The Science of Health Promotion

Stress Management

Hardiness and Support at Work as Predictors of Work Stress and Job Satisfaction

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Abstract

Purpose. To test a theoretically and empirically based model linking potential protective resources (hardiness, coworker and supervisor support) to the outcomes of work stress and job satisfaction while accounting for the potential influence of negative affectivity.

Design. A cross-sectional research design using survey data collected from two convenience samples.

Setting. Two worksites: (1) a high-tech company and (2) a government agency.

Subjects. High-tech employees (N=310; response rate, 73.8%) and government agency employees (N=745; response rate, 49.7%).

Measures. The Dispositional Resilience Scale measured hardiness and the Positive and Negative Affect Schedule measured negative affectivity. Coworker and supervisor support were measured using the Coworker Support Scale and the Supervisor Support Scale, respectively. The Perceived Work Stress Scale measured work stress, and a single item from the Job Satisfaction Scale assessed overall job satisfaction.

Results. A multiple-group path analysis examined the proposed model. Similar patterns of association were found for both samples and suggested a more parsimonious model without the path from negative affectivity to job satisfaction. The model supports the protective nature of hardiness and support at work with regard to work stress and job satisfaction.

Conclusion. Explanations of relationships depicted in the model, practical implications for reducing work stress and enhancing job satisfaction, limitations and future directions are discussed. (Am J Health Promot 2006;20[3]:183±191.)

Key Words: Hardiness, Supervisor Support, Coworker Support, Work Stress, Job Satisfaction, Prevention Research, Negative Affectivity. Manuscript format: research; Research purpose: modeling/relationship testing; Study design: nonexperimental; Outcome measure: cognitive; Setting: workplace; Health focus: stress management; Target population: adults

INTRODUCTION

Work stress and job dissatisfaction are both prevalent in today’s work force, affecting millions of employees and their employers each year. Work stress constitutes a significant problem for a large number of employees in the United States, with 26% to 52% reporting moderate to high levels of stress at work.1-4 Job dissatisfaction is also problematic among employees in the United States, as indicated by recent surveys indicating job satisfaction has dropped to approximately 50%.4-5

While work stress and job dissatisfaction are inherently undesirable in and of themselves, they also have been shown to influence a variety of organizational and employee well-being outcomes. Excessive work stress can lead to increased medical claims and health care costs for employees,6,7 higher workers’ compensation costs,8,9 increased employee absence,10 and reduced productivity.6 Decreases in job satisfaction have been shown to impact such work-related outcomes as organizational commitment,11,12 absenteeism,13,14 turnover,15,16 and turnover intentions.16 In addition, job satisfaction has been related in a broader sense to quality of life17 and life satisfaction.18,19 The link between work stress and job satisfaction also has been well established in empirical research, with work stress being one of the most commonly cited predictors of job satisfaction.20-26

Theoretical Basis for the Conceptual Model

Although many of today’s employees feel stressed and dissatisfied with their jobs, these negative effects are not experienced equally by all individuals. The transactional model of stress and coping and the person-environment (P-E) fit model provide useful frameworks for explaining...
such individual differences in the experience of work stress and job dissatisfaction. Within this theoretical context, work stress and job dissatisfaction are described as functions of the P-E relationship in that they are determined by the interaction between the unique psychological makeup of each individual and characteristics of the work environment.27-29 Both theories propose that work stress results from a perceived incompatibility between the person and the environment that can occur when the relationship between the demands of the job and the abilities of the individual to meet these demands are perceived as incongruent.27,28 The P-E fit model proposes that job dissatisfaction results from a perceived misfit between the person and the environment that occurs when the values of the person and the environmental supplies available to fulfill those values are perceived to be discrepant.27

Individual and environmental resources have the potential to beneficially alter the perception of fit between person and environment. For example, individuals take the availability and strength of resources into consideration when evaluating their abilities to meet job demands. By offsetting the balance in favor of abilities to demands and values to supplies, resources can lead to less work stress and job dissatisfaction, respectively. The presence or absence of resources may help explain differences in the levels of work stress and job dissatisfaction experienced by individuals under similar environmental conditions. As such, it is useful to examine factors that vary from individual to individual that may contribute to less work stress and job dissatisfaction. Empirical research points to several such potential protective resources.

