The Role of Negative Affectivity in Understanding Relations Between Self-Reports of Stressors and Strains: A Comment on the Applied Psychology Literature

Michael J. Burke, Arthur P. Brief, and Jennifer M. George

On the basis of a brief review of the health, organizational, and personality psychology literatures supportive of the expectation that observed relations between self-reports of stressors and strains are influenced by the mood-dispositional dimension negative affectivity (NA), reanalyses of four data sets were conducted. The results of these reanalyses, contrary to the assertions of several authors in the applied psychology literature, offered further support for the hypothesized "nuisance" properties of NA in studies involving relations between self-reports of stressors and strain. A discussion of how NA and other mood-dispositional dimensions may be of interest to investigators concerned with relations between self-reports of any condition of employment and any affective state of workers is presented.

A number of investigators in health, organizational, and personality psychology, using alternative methodologies, have shown that the mood-dispositional dimension negative affectivity (NA) influences relations between self-reports of stressors and strains (e.g., Costa & McCrae, 1980; Payne, 1988; Schroeder & Costa, 1984); yet, in the applied psychology literature, the claim persists that this is not so. For example, Chen and Spector (1991), based on the results of a study of 400 employed people recruited from 14 sources, concluded that "contrast to the results of Brief, Burke, George, Robinson, and Webster (1988), NA did not account for much of the variance shared by stressors and affective strains" (p. 398). Thus, the purposes of this article are to help clarify for applied scholars what is known about the role of NA in the study of stress and to discuss key validity issues concerning the measurement of and empirical linkages between stressors, strain, and NA. Our aim, therefore, is not to present an exhaustive treatment of NA. For that, readers are referred, for example, to Clark and Watson (1991), Watson and Clark (1984), and Watson and Pennebaker (1989).

The remainder of this article unfolds as follows. First, we present conceptual arguments supportive of the expectation that observed relations between self-reports of stressors and strains are influenced by NA. In this presentation, various empirical studies also supportive of this expectation are noted. Second, a number of construct validity issues regarding how NA has been studied in the applied psychology literature are raised, with attention paid to state-trait distinctions in the measurement of NA and to the potential item content overlap problem between measures of strain and NA identified by Chen and Spector (1991). Here, we also reanalyze data from several published studies to show why fundamental questions concerning the impact of NA remain in the applied psychology literature. Finally, the article closes with a discussion of how NA and other mood-dispositional dimensions might fit not only in the agenda of job stress researchers but also may be of interest to investigators concerned with relations between self-reports of any condition of employment and any affective state of workers.

Negative Affectivity and the Study of Stress

The five-factor model of personality provides a widely recognized taxonomy of personality dimensions that appear to underlie most personality constructs (e.g., Digman, 1990). One of the "big five" usually is referred to as neuroticism (vs. emotional stability). It is important to note that an alternative label for this factor is N4 (Watson & Clark, 1984). Indeed, Watson and Clark demonstrated that a large number of common instruments (e.g., the Taylor Manifest Anxiety Scale [TMA]; Taylor, 1953), the Eysenck Personality Inventory Neuroticism Scale [Eysenck & Eysenck, 1968], and the Beck Depression Inventory [Beck, Ward, Mendelson, Mock, & Erbaugh, 1961]) purporting to measure, for example, trait anxiety, neuroticism, and depression, can be considered as alternative measures of the NA construct. Thus, considerable empirical evidence addressing the nature and effects of NA is available.

N4 is a term first 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. Based on an extensive review of the literature, Watson and Clark concluded that high-NA individuals as contrasted to lows are (a) more likely to experience distress and dissatisfaction; (b) more introspective and dwell more on their failures and shortcomings; (c) tend to focus on the negative side of the world in general; and, therefore, (d) have a less favorable self-view and are more dissatisfied with them-
selves and their lives. Alternatively, Watson and Clark described low-NA individuals as contrasted to highs as content, secure, and self-satisfied.

In a recent update of their review of the literature relevant to the NA construct, Clark and Watson (1991) further clarified the nature of NA and its pervasive effects on subjective experience and evaluation. More specifically, Clark and Watson suggest that NA entails a generalized negative cognitive set; thus, subjective evaluations of a wide range of potentially negative phenomena are likely to be impacted by the negative interpretive and perceptual orientation characteristic of the high-NA individual. That is, because NA involves a propensity to view the world and oneself through a negative lens, this pervasive negative orientation is more important than the particular field of expression.

The implications of NA for the study of stress are rather straightforward. First, it is expected that NA would be associated with self-reports of stressors, particularly those more subjective in nature. Second, it is expected that NA would be associated with self-reports of strains, namely, negative affective states. Third, because of NAs association with self-reports of both stressors and strains, it is expected that the observed associations between self-reports of stressors and strains would be inflated considerably by NA.

None of these expectations have gone unattended in the psychology literature. For example, Watson and Pennebaker (1989) stated that “generally speaking, perceived stress measures have a strong subjective distress component and correlate significantly with NA scales” (p. 249). Depue and Monroe (1986) also stated that

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)

Several other empirical studies (e.g., Ormel & Wohlfarth, 1991; Watson, 1988a) have presented results that are consistent with these assertions and support the effects of NA on observed relations between self-reports of stressors and strains. Below we provide a few examples of such research.

