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ORIGINAL RESEARCH ARTICLE

The Role of Wellness Climate in Small Business Health Promotion and Employee Wellbeing

G. Shawn Reynolds[1] · **Joel B. Bennett**[1]

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Abstract

Wellness involves physical, emotional, behavioral, social, and spiritual dimensions. A climate for wellness exists at both the psychological and organizational levels, consisting of individual and shared perceptions of policies, structures, and managerial behavior that support or promote employee wellbeing. This study explored the associations between psychological and organizational wellness climate and the effectiveness of a team health promotion training on employees' perceived physical and mental wellbeing and substance use. Employees from 45 small businesses completed self-report measures of wellness climate, wellbeing, positive unwinding behavior, work-family conflict, job stress, drug use, and alcohol use, assessed before, and one and six months after, attending either of two types of onsite health promotion training. Team Awareness training targeted improvements in the social climate at work. Healthy Choices training targeted individual health behavior. A control group did not receive training until after the study. Businesses were randomly assigned to conditions and data were analyzed using multi-level modeling. Models that included wellness climate as a mediator fit the data significantly better than models without climate as a mediator. Team Awareness participants showed greater improvements in wellness climate and wellbeing compared to the control group. Healthy Choices participants showed no changes in climate and no mediation effects of climate. Health promotion efforts may be enhanced by including wellness climate as a target in program design at multiple levels.

Keywords Psychological climate · Organizational climate · Workplace health promotion · Alcohol · Drug use prevention · Employee wellbeing

✉ G. Shawn Reynolds
shawnreynolds@mail.com

[1] Organizational Wellness & Learning Systems, 2221 Justin Rd. #119485, Flower Mound, TX 75028, USA

In common language, personal wellness is a broad concept of health, often defined to include multiple dimensions of wellbeing (physical, emotional, social, spiritual), avoidance of alcohol and drugs, use of positive coping mechanisms, absence of health symptoms, and work-life balance. Research suggests that worksite health promotion (HP) training can improve employees' wellbeing. Experimental trials of classroom training programs show interventions may have stronger impact in the short-term (Jones et al., 2019; Lehman et al., 2003; Song & Baicker, 2019), and field studies suggest longer-term financial benefits to HP (Goetzel et al., 2016; Grossmeier et al., 2016). However, the findings are mixed causing recent editorials to question investment in HP (Anderson, 2016; Solow, 2019). Rather than discount HP altogether because of a few studies that show diminished outcomes, researchers may help develop more-effective HP by studying why programs work and, more specifically, identify and distinguish individual, workgroup, and organizational factors associated with program effectiveness. To this end, the current study evaluates interventions that primarily focus on improving the individual and shared perceptions of the climate of workplace wellbeing in addition to changing individual health.

To our knowledge, the current study is the first to specifically assess the impact of HP on climate as a mediator of HP effectiveness within a randomized experimental trial and also guided by theoretical distinctions between individual versus group perceptions of health. Accordingly, this study contributes to the fields of workplace climate and HP by (1) examining a multi-level model of climate that includes both psychological and organizational climate; (2) testing whether a brief training can improve employee's perceptions of the climate for wellness; and (3) testing whether and how much psychological and organizational climate mediates the effects of HP on individual health behavior, attitudes, perceived wellbeing, and substance use. We analyzed data from a cluster-randomized control trial with pre and post intervention measures of climate, wellbeing, and substance use to test the hypothesis that climate is a mediator of HP effectiveness. As noted above, we wanted to distinguish HP programs designed to impact climate in comparison to those designed to impact individual health. A broader goal is to examine the utility of this distinction. The following sections provide background for the concepts and programs behind the study's hypotheses.

Organizational and Psychological Wellness Climate

Until the 1970s, organizational climate was conceptualized primarily as the observable qualities of the social and workspace environment that depict what the organization is and what its members do (Ostroff et al., 2013; Schneider et al., 2017). Organizational climate consists of observed, or shared perceptions of, policies, procedures, structures, manager and coworker attitudes and behavior. Following a review by Jones and James (1974), workplace climate has become understood to exist at both the organizational and psychological levels. Psychological climate consists of perceptions of and personal meaning attributed to the organizational climate. Both levels of climate may be important to theoretical explanations of organizational and individual wellbeing and job performance,

whether measured at individual or organizational levels (Beus et al., 2020). Climate is useful as a variable that is tangible, easily measured, and amenable to managerial change (Schneider et al., 2013).

Schneider and Reichers (1983) posited that a work environment has many climates, assessed as being for something specific (e.g., climate for safety, for health, or for service). Among these, safety climate is the most investigated (Bamel et al., 2020). Meta-analyses show safety climate predicts safe behaviors (Jiang et al., 2019) and interventions can improve safety climate (Lee et al., 2019). One study showed that by improving communications, supervisors were more apt to talk with employees about valuing safety over production, thereby improving safety climate and safety behaviors (Zohar & Polacek, 2014).

Research and practice have also contributed to the concepts of health climate, or organizational health, and ways to nurture and measure them, thus providing some basis for examining climate as a mediator of HP effectiveness. However, many studies cast climate in a negative light or as a risk factor; for example, as unsafe or exposing employees or patients to risks (e.g., chemicals, hot surfaces, risk of falling, medical errors) (James et al., 2021; Kalteh et al., 2021); as uncivil, (e.g., bullying coworkers, abusive supervisors) (Yao et al., 2022); or as stressful (e.g., conflictful, laissez-faire leadership, workaholic) (John Hauge et al., 2007; Mazzetti et al., 2014). Similarly, popular business articles appear more apt to describe "toxic" than "wellness" work environments (e.g., Perna, 2022; Sull et al., 2022). Regarding organizational health, there are dozens of measures (Flynn et al., 2018) and corporate studies that tend to implement score-cards, audits, or check-lists for use by a single manager to assess organizational health (e.g., Roemer 2020), which is typically heavily focused on negative aspects of climate that leads to illness.

These approaches have limitations the current study seeks to address. First, previous models involve negative aspects of climate, so the current study includes a positive measure of wellness climate. Second, corporate score-cards fail to consider local-level employee perceptions of the social environment (Safeer & Allen, 2019). In practice, wellness professionals also generally do not incorporate theories that involve connections between individuals, teams, and organizational processes (Klein & Kozlowski, 2000) or models that include work group and coworker relationships as important to wellness (Bennett & Tetrick, 2013; Holt-Lunstad, 2018) even though a review of 21 studies of healthcare workers' climate found that group relationships between coworkers, leadership, and supervisors were very important in explaining workers' burnout, depression, and anxiety (Bronkhorst et al., 2015).

This promising literature on safety and health climate points to a parallel need for studies on wellness climate. Just as employers increasingly embraced safety practices in previous decades, growing interest in integrating mental health promotion with physical safety protection suggests organizations might wish to enhance wellness climate (Sorensen et al., 2016). In 2011, the National Institute on Occupational Safety and Health (NIOSH) initiated the Total Worker Health® Program (TWH) and committed to developing knowledge focused on integrating safety and health protection and health and wellbeing promotion (NIOSH, 2012). TWH builds on traditional protection through the recognition that work is a social determinant of health by prioritizing a hazard-free work environment for all workers and collating all aspects of

work in integrated interventions that collectively address worker safety, health, and wellbeing.

Although several reviews have resulted in frameworks that suggest climate is essential to advancing HP, they often conflate health and safety, or physical and mental health. Accordingly, these frameworks assume that climates for physical health will be supportive of mental health or wellness (Smith et al., 2015; Sorensen et al., 2016; Karnika-Murray & Biron, 2015; Weiner et al., 2009). A positive-oriented model of climate may be useful for understanding the broad effectiveness of HP. We use the term *wellness climate* to indicate a climate for integrated physical and mental health that includes both the individual psychological perceptions of the workplace and the shared organizational aspects or organizational climate (Jones & James, 1979).

As defined here, *psychological wellness climate* (PWC) is perceptions of coworker relationships, policies, and supervisor behavior that support optimizing physical and mental health, including emotional wellbeing, coping with stress, and limited substance use. *Organizational wellness climate* (OWC) is the aggregate of the PWC between employees in the same workplace. Organizational-level indicators of climate are assessed by averaging individual perceptions across the same workplace (Klein & Kozlowski, 2000). Aggregate measures of climate may portray the extent to which the perceptions of climate are similar, or shared, among the members of the group or organization. The extent to which the perceptions are shared among employees may be associated with the strength of the climate's influence on outcomes (Schneider et al., 2002).

Climate as a Potential Mediator of Health Outcomes

Despite the extensive research and a general acceptance that climate plays a significant role in organizational life (e.g., Kuenzi & Schminke, 2009), we have found no intervention study that: (1) sets out to change climate for the purpose of enhancing employee wellbeing, (2) applies a multi-level approach, (3) utilizes a longitudinal design, and (4) examines climate as a mediator of health outcomes. In an extensive review of the history of climate research, Schneider et al. (2017) point to the lack of intervention studies that target climate for change. The current paper seeks to address this lack while also building upon insights from the aforementioned literature as well as a number of studies reviewed below.

Most climate research depicts associations between psychological climate, employee safety, health, work attitudes and organizational behavior (Clarke, 2010; Aarons & Sawitzky, 2006), or study safety climate interventions (Nahrgang et al., 2011; Zohar & Polachek, 2014). There are studies on leadership development that assess climate (Naveh & Katz-Nvon, 2015; Karanika-Murray et al., 2017); however, very few studies articulate theory and then directly test whether HP effects on climate mediate the effects of the interventions on employee attitudes and behavior (Hasson et al., 2016).

