behavior Checker delivery was dictated by the procedural norms rooted in the clinic culture, resulting in unplanned implementation adaptations.

### CMO #3: Electronic Health Record (EHR) System Integration

*In the fast-paced data-driven clinic environment (context), EHR integration challenges interfered with routine utilization of Behavior Checker (outcome) due to the lack of a systematic method of prompting the delivery (mechanism 1) of Behavior Checker for clinicians and ongoing performance evaluation (mechanism 2) for leadership.*

EHR integration was considered as the most ideal path to achieve *efficiency* in delivering Behavior Checker. However, due to the mismatch between the clinic's EHR platform and the features supported by Behavior Checker, the integration could not be achieved as intended. Instead, staff clicked the link to the Behavior Checker website on their laptops to search for discipline strategies for specific behavioral issues. The documentation template that was created in the EHR was not fully integrated into the main platform. As a result, the review of EHR showed no documentation at the time of the final data collection phase. EHR integration challenges interfered with Behavior Checker adoption via mechanisms

other than efficiency; 1) a lack of systematic pathways to prompt Behavior Checker delivery, and 2) challenges with ongoing documentation as seen in the following statements:

"I tend to forget to use it, but definitely when I have a parent who talks about a concern or I see an issue in the room then I will mention it [Physician]."

"...it doesn't really remind staff. They still have to know to ask that question to the parents... [IT specialist]"

The clinic leadership also perceived the lack of systemic pathways to prompt Behavior Checker delivery as an important obstacle due to the inability to evaluate Behavior Checker usage in an ongoing manner as indicated by the following statements:

"What I would like is to know that if this percentage of people come in who present with a toileting issue, that 75% of them had a conversation with a nurse or a provider and we specifically talked about it in a way that focused on helping parents to be better parents... See, I don't know that [it is actually happening]."

### CMO #4: Environmental Interventions

No sufficient data were collected to test the program theory concerning the environmental interventions as most staff reported not having opportunities to observe parental reactions regarding promotional materials. A comment from a staff member also alluded to the possibility of implementation deviations:

"I don't know if we need to make the signs bigger... maybe if it was a little more eye catch thing...it's not in the parents' direct line of sight..."

### CMO #5: Perceptions of Sustainability

*Strategies to maintain staff competence (program resources) increased leadership perception of sustainability (facilitating mechanism) in the context of frequent turnover and interdepartmental shifts (context), thereby facilitating Behavior Checker integration efforts. (outcome)*

Data supported a formulation of a new CMO concerning staff education and training. Ongoing training of new employees in the context of frequent turnover created challenges in sustaining the Behavior Checker implementation efforts, which made web-based training necessary. Having the plans to sustain staff competence through web-based training positively contributed to leadership commitment to continue implementing Behavior Checker via increased perceptions of sustainability.

“...the impact is still very small simply because of how the organization changes so rapidly, and the shuffling of staff to different positions, and trying to get everyone trained and they’re consistent in what they’re doing has been probably our biggest challenge.”

“...we found that online training was necessary...due to refreshing our coworkers who are here...we would have to be training people face to face which would’ve been just impossible almost...to take people out of the clinic for eight hours a day, have other people cover it, the logistics weren’t good.”

#### CMO #6: Perception of Fit

*The heightened awareness of the service gap (context) and the fitting resources provided by Behavior Checker (program resources) increased clinic stakeholders’ perception of fit (mechanism), facilitating leadership’s decision to adopt Behavior Checker (outcome).*

The administrators and departmental directors of the hospital had been aware of the missed opportunities to promote positive parenting due to staff’s limited knowledge and a lack of structure in parenting guidance and perceived Behavior Checker as an ideal fit to address this gap, which was an important decision factor in adopting Behavior Checker:

“Many of our staff members...don’t feel they’re qualified to provide advice or guidance, or they just provide advice and guidance off the hip. It’s not necessarily structured. My desire, our hope was that we would have a little bit more of a structured conversation when we hear things from parents.”

