EVALUATING A MINDSET TRAINING PROGRAM TO PROMOTE THE ENHANCING NATURE OF STRESS

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INTRODUCTION

For more than 30 years, interventions to manage stress have focused on reducing stressful experiences and their negative consequences. And for good reason: workplace stress may directly threaten the health and wellbeing of employees (Atkinson, 2004; Schneiderman, Ironson, & Siegel, 2005). Concomitantly, research demonstrates that when stress causes distress, it can negatively affect performance by stifling creative problem solving, inhibiting attention and concentration, and impeding decision-making (Shapiro, Brown & Biegel, 2007; Shapiro, Shapiro, & Schwartz 2000). Unfortunately, the residual outcomes of intervention attempts are considerably bleak. As Avey, Luthans, and Jensen (2009) note, "Extensive research over the years has focused on identifying stressors, coping mechanisms, and ways that both individual employees and organizations can effectively manage stress. Yet, despite this attention, remedies to combat occupational stress remain elusive" (p. 677).

Existing stress management programs tend to disseminate a negative view of stress, emphasizing its risks and deteriorating consequences. Individuals are typically encouraged to avoid stressful situations whenever possible, to actively control or cognitively re-appraise unavoidable or inevitable stress as non-threatening, and to mitigate or counteract the stress response through various coping techniques such as meditation and other physical activities (e.g., Ivancevich, Matteson, Freedman & Phillips, 1990). Although the motivation for these programs may be well intended, several limitations are present: Individuals generally do not have the ability or luxury to directly control the objective amount of stress that they are faced with, and paradoxically, attempts to control stress can sometimes result in increased anxiety and compulsive behaviors (Farach, Mennin, Smith, & Mandelbaum, 2005). These and other limitations to current stress management approaches are enumerated elsewhere (Bond & Bunce, 2000; Briner, 1997; Kompier et al., 1998; Richardson & Rothstein, 2008). In our view, the issue with the current approach to stress management may be more fundamental: These approaches advocate and perpetuate the mindset that stress is deteriorating, a mindset that is not only inaccurate, at least in part, but may also be counter-effective.

Although stress can and does pose a threat to health and wellbeing, a body of research suggests that stress has fundamentally *enhancing* properties (e.g., Cahill et al., 2003; Epel, McEwen & Ickovics, 1998; Park & Helgeson, 2006; Tedeschi & Calhoun, 2004). Furthermore, several lines of research converge to support the notion that subtle differentiations of mindset can

engender meaningful changes in an individual's psychological and physiological states (e.g., Crum & Langer, 2007; Dweck, 2008; Levy et al., 2000, 2002, 2004). Extending this research, we have recently proposed that an individual's mindset regarding stress also matters. In our previous research, we validated a measure designed to determine one's stress mindset (the SMM) suggesting that the more an individual adopts a "stress-is-enhancing" mindset, the more likely stress will have enhancing effects on one's health, performance, and wellbeing; whereas, if one views stress as deteriorating, then stress is likely to have deteriorating effects on one's health, performance, and wellbeing. Stress mindset was indeed correlated with fewer symptoms of depression and anxiety, as well as workplace performance and overall satisfaction with life.

The purpose of the current study was to examine whether providing participants with complete information about the nature of stress, in conjunction with a three-step process they could utilize to help them adopt an enhancing stress mindset, would be effective in enabling them to actually adopt an enhancing mindset. This study also sought to investigate whether attendance at the training would be associated with positive changes in health and work performance. The following hypotheses were articulated:

Hypothesis 1. Participants who attend the Mindset Training Program will demonstrate improvements in health and work performance, whereas those in the control condition will show no changes over the course of the same time period.

Hypothesis 2. Positive changes in health and work performance that occur as a result of attending the Mindset Training Program will be mediated by changes in stress mindset.

METHOD

Participants

Respondents in this study were 229 employees of a large international financial institution at offices in the northeast region of the United States. Participants were recruited into the study through an emailed invitation from the company's Human Resource department offering the opportunity to participate in a stress management training program. Consistent with typical protocol for training and development, this invitation went out to employees across several domains of work (e.g., wealth management, investment banking, and asset management). Consistent with the organization's composition, 53% of participants were male. Participants held a wide variety of jobs across different domains of the organization. Mean age of the sample was 38.49 with a standard deviation of 8.40. Many participants were White/Caucasian (71.7%), followed by Asian (15.8%), Hispanic (6.4%), Black/African American (2.4%), and other (3.7%).

