Should Negative Affectivity Remain an Unmeasured Variable in the Study of Job Stress?

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We predicted that the dispositional construct negative affectivity (NA) would be related to self-report measures of job stress and job strain and that observed relationships between these stress and strain measures would be inflated considerably by NA. Results of a study of 497 managers and professionals were largely consistent with these expectations. Thus, we discuss implications for NA as both a methodological nuisance and a substantive cause of stressful work events, and conclude that NA should no longer remain an unmeasured variable in the study of job stress.

A substantial part of the literature on job stress is based on observed relationships between presumably stressful conditions of work and various indices that are purported to gauge the levels of distress experienced by workers using self-report measures of both stress (the predictor) and strain (the criterion) (Brief & Atieh, 1987). The purpose of this article is to report on tests that measure whether a particular personality construct, negative affectivity, underlies self-reports of both stressful working conditions and strain and, therefore, on whether many (if not most) observed job stress–job strain relationships are spurious.

Negative Affectivity

The term negative affectivity (NA) was used by Tellegen (1982) and defined by Watson and Clark (1984) as a mood-dispositional dimension that reflects pervasive individual differences in negative emotionality and self-concept. On the basis of an exhaustive review of the literature regarding NA, Watson and Clark concluded, among other things (a) that high-NA individuals tend to focus differentially on the negative aspects of themselves, other people, and the world in general (i.e., they accentuate the negative) and (b) that high-NA individuals are more likely, in any situation, to experience significant levels of distress than low-NA individuals.

Watson and Clark (1984) illustrated this accentuation on the negative by showing, for example, that high-NA individuals significantly overestimate the size of failure-related stimuli (Zahn, 1960) and interpret ambiguous stimuli more negatively (Goodstein, 1954; Haney, 1973; Phares, 1961). They also demonstrated the relatively high levels of cross-situational distress, for example, by reviewing findings that indicate that high-NA subjects report more discomfort in relaxed baseline settings as well as in situations that involve psychological or physical stressors and that show that NA can predict negative affect as much as 10 years later (Costa & McCrae, 1980).

Negative Affectivity and the Study of Job Stress

As noted earlier, measures of stressful conditions of work are often of the self-report variety. For example, Bhagat, McQuaid, Lindholm, and Segovis (1985) indexed total life stress, including that experienced in the work and personal domains, by asking subjects to rate the impact that particular events had on their lives from extremely positive to extremely negative. What is known about high-NA individuals would lead one to expect them to elicit (as compared with low-NA individuals) more negative responses and, therefore, to be judged by Bhagat and colleagues as experiencing more negative total life stress, including more negative job and personal stress. In their study, Bhagat et al. used a measure of job satisfaction as a dependent variable and observed negative relationships between the indices of negative job stress and job satisfaction. Such reliance on low job satisfaction scores as indicators of job-related distress pervades the job stress literature (Brief & Atieh, 1987). Indeed, the use of such nonspecific measures of distress is the norm, and it is these very sorts of measures that are expected to capture the distress experienced by high-NA individuals across situations.

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The order of the three junior authors, Jennifer George, Brian Robinson, and Jane Webster, was determined alphabetically.

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This position is stated more generally and more strongly by Depue and Monroe (1986):

. . . in view of the fact that most scales of psychological disorder in the life stress literature assess general negative affect, life dissatisfaction, and a lack of positive well-being, and that many scales of physical disorder comprise stress-reactive somatic complaints, it is very likely that a substantial portion of the high-scoring group on nonspecific scales of both psychological and physical disorder will consist of individuals who are high on the personality dimension of NA. (p. 39)

Therefore, we predicted that NA would be related positively to measures of (a) negative stress (total, job, and personal) and (b) distress (at work and in life in general). Furthermore, and of primary concern, we predicted that the observed associations between stress and distress, "controlling" for NA, would be approximately zero, thus, indicating that substantial portions of the observed correlations are spurious (Simon, 1954).