#### CMO #7: Resources

*Building upon the general organizational resources (context), partnering (key process) allowed leveraging resources and sharing expertise (mechanism), increasing innovation-specific resources to pursue innovation (outcome).*

The participating clinic was able to obtain resources by partnering with the R&D center and the non-profit organization. The financial and human resources secured through partnering fueled Behavior Checker integration efforts building on the existing resources available through the clinic as a FQHC such as co-located behavioral health specialists and other features of integrated healthcare. Clinic stakeholders perceived that these existing organizational resources would be crucial in the successful integration of Behavior Checker as seen in the following statement made by a physician:

“I’m able to pull the behavioral health consultant over if I need her to come in and talk with a parent about

parenting issues, or behavior issues, or a teen suffering from severe depression who needs counseling. She’s right there to help me with that and can provide some limited counseling longer term.”

Additionally, the flexibility of the FQHC funding mechanism allowed the clinic to allocate existing resources to support Behavior Checker integration:

“One of the reasons that the FQHC can look at this innovation and look at a way to adopt it is because of that funding structure...FQHC can adopt this as a culture, and they can deliver it and bring it into the scope of their care...But other clinics might say if I can’t bill for it, I’m not going to look at it or learn from it. There’s no funding source that goes with the product.”

## Discussion

The purpose of this study was to identify contexts and mechanisms that facilitated and interfered with the routine implementation of Behavior Checker in a rural primary care clinic. The program theories refined or developed through the present study in the form of CMOs pointed to several core mechanisms that can facilitate or interfere with Behavior Checker implementation.

The CMO concerning staff training highlights increasing and maintaining staff competence as central concerns for the sustainable adoption and implementation of Behavior Checker. Although child behaviors and positive disciplines are topics directly relevant to pediatric care, medical professionals generally receive limited education and training in behavioral health (Smith et al., 2014). Behavioral health workforce development is an ongoing issue that is exacerbated in the rural and frontier context (Han & Ku, 2019). Rural clinics have limited capacity to internally draw resources to train staff and may have to rely on external sources for ongoing training of staff. Therefore, implementation strategies that include concrete plans to maintain staff competence are likely to be favored by organizational leaders in rural healthcare settings.

Another CMO revealed that while staff training was generally helpful in increasing content knowledge and confidence, it also created the adverse effects of increasing complexity compression (CC) among staff. The concept of CC, an understudied topic, first appeared in the nursing literature to capture the nature of nursing workflow that involves assuming multiple roles simultaneously and frequent shifting between tasks due to frequent staff turnover and increasing system complexity within healthcare (Krichbaum et al., 2007, 2011). Containing CC was a central concern for the clinic leadership in their effort to engage frontline staff in the Behavior Checker implementation efforts, which warrants



further studies into CC as a possible mechanism that can influence implementation success. Additionally, the results highlight the importance of strategic planning around training structure, content, timing, and an appropriate dosage of training to minimize CC among the frontline staff members.

In this study, Electronic Health Record (EHR) integration was one strategy used by the implementation team to minimize CC as staff perceived it as the most ideal path to efficiency in delivering Behavior Checker. Consequently, EHR integration challenges were perceived as a major barrier to the Behavior Checker implementation efforts via two different mechanisms for clinicians and leadership. For clinicians, the major barrier was the lack of systematic pathways to prompt the intervention delivery while for leadership, the inability to perform an ongoing evaluation was perceived as a major barrier.