Design & Procedures

The 229 individuals were randomly assigned to an active treatment (n=117) or a wait list control (n=112). Preliminary assessments were measured approximately one week prior to training and follow-up assessments were administered three weeks following the training program. Assessments for the control group were administered at the exact same time as those in the intervention group. The control group did not receive any information or intervention until after the followup measures upon which they also received the Mindset Training Program in its entirety. Consent and preliminary assessments were given by means of email connecting to the Qualtrics Online Survey Software.

Program Content

The purpose of the Mindset Training Program was to provide participants with complete information about the nature of stress and the influence of their mindsets in determining the stress response in conjunction with a specific skill set designed to help them adopt an enhancing mindset actively and deliberately. More specifically, the training included the following content: *Part 1: The Paradox of Stress.* Information on the nature of stress— both honoring the research on the deteriorating nature of stress, but also orienting them to the possibility that stress can be an enhancing. *Part 2: The Power of Mindset:* A basic definition of mindset and several research examples of how one's mindset can produce meaningful changes in psychological and physiological responding. *Part 3. Three Steps to a Stress-is-Enhancing Mindset.* A simple three-step technique designed to help participants adopt a stress-is-enhancing mindset actively and deliberately. This three-step technique is based on research supporting its positive effect on the stress response. A training manual is available on request.

Measures

Stress Mindset Measure (SMM). The Mindset Training Program was an intervention designed to shift participants' mindsets regarding the nature of stress independent of their actual and perceived levels of stress. This 8-item was developed to address the extent to which an individual adopts a mindset that the effects of stress are enhancing or deteriorating. Participants rated items on a five-point scale ranging from 1=strongly disagree to 5=strongly agree. SMM scores are obtained by reverse scoring the four negative items, and then taking the sum of all 8 items. Higher scores on the SMM represent the mindset that stress is enhancing. In the current sample, internal consistency of the SMM-G (Cronbach's alpha) was .87.

Mood and Anxiety Symptom Questionnaire (MASQ; Watson et al., 1995). This is a measure used to assess respondents' symptoms of anxiety and depression (Watson et al., 1995). The 77-item measure includes subscales: general distress with anxious symptoms (GA), general distress with depressive symptoms (GD), anxious arousal (AA), and anhedonic depression (AD). One item dealing with thoughts of suicide was removed. Participants are asked to rate how much they have experienced a given symptom during the past month on a five-point scale ranging from 1 (not at all) to 5 (extremely) and the total MASQ score is calculated by summing the mean of the four subscales (producing a range of 4-20). The internal consistency of the full scale was .96 and of each subscale was as follows: GA (.85), GD (.91), AA (.90), and AD (.94).

*Work Performance Scale (WPS)***.** This measure was adapted from the Role Based Performance Scale (Welbourne, Johnson & Erez, 1998). The scale includes eight questions addressing characteristics of work output: quality, quantity, accuracy, efficiency, ability to generate new ideas, ability to sustain focus, communication, and contribution to work environment. Exploratory factor analysis revealed two factors with eigen values > 1. Based on these loadings, the scale was separated into two factors. Questions of quality, quantity, accuracy, and efficiency were placed into the group of hard performance measures (WPS-hard) (all items loading > .63). Questions relating to ability to generate new ideas, ability to sustain focus, communication, and contribution to work environment were placed into the group of soft performance measures (WPS-soft) (all items loading > .68). Participants rated items on a five-point scale ranging from 1=needs much improvement to 5=excellent. In this study, the internal

consistency of the complete scale (alpha) was .89 and for each subscale it was .87 (hard) and .84 (soft).

RESULTS

To examine the effect of the stress mindset training on health, performance, and wellbeing of the participants, 2 (group: intervention, control) x 2 (time: pre, post) mixed general linear models (GLM) were conducted. Where significant two-way interactions occurred, simple effects test were used to determine the nature of these changes within each group.

