

Delivering Trauma-focused Cognitive-Behavioral Therapy in Kenya: Exploring Determinants
and Impacts of Organizational Implementation Constructs

Rashed AlRasheed

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Reading Committee:

Shannon Dorsey, Chair

Wendy Stone

Katherine Foster

Program Authorized to Offer Degree:

Department of Psychology

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Rashed AlRasheed

University of Washington

Abstract

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Rashed AlRasheed

Chair of the Supervisory Committee:

Shannon Dorsey

Department of Psychology

Implementation research presents opportunities to study methods that facilitate successful uptake of evidence-based treatments (EBTs) in low-resource mental health settings. Exploring determinants that facilitate EBT implementation success and how successful implementation leads to improved clinical outcomes would help us develop implementation strategies that achieve favorable implementation and clinical outcomes. Using data from a randomized controlled trial evaluating the lay-counselor delivery of a culturally adapted group-based Trauma-focused Cognitive Behavioral Therapy (TF-CBT) to orphaned youth in Western Kenya, the overarching aims of this project are two-fold. The first aim was to identify individual- and organizational-level factors that predict implementation climate in the Education sector — the extent to which TF-CBT delivery is expected, supported, and rewarded — through coincidence analysis (CNA). Teacher-counselors' self-report measures of organizational characteristics, implementation leadership, implementation climate, burnout, and job satisfaction were included

in our analyses. The second aim was to explore the relationships between organizational readiness for change, TF-CBT fidelity (i.e., adherence and competence), and clinical outcomes in both the Education and Health sectors using multilevel path analyses. Lay counselors completed self-report measures on organizational readiness for change, whereas their supervisors completed adherence and competence ratings based on live observations of child- and guardian-groups. Children completed baseline- and post-treatment post-traumatic stress symptoms (PTSS) self-report measures. Results from aim 1 highlighted different combinations of individual- and organizational-level conditions that are minimally necessary or sufficient to achieve moderate and high levels of implementation climate. These findings can help inform context-specific, efficient implementation strategies that can promote higher levels of implementation climate, and ultimately successful EBT implementation. Results from aim 2 demonstrated the importance of organizational readiness for change in improving adherence to TF-CBT elements in the Education sector. Further, our findings revealed that TF-CBT adherence and competence, mainly in guardian-group sessions, can improve post-treatment child PTSS. Taken together, this project underscores the utility of harnessing community partnerships and statistical approaches, which identified critical relationships between organizational characteristics, implementation outcomes, and clinical outcomes. Researchers must carefully consider the multifaceted nature of clinical contexts and design low-cost, practical implementation strategies that map onto the contexts' needs to optimize implementation and clinical outcomes.

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I. General Introduction

Mental health problems are the leading cause of disability in children and adolescents (Erskine et al., 2015). Children and adolescents have been estimated to constitute more than a third of the global population (United Nations, 2017). Over 80% of those youth live in low- and middle- income countries (LMICs) (United Nations, 2017). Living in LMICs, children and adolescents are highly vulnerable to experiencing mental or behavioral health problems and the associated high mortality rates due to environmental and social circumstances, such as violence, poverty, lack of access to mental health care (Lund et al., 2018; Patel et al., 2016). Given their low tax bases and high population demands, LMICs' government expenditure on mental health services is less than 2% of their health budget (Thornicroft et al., 2010), allocating most of these resources to adults experiencing serious mental illness. Thus, it is imperative to address the mental health treatment gap for youth in LMICs, particularly by scaling up supports that require minimal resources.

Due to the lack of resources and capacity within mental health workforces in LMICs, access to high quality mental health care is a major challenge (Rabbani et al., 2016). In order to deliver professional, effective services, trained specialists, ongoing supervision, and supportive infrastructure are needed, which are limited or often unavailable in LMICs (Cancedda et al., 2015; Mormina & Pinder, 2018; Saxena et al., 2007). One commonly used low-cost strategy to address these challenges and build capacity in LMICs is task-shifting (Patel, 2009; Patel et al., 2007). Task-shifting (and task-sharing) is a process that harnesses non-specialists (e.g., lay counselors) with little to no prior training in mental health service delivery who are then trained to deliver care with supervision. Several reviews in the last decade have suggested that task-

shifting can be an effective strategy that addresses the mental health treatment gap, particularly in LMICs where access to mental health professionals is limited (Galvin & Byansi, 2020; Javadi et al., 2017; Raviola et al., 2019; van Ginneken et al., 2013). However, some studies that utilized task-shifting could potentially improve the rigor of their methods by having comparison groups, clear treatment fidelity guidelines, and ensuring appropriate cultural adaptation of the delivered care (Galvin & Byansi, 2020).

Most of the psychosocial evidence-based treatments (EBTs) have been developed and evaluated in high-income countries, which may limit their generalizability to LMICs (Tiley & Kyriakopoulos, 2018). However, recent systematic reviews show promising results for the effectiveness and feasibility of delivering EBTs from high-income settings in LMICs (Brown et al., 2017; Pedersen et al., 2019; Singla et al., 2017). For example, randomized controlled trials (RCTs) across culturally different LMICs (e.g., India (Patel et al., 2010), Southern Iraq (Weiss et al., 2015), Uganda (Bolton et al., 2007), and Zambia (Murray et al., 2015), and population groups (e.g., youth, adults, rural areas) revealed that EBTs can be successfully delivered. These studies have shown effect sizes for primary treatment outcomes ranging between medium to large in which outcomes were sustained for months after treatment completion. Moreover, some studies have also demonstrated effectiveness in implementation outcomes, indicating provider and client acceptability (Dorsey et al., 2019; Murray et al., 2015; Woods-Jaeger et al., 2017) and feasibility of EBTs (Mendenhall et al., 2014). Some concerns about feasibility remain, however, including the need for ongoing supervision and support for lay counselors and their organizations to successfully implement EBTs (Barnett et al., 2018; Padmanathan & De Silva, 2013; van Ginneken et al., 2013).

While global mental health researchers have made strides in demonstrating effectiveness of EBTs when delivered in LMICs, demonstrated treatment effectiveness does not necessarily correlate with or lead to widespread use. More research is still needed to identify tailored strategies to implement, scale-up and sustain these EBTs for the populations that need them most. Collins and colleagues described 25 “Grand Challenges” for global mental health and then ranked the top 5 challenges by disease-burden reduction, equity considerations, immediacy of impact, and feasibility (Collins et al., 2011). The authors shared that (1) integrating services into routine primary care, (2) reducing costs/increasing supply of medications, (3) provision of effective and affordable community-based care, (4) improving youth access to EBTs by training providers in LMICs, and (5) strengthening mental health training as the starting point for immediate research and prioritization of policies. These challenges can be directly addressed via implementation science: “the scientific study of methods to promote the systemic uptake of research findings and other evidence-based practice (EBP) into routine practice, and hence, to improve the quality of effectiveness of health services” (Eccles & Mittman, 2006). Bauer & Kirchner (2020) described the crux of implementation science as two-fold: (1) identifying intervention uptake barriers and facilitators (i.e., determinants) across different levels of a particular context (e.g., patients/clients, providers, and organizations), and (2) developing and applying implementation strategies that overcome those barriers to ameliorate EBT uptake.

Empirical studies in LMICs have demonstrated how the use of context-specific implementation strategies can improve implementation and clinical outcomes. Dorsey & colleagues examined the effectiveness of a culturally adapted TF-CBT delivered by lay counselors (via task-shifting) in both Kenya and Tanzania and found it to outperform usual care in reducing post-traumatic stress (PTS) symptoms in urban and rural Kenya as well as urban

Tanzania. They even found that the effects were sustained at one year follow-up in rural and urban Kenya, where youth experienced greater adversity and stress (Dorsey, Lucid, et al., 2020). Another study harnessed technology to scale-up EBT delivery in Somaliland by studying the use of remote WhatsApp text supervision, demonstrating its feasibility and ability to facilitate successful trauma-informed intervention implementation when tailored to its specific context (Klein et al., 2023). These studies are examples of efforts that utilize implementation science methods to identify determinants to quality care (e.g., trained mental health providers, supervision, access to care) and then developed and/or applied implementation strategies to overcome these barriers in an effort to facilitate successful EBT implementation.

II. Parent Study Overview

Trial Description

“Building and Sustaining Interventions for Children (BASIC): Task Sharing Mental Health Care in Low-Resource Settings” (Dorsey, Gray, et al., 2020) builds on over a decade of collaborations with Ace Africa in Kenya, and evaluates the effectiveness of “Pamoja Tunaweza” (Together We Can in Kiswahili) — an adapted version of TF-CBT delivered to children who experienced parental death and have mental health impact. The overarching goal of this parent study is to identify locally sustainable implementation policies and practices (IPPs) (i.e., implementation strategies) that facilitate effective implementation of task-shifted TF-CBT/*Pamoja Tunaweza* (PT) in two Kenyan governmental sectors identified by our Kenyan colleagues as important platforms for scale-up: (1) Education (via teacher delivery) and (2) Health (via community health volunteer [CHV] delivery). BASIC includes measures of child clinical outcomes, implementation outcomes, and intervention costs in both the Education and Health sectors.

BASIC is a stepped wedge, cluster randomized controlled trial (SW-CRT) conducted in both the Education and Health sectors in Bungoma South Sub-County in Kenya. Forty schools were randomly selected from all 137 primary schools in Bungoma South. The school and its surrounding community were considered a “village cluster.” There were 40 village clusters, each including both a team of teachers and a team of CHVs delivering PT. The role of a CHV in the health sector is to provide health services under the supervision of a community health extension worker (CHEW), in a community health facility (e.g., clinic, dispensary). Forty village clusters were randomly ordered into 7 sequences in the SW-CRT, and sequence 1 began with 10 clusters; subsequent sequences had 5 clusters. Each village cluster had 3 teachers and 3 CHVs (a total of

240 planned providers) and up to 16 youth per sector per cluster (up to 1280 youth total) over the 7 sequences. The sample size of 40 village clusters (40 schools and their 40 surrounding communities) was selected in order to examine outcomes at the site/organization level. More information about the trial and its aims can be found in the trial's protocol paper (Dorsey, Gray, et al., 2020).

Participants

While the study planned for enrolling 120 teachers from the Education sector and 120 CHVs from the Health sector to deliver PT (240 total), the final sample included 248 counselors due to some teacher and CHV turnover and replacement. At each site, one leader was recruited to participate in the study to answer study questions (i.e., head teachers in schools, CHEWs in health facilities). Participating teachers were selected by school leaders based on being perceived as good with children experiencing challenges, ideally not teachers of potential youth participants to minimize children's discomfort with the teaching and counseling overlap. During the school week, teachers delivered PT in their classrooms during a one-hour games time slot. Participating CHVs were also selected based on being perceived as good with children experiencing challenges and delivered PT at a time that suited them either in schools or other community spaces. They also delivered PT at schools and during the games' hour. This occurred because school leaders invited them to use the school rooms, given considered community spaces, once they learned that CHVs would also be delivering PT.

Schools and communities had lists of single- or double-orphaned children aged 11 to 14 in the area served by the identified schools. Those lists were separated by sex. Within each list, children were randomly selected to be screened for posttraumatic stress (PTS) and prolonged grief. Children were screened in either from child- or guardian-reported PTS symptoms or child-

reported prolonged grief symptoms. PT groups were segregated by sex, with up to eight children per group. Children were then randomized to receive PT either through the Education or Health sector. Trained local interviewers had random assignment lists and proceeded to enroll, consent, and assent participants as well as provide logistical details. Within each of the 40 clusters, up to 32 children (16 boys; 16 girls) and 1 of their respective primary guardians received TF-CBT. More details about randomization can be found in the trial's protocol paper (Dorsey, Gray, et al., 2020)

Procedures

Teachers and CHVs were trained in the adapted TF-CBT (i.e., PT) and began practicing and receiving ongoing supervision. Subsequently, they provided two sequential 8-week PT groups (boys and girls). This would result in 40 sites per sector — Education and Health (80 total), 120 counselors per sector (240 total — given counselor teams of three per site), and up to 640 children per sector (up to 1280 total) receiving PT. Participating counselors and leaders in each cluster received annual assessments as well as an assessment after completing two sequential PT groups (one for each sex). Depending on youth's sequence, they completed assessments at baseline, post-treatment, and up to three yearly post-treatment follow-up visits.

Experienced TF-CBT counselors (i.e., PT experts) from Ace Africa, trained as trainers using the Apprenticeship model (Murray et al., 2011), trained lay counselors for five to six days, separated by teachers and CHVs. Lay counselors received didactic training and short session guides for each session (i.e., “step sheets” for delivering each session). Trainees practiced the sessions in small groups while receiving both trainer and peer feedback. After the in-person training, a PT expert provided weekly supervision with each counselor team. Supervision, which was delivered via a combination of in-person meetings, audio/video formats, and text-messaging

for support, includes discussing prior session as well as role-playing upcoming sessions. PT experts identified strong counselors who may be excellent candidates for future PT leadership roles (e.g., supervisors).