**Hardiness**

Hardiness seems particularly relevant to work stress and job satisfaction due to its conceptual derivation from studies of employees in the organizational setting. Kobasa30 identified three general personality characteristics of employees who did not become ill during stress and thus defined hardiness as “a constellation of personality characteristics that function as a resistance resource in the encounter with stressful life events” (p. 169).31 These three basic elements comprising hardiness include the ability to perceive change as a challenge, to maintain a sense of purpose and deep commitment to the people and activities in which they are involved, and to perceive a sense of personal control in handling life’s events and activities.31

The protective function of hardiness in the experience of work stress and job dissatisfaction is empirically supported. Hardiness has been found to be inversely related to overall perceptions of work stress,27,32-53 suggesting that it may act as a stress-resistant resource, reducing the effects of stress at work. Hardiness has also been shown to be directly related to job satisfaction22,24,33,36 and indirectly related through work stress,22,36 suggesting high levels of job satisfaction are due in part to challenge, commitment, and control tendencies as well as decreased perceptions of work stress.

**Workplace Social Support**

Support at work refers to individuals’ perceptions of available social support on the job from supervisors or coworkers36 and can influence their levels of perceived work stress and job satisfaction.39 Perceived supervisor support has been shown to relate to lower overall perceptions of work stress.20,22,40 The perception of a supportive supervisor has a positive influence on an employee’s perceptions of available coping resources and reduces work stress by acting as a stress-resistant or protective resource. In addition, supervisor support can have a direct and positive effect on the job satisfaction of employees20,37,49-42 as well as an indirect effect through work stress.22,45,44

Overall, the research suggests that perceived supervisor support influences employee job satisfaction indirectly by reducing perceptions of work stress and directly by leading to more positive evaluations of the employee’s work environment.

Research findings on the relationship of coworker support to work stress are mixed, with some studies reporting significant inverse relationships between support and work stress45 and others failing to find evidence of such relationships.46,47 The variability in the findings from these studies may be due in part to the lack of clear operational definitions of support as well as the lack of consistent definitions across studies. Few of these studies have used general work stress measures as employed in the current study; however, when isolating those that have, the overall findings demonstrate that support from coworkers is related to less work stress.45,48 In addition, a substantial amount of research supports the positive relationship between perceived coworker support and job satisfaction.44,49-53

**Negative Affectivity**

Negative affectivity refers to the extent to which an individual generally experiences various negative feelings and emotions,54 and its examination in the current study is warranted for several reasons. Negative affectivity has been shown to positively relate to work stress55 and inversely relate to job satisfaction,56,57 hardiness,58 and support at work55,59. In addition, negative affectivity has been implicated as a biasing variable.56 For example, workers with high negative affectivity may rate their work stress, job satisfaction, or support at work more negatively than their actual environment would warrant.59,61 Some researchers have attempted to remove the potential biasing effect of negative affectivity through partial correlation and related techniques.56,62 Such strategies, however, make the improbable assumption that negative affectivity contributes only bias to the model, although it is more likely that negative affectivity contributes both biasing and substantive effects.63

**Purpose of the Current Study**

The purpose of the current study is to test a conceptual model based on the transactional model of stress and coping, the P-E fit model, and the empirical research described above. In this model, hardiness, supervisor support, coworker support, and negative affectivity have direct
paths to both work stress and job satisfaction, and work stress has a direct path to job satisfaction. By testing this model, we sought to replicate the relationship between work stress and job satisfaction and examine the extent to which hardiness and coworker and supervisor support contribute to each, while taking into account the potential influence of negative affectivity. Regardless of whether negative affectivity plays a biasing or substantive role, a key concern is whether the exclusion of negative affectivity from the model would result in a flawed understanding of the connections between the other substantive variables in the model. Recent evidence suggests that negative affectivity may not strongly impact the relationships between other variables in the model. In this article, we explore the role of negative affectivity in two ways. First, we treat it as a substantive predictor along with the other predictors of hardness, coworker support, and supervisor support and evaluate its contributions to work stress and job satisfaction. Second, we remove negative affectivity from the model to determine whether its exclusion alters the relationships between the resources and the outcomes of interest.