Schroeder and Costa (1984) hypothesized that observed relations between self-reports of stressful life events and self-reports of illness are contaminated by several factors, including NA. They demonstrated support for their hypothesis by showing that NA-related events are significantly correlated with self-reported illness but uncontaminated events are not. Brett, Brief, Burke, George, and Webster (1990), using data from the same series of studies as Brief et al. (1988), constructively replicated (cf. Lykken, 1968) Schroeder and Costa’s finding. Brett et al. (1990) found that NA-related events correlated significantly with three self-report measures of well-being and that uncontaminated events were unassociated with the well-being indicators. Examples of the NA-contaminated life events empirically identified by Brett et al. are “Had trouble with boss” and “Conditions at work got worse, other than demotion or trouble with boss.”

Watson and Pennebaker (1989), on the basis of analyses of data from six samples, found that self-report measures of stress and health both contain a significant NA component. Furthermore, they concluded that correlations between self-reports of stress and health overestimate the true association between stress and health. In general, their results demonstrated the importance of including different types of health measures (e.g., physiological measures of blood pressure, hypertension, and blood chemistry) and outcome variables (e.g., disease incidence and mortality) in health psychology research.

Payne (1988) studied the psychological well-being of 75 unemployed men on three occasions over a 2-year period. On the third occasion of the study, NA was measured to test the hypothesis that the large correlations among all negatively toned scales (e.g., perceived problems and strain on the preceding day) were the result of NA. The results from Payne’s analyses strongly supported this hypothesis. Payne concluded that future studies using self-report methods, whether cross-sectional or longitudinal, should include a measure of NA and should partial out its effects before testing hypotheses about relations between environmental conditions and psychological states.

As previously noted, Brief et al. (1988), on the basis of a study of 497 managers and professionals, reported findings indicating that observed correlations between self-reports of stressors (measured by a modified version of a scale used by Bhagat, McQuaid, Lindholm, & Segovis, 1985) and strain (as indexed by Weiss, Dawis, England, & Lofquist’s [1967] short form of the Minnesota Satisfaction Questionnaire; Caplan, Cobb, French, Van Harrison, & Pinneau’s [1975] measure of somatic complaints at work; the negative affect at work dimension of the Job Affect Scale developed by Brief et al. [1988]; Diener, Emmons, Larsen, & Griffin’s [1985] Satisfaction With Life Scale; and Radloff’s [1977] Center for Epidemiologic Studies Depression Scale) were inflated considerably by NA (as gauged by the TMAS; Taylor, 1953). These findings led Brief et al. (1988) to conclude 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 importantly) 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 argument could be made regarding simple, zero-order correlations between self-report measures of any characteristic of work and any work-related affective state. (p. 197)

Consistent with the above findings, Ganster, Fox, and Mayes (1989), in a study of 129 full-time members of the police department of a medium-sized city, found results supporting a spurious relation between perceptions of role stress (i.e., role ambiguity) and self-reports of psychological well-being (i.e., somatic health complaints and depression). However, they did not find any significant decrease in the relations between the stress variables and physiological and job satisfaction outcome measures. In regard to Ganster et al.’s (1989) findings entailing physiological responses, there, of course, is no argument evident in the literature to lead one to expect NA to be related to such indicators of strain.

Also noted previously was Chen and Spector’s (1991) pur-
ported failure to replicate Brief et al.'s (1988) findings. As should now be clear, their purported failure not only speaks to Brief et al.'s findings but also to a wealth of conceptual and empirical arguments in various areas of psychology that indicate that NA does matter in the study of stress so long as self-reports of stressors and strains are the objects of investigation. Below, we present reanalyses of data from Chen and Spector to demonstrate that these authors may have misinterpreted the broad influences of mood-dispositional NA on their self-reported measures of stressors and strain.

In large part, we have addressed NA as a methodological nuisance; however, others have suggested that the trait may lead to the creation of stressful conditions (e.g., Brief et al., 1988; McCrae & Costa, 1991) and heightened reactivity to stressors (e.g., Larsen & Ketelaar, 1991; McCrae & Costa, 1991; Parkes, 1990). For instance, the negative worldview of high-NA individuals may lead co-workers to respond to them in aversive ways (e.g., avoiding them) and, thereby, contribute to a work environment that, in fact, is stressful. Moreover, we do not mean to imply that high-NA individuals' perceptions of stressors nor their experienced distress are any less real to them in a phenomenological sense. Indeed, based on past theorizing and research, we would expect such individuals to perceive and evaluate potential stressors more negatively and to also experience more distress. Hence, from the standpoint of subjective experience itself, the distress felt by the high-NA individual is just as real as that experienced by individuals low on NA. More generally, the underlying mechanisms that cognitively and behaviorally link NA to stressors and strains compose an intriguing area for future research. In any case, however, if one's research focus is on negative affective states, then consideration of the effects of NA is warranted.

Validity Issues

Above, we have reviewed briefly the wealth of theoretical and conceptual work surrounding the NA construct and its purported relations with individuals' perceptions and evaluations of stressors and experienced distress. Most important, these conceptual underpinnings have guided empirical investigations into the measurement of NA and its theorized relations with self-reports of stressors and strains; a brief sampling of some of this work was also reviewed above.