To monitor fidelity, counselors completed a brief report per session that includes information on child/guardian attendance, self-reported elements covered in the sessions, and note on participant response. Those reports are reviewed by PT experts to inform their supervision sessions. PT experts conducted live observation of groups twice a month during the first implementation year and once a month during sustainment both to monitor fidelity as well as inform supervision.

Intervention

TF-CBT, an EBT for child/adolescent trauma exposure, was selected for its strong empirical base (Lewey et al., 2018; Mavranezouli et al., 2020; Thielemann et al., 2022). *Pamoja Tunaweza* (PT)— the adapted TF-CBT — is a group-based eight-session intervention that was delivered weekly. Each week, eight children and one of their guardians met concurrently and separately; joint child-guardian activities occurred in the final sessions. This version of the intervention was designed collaboratively with PT counselors and included all TF-CBT elements. A pilot study with 63 youth yielded preliminary support for using this shortened version in the BASIC trial.

Measurement Approach

In this study, we utilized implementation measures, many of which originated in high-income countries (HICs). Therefore, the Kenyan and US-based research teams dedicated a considerable amount of time to measurement selection. Measures of implementation constructs developed for or in LMICs were prioritized (Haroz et al., 2019). When such measures were not

available, implementation measures developed in HICs were adapted, translated, and back translated with the help of the Kenyan research team to fit the context in which the study is conducted. When certain measures were not developed in LMICs nor HICs, the research team developed measures following the Theoretical Domains Framework (Atkins et al., 2017; Huijg et al., 2014).

III. Study 1: Determinants of Implementation Climate

Weiner & colleagues' organizational theory of implementation effectiveness posits that successful implementation (e.g., sustained, high-quality delivery of an EBT) depends on a positive (organizational) implementation climate (Weiner et al., 2009). Implementation climate, coined by Klein & Sorra (1996), is defined as the collective perception of employees in a particular organization that using a particular innovation (e.g., EBT) is expected, supported, and rewarded. A growing body of work has shown that a positive EBT implementation climate is associated with improved EBT implementation outcomes. Some studies have linked positive implementation climate to successful EBT implementation (Powell et al., 2017; Williams et al., 2022) as well as greater EBT content coverage in clinical supervision (Lucid et al., 2018; Pullmann et al., 2018). However, Beidas et al. (2015) found that implementation climate did not predict EBP use in community mental health settings, though the authors reported that they have not accounted for complex interactive or mediational processes that may have impacted the effect of implementation climate on EBP implementation. A small number of studies examined these more comprehensive pathways in which implementation climate may affect EBT implementation. For example, Williams and colleagues found that a more positive implementation climate predicted increased use of EBPs when organizations had a more positive *molar organizational* climate (i.e., clinicians' shared perceptions of how the organizational environment more generally influences their well-being) (Williams et al., 2018). Another study revealed that community mental health clinicians' perceptions of EBT implementation climate predicted more positive attitudes toward essential EBT treatment elements (e.g., exposure) following EBT training and consultation (Woodard et al., 2021).

Weiner and colleagues suggest that a positive EBT implementation climate depends on (1) implementation strategies (or implementation policies and practices) that are put into place by a given organization to facilitate successful EBT delivery and (2) organizational characteristics such as organizational readiness for change, organizational climate, or implementation leadership, though research in this area within the mental health field is limited (Weiner et al., 2011). One study that assessed how EBP implementation leadership and implementation climate affected observed fidelity to school-based EBPs for autism found school principals' increased frequency of EBP implementation leadership predicted a more positive school EBP implementation climate, which in turn, predicted higher EBP fidelity (Williams et al., 2022). Similarly, another study conducted in outpatient child mental health clinics found that when first-level leaders (i.e., supervisors) increased frequency of implementation leadership behaviors, EBP implementation climate became more positive, which also yielded more EBT use by clinicians (Williams et al., 2020). Most studies that examined implementation climate, such as the examples above, were conducted in high-income countries (e.g., United States), and thus more research is needed to understand determinants and impacts of implementation climate in resource-limited settings, such as in LMICs.

While implementation climate is considered an organizational level construct, its aggregation to the organization level must be considered based on the context (Jacobs et al., 2014). For example, in contexts where workers collaborate or interact frequently, a shared perception of implementation climate can be meaningful. On the other hand, in contexts where workers do not collaborate or interact frequently, individual-level perceptions of climate may be more relevant (Jacobs et al., 2014). To our knowledge, there is no empirical literature relating therapist-level factors to implementation climate.

However, there is some research suggesting that organization-related stressors experienced by individual therapists, such as burnout and low satisfaction, may impede EBT implementation success (i.e., therapists' ability to successfully deliver EBTs). For example, Yang & Hayes (2020) described how burnout can negatively affect therapists' general well-being, client treatment engagement, and treatment outcomes. Luther et al. (2017) found that working overtime increased burnout and reduced work-life balance, significantly decreasing job satisfaction and quality of care. Using coincidence analysis (CNA), Johnson et al. (2024) found that in the BASIC study, low burnout was associated with high feasibility of implementing PT (adapted TF-CBT), with high feasibility being a conceptually important indicator of implementation success (E. Proctor et al., 2011). Melnyk et al. (2010) found that health care providers' (i.e., nurses) job satisfaction is related to their beliefs about EBPs, which is linked to implementation success (Eslinger et al., 2020; Peters-Corbett et al., 2023). These studies demonstrate how individual-level factors are important determinants of implementation success, however it is uncertain whether these factors may impact implementation climate, prompting further examination.

Using data from BASIC, this study aims to identify individual- and organizational-level factors that shape counselors' perceptions of EBT implementation climate. Since the literature provides very little empirical guidance on what generates a positive implementation climate, this study takes on an exploratory approach that involves partnering with our Kenyan colleagues and US-based research team as well as empirical guidance to inform our analyses.

Methods

Participants & Procedures

This secondary data analysis uses data from the BASIC study which includes 121 teacher-counselors that delivered PT across 40 different schools. All counselors consented to study participation. Health sector/CHV teacher-counselor data was not included because unlike teacher-counselors, they are not embedded day-to-day in an organizational structure or hierarchy in which there is daily and regular interaction with their colleagues and leaders. Additionally, CHVs did not deliver PT in their health facilities, but rather in community spaces, namely schools. Therefore, we limited our analyses to teachers for this study.

Measures

The primary outcomes are counselors' (1) *individual* and (2) *collective* perceptions of their organization's (school) PT implementation climate. A number of counselor- and organizational-level determinants of PT implementation climate have been examined. For the individual-level PT implementation climate analyses, counselor- and organizational-level determinants reflect individual counselor responses to self-report measures. Whereas for the organizational-level PT implementation climate analyses, counselors' responses were aggregated to their organization (i.e., we used a mean score of counselors' responses for each school) to reflect *collective* perceptions. The outcomes and all determinants we considered, including their definition, scale, and measure properties are described in Table 1.

Table 1. Primary outcome and determinant measures

Variable	Definition	Scale	Measure Properties
Outcome Measure: *Implementation Climate Scale (ICS; Ehrhart et al., 2014; Jacobs et al., 2014)	Counselors' perception of the degree to which PT was expected, supported, and rewarded in their organization.	10 items rated on a 5-point Likert Scale from 1 (Strong Disagree) to 5 (Strongly Agree); higher scores indicate a more positive implementation climate. Example item: "I am expected to use PT with children at my school."	Prior research demonstrated ICS's excellent overall internal consistency ($\alpha = 0.91$), and reliable organizational-level means (ICC = 0.25; Ehrhart et al., 2014). In our sample, this measure demonstrated good internal consistency ($\alpha = 0.87$)
*Organizational Readiness for Implementing Change Scale (ORIC; Shea et al., 2014)	Counselors' perceptions of whether organizational members are prepared to implement change.		
Change Commitment	Counselors' perceptions of whether their organization values this change.	5 items rated on a 5-point Likert Scale from 1 (Strong Disagree) to 5 (Strongly Agree); higher scores indicate higher change commitment. Example item: "People you work with are determined to implement PT."	Prior research demonstrated that the ORIC change commitment subscale had excellent internal consistency ($\alpha = 0.91$) and reliable organizational-level means (ICC = 0.72; Shea et al., 2014). In our sample, this measure demonstrated good internal consistency ($\alpha = 0.91$)
Change Efficacy	Counselors' perceptions of whether their organization is capable of change.	5 items rated on a 5-point Likert Scale from 1 (Strong Disagree) to 5 (Strongly Agree); higher scores indicate higher change efficacy. Example item: "People you work with feel confident that they can manage the challenges that might arise in implementing PT."	Prior research demonstrated that the ORIC change efficacy subscale had good internal consistency ($\alpha = 0.89$) and reliable organizational-level means (ICC = 0.51; Shea et al., 2014). In our sample, this measure demonstrated excellent internal consistency ($\alpha = 0.91$).

*Implementation Leadership Scale (ILS; Aarons et al., 2014)	Counselors' perceptions of strategic leadership for PT implementation.		
Proactive Leadership	Counselors' perceptions of whether their leader is proactive with PT implementation.	3 items rated on a 5-point Likert Scale from 0 (<i>Not at All</i>) to 4 (<i>Very Great Extent</i>); higher scores indicate more proactive leadership. Example item: "[Leader] has removed obstacles to the implementation of PT."	Prior research demonstrated that the proactive leadership subscale had excellent internal consistency ($\alpha = 0.95$) and reliable organizational-level means (ICC = 0.25; Aarons et al., 2014). In our sample, this measure demonstrated acceptable internal consistency ($\alpha = 0.77$).
Knowledgeable Leadership	Counselors' perceptions of whether their leader supports PT implementation.	3 items rated on a 5-point Likert Scale from 0 (<i>Not at All</i>) to 4 (<i>Very Great Extent</i>); higher scores indicate more knowledgeable leadership. Example item: "[Leader] is knowledgeable about PT."	Prior research demonstrated that the knowledgeable leadership subscale had excellent internal consistency ($\alpha = 0.96$) and reliable organizational-level means (ICC = 0.26; Aarons et al., 2014). In our sample, this measure demonstrated good internal consistency ($\alpha = 0.87$).
Supportive Leadership	Counselors' perceptions of whether leader is knowledgeable about PT implementation.	3 items rated on a 5-point Likert Scale from 0 (<i>Not at All</i>) to 4 (<i>Very Great Extent</i>); higher scores indicate more supportive leadership. Example item: "[Leader] supports Teacher counselor efforts to use PT."	Prior research demonstrated that the supportive leadership subscale had excellent internal consistency ($\alpha = 0.95$) and reliable organizational-level means (ICC = 0.22; Aarons et al., 2014). In our sample, this measure demonstrated excellent internal consistency ($\alpha = 0.94$).
Perseverant Leadership	Counselors' perceptions of whether their leader perseveres in the PT implementation process.	3 items rated on a 5-point Likert Scale from 0 (<i>Not at All</i>) to 4 (<i>Very Great Extent</i>); higher scores indicate more perseverant leadership. Example item: "[Leader] perseveres through the ups and downs of implementing PT."	Prior research demonstrated that the perseverant leadership subscale had excellent internal consistency ($\alpha = 0.98$) and reliable organizational-level means; (ICC = 0.29; Aarons et al., 2014). In our sample, this measure demonstrated good internal consistency ($\alpha = 0.85$).

*Organizational Climate ('Molar' Climate) (Aldridge et al., 2022)	Counselor perceptions of the psychological impact of the work environment on their well-being.		
Personal Feelings at Work	Counselors' perceptions of how they feel at work.	12 items rated on a 5-point Likert Scale from 0 (<i>Never</i>) to 4 (<i>Always</i>); higher scores indicate more positive feelings at work. Example item: "Does the school for which you work promote your professional growth?"	Prior research demonstrated that the Personal Feelings at Work subscale had good internal consistency ($\alpha \geq 0.80$; Aldridge et al., 2022). In our sample, this measure demonstrated acceptable internal consistency ($\alpha = 0.72$).
Perceived Work Environment	Counselors' perceptions of their work environment.	4 items rated on a 5-point Likert Scale from 0 (<i>Never</i>) to 4 (<i>Always</i>); higher scores indicate more positive perceptions of the work environment. Example item: "Do you feel that there is a high level of cohesion within your school?"	Prior research demonstrated that the Perceived Work Environment subscale had good internal consistency ($\alpha \geq 0.80$; Aldridge et al., 2022). In our sample, this measure demonstrated acceptable internal consistency ($\alpha = 0.79$).
Professional Quality of Life (Stamm, 2010)	Counselors' satisfaction and burnout related to providing PT.		
Burnout	Counselors' work and client-related burnout.	5 items rated on a 5-point Likert Scale from 1 (<i>Never</i>) to 5 (<i>Always</i>); higher scores indicate higher burnout. Example item: "It drains my energy to work with PT children/guardians."	Prior research demonstrated that the Burnout subscale had acceptable internal consistency ($\alpha = 0.75$; Stamm, 2010). In our sample, this measure demonstrated good internal consistency ($\alpha = 0.82$).
Satisfaction	Counselors' satisfaction with delivering PT.	5 items rated on a 5-point Likert Scale from 1 (<i>Never</i>) to 5 (<i>Always</i>); higher scores indicate greater satisfaction. Example item: "I get satisfaction from being able to help people as a PT counselor."	Prior research demonstrated that the Burnout subscale had good internal consistency ($\alpha = 0.88$; Stamm, 2010). In our sample, this measure demonstrated good internal consistency ($\alpha = 0.83$).