The results suggest that without these core mechanisms supported through EHR integration, sustainable integration of a new intervention into routine primary care workflow may not be feasible in healthcare settings that increasingly depend on EHR for daily operation. Additionally, the results endorse the suggestion that integrated care development should involve investing in information technology development, which is likely to require external support at the technical and financial levels (Jetelina et al., 2018). Although EHR is used in many primary care clinics, the role of EHR in delivering integrated healthcare is not well understood (Woodson et al., 2018). Studies suggest that existing EHR systems are not designed to fully support activities that are common to integrated healthcare settings such as documenting, tracking, coordinating among multidisciplinary teams, and exchanging information between different EHR systems (Cifuentes et al., 2015). Further studies are needed to better understand the role of EHR integration in implementing behavioral health interventions in integrated healthcare settings.

The CMO related to workflow integration points to the need for explicit implementation fidelity measures in anticipation of the unplanned adaptation that may occur based on the procedural norms rooted in clinic culture. Integrating a new intervention into a practice setting entails redefining roles to which staff may or may not be susceptible. Task shifting, i.e., “delegating tasks to existing or new cadres with either less training or narrowly tailored training” (Fulton et al., 2011, p. 2) is a strategy increasingly used to alleviate workforce shortage issues (Maier & Aiken, 2016). Task shifting has important implications in the rural context where behavioral health specialists are typically limited. When the implementation of a new intervention involves task-shifting, adequate preparation may be needed to prepare staff readiness to take on tasks beyond their traditional roles.

The CMO related to perceptions of fit highlights the importance of user perceptions of an intervention as an

ideal fit to fill the identified service gap. The findings further endorse models of intervention development that involve collaboration among researchers, intervention developers, and practitioners to increase fit. Additionally, the CMO related to resources highlights the importance of both innovation-specific and general organizational resources. Implementation success largely depends on the organizational capacity to carry out tasks that are often resource-intensive. Concerted efforts are needed at the macro and mezzo levels to increase healthcare organizational capacity in resource-depleted areas through redistribution of resources, strengthening healthcare provider networks, incentivizing strategic community partnerships for resource sharing.

The implementation strategies used in this study overlap with the several discrete implementation strategies included in the compilation of the Expert Recommendations for Implementing Change (ERIC) such as staff education, revising professional roles, changing health records systems for ongoing quality management, and building a coalition (Powell et al., 2011, 2015). While a list of implementation strategies can guide program adopters' selection of implementation strategies, their effects on implementation outcomes may vary depending on the practice context. Therefore, identifying core mechanisms and the essential characteristics of contextual conditions that make particular implementation strategies more or less effective can suggest topics to consider when these strategies are utilized. Waltz et al. (2019) recently developed the CFIR-ERIC Implementation Strategy Matching Tool that can guide the selection of implementation strategies specifically suited to address known implementation barriers. Further studies into the contexts and mechanisms can maximize the utility of such tools by informing stakeholders of the factors to manipulate when utilizing recommended implementation strategies to achieve intended implementation outcomes within the specific contextual constraints.

## Strengths and Limitations

This study has several limitations. Most importantly, due to the changes in the clinic environment, shifting priorities, and other challenges associated with implementation, the study covered only the initial phase of implementation. Thus, the data collected from this study may have been too premature to provide a more complete understanding of the Behavior Checker implementation processes. Additionally, considering the limited number of Behavior Checker training participants and respondents to the training survey, the results from the quantitative analyses of the training effects on participants' confidence and knowledge should be interpreted with caution. The qualitative data from the training feedback group served the purpose of triangulation, providing additional insights regarding staff experience in participating in

the Behavior Checker training. In general, soliciting staff participation in the data collection was challenging as patient needs and clinical emergencies took priority over research participation. For example, the dyad was originally intended to be a focus group, but several staff members were not present due to the unexpected clinic issues and rescheduling was not an option. Additionally, about a half of the staff members who attended Behavior Checker training did not submit the survey, and the characteristics of non-participants were not collected, which raises the issue of reporting bias in the analysis of the survey results.

Furthermore, due to the inability to fully integrate Behavior Checker into the EHR system as intended, the initial plan to collect the EHR data was not successful, and therefore, the staff's Behavior Checker utilization rate could not be accurately determined. The qualitative data collected through observation of meetings provided relevant information, which relied on providers' self-report.