Mixed model GLM yielded a reliable group by time effect for SMM [$F(1,179) = 25.64$, $p < .01$, $\eta 2 = .13$]. Specifically, simple effects tests indicate that while the SMM increased over time for the waitlist control group [$t(94) = 3.47$, $p < .01$], this effect was stronger for the group who had attended the mindset training program [$t(115) = 11.10$, $p < .01$].

With respect to health, mixed model GLM yielded a reliable group by time effect for MASQ [$F(1,227) = 7.53$, $p < .01$, $\eta 2 = .03$]. Simple effects tests indicate that while the MASQ decreased significantly over time for the intervention condition [$t(120) = 2.21$, $p = .03$], the waitlist control condition showed only a small change before and after the intervention in the number of symptoms they reported [$t(107) = 1.69$, $p = .09$].

With respect to performance (WPS), within subjects GLM did not yield a reliable group by time effect for the scale as a whole [$F(1,229) = 1.69$, $p = .19$, $\eta 2 = .01$]. However, simple effects did indeed show a significant improvement in performance for those in the intervention condition [$t(123) = 4.17$, $p < .01$] and no significant change for those in the wait list control, although this should be interpreted with caution given the lack of a significant interaction term. A breakdown in the subscales of the WPS helps to clarify why the overall effect was not significant: With respect to "hard" skills (quality, quantity, efficiency, accuracy) mixed model GLM yielded no group x time interaction effect [$F(1,229) > .5$, $p = .97$, $\eta 2 < .01$]. Simple effects clarify that there was no interaction effect because both groups significantly increased their self reported performance over time [intervention: $t(111) = 2.48$, $p < .05$; control: $t(106) = 2.17$, $p = .03$]. With respect to "soft" skills (new ideas, focus, engagement, collaboration) a significant group x time interaction effect did emerge [$F(1,229) = 5.07$, $p < .05$, $\eta 2 = .02$], and this was qualified by significant improvement in the informed condition [$t(91) = 7.36$, $p < .001$] and only a slight improvement reported in the control condition [$t(142) = 3.40$, $p < .001$].

Mediation Analyses

Given the limitations of traditional mediation methods (e.g., Baron & Kenny, 1986) including low power, type 1 error inflation (see MacKinnon, Lockwood, Hoffman & West, 2002; Preacher & Hayes, 2005 for more detailed information), the current study employed a bootstrapping method (with n=5000 bootstrap resamples) to assess the *indirect effect* of the independent variable (IV) (training group) on each dependent variable (DV) (health, and performance) through the proposed mediator (M) (mindset). In these analyses, participation in the Mindset Training Program was positively and significantly associated with changes in mindset (a weights) and changes in health symptoms, performance (soft), and health satisfaction (c weights). Based on the bootstrapping procedure, changes in mindset emerged as a significant mediator in the effect of the Mindset Training Program on both health symptoms (indirect effect = .18, point estimate < .05) and performance (indirect effect = point estimate < .05) in both

cases dropping the c weight to non-significant (full mediation). Complete analyses and figures are available from the first author.

DISCUSSION

A Mindset Training Program designed to help participants adopt an enhancing stress mindset had beneficial effects on employees' self-reported health, performance, and wellbeing. Specifically, those who participated in the training reported significant improvements in their experience of physical symptoms, greater overall satisfaction with their health, and better performance at work with respect to generating new ideas, sustaining focus, being engaged, and collaborating well at work. Mediation analyses demonstrate that these improvements occurred primarily through changes in mindset initiated by the training intervention. In other words, taking part in a training program influenced participants to adopt more of a stress-is-enhancing mindset about stress, and this, in turn, produced positive changes in their health and performance.

The effects of this Mindset Training Program are unique and noteworthy for two reasons. First, the underlying assumption of this training model (that stress is enhancing) was fundamentally different than typical stress-management programs (that stress is deteriorating). Second, the proposed mechanism through which positive change will occur in the face of stress was also unique (through changing one's implicit beliefs or mindset about stress as opposed to changing the amount of stress, their appraisal of that stress or their ability to handle it).

