Research Article

Proof-of-Concept Evaluation of the Reaching Families Engagement System for Youth Mental Health Workers in India

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Abstract

Objective: Low engagement in youth mental health services is a global concern. This study evaluated the feasibility, acceptability, and training outcomes of the Reaching Families Engagement System (ES) taught to youth mental health workers (MHWs) in India. **Method:** Twenty-four MHWs participated in a five-hour training on the ES. Training feasibility (i.e., completion of training procedures) and ES acceptability (i.e., MHW report of perceived ease of use and utility) were assessed at post-training. Before and after the training, MHWs audio-recorded conversations about a youth they identified as experiencing low engagement. Conversations were evaluated using behavioral coding to yield training outcomes. **Results:** The ES training was feasible and the ES was acceptable, with ratings of high ease of use and utility. At post-training, participants demonstrated expanded breadth of conversation about engagement problems and practices, increased matching between the identified problem and the chosen engagement practice, and greater planning for implementation and measurement. **Conclusions:** Findings converged with benchmarks provided by pilot testing of the ES in the U.S. and suggest that a larger, more rigorous study could yield important findings about the training effectiveness of the ES in India and set the stage for future testing of the ES intervention in this context.

Keywords: Engagement; Training; Mental health workers; Decisions; India

Introduction

Global initiatives related to situating treatment in youth-serving contexts (e.g., schools) and expanding workforce capacity through task-shifting to lay health workers have made strides in increasing the reach and access of youth mental health services [1-4]. However, once enrolled in mental health treatment, youth are likely to experience barriers to meaningful treatment engagement. Engagement is widely conceptualized as an individual's multidimensional (e.g., social, cognitive, affective, and behavioral) involvement with treatment (e.g., [5]). Studies conducted in low- and middle-income countries (LMICs) have identified barriers that interfere with youth treatment engagement, including low awareness of one's own problems, preferences for traditional healers or care other than therapy, low expectations that treatment will be helpful, concerns about confidentiality, competing demands, low understanding about the purpose of therapy activities, varied preferences for format and content other than what is offered, and stigma [2,6,7]. These barriers can interfere with a youth attending the recommended number of treatment sessions, participating meaningfully during treatment sessions, carrying out therapeutic activities between

appointments, and completing treatment successfully [2,8]. These emerging trends in LMICs regarding treatment engagement are consistent with patterns identified in high-income countries (HICs). For example, in the United States (U.S.), approximately 50-70% of youth and families who enroll in community- or school-based mental health services terminate treatment prematurely [9]. Many youth attend only a few appointments [10,11]. Treatment attrition is associated with high psychosocial stressors, clinical complexity, and poor treatment outcomes (e.g., [12,13]).

Our current study is situated in the context of the PRIDE (Premium for aDolEscents) research program, which is developing a suite of school-based stepped-care interventions for adolescent mental health problems in India (e.g., [2,14]). In this context, questions arose about how to support school-based mental health workers (MHWs) in urban secondary schools in India who encounter heterogeneous engagement barriers that emerge across time, often unpredictably [2]. We sought a solution that would be broadly applicable to an array of barriers to treatment engagement and relatively simple to use in a context that naturally requires attention to many clinically complex problems and that has a highly burdened workforce.

We had faced a similar concern years before as we considered how to support community partners in the U.S. - school-based mental health providers in rural and urban sites who encounter a similar array of engagement concerns that emerge unpredictably. Research suggests that providers encounter heterogeneous engagement problems, yet also have difficulty identifying engagement problems [15-17], and that when they do intervene, providers tend to have a limited set of responses for how to improve engagement [15,18]. In our U.S. context, it was important for us to find a solution that would apply to a variety of engagement problems, help providers assess and intervene to improve treatment engagement, and provide an array of engagement procedures from the evidence base [19].