Lastly, other implementation strategies suggested by implementation science literature such as involving executive boards, identifying and preparing champions, using workgroups, and organizing clinician implementation team meetings were not explicitly stated as the core implementation strategies for Behavior Checker. Therefore, no systematic inquiries were made around such strategies, which were important aspects of the Behavior Checker integration efforts. As such, readers should be mindful of the possible influences that these strategies might have had on shaping the implementation context in this study.

## Conclusion and Recommendation

Our realist analyses suggest that the following features facilitated positive parenting promotion through Behavior Checker implementation in the participating clinic: (1) plans for sustainable workforce development; (2) implementation fidelity measures to prevent implementation deviation; (3) efficient access, systematic methods of prompting delivery, documentation, and means for ongoing performance evaluation through EHR integration; (4) fit between program resources and clinic needs; (5) innovation-specific resources secured through organizational partnerships; and (6) general organizational resources that can augment innovation-specific resources. Healthcare organizations seeking to adopt behavioral parenting interventions such as Behavior Checker into their routine service delivery can consider strategies that activate the core facilitating mechanisms identified in this study in the given practice context. Realist evaluation design may contribute to advance the field of implementation science by providing a model of inquiries that can uncover contexts and mechanisms leading to implementation success. Considering the resource-intensive nature of realist

inquiries through heavy immersion into the practice context, a strong academic-healthcare partnership may be necessary to promote such a line of research.

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## Declarations

**Conflict of interest** We have no known conflict of interest to disclose.

## References

- Barth, R. P., & Liggett-Creel, K. (2014). Common components of parenting programs for children birth to eight years of age involved with child welfare services. *Children and Youth Services Review*, *40*, 6–12.
- Cifuentes, M., Davis, M., Fernald, D., Gunn, R., Dickinson, P., & Cohen, D. J. (2015). Electronic health record challenges, workarounds, and solutions observed in practices integrating behavioral health and primary care. *The Journal of the American Board of Family Medicine*, *28*(Supplement 1), S63–S72. <https://doi.org/10.3122/jabfm.2015.S1.150133>
- Creswell, J. W., Klassen, A. C., Plano Clark, V. L., & Smith, K. C. (2011). Best practices for mixed methods research in the health sciences. *Bethesda (maryland)*, *2013*, 541–545.
- Crilly, N. (2006). Graphic elicitation: Using research diagrams as interview stimuli. *Qualitative Research*, *6*(3), 341–366. <https://doi.org/10.1177/1468794106065007>
- Dalkin, S. M., Greenhalgh, J., Jones, D., Cunningham, B., & Lhussier, M. (2015). What's in a mechanism? Development of a key concept in realist evaluation. *Implementation Science*. <https://doi.org/10.1186/s13012-015-0237-x>
- 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), 50. <https://doi.org/10.1186/1748-5908-4-50>
- De Souza, D. E. (2013). Elaborating the context-mechanism-outcome configuration (CMOc) in realist evaluation: A critical realist perspective. *Evaluation*, *19*(2), 141–154. <https://doi.org/10.1177/1356389013485194>
- Ebenso, B., Manzano, A., Uzochukwu, B., Etiaba, E., Huss, R., Ensor, T., Newell, J., Onwujekwe, O., Ezumah, N., Hicks, J., & Mirzoev, T. (2019). Dealing with context in logic model development: Reflections from a realist evaluation of a community health worker programme in Nigeria. *Evaluation and Program Planning*, *73*, 97–110. <https://doi.org/10.1016/j.evalprogplan.2018.12.002>
- Eldredge, L. K. B., Markham, C. M., Ruitter, R. A., Fernández, M. E., Kok, G., & Parcel, G. S. (2016). *Planning health promotion programs: An intervention mapping approach*. Wiley.
- Evans, J., Grudniewicz, A., Baker, G., & Wodchis, W. P. (2016). Organizational context and capabilities for integrating care: A framework for improvement. *International Journal of Integrated Care*. <https://doi.org/10.5334/ijic.2416>
- Evans, S., & Scarborough, H. (2014). Supporting knowledge translation through collaborative translational research initiatives: 'Bridging' versus 'blurring' boundary spanning approaches in the UK CLAHRC initiative. *Social Science Medicine*. <https://doi.org/10.1016/j.socscimed.2014.01.025>