A study by Lin and Lin (2014) operationalized health culture as the within-business aggregate score on a questionnaire administered to 54 enterprises. One person

responsible for HP in each enterprise was given a separate survey that asked if HP was effective. Healthy culture was significantly correlated with perceived HP effectiveness. This study has limitations, however, that are typical in organizational climate research. There was no control group, and the validity of HP effectiveness measure is questionable, as the measure was the perception of just one person from each organization.

Studies suggest that the ineffectiveness of HP is associated with focusing on individual behavioral change and neglecting workplace context and cultural influences (Hipp et al., 2017; Joyce et al., 2016; Proper & van Oostrom, 2019). Although, there is growing recognition of the importance of climate and culture, work climate interventions may be overlooked as a key to health promotion (Day & Penney, 2018). Interventions can attend to mediators of individual outcomes, such as a climate of coworker and manager support for health (Flynn et al., 2018; Goetzel et al., 2014; Passey et al., 2018). Social support has a direct positive effect on wellbeing and buffers the negative effects of stress on illness (Cohen & Wills, 1985). Social support for wellness comes from coworkers in the immediate workgroup and from supervisors and managerial policies (Zweber et al., 2016).

Measures that are sensitive to employee's own experience of the climate and multi-level models can advance our knowledge of ways to improve HP. There is an urgent need to apply this knowledge to address risks faced by businesses because of COVID-19 (Sinclair et al., 2020). In particular, the pandemic has negatively impacted employee wellbeing in small businesses (e.g., Brown et al., 2021a, b). HP interventions typically do not address adult risk from substance use, which has also increased as a result of the pandemic (Taylor et al., 2020). Reviews of HP often cite evidence from only large businesses, even though small businesses have the most to gain from HP (Schwatka et al., 2018).

Employee Substance Use

Employers have long offered services (i.e., Employee Assistance Programs) and forms of treatment for substance use issues, particularly from alcohol misuse (Roman, 1990). An occasional drink of alcohol on an evening that does not precede work may not have a negative impact on health or job performance. However, more frequent use increases the likelihood of accidents and injuries, overdoses, hangovers, cardiovascular disease, violence, and death, (Mangione et al., 1999; World Health Organization, 2018). Prior to the pandemic, the Bureau of Labor statistics reported an almost 300% increase (from 2011 to 2016) in fatal occupational injuries due to nonmedical use of drugs or alcohol unintentional overdose, particularly in high-risk occupations of construction, materials moving, and food service. The COVID 19 pandemic has also led to increased risks of substance misuse (Rolland et al., 2020; Taylor et al., 2020).

Employee substance use can be a significant problem for worker health and productivity, particularly for small businesses in certain industries (e.g., transportation, construction) that often lack policies and programs. Making matters worse, problems from one employee's substance use impacts the health and

productivity of their coworkers. About 10% of employees report problems from personal drug or alcohol dependence (SAMHSA, 2008), and about 30% report being affected by coworker substance use (Lehman et al., 1998). Coworkers may often know about alcohol problems in their work peers before their supervisors do (Moan & Halkjelsvik, 2020).

Employee assistance programs (EAPs) can be effective for alleviating substance use related problems (NIAAA, 1999); however, there is a large gap between the number of employees that would benefit from help and those that seek help. Improving workgroup cohesion and trust may increase willingness to use employer provided health services. A study of municipal employees showed that problem drinkers and drug users were more reluctant to use EAPs than are nondrinkers and non-drug users, but problem drinkers and drug users were just as willing to use the EAP as moderate drinkers and nonusers when they perceived stronger group cohesiveness and trust in management (Reynolds & Lehman, 2003). Accordingly, improving climate could enhance the overall strategy of reducing employee substance use. The effects of workplace HP on substance use may be mediated by a climate that supports healthy coping behavior and willingness to use the EAP.

Unique Context of Small Business Health Promotion

Wellness and HP programs are typically offered to large corporations, but HP is just as (if not more) important for small businesses. A recent econometric study found that compared to their counterparts in larger organizations, leaders in workplaces of less than 100 employees are much more susceptible to productivity and financial losses amongst employees as exposure to mental health risks increase in their work population (i.e., burn-out, mental health issues, fatigue, substance use; Bennett et al., 2023). Because they are so intimate, small business managers and coworkers also genuinely come to think of each other as family, and as such, want them to be well. In spite of limited financial and time resources, there is growing interest in employee HP by small business owners (Cunningham et al., 2015; Schwatka et al., 2018).

Both the provision and study of wellness or other programs (e.g., Total Worker Health) in small businesses are fraught with challenges. For example, research cited above (Zohar & Polachek, 2014) places emphasis on managerial endorsement of climate sentiments as a key method of altering climate. A singular focus on the small business owner would require less training and more gain for a smaller business that lacks the capital, resources, or employees to conduct training. However, studies suggest that, a single focus on the small business manager, by themselves, may not be optimal for HP.

For example, these managers may be reluctant to offer HP training because they tend to believe that each individual employee is responsible for their own health (Saito et al., 2022). Studies also suggest that promoting coworker relationships and coworker wellness champions may be more attractive to small business managers (Cunningham et al., 2021: Saito et al., 2022). Recent studies also indicate that while small business employees' perceptions of health and safety

climate correlate with their well-being, a leadership training was not able to modify either climate or well-being (Brown et al., 2021a, b). Finally, research suggests that coworker social norms have a stronger influence on at-risk drinking than supervisor ability or willingness to intervene when problems are detected (Bacharach et al., 2002).

Current Study

The current study uses data from the Small Business Wellness Initiative that adapted two evidence-based classroom training interventions for small businesses: Team Awareness for Small Businesses (TA^{SB}) and Choices in Health Promotion (Choices). The Team Awareness (TA) model for health promotion focuses on improving social support and is based on a multi-level theory which posits the work group as a nexus for individual and organizational wellness (Bennett et al., 2000, 2020). TA was designed to enhance workplace climate in order to facilitate improvements in wellbeing and substance use risk (Bennett et al., 2000). The TA curriculum raises awareness of supportive policies and coworkers as sources of support, and trains on peer-communication skills. Studies of an adapted version for small businesses (TA^{SB}) have demonstrated improvements on wellbeing-related outcomes, including work-family conflict (Bennett et al., 2006), positive unwinding behavior (Patterson et al., 2005), alcohol use, and help-seeking attitudes (Reynolds & Bennett, 2015). TA is associated with increases in facets of the work climate, including group cohesion, alcohol-drinking norms, and perceived stigma on problem drinking and seeking help (Bennett et al., 2004). To date, there has been no study of climate as a mediator of the effectiveness of TA.

The Choices program focuses more on helping participants identify and make commitments to personal healthy lifestyle goals. Choices was based on the logic of a SAMHSA Model program *Healthy Workplace* that emphasizes self-determinism and choice theory (Cook et al., 2003). While both of these programs are in-person classroom trainings, they each approach HP from very distinct theoretical presumption about how to improve employee health. Choices targets the individual's needs and motivations, while TA^{SB} targets group norms and climate directly as well as other attributes from multiple levels of individuals, workgroups, and organizations. Choices could result in improved climate, but unintentionally after much time has passed for individuals to have shifted their behavior and for those behaviors to have been observed by coworkers and incorporated into their perception of the climate.

On the other hand, the TA approach was based on the theory that to be effective at changing behavior, the climate must be supportive of the change. Accordingly, TA^{SB} targets beneficial workgroup and organizational qualities that support HP as well as the risks associated with unhealthy climates like violence at work and coworker alcohol and drug use norms (Bennett et al., 2000). Positive work environments that support HP include attitudes toward policy and the EAP, workgroup and coworker norms that support wellbeing and change, formal and informal policies toward employee health and HP, and social qualities of warmth, respect, trust, and cohesion (sense of belonging). TA^{SB} sought to address these factors.

Hypotheses

Both the Healthy Choices and TA^{SB} trainings were expected to be associated with positive improvements to health and substance use. Compared to Healthy Choices, the TA^{SB} was expected to be associated with significant improvements to wellness climate. A model of direct and mediated influence was developed for this study to examine how HP can affect wellness climate (see Fig. 1). The model depicts four factors: OWC, PWC, the two interventions, and wellbeing outcomes; these are dynamic and continually developing throughout the process of HP effects (cf., Judd & Kenny, 1981). The TA^{SB} and Choices training can have direct and indirect effects via wellness climate on employee-level wellbeing, including physical health, positive coping, reduced felt stress, willingness to use the EAP, and substance use.

Three observations are made in order to assess mediation, whether there is (1) a direct effect of each intervention on the mediator, (2) an association between the mediator and the outcome, and (3) no (or significantly reduced) effect of an intervention when the mediator is included in the analysis as a covariate (Baron & Kenny, 1986). With multiple levels of climate (i.e., PWC at the individual-level and OWC at the organizational level), study hypotheses correspond to the mediation paths (a1*b1 and a2*b2) and the direct effect path (c) as displayed in Fig. 1.

We expected that the two training conditions could have different routes to impacting health and wellbeing. While both trainings may potentially improve climate, the TA^{SB} was specifically designed to target climate; hence, we expect that TA^{SB} will have stronger effects on climate than will the Choices program.