However, in some of the applied psychology literature, it appears that there has been either an inadequate understanding of the conceptual issues surrounding the NA construct and its relations with stressors and strains or a failure to consider these conceptual issues (and their supporting bases) in empirical investigations and data analyses. These problems have led (in our opinion) to questionable conclusions in the applied psychology literature about the inferential linkages between measures of stress, strain, and NA. Two sources of confusion that we discuss below pertain to the (a) state–trait distinction in mood-dispositional dimensions and (b) the effects of item content overlap in measures of stress, strain, and NA. Based on our brief review of work pertaining to these issues, we present reanalyses of several published data sets to demonstrate the pervasive influence of NA on self-reports of stress and strain.

State–Trait Distinction in Mood-Dispositional Dimensions

So far, our discussion has focused on NA. However, considerable theory and research indicate that emotional experience is dominated by two broad and relatively independent (over time) dimensions, negative affect (referred to as state-NA) and positive affect (referred to as state-PA; e.g., see Diener & Emmons, 1984; Emmons, 1986; Meyer & Shack, 1989; Thayer, 1986; Watson, 1988b; Watson & Tellegen, 1985). In contrast to negative affect, positive affect reflects one's level of energy, enthusiasm, and excitement. Watson, Clark, and Tellegen (1988) indicated that both mood factors can be measured as a state (i.e., transient fluctuations in mood over a time frame such as the last few days) or as a trait (i.e., relatively stable individual differences in general affective level). Trait-NA and trait-PA (two of the Big Five dimensions noted above), following Tellegen (1982), have been referred to in the literature as negative affectivity and positive affectivity, respectively.

A key distinction in the measurement of state- or trait-NA or state- or trait-PA is that when longer term instructions are given (e.g., asking respondents how they have felt over the past few weeks, past few months, or past year), subjects' affective ratings exhibit traitlike stability. That is, the test-retest stability of subjects' affect ratings tends to increase as the rated time frame increases (cf. Diener & Larsen, 1984; Epstein, 1979; Watson et al., 1988). In fact, stability coefficients for general ratings of affect have been high enough to lead several researchers (e.g., Meyer & Shack, 1989; Watson et al., 1988) to suggest that they may be used as trait measures. Furthermore, there is a considerable body of literature demonstrating the existence of a strong dispositional component in state-rated affect (cf. Clark & Watson, 1991; Costa & McCrae, 1980; Meyer & Shack, 1989; Tellegen, 1985; Watson & Clark, 1984, in press; Watson & Pennebaker, 1989).

Watson and Clark (in press) have argued that these strong and systematic relations between affect and dispositions offer a valuable heuristic guide for future research in both areas. More specifically, they concluded that "because of the strong links between these domains, we can use personality research to enhance our understanding of affect, and use affect data to clarify the nature and structure of personality" (Watson & Clark, in press, p. 37). We concur with their conclusion.

Within the applied psychology literature, it appears that some researchers may have unknowingly measured trait-PA or trait-NA by using longer term time frames in their affect questionnaire instructions. For instance, George (1991) noted that Organ and Konovsky (1989) may have measured trait-PA rather than state-PA by asking respondents to describe their typical mood at work during the preceding 6 months. More germane to our present discussion of the role of NA in observed stress–strain relation is that Spector, Dwyer, and Jex (1988) altered the instructions of the state anxiety scale of Spielberger's (1979) State-Trait Personality Inventory (STPI). The altered instructions asked respondents how they generally felt at work for the past 30 days. By altering the instructions to reflect a longer time frame, Spector et al.'s (1988) measure of anxiety might be considered as an indicator of trait-NA (Clark & Watson, 1991; Watson & Pennebaker, 1989). Consistent with this possibility is
the finding that Spielberger’s state anxiety scale has been shown to correlate moderately strongly with negative affect measured over the “past few weeks” (Watson et al., 1988); as mentioned above, when respondents are instructed to rate their negative affect over the past few weeks, such ratings can possibly be used as a measure of negative affectivity. Hence, some of Spector et al.’s (1988) inferences and conclusions concerning the lack of a strong dispositional influence on their data may be more properly addressed if their anxiety measure is viewed as a possible indicator of trait-NA rather than state-NA. That is, although Spector et al. (1988) used a modified state scale of the STPI as an indicator of state anxiety construed of by them as a dependent variable, we believe it may be more appropriately considered as a measure of trait-NA and treated as a nuisance variable with respect to observed stress–strain relations.

Variability in Self-Report Measures of Stress and Strain Attributable to NA

In order to more appropriately address the possible nuisance properties of NA on observed correlations between self-reported stressors and strains in Spector et al. (1988), we reanalyzed their summary data for self-reported stressors, strains, and job satisfaction. Following the procedure discussed in Brief et al. (1988) for computing partial correlations, we examined the inflation in Spector et al.’s (1988) observed correlations involving self-reports of stress, strain, and job satisfaction due to the influence of NA operationalized as the modified state anxiety scale used in Spector et al. As discussed above, our use of the modified state anxiety scale as a possible indicator of trait-NA is consistent with the literature on the measurement of affective states and traits. With respect to one of Spector et al.’s (1988) strain measures, health complaints, we only reanalyzed data for the total number of health complaints (i.e., those complaints endorsed as “yes, I did but did not see a doctor” or “yes, I did and I saw a doctor”). Our interest in the total health complaint score is that theoretically it should capture most, if not all, of the variance due to subjective and psychological components and objective and more closely related health components (Watson & Pennebaker, 1989).