These findings fall in line with a growing body of literature on the power of mindset in determining important outcomes (Blackwell, Trzesniewski & Dweck, 2007; Crum & Langer, 2007; Crum & Salovey, in press; Dweck, 2006; Tamir et al., 2007). The fact that one's mindset matters in the context of stress and that training programs can be designed to alter one's mindset in the face of stress may speak to some of the core concerns with the current stress management approach. Traditional interventions, which assume that stress is deteriorating, emphasize avoidance, management, and counteraction. But this approach may inadvertently perpetuate a stress-is-deteriorating mindset and thereby stifle the intervention's ability to assert meaningful change in individuals' health and performance under stressful situations. Designing interventions directed toward stress mindset arises from a different foundation. Such interventions focus on shifting individuals' core mindsets about stress by emphasizing the often-neglected and counterintuitive research suggesting that the stress may in fact be psychologically and physiologically enhancing.

Current stress management programs often combine a diverse array of components e.g., relaxation training, cognitive restructuring, time management (Shapiro, Shapiro & Schwartz, 2000). Of practical concern is that these bundles of stress management components offered in many programs, regardless of their utility, often require more resources for implementation than are available and make more demands on the time and resources of the recipients than can be met (see Lewis, 1997). Not only is this costly and infeasible in a corporate setting, recent meta-analyses have also demonstrated that such time-intensive interventions (estimated to be an average of 7.4 weeks) are actually not as effective as those that are more streamlined (Richardson & Rothstein, 2008). The improvements in this present study were produced as a result of a two-hour intervention focusing on one's mindset about stress. It presents a method through which simple, time-efficient, and cost-effective mindset training programs can elicit meaningful results.

This study has several limitations that should be noted. Of primary concern is the fact that the control group was a wait-list control and not an active treatment. The lack of an attention in an active comparison group is problematic because it stifles the ability to separate the effect of information provided in the training from simply receiving attention. Although this study suggests that a primary mechanism of action in this case was stress mindset, future research is needed to tease apart the relative benefit of a mindset intervention over and above other components of existing interventions such as CBT or mindfulness focused trainings (e.g., Antoni et al., 2001, Berger & O'Brian, 1998; Bond & Bunce, 2000; Brown, Cochrane & Hancox, 2000). Future research is needed to test the mechanisms linking such changes in mindset to changes in health and how such changes may differentiate between other stress management interventions (e.g. cognitive skills such as perspective-taking or acceptance and behavioral strategies such as problem solving).

Furthermore, readers should be reminded that the primary outcome variables in this study were self-reported health, performance, and satisfaction. The problems associated with this type of measurement are well documented (Podsakoff, MacKenzie, Lee & Podsakof, 2003). Future research is needed to rectify the existing limitations of this approach (self inflationary bias, demand effects, etc.) by the inclusion of objective measures of health and performance and/or informant ratings of these measures. To address the question of external validity, future research is needed to fully understand the enhancing nature of stress and the influence of mindset in engendering this response. Specifically, a more nuanced investigation of moderators of stress mindset training including the methods of delivery (e.g., human interaction, computerized), the character and size of the organization, and the types of stress (e.g., social, psychological, physical) is particularly warranted.

The issue of stress has never been more pertinent for organizations. According to the American Institute of Stress, the number of workers calling in sick due to stress tripled from 1997 to 2001 (Atkinson, 2004). One of the primary reasons for this change is that Americans are working longer and harder: In the United States, the average work year for prime-age working couples increased by 700 hours in the past two decades (Department of Labor, 1999). Adding to these stressors, in response to the current economic recession, corporations have been forced to downsize and restructure their labor forces. This process generally results in objectively stressful conditions for employees, stemming from the uncertainty surrounding financial and job security, as well as from increased pressure and workload due to changes in job criteria and a reduction in the workforce (e.g. Virtanen, Vahtera, Kivimaki, Pentti & Ferrie, 2002; Virtanen, Kivimaki, Elovainio, Vahtera & Ferrie, 2003). Given the relative instability of the current world economic situation and the dangerously high levels of unemployment and job insecurity, the stakes are particularly high and the timing right to move beyond previous limitations in the coping literature and practice and to apply and test new and creative solutions (such as eliciting and capitalizing on the power of mindset) to help individuals actively and deliberately elicit a positive pattern of response efficiently and meaningfully.

REFERENCES AVAILABLE FROM THE AUTHOR