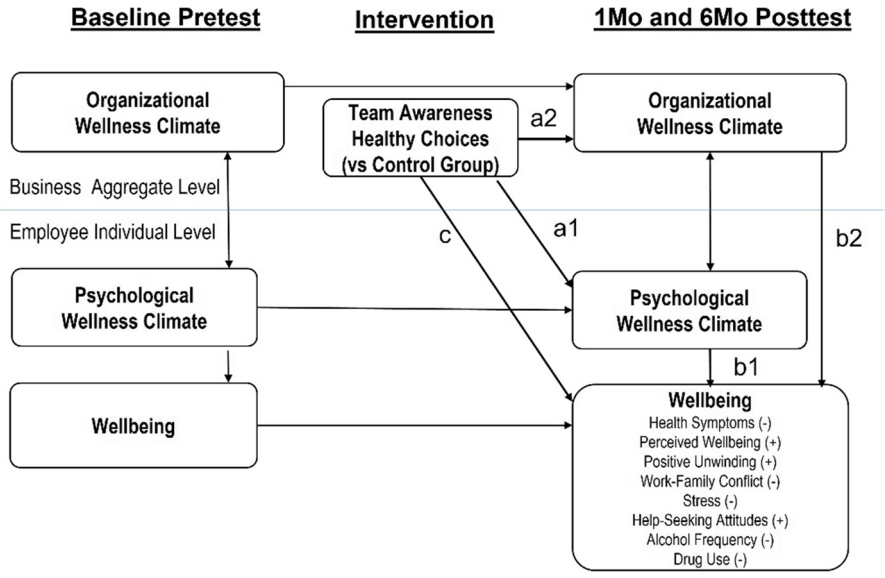

Fig. 1 Model of the effects of workplace health promotion interventions on wellness climate and wellbeing. Positive and negative signs in parentheses show hypothesized changes over time for trained employees

Hypothesis 1a: Trained businesses will show greater improvements in wellness climate than control group businesses.
Hypothesis 1b: The TA^{SB} will have stronger effects on wellness climate than will the Choices training.

Working with trustworthy, accepting, and encouraging coworkers and leaders alleviates a variety of work stressors, and perhaps makes social relationship resources more available, thereby enabling more positive coping strategies. Both the psychological and organizational levels of wellness climate should be correlated with the health and wellbeing outcomes at all times because culture and climate can both cause and be affected by individual attitudes and behavior in a recurrent and emergent process (Bronfenbrenner, 1979; Cole, 1996). If wellness climate is to be associated with improved healthier unwinding and reduced stress, then wellness climate might be associated with reduced alcohol and drug use. According to the alienation/stress model of alcohol use, employees might use substances to reduce stress (Frone, 1999).

Hypothesis 2: Wellness climate will be correlated with wellbeing and substance use. Specifically, wellness climate, PWC and OWC, will be *positively* correlated with perceived wellbeing, positive unwinding, and help-seeking attitudes and will be *negatively* correlated with health symptoms, work-family conflict, stress, alcohol and drug use.

If climate is associated with wellbeing, and HP can impart positive changes in climate, then we can expect that the effects of HP on individual-level outcomes, will be mediated by the effects of HP on wellness climate. We hypothesized that climate mediates the association between HP and wellbeing and substance use and mediation may occur at multiple levels within and between businesses. Both perceptions of climate, PWC, and aggregate business climate, OWC, will mediate the effects of training at one and six months.

Hypothesis 3a: The effect of training on wellness climate at 1-month posttest will mediate the effects of training on 1-month measures of health and wellbeing, including substance use.
Hypothesis 3b: The effect of training on wellness climate at 6-month posttest will mediate the effects of training on 6-month health and wellbeing measures.

We expect significant direct effects of both trainings on the health and substance use outcomes in addition to indirect effects via climate. Results have already been published about the direct effects of the training programs on work-family conflict (Bennett et al., 2006), positive unwinding behavior (Patterson et al., 2005), EAP attitudes, and alcohol drinking frequency (Reynolds & Bennett, 2015). This study examines only the indirect effects of HP on these outcomes and reports four new measures that have never been analyzed as training outcomes from this dataset.

Hypothesis 4: Employees from trained businesses will show greater improvements in health symptoms, wellbeing, stress, and drug use than employees from control businesses.

Methods

Data

The data were collected during a randomized controlled trial of two health promotion programs. Participants were employees recruited from small businesses (< 500 employees) within and surrounding a southwestern urban Metroplex in industries identified as high risk for alcohol or drug use problems based on risk factors described in Frone (2013). The sampling strategy included both random and convenience methods. At the start of the project, businesses that met criteria regarding size, county, and industry were randomly selected from Dun and Bradstreet (D&B; www.dnb.com) to make a list of 75 businesses. After all businesses in a list were contacted, a new list was compiled. After the entire D&B database was exhausted, a convenience sample was used, which included referrals obtained through phonebook listings, listings from minority chambers of commerce, and networking at small business events. As a result, 17 businesses were recruited from random sampling and 28 were recruited from convenience sampling. When a business agreed to participate, we asked owners and managers to encourage worker participation and permit us to post flyers and directly contact workers on-site during the work day.

Participants

A total of 45 businesses with 1512 employees agreed to participate and completed the baseline questionnaire. Efforts were made to select businesses with occupations known to have generally higher risks for substance use: construction, food service, hospitality, and transportation/materials moving. The number of employees per business ranged from 2 to 359 with an average of 33 employees per business. The sample is diverse in terms of ethnicity (28% Hispanic, 16% African American, 2% Native American Indian); business type (53% service, 29% construction, and 18% materials moving); age (18% young employees aged 18–30, 24% aged 31–40, and 58% older than 40); and gender (56% women). More than three-fourths (78%) had completed high school: 37% had only completed high school, 24% had some college and 17% had completed college or higher education.

Procedure

Businesses were randomly assigned to one of three conditions: TA^{SB} (k = 16; n = 735), *Choices* (k = 13; n = 372), or control (k = 16; n = 403). All employees within a business were assigned to the same condition. About 80% of employees who were assigned to receive training actually attended. A total of 561 (k = 16) employees presented to the TA^{SB}, and 284 (k = 12) employees attended the *Choices* training. This study used an intent-to-treat approach. Participants remained in the condition to which they were assigned even if they dropped out of the study. We did not switch participant condition from trained condition to control group if they did not attend training. Informed consent was obtained from all

individual participants included in the study. Questionnaires were collected from employees at their workplaces two-to-four weeks before, two-to-four weeks after, and six months after trainings. All business assigned to TA^{SB} returned for posttest at one-month and 6-months after training. One business from the Choices condition (n = 16) did not participate in either of the posttests, one business from the control group did not participate in either of the posttests (n = 10), and another control group participated pretest and 1-month posttest but did not participate at 6-months followup (n = 12). Only one of the two participants from the smallest businesses (n = 2) in the TA^{SB} group completed both posttests.

Team Awareness for Small Businesses The TA^{SB} training was an adaptation of an existing program, Team Awareness, by selecting components that were thought to be most useful according to pilot tests with small businesses. The training included information, games, role-playing, and other activities on substance misuse prevention, employee and coworker roles in prevention, communication, and peer referral skills.

Both the TA^{SB} and Choices programs implemented for this study were the same dose of 4 h. Components of TA^{SB} include modules on: (1) *Relevance*, which sought to increase understanding of the importance of substance misuse prevention; (2) *Team Ownership of Policy*, which explained that policy is most effective when seen as a useful tool for enhancing safety and wellbeing for the whole work group; (3) *Understanding Tolerance*, which taught how tolerance of coworkers' risky behavior like ignoring coworker substance use can become a risk factor for groups; (4) *Communication*, which reviewed basic communication skills (e.g., listening exercises), and (5) *Support and Encourage Help*, which sought to encourage appropriate help-seeking and help-giving behavior. This module provides tips and guidelines for approaching employees who have a problem, and engages employees in a role-playing activity to practice encouraging help. Materials and full description of the Team Awareness for Small Businesses program are available online (http://ibr.tcu.edu/wp-content/uploads/2013/09/TASBallmanual.pdf).

Choices in Health Promotion The Choices program was developed for the current study and primarily uses components developed from the *Healthy Workplace* program described above. The *Choices* training is customized for each small business based on a needs assessment interview conducted with the owner or senior manager. The needs assessment is a one hour face-to-face structured interview and covers several areas such as: business description and policies, management-employee relations, alcohol and other drug use, health and productivity, personal stress and sense of meaning, time management, and training preferences. A 4-hour program is developed through mixing and matching the components according to the needs assessment. The program can include several components (listed below) and uses various formats including: videos, discussion, lecture, hand-outs, and interactive CD-ROM.

All *Choices* trainings include goal setting, where participants write down their goals about health improvement (such as cutting back on drinking or tobacco use,

exercising more, and/or finding time to relax). Facilitators help participants to set attainable goals as well as specific steps to achieve that goal (i.e. "I will do stretching exercises 3 times a day"). The *Choices* components are as follows: (1) Stress Management, (2) Tobacco, (3) Active Lifestyle, (4) Healthy Eating, (5) Parenting, (6) Time Management and Spiritual Health, (7) Safety in the workplace, (8) Information on Alcohol and Moderate drinking, (9) Prescription drug use, and (10) any part of the 8-hour *Team Awareness* could be used.

Measures

Experimental Conditions Two dummy-coded variables were used in the omnibus analysis of training effects. One variable, DUM1, was coded 1 for TA^{SB}, 0 for Choices, and 0 for the control group. The second variable, DUM2, was coded 0 for TA^{SB}, 1 for Choices, and 0 for the control group. Planned contrast indicators between TA^{SB} and the control group (TvC) and between Healthy Choices and the control-group (HvC) also used variables that were coded 1 for the intervention and 0 for the control group.