METHODS

Design

This study employed a cross-sectional research design using survey data with two convenience samples: employees of a high-tech company and a government agency. Employees of the high-tech company completed the survey electronically at a computer in their work areas. Employees of the government agency completed a paper version of the survey in a designated quiet setting within their workplace. Procedures for the study were approved by the University of Texas at Austin Institutional Review Board, and employees were assured of confidentiality and that participation was voluntary.

Samples

Participants for this study were employees from two separate organizations: a high-tech company (N = 310) with employees in Austin, Texas, and Santa Clara, California, and a state government agency (N = 745) in Austin, Texas. E-mail invitations to participate were sent out to 420 employees of the high-tech company and 1500 employees of the government agency, resulting in response rates of 73.8 and 49.7%, respectively. Some demographic information was not available from the human resources database based on the identifying information provided by the participants and therefore remains unknown (5.8% for sex, 7.1% for age, and 35.8% for ethnicity for the high-tech sample; and 11.7% for all demographics in the government sample). While these missing data may affect group comparisons of demographics, they do not affect the primary analyses, which are based on survey data with an occasional missing observation due to a skipped item.

Several significant differences in the demographic make-up of the two convenience samples were observed. While the majority of the high-tech sample was male (73.5%, 20.6% female), the majority of the government sample was female (65.4%, 23% male) (χ²[1, N = 950] = 225.31; p < .001). The high-tech sample was younger (mean age 39.9 years) than the government sample (mean age 44.2 years) (t[944] = 6.3, p < .001) and had a shorter length of tenure at the company (3.9 years) than the government sample (13.2 years) (t[832] = 22.2; p < .001; equal variances not assumed based on Levene’s test). The high-tech sample had greater percentages of Asian/Pacific Islander (9.7% compared with 1.9% for the government sample) and American Indian (0.3% compared with 0.1% for the government sample) employees, whereas the government sample had greater percentages of Caucasian (56.1% compared with 47.5% for the high-tech sample), Hispanic (18.0% compared with 4.8% for the high-tech sample), and African-American (12.2% compared with 1.9% for the high-tech sample) employees (χ²[4, N = 857] = 83.4; p < .001). Significant differences were also found between the samples for several study variables (Table 1). Combined, these observations support the basic premise that the two samples are different from one another.

Measures

Hardiness. The 30-item Dispositional Resilience Scale (DRS) was selected as a measure of hardiness because it assesses the presence of the three tendencies that characterize hardiness, i.e., challenge, commitment, and control. On a four-point Likert scale, respondents were asked to indicate the extent to which statements on the DRS were true. The DRS was found to have adequate internal consistency in both the high-tech (α = .80) and government (α = .75) samples.
**Supervisor Support.** Supervisor support was measured using the four-item Supervisor Support Scale (SSS), which assesses perceptions of instrumental and emotional support from supervisors. Respondents were asked to indicate the extent to which they agreed with the items using a four-point Likert scale. The SSS was internally consistent in both the high-tech (α = .88) and government (α = .89) samples.

**Coworker Support.** Coworker support was measured using the five-item Coworker Support Scale (CWS), which captures perceptions of instrumental and emotional support from coworkers. Using a four-point Likert scale, respondents were asked to indicate how much they agreed with the five items. The CWS was found to be internally consistent in both the high-tech (α = .82) and government (α = .86) samples.