We discovered that there was no single protocol to share with our community partners, and not even a collection of several protocols that could suffice. Thus, we assembled a solution, using design principles from Managing and Adapting Practice (MAP; [20,21]). MAP is a system of evidence resources and decision models incorporating concepts and methods from hundreds of treatment protocols for youth emotional and behavioral health problems (e.g., anxiety, depression). Its metacognitive model and coordinating framework support integrative reasoning across essential treatment decisions and actions, including assessment, treatment selection, preparation, treatment delivery, and evaluation. MAP has demonstrated scalability, effectiveness, and sustainability in child and adolescent mental health service contexts [20,22,23].

We applied the MAP architecture to create an engagement-specific configuration of the MAP toolkit that was (a) multi-problem: useful for an array of engagement barriers or challenges commonly encountered in service contexts, (b) multi-decision: supported the assessment of engagement problems to detect problems early as well as the selection and planning of engagement solutions, and (c) multi-technique: included a library of procedures from the evidence base. We tested our assembled intervention, referred to as the Reaching Families Engagement System (ES), first within a pilot randomized controlled trial (RCT; [18]) and then within a large, multisite RCT in the U.S. [24] and found promising results. We found that relative to a condition in which providers had access to practice guidelines for treatment engagement, the ES supported the identification of a broad range of engagement problems, the selection and planning of well-matched engagement interventions from the evidence base, and direct use of these interventions in treatment [18].

In the context of MHWs in India, we considered the applicability of the ES. It offered the simplicity of a single system, yet its utility for addressing a range of engagement barriers made it appealing for use in a new context. Its intuitive features appeared to be easy to use by MHWs across two sites in the U.S. that differed greatly in their resources for mental health services and their previous experience with evidence-based treatments. Yet, the ES as a multi-problem, multi-decision, and multi-technique system is much different than typical protocols for evidence-based treatments. As such, it required careful testing within a proof-of-concept study to determine if it warranted larger-scale testing.

The purpose of this proof-of-concept study was to gather information about whether the ES might be a viable option for implementation in the context of MHWs serving young people in urban sites in India. In line with the fundamental purpose of using a pilot study to explore an innovation [25,26], we designed this study with an emphasis on gathering data regarding the feasibility and acceptability of our approach (i.e., ES training and intervention). Additionally, a secondary aim was to gather data that signalled promising training outcomes that might be pursued within the context of a larger hypothesis-testing study.

Method

Participants

Mental health workers (MHWs) in Goa and New Delhi, India were recruited to participate in a five-hour workshop on engaging youth and families in mental health services. MHWs were recruited through email announcements about the engagement training distributed to professionals delivering a multi-problem modular psychosocial intervention as part of an effectiveness research trial (i.e., [27]). Interested individuals contacted a local research team liaison to register for the training. Workshop participants were 24 MHWs who attended the in-person training.

Demographic and professional information was collected for 21 of the 24 (87.5%) study participants; the data from three participants were inadvertently not collected due to technology failure. All MHWs identified themselves as female of Indian descent. All were fluent or proficient in English and most (95.2%) were also at least proficient in a second language (e.g., Hindi, Konkani, Marathi, Tamil). They ranged in age from 22 to 54 (M=32.0; SD=8.6). Most MHWs had earned their master's degree (62.0%), whereas some had either a doctoral (19.0%) or a bachelor's degree (19.0%). Clinical psychology was the most common field of study (38.2% of MHWs), followed by counseling psychology (23.8%), social work (19.0%), and other related fields (e.g., developmental psychology, pediatrics; 19.0%). They reported 0.5 to 22.0 years of professional experience after earning their most advanced degree (M=6.1; SD=6.5). They reported experience working in hospitals (55.0%), secondary schools (52.4%), primary schools (47.6%), private clinics (45.0%), community mental health centers (25.0%), colleges (20.0%), and other settings (e.g., home, specialty clinic for children with special needs, childcare center).

Engagement System

The Reaching Families Engagement System (ES) coordinates multiple evidence resources into a single system to support MHWs to *assess* engagement problems, *select* an intervention that is well-suited to the focal problem, *prepare* for delivering the intervention, *deliver* the intervention, and *evaluate* its effect on engagement [18]. The ES includes knowledge resources to support each of these actions (identified in *italics*): (1) questionnaires for youth and caregivers to complete about their engagement in services (*assess, evaluate*), (2) a worksheet used by MHWs that provides an explicit mapping of youth engagement problems to specific engagement practices (*assess, select, prepare, evaluate*), and (3) a library of practice guides that provide

concise descriptions about how to use specific engagement procedures with a youth (*prepare, deliver*).