- Farley, K., Thompson, C., Hanbury, A., & Chambers, D. (2013). Exploring the feasibility of conjoint analysis as a tool for prioritizing innovations for implementation. *Implementation Science*, 8(1), 56. <https://doi.org/10.1186/1748-5908-8-56>
- Farmer, T., Robinson, K., Elliott, S. J., & Eyles, J. (2006). Developing and implementing a triangulation protocol for qualitative health research. *Qualitative Health Research*, 16(3), 377–394.
- Fernandez, M. E., ten Hoor, G. A., van Lieshout, S., Rodriguez, S. A., Beidas, R. S., Parcel, G., Ruiters, R. A. C., Markham, C. M., & Kok, G. (2019). Implementation mapping: Using intervention mapping to develop implementation strategies. *Frontiers in Public Health*. <https://doi.org/10.3389/fpubh.2019.00158>
- Fulton, B. D., Scheffler, R. M., Sparkes, S. P., Auh, E. Y., Vujicic, M., & Soucat, A. (2011). Health workforce skill mix and task shifting in low income countries: A review of recent evidence. *Human Resources for Health*, 9(1), 1–11. <https://doi.org/10.1186/1478-4491-9-1>
- Green, A. E., Fettes, D. L., & Aarons, G. A. (2012). A concept mapping approach to guide and understand dissemination and implementation. *The Journal of Behavioral Health Services & Research*, 39(4), 362–373. <https://doi.org/10.1007/s11414-012-9291-1>
- Han, X., & Ku, L. (2019). Enhancing staffing in rural community health centers can help improve behavioral health care. *Health Affairs*, 38(12), 2061–2068. <https://doi.org/10.1377/hlthaff.2019.00823>
- Hopf, Y., Francis, J., Helms, P., Haughney, J., & Bond, C. (2016). Core requirements for successful data linkage: an example of a triangulation method. *British Medical Journal Open*, 6(10), e011879.
- Jetelina, K. K., Woodson, T. T., Gunn, R., Muller, B., Clark, K. D., DeVoe, J. E., Balasubramanian, B. A., & Cohen, D. J. (2018). Evaluation of an electronic health record (EHR) tool for integrated behavioral health in primary care. *The Journal of the American Board of Family Medicine*, 31(5), 712–723. <https://doi.org/10.3122/jabfm.2018.05.180041>
- Kazi, M. (2003). Realist evaluation for practice. *British Journal of Social Work*, 33(6), 803–818. <https://doi.org/10.4135/9781849209762>
- Krichbaum, K., Diemert, C., Jacox, L., Jones, A., Koenig, P., Mueller, C., & Disch, J. (2007). Complexity compression: Nurses under fire. *Nursing Forum*, 42(2), 86–94. <https://doi.org/10.1111/j.1744-6198.2007.00071.x>
- Krichbaum, K. E., Peden-McAlpine, C., Diemert, C., Koenig, P., Mueller, C., & Savik, K. (2011). Designing a measure of complexity compression in registered nurses. *Western Journal of Nursing Research*, 33(1), 7–25. <https://doi.org/10.1177/0193945910383877>
- Leeuw, F. L. (2003). Reconstructing program theories: Methods available and problems to be solved. *American Journal of Evaluation*, 24(1), 5–20. <https://doi.org/10.1177/109821400302400102>
- Leslie, L. K., Mehus, C. J., Hawkins, J. D., Boat, T., McCabe, M. A., Barkin, S., Perrin, E. C., Metzler, C. W., Prado, G., Tait, V. F., Brown, R., & Beardslee, W. (2016). Primary health care: Potential home for family-focused preventive interventions. *American Journal of Preventive Medicine*, 51(4), S106–S118. <https://doi.org/10.1016/j.amepre.2016.05.014>
- Lewis, C. C., Boyd, M. R., Walsh-Bailey, C., Lyon, A. R., Beidas, R., Mittman, B., Aarons, G. A., Weiner, B. J., & Chambers, D. A. (2020). A systematic review of empirical studies examining mechanisms of implementation in health. *Implementation Science*. <https://doi.org/10.1186/s13012-020-00983-3>
- Maier, C. B., & Aiken, L. H. (2016). Task shifting from physicians to nurses in primary care in 39 countries: A cross-country comparative study. *European Journal of Public Health*, 26(6), 927–934. <https://doi.org/10.1093/eurpub/ckw098>