**Negative Affectivity.** Trait negative affectivity was measured using the 10-item negative affectivity portion of the trait version of the Positive and Negative Affect Schedule (PANAS). On a five-point Likert scale, respondents indicated to what extent they generally felt different negative feelings and emotions. The negative affectivity portion of the PANAS was found to have high internal consistency in both the high-tech (α = .87) and government (α = .91) samples.

**Work Stress.** Work stress was assessed using the Perceived Work Stress Scale (PWSS), which contains seven items that measure overall perceptions of work-related stress experienced by an individual at work during the last month. These items were adapted from the Perceived Stress Scale to apply to the work setting and take into account stress that may have resulted from any number of work-related stressors. Respondents were asked to indicate how often their lives at work were unpredictable, uncontrolable, and overwhelming on a five-point Likert scale. The internal consistency of the PWSS was high for both the high-tech (α = .87) and government (α = .89) samples.

**Job Satisfaction.** An overall measure of job satisfaction was obtained with a commonly used single item taken from the Job Satisfaction Scale (JSS). On a seven-point Likert scale, participants responded to the question “Taking everything into consideration, how do you feel about your job as a whole?” Research has demonstrated adequate validity and estimates of minimum reliability of a single-item job satisfaction measure.

**Analysis.**

**Descriptive Statistics and Correlations.** Descriptive statistics, including means and standard deviations, were calculated for all variables in both samples. In addition, correlations were calculated to examine the linear relationships among all study variables in both samples.

**Multiple-group Path Analysis.** A multiple-group path analysis was conducted using the path analysis and structural equation modeling software package AMOS 4.0 to test the proposed conceptual model in both samples. When a model is saturated, as the proposed conceptual model is (that is, each variable in the model has an estimated relationship with all other variables in the model), tests of model fit cannot be calculated. However, the critical ratios for each path between predictor and criterion variables can be calculated and assessed for their significance. We deleted any insignificant paths to produce a more parsimonious model and re-evaluated the model, allowing for the calculation of model fit. Goodness of fit was examined using the χ² test, normed fit index (NFI), comparative fit index (CFI), Tucker-Lewis index (TLI), and Root Mean Square Error of Approximation (RMSEA). The χ² includes a significance test, where χ² > .05 indicates good fit. Rules of thumb for the other indices suggest that a NFI, CFI, and TLI over .95 and a RMSEA below .06 indicate good model fit.

To test whether the exclusion of negative affectivity from the model alters the relationships between the resources and work stress and job satisfaction, an additional path analysis was conducted comparing the proposed conceptual model with one that excludes the effect of negative affectivity. This model comparison is an explicit test to determine whether the relationships between the other predictors and the outcomes were significantly altered by the exclusion of negative affectivity from the model. This test involved the estimation of three models. Model 1 was our proposed conceptual model, which includes negative affectivity. Model 2 constrained Model 1 such that all negative affectivity correlations and paths were set equal to zero, effectively removing negative affectivity from the model. Thus, Model 2 estimated what the correlations and path coefficients between the other predictors and the outcomes would be if negative affectivity were not included in the model. Model 3 constrained Model 1 such that all path coefficients between the other predictors and the outcomes were equal to the values obtained from Model 2. An acceptable degree of fit for Model 3 would indicate that the path coefficients between the other predictors and the outcomes are not significantly different between the model that includes negative affectivity and the model that excludes negative affectivity.

**RESULTS**

**Descriptive Statistics and Correlations.**

The possible range of scores, means, and standard deviations for all study variables in the high-tech and government samples are shown in Table 1.

Correlations among the study variables for both the high-tech and government samples are shown in Table 2. As expected, higher scores on job satisfaction were significantly related to higher scores on hardiness, supervisor support, and coworker support and to lower scores on negative affectivity and work stress. Also as expected, higher scores on work stress were significantly related to lower scores on hardiness, supervisor support, and coworker support and to higher scores on negative affectivity. The
Table 2
Correlations Among Study Variables in Both Samples†