The reanalyses of the Spector et al. (1988) data are presented in Table 1. Table 1 shows the zero-order correlations presented in Spector et al. between self-reported stressors, strains, and job satisfaction; partial correlations disattenuated for the unreliability of the covariate NA (i.e., \(\alpha = .90\)); and the variance reduction rates for the respective correlations. The variance reduction rate was presented by Chen and Spector (1991) as an index of the proportion of shared variance between stressors and strains attributable to NA. Their variance reduction rate is computed by dividing the amount of variance shared by stressors and strains that is attributable to NA (i.e., the squared zero-order correlation minus the squared partial correlation) by the squared zero-order correlation. The resulting proportion represents the variance reduction rate caused by removing NA. Across stress measures in Table 1, the average variance reduction rates for the outcome variables frustration, overall job satisfaction, and total health complaints were 61%, 59%, and 97%, respectively.

The results presented in Table 1 (a) are highly consistent with the research literature on the nuisance properties of NA in studies involving relations between self-reports of stress and strain, (b) offer support for the influence of the mood-dispositional dimension NA in the Spector et al. (1988) data, and (c) are contrary to the conclusions of several researchers (Chen & Spector, 1991; Spector et al., 1988) concerning the purported lack of a strong dispositional influence on these data. These results are noteworthy considering a limitation of our reanalyses—the use of a modified state anxiety measure as a possible indicator of trait-NA. In fact, this measure is not necessarily a good indicator of trait-NA and also may be sensitive to objective work conditions.

The results in Table 1 also can be contrasted with a reanalysis of summary data from Chen and Spector (1991). Below, we only report contrasts for variance reduction rates because these provide a more parsimonious comparison across studies. This contrast is possible because the outcome measures (i.e., frustration, overall job satisfaction, and total health complaints) were the same in Spector et al. (1988) and in Chen and Spector (1991). Additionally, Chen and Spector measured NA in two ways, as the 50-item TMAS (Taylor, 1953) and as the 10-item Trait Anxiety Scale (TAS) of Spielberger’s (1979) STPI.

The computed (i.e., correcting NA, as measured by the TMAS, for unreliability when computing partial correlations) average variance reduction rates for the Chen and Spector (1991) data, across stressor variables (i.e., across the independent variables of role ambiguity, role conflict, interpersonal conflict, work load, and situational constraints) were 28%, 47%, and 89% for the outcome variables frustration, overall job satisfaction, and total health complaints, respectively. The magnitudes of the reductions in observed correlations coefficients ranged from .03 (corresponding to a variance reduction rate of 14% between work load and frustration) to .24 (corresponding to a variance reduction rate of 99% between conflict and total health complaints). Likewise, the computed (i.e., correcting NA, as measured by the TAS, for unreliability when computing partial correlations) average variance reduction rates across stress measures were 23%, 35%, and 63% for the outcome measures frustration, overall job satisfaction, and total health complaints, respectively. The magnitudes of these latter reductions in observed correlation coefficients ranged from .01 (corresponding to a variance reduction rate of 5% between work load and frustration) to .14 (corresponding to a variance reduction rate of 95% between role ambiguity and total health complaints). It should be noted that 25 of the 30 variance reduction rate values, which the above averages were based on, were greater than or equal to 20%. Although the average variance reduction rates are somewhat lower in Chen and Spector (1991) as compared to Spector et al. (1988), all average variance reduction rates across these two studies were moderate to substantial. Clearly, these latter reanalyzed data from Chen and Spector yield additional results consistent with extant theory and research on the nuisance properties of NA in research using self-reports of stressors and strains.

It should be noted that the magnitudes of most correlations in Spector et al. (1988) and Chen and Spector (1991) are very similar to analogous correlations presented in three other studies (Hall & Spector, 1991; Spector, 1987; Spector & Jex, 1989). Our reanalyses of the Chen and Spector (1991) and Spector et
al. (1988) data suggest the possible existence of a substantial NA influence in these latter three data sets. Our suggestion concerning the influence of NA in these other data is consistent with Hall and Spector's (1991) speculation that dispositional factors related to both perceived work environment and affect variables may be influencing the relations between all sets of study variables (i.e., Hall & Spector, 1991; Spector, 1987; Spector et al., 1988; Spector & Jex, 1989).

Furthermore, although Frese (1985) has been cited frequently for reporting a failure to detect personality- or response-style attributable invariance in stress-strain correlations involving self-reports, such an assertion is contradicted by a closer examination of his summary data. A reanalysis of the summary data in Frese's Table 3 (p. 321), using Chen and Spector's (1991) variance reduction rate procedure, is presented in Table 2. The independent variables in Table 2 from Frese are measures of psychological and physical stress, gauged as one's subjective responses (i.e., self-reports), median rating of people doing the same work (group estimate), and trained observers' ratings (observers' estimate). The health complaints scale was a modified version of the Fahrenberg (1975) scale that Frese indicated is similar to Caplan et al's (1975) scale. It is particularly noteworthy that the variance reduction rates shown in Table 2 are based on independent observations of stress and strain, yet, are highly consistent with the above variance reduction rates based on the partialing of NA from correlations between self-reported stress and health complaint measures. Unfortunately, Frese's (1985) study did not include a measure of NA and, therefore, one cannot definitively conclude that these latter stress-strain rela-