In this article, then, we report the results of tests of the following three hypotheses:

*Hypothesis 1.* Negative stress (total, job, and personal) is negatively related to job and life satisfaction and positively related to distress at work and in life in general.

*Hypothesis 2.* NA is positively related to negative stress and distress and negatively related to satisfaction.

*Hypothesis 3.* By controlling for NA, the hypothesized relationships between negative stress and distress or satisfaction (see Hypotheses 1 and 2) will be approximately zero, indicating that substantial portions of the observed relationships are spurious.

The first two hypotheses are derived from Bhagat et al. (1985) and represent an attempt to replicate their findings partially and constructively (Lykken, 1968). Even if the results of our tests of Hypotheses 1 and 2 are supportive of those findings, it is important to recognize that the meaningfulness of such support will be called to question to the degree that our third hypothesis is supported. Again, this would be the case for most findings that constitute the job stress literature.

**Method**

**Subjects and Setting**

In this research, we used data from a larger series of studies in which professional and managerial personnel of an insurance company were assigned randomly to one of three questionnaires. Although containing some common elements, the questionnaires varied in their content; therefore, sample sizes for the scales used in this study are not necessarily equal.

Surveys were mailed to respondents through interoffice mail and returned directly to the researchers. Respondents were guaranteed confidentiality, and only aggregate results were presented to the insurance company. Questionnaires were mailed to 1,093 employees; responses were received from 497 (a response rate of 45%). Approximately half of the respondents worked in New York City, and the remainder, in various other locations in the United States. Approximately 50% of these subjects were managers, and the remaining were professionals. The mean respondent's age was 41.27 years (SD = 8.88), and 39.4% of the respondents were women. Education ranged from some high school to a graduate degree, with 66.6% of the respondents having graduated from college. The average salary was $47,041 (SD = $26,429), and company tenure averaged 8.94 years (SD = 3.52).

**Measures**

**Negative Affectivity**

Negative affectivity (NA), a personality variable measuring individual differences in negative emotionality and self-concept, was measured using 50 items taken, with slight modifications, from the Minnesota Multiphasic Personality Inventory (MMPI). These 50 items make up the Taylor Manifest Anxiety Scale (TMAS, Taylor, 1953). The TMAS is a true-false scale that includes such items as "I do not tire quickly" and "I cannot keep my mind on one thing." It is scored by adding up the number of times a respondent answered true to particular questions and false to other questions. It is, therefore, an item count of the number of NA statements that apply to a respondent. The scale has shown no significant differences between men and women, and test-retest reliabilities have been greater than .80 for periods ranging from 3 weeks to 17 months (Taylor, 1953). Recently, Watson and Clark (1984) reported that the average internal consistency estimate for the TMAS is .82, and that it correlates highly (i.e., r = .70) with 12 other personality measures. In fact, they noted that the TMAS as well as the other personality measures, which apparently gauge diverse personality traits such as anxiety, neuroticism, ego strength, general maladjustment, and so forth, actually measure the same stable trait of NA. Of the 12 measures investigated, Watson concluded that the TMAS is the best indicator of NA (personal communication, 1985).

**Stress**

In order to measure stress (total, job, and personal), Bhagat and colleagues (1985) used the items from the Psychiatric Epidemiology Research Interview (Dohrenwend, Krasnoff, Askenasy, & Dohrenwend, 1978) coupled with the response format taken from the Life Experiences Survey (LES, Johnson & Sarason, 1979). The Bhagat et al. scale asked respondents to indicate whether a given life event had happened to them in the last 3 years and, if so, to indicate the current impact of the event on a 7-point scale ranging from very negative to very positive. Negative stress scores were then computed by summing across all events (within the appropriate domain) to which a respondent indicated that the impact of the event was currently negative. In the study reported here, the same procedures were used for measuring negative stress. However, a total of 119 events, rather than 83, was investigated, with 21 classified as job events and 98 as personal events. The particular events studied were modified on the basis of the Dohrenwend and colleagues (1978) advice to add or delete events contingent on the particular population under investigation and, accordingly, on approximately six unstructured interviews with prospective subjects. Test-retest reliabilities of a related scale, the LES, have been acceptable (Sarason, Johnson, & Siegel, 1978).

