Disseminating Workplace Evidence-Based Resilience Training: A Study of Train-the-Trainer Process and Results

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Abstract

Despite a need for evidence-based practices (EBP) in stress prevention, few studies examine how EBP can be effectively disseminated across diverse settings. While work stress (e.g., Blanchflower & Bryson, 2022) and alcohol-related problems (e.g., Shuey et al., 2024), have exacerbated since COVID-19, knowledge about EBP dissemination has not been applied to these problems. The current study evaluated both the effectiveness of a train-the-trainer (T3) resilience program previously identified as an EBP, and whether it could be effectively scaled; that is, when delivered by novice T3-certified facilitators (TF) in diverse settings and with outcomes comparable to an expert or master-level instructor. The sample consisted of three trainer types: (1) A master trainer delivering T3 to novice facilitators (k = 1; n = 297), and (2) novice TFs who delivered training once (k = 36; n = 585) or (3) multiple times (k = 13; n = 826). Hypotheses assess if pre-post improvements in stress consciousness, perceived improvement, and session ratings are consistently positive across trainer types and in diverse settings. Results confirm overall positive outcomes in dissemination and point to differences across trainer types and outcome measures. Results are discussed, and implications are given for the wide dissemination of brief cognitive-based stress management training.

Keywords: Workplace resilience, Evidence-based practice (EBP), Train-the-trainer (T3), Cognitive-based stress management, Implementation science

Disseminating Workplace Evidence-Based Resilience Training: A Study of Train-the-Trainer Process and Results

The current study seeks to evaluate the effectiveness of a train-the-trainer program for a prevention education and resilience program previously identified as effective (i.e., evidence-based practice or EBP; Office of Surgeon General, 2016). This paper examines whether an EBP could be effective "in dissemination;" that is, when delivered by recently trained instructors in diverse settings and whether its effectiveness is comparable to that of training offered by a master-level instructor. We seek to contribute to the field of EBP dissemination research (e.g., Brownson et al., 2018), which has rarely been applied to workplace behavioral health (Sharar, 2006; Bennett et al., 2015).

Meeting this objective will also contribute to the need for refining stress-related interventions (Ruchiwit et al., 2024) and close the research-to-practice gap (Waddell, 2001). Despite a growing need for mental health education, studies of workplace interventions rarely assess variability across trainers, employee ratings, and training sessions. This study seeks to demonstrate whether a brief resilience session can be just as effective at short-term changes in stress competency when delivered by multiple trained facilitators as when delivered by program developers with years of practice. The study links the fields of training effectiveness (e.g., Ford, 1997) and workplace behavioral health, focusing on reactions to the training and enhanced knowledge, beliefs, and attitudes (Level 1 and 2 outcomes; see Kirkpatrick, 1994).

Since the COVID-19 pandemic, workplaces have an increased need for addressing employee mental health issues, particularly stress (Blanchflower & Bryson, 2022; Klein & Smith, 2021; Restauri & Sheridan, 2020), as well as alcohol-related problems and diseases (e.g., Shuey et al., 2024; Tucker et al., 2022). A recent national survey indicated that only 59% agreed that their employer regularly provides information about mental health resources and only 12% reported someone works onsite who has received mental health training (APA, 2023). In the years leading up to the pandemic, many industries worldwide incorporated

workplace health promotion (WHP) as standard practice (Lahiri & Schwartz, 2018; Gorgenyi-Hegyes et al., 2021).

Research reviews show WHP can have a positive impact on mental health and stress-related symptoms (Proper & van Oostrom, 2019; Rongen et al., 2013); with mindfulness and cognitive-based programs tending to be more effective than informational training on symptoms and referral resources (e.g., Forthal et al., 2022; Querstret, et al., 2020). In fact, a recent large study of 18,000 participants across 125 countries found that proactive stress management competencies were strongly correlated with personal and professional success and productivity (Epstein et al., 2024). These results also reinforce results of a recent comprehensive analysis of the role of coping in mental health which point to a major distinction in the literature between proactive and healthy coping versus reactive and unhealthy coping (Gautam et al., 2024).

Employers are often challenged when selecting, implementing, and scaling training programs (Salas et al., 2012), including knowing which programs may be best according to problem severity, evidence-basis, proper fit, cost-effectiveness, ease of implementation, utility, and—most importantly—impact on outcomes that include mental health, stress, and alcohol risk. Moreover, employers face too many choices—a traditional problem for WHP implementation (Hannon et al., 2012)—which has grown with major financial investments in mental health applications (Wallace & Pestaina, 2023) that typically have little to no basis in research (e.g., Attridge, 2024). Employers stand to benefit from knowing programs can achieve consistent outcomes across diverse contexts.

Resilience-building interventions are one type of WHP program used to address work stress (Badu et al., 2020; Joyce et al., 2018b). Even though studies assess resilience trainings (Brouwers et al., 2006; Joyce et al., 2018a; Liu et al., 2022; Luthans et al., 2008; Rogerson et al., 2016), few assess their efficacy when disseminated by independent trainers in diverse settings (e.g., health-care, higher education, and community centers). While the current study

bears similarity to research on workplace train-the-trainer for health outcomes (Persaudet al., 2022; Lang et al., 2017), these studies focus on trainer perceptions rather than measure pre-to-post changes in participants.

There are no standard criteria for a proper test of "evidence-based dissemination." However, studies in the field of implementation science suggest that, following the adaptation of an original program, researchers assess recipient perceptions and knowledge/attitude change, especially across repeated occasions (e.g., Escoffery et al., 2019; Fixsen et al., 2019; Tabak et al., 2012). The current study sets out to follow these suggestions.