<table>
<thead>
<tr>
<th>Subordinate stressor</th>
<th>Frustration Variance reduction rate (%)</th>
<th>Overall job satisfaction Variance reduction rate (%)</th>
<th>Total health complaints Variance reduction rate (%)</th>
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<tbody>
<tr>
<td></td>
<td>r</td>
<td>r</td>
<td>r</td>
</tr>
<tr>
<td>Autonomy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zero-order r</td>
<td>.27</td>
<td>.51</td>
<td>-.13</td>
</tr>
<tr>
<td>Partial r</td>
<td>-.10</td>
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<td>.05</td>
</tr>
<tr>
<td>Uncorrected partial r</td>
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<td>.35</td>
<td>.03</td>
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<td>.24</td>
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<tr>
<td>Partial r</td>
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<td>.35</td>
<td>.07</td>
</tr>
<tr>
<td>Uncorrected partial r</td>
<td>.46</td>
<td>-.09</td>
<td>.09</td>
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<td>Constraints</td>
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<tr>
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<td>-.47</td>
<td>.21</td>
</tr>
<tr>
<td>Partial r</td>
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<td>-.29</td>
<td>.01</td>
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<td>Uncorrected partial r</td>
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<td>-.31</td>
<td>.01</td>
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<tr>
<td>Zero-order r</td>
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<td>-.51</td>
<td>.07</td>
</tr>
<tr>
<td>Partial r</td>
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<td>.08</td>
</tr>
<tr>
<td>Uncorrected partial r</td>
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<td>.06</td>
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<td>Zero-order r</td>
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<td>Partial r</td>
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<td>.05</td>
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<tr>
<td>Uncorrected partial r</td>
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<td>-.20</td>
<td>.07</td>
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<tr>
<td>Average variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction rate for partial rs</td>
<td>61</td>
<td>59</td>
<td>97</td>
</tr>
</tbody>
</table>

Note. Partial correlations are controlled for negative affectivity (disattenuated for unreliability) as computed from Spector, Dwyer, & Jex's (1988) data.

An uncorrected partial $r$ is a partial correlation not corrected for the unreliability of negative affectivity.

$^a$ Variance reduction values were computed for autonomy and ambiguity with partial $r$ values of zero because the signs of these estimated partial $r$ values changed from the signs of the respective zero-order $r$.
tions were inflated due to its influence. In fairness to Frese, the interest in NA in the applied psychology literature was subsequent to 1985.

We, however, can contrast, by further reanalysis of Spector et al.'s (1988) data, variance reduction rates based on a comparison of correlations entailing independent observations of stress and strain (i.e., based on self-reports and supervisory reports) with variance reduction rates in Table 1 (i.e., based on the partialing of NA from correlations computed with self-reports of stress and strain). More specifically, the former variance reduction rates are computed based on a comparison of correlations calculated with self-report (i.e., subordinate) measures of stress and strain and correlations calculated with supervisory reports of "subordinate" stress and subordinate reports of strain. Variance reduction rates based on independent (i.e., subordinate and supervisory) observations of stress and strain are reported in Table 3. The average variance reduction rates presented in the table for correlations of stress measures with the criteria frustration, job satisfaction, and total health complaints were 74%, 92%, and 73%, respectively. As shown in Table 3, these results are consistent with the results based on partialing NA from stress–strain correlations computed with self-reports. It should be stressed that the magnitudes of Spector et al.'s correlations between more objectively oriented measures of stress (i.e., measured as hours worked) and strain (i.e., measured as subordinates' reports of absenteeism because of sick leave) were approximately zero for both self- and supervisory source data.

Also, the magnitudes of their correlations between measures of hours worked and strain, measured as subordinates' reports of the number of doctor visits during the past 30 days, were very similar for both self- and supervisory reports. Again, these analyses and findings are consistent with extant theory and empirical research (including our reanalyses of Frese's data) concerning the nuisance properties of NA. Furthermore, the results of our reanalyses coupled with Spector et al.'s findings with more objectively oriented measures of stress and strain clearly point to the value of these more objective types of measures in the study of stress–strain relations.

The results discussed above also draw attention to an erroneous belief in the applied psychology literature (e.g., see Frese, 1985; Spector et al., 1988) that a test for (and failure to find) a method variance pattern in a multitrait-multimethod matrix is a sufficient test for (and basis for rejecting) the influence of dispositions on observed relations between measures such as self-reported stressors and strains. Such an assertion fails to take into account the theoretical proposition that the influence of a particular mood-dispositional dimension is not necessarily symmetrical across self-reported monomethod or even multimethod measures (e.g., self- and supervisory reports) of stressors and strains but is tied more specifically to the interaction between the general type (e.g., positive or negative) of affective content of each measure and individuals' positive and negative interpretive and perceptual orientations. Our position is that researchers cannot exclude the direct measurement of mood-

Table 3
Variance Reduction Rates for Spector, Dwyer, & Jex's (1988) Correlations Between Self-Reported Stress and Strain Measures Based on Relations Between Supervisory Reports of Stress and Subordinate Reports of Strain