**Outcome**

**Overall job satisfaction.** Overall job satisfaction was measured using 20 items from the Minnesota Satisfaction Questionnaire (MSQ) referred to as the short form of the MSQ (Weiss, Dawis, England, & Lofquist, 1967). For each item, the respondent is asked how she or he feels about her or his present job on a 5-point scale ranging from very satisfied to very dissatisfied. An internal consistency reliability estimate of .90 and test-retest reliability estimates of .89 (over 1 week) and .70 (over 1 year) have been reported (Weiss et al., 1967).

**Somatic complaints at work.** Somatic complaints at work were measured using a 10-item scale taken from Caplan, Cobb, French, Harrisson, and Pinneau (1975), which asks the respondent to indicate how often she or he has experienced various symptoms during the past week at work. Subjects respond to each item on a 3-point scale ranging from never to once or twice to three or more times.
Negative affect at work. The measure of negative affect at work was taken from the Job Affect Scale (JAS), which was developed for the current research. The JAS gauges both positive and negative affect at work, however, only the negative affect dimension was of interest here. The JAS is based on the work of Watson and Tellegen (1985), who defined negative affect as “the extent to which a person reports feeling upset or unpleasantly aroused” (p. 221). On the basis of factor analyses of self-reported mood, Watson and Tellegen found that positive and negative affect consistently emerged as the first two orthogonal dimensions of self-rated mood and that clear markers of each dimension could be identified. Here, 10 clear markers of negative affect, identified by Watson and Tellegen (e.g., distressed, fearful, and hostile), were used to measure negative affect at work. For each item, the respondent was asked to indicate how she or he felt at work during the past week, using a 5-point scale ranging from very slightly or not at all to very much.

Life satisfaction. Life satisfaction was measured with the Satisfaction With Life Scale (SWLS), which assesses global life satisfaction (Diener, Emmons, Larsen, & Griffin, in press). The SWLS is a 5-item scale that asks respondents to indicate the extent to which they agree with each item, using a 7-point scale ranging from strongly disagree to strongly agree. An example item is “In most ways my life is close to my ideal.” The items are summed to arrive at a total life satisfaction score. A 2-month test–retest reliability estimate of .82 and an internal consistency reliability estimate of .87 have been reported (Diener et al., in press).

Symptoms of depression. The Center for Epidemiologic Studies Depression Scale (CES-D), which purportedly measures depressive symptomatology in the general population, was used (Radloff, 1977). This 20-item scale includes items, such as “I was bothered by things that usually don’t bother me.” Respondents indicate how often they have felt this way during the past week on a 4-point scale, ranging from rarely or none of the time to most or all of the time. An internal consistency reliability estimate of .85 and test–retest reliability coefficients ranging from .32 (for 12 months) to .67 (for 4 weeks) have been reported (Radloff, 1977).

Tests of Hypotheses

Zero-order correlations were computed for the hypothesized relationships in Hypotheses 1 and 2. For Hypothesis 3, partial correlation coefficients were calculated between stress and outcome measures, controlling for NA. These first-order partial correlations were also corrected for the unreliability of NA, because measurement error may decrease, increase, or change the sign of a partial correlation (Cohen & Cohen, 1983). The formula for computing partial correlation coefficients corrected for unreliability of the partialled variable as presented in Cohen and Cohen (p. 408) is:

$$r_{xy|z} = \frac{r_{xz} - r_{xz}r_{yz}}{\sqrt{(1 - r_{xz}^2)(1 - r_{yz}^2)}}$$

where $r_{xy|z}$ is the partial correlation for Y with X, partialling for Z, where X is corrected for measurement error, $r_{xz}$ is the reliability coefficient for NA (X1); $r_{xz}$ is the correlation between distress (Y) and stress (X2); $r_{yz}$ is the correlation between distress and NA; and $r_{yz}$ is the correlation between NA and stress. No test of statistical significance is available for a partial correlation coefficient corrected for unreliability.

