

STUDY PROTOCOL & STATISTICAL ANALYSIS PLAN

STUDY TITLE: ADAPTING AND IMPLEMENTING TEAMSTEPPS IN SCHOOL MENTAL HEALTH

NCT04440228

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Project Aim 3 - Explore the feasibility, acceptability, and utility of TeamSTEPPS plus the strategies generated in Aim 2 on inter-professional collaboration, teamwork, and outcomes in schools.

PROTOCOL

Procedure. The primary implementation outcomes are feasibility and acceptability of the adapted TeamSTEPPS, consistent with recommendations for selecting appropriate outcomes for pilot phase research. We also explored collaboration and teamwork, assessed via self-report and observation, behavioral and educational outcomes for students, and potential contextual predictors of implementation which will allow us to identify measures that are sensitive to change for future trials. Inter-professional collaboration, which has been identified as a key factor in quality school mental health promotion, is assessed via self-report and observation. We will collect self-report data at baseline (i.e., before engagement in TeamSTEPPS) and for the school year following participation at two time points each school year (fall, spring).

Participants. Participants completing research measures include members of school mental health teams and school personnel from participating schools.

Dependent Variables and Measures

Self-Report Measures. Self-report measures of inter-professional collaboration and teamwork and feasibility and acceptability will be completed by participating mental health team members and school personnel.

Dependent measures:

Expanded School Mental Health Collaboration Instrument (ESMHCi). Mental health team members will complete the *Expanded School Mental Health Collaboration Instrument- Community version (ESMHCi-CV)*. School personnel will complete the *Expanded School Mental Health Collaboration Instrument- School version (ESMHCi-SV)*. The 59-item ESMHCi assess perceptions of three aspects of collaboration (i.e., types, influences, and benefits) between school professionals and mental health professionals from collaborating agencies on a continuous scale. Scores can be calculated individually or among groups working in the same school. For each subscale, an average score is calculated with higher scores indicating strengths and lower scores indicating areas to consider improving or targeting. Preliminary psychometric studies are promising and indicate validity and internal consistency.

TeamSTEPPS Teamwork Perceptions Questionnaires (T-TPQ). The T-TPQ is a self-report measure of individual perceptions of group-level team skills and behavior. It is based upon the five core components of teamwork that comprise TeamSTEPPS. Each construct is represented by seven questions, totaling 35 items. Items are rated continuously on a five-point scale from “strongly disagree” = 1 to “strongly agree” = 5. A total score is computed by averaging all items and higher scores indicate more favorable perceptions.

TeamSTEPPS Teamwork Attitudes Questionnaire (T-TAQ). The T-TAQ is a self-report measure of individual attitudes related to the core components of teamwork captured within TeamSTEPPS. Six items measure each of the core teamwork constructs, for a total of 30 items. Items are rated continuously on a five-point scale from “strongly disagree” = 1 to “strongly agree” = 5. A mean total score is calculated across items with higher scores indicating more positive attitudes.

The *Acceptability of Intervention Measure (AIM)* and *Feasibility of Intervention Measure (FIM)* are each reliable and valid 4-item tools to assess teacher, counselor, and leader perceptions of the acceptability and feasibility of TeamSTEPPS.

Exploratory contextual predictors

Evidence Based Practice Attitude Scale (EBPAS). The EBPAS is a 15-item self-report measure of attitudes toward adoption of EBPs. It consists of four subscales: appeal (is EBP intuitively appealing), requirements (would an EBP be used if required), openness (general openness to innovation), and divergence (perceived divergence between EBP and current practice). Items are rated from 0 (Not at all) to 4 (Very great extent). Higher scores indicate more positive attitudes, with the exception of divergence which is reverse coded.

Maslach Burnout Inventory Human Services Survey (MBI). The MBI is a 22 item self-report measure of burnout. Three subscales measure emotional exhaustion, depersonalization, and reduced personal accomplishment. Items are rated from 0 (Never) to 6 (Everyday) with higher scores on emotional exhaustion and depersonalization and lower scores on personal accomplishment (reverse scored) indicating higher levels of burnout.

Observations. We will conduct observations in schools who implement TeamSTEPPS. For each school observation, a trained observer from the research team will observe team dynamics, service provision, and interactions among mental health providers, school personnel, and students. Observations will occur at baseline (i.e., before engagement in TeamSTEPPS), at the completion of TeamSTEPPS trainings, and for 1 school year following participation at two time points each school year (fall, spring). Observations will include detailed field notes and use of the adapted *NOTECHS* for school mental health teams.

STATISTICAL DESIGN AND POWER

Qualitative analysis. We will load all field notes and interview transcripts into NVivo for data management and analysis. Analysis will be guided by an integrated analytic approach.

Quantitative analysis. Quantitative analysis of feasibility will examine the proportion of schools who enroll/those invited and participants who attend TeamSTEPPS training/those eligible to participate in the school. We also will examine the distribution of AIM and FIM scores to quantitatively assess acceptability and feasibility, respectively.

Collaboration and teamwork are assessed observationally (i.e., *NOTECHS*) and via self-report (e.g., *ESMHCI*, *T-TPQ*). Mean total and domain scores on the *NOTECHS* will be computed for each school. Individual and school scores will be calculated for the self-report measures.

The analytic approach consisted of three phases. First, preliminary analyses were conducted using paired t-tests to evaluate simple pre-to-post changes in the primary outcome measures: teamwork perceptions (T-TPQ), teamwork attitudes (T-TAQ), and collaboration (ESMHCI-SV). For the main analysis, we fitted linear mixed-effects regression models for each outcome variable, specifying random intercepts for participant ID to account for repeated measures and within-individual clustering. The core model included a binary post-training indicator as the primary predictor, along with the baseline value of the corresponding outcome as a covariate. To account for participant characteristics, we included a set of individual-level covariates: age, gender, race/ethnicity, education level, licensure status, professional role (clinical vs. school staff), years in the field, burnout (measured by the MBI-HSS subscales: emotional exhaustion, depersonalization, and personal accomplishment), and practice attitudes (EBPAS). These variables reflect clinician background, experience, and attitudes that may influence response to training. In parallel, we incorporated organizational-level covariates reflecting the structural and contextual features of training implementation. These included training group structure (small group, large group), school size, teacher-student ratio, building team size, and the number of team members trained. To examine whether training effects varied across these individual and organizational dimensions, we fitted comprehensive interaction models. These included all main effects plus full interaction terms between the post-training indicator and each individual- and organizational-level covariate. This allowed us to identify potential moderators of training impact and determine whether particular subgroups responded differentially to the intervention. Statistical significance was evaluated at the $\alpha = 0.05$ level.

Abbreviations

AIM	Acceptability of Intervention Measure
EBP	Evidence-based practice
EBPAS	Evidence-Based Practice Attitudes Scale
ESMHCI	Expanded School Mental Health Collaboration Instrument
FIM	Feasibility of Intervention Measure
MBI-HSS	Maslach Burnout Inventory – Human Services Scale
NOTECHS	Oxford Non-Technical Skills scale
TeamSTEPPS	Team Strategies and Tools to Enhance Performance and Patient Safety
T-TPQ	TeamSTEPPS Teamwork Perceptions Questionnaires