Wellness Climate The questionnaires included a measure of climate developed to assess nine unique aspects of workgroups and the organization related to support for employee wellbeing (Reynolds & Bennett, 2019). All items refer to aspects of coworkers or the workgroup or to managerial actions or policies. Participants rated nine items about coworkers being truthful, trustworthy, full of vitality, appreciative of cultural differences, able to easily forget about job pressures when the workday is over, as well as the organizational concern with health and safety and workplace offerings of health and wellness classes. Responses ranged from (1) strongly disagree to (5) strongly agree. All nine items were averaged to compute a measure of *psychological wellness climate* ($M = 3.29$, $SD = 0.63$, $\alpha = 0.74$). The Intraclass Correlation Coefficient (ICC(1)) for the pretest, posttest, and followup measure was 0.07, 0.12, and 0.11 when adjusting for experimental condition and an autoregressive correlation between the measures over time. The average within-business agreement on these measures was high at baseline ($R_{wg(j)} = 0.87$). Business aggregate scores as the mean of PWC within businesses were used as an indicator of *organizational wellness climate* ($M = 3.29$; $SD = 0.25$). A previous cross-sectional analysis of baseline measures showed that the observed measures of PWC and OWC were significantly correlated with fewer symptoms of physical illness, perceived wellbeing, and lower frequency of alcohol use (Reynolds & Bennett, 2019).

Wellbeing Outcomes *Health symptoms* was assessed with eight items taken from checklists (Derogatis, 1992; Hays & Stewart, 1990; Kroenke et al., 2002) that assessed the frequency of common physical ailments (e.g., fatigue, tension, illness). Responses ranged from "Not at all (1)," "Rarely (2)," "Sometimes (3)," "Often (4)," to "Almost Always (5)." The average response across all participants pretest was 2.30 ($SD = 0.78$, $\alpha = 0.85$). A sixteen-item measure examined multiple

dimensions of wellbeing (spiritual, social, and emotional). Factor analysis in Adams et al. (1997) and in the current sample suggested the items are measuring a single factor. These items were averaged to create the measure of *perceived wellbeing* (M = 3.47, SD = 0.42, α = 0.81). *Positive unwinding* was assessed with eight items (Patterson et al., 2005). Participants were asked how often they performed each of four behaviors: call or spend time with friends, meditate or pray, entertainment (watch TV, read, go to movies, etc.), and exercise, in order to "relax, forget worries, and cope with stress" both in general and after work. Responses ranged from (1) Not at all to (5) Very Often. Ratings of general and after work unwinding were averaged for a composite measure of positive unwinding (M = 3.03, SD = 0.67, α = 0.73). *Stress* was assessed with five items used to measure felt stress or strain from work (Lehman et al., 2003), for example, "I am constantly under heavy pressure in my job." Responses ranged from (1) strongly disagree to (5) strongly agree, and averaged together to form the measure (M = 2.73, SD = 0.90, α = 0.83). Four items assessing the extent to which work-related stress was interfering with family life were averaged for a measure of *work-family conflict* (Frone, 2000). An example item is, "My work takes up time that I'd like to spend with my family/friends." Responses ranged along a 5-point scale from strongly disagree to strongly agree with "in between" as a midpoint (M = 2.71, SD = 0.83, α = 0.68). *Help-Seeking Attitudes* were assessed with three items that asked about willingness to get help for depression, stress, or a drug or alcohol problem. These items were adapted from survey instruments used in previous research to assess stated intentions to seek help (Bennett & Lehman, 2001; Harris & Fennel, 1988). An example item was ''If you were depressed, how likely would you go to a counselor, support group, or EAP (Employee Assistance Program) for help?'' Response format was (1) very unlikely to (5) very likely. The mean of these three items was used as the primary outcome of help-seeking attitudes (M = 2.99, SD = 1.20, α = 0.88). Each measure's ICC(1) estimates are presented in Table 1 for each time period.

Substance Use A single item from the Substance Abuse and Mental Health Services Administration's (1999) performance measures was used to develop a measure of *alcohol frequency.* The item asked "During the past 30 days how many days have you used any alcohol?" Responses ranged from 0 to 30 and were categorized into five groups: 0 days, 1–5 days, 6–15 days, 16–21 days, and 23–30 days. Alcohol frequency scores ranged from 0 to 4 (M = 0.73; SD = 1.03). Measures of alcohol drinking frequency are helpful for screening for potential problems that have not yet developed into dependence (Saunders et al., 1993). Greater frequency of drinking alcohol is correlated with poorer health (WHO, 2004), social anxiety (Stewart et al., 2006), and absenteeism at work (Bacharach et al., 2010).

Six similar items asked how many of the past 30 days did the respondent use illicit drugs, marijuana, cocaine, amphetamines, hallucinogens, or other drugs. Responses to these 6 items ranged from 0 to 30 (days). Two additional items asked how frequently had the employee used drugs in the past 6 months to cope with stress and relax after work. Responses ranged from (1) Not at all to (5) Very Often. There were

Table 1 Intraclass correlation coefficients (Type 1) at each time period and lagged mediator-outcome associations

Measure	Baseline Pretest	1-Mo Posttest	6-Mo Posttest	1-Mo PWC to 6-Mo Outcome PE (SE)
PWC	.07	.12	.11	.57 (.05)*
OWC				.84 (.12)*
Health Symptoms	.05	.02	.07	.65 (.06)*
Perceived Wellbeing	.05	.08	.07	.71 (.03)*
Positive Unwinding	.04	.05	.06	.67 (.03)*
Work-Family Conflict	.11	.11	.16	.60 (.05)*
Stress	.11	.10	.11	.64 (.04)*
Help-Seeking Attitudes	.07	.09	.07	.56 (.05)*
Drinking Frequency	.21	.14	.16	.66 (.03)*
Drug use	.07	.05	.13	.19 (.08)*

*$p < .05$, The cross-lagged correlations between 1-Month PWC and 6-Month Outcomes estimates are from model that adjusts for the effect of the training condition and baseline scores. PWC = Psychological Wellness Climate, OWC = Organizational Wellness Climate, PE = Parameter Estimate

relatively few positive responses to these eight items, so we dichotomized them into a single variable indicating a positive response to any of the items, coded 1 to indicate yes (14%), or 0 to indicate no *drug use* (86%).

Data Analysis

Data analysis was use to take full advantage of the multi-level and longitudinal design of this experimental study. This section describes our approach to testing mediation using both omnibus and planned contrast models. It also describes how we tested indirect effects at both individual-and business-levels as well as attrition, pre-training, and direct effects.

The study design was a three by three, condition (TA^{SB}, Choices, Control) by Time (1-month pretest, 1-month posttest, 6-month follow-up) repeated-measures design. Analysis of the employee-level mediation effect was based on the cross-level mediation model described by Pituch and Stapleton (2012). Analysis of the business-level mediation effect was based on the unconflated multi-level mediation model (Zhang et al., 2009). Unconflated models used the business-mean centered PWC scores in the employee-level part of the model and the business-mean OWC score in the business-level part of the model, such that the components vary strictly within each of the levels of analysis. This enables a test of each mediation path level for PWC and OWC simultaneously without conflating each level's contribution to the mediation, and reduces bias in the higher-level parts of mediation (Preacher et al., 2010).

We employed two approaches to testing the effects of the interventions on climate and wellbeing to address slightly different questions. First, an omnibus

approach was used to assess the effects of both training conditions over time, addressing two questions: (1) "Did training of either type have significantly different outcomes than the control group or did they differ from each other at any time from baseline to 6-month follow-up?" and (2) "Were these training effects mediated by the effect of the training on wellness climate?" Second, a planned contrasts approach was used to assess each intervention separately in order to examine immediate and longer-term outcomes separately. Specifically, we asked "were there significant differences between the TA^{SB} and the control participants at 1-month posttest or 6-months posttest accounting for pretraining baseline measures and mediated by PWC or OWC?"

The two approaches differ in the numbers of levels of analysis. The omnibus approach requires three levels of analysis, whereas the planned contrasts approach only requires two levels of analysis. Although the omnibus test has three levels of analysis with business-level (OWC, training) analyzed at the third level, we refer to the employee-level as level-1 and the business level as level-2 throughout this manuscript. See Table 2 for a description of the levels of measurement and analysis for this study.

Omnibus Analyses The omnibus analysis employed a three-level mixed-effects model of outcomes over time with time being nested within persons who are nested within businesses. This analysis followed models described by Preacher (2011). The model included all three time periods, all training conditions, and covariance between outcomes and wellness climate at two levels: person-level PWC and business-level OWC as time-varying covariates.

Separate models were tested for each of the wellbeing outcomes and substance use. Direct-effects models were compared to mediation models. Direct-effects models included training conditions and time. Mediation models included training conditions, time, and wellness climate as a covariate. The comparison of primary interest was between the mediation models and the direct-effects models. In all tests of mediation, the null model was the direct-effects model including only outcomes regressed onto training condition and time. The hypothetical model was the mediation model that included PWC and OWC as covariates. We also compared models that included each level of climate separately. We wished to test if climate was mediating the process of the interventions, and if mediation was occurring, we wanted to describe how much of the mediation was occurring at each of the levels.