- Maluka, S., Kamuzora, P., SanSebastián, M., Byskov, J., Ndawi, B., Olsen, Ø. E., & Hurtig, A. K. (2011). Implementing accountability for reasonableness framework at district level in Tanzania: A realist evaluation. *Implementation Science*, 6(1), 1–15. <https://doi.org/10.1186/1748-5908-6-11>
- Moon, D. J., & Ballard, A. J. (2020). The comprehensive framework for integrated healthcare implementation: a realist evaluation of positive parenting in rural primary care in the US. *Journal of Integrated Care*. <https://doi.org/10.1108/JICA-06-2020-0039>
- Moon, D. J., Damman, J. L., & Romero, A. (2020). The effects of primary care-based parenting interventions on parenting and child behavioral outcomes: A systematic review. *Trauma, Violence, & Abuse*, 21(4), 706–724. <https://doi.org/10.1177/1524838018774424>
- Moon, D. J., Lauer, S. J., & Unell, B. (2021). Behavior Checker® staff training for positive parenting in primary care: Changes in the knowledge, attitudes, and confidence. *Journal of Child and Family Studies*, 30(4), 932–940. <https://doi.org/10.1007/s10826-021-01917-3>
- O’Cathain, A., Murphy, E., & Nicholl, J. (2010). Three techniques for integrating data in mixed methods studies. *BMJ*, 341, c4587.
- Pawson, R., & Tilley, N. (1997). *Realistic evaluation*. Sage Publications.
- Perrin, E. C., Leslie, L. K., & Boat, T. (2016). Parenting as primary prevention. *JAMA Pediatrics*, 170(7), 637–638. <https://doi.org/10.1001/jamapediatrics.2016.0225>
- Powell, B. J., Beidas, R. S., Lewis, C. C., Aarons, G. A., McMillen, J. C., Proctor, E. K., & Mandell, D. S. (2017). Methods to improve the selection and tailoring of implementation strategies. *The Journal of Behavioral Health Services & Research*, 44(2), 177–194. <https://doi.org/10.1007/s11414-015-9475-6>
- Powell, B. J., Fernandez, M. E., Williams, N. J., Aarons, G. A., Beidas, R. S., Lewis, C. C., McHugh, S. M., & Weiner, B. J. (2019). Enhancing the impact of implementation strategies in healthcare: A research agenda. *Frontiers in Public Health*. <https://doi.org/10.3389/fpubh.2019.00003>
- Powell, B. J., McMillen, J. C., Proctor, E. K., Carpenter, C. R., Griffey, R. T., Bunger, A. C., Glass, J. E., & York, J. L. (2011). A compilation of strategies for implementing clinical innovations in health and mental health. *Medical Care Research and Review*, 69(2), 123–157. <https://doi.org/10.1177/1077558711430690>
- Powell, B. J., Waltz, T. J., Chinman, M. J., Damschroder, L. J., Smith, J. L., Matthieu, M. M., Proctor, E. K., & Kirchner, J. 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. K., Landsverk, J., Aarons, G., Chambers, D., Glisson, C., & Mittman, B. (2009). Implementation research in mental health services: An emerging science with conceptual, methodological, and training challenges. *Administration and Policy in Mental Health and Mental Health Services Research*, 36(1), 24–34. <https://doi.org/10.1007/s10488-008-0197-4>
- Proctor, E. K., Powell, B. J., & McMillen, J. C. (2013). Implementation strategies: Recommendations for specifying and reporting. *Implementation Science*, 8(1), 1–11. <https://doi.org/10.1186/1748-5908-8-139>
- 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 and Mental Health Services Research*, 38(2), 65–76. <https://doi.org/10.1007/s10488-010-0319-7>
- Pronovost, P. J., Berenholtz, S. M., & Needham, D. M. (2008). Translating evidence into practice: A model for large scale knowledge translation. *BMJ*. <https://doi.org/10.1136/bmj.a1714>
- Rogers, P. J., Petrosino, A., Huebner, T. A., & Hacsí, T. A. (2000). Program theory evaluation: Practice, promise, and problems.