PT = Pamoja Tunaweza; ICC = Intra-class Correlation Coefficient

Note: all variables were measured post-PT implementation *except for the ORIC subscales* which were measured pre-PT implementation.

*These variables reflected individual counselor's perceptions in the individual-level CNA models (CNA models 3 and 4) and perceptions aggregated to the school-level for the school-level CNA models (CNA models 1 and 2).

Analysis Plan

Using BASIC data from baseline to one-year follow-up, we examined variables associated with implementation climate using a configurational comparative method (CCM) adapted from Whitaker et al. (2020). Widely used regression-based analytic approaches dissect cases, of a dataset, into a series of variables and compute estimates that represent the net effect of a variable for the average case (Whitaker et al., 2020). In contrast, CCMs draw on Boolean algebra and set theory and employ a case-based approach to identify how different combinations of conditions (i.e., variables) lead to a desired outcome as well as determining if different solution paths yield the same outcome (i.e., equifinality; Miech et al., 2022; Ragin, 1987). Coincidence analysis (CNA) is a new type of CCM that can be used by implementation and health services researchers, regardless of their data's sample size, to support causal inference. It also helps identify specific combinations of variables (i.e., conditions) whose presence or difference "make a difference" as to whether a desired outcome occurs (Baumgartner & Falk, 2023; Baumgartner & Thiem, 2015; Gwayi-Chore et al., 2022). CNA helps discover the minimal set of necessary and/or sufficient conditions to achieve a desired outcome (Baumgartner & Falk, 2023; Baumgartner & Thiem, 2015). A necessary condition *must* be present for a desired outcome to occur, whereas a sufficient condition can yield an outcome independently (Gwayi-Chore et al., 2022; Kane et al., 2014). There are certain conditions, called "INUS conditions," that are neither sufficient nor necessary, however as a component of a solution pathway play an instrumental role in achieving the desired outcome. Thus, INUS describes a condition that is "Insufficient" but a "Necessary" part of a pathway that is itself "Unnecessary" (due to presence of several solution pathways) but "Sufficient" for occurrence of an outcome (Kane et al., 2014). Relating this to implementation science, it is rarely the case that one variable or factor

independently produces a desired outcome (e.g., implementation climate), and so identifying these INUS conditions is particularly important to capture the nuances of the occurrence of an outcome.

Further, CNA is inherently redundancy-free and allows us to identify the most parsimonious solutions (Baumgartner & Falk, 2023; Baumgartner & Thiem, 2015), making it particularly relevant to this study's context, a low-resource setting, where it is critical to find the most efficient pathways that yield a positive implementation climate. Using CNA, we systematically identified the different combinations of counselor- and organizational-level factors — referred to as pathways — that yield a positive implementation climate.

To identify conditions (i.e., variables) associated with implementation climate, we were guided by the CNA analytic steps outlined by Baumgartner & Ambühl (2020) as well as data deduction approaches described in the CNA literature 8/18/2025 4:25:00 PM. We first examined theoretical models and frameworks as well as existing literature that examine what predicts a positive implementation climate (e.g., Klein & Sorra, 1996; Weiner et al., 2011; Williams et al., 2018). Second, our US-based research team collaborated with our Kenyan partners, including PT supervisors and counselors to narrow down our selection of variables. Third, we calibrated each variable and outcome, utilizing crisp-set CNA (i.e., binary categories). For example, the majority of counselors rated implementation climate between 3.25 to 5. We dichotomized implementation climate into two categories: moderate implementation climate (scores ranging from 3.25 to 4) and high implementation climate (scores ranging from 4.25 to 5). Scores between 4 to 4.25 were dropped from the analysis to ensure that there is a meaningful difference between the two categories of implementation climate. This process of dichotomizing variables was repeated for each variable based on the distribution of scores for each variable. For each variable, most of the

counselors' scores fell under one of two categories, usually moderate or high. Very few scores fell under the 'low' category of each variable, making them insufficient and impractical to examine. There were two exceptions — burnout and work satisfaction variables — where scores ranged from very low-to-low and high-to-very high, respectively. Table 2 shows the categories and corresponding scores for each variable. Fourth, we used the “minimally sufficient conditions” (*msc*) function as part of the R *cna* package (Ambuehl et al., 2023) to further reduce our list of variables based on the strength of their association with the outcome, as measured by their consistency and coverage scores. The initial consistency and coverage thresholds were set to 1.0 and 0.25, respectively, and we lowered consistency by 0.05 until solutions (i.e., which could include one or more pathways) that met consistency and coverage levels were identified. Fifth, once variable selection was completed, we conducted CNA to identify predictors of implementation climate. When conducting CNA, there is a risk of overfitting model solutions when searching for the maximum consistency and coverage thresholds (i.e., score of 1.0), yielding false positives (Arel-Bundock, 2022; Whitaker et al., 2020). Thus, we set our consistency and coverage scores to ≥ 0.75 , which is also consistent with previous studies (Damschroder et al., 2022; Johnson et al., 2024). If CNA uncovers model ambiguity (i.e., multiple solutions yield very similar consistency and coverage scores), then the models were evaluated based on coverage, consistency, and robustness (i.e., model fit) scores, which were conducted using the R package “*frscore*” (Parkkinen et al., 2023). Consistent with previous studies, we ran our models at various consistency and coverage thresholds ranging between 0.75 and 1.0 and identified solutions with the highest relative fit robustness scores (Cragun et al., 2024). Each solution may present one or more pathways where each pathway includes one or more conditions that yield the desired outcome.

In this study, we conducted four separate CNA analyses:

Organizational-level perceptions:

CNA Model 1: Solution pathways for teachers' *collective* perceptions of a highly positive implementation climate (i.e., high implementation climate).

CNA Model 2: Solution pathways for teachers' *collective* perceptions of a moderately positive implementation climate (i.e., moderate implementation climate).

Individual-level perceptions:

CNA Model 3: Solution pathways for teachers' *individual* perceptions of a highly positive implementation climate (i.e., high implementation climate).

CNA Model 4: Solution pathways for teachers' *individual* perceptions of a moderately positive implementation climate (i.e., moderate implementation climate).

We conducted CNAs for both individual-level and organizational-level implementation climate as we are interested in exploring pathways specific to both organizational and individual perceptions, which in turn can help us develop strategies tailored to support organizations as well as individual counselors, especially if counselors in a given school have different perceptions of their school's implementation climate.

Table 2. Categorization of Determinants and Outcome

Variable	Range	Cut-off
Implementation Climate (Outcome)	1 to 5	Moderate: 3.25-4 High: 4.25 - 5
<i>Organizational Readiness for Implementing Change</i>		
Change Commitment	0 to 4	Moderate: 2 - 2.75 High: 3 - 4
Change Efficacy		
<i>Implementation Leadership</i>		
Proactive		
Knowledge		
Supportive		
Perseverant		
<i>Organizational 'Molar' Climate</i>		
Personal Feelings at Work		
Perceived Work Environment		
<i>Professional Quality of Life</i>		
Burnout	1 to 5	Very Low: 1 - 1.5 Low: 1.75 - 2.25
Work Satisfaction		High: 3.75 – 4.25 Very High: 4.5 – 5.0

Results

Counselors were predominantly female ($n = 79$; 65.3%), had a mean age of 42.3 ($SD = 7.7$), worked as a teacher for a mean of 15.6 years ($SD = 8.6$), and their highest education level was largely a diploma certificate ($n = 94$; 77.7%). Table 3 summarizes teacher-counselor demographics. With regards to individual teacher-counselor ratings, 45 counselors (37.2%) reported moderate levels of implementation climate (i.e., scores greater than 3.25 and less than or equal to 4) and 53 counselors (43.8%) reported high levels of implementation climate (i.e., scores greater than or equal to 4.25). The remaining counselors had scores greater than 4 and less than 4.25 ($n = 16$; 13.2%) or less than or equal to 3.25 (i.e., lower levels of implementation climate; $n = 3$; 2.5%) or were missing scores ($n = 4$; 3.3%).

Among the 40 schools (i.e., 3- counselor teams' responses aggregated to the school level), 11 schools (27.5%) reported moderate levels of implementation climate and 20 schools (50%) reported high levels of implementation climate. The remaining schools had scores greater than 4 and less than 4.25 ($n = 8$, 20%) or less than or equal to 3.25 ($n = 1$; 2.5%). Overall, missingness of teacher-counselor data was less than 5% and was determined to be missing at random. Table 4 provides additional descriptive statistics for the outcome and determinants.

Table 3. Teacher-Counselors' Demographics

Demographic Variable	Teachers (<i>N</i> = 121)
Age, M (SD)	42.3 (7.7)
Female (%)	65.30%
Years as a teacher, M (SD)	15.6 (8.6)
Highest Education (%)	
Diploma Certificate	77.7%
Secondary Education	5.0%
Master's Degree	17.3%
Prior Mental Health Training (% yes)	48.8%
Prior Experience Providing Mental Health Care (% yes)	80.0%

M = mean; SD = standard deviation

Table 4. Descriptive Statistics for Outcome and Determinants

Variable	Individual-level (<i>N</i> = 121)	Organizational-level (<i>N</i> =40)
Outcome, M (SD)		
Implementation Climate	4.27 (0.47)	4.25 (0.4)
Organizational Readiness for Implementing Change, M (SD)		
Change Commitment	3.95 (0.64)	3.95 (0.41)
Change Efficacy	3.95 (0.63)	3.95 (0.41)
Implementation Leadership, M (SD)		
Proactive	2.49 (0.82)	2.47 (0.62)
Knowledge	2.40 (0.83)	2.40 (0.66)
Supportive	2.96 (0.79)	2.95 (0.65)
Perseverant	2.52 (0.87)	2.51 (0.65)
Molar Climate, M (SD)		
Personal Feelings at Work	2.86 (0.47)	2.87 (0.28)
Perceived Work Environment	2.93 (0.84)	2.93 (0.52)
Professional Quality of Life, M (SD)		
Burnout	1.56 (0.48)	-
Work Satisfaction	4.55 (0.52)	-

Note: Measures are divided into their subscales; score ranges for measures are found in Table 2.

M = Mean; SD = Standard Deviation

Predictors of Implementation Climate: CNA Analysis

Results from four CNA models were conducted are presented below. Separate condition reductions were conducted for each model. We used the same consistency and coverage levels for all four models (consistency ≥ 0.75 , coverage ≥ 0.75). After conducting the CNA analysis, our research team reviewed the resulting models that met our consistency-coverage thresholds in descending order of robustness and selected a preferred solution that contained multiple pathways based on three areas: 1) highest robustness; 2) alignment with the literature, and 3) practicality (i.e., not over- or underfitted solutions).

Organizational-level Implementation Climate

Moderate Implementation Climate Solution. The following are interpretations of the solutions' pathways:

Pathway 1: If teacher-counselors reported *moderate levels* of change efficacy AND *moderate levels* of supportive leadership, then they collectively reported a moderate implementation climate.

Pathway 2: If teacher-counselors reported *moderate levels* of change commitment AND *moderate levels* of supportive leadership, then they collectively reported a moderate implementation climate.

Pathway 3: If teacher-counselors reported *moderate levels* of perceived feelings at work AND *moderate levels* of change efficacy AND *moderate levels* of supportive leadership, then they collectively reported a moderate implementation climate.

High Implementation Climate Solution. The following are interpretations of the solutions' pathways:

Pathway 1: if and only if teacher-counselors reported *high levels* of supportive leadership, then they collectively reported a high implementation climate.

Pathway 2: if teacher-counselors reported *high levels* of perceived work environment AND *high levels* of personal feelings at work AND *high levels* of change efficacy, then they collectively reported a high implementation climate.

Pathway 3: if teacher-counselors reported *high levels* of personal feelings at work AND *high levels* of proactive leadership, AND *high levels* of change commitment, then they collectively reported a high implementation climate.

Table 5 provides details about conditions present in each solution along with consistency, coverage, and robustness scores.

Individual-level Implementation Climate

Moderate Implementation Climate Solution. The following are interpretations of the solutions' pathways:

Pathway 1: If and only if a teacher-counselor reported *low levels* of burnout, then the individual teacher-counselor reported a moderate implementation climate.

Pathway 2: If a teacher-counselor reported *high levels* of job satisfaction AND *moderate levels* of supportive leadership, then the individual teacher-counselor reported a moderate implementation climate.

High Implementation Climate Solution. The following are interpretations of the solutions' pathways:

Pathway #1: if and only a teacher-counselor reported *high levels* of supportive leadership, then the individual teacher-counselor reported a high implementation climate.

Pathway #2: if and only if a teacher-counselor reported *very high levels* of job satisfaction, then the individual teacher-counselor reported a high implementation climate.

Pathway #3: if a teacher counselor reported *high levels* of perceived work environment AND *very low levels* of burnout, then implementation climate is high.

Table 6 provides more details about conditions present in each solution along with consistency, coverage, and robustness scores.