Background on Resilience & Thriving Training

The current training has been iteratively adapted and shortened over the past 20 years. "Resilience and Thriving Training (R&T)" was originally one of six sixty-to-ninety-minute modules from a broader curriculum designed to address individual, team, and organizational factors associated with preventing adult worker substance misuse (Lehman et al., 2002). "Team Awareness" (TA), based on a theory of workplace risk and protective factors (Bennett et al., 2001), was independently tested in several cluster randomized trials (e.g., Bennett et al., 2004; Burnhams et al., 2015). Findings indicated reductions in substance misuse risk and other health outcomes, and TA was acknowledged as effective in the U.S. Department of Health registry of evidence-based programs (USDHHS, 2015) and the U.S. Surgeon Generals' report on addiction (Office of Surgeon General, 2016). TA sought to change social norms that support addictive behavior, and included capacity-building efforts (focus groups, stakeholder interviews), promoting employee assistance, and eight-hour programs for supervisors and employees.

After the original clinical trials, trainers shortened TA to accommodate small business needs, busy schedules for restaurant occupations, and military settings. Randomized studies indicated these adaptations also reduced risks related to employee mental health, stress, stigma, and counterproductive work behaviors (e.g., Patterson et al., 2005; Reynolds &

Bennett, 2023). However, even the reduced length of these programs (e.g., 4 hours) appeared prohibitive for employers. Accordingly, a shorter stress R&T module was carved out of TA and a train-the-trainers (T3) program was designed to certify facilitators of R&T. After 13 facilitators had completed the T3 program, a pilot study was conducted, which showed significant short-term improvements in self-rated beliefs around stress (Bennett et al., 2018). The current paper expands this previous pilot study to a larger sample.

R&T is based on a model of enhancing health consciousness (HC), defined simply as an individual's awareness of their health status. Prior research has suggested HC is a personal trait that may not be modifiable through intervention (e.g., Dutta-Bergman, 2004; Gould, 1989; Hong, 2009). However, following dynamic models of self-regulation, HC may also be conceived of as a meta-cognitive process wherein an individual monitors their ability to remain alert and responsible for their health in the face of challenges (e.g., Carver & Scheier, 1990; Lord et al., 2010). Four sub-processes underlie this meta-cognitive and process view of HC: (1) Individuals wish to stay conscious of their current health state, (2) recognize how their behavior puts them at risk of poor health and, when stressed, (3) take corrective action through (4) protective factors or health-raising resources (see Bennett et al., 2018). This dynamic, process model of HC, as applied to stress, is consistent with psychometric and related research on resilience (Liu & Duan, 2023); adaptive coping (Gloria & Steinhardt, 2014); individual ability to monitor internal states (Marsall et al., 2021), process measures of mindfulness (Li et al., 2016), and stress competency (Epstein et al., 2024).

R&T targets only short-term improvement in HC, with a focus on stress-stressor awareness and coping skills. We view stress consciousness (SC) as a subset of HC that is specifically relevant to awareness of stress levels and readiness to employ healthy coping strategies. The R&T curriculum includes five main objectives, to (1) identify and respond to mind and body cues that signal stress (i.e., pain, warning signs), (2) effectively evaluate the identified stressors and current unhealthy coping responses (i.e., drugs and alcohol), and

correct these behaviors in favor of healthier alternatives, (3) build one's repertoire of healthy resources, (4) understand the relationship between unhealthy coping and risk for addiction, and (5) prevent stress from impacting work performance (Bennett et al., 2018).

Hypotheses

The first set of hypotheses test whether R&T can effectively improve students' beliefs/attitudes on stress consciousness (H1a) and through different facilitators trained (H1b), whether the effectiveness of these facilitators is equal to that of a master facilitator (H2a), and whether facilitators providing many sessions are more effective than those training one session (H2b).

We wanted to know whether short-term, pre-to-post changes were significant and consistent across all facilitators. As noted above, positive results were obtained in a pilot study of R & T (Bennett et al., 2018). A systematic review of workplace mindfulness interventions – which have stress awareness as a core feature – show stress reduction is one of the most reported of eleven categories of positive outcomes (Lomas et al., 2018) and an earlier large review of workplace interventions indicate that cognitive behavioral approaches tend to be more effective (Bhui et al., 2012).

Accordingly,

H1a: Post-test stress consciousness will be significantly higher than pre-test scores across all items.

H1b: Stress consciousness will increase significantly across all facilitators, such that participants from every facilitator will show improvement.

We also examined improvements as a function of repeated delivery or level of mastery. Research in the education industry suggests that the more a teacher practices the greater their effectiveness (Bell et al., 2023; Heck, 2008). To our knowledge, there is no similar research on trainer proficiency in WHP and stress. In the current study, evaluations across levels of mastery included pre-to-post self-assessments of stress consciousness, retrospective ratings of

perceived improvement, and ratings of the facilitator and the session. Measures of subjective change and perceived improvement have been used in prior studies of resilience training (e.g., Jones, 2015) and were used to complement other measures and add to the reliability of the assessment. We hypothesized that student improvements would be more significant from more than from less experienced facilitators. While we explore the hypothesis that greater facilitator experience will be associated with higher facilitator/session ratings, the original purpose of examining facilitator/session ratings was to examine the fidelity of the training. Accordingly,

H2a. Pre-to-post changes in stress consciousness, posttest perceived improvement, and posttest facilitator/session ratings will be larger for students of the master facilitator than of novice facilitators.