The omnibus direct-effects model included the three time periods of questionnaires coded 0 for pretest, 1 for 1-month posttest, and 2 for 6-month posttest to represent a linear effect of time, and two dummy-coded variables to represent all three conditions. A multi-level linear mixed model of training effects was estimated by regressing the coefficient between time and outcome (i.e. slope of outcome across time) from the within-individual level onto the two dummy-coded variables at the between-business level while estimating the intercept and time-slope's variance at the between-individual level. The effect of training condition

Table 2 Levels of analysis for two approaches to hypothesis testing about intervention effects

	Omnibus Intervention Effect Across All Time Periods	Pretest-to-Posttest Planned Contrasts
Description of analysis approach for each outcome	One omnibus analysis assessed the interaction between the experimental training condition (TA^{SB}, Choices, Control) and the three time periods (baseline, 1-month, 6-months). This analysis includes data from all experimental training conditions and all time periods.	Four analyses compared the control group to each intervention separately (TA^{SB} vs. Control and Healthy Choices vs. Control for each of the two time-periods: Baseline to 1-month, Baseline to 6-months). Each intervention gets two analyses; one for 1-month and one for 6-month outcomes. All analyses contain the pre-training baseline measure as a covariate.
Level of Measurement	1	1
Description of Level of Measurement	Employees completed questionnaires three times.	
Levels of Analysis	3	2
Level 1:	Employee measures across Time.	Employee 1 month and 6 months posttest measure across the baseline pretest scores.
Level 2:	Employee measures across Individuals.	Organizational Wellness Climate measure and Training condition.
Level 3:	Organizational Wellness Climate measure and Training condition.	
	Time and individual-differences are modeled separately though both are at the employee level. We refer to business-effects as “Level 2” or “L2” throughout this paper despite being modeled at the third level of this analysis.	There are two time-points of interest in each analysis. Time is modeled in the same equation as individual differences by including the pretraining measure as a covariate in the model of the posttest measure.

on growth of the outcome and mediator over time was the total multiple-correlation coefficient for both the dummy-coded variables (γ_{31*32}; Path c in Fig. 1 for the outcomes, and Paths a1 and a2 for the different levels of the climate mediator). The indirect/mediation model was used to test (1) employee-level mediation with PWC as a covariate with the wellbeing outcomes at the within-individual level, and (2) business-level mediation, with business-centered PWC at the individual-level and OWC as a covariate in the between-business part of the model.

The multiple correlation parameter for the dummy-coded training conditions combined was tested with an F-test to examine if there was significant variance in each outcome across the three training conditions. The association between the PWC mediator and the outcome ($\pi_{2;}$ b1 in Fig. 1) is estimated by entering PWC as a covariate in the regression of the outcome on time. The association between the OWC mediator and the outcome (path b2 in Fig. 1) is the coefficient for OWC in the between-business regression of the time-outcome slope adjusted for the training effects (i.e. with the dummy-coded variables in the equation) and business-centered PWC at the within-employee level.

Model fit and parameter coefficients were also estimated in planned-contrast analyses that assessed the effects of each training condition versus the control group separately across two time periods: from pretest to 1-month posttest and from pretest to 6-month posttest. Four planned contrast models were analyzed for each outcome: TvC and HvC effects at the two posttest time-periods. TvC and HvC were contrast variables coded as 1 for the training condition (TA^{SB} or Healthy Choices) and 0 for control group. Only two levels are needed to model planned contrast analyses, which regresses the mediator and outcomes at each posttest period onto the pretest mediator and outcome score on the first level of the analysis. The level-1 (L1) intercept and slopes are regressed onto the contrast variable of interest (TvC, HvC) at level 2 (L2).

Planned Contrast Analyses In the planned contrast analysis, the direct effect of the TA^{SB} training on the outcome (path c in Fig. 1) is the Level-2 coefficient (γ_{1j}) between the TvC variable and the L1 intercept from the regression of posttest outcome on pretest outcome. The effect of TA^{SB} on the PWC mediator is the coefficient ($\gamma_{2j;}$ path a1 in Fig. 1) between the L2 TvC variable and the L1 intercept from the regression of the posttest PWC scores on pretest PWC scores. The effect of TA^{SB} on the OWC mediator (path a2 in Fig. 1) is the coefficient between the posttest OWC and the TvC contrast variable. The association between the PWC mediator and the outcome (path b1 in Fig. 1) was estimated by entering PWC into the L1 regression of the posttest outcome on the pretest outcome. The association between the OWC mediator and the outcome (path b2 in Fig. 1) is estimated by entering OWC into the L2 regression of the L1 intercept on the L2 training contrast variable, and including business-centered PWC at L1.

Estimating Indirect and Mediation Effects The data were analyzed using MPlus version 8, which calculated estimates of the mediation effect as the product of coefficients for paths a and b using the Model Constraint procedure,

and a significance test based on the delta method using the robust maximum likelihood estimator (MLR). The Percent Mediation was calculated for the observed significant employee-level mediation path as the indirect effect (ab in Fig. 1) divided by the total effect (ab + c in Fig. 1) where c is the effect of the time*condition interaction on the outcome measure from the direct-effects model, and the indirect effect (ab) was slightly different between the two analytic approaches. For the omnibus analysis of all times and conditions, the indirect effect is the product of the effect of wellness climate on the outcome and the sum of both dummy-coded time*condition interactions (i.e. cross-level gamma estimates of the effect of L2 training condition on the L1 slope/regression of outcomes on time); and the total effect is the indirect effect plus the effect of the time*condition interactions on the outcome measure from the direct-effects model.

For the planned-contrast analysis, the indirect effect is the product of the effect of wellness climate on the outcome and the main-effect of treatment condition (i.e. cross-level gamma estimate of effect of L2 training condition on the L1 slope/regression of posttest outcome on the pretest outcome score), and the total effect is the indirect effect plus the main-effect of condition on the outcome measure from the direct-effects model. The indirect effects also differed between the cross-level mediation models (used to estimate employee-level mediation) and the unconflated mediation models (used to estimate the business-level mediation). For testing employee-level mediation, the effect of PWC on the outcome was the estimate of the regression of the outcome on posttest PWC in the employee-level part of the model, whereas for the business-level mediation, the effect of wellness climate on the outcome was the estimate of the outcome regressed onto posttest OWC from the business-level part of the model while adjusting for the employee-level business-centered PWC in the employee-level part of the model.

Attrition and Pre-Training Analyses Attrition and pretraining differences between training conditions were analyzed prior to the mediation analysis using SPSS version 25. Attrition was analyzed by comparing two groups, those that completed either the 1-month or 6-month questionnaire, and those that did not complete the posttest questionnaires. This variable was used as an independent factor in mixed ANCOVA models testing the association between dropping out (attritting) and other measures. Bivariate correlations between all the measures at pretest were computed to observe pretraining differences between the training conditions.

Direct Effects The F-tests for the direct effects of training on each continuous outcome were estimated using the MIXED procedure for continuous outcomes and GENLINMIXED procedure for binary outcomes in SPSS with a RANDOM identity subcommand for the intercept and REPEATED diagonal subcommand for time. The −2 Restricted Log Likelihood index for the direct model was compared to the mediation model using the likelihood ratio test (Moreira, 2003).

Results

Attrition

The overall attrition rate from pretest to posttest was 34% with equal proportions of participants dropping out from each of the conditions (36% from TA^{SB}, 31% from Choices, and 34% from the Control group). There were no differences in attrition across any of the dependent measures or participant ethnicity, but males dropped out at a higher rate (32%) than did females (23%; $\chi^2 = 11.72$, $p = .001$). Participants from the youngest group dropped out at a higher rate (34%) than older participants (24%; $\chi^2 = 11.67$, $p < .003$), and the least educated employees (less than 12 years of school) dropped out at a higher rate (34%) than the other 3 levels of education (26%; $\chi^2(3) = 8.28$, $p = .04$).

The overall attrition rate was 46% from pretest to 6-month followup. Significantly fewer participants dropped out from the Choices condition (36%) than from the TA^{SB} condition (47%) and the control condition (51%; $\chi^2 = 19.94$, $p < .001$), but post hoc tests with Bonferonni adjustment showed the TA^{SB} and Control conditions attritted at the same rate. There were also no differences in attrition rates from pretest across the dependent measures, participants' education-levels, or ethnic identities, but attrition rates were different across gender, age, education level, and hours worked per week. A greater percentage of males (44%) attritted from pretest to 6-month followup than did females (36%; $\chi^2 = 8.16$; $p = .005$). More of the younger employees (57% of those less than 30 years old) attritted, whereas 40% of the middle aged and only 34% of the oldest (and most prevalent) group attritted ($\chi^2 = 41.21$, $p < .001$). More part-time employees (54%) attrited than full-time employees (38%; $\chi^2 = 20.11$, $p < .001$).

Pre-Training Differences Between Conditions

Correlations between all the measures observed before the training are presented in Table 3. There were differences in wellness climate and drinking frequency across conditions at pretest. Participants in the TA^{SB} condition began the study with higher wellness climate than participants in the control condition (r = .10). Participants in the Choices condition began the study with higher frequency of drinking alcohol than the control group (r = .15).

Effects of Training on Wellness Climate

The first hypothesis was that training will be associated with significant improvements in climate over time. Results showed that there were significant differences in climate across all three conditions and all times (F (2,1342) = 5.35, $p = .005$). Post hoc comparisons of TA^{SB} versus the control group showed that there is a significant effect of TA^{SB} on climate across a linear model of all three time periods (F (1, 1000) = 6.93, $p = .009$) but there was no significant linear growth across the three time periods between the participants in the Choices training and the control group (F (1,671) = 0.29, n.s.). Comparisons of mean climate across conditions and time showed that climate increased over time for the TA^{SB} condition whereas climate

Table 3 Bivariate correlations between all measures at pretest

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Perceived wellness climate									
2. Health symptoms	− .19*								
3. Perceived wellbeing	.20*	− .27*							
4. Positive unwinding	.14*	− .02	.30*						
5. Work-Family conflict	− .20*	.36*	− .27*	− .10*					
6. Stress	− .27*	.38*	− .20*	− .09*	.54*				
7. Help-Seeking attitudes	.18*	.01	.08*	.17*	− .01	− .08*			
8. Alcohol frequency	− .01	.04	.02	− .03	.01	.06	− .18*		
9. Drug use	− .08*	.13*	− .15*	− .02	.09*	.07	− .06	.19*	
10. TvC	.10*	− .04	− .03	− .04	.01	.02	.06	.06	− .05
11. HvC	.06	− .02	.06	− .06	− .07	.04	− .07	.15*	− .05

TvC = Team Awareness for Small Businesses versus Control, HvC = Healthy Choices versus Control

stayed about the same for Choices and the Control group (see Table 4). Analysis of the data across businesses showed that this same trend for TA^{SB} (vs. the control group) was similar across businesses; there was insignificant variance of slopes across businesses within condition.