<table>
<thead>
<tr>
<th>Stressed role and source</th>
<th>Frustration</th>
<th>Overall job satisfaction</th>
<th>Total health complaints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subordinate</td>
<td>.27</td>
<td>.51</td>
<td>.13</td>
</tr>
<tr>
<td>Supervisor</td>
<td>.08</td>
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<td>.01</td>
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<tr>
<td>Work load</td>
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<td>.26</td>
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<td>Supervisor</td>
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<td>.07</td>
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<tr>
<td>Constraints</td>
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<tr>
<td>Subordinate</td>
<td>.51</td>
<td>.47</td>
<td>.21</td>
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<tr>
<td>Supervisor</td>
<td>.22</td>
<td>.14</td>
<td>.13</td>
</tr>
<tr>
<td>Ambiguity</td>
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</tr>
<tr>
<td>Subordinate</td>
<td>.29</td>
<td>.51</td>
<td>.07</td>
</tr>
<tr>
<td>Supervisor</td>
<td>.23</td>
<td>.08</td>
<td>.04</td>
</tr>
<tr>
<td>Conflict</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subordinate</td>
<td>.39</td>
<td>.35</td>
<td>.22</td>
</tr>
<tr>
<td>Supervisor</td>
<td>.19</td>
<td>.07</td>
<td>.16</td>
</tr>
<tr>
<td>Average variance reduction rate</td>
<td>74 (61)</td>
<td>92 (59)</td>
<td>73 (97)</td>
</tr>
</tbody>
</table>

*a The numbers in parentheses are the variance reduction rates reported in Table 1 in which negative affectivity (disattenuated for unreliability) was partialled from the respective subordinate correlations. *b Variance reduction for work load was computed with a value of 0 for the supervisor correlation because the sign of this latter correlation changed from the subordinate correlations.
dispositional dimensions of theoretical import and justifiably make conclusions concerning their influence. For instance, it appears to have been premature for Spector et al. to conclude, based on a test for a method variance pattern in a multitrait-multimethod matrix in which dispositions were not hypothesized and studied, that a dispositional explanation could not account, in part, for intercorrelations among self-reported stressors and outcomes. Our position is probably disconcerting to many who maintain that mood-dispositional dimensions can be studied solely through common methods variance analyses. Consistent with the admonitions of Clark and Watson (1991), our position, therefore, frustrates simplistic efforts to study the relations among diverse constructs measured through self-reports in applied psychology.

**Issues Concerning Item Content Overlap in Measures of Stress, Strain, and NA**

Over the past 2 decades, researchers (e.g., B. S. Dohrenwend, Dohrenwend, Dodson, & Shroot, 1984; B. P. Dohrenwend & Shroot, 1985; Kasl, 1978; Lazarus, DeLongis, Folkman, & Gruen, 1985; Payne, 1988; Watson & Pennebaker, 1989) have commented on the potential confounding effects of item content overlap in measures of stress and strain. More recently, and from a strictly methodological perspective, Chen and Spector (1991) have asserted that Brief et al.'s (1988) results concerning the apparent nuisance properties of NA in the study of stress-strain relations could be attributed to item content overlap in Brief et al.'s measures of NA and strain. Although it is important to recognize potential methodological problems related to item content overlap in measures of stress, strain, and NA, it is equally, if not more, important to be cognizant of relevant theoretical and conceptual considerations.

Chen and Spector's (1991) methodological perspective, which attributed a purported failure to replicate Brief et al.'s (1988) findings to less item content overlap in their measures than those used by Brief et al., represents a position in which the face validity of a measure's content is considered more important than the theorized pervasiveness of mood-dispositional negative affectivity. This methodological perspective does not take into account other substantive considerations such as state-trait distinctions that, as discussed above, are embodied in the time frame of item stems. Furthermore, such a methodological perspective has at least two important implications, neither of which is presently supported by data (cf. Clark & Watson, 1991). First, if face item content overlap in measures of stress, strain, and NA is more important than the affective content of such self-report measures, then NA should not be approximately equally correlated with self-report measures of stress and somatic complaints when the face item content of these measures differs (i.e., when items do not appear to overlap). Nonsupport for this methodological implication was found in Watson and Pennebaker (1989). Watson and Pennebaker reported that the average intercorrelation between NA (operationalized by Tellegen, 1982, Negative Emotionality Scale) and three somatic complaint measures was .43. NA correlated .42 with their measure of stress, the Hassles Frequency Scale (Kanner, Coyne, Schaefer, & Lazarus, 1981). Watson and Pennebaker's results are particularly informative, in light of Chen and Spector's concerns about face item content overlap, when one considers diversity in item content between the three somatic complaints measures and their measure of stress.

Rowlinson and Felner (1988) provided additional counterevidence to Chen and Spector's (1991) methodological implication. For a sample of 682 adolescents, they reported intercorrelations among a composite measure of NA, a somatic complaint measure, and a hassles measure ranging from .50 to .56. Thus, both Watson and Pennebaker's (1989) results and Rowlinson and Felner's findings that three conceptually distinct measures are approximately equally correlated with each other suggests that these measures share an underlying dimension and that the dimension in question is not a methodological confound relating to face item content overlap among the respective measures.

Second, if the negative or positive affective content of self-report measures is secondary to the face item content, then one should not expect measures of other constructs to overlap in a similar way with NA, stress, and strain. The evidence clearly is not supportive of this second methodological implication of Chen and Spector's (1991) assertions (cf. Clark & Watson, 1991). For instance, several researchers have argued that measures of the construct "hardiness" (Kobasa, 1979) overlap with NA (Alfred & Smith, 1989; Funk & Houston, 1987; Rhodewalt & Zone, 1989; Schmied & Lawler, 1986). Furthermore, hardiness-health relations also have been found to be considerably inflated by NA (Funk & Houston, 1987; Rhodewalt & Zone, 1989).