H2b: Facilitators that have delivered multiple trainings will report greater improvement than those who conducted the training once.

In addition to assessing pre-to-post changes, the current study also collected perceptions of the facilitator and session effectiveness. Previous T3 studies in WHP have examined perceptions of facilitators' competency and actions taken since training but not student reactions to the training once in dissemination (Persaud et al., 2022; Lang et al., 2017). Research shows that a positive relationship between teacher and student leads to higher learning outcomes (Hagenaue et al., 2022) and that significant variance in training outcomes can be attributed to trainers (Glerum et al., 2021). Admittedly, the R&T training is 60-to-90 minutes long, begging the question of how teacher-student relationships can develop in a short window of training time. However, we expected that smaller group sizes might support such development. For example, Varble (1990) found support for small group sizes leading to higher learning outcomes. In general, we hypothesize that the more participants rate the facilitator and the session as effective, then the more likely they would show improvements.

H3. Ratings of facilitators/sessions will be positively associated with pre-to-post changes in stress consciousness and perceived improvement.

Methods

Data and Sample

The data analyzed for this study were collected from 49 facilitators after completing the Train-the-Trainer (T3) course and independently delivering R&T to at least one group of students. These trainers were all students of the master facilitator and they delivered R&T to a total of 1249 participants. The master instructor conducted an additional 18 R&T sessions with a total of 297 participants. The vast majority of participants voluntarily self-selected into the study; however, some in a more-corporate setting may have received wellness points and in rare cases attendance may have been mandatory. Some data (n = 162) were included that were previously reported from a pilot study. Hypothesis H1a was tested only with new data because the pilot study already reported a test of the same hypothesis (Bennett et al., 2018). Other hypotheses were tested using all data (N=1708).

Facilitator Descriptions

Facilitators represented a variety of professions and educational backgrounds; some held degrees at Ph.D. or equivalent (e.g., Ed.D., n = 11), Masters or equivalent (n = 26), and/or they were in the position of coaching (n = 15), EAP (n = 1), or a corporate trainer (n = 18). Many trainers received continuing education credits related to the wellness profession (i.e., Certified Health Education Specialist or Certified Wellness Practitioner). Background information could not be found from 14 individuals. Trainers reached participants in different settings: construction (participant n = 19), corporate (n = 157), county government (n = 8), education (n = 453), finance and insurance (n = 225), food distribution (n = 8), health care and social assistance (n = 305), housing and development (n = 10), manufacturing (n = 31), military (n = 151), professional/scientific/technical services (n = 16), public group (n = 30) , retail trade (n = 14), wholesale retailer (n = 7), a women's group (n = 9), or as a public presentation (n = 89). The settings of some training sessions could not be determined (n = 176), because facilitators returned data without setting information, and in some cases,

training was conducted with many employees from a variety of settings. Two facilitators conducted multiple sessions, during which only one data bundle was returned uncollated, precluding session-specific analysis. Among 89 sessions known to be distinct, the average number of participants per session was 15.

Measures

The 10 items assessing stress consciousness (see Table 1) were adapted from those in the research literature on health consciousness, mindfulness, and stress management competencies (e.g., Epstein et al., 2024). Items, selected to match content from the training, form a set of beliefs and skills to match each step in the HC process: knowing signs of stress; recognizing, and interrupting unhealthy reactions to stress; and choosing to engage in healthy coping. The *SC10* was the average response to all 10 items computed for all participants at pretest (Cronbach's α = .91, M=3.62, SD=.65, N=1674, IQR: 3.20-4.00, ICC(1) = .17) and, right after training at posttest (α = .91, M=4.16, SD=.54, N=1460, IQR: 3.80-4.60, ICC(1) = .15). Results from a Principal Component Analysis showed all 10 items correlated strongly with the total factor score with factor loadings between .7 and .8 for all items except item #3 (.62 at pretest and .68 at posttest) and item #9 (.70 at pretest and .67 at posttest). The single-factor accounted for 55% of the total item variance at pretest and 57% at posttest.

Perceived improvement was assessed with 5 ratings of "My ability to handle stress has", "My knowledge of healthy coping has", "My skills for pausing and evaluating stress has", "My desire to address stress effectively has," and "My knowledge of where to go to get help if I cannot handle stress has." Responses ranged along a scale from 1 "*stayed the same*" to 5 "*improved greatly.*" A composite measure was formed by averaging responses across all items (Cronbach's α = .93, *M* = 3.59, *SD* = .99, ICC(1) = .15). Results from a PCA showed that all five items correlated strongly with the total factor score with factor loadings between .83 and .92 for all items. The single factor accounted for 79% of the variance. Many studies have suggested that obtaining client or student perceptions of improvement are important to

gauge as an adjunct to pre and post measures. This includes studies across health-care, program evaluation, etc. and include studies that assess validity (Perreault et al., 2010). Perceived improvement has been proposed as an important patient-reported outcome measure in mental health services evaluation (Andrade et al., 2012). One advantage of this measure is that it can indicate whether other outcome measures, as pre-post differences in symptoms, correspond to a noticeable impact in patients' lives, as assessed by themselves.

The facilitator and overall session were rated with 10 items, 8 of which refer to "the facilitator." Example items include, "The facilitator did a good job of guiding participants for the breathing, self-talk, and stretching exercises," and "The pace of the session helped my learning (not too slow or too fast)." The mean score of all 10 items was the *facilitator/session ratings* measure (Cronbach's $\alpha = .94$, $M = 4.59$, $SD = .53$, $ICC(1) = .05$)**.** Results from a PCA showed that all 10 items correlated strongly with the total factor score with factor loadings between .79 and .85 for all items. The single factor accounted for 67% of the variance.