Planned contrasts for the TA^{SB} training versus the control group for each followup period showed that wellness climate was significantly higher for TA^{SB} participants than the control group at 1-month posttest ($\gamma_{2j(1MO)} = 0.13$, SE = 0.04, $p = .002$) and 6-month followup ($\gamma_{2j(6MO)} = 0.13$, SE = 0.04, $p = .003$). Businesses within the TA^{SB} condition showed sharp increases in climate from before to one-month after training, and the gains were sustained until the 6-month follow-up period. Control group businesses showed either no change or slight decreases in climate immediately after training and no increases at 6-month follow-up.

Mediation of Training Effects via Climate

In each model of the health and wellbeing outcomes, the likelihood ratio test showed that excluding climate would result in a significantly worse model fit. The estimates for the indirect effects (ab; Mediation PE in Table 5) show that the effects of training on each of the six health and wellbeing outcome variables were significantly mediated by PWC. For example, after adding wellness climate as a covariate to the model of the effects of training on perceived wellbeing the model fit improved significantly to 3127 from 3226 (Δ Log Likelihood = 99, $p < .001$) with the mediation model including PWC and OWC compared to the null model including only the intervention and time conditions. PWC was significantly correlated with perceived wellbeing ($\pi_2 = 0.15$, SE = 0.01, $p < .001$), and the condition-by-time interaction was reduced to zero ($\gamma_{31.32} = 0.03$, SE = 0.03, F (2,915) = 1.60, n.s.). The indirect effect of training on perceived wellbeing via PWC was small

Table 4 Effect of training: means and standard deviations of wellness climate and health outcomes across condition and time

	Pretest	1-Month Posttest	6-Month Followup	Time X Condition (df) F	Time X TvC (df) F	Time X HvC (df) F
Wellness climate						
TA^{SB}	3.34 (.63)	**3.39** (.58)	**3.46** (.58)	(2,1031) 3.77 *	(1,1000) 6.93 *	(1,671) 0.01
Choices	3.28 (.59)	3.31 (.54)	3.29 (.56)	$p = .02$	$p = .009$	
Control	3.21 (.66)	3.23 (.64)	3.20 (.61)			
Health symptoms						
TA^{SB}	2.27 (.80)	2.26 (.77)	2.19 (.75)	(2,1183) 0.15	(1,877) 0.19	(1,587) 0.29
Choices	2.32 (.76)	2.25 (.77)	2.30 (.75)			
Control	2.34 (.76)	2.29 (.75)	2.41 (.77)			
Perceived wellbeing						
TA^{SB}	3.84 (.53)	3.81 (.53)	3.85 (.49)	(2,1195) 2.95 *	(1,882) 3.37 $^{+}$	(1,618) = 0.01
Choices	3.94 (.54)	3.87 (.55)	3.88 (.54)	$p = .05$	$p = .06$	
Control	3.87 (.55)	3.81 (.54)	3.84 (.52)			
Stress						
TA^{SB}	2.72 (.92)	2.81 (.82)	**2.83** (.81)	(2,1279) 0.23	(1,957) 0.20	(1,647) 0.43
Choices	2.76 (.90)	2.85 (.85)	**2.86** (.81)			
Control	2.70 (.88)	**2.84** (.84)	**2.88** (.84)			
Drug Use (%)						
TA^{SB}	12.6	11.9	9.0	(4,2888) 1.34	(2,2111) 2.46 $^{+}$	(2,1542) 1.08
Choices	14.0	13.4	9.4		$p = .09$	
Control	17.4	11.4	**5.5**			

*$p \leq .05$; $^{+}$ $p \leq .10$; Boldface font Indicates Statistically Significant Change in Positive Direction Compared to Baseline ($p < .05$); TA^{SB} = Team Awareness for Small Businesses, Choices = Choices in Health Promotion, TvC = TA^{SB} vs. Control Group, HvC = Choices vs. Control Group

and significant ($P_{ab} = 0.03$, SE = 0.01, $p = .04$). The mediation accounted for 52% of the total effect of training on perceived wellbeing. For each of the outcomes examined, mediation was only significant via the employee-level PWC. This pattern of results can be seen for each of tests of mediation effects on all the health and wellbeing variables in Table 5. To illustrate the mediation effects on each outcome over time, we dichotomized employees and businesses into those that showed improvements in wellness climate from pretest to posttest, and those that showed no improvement, and then plotted the employee and business means for each outcome at each time period for employees from all conditions (see Fig. 2) and for businesses that received TA^{SB} and control businesses (see Fig. 3).

The planned contrast between TA^{SB} and the Control group at one-month posttest showed that the effects of TA^{SB} on perceived wellbeing, positive unwinding, and positive attitudes toward help seeking were mediated by PWC. The mediation effect of TA^{SB} on perceived wellbeing and positive unwinding via PWC at six-months posttest was only marginally significant ($p = .07$) although it was about the same size as one-month posttest. There was no significant mediation of the Choices training on any of the outcomes.

Table 5 Results from testing mediation of training effects on health, wellbeing, and substance use via wellness climate

	All Conditions and All Times	TvC 1-Month Posttest	TvC 6-Month Posttest
Health Symptoms			
Loglikelihood (Direct)	6317	3704	3480
Loglikelihood (Mediation)	6233	3655	3450
Δ Loglikelihood	84*	49*	30*
Condition x Time PE (SE)[a]	− .03 (.03)	− .04 (.05)	− .06 (.05)
Condition x Time PE (SE)[b]	− .01 (.07)	− .09 (.14)	− .06 (.13)
PWC PE (SE)	− .158 (.02)*	− .168 (.04)*	− .128 (.03)*
OWC PE (SE)	− .32 (.07)*	− .18 (.11)$^{+}$	− .36 (.11)*
L1 Mediation PE (SE)	− .027 (.013)*	− .036 (.017)*	− .001 (.006)
L2 Mediation PE (SE)	− .03 (.02)	− .03 (.09)	− .15 (.12)
% Mediated	71	30	2
Perceived Wellbeing			
Loglikelihood (Direct)	3226	2395	2212
Loglikelihood (Mediation)	3127	2343	2159
Δ Loglikelihood	99*	52*	53*
Condition x Time PE (SE)[a]	.034 (.017)*	.03 (.03)	.06 (.04)
Condition x Time PE (SE)[b]	.025 (.03)	.01 (.07)	.03 (.03)
PWC PE (SE)	.15 (.01)*	.10 (.02)*	.11 (.02)*
OWC PE (SE)	.19 (.05)*	.22 (.07)*	.11 (.07)
L1 Mediation PE (SE)	.026 (.01)*	.021 (.01)*	.02 (.011)$^{+}$
L2 Mediation PE (SE)	− .01 (.01)	.06 (.04)	.04 (.04)
% Mediation	52	70	40
Positive Unwinding			
Loglikelihood (Direct)	5517	3273	3121
Loglikelihood (Mediation)	5416	3240	3065
Δ Loglikelihood	99*	33*	56*
Condition x Time PE (SE)[a]	.07 (.03)*	.13 (.04)*	.07 (.05)
Condition x Time PE (SE)[b]	.018 (.06)	.16 (.09)$^{+}$	.10 (.09)
PWC PE (SE)	.13 (.02)*	0.12 (.03)*	.17 (.04)*
OWC PE (SE)	.16 (.06)*	.19 (.09)*	.06 (.10)
L1 Mediation PE (SE)	.027 (.013)*	.02 (.01)*	.03 (.02)$^{+}$
L2 Mediation PE (SE)	− .03 (.02)	− .01 (.05)	− .01 (.06)
% Mediated	60	12	25
Work-Family Conflict			
Loglikelihood (Direct)	6755	3966	3768
Loglikelihood (Mediation)	6708	3941	3753
Δ Loglikelihood	47*	25*	15*
Condition x Time PE (SE)[a]	.05 (.03)	.02 (.05)	.10 (.06)
Condition x Time PE (SE)[b]	.056 (.08)	.04 (.14)	.14 (.19)
PWC PE (SE)	− .18 (.02)*	− .16 (.03)*	− .11 (.03)*

Table 5 (continued)