The development of the ES was guided by principles and activities consistent with the architecture of MAP [20,21]. For example, we established a multi-problem (i.e., REACH) engagement framework of five broad categories of engagement challenges: *Relationship* (e.g., therapeutic alliance), *Expectancy* (e.g., beliefs that treatment will be helpful), *Attendance* (e.g., presence at treatment sessions), *Clarity* (e.g., understanding how treatment relates to the identified problem), and *Homework* (e.g., homework completion, in-session participation) [5].

We also conducted a distillation synthesis of the literature [28,29] to identify the discrete engagement procedures of which effective engagement interventions are comprised [5]. We introduced the REACH framework to our analysis to examine which practices were empirically associated with ("matched") each engagement dimension [5]. We then designed the youth and caregiver questionnaires as well as a portion of the provider-completed worksheet to assess each REACH domain. We also designed the provider worksheet to reveal the match (i.e., coordination) between problems and practices. Finally, we designed the practice guides to support the implementation of each engagement procedure.

For this proof-of-concept study, we piloted a training of a portion of the ES with MHWs. We did not administer the youth and caregiver questionnaires, although we shared the questionnaires with MHWs and taught them how to interpret the responses. For demonstration purposes, we selected a subsample of practice guides to showcase in the training. Given that our purpose was to pilot the training and the ES as a method for making decisions related to treatment engagement, we determined that the abbreviated ES would adequately serve this purpose.

Training

Participants attended a five-hour training on the ES delivered by the lead author, a doctoral-level psychologist with research expertise in the study of clinical reasoning and treatment engagement. The training began with an overview of treatment engagement as a concern in mental health services, including a discussion of the common engagement challenges encountered by the MHWs in their own work with youth. Then, MHWs were introduced to the REACH framework of treatment engagement [5]. Next, MHWs learned how to apply the ES logic and resources to address low treatment engagement. Training involved instruction, demonstration, and multiple rehearsal and reflection exercises with the ES.

Measures

Feasibility: Training feasibility was assessed by the following indicators: (a) number of MHWs who registered for the training, (b) percentage of registered MHWs who consented to participate when invited, (c) percentage of consented MHWs who completed study questionnaires, (d) percentage of consented MHWs who completed behavioral observations, and (e) percentage of recorded conversations that were successfully transcribed and coded.

Acceptability: Acceptability of the ES was evaluated at post-training, when participants completed items from the Unified Theory of Acceptance and Use of Technology-2 (UTAUT-2), a 27-item questionnaire assessing user experiences of technology that are related to technology adoption [30,31].

To reduce participant burden, we selected 10 items representing 6 constructs on the UTAUT-2 that were most relevant to user experiences in this training context: (1) *effort expectancy* (three items); (2) *performance expectancy* (three items); (3) *social influence* (i.e., influential others support system use; one item); (4) *hedonic motivation* (i.e., enjoyment of system use; one item); (5) *behavioral intention* (i.e., expected future use of system; one item); and (6) *habit* (i.e., automatic use of system; one item). Participants responded to items using a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Training Outcomes: We used the Action Cycle/Use of Evidence Behavioral Observation Coding System (ACEBOCS; [32]), which measures how people use evidence in their clinical decision-making, to code peer supervision conversations for the following behaviors: (1) considered possible engagement problems, (2) identified an engagement problem, (3) selected an engagement problem to target, (4) considered possible engagement practices, (5) number of engagement practices considered, (6) prepared for the application of the practice (e.g., by rehearsal or troubleshooting), and (7) planned to measure progress (see Table 1 for definitions). Given that this study was designed as a proof-of-concept, we did not examine actual implementation of the engagement intervention by the provider during a treatment session with the youth.

