

Do Social Support and Deep-Breathing Exercises Reduce Work Stress?

Stress is a ubiquitous issue that leads to potentially harmful outcomes in one's work and personal life (Thoits, 1986). As stress is such a prevalent issue, many researchers are interested in how to resolve or reduce stress. Research suggests that social and cognitive-behavioral interventions, including social support and breathing exercises, can help reduce work stress, thus fostering positive work outcomes (Bakker & Demerouti, 2007).

Stress occurs under duress of negative life events and chronic life strains (Thoits, 1986), which reduces resources and leads to negative outcomes (Crawford, LePine, & Rich, 2010). In work settings, stress often occurs from distressing challenges on the job (Cavanaugh, Boswell, Roehling, & Boudreau, 2000). Some negative work outcomes associated with stress include low job satisfaction, increased alternative job search, and voluntary turnover, which is when an employee chooses to quit (Cavanaugh et al., 2000). However, research shows that social support can mitigate these negative outcomes when the support responds to the specific needs the stress produces (Cohen & Willis, 1985).

Social support is defined broadly as an exchange of resources between two people, which is intended to enhance well-being of at least one of the parties (Shumaker & Brownell, 1984). Social support can reduce strain from job stressors because it provides employees a way to cope (Bakker & Demerouti, 2007; Thoits, 1986). Work and personal social support are both effective means to reduce stress (Bakker & Demerouti, 2007), however, the amount of stress reduced may depend on the type of social support (Shumaker & Brownell, 1984).

Research shows that work-related social support may be most important for reducing work stress, compared to other types of support (Ganster, Fusilier, & Mayes, 1986). Work-related social support can come from many sources, including one's supervisor, coworker, and

organization (Bakker & Demerouti, 2007). Much of the literature emphasizes the importance of supervisor support (Ganster et al., 1986; Kossek, Pichler, & Hammer, 2011; Bakker & Demerouti, 2007; Selvarajan, Cloninger, & Singh, 2013), because supervisors can provide feedback, give emotional support, and affirm employee value (Bakker & Demerouti, 2007). As much as 80% of the variance in reduced work strain can be explained by supervisor support, and supervisor support is strongly and negatively related to stress (Ganster et al., 1986).

In addition to supervisors, support from coworkers can reduce an individual worker's experienced stress. Coworkers can amplify the individual worker's energy to complete tasks as well as provide comradery (Bakker & Demerouti, 2007). The same study of supervisor support shows that coworker support is significantly and negatively related to stress ($r = -.61$), however, further research needs to be conducted to assess whether supervisor or coworker support is better to reduce work stress (Ganster et al., 1986).

Although social support shows promise for reducing work stress, employees need additional tools to help self-regulate when social support is not available. Cognitive-behavioral interventions, such as mindfulness, deep breathing, and meditation, show promise for teaching workers skills to cope on their own. Although meditation is a more popular method in psychology presently, breathing-exercises show significant benefits for reducing stress (Richardson & Rothstein, 2008).

Deep-breathing exercises allow employees to de-stress by increasing their oxygen intake with the goal of slowing and deepening breathing (Richardson & Rothstein, 2008). Research shows that the increase in oxygen is associated with muscle and mental relaxation (Richardson & Rothstein, 2008), and on a smaller scale, deep-breathing also reduces cortisol levels and cortisol is associated with stress (Iglesias, Azzara, Granchetti, Lagomarsino, & Vigo, 2014). In a study of

a mindfulness intervention that incorporated deep breathing exercises, the intervention significantly reduced stress (Klatt, Buckworth, & Malarkey, 2009).

In the present study, we examine essential questions about the effectiveness of supervisor and coworker support in addition to breathing exercises as tools to reduce stress. Although all of these techniques have demonstrated potential to reduce stress individually, we examine them in combination, using a large sample of working adults. Because neuroticism is related to the experience of negative emotion and therefore the appraisal of stress (Cavanaugh et al., 2000), we also evaluated participant's level of neuroticism/emotional stability and included it in our analyses. This presents an important contribution to research about reducing work stress within the corporate environment, thus promoting positive work outcomes such as job satisfaction and lower rates of turnover.