Results

Scale means, standard deviations, internal consistency, and reliability estimates (Cronbach, 1951) as well as intercorrelations are presented in Table 1. Results germane to the negative stress–satisfaction and distress relationships contained in Hypothesis 1, including those derived from the Bhagat et al. (1985) findings, are also in Table 1. In general, these results would appear to provide strong support for the hypothesis and to replicate the Bhagat et al. findings partially and constructively. For example, Bhagat et al. reported a correlation of $-0.35 (p \leq .01)$ between total negative life stress and life satisfaction, and our corresponding result was $-0.41 (p < .01)$. Their correlation between total negative life stress and a measure of distress/negative affect was $0.33 (p \leq .01)$, and our corresponding correlation between total negative life stress and symptoms of depression was $0.39 (p < .01)$. Their correlation between negative job stress and a measure of job satisfaction was $-0.39 (p < .01)$, and our corresponding correlation was $-0.37 (p < .01)$. In total, although ignoring the sign of the correlations (which were all in the hypothesized directions), we found the average correlations between negative total, negative job, and negative personal life stress and our three indicators of work-related reactions to be $0.32, 0.32, \text{and } 0.24$, respectively; we found the average correlations between negative total, negative job, and negative personal life stress and our two indicators of life-in-general reactions to be $0.40, 0.34, \text{and } 0.33$, respectively.

Table 1 also contains the results germane to Hypothesis 2, which stated that NA would be positively related to the negative life stress measures and the indices of distress and negatively related to the satisfaction measures. The results are consistent with our expectations, with observed correlations ranging from $-0.24 (p < .01)$ for the NA–job satisfaction relationship, to $0.69 (p < .01)$ for the NA–symptoms of depression relationship. Average correlations, ignoring signs, were $0.35$ for the three NA-negative stress relationships, $0.45$ for the three NA–work-related reaction relationships, and $0.57$ for the two NA–life-in-general reaction relationships.

Results pertaining to Hypothesis 3 are presented in Table 2. Again, Hypothesis 3 was concerned with the effects of partialing out NA on the relationships contained in Hypothesis 1. Relying on the first-order partial correlations corrected for the unreliability of NA, it is apparent that Hypothesis 3 is supported (at least partially), with 6 of the coefficients less than $.10$ and 10 of the coefficients less than $.20$. Moreover, the following averages of the corrected first-order partial correlation coefficients are revealing. The average coefficients, ignoring signs, between negative total, negative job, and negative personal life stress and our three indicators of work-related reactions (controlling for NA) were $.13, .19, \text{and } .08$, respectively. The average coefficients between negative total, negative job, and negative personal life stress and our two indicators of life-in-general reactions (controlling for NA) were $.15, .15, \text{and } .11$, respectively.

Discussion

The primary purpose of our research was to examine the role of negative affectivity (NA) in observed job stress–job stress relationships. In general, our findings (a) confirmed preexisting zero-order relationships between various stress and strain indices, (b) demonstrated that NA is significantly related to these stress and strain measures, and (c) indicated that zero-order stress–strain relationships as commonly reported in the literature are obscured by NA at best, with the zero-order relationships being inflated considerably. First, we will discuss the im-
Table 1