The ACEBOCS structures dichotomous coding of each behavior as present or absent along with an extensiveness rating about the extent to which evidence is used to make the decision. Due to the brevity of the peer conversations, we relied on the dichotomous presence/absence indicator for each decision-making behavior. The ACEBOCS has demonstrated excellent interrater reliability (ICCs >.90; [33]).

We also used a set of codes representing each of the five REACH engagement domains and a set of codes corresponding to the six engagement procedures reviewed in the training. These codes allowed us to further examine decision-making in three ways: by summing (1) the number of engagement domains and (2) the number of practices discussed during peer conversations, as well as (3) coding the match between the identified problem and the selected engagement intervention.

Coders were 1 postbaccalaureate student, 7 clinical psychology doctoral students and 2 clinical psychology postdoctoral scholars trained in the ACEBOCS framework. Coders independently coded transcriptions of the audio-recorded peer consultation events. Our coding team achieved excellent interrater reliability for all codes within the current study (ICC = 0.90 –1.00; [34]).

Code	Definition	Exemplar Questions[a]
Considered engagement problem	An engagement domain was discussed	Could there be a problem? How could we know?
Identified engagement problem	An engagement domain was verified as being problematic	What is the problem? What is the extent of the problem?
Selected engagement problem	An engagement domain was selected to be addressed	Which problem should be prioritized for intervention?
Considered engagement practice	An engagement practice was discussed	What practice(s)might address the selected problem?
Considered matching practice	An engagement practice considered was well-suited to the engagement problem identified	N/A[b]
Prepared for application	An engagement practice was reviewed or rehearsed	What needs to happen for the practice to be applied? What happened in supervision to prepare?
Planned to measure progress	A plan was made to measure progress toward addressing the selected problem	How will we know if progress is made towards addressing the problem?

Note: [a] Used by coders to distinguish among codes when rating behaviors. [b] *Considered matching practice* was calculated in analysis, rather than rated by coders, using the practice-to-problem relations outlined in the Becker et al., [5] review of 50 randomized clinical trials.

Table 1: Behavioral Observation Codes, Definitions, and Exemplar Questions.

Design and Procedures

We used a pre-post open trial design, whereby all individuals participated in the ES training. Ahead of the training, MHWs received an email with a secure link to a study information form that requested their consent to participate and questionnaires for them to complete. At the start of the training event, study participation was reviewed in person with MHWs.

Following this, the trainer asked MHWs to "Select one young person that you think has engagement problems. Discuss the case as you normally would with a peer." MHWs recorded demographic (i.e., age, gender) and clinical information (i.e., clinical problem and treatment setting) on a worksheet that they turned in to the research team. Then, they and a peer colleague audio-recorded a (baseline) conversation during which the MHW discussed the case. At the end of the 5-hour training, each MHW again worked with their identified peer colleague and audio-recorded a (post-training) conversation about the same case they discussed at the baseline measurement. The instructions for this post-training conversation were "You have been given feedback that your case shows signs of risk for poor treatment engagement. Your task will be to discuss the case with your peer, using the resources you have now learned to use."

Analysis

We calculated percentages for the feasibility indicators (e.g., the number of MHWs who consented divided by the number invited to participate). For acceptability indicators, we calculated descriptive statistics for each of the ten selected items from the UTAUT-2. For training outcomes, we used McNemar tests for binomial distributions [35] to conduct pairwise comparisons to determine if the proportions of providers who exhibited each clinical reasoning behavior was significantly different across time. Due to the pairwise nature of these analyses, we included only those individuals for whom we had pre- and post-training data (n=19). We also calculated descriptive statistics for the number of REACH domains and engagement practices discussed during the observation paradigms.

Results

Case Descriptions

The 24 MHWs described 24 young people (58.3% male) between the ages of 9-20 (M=14.3; SD=2.3). MHWs reported that these youth were seeking treatment for problems such as anger (54.2%), anxiety (26.1%), depression (26.1%), and other concerns (e.g., interpersonal sensitivity, academic issues; 21.7%). Many MHWs reported delivering treatment to their identified youth in schools (52.2%), although some reported delivering services in community clinics (34.8%) or other settings (e.g., residential setting; 16.7%).