Even given the possibility that face item content overlap may inflate intercorrelations between NA, stress, and strain measures, it is incumbent on researchers making such assertions, where feasible, to empirically examine the validity of such assertions. More specifically, Chen and Spector (1991) indicated that specific item content overlap existed between Brief et al.'s (1988) measure of NA (the TMAS) and eight items in their somatic complaints measure (see Table 2 of Chen and Spector, 1991), five items in their negative affect scale (see Table 3 of Chen and Spector, 1991), and four items in their symptoms of depression measure (see Table 4 of Chen and Spector, 1991). We do not necessarily agree that items seemingly sharing content overlap are conceptually and empirically the same. For example, Chen and Spector indicated that the following two items are similar: "I do not have as many fears as my friends" (Taylor, 1953) and "How much have you felt fearful at work during the past week?" (Brief et al., 1988). Although both items contain the term fear, they, however, do differ in meaningful ways. The former, for instance, evokes a social comparison ("my friends") and is bound in no way by a time frame or particular context, whereas the latter does not explicitly evoke any social comparison and is bound by the "past week" and the context of "work." Nevertheless, a useful set of follow-up analyses would remove the questionable items from the TMAS and recompute partial correlations for the relations in question. Although the internal consistency reliability of the TMAS likely will be slightly lowered by the removal of the items noted in Chen and Spector's Tables 2-4, holding such items should not adversely affect the factor structure of the TMAS. With these considerations in mind, we removed the items in question (i.e., those noted in
Chen and Spector’s (1991, Tables 2–4) from the TMAS and recomputed partial correlations for the results in question. From Chen and Spector’s alternative methodological perspective, one would expect the recomputed partial correlations to be considerably greater than those originally reported in Brief et al. (1988).

Brief et al.’s (1988) original results for zero-order correlations between stress and strain measures and partial correlations controlling for NA as well as reanalyzed partial relations with items reflecting purported item content overlap omitted are presented in Table 4. The similarity in results between respective partial correlations with and without questionable items in the TMAS is noteworthy. These results provide additional evidence that the hypothesized NA component of self-report measures is sufficiently strong in that it emerges regardless of the substantive job strain domain. Moreover, these results lend further support to the substantive proposition that the general type of affective content of a self-report measure is more important than the face item content. A consonant finding is that when the negative affective content of a dependent measure is reduced relative to the total content of the measure (e.g., Ganster et al.’s [1989] dependent measure of physiological responses), one would not necessarily expect NA to considerably inflate relations between stressors and such outcome measures.

Summary and Conclusions

Our brief review of the conceptual and empirical literature relevant to the NA construct suggests that there are compelling reasons for expecting NA to be associated with self-reports of stressors and strains and, importantly, for NA to influence the magnitude of observed correlations between self-reports of stressors and strains. Recent assertions in the applied psychology literature to the contrary do not appear to stand up under closer scrutiny. We suspect that some of these assertions (and the empirical work that has driven them) may be the result of an inadequate appreciation of the nature of the NA construct and its conceptual linkages to individually perceived stressors and strains and may be due to attempting to divorce methodological issues from theoretical considerations. In any case, our reanalyses of several data sets (including our own) are highly consistent with conclusions drawn in diverse areas of psychology regarding the effects of NA in stress research. Consistent with the conceptualization of NA, it does appear to be associated in theorized ways with self-reports of stressors and strains and does appear to influence the magnitude of observed correlations between self-reported stressors and strains in expected directions.

We do not mean this to be a general indictment against the use of self-reports in stress research, nor do we mean to imply that self-reports are necessarily uninformative. Indeed, it may be desirable to use self-reports under a number of circumstances. For example, explorations of changes in intravariability experience over time, studies of individuals’ phenomenological experience of stressors and strains, and the lack of alternative sources of data may all dictate the use of self-reports. Additionally, researchers may be substantively interested in perceptions of stressors, experienced psychological strain, and relations between the two. Under these and other circumstances, the use of self-reports may be desirable. However, when self-reports are used (for whatever reason), we do think it is crucial that researchers also include a measure of NA in their study so they can explore the effects of this individual difference on the self-reports and relations among them.

Our present analyses concerning the role of NA in associa-

<table>
<thead>
<tr>
<th>Stress measure</th>
<th>Somatic complaints at work</th>
<th>Negative affect at work</th>
<th>Symptoms of depression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Brief et al. (1988) result</td>
<td>Face content overlap items removed</td>
<td>Brief et al. (1988) result</td>
</tr>
<tr>
<td>Total negative stress Zero-order r</td>
<td>0.15</td>
<td>0.15</td>
<td>0.06</td>
</tr>
<tr>
<td>Partial r</td>
<td>(.18)</td>
<td>(.22)</td>
<td>(.11)</td>
</tr>
<tr>
<td>Negative job stress Zero-order r</td>
<td>0.03</td>
<td>0.09</td>
<td>0.22</td>
</tr>
<tr>
<td>Partial r</td>
<td>(.06)</td>
<td>(.07)</td>
<td>(.24)</td>
</tr>
<tr>
<td>Negative personal stress Zero-order r</td>
<td>0.15</td>
<td>0.19</td>
<td>0.06</td>
</tr>
<tr>
<td>Partial r</td>
<td>(.11)</td>
<td>(.19)</td>
<td>(.02)</td>
</tr>
</tbody>
</table>