	All Conditions and All Times	TvC 1-Month Posttest	TvC 6-Month Posttest
OWC PE (SE)	−.34 (.08)*	−.50 (.11)*	−.27 (.12)*
L1 Mediation PE (SE)	−.026 (.013)*	−.032 (.016)$^{+}$	−.02 (.02)
L2 Mediation PE (SE)	−.04 (.03)	−.12 (.09)	−.11 (.14)
% Mediated	46	46	20
Stress			
Loglikelihood (Direct)	7281	4271	3990
Loglikelihood (Mediation)	7218	4238	3958
Δ Loglikelihood	63*	33*	32*
Condition x Time PE (SE)[a]	−.03 (.03)	.03 (.06)	−.02 (.07)
Condition x Time PE (SE)[b]	−.016 (.07)	.14 (.11)	−0.01 (.02)
PWC PE (SE)	−0.20 (.02)*	−.10 (.03)*	−.20 (.03)*
OWC PE (SE)	−0.38 (.08)*	−0.44 (.12)*	−0.27 (.13)*
L1 Mediation PE (SE)	−.034 (.01)*	−0.02 (.01)$^{+}$	−.02 (.02)
L2 Mediation PE (SE)	−0.06 (.04)	−.09 (.08)	−.05 (.11)
% Mediation	68	67	67
Help-seeking Attitudes			
Loglikelihood (Direct)	9223	5203	4868
Loglikelihood (Mediation)	9089	5121	4797
Δ Loglikelihood	134*	82*	71*
Condition x Time PE (SE)[a]	.10 (.05)$^{+}$	.21 (.08)*	.08 (.09)
Condition x Time PE (SE)[b]	.09 (.05)	.32 (.17)*	.25 (.18)
PWC PE (SE)	.38 (.03)*	.34 (.06)*	.30 (.09)*
OWC PE (SE)	.18 (.11)	.21 (.16)	.33 (.17)
L1 Mediation PE (SE)	.06 (.03)*	.07 (.03)*	.05 (.03)$^{+}$
L2 Mediation PE (SE)	−.02 (.03)	−.01 (.09)	.03 (.11)
% Mediated	42	18	17
Alcohol Frequency			
Loglikelihood (Direct)	7222	4230	3850
Loglikelihood (Mediation)	7219	4230	3847
Δ Loglikelihood	3	0	3
Condition x Time PE (SE)[a]	−.11 (.04)*	.01 (.05)	.08 (.06)
Condition x Time PE (SE)[b]	−.115 (.049)*	.15 (.20)	.10 (.25)
PWC PE (SE)	−.03 (.01)*	−.014 (.03)	−.07 (.05)
OWC PE (SE)	−.06 (.09)	−.19 (.13)	−.11 (.13)
L1 Mediation PE (SE)	−.006 (.003)*	−.003 (.007)	−.01 (.01)
L2 Mediation PE (SE)	−.05 (.04)	−.13 (.14)	−.08 (.12)
% Mediated	5	2	9
Drug Use			
Loglikelihood (Direct)	16,774	9002	8388
Loglikelihood (Mediation)	16,797	9017	8398

Table 5 (continued)

	All Conditions and All Times	TvC 1-Month Posttest	TvC 6-Month Posttest
Δ Loglikelihood	0	0	0
Condition x Time PE (SE)[a]	1.34 (.53)	.39 (.38)	.78 (.50)
Condition x Time PE (SE)[b]	1.58 (.53)	.38 (.10)*	1.53 (2.66)
PWC PE (SE)	− .22 (.08)*	− 0.05 (.02)*	− .03 (.02)
OWC PE (SE)	− .10 (.04)*	− .09 (.06)	− 0.14 (.06)*
L1 Mediation PE (SE)	− .031 (.08)	.021 (.08)	.05 (.08)
L2 Mediation PE (SE)	− .01 (.01)	− .01 (.02)	− .05 (.07)
% Mediated	5	5	3

* $p \leq .05$, $^{+}$ $p \leq .10$, TvC = Team Awareness for Small Businesses versus Control Group, L1 = Employee Level, L2 = Business Level, Loglikelihood = -2 Restricted Log Likelihood, PWC = Psychological Wellness Climate, OWC = Organizational Wellness Climate

[a] Parameter estimate (PE) and standard error (SE) from the Direct Model with only fixed effects of condition and time

[b] Parameter estimate (PE) and standard error (SE) from the Mediation Model with climate as a covariate

Effects of Training on Substance Use via Climate

In the models of alcohol and drug use, the fit of the direct models was not changed by the inclusion of the climate-mediation paths. The partial correlation coefficients between wellness climate and alcohol frequency and between wellness climate and drug use were not statistically significant. There was a direct effect of the Choices training on alcohol frequency compared to the control group at 6-months posttest ($\gamma_{1j} = -0.29$, SE = 0.08, $p = .01$), but the mediation effect via climate was not significant.

Direct Effects of Training

The fourth hypothesis was that training will be associated with greater improvements in health, wellbeing, and substance use over time, for health symptoms, perceived wellbeing, stress, and drug use. There was an interaction effect of condition and time on perceived wellbeing (F (2, 912) = 2.96; $p = .05$). Post hoc comparisons showed that there is a significant interaction effect of TA^{SB}-by-time on perceived wellbeing (F (643) = 4.93, $p = .03$), but there was no difference between the participants in the Choices training and the control group (F (505) = 0.29). Comparing the mean scores across conditions and time show that perceived wellbeing decreased in the Choices and control condition, but for TA^{SB}, perceived wellbeing increased from pretest to 6-month followup after a decrease from pretest to posttest (see Table 4). We observed positive change, and much more variation in the rate of change (steepness of slopes) from pretest to followup in businesses that received the TA^{SB} compared to those that received no training. There were no significant differences in mean health

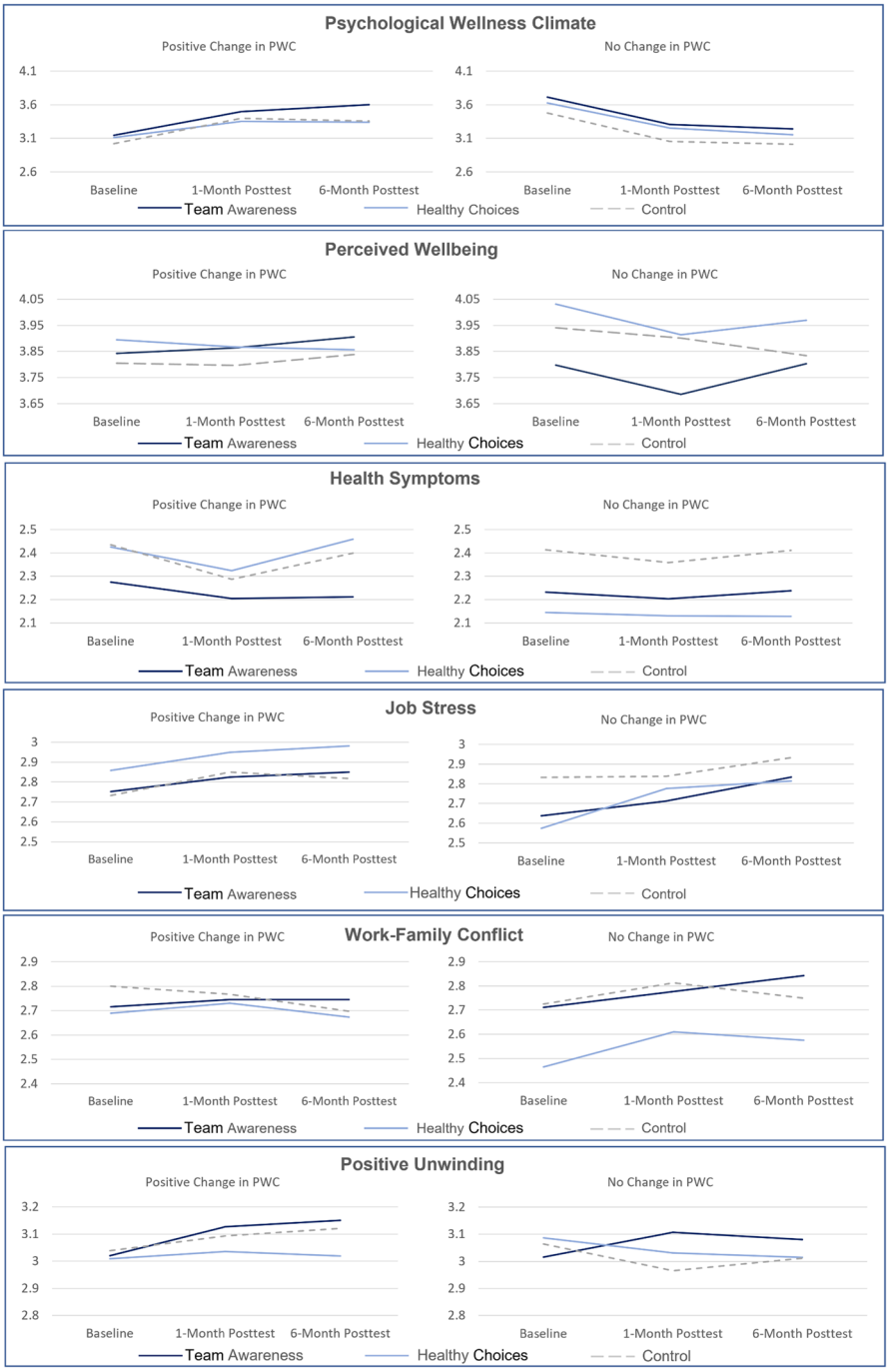

Fig. 2 Psychological wellness climate (PWC) and wellbeing outcomes (M or %) for Team Awareness, Healthy Choices, and control group across time by change in PWC.

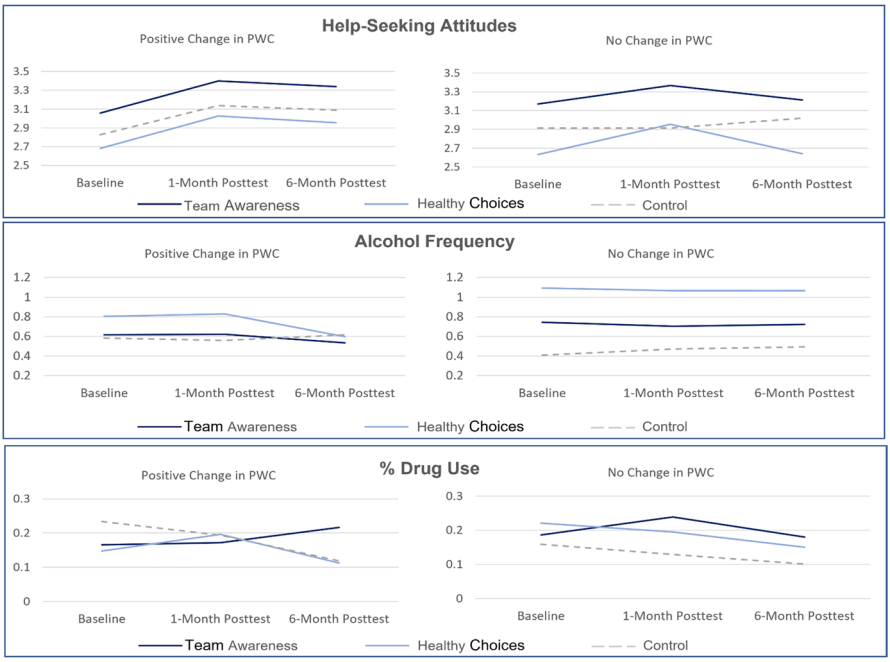

Fig. 2 (continued)

symptoms or stress across the training conditions and time when the climate mediation was excluded from the analytic model. There was not much variance in health symptoms at the between-business level. Most of the variance in health symptoms and perceived wellbeing is between individual employees.