Feasibility

Of the 24 MHWs who registered for the training, 100% consented to participate. Twenty-one (87.5%) MHWs completed the background questionnaire and 23 (95.8%) completed the ten items from the UTAUT-2. Twenty (83.3%) MHWs completed the pre-training recording and 22 (91.7%) completed the post-training recording. Technology failures accounted for 100% of the missing recordings. All recordings obtained were successfully transcribed and coded.

Acceptability

Overall, participants reported high acceptability of the ES, as indicated by the item-level means on the UTAUT-2. On average, participants agreed that the resources were easy to use (effort expectancy; M=6.1; SD=0.5) and useful to their clinical work (performance expectancy; M=6.0; SD=0.5). Providers also reported positive behavioral intentions to continue using the resources (M=6.0; SD=0.7) and agreed that

the process of using the resources was enjoyable (hedonic motivation; M=5.9; SD=0.7). Lower ratings were apparent for two items that would be important for a real-world implementation context but that did not align well with our behavioral observation paradigm: important others support resource use (M=5.1; SD=1.1) and use of the materials have become habit (M=4.3, SD=0.7).

Training Outcomes

Training outcomes were analyzed for those 19 MHWs who successfully recorded peer conversations at pre- and post-training. As shown in Table 2, nearly every MHW considered an engagement problem at pre-training and at post-training. Differences emerged in the breadth of problems considered, such that the number of engagement problems considered at pre-training was limited (range: 0-5; mode=2) relative to those considered at post-training (range: 1-5;

mode=5). At post-training, significantly more MHWs selected a specific engagement problem from among those considered as their intended focus of intervention.

Significantly more participants considered an engagement *practice* at post-training than at pre-training and the breadth of practices considered increased significantly from pre-training (range: 0-1; mode=0) to post-training (range:0-3; mode=2). The proportion of participants who considered a matching engagement practice was significantly greater at post-training than at pre-training, as was the number of matching engagement practices (pre-training range: 0-2, mode=0; post-training range:0-5, mode=1). Finally, relative to pre-training, a significantly greater proportion of participants at post-training prepared for the application of the practice with the youth and made plans to measure the youth's progress with engagement.

Code	Time	N MHWs (%)	χ^2	p	Mean problems or practices (SD)	t	p
Considered engagement problem	Pre	18 (94.7)	1.00	0.32	2.0 (1.2)	6.53	<0.001*
	Post	19 (100.0)			4.0 (1.2)		
Identified engagement problem	Pre	17 (89.5)	2.00	0.16	1.6 (1.1)	6.76	<0.001*
	Post	19 (100.0)			3.2 (1.2)		
Selected engagement problem[a]	Pre	0 (0.0)	16.00	<0.001*			
	Post	16 (84.2)					
Considered engagement practice	Pre	1 (5.2)	14.00	<0.001*	0.1 (0.2)	6.66	<0.001*
	Post	15 (78.9)			1.5 (1.0)		
Considered matching practice	Pre	1 (5.2)	14.00	<0.001*	0.1 (0.2)	5.00	<0.001*
	Post	15 (78.9)			1.7 (1.5)		
Prepared for practice application[a]	Pre	0 (0.0)	9.00	0.003*			
	Post	9 (41.0)					
Planned to measure problem[a]	Pre	0 (0.0)	6.00	0.01*			
	Post	6 (31.6)					

Note: [a]Breadth analyses (i.e., calculating the mean number of problems or practices) were not performed for these codes.

Table 2: Behavioral Observation Coding at Pre-Training and Post-Training (N=19).

Discussion

Consistent with the goal of pilot studies [25], we sought to gather preliminary evidence about whether an engagement intervention designed for mental health contexts in the U.S. might warrant consideration for use in mental health contexts in India, based on the feasibility and acceptability of the training approach and intervention. A secondary aim was to detect a signal of the potential for promising training outcomes if pursued within the context of a larger hypothesis-testing study.