Facilitator group was coded with a unique id for each facilitator. Each *session* was also coded with a unique id. *Facilitator-experience* was a dichotomous variable dummy-coded 1 for *novice* and 2 for *master*.

Session number was a within-facilitator count (coded 1 session thru 18 sessions) ascending for each additional batch of assessments that were returned. A separate dichotomous variable was created to indicate whether the assessments were from facilitators who had conducted a *single session* ($k = 36$; $n = 585$) or *multiple sessions* ($k = 13$; $n = 826$).

Description of Resilience and Thriving

The R&T training, originally titled "Stress, Problem Solving, and You," was a module in an 8-hour training designed to reduce behavioral risks in work groups (Lehman et al., 2002) and was later adapted and titled "Resilience and Thriving" or R&T. R&T is typically delivered between 60 and 90 minutes and includes a PowerPoint slide deck, participant handouts and workbook, and inclusion of mental health resources both internally (through the

Employee Assistance Program) and in the community (through a customized compiled list of services). Every effort is made to keep session sizes small—ideally limited to 15 participants—to encourage personal reflection and discussion of applied tools and concepts. The training is highly interactive with group/paired discussions. It includes a review of positive aphorisms, societal factors that impact stress, a discussion of wellness strengths, a guided flip-chart on current stressors, personal wellness and coping resources, early and later mind-body warning signs of stress, promotion of EAP and community resources, and a guided visualization where participants create a goal or affirmation specifically tailored to address a personal stress area. R&T walks participants through a "SECRET" model of Stress – Evaluate – Cope – Resilience – Evolve – Thrive and is designed to integrate cognitive-behavioral techniques with aspirational messages for resilience as a positive path toward thriving.

The train-the-trainer program requires new student trainers to watch two brief videos on facilitation skills and key training concepts and then attend two 2.5 to 3-hour sessions where they interact with the master facilitator as each slide or activity is presented. Session 1 and about half of Session 2 are immersive and experiential; students set aside training notes to experience all material directly to apply insights to their own experience. The latter half of Session 2 reviews training logistics, facilitator notes, methods for collecting pre-and-post data, and guide sheets to support training management. Students complete a simple 20-item quiz to test their knowledge. Within the next few months, these trained facilitators independently deliver the training to a minimum of eight participants and collect pre-and-post survey data. The data is then sent to and reviewed by the master-level trainer. New facilitators are certified if the data show improvements across most items and both the master trainer and new facilitator agrees that the training was satisfactory. Following Dusenbury et al. (2003), student evaluations of trainers are key to assessing fidelity. All facilitators were instructed on the importance of maintaining fidelity, and are specifically instructed how to use the

facilitator/session ratings to check fidelity. Certification required presentation of positive results on the facilitator/session ratings forms.

Data Collection and Analysis

Data used from the current study comes from trained facilitators (TF) certified between 2010 and 2020. All data were anonymous, collected from trained employees just prior to and immediately following each training session by using anonymous codes so that pre-ratings could be matched with post-ratings or, when delivered in-person, the pre-rating sheet was stapled to the post-rating sheet. Facilitators were provided with pre-formatted Excel sheets where they could copy data by hand and send for certification review.

The data were nested within individuals for two waves: pretest and posttest. Pretest scores were used as a covariate in all models of posttest measures. Individual participants were nested within sessions indicated by facilitator and by session date when facilitators provided data from multiple sessions. Mixed-effects linear modeling was used to account for the fixed and random effects of assessment scores across facilitators. Analyses focus on random effects of the facilitator for which all sessions from a facilitator were coded into a single group. Intra-facilitator correlations (ICC(1)s) showed significant amounts of variance in all the item responses across facilitators, ranging from .11 to .17 across the pretest items and .09 to .15 across the posttest items. The perceived improvement items have slightly higher ICC(1)s (.10 to .18). The total facilitator/session ratings did not vary significantly across the facilitators (ICC(1) = .05), except for one item. "Doing a good job of guiding participants for the breathing, self-talk, and stretching exercises" varied across facilitators (ICC(1)=.10).

Some hypotheses were tested with paired samples t-tests and repeated-measures ANOVA using ordinary least squares methods. H1a was tested with paired t-test comparing pretest and posttest scores on the same item or the SC10. The variation in the groups' average total and item scores and perceived improvements across facilitators (H1b) was tested using an empty mixed-effects linear model accounting just for the random effects of sharing a

facilitator, and was further analyzed post-hoc using results from paired-t tests of differences between pre and posttest scores for each facilitator. To test H2a, independent samples t-tests were used to compare the master facilitator's students to the T3 certified facilitators' (TF) posttest-minus-pretest (post-pre) differences in SC10, perceived improvement, and facilitator/session ratings.

Repeated-measures ANOVA was used to examine single items and to test the interaction between time and facilitator experience level. H2b was tested with independent samples t-test comparing students' SC10 post-pre difference scores, perceived improvement, and facilitator/session ratings between TFs that conducted single versus multiple sessions. H3 was tested using mixed-effects linear modeling to assess variation of the intercept and in slopes across facilitator-groups of posttest SC10 with the pretest assessment as a covariate, and with the posttest facilitator/session rating as the independent variable. MANOVA was used as an omnibus analysis of the five items of perceived improvement. Given the large number of post hoc tests conducted in response to significant primary results, *p*-values for the follow-up tests were adjusted using Holm's sequentially rejective multiple test procedure to balance control of Type I error with statistical power (Holm, 1979). All analyses were conducted using SPSS version 25.