<table>
<thead>
<tr>
<th>Variable</th>
<th>Hardiness</th>
<th>Negative Affectivity</th>
<th>Supervisor Support</th>
<th>Coworker Support</th>
<th>Work Stress</th>
<th>Job Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardiness</td>
<td></td>
<td>−0.43**</td>
<td>0.26**</td>
<td>0.26**</td>
<td>−0.36**</td>
<td>0.40**</td>
</tr>
<tr>
<td>Negative affectivity</td>
<td>−0.39**</td>
<td>−0.11*</td>
<td>−0.13*</td>
<td>0.44**</td>
<td>−0.17**</td>
<td></td>
</tr>
<tr>
<td>Supervisor support</td>
<td>0.26**</td>
<td>−0.17**</td>
<td>0.28**</td>
<td>−0.28**</td>
<td>0.39**</td>
<td></td>
</tr>
<tr>
<td>Coworker support</td>
<td>0.23**</td>
<td>−0.11**</td>
<td>0.46**</td>
<td>−0.24**</td>
<td>0.29**</td>
<td></td>
</tr>
<tr>
<td>Work stress</td>
<td>−0.29**</td>
<td>0.37**</td>
<td>−0.32**</td>
<td>−0.27**</td>
<td>−0.35**</td>
<td></td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>0.34**</td>
<td>−0.23**</td>
<td>0.51**</td>
<td>0.46**</td>
<td>−0.34**</td>
<td></td>
</tr>
</tbody>
</table>

† High-tech sample above the diagonal, government sample below the diagonal in italics.
* p < 0.05, two-tailed; ** p < 0.01, two-tailed.

Correlations among the predictor variables are typically small to moderate and are accounted for in the path analysis.

Multiple-group Path Analysis

Test of the Proposed Conceptual Model. The proposed conceptual model was saturated (hardiness, supervisor support, coworker support, and negative affectivity had paths to work stress and job satisfaction and work stress had a path to job satisfaction) but could be used to assess the critical ratios for each path. In both samples, all critical ratios were significant except for the path from negative affectivity to job satisfaction. This path was deleted to produce a more parsimonious model, which was then re-evaluated to determine goodness of fit.

The overall fit index demonstrated that this more parsimonious model had acceptable fit ($\chi^2[2] = 3.2, p = .20$). All fit indices exceeded .95, and the RMSEA was below .06 (NFI = 1.00, CFI = 1.00, TLI = .999, RMSEA = .024). These results indicate that this final model adequately fits the data for both samples. Table 3 depicts the various pathways from the predictors to the criterion variables, the standardized and unstandardized estimates, standard errors, and critical ratios of the paths for the variables and their levels of significance in the high-tech and government samples. Results of the path analysis indicate that the predictors account for a substantial amount of variance in work stress for both samples (high tech $R^2 = .28$; government $R^2 = .37$), with hardiness, coworker support, and supervisor support being negatively related to work stress and negative affectivity being positively related. The results also indicate that the predictors, with the exception of negative affectivity, account for a significant amount of the variance in job satisfaction in both samples (high tech $R^2 = .28$; government $R^2 = .37$), with hardiness, coworker support, and supervisor support being positively related to job satisfaction and work stress being negatively related. The final model with the intercorrelations between the predictors, path coefficients, and $R^2$ values for the high-tech and government samples is pictured in Figure 1.

This multiple-group path analysis did not explicitly test whether the models were the same for the two groups or compare the models between the two groups. Nonetheless, while some pathways were slightly stronger in one sample than the other, the patterns of significance and substantive positive and negative pathways are quite similar between the two groups.
Model Comparison. The proposed conceptual model (Model 1) was compared with one that excludes the effect of negative affectivity and was empirically tested to determine if there were any differences in the patterns of association among the remaining variables. Model 2 constrained Model 1 by setting all negative affectivity correlations and path coefficients equal to zero. Model 3 constrained Model 1 by setting all path coefficients between the other predictors and outcomes equal to those obtained from Model 2. The overall fit index demonstrated that Model 3 had acceptable fit ($\chi^2[14] = 17.24; p = .24$). All fit indices exceeded .95, and the RMSEA was below .06 (NFI = .999, CFI = 1.00, TLI = 1.00, RMSEA = .015). These results indicate that the path coefficients between the other predictors and the outcomes were not significantly altered by the inclusion of negative affectivity in the model. Fifteen of the 18 standardized coefficients were altered by .05 or less. The largest discrepancy between the standardized coefficients was for the path between hardiness and work stress in the high-tech sample; this path was estimated as -.15 in the conceptual model and -.27 in the model excluding negative affectivity.