Intercorrelation Matrix For Study Variables

<table>
<thead>
<tr>
<th>Measure/variable</th>
<th>1</th>
<th>2</th>
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<th>8</th>
<th>9</th>
<th>M</th>
<th>SD</th>
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<td><strong>Dispositional</strong></td>
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<tr>
<td>1. Negative affectivity</td>
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<td>-.24</td>
<td>.53</td>
<td>.57</td>
<td>-.46</td>
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<td>2. Total negative stress</td>
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<td>.90</td>
<td>-.29</td>
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<td>-.41</td>
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<td>9.46</td>
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<td>4. Negative personal stress</td>
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<td>-.17</td>
<td>.33</td>
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<td>6.19</td>
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<td><strong>Satisfaction/distress</strong></td>
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<td>5. Overall job satisfaction</td>
<td>.88</td>
<td>-.19</td>
<td>-.29</td>
<td>.34</td>
<td>-.38</td>
<td>71.79</td>
<td>10.26</td>
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<td>6. Somatic complaints at work</td>
<td>.68</td>
<td>.45</td>
<td>-.26</td>
<td>.55</td>
<td>11.35</td>
<td>1.90</td>
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<td>7. Negative affect at work</td>
<td>.84</td>
<td>-.35</td>
<td>.61</td>
<td>23.38</td>
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<td>8. Life satisfaction</td>
<td>.90</td>
<td>-.52</td>
<td>22.82</td>
<td>6.85</td>
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<td>9. Symptoms of depression</td>
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<td>.90</td>
<td>8.71</td>
<td>8.43</td>
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*Note. Ns on which correlation coefficients were based are in parentheses. All correlation coefficients are statistically significant at the .01 level. Internal consistency reliability coefficients are shown on the diagonal. Internal consistency reliability coefficients were not computed for stress measures because of the scale construction. That is, there is no reason to assume the occurrence of life events will be correlated. Listwise deletion was used for missing values.

In the study of stress and its effects on health, complications of the first-order partial correlations controlling for NA that were the basis for the latter conclusion.

If, in fact, often-reported job stress-job strain relationships are inflated because of self-report measures of both stress and strain being "contaminated" by NA, then questions arise regarding the current state of the job stress literature and, methodologically, in terms of what the future should hold. It would appear that we cannot rely confidently on the job stress literature as currently constituted for estimates of the strength of stress-strain relationships. For instance, we found a significant, positive relationship between negative job stress and somatic complaints at work \( r = .21, p \leq .01 \), but, when NA was controlled for, the resulting coefficient was .03. Assuming this result generalizes to other sorts of stress-strain relationships—such as between role conflict and tension/anxiety, for which Jackson and Schuler (1985) reported an average observed correlation of .28—then whether these other relationships are as reported or considerably weaker remains open to very serious question.

What can be done, methodologically, to correct the NA “problem” in future job stress research? Potential answers to this question include (a) measuring and controlling for NA and (b) objectively gauging stress and strain (or both). The objectification prescription is not an original one (e.g., Brief & Atch, 1987), but the current findings add further substance to this plea, at least minimally. This call, however, should not be blindly adhered to because some theoretical approaches to the study of stress (e.g., Lazarus & Folkman, 1984) dictate a focus on cognitions and emotions and, therefore, investigation of the

Table 2

Correlation Coefficients Between Hypothesized Stress Measures And Outcome Measures Controlling For Negative Affectivity, Disattenuated For Unreliability Of Negative Affectivity

<table>
<thead>
<tr>
<th>Stress measure</th>
<th>Overall job satisfaction</th>
<th>Somatic complaints at work</th>
<th>Negative affect at work</th>
<th>Life satisfaction</th>
<th>Symptoms of depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total negative stress</td>
<td>-.18 (-.20)</td>
<td>.15 (.18)</td>
<td>.06 (.11)</td>
<td>-.21 (-.23)</td>
<td>.09 (.14)</td>
</tr>
<tr>
<td>Negative job stress</td>
<td>-.31 (-.31)</td>
<td>.03 (.06)</td>
<td>.22 (.24)</td>
<td>-.11 (-.13)</td>
<td>.20 (.23)</td>
</tr>
<tr>
<td>Negative personal stress</td>
<td>-.04 (-.06)</td>
<td>.15 (.21)</td>
<td>.06 (.02)</td>
<td>-.21 (-.23)</td>
<td>.01 (.04)</td>
</tr>
</tbody>
</table>

*Note. N = 279. Correlation coefficients in parentheses are first-order partial correlations not corrected for reliability of negative affectivity. If an uncorrected partial correlation coefficient is greater than .10, p is less than or equal to .05. If an uncorrected partial correlation coefficient is greater than .13, p is less than or equal to .01.
subjective as well as objective side of stress and coping processes. It would seem that the incorporation of NA into those studies using a cognitive and affective approach is becoming a necessity.