Results

H1a: Post-test stress consciousness will be significantly higher than pre-test scores across all items.

The total SC10 was significantly higher at posttest (M = 4.15, SD = .54, n = 1301) than at pretest (M = 3.64, SD = .64, n = 1513; Paired t (1281) = 33.60, $p < .001$). Also, scores were significantly higher at posttest than at pretest for each item of the assessment (See Table 1).

H1b: Stress consciousness will increase significantly across all facilitators, such that every facilitator's student groups will show improvement.

Using a mixed-effects model with Time as a fixed effect and random intercepts for Facilitator, the estimated mean change from pre- to post-training was 0.47 (SE =.03), 95% CI [0.40, 0.53]. Every TF's group of students reported an average SC10 score that was higher at posttest than at pretest. There was significant variance in the SC10 difference score across facilitators ($y = .09$, $SE = .02$, $p < .001$), ranging from a minimum average score (and IQR) within facilitator of .09 (-.10, .40) to a maximum of 1.90 (1.75, 2.05). Cohen's d effect sizes ranged from .23 to 12.57 with 44 (90%) of the TF groups showing medium to large effects (Cohen, 1988; See Table 2).

A plot of all TF's students' average pretest and posttest scores on the total SC10 showed that the facilitator group of students who improved the most (on average) had some of the lowest pretest scores. In contrast, facilitator-student groups that did not improve much had some of the highest pretest scores. Nonetheless, a mixed-effects model of total SC10 difference scores that adjusted for pretest SC10 as a covariate showed SC10 difference scores varied significantly across facilitators ($y = .03$, $SE = .01$, $p = .002$). A mixed-effects model with posttest SC10 as the dependent measure and pretest SC10 as fixed level-1 independent variable with random intercept also showed significant variation in the posttest scores across facilitators after adjusting for pretest scores ($\gamma = .03$, $SE = .01$, 95% CI [.016, .055]) and a significant association between pretest and posttest scores on the SC10 ($\beta = .40$, $SE = .02$, $t(1413) = 20.20$, $p<.001$). .

H2a. Pre-to-post changes in stress consciousness, posttest perceived improvement, and posttest facilitator/session ratings will be larger for students of the master facilitator than of T3-certified facilitators.

Table 3 compares student ratings of SC10 (pre, post, and difference scores), perceived improvement, and facilitator/session across three levels of training experience: master and TF with single or multiple sessions. The total SC10 score was significantly higher at posttest (M=4.45, SD=.46) than pretest (M=3.92, SD=.48) for students attending the master level

training (Paired-t (250) = 14.15, p<.001) and higher at posttest (M=4.10, SD=.54) than pretest (M=3.52, SD=.67) for students of TF (Paired-t (1188) = 32.25, p<.001). Pretest scores of students attending the master facilitator's training (M = 3.91, SD = .48) were significantly higher than the TF at pretest (M=3.56, SD=.67; t (1672) = -8.36, p<.001).

A series of repeated-measures ANOVAs conducted on each of the SC10 items showed only one significant interaction between time and facilitator experience levels for item #6 (coping is about a healthy lifestyle; F (1, 1349) = 8.08, p = .005). Comparing difference scores between the master and TF also showed no differences on any items except item #6 to which TF's students improved significantly more (M = .61, SE = .03, n = 1103) than master facilitator's students (M = .42, SE =.06, n = 248; t (1349) = -2.84, p = .005). A repeated-measures ANOVA of the total SC10 score with time and facilitator-experience showed no significant time-by-facilitator-experience interaction with the pretest total SC10 score.

The master facilitator's students rated 4 of the 5 posttest-only perceived-improvement items significantly greater than did the TF's students. Master's students rated their improvement in ability to handle stress much higher (M = 3.75, SE = .06, n = 243) than did TF's students (M = 3.18, SE = .035, n = 914; t (1155) = 7.57, p < .001). The master facilitator's students also rated their improvement in knowledge of healthy coping (M = 3.93), skills for pausing and evaluating stress (M = 3.98), and their desire to address stress effectively (M = 4.25) significantly greater than did the TF's students (all M = 3.54, 3.47, 3.71 respectively, all p < .001). However, the master facilitator's students rated improvement in knowledge of where to get help about the same (M = 3.67, SE = .09, n = 241) as the TF's students (M = 3.70, SE = .04, n = 914; t (1153) = -.39, p = .69).

H2b: Facilitators that have delivered multiple trainings will report greater improvement than those who conducted the training once.

Using only TF students' data, the average SC10 difference-score for facilitators with only one session was higher (M = .62, SD = .64, n = 567) than among facilitators that delivered multiple trainings (M = .54, SD = .60, n = 622; t (1187) = 2.07, p = .02; See Table 3).

A MANOVA of all five perceived improvement items with multiple-sessions as the independent variable showed that single-session TF's students perceived greater improvement than multi-session students (Wilks Lamda = .97, F (5, 904) = 4.86, p < .001). Univariate t-tests showed significantly greater perceived improvement among single-session as compared with multi-session TFs on all five items (see Table 4). A t-test also showed significantly greater total perceived improvement among single-session (*M* = 3.64, *SD* = .99) compared to multi-session TFs (*M* = 3.39, *SD* = .95, t (913) = 3.94, *p* < .001, Cohen's d = .26, 95% CI [.13, .39]).