Table 5. Organizational-level solutions for implementation climate with consistency, coverage, and robustness scores

School-level Implementation Climate									
Change Commitment	Change Efficacy	Supportive Leadership	Proactive Leadership	Personal Feelings at Work	Perceived Work Environment	Outcome: Implementation Climate	Consistency	Coverage	Robustness*
		•				MODERATE	0.78	0.89	1.00
						HIGH	0.77	0.85	1.00

Note: Each row represents a solution and the cells highlighted in green indicate the presence of the condition in at least one of the pathways of that solution. The outcome is indicated under the ‘Outcome: Implementation Climate’ column.

The dot represents an INUS condition in a solution.

*Robustness scores range between 0 to 1; higher scores indicate higher robustness

Table 6. Individual-level solutions for implementation climate with consistency, coverage, and robustness scores

Individual-level Implementation Climate							
Supportive Leadership	Job Satisfaction	Burnout	Perceived Work Environment	Outcome: Implementation Climate	Consistency	Coverage	Robustness*
				MODERATE	0.76	0.93	0.72
				HIGH	0.81	0.85	0.64

Note: Each row represents a solution and the cells highlighted in green indicate the presence of the condition in at least one of the pathways of that solution. The outcome is indicated under the ‘Outcome: Implementation Climate’ column.

*Robustness scores range between 0 to 1; higher scores indicate higher robustness

Discussion

Our findings revealed that both organizational- and individual-level factors can influence teacher-counselors' perceptions of their organizations' implementation climate. Overall, across organizational- and individual-level CNA analyses, supportive leadership (i.e., head teacher and deputy teacher's support and endorsement of efforts to implement PT) was the only condition that was present in at least one pathway of all solutions, indicating its importance as a predictor of PT implementation climate. In fact, in both the organizational- and individual-level CNA solutions that yield *high* implementation climate, *high supportive leadership* was a *sufficient* condition in one of the pathways, *independently* yielding high levels of implementation climate. Our findings also revealed similarities and differences across moderate and high implementation climate solutions and across organizational- and individual-level models.

Organizational-level Implementation Climate

CNA results for organizational-level implementation climate demonstrated the importance of organizational characteristics and implementation practices that predict higher levels of implementation climate. This is consistent with the theory presented by suggesting that implementation climate depends (1) organizational characteristics (e.g., organizational readiness for change and organizational 'molar' climate) and (2) implementation practices (e.g., implementation leadership). Beyond supportive leadership, which we described as a sufficient solution pathway across all CNA analyses, other pathways to organizational-level *high implementation climate* included the combination of other organizational characteristics.

One pathway suggests that when teacher-counselors have highly positive feelings about their job, highly positive perceptions of their school environment, and confidence in their organization's ability to implement PT, then they are more likely to perceive their school as

having a high PT implementation climate. The other pathway suggests that having highly positive feelings about their job, highly proactive leadership, and high organizational commitment to implementing PT leads to higher levels of PT implementation climate. In comparing those two pathways, the first suggests that when teacher-counselors have positive feelings about their job in addition to positive perceptions of the work environment (i.e., cohesive environment), then all they need is to feel that their organization is capable of implementing PT to perceive high levels of implementation climate. On the other hand, when teacher-counselors have positive feelings about their job but not necessarily a highly positive, cohesive work environment, then they require highly proactive leadership (e.g., leaders facilitating PT implementation and removing obstacles to implementation) *and* organizational commitment to implementing PT. While different, these pathways have some overlap, namely highlighting the significance of molar climate. While more studies are needed to show the direct relationship between molar climate and implementation climate, Williams et al. (2020) found that organizations with more positive molar climate and high implementation climate predicted increased EBP use. This suggests that these two constructs may go hand-in-hand to support EBP implementation success.

It is also important to note that these different pathways to high implementation climate help us identify and/or design implementation strategies that harness elements of organizational readiness, implementation leadership, and molar climate to promote a high implementation climate, based on what is important for each context. Implementation strategies that lead to high levels of implementation climate have been gaining traction in the literature. A randomized pilot study and a RCT have shown that the Leadership and Organizational Change for Implementation (LOCI) is one strategy that has shown to promote a positive implementation climate through

transformational and implementation leadership skills for frontline, typically supervisor-level, leaders (Aarons et al., 2015; Skar et al., 2022). Further, in a pre-post outcome evaluation study, Proctor and colleagues found that the Training in Implementation Practice Leadership (TRIPLE) program is another implementation strategy that significantly increased implementation leadership skills and implementation climate (E. Proctor et al., 2019). TRIPLE involves building trainees' skills to assess quality of service delivery, identify appropriate and feasible evidence-based policies, practices, programs that address agency priorities, persuasively adopt new EBPs, increase stakeholder engagement, and ongoing monitoring. More research is needed to either adapt these strategies to low-resource settings or develop new implementation strategies that include elements that are important to facilitate high implementation climate in a given context.

The moderate implementation climate CNA analysis produced solutions that follow similar patterns to the high implementation climate solutions, involving combinations of moderate supportive leadership and organizational readiness subscales and/or personal feelings at work. This suggests that the variations of the level of supportive leadership, personal feelings at work, and organizational readiness can influence the perception levels of PT implementation climate. Interestingly, the moderate implementation CNA analysis successfully identified one INUS condition — *moderate supportive leadership* — which was observed in every pathway of the solution. Although moderate supportive leadership was insufficient alone, it was a necessary component of every pathway. This shows the importance of combining moderate supportive leadership with other organizational characteristics to achieve moderate levels of implementation climate, but interestingly, high levels of supportive leadership can sufficiently lead to high levels of implementation climate.

Individual-level Implementation Climate

Compared to the organizational-level implementation climate models, the individual-level models included fewer conditions which comprised of supportive leadership, burnout, job satisfaction, and perceived work environment. Individually perceived very high levels of job satisfaction and high levels of supportive leadership were each sufficient conditions for achieving individually perceived high implementation climate, the latter being consistent with organizational-level solutions. Further, a highly positive perception of the work environment *and* very low burnout achieved high levels of implementation climate. Determining causation is not as straightforward with these models because individual-level factors are not theoretically linked to perceptions of an implementation climate. However, these individual-level factors (e.g., job satisfaction and burnout) may highly correlate with organizational characteristics such as high levels of supportive leadership and molar climate, and thus yield high levels of PT implementation climate.

The moderate implementation climate CNA analysis produced a solution with pathways that follow similar patterns of the high implementation climate models that involved low (vs. very low) burnout, high (vs. very high) job satisfaction, and moderate (vs. high) supportive leadership. This suggests that the variations of the level of supportive leadership, burnout, and job satisfaction can influence the level of individually perceived PT implementation climate.

Interpretating the individual-level implementation climate CNA analyses should be done with caution. Jacobs et al. (2014) posit that it is important to consider that context in which implementation climate is being studied and found that group- or organizational-level climate measurement may be more appropriate when implementers are interdependent and interact frequently. This is likely the case with the teacher-counselors, as they are interacting with each

other daily in their schools, and co-deliver PT, and thus implementation climate may be more appropriately captured at the organizational-level.

Strengths & Limitations

This present study has several strengths. First, to our knowledge, it is one of the very first to examine causal chains of predictors of implementation climate using CNA. CNA is a rigorous analytical process that is gaining popularity within implementation and has the potential to help implementation researchers better understand causal relationships when studying complex interventions in settings with interdependent conditions, which is reflected in real-world settings (Whitaker et al., 2020). Second, to our knowledge, this is one of the first studies to look at both individual-level and organizational-level predictors of implementation climate. Exploring both allows for a more nuanced understanding of factors influencing implementation climate, which in turn, assists in informing future implementation efforts supporting organizations as a whole and its parts (i.e., its individual employees). Third, our analytic approach involved careful consideration of the literature and the systematic involvement of key stakeholders throughout the entire process, including Kenyan collaborators with contextual, clinical, and research expertise along with our US-based research team. We also plan to further our collaboration with our Kenyan colleagues by disseminating these findings and generating context-specific strategies or solutions that support PT implementation in the schools in Kenya.

This study also has some limitations that need to be considered when interpreting the findings. First, CNA is a relatively new statistical approach and needs more empirical support. Second, although CNA supports causal inferences, it is exploratory in nature and there are limitations to the degree in which the results may be generalized. However, exploratory analyses can be particularly useful when the literature on a given subject is limited — such as

determinants of implementation climate. CNA can be a powerful tool to assess implementation climate as it involves both stakeholders' perspectives as well as the data to inform efficient, context-specific implementation strategies. Third, there may be other determinants of a positive implementation climate that we have not measured and thus could not be included in our analysis. However, we tried to be thoughtful in selecting the most efficient set of determinants that we believe, based on strong theoretical support and stakeholder perspectives, would influence implementation climate.

Conclusion

Understanding predictors of implementation climate can provide insight into what is needed to facilitate successful EBT implementation. Through partnering with our Kenyan colleagues and employing CNA, we identified different combinations of individual- and organizational-level conditions that are minimally necessary or sufficient to achieve moderate and high levels of implementation climate. Our findings highlighted the importance of certain implementation practices, such as supportive leadership, and organizational characteristics (e.g., molar climate) that were repeatedly present in different solutions and their pathways. We raise important considerations with regards to the interpretation of our models. These findings can help inform context-specific, efficient implementation strategies — which is important for low-resource settings — that can promote higher levels of implementation climate and ultimately facilitate successful EBT implementation.

IV. Study 2: Linking Implementation Constructs to Clinical Outcomes

Implementation success, an organization-level construct, describes the aggregated consistency, quality, and appropriateness of a given innovation use in an organization (Klein et al., 2001; Weiner, 2009). In other words, implementation success refers to the extent to which an intervention, such as an EBT, has been successfully implemented in a given context. Proctor et al. (2011) describes that implementation outcomes (e.g., feasibility, acceptability, fidelity) serve as (1) indicators of implementation success, (2) proximal indicators of implementation processes, (3) key intermediate outcomes in relation to clinical outcomes (Rosen & Proctor, 1981). In a scoping review, Proctor and colleagues found that only a small number of studies examined implementation outcomes in relation to clinical outcomes, and that fidelity (i.e., the extent to which a treatment is delivered as intended) was the implementation outcome most frequently examined in relation to clinical outcomes (Proctor et al., 2023).

EBT fidelity has been considered an indicator of implementation success because it reflects, at least to some degree, the decisions and processes involved when adopting a given intervention (Weiner et al., 2009). Southam-Gerow & McLeod (2013) describe four components of treatment fidelity: adherence (i.e., degree to which a treatment is delivered as intended), differentiation (i.e., degree to which therapists deviate from a treatment manual), competence (i.e., quality of treatment delivery), and relational elements (i.e., alliance and client engagement). There is a growing body of work studying the relationship between fidelity and clinical outcomes, however the evidence is inconclusive. Some studies have demonstrated a link between a high degree of *adherence* to the treatment with improved clinical outcomes (Herschell, 2010; McArthur et al., 2012; Rakovshik & McManus, 2010). However, two meta-analyses that assessed the relationship between fidelity and clinical outcomes found that *competence* was not

significantly associated with clinical outcomes, and the more recent meta-analysis found a small but significant association between adherence and clinical outcomes (Collyer et al., 2020; Webb et al., 2010), attributing the lack of strong associations with measurement inconsistency. Another study that assessed a drug abuse prevention program among high school students revealed that higher adherence was actually associated with poorer clinical outcomes, namely increased alcohol use and anger (Sánchez et al., 2007).

The literature examining how implementation outcomes, which are indicators of implementation success, are related to improved clinical outcomes is growing, and therefore it is important to understand what factors promote favorable implementation outcomes. Implementation theorists outline factors that lead to desired implementation outcomes. Klein and colleagues' innovation implementation framework proposes that implementation strategies (sometimes referred to as implementation policies and practices) and an organization's employees' shared implementation climate perceptions influence implementation outcomes (Klein & Sorra, 1996). Subsequent implementation theories and frameworks have suggested that organizational characteristics can also influence implementation outcomes. For example, Weiner (2009) proposes that organizational readiness for change is a critical precursor for successful implementation of complex changes within healthcare settings. Organizational readiness for change was described as having two core components: (1) Change commitment/valence: whether organizational members *value* the specific change and (2) Change efficacy: "a function of organizational members' cognitive appraisal of three determinants of implementation capability: task demands, availability of resources, and contextual situational factors" (Weiner, 2009).

The research on the effect of organizational readiness on implementation success, while limited, demonstrates inconsistent findings. In a longitudinal mixed-methods study, Stanhope et

al. (2019) found that organizational readiness for change was positively associated with organizational leadership behaviors over time, leading to stronger endorsement of implementing a training initiative in community mental health clinics. In another pre-post study, organizational readiness improved implementation outcomes, namely acceptability and appropriateness of evidence-based substance use treatments in primary care (Ober et al., 2017). However, in a randomized trial, Beidas and colleagues found that organizational readiness for change was not associated with EBP fidelity (i.e., adherence), whereas adopter characteristics (e.g., attitudes toward EBPs) were significantly associated with fidelity (Beidas et al., 2014). More empirical work is needed to better understand when and how organizational readiness for change affects indicators of implementation success, such as fidelity. There is also very limited research examining how organizational readiness for change impacts clinical outcomes. In a systematic review assessing the relationship between organizational readiness and adoption of substance misuse treatment programs, the authors were not able to find articles that specifically studied whether organizational readiness for change was related to clinical outcomes (Kelly et al., 2017).