Note: Partial correlations are based on N = 279. See Brief, Burke, George, Robinson, & Webster (1988) for sample sizes for respective zero-order rs. Correlation coefficients in parentheses are first-order partial correlations not corrected for the unreliability of the Taylor Manifest Anxiety Scale (TMAS). a Reliability of the TMAS was .88. b Reliability of the revised TMAS was .73. c Reliability of the revised TMAS was .81. d Reliability of the revised TMAS was .73.
tions between self-reports of stress and strain are based on the assumption of a certain causal model. That is, we rely on a model in which substantial portions of the observed correlations between such measures are hypothesized to be spurious (Simon, 1954). Even though a considerable body of knowledge pertaining to the spurious effects or nuisance properties of NA exists, there is still an array of unanswered questions awaiting future theorizing and research. For example, it is not clear to what extent high-NA individuals are instrumental in creating potentially stressful situations for themselves (McCrae & Costa, 1991). As another example, although Clark and Watson (1991) suggested that high-NA individuals are not necessarily more reactive to stressors given their tendency to report higher levels of state negative affect over time and across situations, others have suggested that high-NA individuals may indeed be more reactive to stressors (e.g., Larsen & Katarla, 1991; Parkes, 1990). Clearly, the specification and test of broader causal systems (cf. Tellegen, 1985) that include more dynamic conceptions of how NA operates will assist in addressing these latter issues. To this end, Baron and Kenny (1986) have offered useful insights and possible causal models for examining the influence of dispositional variables in broader causal systems involving moderator and mediator variables.

It is hoped that future investigations of the role of NA in moderator or mediator frameworks will use not only self-report measures of stress, strain, and NA but also more objectively oriented measures of these constructs. Because many of the interpretive issues and disputes that we have raised or have attempted to shed light on in this article involve construct validity issues, a multimethod approach is ultimately necessary for resolving some of these issues. A call for a multimethod approach is a call for increasing not only the quantity but the quality of the data in stress-strain research, both across-sectionally and longitudinally. Certainly, this is an ambitious research agenda.

Although NA influences self-reports of stressors and strains, one would not expect NA to necessarily influence self-reports of positive work features and positive affective states or reactions. That is, recall that affective experience is characterized by two dominant and relatively independent dimensions—positive affect and negative affect—rather than a single dimension (e.g., Watson & Tellegen, 1985). Although individuals high on NA are more prone to experiencing negative affective states, their standing with respect to NA tells us little about the extent to which they experience positive emotions (Watson & Clark, 1984). Rather, the personality trait PA reflects the predisposition to experience positive emotional states. Individuals high on PA have a generalized sense of well-being, consider themselves to be pleasurably and effectively engaged in both interpersonal and achievement contexts, feel self-efficacious, and are more likely to experience positive emotions and moods than individuals low on PA (e.g., George & Brief, 1992; Tellegen, 1982, 1985). More important, NA and PA are independent personality dimensions that drive negative affective states and positive affective states, respectively (Meyer & Shack, 1989; Tellegen, 1985). Thus, although we would not expect NA to exert a strong influence on, for example, self-reports of positive affective experiences at work (e.g., positive mood states at work), we would expect PA to be influential in this regard (e.g., George, 1989; George & Brief, 1992). Hence, we stated earlier that mood-dispositional dimensions (i.e., NA and PA) may be of interest to researchers concerned with relations between self-reports of any condition of employment and any affective state of workers. Put simply, self-reports of negative features of the work situation and negative affective reactions may both be influenced by NA, whereas self-reports of positive aspects of the work situation (e.g., social interaction on the job) and positive affective reactions may both be influenced by PA.

In this regard, it should be noted that certain popular indexes of affective reactions at work, such as measures of job satisfaction (e.g., the Minnesota Satisfaction Questionnaire [Weiss et al., 1967], the Job Descriptive Index [Smith, Kendall, & Hulin, 1969], and the Faces Scale [Dunham & Herman, 1975; Kunin, 1955]), confound positive and negative affects as well as cognitions (Brief & Roberson, 1989). Hence, responses on scales such as these may be influenced by some combination of NA and PA depending on the negative and positive affective content of the scale. One viable alternative in these circumstances would be to measure both PA and NA and to control for their effects; however, if positive and negative affective states are of substantive concern, we would advocate the use of purer measures of these states that do not confound them (e.g., measures of positive mood and negative mood). More generally, because positive affective states and negative affective states are relatively independent of one another and have different antecedents and consequences (George & Brief, 1992), the study of affect in work contexts should no longer ignore the bidimensional structure of affective experience. Gender also may represent a concern for future consideration. That is, evidence indicates that women may score higher than men on some measures of NA (e.g., Eysenck & Eysenck, 1968; Parkes, 1990). Our failure to consider gender empirically, therefore, may be construed as a limitation of the various analyses we conducted. Alternatively, however, other evidence indicates no gender differences in NA scores (Tellegen, 1982; Watson, et al., 1988).

Getting back to our original focus on the role of NA in understanding relations between self-reports of stressors and strains, our analysis brings to mind two very simple (but we think important) points relevant to any applied discipline. First, given that applied theorists and researchers often import concepts and theories from basic disciplines, prior to the application of these concepts and theories, it is imperative that the investigator be grounded fully in the relevant conceptual and empirical work in the base discipline. Second, methodological issues usually are not explored productively when they are divorced from their theoretical and conceptual underpinnings. With regard to the role of NA in job stress research, we think that the conceptual and empirical evidence suggests that NA does indeed influence the magnitude of observed correlations between self-reports of stressors and strains.

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