Additional analysis was conducted using only facilitators conducting multiple sessions (k = 8, with complete data) to examine sequential changes across sessions, testing whether there were improvements over time. Results indicated curvilinear effects with pre-post changes, perceived improvement, and session ratings showing neither positive nor negative trends. For example, stress consciousness was about the same from the first (.54) to the second session (.53), then increased in the third session (.69) only to regress in the fourth (.64) to the fifth (.50) and sixth (.45) session. This post hoc analysis was exploratory due to limited sample size (n = 265) and with some sessions including participants trained by a single TF.

H3. Ratings of facilitators/sessions will be positively associated with pre-to-post changes in stress consciousness and perceived improvement.

The mixed-effects model showed participant ratings of facilitators/sessions were significantly associated with posttest scores (β = .19, SE = .035, 95% CI [.12, .26]) while adjusting for pretest scores. The rate of increase in overall improvement in assessment scores due to facilitator/session ratings was statistically significant and the same across facilitators (i.e. no significant variation across facilitator groups).

A MANOVA of all 10 difference scores with facilitator/session ratings and the total SC10 pretest score as covariates showed no interaction effect between facilitator ratings and pretest SC10 (Wilks' lambda = .05). All difference scores were positively associated with facilitator/session ratings (Wilks' lambda =.60, F (390, 8510) = 1.12, p = .02) and pretest total SC10 (Wilks' lambda = .39, F (400, 8510) = 2.11, p < .001). Thus, the more participants gained in any SC10 item, the more likely they gave more-favorable ratings to the facilitators.

A MANOVA of the five perceived improvement items with the facilitator/session ratings as an independent variable also showed a significant overall association between facilitator/session ratings and perceived improvement (Wilks' lambda =.70, F (185, 5202) = 2.09, p = .0001). Pearson correlations showed that facilitator ratings are positively associated with perceived improvement in ability to handle stress (r = .29), knowledge of healthy coping (r = .31), skills for evaluating stress (r = .30), desire to address stress effectively (r = .33), and knowledge of where to go to get help (r = .33, all ps < .001). Thus, the more participants reported improvements, the more likely they gave favorable ratings to the facilitators.

Discussion

This study demonstrates that R&T trainees improved their stress consciousness. Whether they receive the training from a master-level instructor or students of a master-level instructor, employees who participate in the R&T training generally strengthen their knowledge of stress processes, confidence in recognizing potentially harmful reactions to stress, and readiness to avoid unhealthy coping in response to stress. Moreover, this study demonstrated that training of trainers' programs are a promising way to disseminate R&T more widely. These findings are based on a brief classroom training and self-reported measures designed only to assess short-term changes in knowledge, self-efficacy, and readiness related to adaptive coping as a basis for resilience (Gloria & Steinhardt, 2014).

While hypothesis 1 was generally affirmed – participants on average showed significant improvements – there was significant variation in outcomes across facilitators.

This finding warrants additional research to understand what factors can account for variation across facilitator groups. Results from the current study showed that the facilitator's experience level (i.e., master v. novice) did not account for any of the variation across trainers. As expected, pretest and posttest scores were higher for those attending the master training, who were typically there to receive certification and assumed to have higher education levels or background in the training content than were students of the TF. Even so, there were no differences in SC improvement between the master facilitators and TF's students and no differences across training levels in terms of session/facilitator ratings. This primary finding shows that brief interventions can be disseminated with consistent outcomes via T3 methods. Still, in partial support of Hypothesis 2a, students of the master facilitator showed higher levels of perceived improvement compared to TF students.

Effect sizes (Cohen's d) were greater than .89 for all facilitator groups (master, single session, or multi-session). However, in a rejection of Hypothesis 2b, novice facilitators who only delivered one session showed greater outcomes for both post-pre differences and perceived improvement when compared with facilitators delivering multiple sessions (see Tables 3 and 4). Also, multi-session facilitators did not show sequential improvements over time. Variance in single versus multi-session outcomes may be due to factors other than trainer competence, suggesting that conclusions about dissemination effectiveness should not rely on single-session delivery only. Also, single-session instructors may have only trained once to receive certification, possibly introducing selection bias by only training groups familiar to them.

The hypothesis (H2b) that facilitator/session ratings would also be higher for multiple-session than single-session facilitators was also rejected. The facilitator/session ratings were the same regardless of the number of times a facilitator conducted the training. This suggests that once a facilitator is trained, their ability to conduct the training remains consistent over time rather than improving after practice. The current study’s rejection of H2b has

implications for other empirical studies that draw broad conclusions about effectiveness without paying attention to variance across instructors and over time. Future workplace studies might test for within- and between-facilitator variability as a first analysis step.

Results supported hypothesis 3, indicating a positive association between facilitator/session ratings and pre-to-post improvements in stress consciousness and perceived improvement. Participant improvements were associated with rating sessions more favorably in general and regarding facilitator's preparedness, knowledge, ability to create positive affirmations, and clearly explaining slides and breathing exercises. These relationships did not vary across facilitators, providing robust evidence for the hypothesis.

The study and the program have both strengths and limitations. Amongst the study's strengths are the sample size, use of multiple measures, multiple hypothesis tests that do not rely on a single measure, and use of multiple facilitators and advanced mixed-effects modeling to estimate the random effect of facilitator groups. With the large sample size, this study has significant power (> .99) to detect even small effect sizes; however, we recognized the potential for spurious findings due to many post hoc tests and used a Holm adjustment to hedge this limitation. Still, results with significance-level near .05 should be interpreted with some caution. A major limitation is reliance on self-reported measures administered immediately before and after training and the use of a relatively new measure to assess stress consciousness. Even though factor and reliability analysis indicate the measure has promise, future studies should use other measures and follow-up over time. This includes having more clarity around operational definitions of stress as distinct from resilience, coping, and related terms (cf. Harkness & Monroe, 2016).