In our small sample, high feasibility was evident for study procedures, including recruitment, training, completion of study measures, and transcription and coding of supervision audio recordings. Technology interfered with the successful recording of six peer conversations. Future studies should allow adequate time for checking the technology

before proceeding with the behavioral paradigm and ensure the availability of backup technology.

Regarding acceptability, as measured by the UTAUT-2, participants rated the features of the ES intervention as easy to use and useful. These are important findings, given that ease of use is associated with adoption of a new technology [36] and that utility (i.e., belief that using the system will benefit user performance) is associated with sustained use of a technology [30,37,38]. MHWs also reported positive behavioral intentions to continue to use the resources. Future studies would be necessary to observe actual use of the resources; however, ratings on the UTAUT-2 provided valuable information that the novel design features of this resource system were not a barrier to its learning and use. Findings suggest that the ES was perceived as adding value to the decision-making process related to low treatment engagement.

This pilot study offered signs that the ES was associated with more comprehensive and evidence-based clinical reasoning at post-training when participants discussed an expansive set of problems and potential engagement practices beyond what they had discussed at pre-training. This suggests that the training provided an expanded cognitive framework, vocabulary, and grasp of the evidence base that guided their conversations about problems and solutions. Importantly, the conversation shifted from pre-training narratives about engagement problems to post-training solution-focused conversations that promoted actions such as considering solutions that matched the problem, preparing to apply the chosen solution with the youth, and planning to measure the impact of the solution on the youth's engagement. Each decision facilitated the subsequent decision to yield a more robust set of plans that were informed by evidence.

Our findings are consistent with a small pilot randomized controlled trial conducted in the United States [18] showing that the ES was associated with increased attention to and high-quality decision-making related to low engagement in youth mental health services. Our results build upon prior findings by suggesting it is possible for MHWs in a new context to successfully use these resources within a behavioral observation paradigm after only a brief training. Of course, we cannot generalize these findings to how MHWs might behave in their clinical settings when working directly with young people; that requires a larger pilot trial and is beyond the scope of this proof-of-concept study.

Limitations

Our study has many limitations. First, although the pre-post design allowed us to detect changes in provider behavior during an observational task, the absence of a control group limits our ability to ascribe the differences in decision-making to the training and resources, as opposed to another factor such as the passage of time. Second, the small sample size requires the cautious interpretation of effects and limits generalization. Third, the behavioral outcomes occurred within the context of a behavioral observation paradigm. Given that skill acquisition immediately following trainings does not necessarily generalize to the service setting [39], caution is warranted when interpreting these findings. Fourth, because we did not collect reports from youth about their own treatment engagement, this study cannot tell us if providers accurately identify engagement problems; only the breadth to which they converse about engagement problems for youth they self-nominated. We prioritized introducing these resources and ideas to community partners and gathering evidence of their feasibility and acceptability and preliminary outcomes before imposing greater burden on a larger number of participants. A larger study with random assignment and behavioral observation in the service setting would provide a more rigorous test than did our current design.

Conclusion

Our preliminary evidence of feasibility, acceptability, and initial training outcomes suggest that continued research is warranted on the efficacy, adoption, and implementation of the ES to help MHWs in India address treatment engagement concerns they encounter with youth enrolled in mental health services. Future testing might reveal that adaptation of the ES is desirable, such as by translating materials into local languages or modifying word choices based on local preferences. It is also possible we would discover that certain practices are either more or less relevant to this context and the local engagement barriers than are others. These findings justify a larger trial examining both implementation outcomes and their effects on youth engagement in clinical settings. Additionally, these findings highlight opportunities for decision-making resources that support the application of the scientific literature to complexities related to treatment engagement.

Declarations

Conflicts of interest

Study authors have no potential conflicts of interest to declare.

Ethics approval

All study procedures were performed in accordance with the ethical standards of the University of South Carolina Institutional Review Board and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Consent to participate and for publication

Study procedures were considered exempt by the Institutional Review Board at the University of South Carolina, as they reflected a benign behavioral intervention that did not pose greater than minimal risk to participants. All participants provided permission to participate via an online consent form.

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