DISCUSSION

The purpose of this study was to examine a theoretically and empirically based conceptual model of the relationships between the potential protective resources of hardiness, coworker support, and supervisor support and the outcomes of work stress and job satisfaction, and replicate the relationship of work stress to job satisfaction while accounting for the potential influence of negative affectivity. Results indicated that a more parsimonious model without the path from negative affectivity to job satisfaction fit the data well for both the high-tech and government-agency samples. As expected and consistent with previous studies, hardiness, supervisor support, and coworker support significantly predicted work stress, and these resources in addition to work stress significantly predicted job satisfaction similarly whether negative affectivity was included in the model or not. The directionality of the predictive relationships suggests that these resources serve a protective function that mitigates work stress and enhances job satisfaction.

While previous research has supported the relationship of these predictors to the criterion variables independently or in some combination, the current study examined them together in a unique configuration that accounted for their conceptual overlap in determining the exclusive contribution of each to work stress and job satisfaction. It is important to note that negative affectivity had the strongest relationship with the outcome of work stress in both samples, followed by supervisor support. Also important to note is that supervisor support had the strongest relationship with job satisfaction in both samples, followed by hardiness. These results suggest that interventions that target negative affectivity and supervisor support may have the greatest potential to reduce work stress.
stress and those targeting supervisor support and hardiness may have the greatest potential to enhance job satisfaction.

Although negative affectivity was inversely correlated with job satisfaction, this pathway was not significant in the path analysis once hardiness, coworker support, supervisor support, and work stress were included as predictors in the model, a result suggesting negative affectivity is weakly related to job satisfaction if at all after other variables have been controlled for.\textsuperscript{76,77} While negative affectivity clearly has an impact on work stress and is related to other variables in the model, its exclusion does not alter the hypothesized relationships between the predictor and the criterion variables. This finding suggests that, while negative affectivity is a useful predictor for inclusion in studies focusing on these variables, its exclusion does not necessarily jeopardize the validity of such studies’ conclusions.

**Practical Implications**

The study results and theory support the consideration of factors that contribute to perceptions of work stress and job satisfaction and are instrumental in proposing several practical implications. The most obvious of these implications is that it may prove beneficial for health promotion and human resource practitioners to consider the employee’s level of hardiness and perception of availability of support in the work environment when planning interventions to reduce stress and enhance job satisfaction at the work site.

Scientists have made significant contributions to the body of knowledge on work stress and health outcomes in the second half of the 20th century, and a shift is now called for from managing health risks to developing sources of strength and resilience among individuals.\textsuperscript{78} Organizations may benefit by including hardiness concepts in training and assimilation programs for employees and supervisors. In addition, employee and supervisor development programs should emphasize the value of coworker and supervisor support, providing training to develop the skills necessary to create more supportive work environments. Health promotion professionals can have more input into supervisor and executive training classes within the company to address how they can promote a more supportive environment for their employees. Both strategies have the potential to build organizational strength while also providing the opportunity for employees to build relationship skills and improve their health.

Negative affectivity may also be an important area to consider for worksite interventions, particularly in relation to work stress. This is not as obvious an implication given the routine treatment of negative affectivity as a biasing variable to be statistically controlled for in research. However, in the multiple-group path analysis, negative affectivity had the strongest relationship to the outcome of work stress in both samples. Although it is possible that a portion of this impact is due to a biasing effect on work stress, it seems likely that part of this relationship is due to a substantive effect that could be targeted for intervention. Given recent evidence of the counteractive effects of positive emotion on negative affect,\textsuperscript{79} this is a promising area for future intervention research.