"Resilience and Thriving" is a micro-intervention designed to enhance resilience as a process of awareness or stress consciousness. As it is often delivered as a "Lunch & Learn" during business hours, it cannot, by itself, be expected to modify job stressors or environmental challenges that cause stress or limit a resilience response. Any program

evaluation of R&T that only uses job-stress as a measure of effectiveness may miss effects in the intrapersonal domain of stress that includes coping, self-efficacy, and stress competence. Nor can R&T be expected to modify enduring traits of resilience or adaptive coping. The training has boundary conditions and may only be useful as a primer; to set the stage for further interventions or a more comprehensive approach (as in the original Team Awareness from which it was derived). Recent studies indicate that it may be best to view resilience as a process (Liu & Duan, 2023) and that intervention studies treat resilience as a process (Hollaar et al., 2025).

Specifying boundary conditions on effectiveness of stress and resilience programs applies universally. For example, mindfulness-based stress reduction (MBSR) is one of the most widely used and studied workplace stress management programs. It is conceivable that R&T teaches a form of mindfulness-based self-efficacy (Cayoun et al., 2022) in the face of stress. At the same time, research-based criticisms of MBSR suggest that it also has limiting conditions in the workplace (Choi et al., 2022; Micklitz et al., 2021).

This study demonstrates the capacity to disseminate a workplace EBP through a train-the-trainer methodology. Future studies might borrow from our approach to increase implementation research in workplace resilience. Significant increases in stress and burnout amongst employees call for an equally substantial need for a research agenda that seeks to broaden the effective and timely distribution of EBP. Such an agenda would address several gaps implied by the current study, such as assessing facilitator bias and variability, and including longer-term outcomes with multimodal measures (psychological, behavioral, biomarkers, physiological; cf. Masri et al., 2023).

Intervention scientists should also be careful to specify in their hypotheses what aspect or type of stress might be influenced by their approach. The stress measurement literature distinguishes different features of stress: personal and job exposures, awareness of these, ways of coping, and forms of recovery (e.g., Cunningham & Black, 2021; Hurrell et al.,

1998). R&T focuses only on personal stress, and we do not suggest it be used to reduce environmental work stressors (or their perception). Previous clinical trials of Team Awareness (TA) have shown no effect on work-related stress and also pre to post decreases in job stress coping efforts (Lehman et al., 2002), while other TA studies have found improvements when stress is assessed as due to coworkers or as personal stress outside work (Petree et al., 2012) or as using positive unwinding from stress after work (Patterson et al., 2005).

As stated in the introduction, we add the construct of stress consciousness based on a model of health consciousness. As such, it may be central to the two current work-related stress interventions most widely implemented and studied—mindfulness and cognitive-behavioral. Both approaches emphasize stress awareness as fundamental within their theories (e.g., Antoni et al., 2007; Brown & Ryan, 2004). Dissemination studies of these models may benefit from pre-post measures of basic awareness, as presented here. In this context, we also hope the current study contributes to the growing need for greater precision in stress measurement in health research (Crosswell & Lockwood, 2020; Dorsey et al., 2022).

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The authors disclose potential financial interests, as their organization offers facilitator certification training for a fee, which was paid either by trainers in this project or the organizations they work for.

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Table 1

Pretest and Posttest scores, and Paired-t Tests on Items and Total Stress Consciousness among T3-Certified Facilitators

	Pretest N	Pretest Mean (SD)	Posttest N	Posttest Mean (SD)	Post – Pre Mean (SD)	Paired-t*	df	d
1. I know my own early warning signs for stress.	1134	3.63 (.83)	1040	4.06 (.70)	.46 (.78)	17.99	943	.59
2. I am confident that I can recognize these signs before I experience too much stress.	1136	3.37 (.89)	1045	3.93 (.71)	.60 (.84)	21.82	945	.71
3. It is important to me to slow down, stop, and evaluate the stressors in my life.	1134	3.73 (.94)	1043	4.22 (.75)	.58 (.92)	19.23	942	.63
4. I am confident that I can evaluate these stressors effectively.	1137	3.34 (.87)	1042	3.98 (.71)	.70 (.89)	24.27	943	.79
5. I can recognize when I am engaging in unhealthy coping and correct the situation.	1217	3.47 (.87)	1044	4.05 (.73)	.64 (.90)	22.77	1026	.71
6. For me, coping is not just about releasing tension but a life-style of healthy coping.	1133	3.59 (.92)	1046	4.09 (.77)	.58 (.90)	19.83	944	.65
7. I know the signs of not coping well.	1134	3.66 (.85)	1042	4.21 (.69)	.59 (.92)	19.65	940	.64
8. I have healthy life-style and coping factors that help me keep stress from building up.	1135	3.28 (.93)	1040	3.78 (.85)	.53 (.90)	17.97	940	.59
9. I understand the link between unhealthy coping and addiction or substance abuse.	1137	4.16 (.80)	1043	4.42 (.64)	.29 (.80)	10.97	944	.37
10. Overall, I am confident that I can keep stress from affecting my performance at work.	1138	3.61 (.83)	1042	4.03 (.73)	.48 (.82)	18.12	944	.59