While working towards achieving successful EBT implementation is an important goal, it is imperative to demonstrate that successful EBT implementation actually matters for the improvement of clinical outcomes. Using data from the BASIC study, this investigation aims to test whether organizational characteristics and implementation outcomes impact clinical outcomes. Specifically, we are examining whether organizational readiness for change and different types of treatment fidelity — adherence and competence — predict improved clinical outcomes. We are also assessing whether adherence or competence mediate the relationship between organizational readiness for change and clinical outcomes.

Methods

Participants and Procedures

This secondary data analysis uses data from the BASIC study and includes a sample of 848 orphaned children in Bungoma, Kenya that received group-based PT from either a team of 3 teacher-counselors (embedded in schools) or 3 CHV-counselors (embedded in community health facilities). Teacher-counselors and CHV-counselors responded to surveys pre- and post-PT implementation. For teacher-counselors in the same school, a mean score was calculated for each measure to reflect organizational perceptions. For CHV-counselors in the community health facility, a mean score was calculated for each measure to reflect organizational perceptions. Our data included organization-level responses from a total of 40 schools and 39 community health facilities. See Table 1 for more details about study participants. The parent study procedures section (see page 11) elaborates on study procedures (e.g., randomization, PT implementation, and supervision).

Measures

Child and Adolescent Trauma Screen (CATS; child version) is a 20-item scale that measures child-reported post-traumatic stress symptoms (PTSS; Sachser et al., 2017). Children rated how often certain thoughts or experiences bothered them from 0 “Never” to 3 “Almost Always.” Example item includes “Bad dreams reminding you of what happened.” The caregiver version uses the same questions and reflect the caregiver’s perspective of the child’s experiences. A total symptom score is the sum of all 20 items (possible range 0 – 60), with higher scores indicating more severe PTSS. The baseline measure demonstrated good internal consistency in our sample with Cronbach $\alpha = 0.82$. This measure was our primary outcome variable. We ran

secondary multilevel path analyses with *guardian-reported* PTSS as our outcome. We have not reported these results in this paper — an illustration of these results can be found in Appendix B.

Organizational Readiness for Implementing Change (ORIC) scale, adapted from Shea et al. (2014), measures “the extent to which organizational members are psychologically and behaviorally prepared to implement organizational change,” and included a total of 11 items split by two subscales: change commitment and change efficacy. Five items measure change commitment (e.g., “[People you work with] will do whatever it takes to implement [Pamoja Tunaweza/TF-CBT].”) Six items measure change efficacy (e.g., “[People you do your work with feel confident that they can] keep track of progress in implementing [Pamoja Tunaweza/TF-CBT].”) All items were rated on a five-point Likert scale from “strongly disagree” to “strongly agree.” Higher scores indicate higher change commitment or change efficacy, respectively. The teacher-counselors’ responses were aggregated to the school level, whereas the CHV-counselors were aggregated to the community health facility team level to account for clustering and to represent an organizational-level estimate. This measure demonstrated excellent internal consistency in our sample with Cronbach $\alpha = 0.91$. ORIC is the only exogenous, predictor variable in our models, such that its variance is not dependent on any other variables in our model.

Treatment fidelity assessment included adherence and competence which was measured by supervisors’ live observations of TF-CBT groups (both child- and guardian-groups). For adherence, supervisors rated whether the counselors followed the steps during each session from 1 “Misses five steps or more” to 6 “Follows all the steps.” For competence, supervisors rated how skillfully counselors implemented the steps (i.e., whether they have demonstrated up to 6 skills including praise, normalizing, asking questions to engage children/guardians) from 1

“Demonstrates only 1 or fewer skills” to 6 “Demonstrates all 6 skills.” Appendix A shows an example of the fidelity rating sheet (i.e., group observation form) for one of the child-group sessions. For each counselor, mean scores of adherence and competence were obtained for both child- and guardian groups. Higher scores indicated better adherence and better competence in delivering the steps, respectively. Child- and guardian-group adherence and competence are considered predictors in separate path analyses model.

Baseline PTSS, child sex, and child age were covariates that we adjusted for in all of our models. As noted in the general measurement approach section, with the help of our Kenyan partners, the BASIC study measures included culturally adapted validated measures or newly developed, theory-driven, context-relevant measures.

Analysis Plan

In this study, we plan to assess whether: (1) organizational readiness for change is associated with better clinical outcomes, whether fidelity (i.e., adherence and competence) are separately associated with better clinical outcomes, and (3) whether components of fidelity (i.e., adherence and competence) mediate the relationship between organizational readiness for change and better clinical outcomes. All analyses are intent-to-treat. Correlation analyses between our variables of interest were examined and intraclass correlations (ICCs) were calculated to determine the appropriateness of multilevel modeling. We proceeded to conduct multilevel path analyses in R version 4.3.2 using the *lavaan* package (Rosseel, 2012). Our analyses included nested data (children nested within a team of teacher-counselors or CHV-counselors, which reflect organizational-level nesting for the Education and Health sectors, respectively) and our goal was to explore how organizational-level characteristics (Level 2 variables) predicted child-level clinical outcomes (Level 1 variables). Similar to other studies (e.g., Hurd et al., 2013), our

variables were considered observed variables, and not latent variables, because they were obtained from self-report scales with strong internal reliability. Our analyses are best described as multilevel path analyses testing for direct and indirect effects of organizational-level characteristics on child-reported post-treatment PTSS. Further, our analyses were separated into two sets of analyses to represent two different sectors in Kenya: (1) Education sector (i.e., schools) and (2) Health sector (i.e., communities). For each analysis, Level 2 predictor variables included organizational readiness for implementing change and one of the four fidelity indicators: (1) Child Group Adherence, (2) Child Group Competence, (3) Guardian Group Adherence, and (4) Guardian Group Competence. The fidelity indicators represented mediators in our models. Since these four fidelity indicators were highly correlated (i.e., $r \geq 0.80$ consistently), they are likely to bias coefficient estimates and thus it is not recommended to include them in the same path analysis (Grewal et al., 2004). Our outcome variable was post-treatment child PTSS. We included three Level 1 covariates: child age, child sex, and baseline PTSS symptoms. Standard errors were calculated using 1000 bootstrapped samples, and we employed full information maximum likelihood in all our models to address limited missingness. We evaluated model fit using Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR) based on criteria outlined in (Hu & Bentler, 1999).

Results

Table 1 summarizes participant demographics. In the Education sector, 50% children were female ($n = 218$) and had a mean age of 12.7 ($SD = 1.1$). 63.8% of these children had a living mother, and 26.4% of them had a living father. Boys in the education sector had an average baseline PTS score of 29.8 ($SD = 10.9$), and an average post-treatment PTSS score of 14.6 ($SD = 11.4$). Girls in the education sector had an average baseline PTSS score of 26.9 ($SD = 10.9$), and an average post-treatment PTSS score of 14.7 ($SD = 11.2$). Table 2 breaks down baseline and post-treatment PTSS by sector and sex.

In the health sector, 47.8% children were female ($n = 198$) and had a mean age of 12.7 ($SD = 1.12$). 65.4% of these children had a living mother and 25.7% of them had a living father. Boys in the health sector had an average baseline PTSS score of 28.7 ($SD = 10.9$), and an average post-treatment PTSS score of 14.1 ($SD = 10.7$). Girls in the health sector had an average baseline PTSS score of 27.3 ($SD = 11.2$), and an average post-treatment PTSS score of 13.4 ($SD = 9.6$; see Table 2).

In the Education sector, the average organizational readiness for implementing change rating was 4 ($SD = 0.4$), where the measure responses range from 1 to 5. With regards to fidelity scores, the child-group average adherence and competence scores were 4.5 ($SD = 0.5$) and 4.4 ($SD = 0.4$), respectively, where scores ranged from 1 to 6. The guardian-group average adherence and competence scores were 4.4 ($SD = 0.5$) and 4.5 ($SD = 0.5$), respectively.

The health sector had an average organizational readiness for implementing change rating of 4.5 ($SD = 0.2$), which is statistically significantly higher than the Education sector's average, $t(62) = 7.6, p < 0.001$. With regards to fidelity scores, the child-group average adherence and

competence scores were 4.2 ($SD = 0.5$) and 4.2 ($SD = 0.5$), respectively. The guardian-group average adherence and competence scores were 4.1 ($SD = 0.5$) and 4.2 ($SD = 0.5$), respectively.

Guardian-group adherence scores were statistically significantly higher in Education (vs. Health), $t(74) = 2.8, p = 0.007$. Child-group adherence scores were statistically significantly higher in Education (vs. Health), $t(75) = 2.7, p = 0.009$. Guardian-group competence scores were statistically significantly higher in the Education (vs. Health), $t(74) = 2.8, p = 0.007$. Child-group competence scores were statistically significantly higher in the Education (vs. Health), $t(74) = 2.2, p = 0.03$. It is important to note that while the differences are statistically significant, they are not necessarily clinically significant. In our study, fidelity ratings between 4 to 4.5 are comparable in practice. Average fidelity scores in both sectors are considered relatively high. Overall, missingness was less than 5% and was determined to be missing at random.

Table 1. Child and Sector Characteristics

Variable	Education	Health
Child Characteristics ($N = 848$)	<i>Children (n = 436)</i>	<i>Children (n = 414)</i>
Female, n (%)	218 (50%)	198 (47.8%)
Age, $M (SD)$	12.69 (1.1)	12.71 (1.2)
Tribe, n (%)		
Luhya	407 (93.6%)	389 (93.9%)
Luo	11 (2.5%)	4 (1.0%)
Kikuyu	3 (0.7%)	3 (0.7%)
Kisi	2 (0.5%)	3 (0.7%)
Teso	13 (3.0%)	15 (3.6%)
% Mother Alive	63.8%	65.4%
% Father Alive	26.4%	25.7%
Sector Characteristics ($N = 79$), $M (SD)$	<i>Schools (n = 40)</i>	<i>Community Health Facilities (n = 39)</i>
Organizational Readiness	4.0 (0.4)	4.5 (0.2)
Child Group Adherence	4.5 (0.5)	4.2 (0.5)
Child Group Competence	4.4 (0.4)	4.2 (0.5)
Guardian Group Adherence	4.4 (0.5)	4.1 (0.5)
Guardian Group Competence	4.5 (0.5)	4.2 (0.5)

M = mean; SD = standard deviation

Table 2. Post-traumatic Symptom Disorder (PTSD) Symptoms Scores

Variables (<i>M, SD</i>)	Education Sector		Health Sector	
	Boys	Girls	Boys	Girls
Child-reported Baseline PTSD Score	29.8 (10.9)	26.9 (10.9)	28.7 (10.9)	27.3 (11.2)
Child-reported Post-Treatment PTSD Score	14.6 (11.4)	14.7 (11.2)	14.1 (10.7)	13.4 (9.75)

M = mean; SD = standard deviation

Education Sector (Teacher-Counselor Delivery)

For all multilevel path analyses, the CFI, TLI, RMSEA, and SRMR indicated acceptable model fit (CFI = 1, TLI = 1, RMSEA < 0.01, and SRMR < 0.01). ICCs for all models revealed that at least 5% of the variance in child-reported PTSS could be explained by school-level differences, justifying multilevel modeling. Figures 1 – 3 demonstrate unstandardized estimates for statistically significant paths of interest for each multilevel path analysis after adjusting for predictors and covariates in each model. Higher levels of organizational readiness for change predicted higher levels of child-group adherence ($b = 0.41, SE = 0.18, p = 0.02$; see Figure 1). No statistically significant associations were found between child-group adherence and clinical outcomes. Further, our results did not demonstrate that child-group competence was associated with either organizational readiness for change or post-treatment PTSS.

With regards to path analyses that included guardian-group fidelity, higher levels of guardian-group adherence predicted statistically significantly lower post-treatment PTSS ($b = -2.99, SE = 1.48, p = 0.04$; see Figure 2). Higher levels of guardian-reported competence predicted statistically significantly lower post-treatment PTSS ($b = -3.50, SE = 1.38, p = 0.01$; see Figure 3). Our findings did not show support for the association between organizational readiness for change and guardian-group fidelity. No mediation effects were found.