Recognizing hardiness, perceived work support, and negative affectivity as potential targets for intervention raises the issue of whether it is possible to change an individual’s general tendencies. Individual dispositions, such as hardiness and negative affectivity, and perhaps perceived support, are by nature difficult to change. Dispositions refer to an individual’s tendency to think, feel, and/or behave in a characteristic way across time and situations, a pattern that is so ingrained in the individual’s very nature that it is automatic. However, it is possible to change such characteristic responses through increasing awareness of those that are maladaptive and training individuals in alternate patterns of responding that are more effective. For example, hardiness training has been shown to be effective in enhancing levels of hardiness,\textsuperscript{80,82} feelings of social support,\textsuperscript{80} and job satisfaction,\textsuperscript{80,81} as well as decreasing maladaptive types of coping and indicators of strain, such as anxiety and depression.\textsuperscript{80,81} These intervention studies show promising evidence that new dispositional tendencies can be learned and developed and have beneficial effects.

The study findings have led to practical implications for intervening at the level of the individual to impact work stress and job satisfaction. However, it is important to acknowledge the contribution of the other side of the P-E transaction, i.e., the environment. The extent to which the environment consists of high levels of job demands and low levels of supplies that fulfill job values important to the individual will assuredly offset the individual’s evaluation of the fit between person and environment, leading to higher levels of work stress and lower levels of job satisfaction. Thus, while the practical application of these findings is individual-level intervention, it is crucial not to overlook the potential impact of interventions targeted at the environment, or organizational level, to modify the levels of demand and supply in the work environment.

**Limitations and Future Directions**

The results of this research should be considered in light of several limitations. First, the design of the study is cross-sectional; therefore, causation cannot be determined. Use of a prospective design in future research would enable examination of the cause-effect relationship between the predictor and criterion variables. Second, the use of self-report survey data has inherent limitations. It is possible that questionnaire responses were untruthful due to suspicion or biased due to historical effects related to past experiences with work surveys or changes in the work setting.

Third, while the measurement tool employed in this study to assess work stress has adequate psychometric properties, it does not provide information about objective or specific stressors in the work environment. There is some debate regarding whether the approach to the future study of work stress should emphasize the individual’s subjective perception or the objective environ-
ment. Both approaches are important in understanding the work stress process, and each approach has clear advantages depending on the research question and underlying theory. Future research should employ both types of measures, when possible, to capitalize on the advantages of each and enable linkages between various theories to provide a fuller understanding of the work stress process.

SO WHAT? Implications for Health Promotion Practitioners and Researchers

The results of this study indicate that hardiness, supervisor support, and coworker support significantly predicted work stress and job satisfaction and that these relationships were not strongly affected by negative affectivity. These findings reiterate the importance of hardiness and support at work from coworkers and supervisors as potentially protective resources at the workplace in relation to work stress and job dissatisfaction. Given these relationships, health promotion interventions to enhance these protective resources have the potential to lessen work stress and enhance job satisfaction. The study also suggests that negative affectivity has a substantial impact on work stress, justifying its inclusion as a target for intervention, rather than treating it solely as a biasing variable to statistically control for. While negative affectivity is a useful predictor for inclusion in work stress studies, our findings also show that its exclusion does not necessarily jeopardize the validity of such studies’ conclusions. Further, future research investigating interventions targeting hardiness, support at work, and negative affectivity to lessen work stress and enhance job satisfaction should use a controlled prospective study design to enable the determination of causality as well as control for potentially confounding variables.

Finally, the use of a single-item job satisfaction measure may affect the reliability or validity of the measurement. However, research has demonstrated adequate validity and estimates of minimum reliability of a single-item job satisfaction measure. Future research comparing single-item measures to multiple-item measures and overall measures to specific job facet measures of job satisfaction will be useful in evaluating the comparability of studies using such different types of measures.

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References

14. Sajeev A. Employee absenteeism, organization-