*All Paired-t tests are statistically significant $p < .0001$; d = Cohen's d

Table 2

Post-Pre Difference Scores and Paired-t Tests For Each T3-Certified Facilitator

Facilitator ID	M	SD	Paired-t	df	d
Single Session					
1	0.39	0.36	6.54**	36	1.08
2	0.76	0.64	3.15*	6	1.19
4	0.57	0.43	5.57**	17	1.31
9	0.78	0.54	6.96**	22	1.45
10	0.41	0.40	3.25*	9	1.03
11	0.41	0.47	4.01**	21	0.85
13	0.47	0.38	5.97**	22	1.24
14	1.02	0.55	6.17**	10	1.86
17	0.45	0.56	2.65*	10	0.80
18	0.55	0.62	8.74**	94	0.90
20	0.50	0.35	4.08*	7	1.44
23	0.76	0.40	6.04**	9	1.91
24	0.73	0.59	3.25*	6	1.23
25	0.76	0.64	3.15*	6	1.19
26	0.44	0.45	3.43*	11	0.99
27	0.51	0.34	7.29**	23	1.49
28	0.55	0.52	3.35*	9	1.06
29	0.17	0.66	0.69	6	0.26
30	0.28	0.39	2.64*	12	0.73
31	1.00	0.41	8.14**	10	2.45
32	0.12	0.30	1.48	12	0.41
33	0.88	0.63	5.10**	12	1.41
34	0.61	0.55	3.33*	8	1.11
36	0.72	0.68	4.63**	18	1.06
38	0.71	0.81	2.65*	8	0.88
40	0.74	0.76	2.75*	7	0.97
41	0.61	0.44	5.45**	14	1.41
42	0.28	0.74	1.80	21	0.38
43	1.26	0.34	11.70**	9	3.70
44	1.90	1.26	5.84**	14	1.51
45	0.58	0.36	6.22**	14	1.61
46	0.74	0.42	7.25**	16	1.76
47	0.60	0.83	2.05	7	0.72
48	1.90	0.15	35.55**	7	12.57
49	0.09	0.41	0.75	10	0.23
50	0.59	0.56	3.17*	8	1.06
Multiple Sessions					
3	0.53	0.68	7.19**	86	0.77
5	0.40	0.49	6.05**	54	0.82
6	0.36	0.63	3.09*	28	0.57
7	0.45	0.42	2.61*	5	1.07
12	1.14	0.25	20.05**	19	4.48
15	0.61	0.30	7.10**	11	2.05
16	0.49	0.53	6.54**	49	0.92
19	0.30	0.64	5.57**	141	0.47
21	0.46	0.50	3.28*	12	0.91

22	0.46	0.55	2.92*	11	0.84
35	0.80	0.54	18.47**	153	1.49
37	0.60	0.40	7.83**	27	1.48
39	0.64	0.28	8.53**	13	2.28

*$p < .05$, **Holm-Bonferroni adjusted $p \leq .0022$

Table 3

Comparisons of Stress Consciousness, Perceived Improvement, and Facilitator/Session Ratings across Levels of Trainer Experience

	Single Session TF (SSTF) k = 36			Multiple Session TF (MSTF) k = 13			Master Facilitator k = 1			Comparisons				
	M	SD	n	M	SD	n	M	SD	n	Omnibus F (df)	SSTF v MSTF t (df)	All TF v Master t (df)	SSTF v Master t (df)	MSTF v Master t (df)
Stress Consciousness														
Pretest	3.55	.68	575	3.57	.66	806	3.91	.48	293	34.97 (2, 1671)**	-.36 (1379)	-8.36 (1672)**	-7.93 (866)**	-8.01 (1097)**
Posttest	4.17	.52	568	4.03	.54	637	4.45	.46	255	57.65 (2, 1457)**	4.34 (1203)**	-9.72 (1458)**	-7.40 (821)**	-10.73 (890)**
Post-Pre Difference	.62	.64	567	.54	.60	622	.53	.60	251	2.71 (2, 1437)	2.07 (1187)*	1.05 (1438)	1.76 (816)	.21 (871)
Paired-t (df)	23.06 (566)**			22.62 (621)**			14.15 (250)**							
Cohen's d (95% C.I.)	.97 (.87, 1.07)			.91 (.81, 1.00)			.89 (.75, 1.04)							
Perceived Improvement	3.64	.99	490	3.39	.95	425	3.86	.98	255	19.57 (2, 1167)**	3.94 (913)**	-4.84 (1168)**	-2.86 (743)*	-6.18 (678)**
Facilitator/Session Rating	4.59	.53	540	4.58	.54	626	4.61	.51	255	.42 (2, 1418)	.57 (1164)	-.72 (1419)	-.42 (793)	-.88 (879)

Note: *p < .05, **p<.001. TF = Train-the-Trainer Certified Facilitators. Ns vary due to missing cases.

Table 4

Differences in Mean Perceived Improvement Across Single-Session and Multiple-Session Certified Facilitators

	Single Session			Multiple Sessions			t (df)
	n	M	SD	n	M	SD	
My ability to handle stress	490	3.32	1.07	424	3.02	1.01	4.38 (912)**
My knowledge of healthy coping	490	3.66	1.09	423	3.41	1.06	3.53 (911)**
My skills for pausing and evaluating stress	489	3.61	1.10	425	3.31	1.04	4.30 (912)**
My desire to address stress effectively	490	3.83	1.11	425	3.57	1.11	3.46 (913)**
My knowledge of where to get help	489	3.77	1.14	425	3.62	1.10	2.07 (912)*
Total Perceived Improvement	490	3.64	0.99	425	3.39	0.95	3.94 (913)**

*p < .05; **p < .001