Figure 1. Multilevel Path Analysis Testing the Relationships Between Organizational Readiness, Child-Group Adherence and Post-Treatment PTSS (Education Sector)

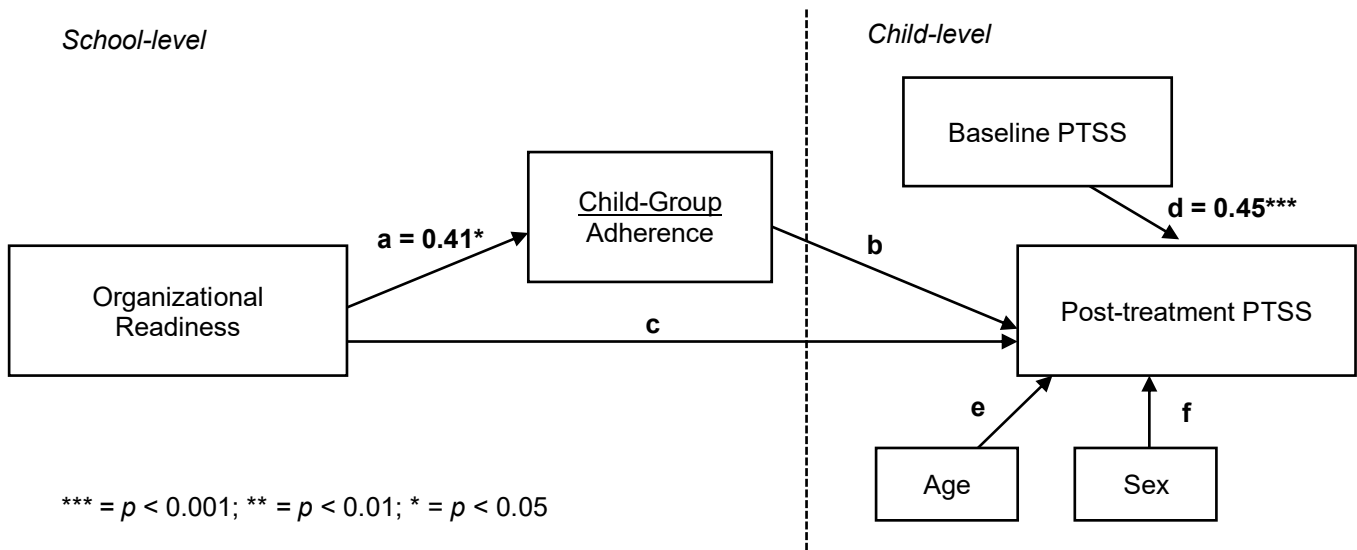


Figure 2. Multilevel Path Analysis Testing the Relationships Between Organizational Readiness, Guardian-Group Adherence, and post-treatment PTSS (Education Sector)

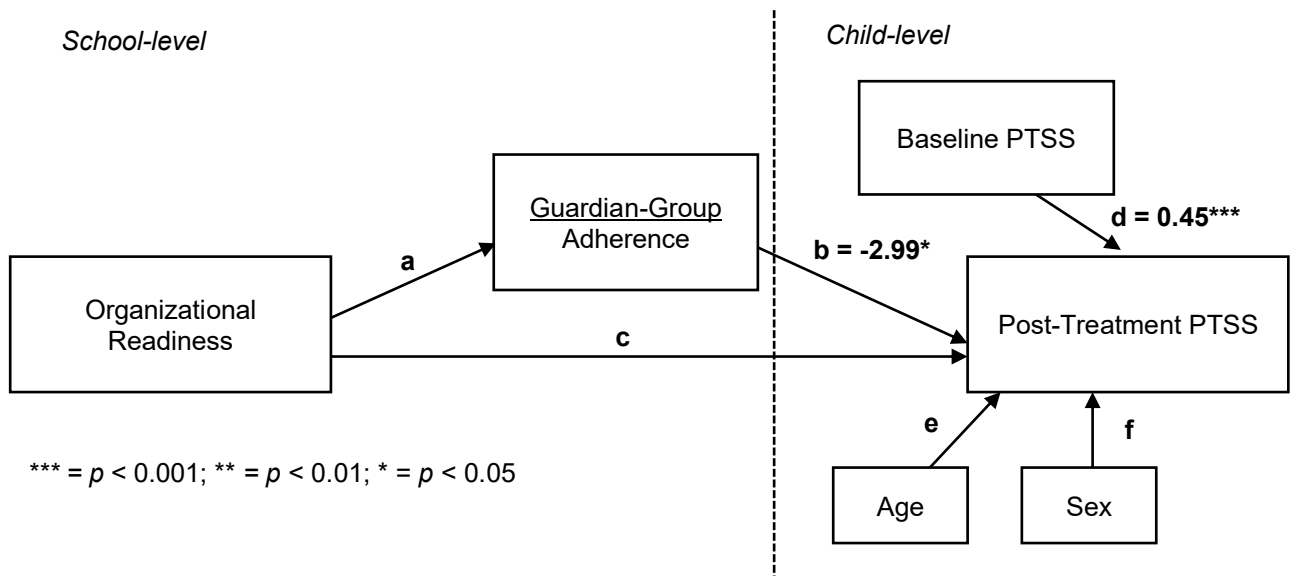
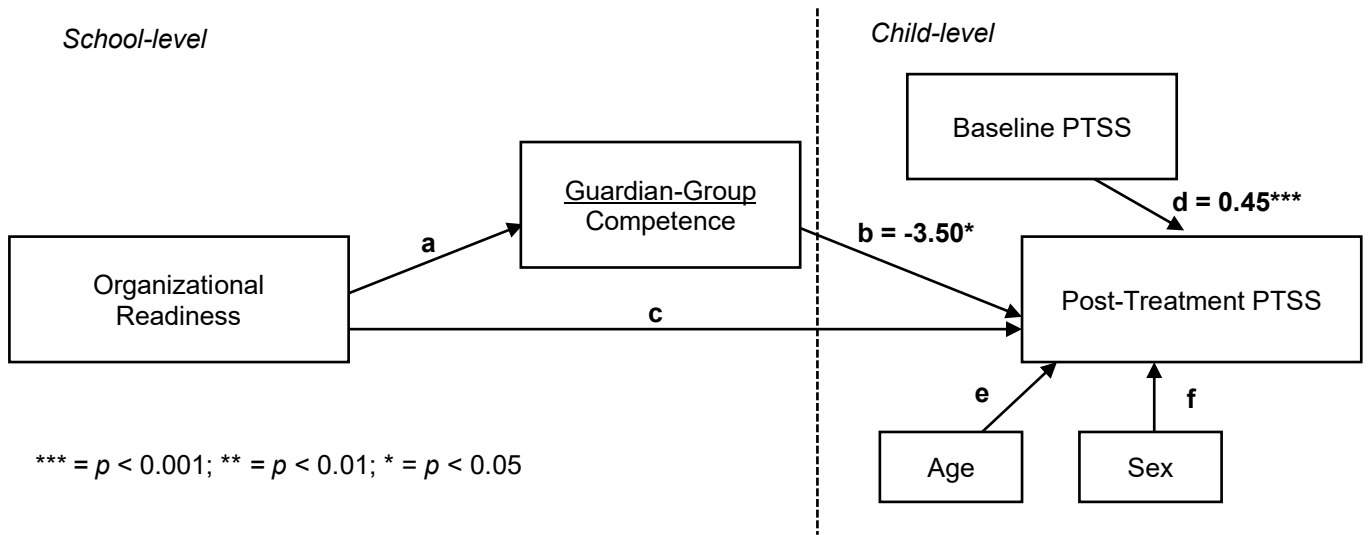


Figure 3. Multilevel Path Analysis Testing the Relationships between Organizational Readiness Guardian-Group Competence and post-treatment PTSS (Education Sector)



Health Sector (CHV-counselor Delivery)

For all of our multilevel path analyses, the CFI, TLI, RMSEA, and SRMR indicated acceptable model fit (CFI = 1, TLI = 1, RMSEA < 0.01, and SRMR < 0.01). ICCs for all models revealed that at least 5% of the variance in child PTSS could be explained by community health facility-level differences, justifying multilevel modeling. Figures 4 to 6 demonstrate unstandardized estimates for statistically significant paths of interest for each multilevel path analysis after adjusting for predictors and covariates in each model. When examining relationships between organizational readiness, child-group competence, and child PTSS, only one direct effect was identified. Higher levels of child-group competence predicted lower levels of post-treatment PTSS ($b = -3.04$, $SE = 1.23$, $p = 0.01$). When examining relationships between organizational readiness, guardian-group adherence, and post-treatment PTSS, one direct effect was identified. Higher levels of *guardian-group adherence* predicted statistically significantly lower post-treatment PTSS ($b = -3.11$, $SE = 1.11$, $p = 0.005$). When examining relationships

between organizational readiness, *guardian-group competence*, and post-treatment PTSS, one direct effect was identified. Higher levels of *guardian-group competence* predicted statistically significantly lower post-treatment PTSS ($b = -2.83$, $SE = 1.04$, $p = 0.006$). No mediation effects were found.

Figure 4. Multilevel Path Analysis Testing the Relationships between Organizational Readiness, Child-Group Competence, and Post-Treatment PTSS (Health Sector)

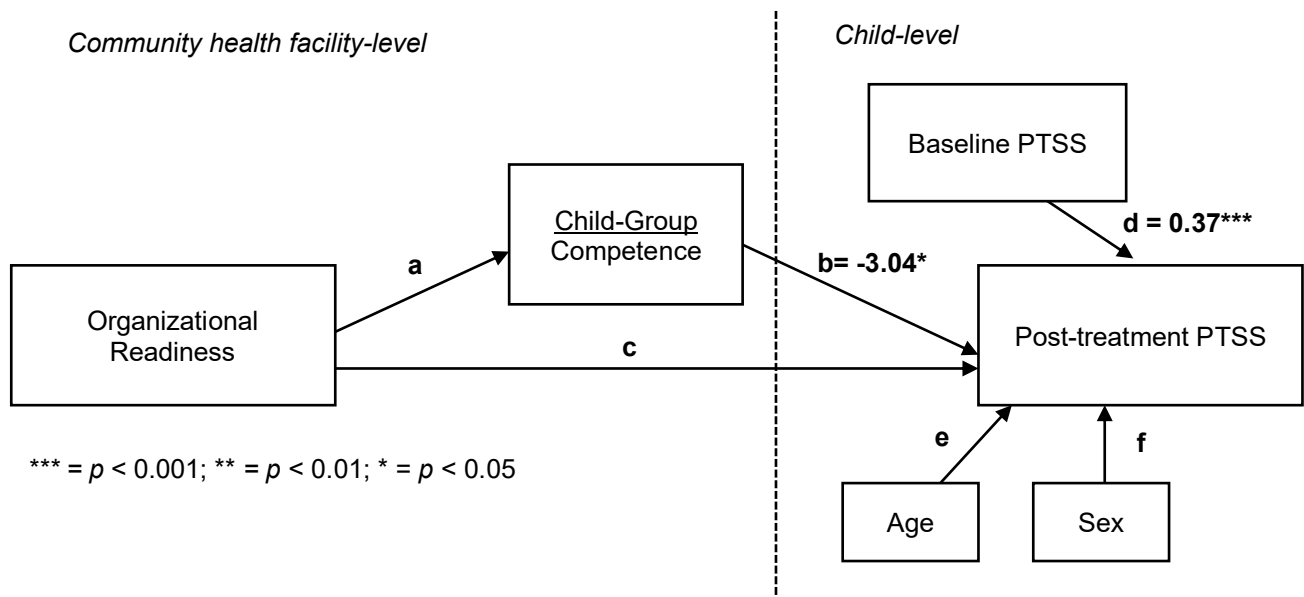


Figure 5. Multilevel Path Analysis Testing the Relationships between Organizational Readiness, Guardian-Group Adherence, and Post-Treatment PTSS (Health Sector)