Method

Participants

We recruited participants from a large corporation in the northeastern United States. The organization is diverse with respect to race, gender, and age. We sent a formalized e-mail for the human resources department to send out to all employees, asking them to participate. This message was approved by our Institutional Review Board and the Vice President for Human Resources, and stated that participation was entirely voluntary and that we would keep all participants' information in strict confidence. Participants received \$20 in compensation for completing the full study, and the organization permitted them to complete all study activities on company time.

Materials

Social support workshop. When employees agreed to participate in the study, we randomly assigned each one to one of three workplace stress management workshops. One workshop focused on improving supervisor support, and taught participants strategies for communicating their needs effectively to their supervisors and building positive relationships with supervisors (cf. Ganster et al, 1986). The second workshop was similar in content, but instead focused on strategies for building support among coworkers. The third workshop represented a neutral control; participants attended a workshop completely unrelated to social support about the impact of stress on the immune system. Each workshop lasted for one hour, and all were administered by the same trained facilitator in a conference room at the organization's main location.

Breathing exercises. We also randomly assigned half the participants in each condition to take part in the breathing exercises intervention. Those who completed the intervention downloaded a free smartphone app that directed them to take 5 minutes of guided deep-breathing at 2-3 points during each work day. We developed this app for this study, based on research in cognitive-behavioral intervention (Richardson & Rothstein, 2008; Wolever et al., 2012). The app prompted the participants to take a deep-breathing break within 30 minutes of receiving a notification, which occurred at random times throughout the day, always at least two hours apart. The 30-minute window allowed participants to delay the deep-breathing exercises slightly if they were in the middle of a task that could not be interrupted. The app then recorded that the participant had completed the 5-minute breathing exercise. Participants used the app every work day over the course of 12 weeks. Participants in the control group, who were not assigned to the breathing intervention, did not receive access to the app during the study. After the conclusion of

the study, when we had conducted debriefing meetings with all participants, we made the app available to all who had participated in the study regardless of condition.

Measures

Emotional stability. To measure neuroticism, we used a 10-item measure of emotional stability from the International Personality Item Pool (Goldberg, 1999) based on Goldberg's (1992) personality markers. Neuroticism is the opposite of emotional stability. This scale consists of statements such as "I get irritated easily", to which the participant responds by indicating how true they believe the item is of them on a scaled from 1 = "not true of me at all" to 7 = "very true of me." Higher scores indicate higher levels of emotional stability, while lower scores indicate higher levels of neuroticism. Prior research shows this scale has high internal consistency reliability ($\alpha = .86$) (Goldberg, 1999).

Stress. To measure stress, we used a 14-item measure of perceived stress from the Perceived Stress Scale (Cohen, Kamarack, & Mermelstein, 1983). This measure rates respondents' level of stress in the form of a question, and the beginning of each question states, "In the last month, how often have you...?" For example, one item reads "In the last month, how often have you been able to control the way you spend your time?" Participants are asked to rate each question from 0 = "never" to 4 = "very often." Higher scores indicate higher levels of stress.

Procedure

When participants replied to the address in the recruitment email, a research assistant responded, answered any questions about the study, and then scheduled participants for a brief information session about the study. Each participant was randomly assigned to a workshop group and attended an information session relevant to their randomly assigned workshop

(including the control group). All information sessions occurred on the same day in separate rooms at an on-site location.

At this information session, participants agreed to an informed consent document, which outlined all study activities, the participant's rights and confidentiality. To preserve confidentiality as far as possible, the Human Resources department told participants' supervisors only that they were attending a training program, without divulging that they were participating in a research study or what the content of the program was.

After agreeing to participate in the study, participants completed a brief personality questionnaire about their level of emotional stability. Once participants completed their questionnaire, they were directed to select a workshop timeslot. To ensure that everyone could attend their assigned workshop, several time options were proposed for each type of workshop. For participants who were assigned to the breathing exercises intervention, we provided additional training at the information session about how to download and use the breathing-exercise app.

All workshops took place within the first week of the study, and the content of the workshops was as described above. Participants in the breathing-exercise intervention used the app for the next 12 weeks; if a participant missed a day, they received a reminder in the app, and if they missed more than 2 days in a row, we emailed them with another reminder. In the 12th week, we contacted all study participants to schedule a brief follow-up appointment. At this appointment, all participants completed a final questionnaire about their levels of stress and received their compensation. A member of the research team explained the goals of the study to them, offered them continued access to the breathing app should they wish it, and thanked them for their participation.

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