- New Directions for Evaluation.*, 2000(87), 5–13. <https://doi.org/10.1002/ev.1177>
- Salmona, M., Lieber, E., & Kaczynski, D. (2019). *Qualitative and mixed methods data analysis using Dedoose: A practical approach for research across the social sciences*. Sage Publications.
- Salter, K. L., & Kothari, A. (2014). Using realist evaluation to open the black box of knowledge translation: a state-of-the-art review. *Implementation Science*. <https://doi.org/10.1186/s13012-014-0115-y>
- Scriven, M. (1994). The fine line between evaluation and explanation. *Evaluation Practice*, 15(1), 75–77. <https://doi.org/10.1177/109821409401500108>
- Shah, R., Kennedy, S., Clark, M. D., Bauer, S. C., & Schwartz, A. (2016). Primary care-based interventions to promote positive parenting behaviors: A meta-analysis. *Pediatrics*. <https://doi.org/10.1542/peds.2015-3393>
- Smith, R. C., Laird-Fick, H., D'Mello, D., Dwamena, F. C., Romain, A., Olson, J., Kent, K., Blackman, K., Solomon, D., & Spoolstra, M. (2014). Addressing mental health issues in primary care: An initial curriculum for medical residents. *Patient Education and Counseling*, 94(1), 33–42. <https://doi.org/10.1016/j.pec.2013.09.010>
- Unell, B., & Wyckoff, J. (2016). *Behavior Checker: Pediatric telephone and office prescriptions for managing common behavioral issues* (1st Edn.). Raised with Love and Limits Foundation.
- Waltz, T. J., Powell, B. J., Fernández, M. E., Abadie, B., & Damschroder, L. J. (2019). Choosing implementation strategies to address contextual barriers: Diversity in recommendations and future directions. *Implementation Science*, 14(1), 42. <https://doi.org/10.1186/s13012-019-0892-4>
- Webb, H. (2012). *A realistic evaluation exploring the implementation of the Social and Emotional Aspects of Learning (SEAL) programme across a whole-school context*. Unpublished doctoral dissertation. University of Birmingham.
- Woodson, T. T., Gunn, R., Clark, K. D., Balasubramanian, B. A., Jetelina, K. K., Muller, B., Miller, B. F., Burdick, T. E., & Cohen, D. J. (2018). Designing health information technology tools for behavioural health clinicians integrated within US-based primary care teams. *Journal of Innovation in Health Informatics*, 25(3), 148–168.
- Wyckoff, J., & Unell, B. (2019). *Discipline with love and limits: Practical solutions to over 100 common childhood behavior problems*. Da Capo Press Hachette Book Group, Inc.
- Yin, R. K. (2003). *Case study research: design and methods*. Sage Publications.