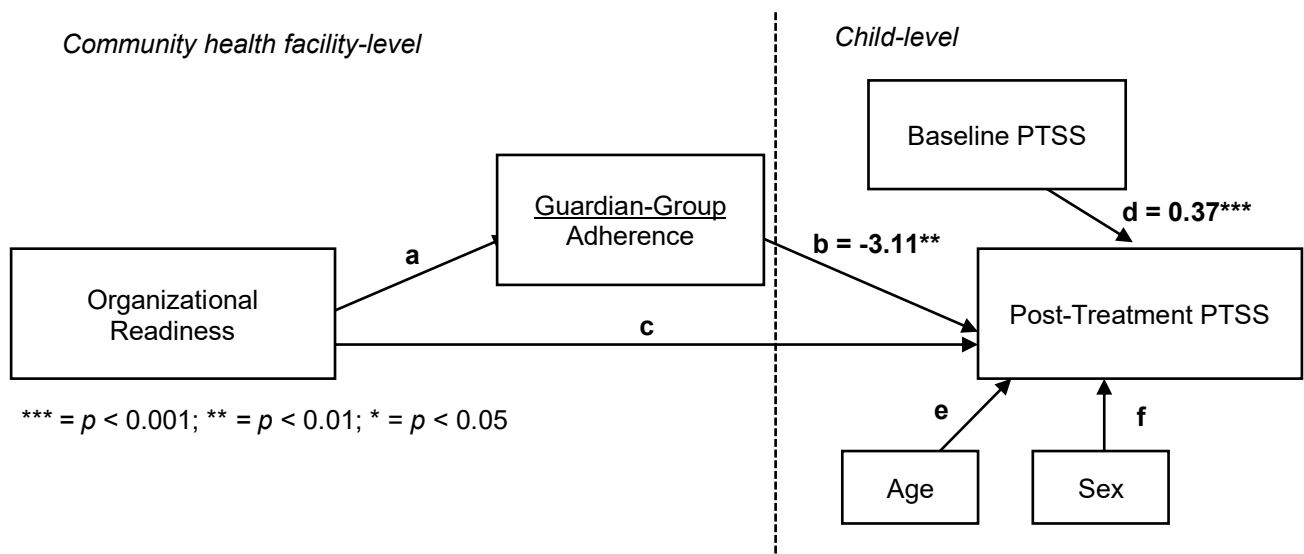
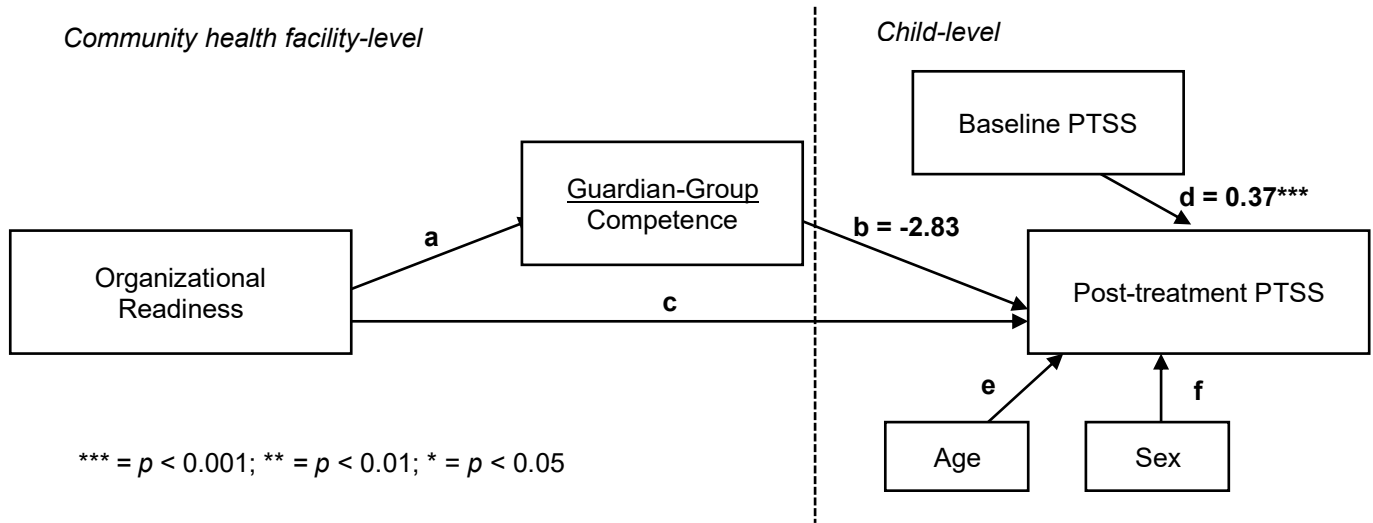


Figure 6. Multilevel Path Analysis Testing the Relationships between Organizational Readiness, Guardian-Group Competence, and Post-Treatment PTSS (Health Sector)



Discussion

Our findings demonstrated that none of the models revealed a significant relationship between organizational readiness and clinical outcomes. Higher levels of organizational readiness for change were only significantly related to adherence, and only in the child groups. Interestingly, in both the education and health sectors, higher levels of *guardian-group* adherence and competence were associated with improved clinical outcomes, underscoring the importance of guardian involvement in PT. Contrary to what we expected, child-group fidelity indicators were not significantly related to clinical outcomes in the Education sector models, and only high levels of child-group competence were associated with improved clinical outcomes in community health facility-level models.

Contrary to our hypotheses, our path analyses did not show evidence of the mediating effect of either aspect of fidelity—adherence or competence—on the relationship between organizational readiness for change and clinical outcomes. One possible explanation may be that both the education and health sectors' mean ratings of organizational readiness and fidelity measures were relatively high. If our data had more variability in both readiness and fidelity, we may have been able to see how, for example, higher levels of fidelity might mediate the relationship between high organizational readiness ratings and significantly lower post-treatment PTSS. In collaborating with our partners in Kenya that include teacher- and CHV-counselors, they anecdotally reported that they, along with their school or community health facility leaders, are enthusiastic about 'this change' (i.e., implementation of PT) because they would not otherwise have been able to provide the necessary support for children that have experienced parental death. Therefore, teacher- and CHV-counselors' perceptions of their organization's readiness to implement PT was certainly high and has inevitably contributed to the successful

implementation of PT. Further, the high levels of fidelity are also a testament to counselors' clinical skills and their supervisors' commitment to fidelity, given their own training, knowledge, and skill in PT. Another potential explanation is that there may be other organizational variables that are more strongly related to fidelity and clinical outcomes that were not accounted for in our models. For example, in an observational study in the U.S. examining factors related to EBP fidelity for autism, Williams et al. (2019) found that highly proficient cultures (i.e., staff perceptions that they are expected to prioritize being responsive to client needs and well-being and maintain competence in up-to-date treatment models) and highly positive climates are strong predictors of EBP fidelity. Further, in a review by Glisson & Williams, also in the U.S., organizational cultures with high levels of proficiency and low levels of resistance and rigidity produced the best clinical outcomes for youth (Glisson & Williams, 2015). It is important to consider these findings and be mindful of the contextual and cultural differences, especially given that these studies are US-based and our study is based in Kenya. Exploring how organizational 'molar' climate and culture in a given context may help us better understand the relationship between fidelity and clinical outcomes.

Education Sector (Teacher-Counselor Delivery)

Higher levels of organizational readiness only predicted higher child-group adherence, while other studies, such as Beidas et al. (2014), did not find a strong association between readiness and adherence. Beidas et al. (2014) explained that their study had ratings of individual therapist scores of organizational readiness for change, rather than scores aggregated to the organization level, which is what the readiness construct has been validated for. This could potentially explain the differences in our findings given that our organizational readiness scores were aggregated to the organizational level. Thus, our findings show support for two theories.

First, it is consistent with the EPIS framework that posits that inner-context variables (e.g., intra-organizational variables like organizational readiness for change) and likely to affect implementation outcomes (e.g., fidelity; Aarons et al., 2011). Second, it also consistent with the theory presented by Weiner (2009) proposing that organizational readiness for change is an important precursor for successful implementation of complex changes within healthcare settings. Interestingly, in this study, the significant relationship between organizational readiness for change and adherence was only apparent in the Education sector models (vs. Health sector). This is likely because schools (vs. community health facilities), as an organization, play a more daily interactional role in teacher-counselors' experiences (vs. CHVs in the health facilities) and may be more influential in determining how teachers deliver PT (e.g., treatment adherence). In other words, teacher-counselors engage in their regular work activities *and* deliver PT in the same organization (i.e., schools), whereas CHV-counselors are situated within health facilities but deliver PT in different community spaces (e.g., schools) and predominantly work day-to-day in communities. Thus, CHVs' perceptions of their organization's readiness to implement PT may not significantly affect their PT delivery.

Higher levels of guardian-group adherence and competence were associated with lower PTSS. This finding adds to some literature that supports the link between a high degree of treatment adherence and improved clinical outcomes (Herschell, 2010; McArthur et al., 2012; Rakovshik & McManus, 2010). On the other hand, there's also some literature that shows that neither adherence (e.g., Southam-Gerow et al., 2021) nor competence (e.g., Collyer et al., 2020; Webb et al., 2010) demonstrated strong associations with clinical outcomes, potentially due to measurement inconsistencies. One of the main strengths of this paper is that fidelity was measured using observed ratings of adherence and competence, where well-trained, highly

skilled PT supervisors themselves observed live child- and guardian-groups and rated adherence and competence using a clear, standardized checklist.

Health Sector (CHV-Counselor Delivery)

Across all path analyses, organizational readiness was not associated with clinical outcomes nor fidelity indicators. As noted earlier, this could be because the community health facilities within the health sector are organizational structures or places in which CHVs typically have daily interaction, and thus health facility organizational factors may not directly influence implementation outcomes such as fidelity.

Consistent with the Education sector models, our findings also demonstrated that high levels of guardian-group adherence and competence were associated with improved clinical outcomes in the health sector. Moreover, higher levels of child-group competence were associated with better clinical outcomes. This significant relationship was not present in the Education sector models. This could be explained by the limited variability in the child-group competence scores in the Education sector (vs. Health sector), which is consistent with other studies such that competence was rarely rated as low (Collyer et al., 2020). In the Health sector, the range of competence ratings include more medium-level competence (scores around 3 to 3.5), whereas the Education sector competence ratings are relatively higher and include less medium-level competence scores. This may also suggest that there is a certain threshold of competence that once met (e.g., 4 and above), it can make a more meaningful clinical difference. Future research should explore whether different levels of competence affect clinical outcomes differently.

Strengths and Limitations

This study has some important strengths to consider. First, to our knowledge, this is one of the first studies that explores paths between organizational characteristics, implementation outcomes, and clinical outcomes. It is important to understand how contextual and implementation factors can be leveraged to improve clinical outcomes, which is ultimately the most important goal. Second, after guidance from the literature and experts in the field, this study's approach to fidelity involves live observations of group sessions and rating adherence and competence. Third, this is one of the very few studies that concurrently tested how different measures of fidelity (i.e., adherence and competence) affected *both* child-reported and guardian-reported clinical outcomes, allowing us to examine more specific paths to improved clinical outcomes. Fourth, this study incorporates a large sample size of children and their respective counselors and sites from two sectors in Kenya (i.e., Health and Education). This allows us to better understand what matters in different contexts, which is particularly helpful when designing policies and practices that facilitate PT implementation in both sectors.

Along with these strengths, interpretation of these findings must be considered in light of this study's limitations. First, our path analyses do not capture all the contextual and implementation factors along the pathway that may account for what predicts clinical outcomes. Second, the fidelity measures we are using include direct observation of about 50% of PT sessions, and thus we are not capturing counselors' fidelity across all their PT sessions. Third, fidelity and organizational readiness for change were relatively high across the board. Having more variability would have helped us better understand how different levels of fidelity and organizational readiness could have impacted clinical outcomes.

Conclusion

This study explored how organizational and implementation constructs are associated with improved clinical outcomes. Our findings found that across both the education and health sectors in Western Kenya, guardian-group adherence and competence improved clinical outcomes, highlighting the importance of guardian/caregiver involvement in PT. Our findings also revealed that organizational readiness only predicted one type of fidelity — child-group adherence — in the Education sector models, likely due to teacher-counselors' embeddedness and daily interactions in their organizations (i.e., schools) compared to CHV-counselors. We raise important considerations with regards to the interpretation of our models based on the education and health sectors. This data helped us better understand what matters and for what context, which is important to identify implementation targets that facilitate better implementation and clinical outcomes.

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Appendix A



BASIC Group Observation Form – CHILD Group 5

Date: _____	Site Name: _____	Counselor: <input type="checkbox"/> Teacher <input type="checkbox"/> CHV
ACE Supervisor Name: _____	Supervisor Signature: _____	Group: <input type="checkbox"/> Male <input type="checkbox"/> Female
Lead Counselor ID: _____	Support Counselor ID: _____	Observation time (min): _____

GROUP CONTENT	Observations				Rate 0-6 (optional)
	Yes	No	Didn't Observe	Notes to help inform your overall rating below.	
Review: Talking about Difficult Memories; facing triggers/reminders of parent's death					
Check Homework: relaxation and facing triggers					
Thinking in a Different Way II; choose a technique to address common thoughts					
<u>Next week</u> : What I miss and don't miss; sharing the TN					
<u>Assign Homework</u> : Practice new thoughts and facing triggers; remember triangles; write down new thoughts to use in group 6					

FIDELITY RATING	Notes	Rating (1-6)
OVERALL Adherence; Following the recipe/steps (1-6) <i>Do not rate lower because of child or guardian response</i>		



BASIC Group Observation Form – CHILD Group 5

GROUP SKILLS/COMPETENCE	Observations				Rate 0-6 (optional)
	Yes	No	Didn't Observe	Notes to help inform your overall rating below.	
Spices it up/steps in own words (not just reading steps sheet)					
Shows support and empathy					
Uses Praise					
Normalizes with child/guardian appropriately					
Uses words a child would understand					
Checking in with guardians/ children one-by-one					
Asks questions to elicit information					

FIDELITY RATING	Notes	Rating (1-6)
OVERALL Skill/Competence; "spicing it up"		



BASIC Group Observation Form – CHILD Group 5

Notes on your observation, to inform feedback in supervision and to explain your rating:

Observed Strengths (be specific, listing x-x strengths):