Drug use declined steadily and significantly across experimental groups, but the sharpest declines were among the control group. The pattern of results (Table 4) shows that participants in the TA^{SB} condition showed significantly less change in drug use over time than the Choices or the control group participants; in fact, participants in the control group reported a significantly sharper decrease in drug use over time than did the participants in either of the trained groups.

Discussion

One purpose of this research was to distinguish HP interventions that focus on work climate versus individual health. We hypothesized that a team-oriented training could, by virtue of its impact on work climate, improve individual health. Overall, the study examined the degree to which wellness climate mediates the effects of HP on health, wellbeing, and substance use outcomes. The results from the omnibus tests showed that there was significant variation in wellness climate across the training conditions and time. The results from the planned contrast analyses showed that the TA^{SB} program was associated with significant

Fig. 3 Organizational wellness climate (OWC) and business-aggregate wellbeing outcomes for Team Awareness for Small Businesses (TA^{SB}) and control group across time by change in OWC. The bold line represents the mean of the businesses' scores

improvements in climate relative to the control group. The influence of training on wellness climate had an immediate onset within one-month of receiving training and was sustained until six months after training.

The research focused on six health and well-being variables and two substance use variables and tested whether the effects of the HP on these outcomes were mediated by wellness climate. Results from the mediation model using data from all time periods and all three experimental conditions showed that climate mediated the effects of HP on all of the health and wellbeing outcomes, including

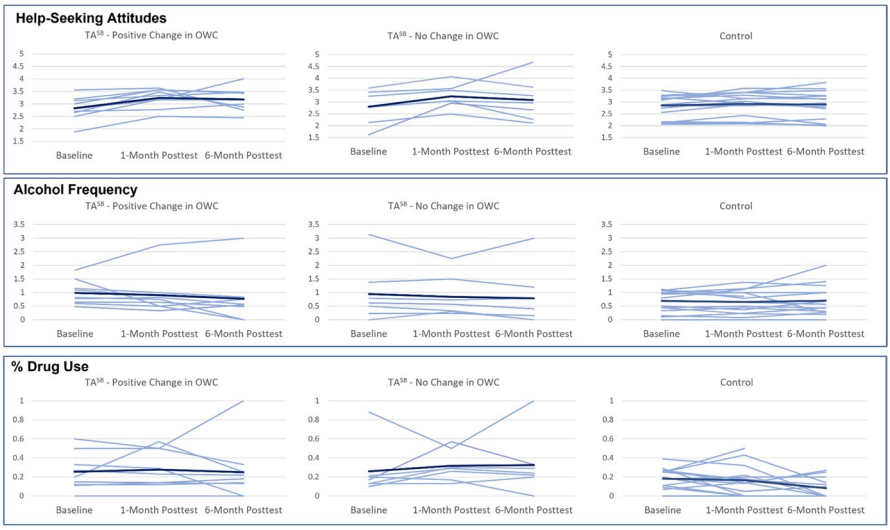

Fig. 3 (continued)

physical health symptoms, perceived wellbeing, positive unwinding, stress, work-family conflict, and help-seeking attitudes. The planned contrasts showed that the mediation effects were significant for the TA^{SB} trained businesses, mostly in the short term, although the mediation effects were significant 6-months after training for perceived wellbeing, positive unwinding, and attitudes of willingness to use the EAP.

Though all the items of the climate measure referenced organizational or coworker attributes instead of aspects of the individual, the measure reflects individual perceptions that vary across individuals. The results showing mediation of a business-level training on individual-level outcomes via individual-level perceived climate shows that the mediation is driven by the correlation between climate and wellbeing outcomes at the psychological level of perceived climate and perceived wellbeing. Employees within the same business can have a wide variety of perceptions of the social climate and policies of wellness. The TA approach targeted psychological safety, norms-setting activities, communications skills practice, and role-playing activities for peer support for personal problems and nudging coworkers to seek help from the EAP. These activities, along with interactive discussion, may raise awareness of organizational policies and social norms that support wellness; and thereby correct and improve perceptions of climate.

There was no evidence that associations between HP and substance use outcomes were mediated by climate in this study. Substance use may be so closely tied to some work groups more than others and is generally discouraged and stigmatized at work unless it is integrated into the workplace culture (Sonnenstuhl, 1996). Additional research is needed to examine whether aggregate measures of smaller-unit (e.g., workgroup, department) climate has different impact on HP. Though there were no mediation effects on substance use, the climate-mediated effect of

training on help-seeking attitudes was significant. Hence training may be able to improve the wellbeing of substance users indirectly by improving their willingness to use EAPs.

Much research has been conducted specifically to understand the influence the workplace's climate on specific aspects of employee physical safety and health, but the notion that climate mediates the process of HP is still hypothetical. This study employed a measure of general climate for wellness in a field-experiment of an HP program that was designed to enhance climate factors. Tests of mediation showed mixed results across different outcomes at different post-intervention time periods. The results suggest a need to develop better activities and training methods for improving climate and better support for employee mental health and wellbeing.

By directly targeting the workgroup social and organizational factors, such as wellness climate, safety and other climate, HP may have a better chance to improve personal health and perceived wellbeing. Training programs that do not target the social climate at work may have a reduced chance of affecting changes in health and wellbeing. Research is needed to improve methods of HP training needed for targeting drinking and drug use climate factors.

The results from this study have practical implications for small businesses. How employees perceive their work climate as being more-or-less supportive of health promotion was consistently associated with employee health and wellbeing. Small businesses might benefit from a wide variety of employee wellness initiatives, including informational campaigns, exercise and educational trainings, organizational development and policy updates, as well as workgroup dynamic trainings, like the TA^{SB} training, that directly targets the workgroup and organizational climate for HP and wellness. Programs focused on individual behavior change may be more effective if they include communication trainings and teamwork exercises that instill a positive climate.

The businesses in the current study only met once to receive one four-hour training. Future research should examine whether businesses will get more return on investment from longer term program campaigns with regularly provided refresher courses and multimedia reminders rather than a single instance of training. Due to the limited resources available to the smallest of businesses, training all the employees to raise awareness of team-dynamics that promote health regularly may be impractical. Both of the trainings in this study were chosen for seeming feasible and appealing to small businesses and because they were brief half-day trainings. Another promising approach from safety climate change research suggests that training supervisors in how to effectively communicate policy (e.g. regarding EAPs) may be a way for small businesses to apply the findings of this study (Zohar & Polachek, 2014). Managers and supervisors are instrumental for conveying policy and procedures.

Strengths and Limitations

Strengths of the current study include a focus on small businesses, especially with a diverse sample and in industries identified at high-risk for substance use problems,

comparison of HPs with distinct theoretical approaches (i.e., focus on climate versus individual), multi-level analysis, and assessing diverse health outcomes that include substance use. We used an experimental design with randomization of businesses to intervention conditions, and longitudinal pretest and two posttest assessments. Repeated-measures analyses accounted for preexisting differences between the experimental conditions and correlations between the pretest and posttest measures. The low ICCs on some of the outcomes limit the sensitivity of the multi-level analyses to provide a reliable test of business-level OWC mediation of HP outcomes. In addition, there were significant improvements in some outcomes from pretest to posttest among participants from the control group. These results are from only a single 4-hour trial across only 8 months of total time for the employees in the study. Additional research is needed to replicate these findings and examine longer-term 1-year and 5-year effects, as well as the inclusion of refresher trainings. Direct effects of the interventions on four of the outcomes that have been previously published (positive unwinding, work-family conflict, help-seeking attitudes, and alcohol-drinking frequency) should not be considered as new results that show additional tests of the effectiveness of these interventions.

Conclusion

Several recent and highly publicized studies (Jones et al., 2019; Mattke et al., 2013; Song & Baicker, 2019) have led media critics to make broad claims that workplace wellness programs are ineffective (Anderson, 2016; Solow, 2019) with rejoinders from researchers in the field (Goetzel et al., 2014; Pronk, 2020). The current study, resting on previously established outcomes of effectiveness, can advance beyond this "work vs. doesn't work" mindset to focus more on how such programs might work. There is a lack of studies that attempt to understand mechanisms of effectiveness.

The current study introduces a mediational model (Fig. 1) that encourages assessment of wellness climate as standard HP practice and for organizational development. Two approaches to HP were examined. TA^{SB} was designed to address climate and individual attributes, and Healthy Choices to address individual needs and plans. Employees who participated in the TA^{SB} program, reported greater improvements in climate, perceived wellbeing, positive unwinding, and help-seeking attitudes than the control group. Most of the effects of TA^{SB} were mediated by positive effects on wellness climate. The Choices training had no effect on climate and no longer-term effects on health and wellbeing. These findings follow from and support the model that includes wellness climate as a mediator of HP programs. The predominant focus of traditional programs is on individual-level outcomes, and these are typically limited to measures of physical health. Current results are promising in suggesting a broader view of HP that includes mental wellbeing and climate.

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Declarations

The authors have no relevant financial or non-financial interests to disclose.

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