It should be recalled that our stress and strain measures all were correlated significantly with NA. These correlations are consistent with the suggestions by others that NA may not just be a psychometric bother in job stress research but, rather, a theoretical variable with which to be reckoned. Generally, this is implied by Dohrenwend, Dohrenwend, Dodson, and Shrout's (1984) assertion that "some life events . . . are consequences of personal dispositions" (p. 22). More directly, Depue and Monroe's (1986) analysis of life stress research suggested that NA is the trait of concern. Finally, Staw, Bell, and Clausen (1986) found that an NA-type measure taken in early adolescence is predictive of overall job satisfaction in later adulthood (r = -.37, p = .01), thus providing strong empirical evidence for a causal link between NA and an often-examined consequence of job stress. It must be noted, however, that the precise causal links between NA and self-reports of negative job stress and strain were undeterminable in the present study. Clearly, serious thought needs to be given to the main effects of NA on both job stress and job strain and to how NA might interact with such context factors as an organization's goal setting, performance appraisal, and compensation systems to affect stress and, thus, strain. This suggestion echoes recent calls for an increased emphasis on examining personality constructs as a means of improving our understanding of various organizational behaviors (e.g., Weiss & Adler, 1984).

We can identify several limitations of the current study. For example, it might be that scores on our measures of NA, stress, and strain all were biased in a like manner by some unidentified person or situationally rooted response set. If this response set is not caused by a person characteristic and is, for example, a function of common method variance, then the reported partial correlations would have been deflated relative to their corresponding zero-order correlation coefficients by controlling for either NA or responses due to common methods. This is plausible; however, Watson and Clark (1984) reported evidence that showed that measures of NA are correlated similarly with various peer and clinical ratings as well as with other self-report measures. Because of such prior consistency in results across methods, the case in favor of a common method variance argument is mitigated to a degree. Tellegen (in press) made a similar point about personality measures in general. If the response set is a function of a person characteristic, then much of the substance of many of the implications we have drawn for the job stress literature would still hold. That is, concern would remain with understanding the role of this unidentified personality construct as well as its relation to the NA construct.

Associated with the possible limitations raised above is the likelihood that a positive analogue to NA exists and that it functions in a similar fashion but relates to people focusing on the positive aspects of themselves, other people, and the world in general as well as to positive emotional states. On the basis of the work of Tellegen (1982), who developed a measure of such a positive affectivity (PA) construct, we feel that this is a definite possibility. Thus, the current study could have benefited from an exploration of the joint role of NA and PA in accounting for observed stress–satisfaction (or strain) relationships. Clearly, this would also be true for future investigations, particularly those in which positive job stress and such positive consequences as positive affect at work are examined.

Another limitation of our research concerns both the measurement and analytic strategies that we chose. If multiple indicators of many of the constructs included in the current study had been taken, then a measurement model with latent variables (Jöreskog & Sörbom, 1986) could have been used. By doing so, we would have been able to address both the measurement properties of NA and its role in job stress more precisely. This suggestion represents a possible refinement and research avenue for future investigators to consider.

These limitations notwithstanding, the current results collectively demonstrate that NA should not remain an unmeasured variable in the study of job stress. Both its role as a methodological "nuisance" as examined here and (we believe, more important) as a plausible cause of substantive stressful work events warrant additional attention. One can no longer assume that simple, zero-order correlations between self-report measures of job stress and job strain are particularly informative. In more speculative and more general terms, an analogous assertion could be made regarding simple, zero-order correlations between self-report measures of any characteristic of work and any work-related affective state.

References


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