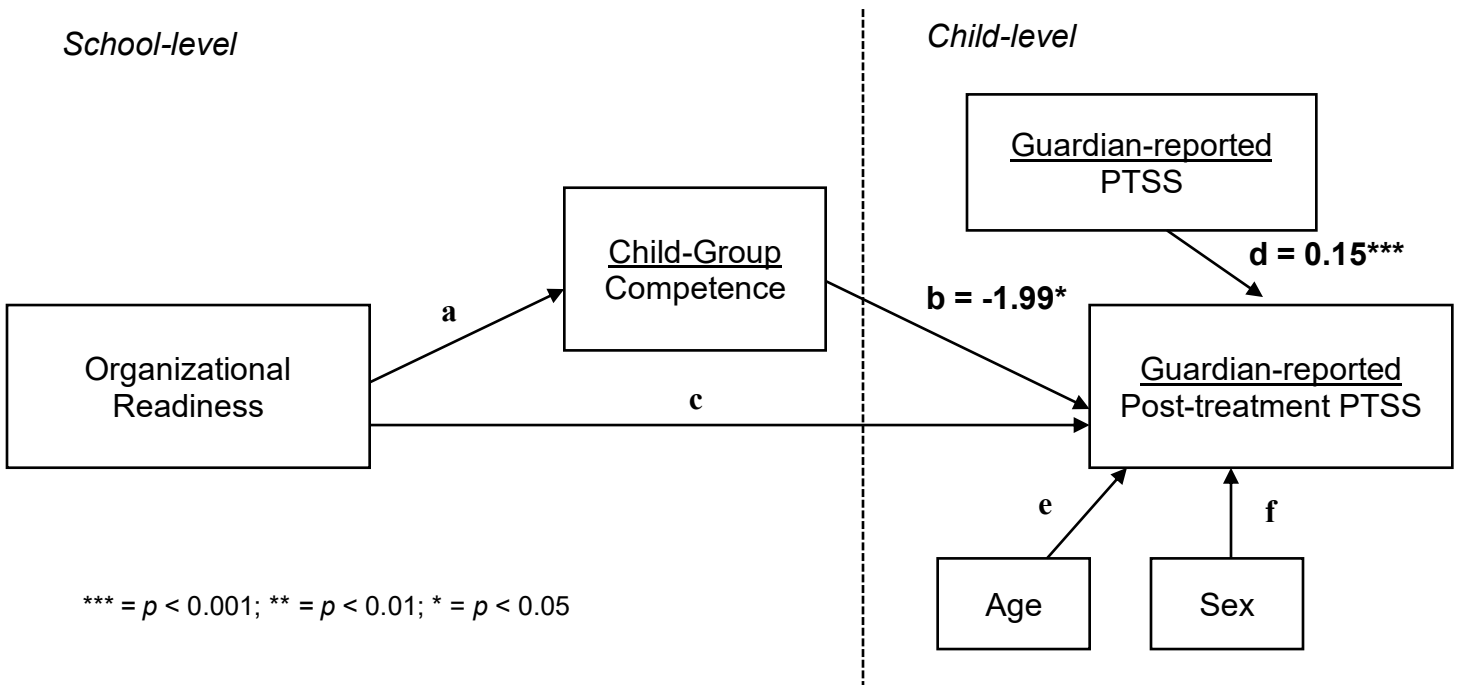
Observed Areas for Improvement (be specific, listing x-x improvements):

Any additional comments from the observation (e.g., had to repeat/redo component from previous session and why; noted a resource missing- like chalk to write the agenda; group leader was late/less involved):

Appendix B

Consistent with our primary analyses, we used multilevel path analyses to examine how organizational readiness, TF-CBT fidelity (adherence and competence), and *guardian-reported* post-traumatic stress symptoms (PTSS) are related. Baseline *guardian-reported* PTSS, child sex, and child age were covariates that we adjusted for in all of our models. For all multilevel path analyses, the CFI, TLI, RMSEA, and SRMR indicated acceptable model fit (CFI = 1, TLI = 1, RMSEA < 0.01, and SRMR < 0.01). ICCs for all models revealed that at least 5% of the variance in child-reported PTSS could be explained by school-level differences, justifying multilevel modeling. Each figure/model illustrates a different multilevel path analysis that has at least one statistically significant path between our primary predictor(s) and/or outcome. Unstandardized estimates are labeled in the statistically significant paths only (depicted via an arrow).

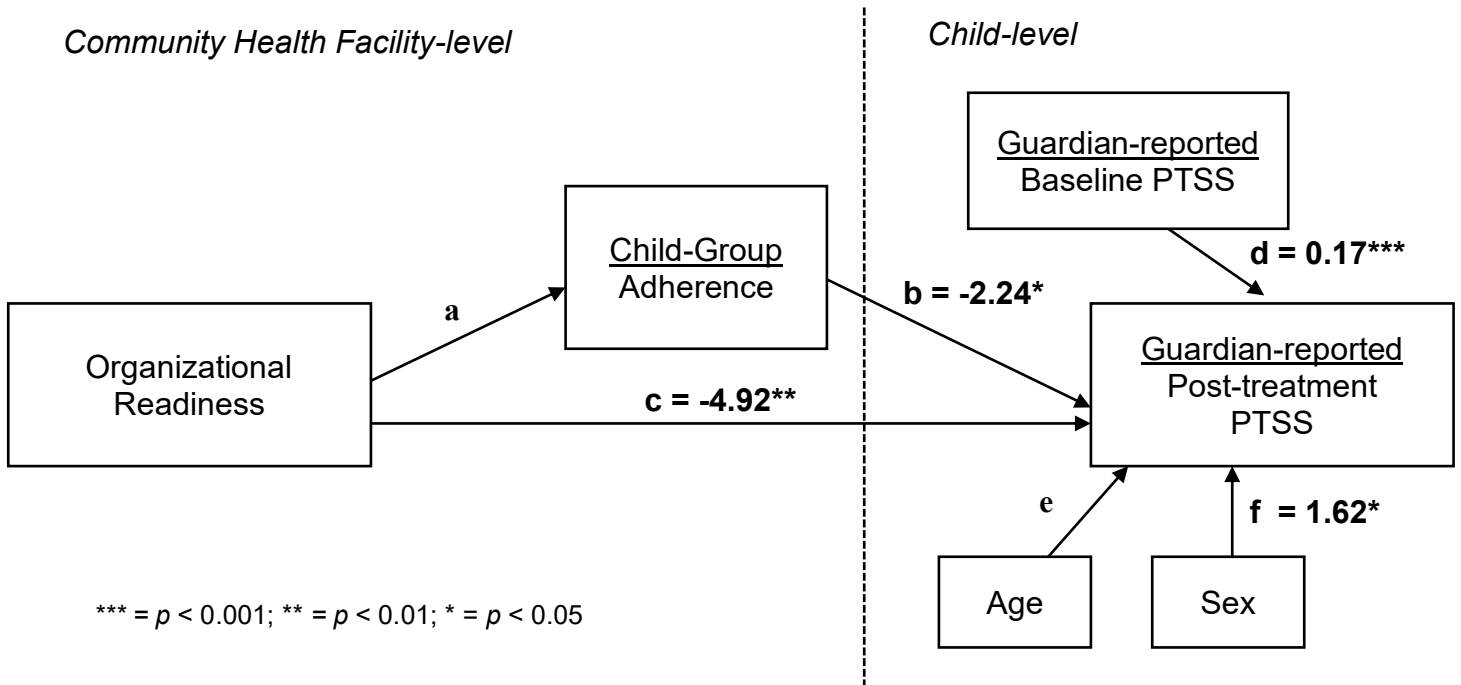
Education Sector



Health Sector

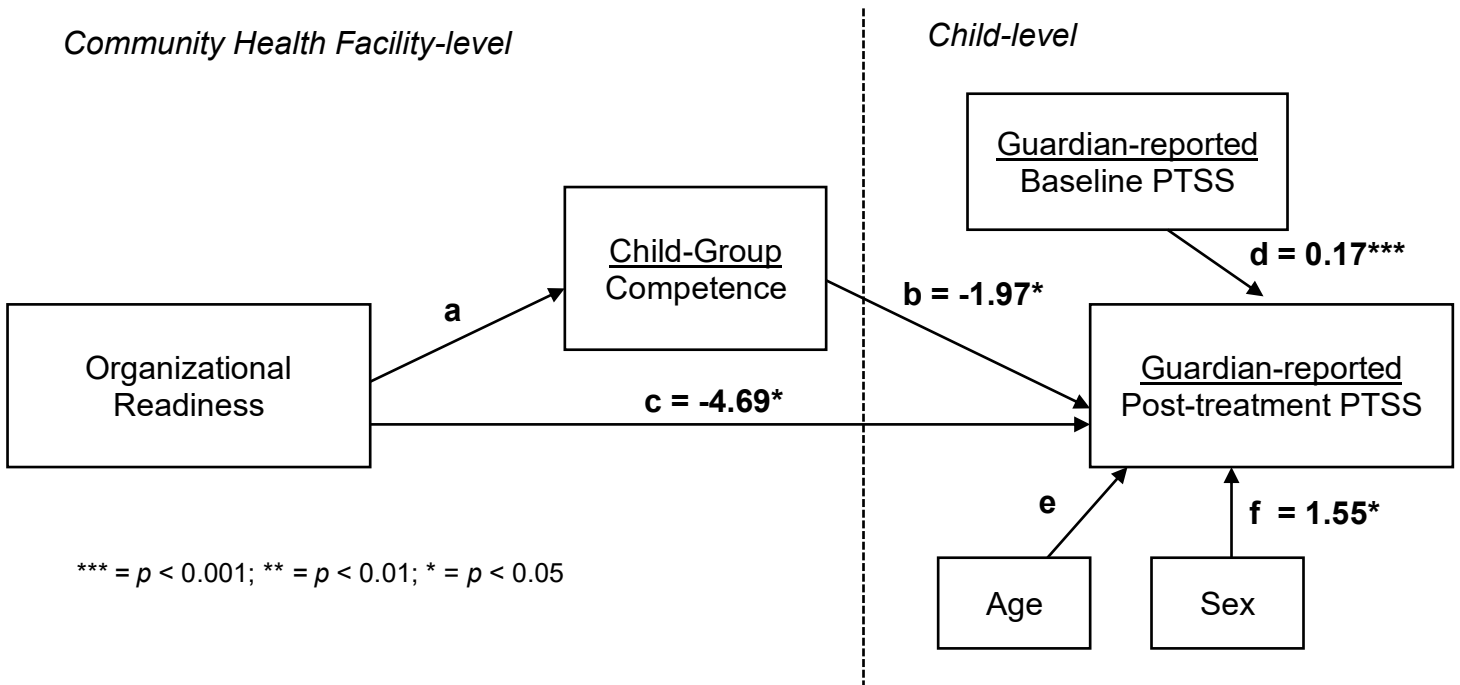
Community Health Facility-level

Child-level



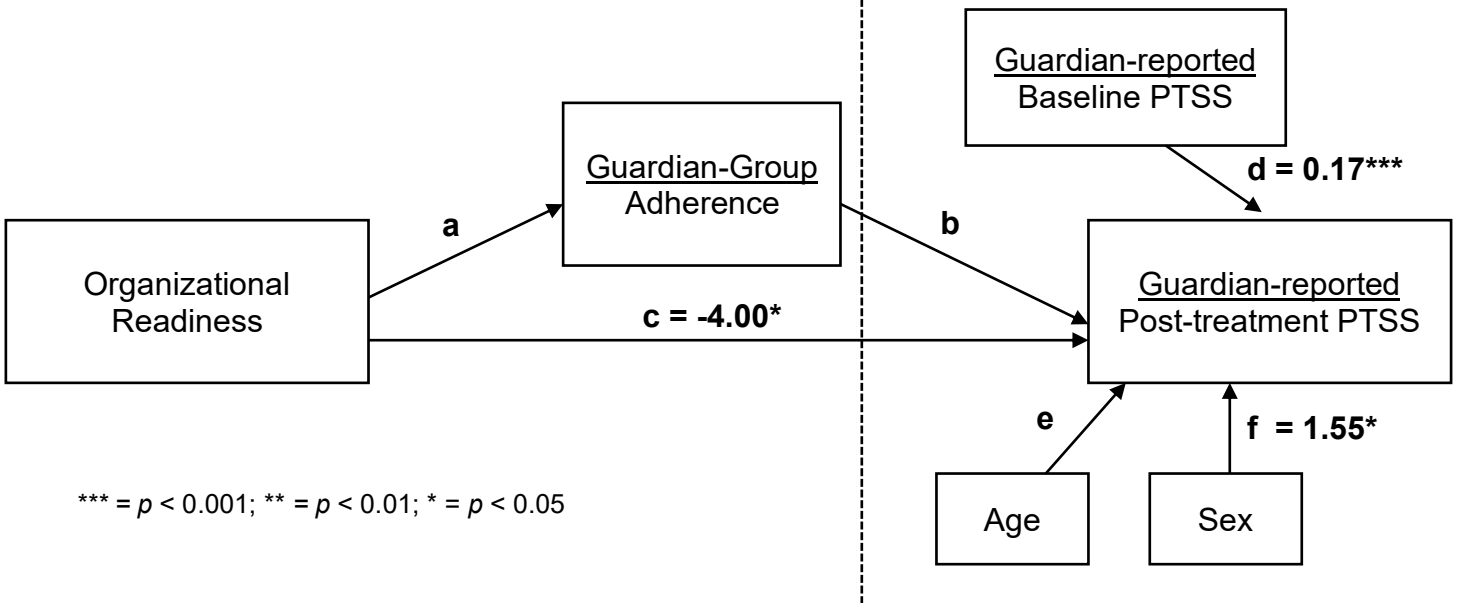
Community Health Facility-level

Child-level



Community Health Facility-level

Child-level



Community Health Facility-level

Child-level

