

Relation of Job Stressors to Affective, Health, and Performance Outcomes: A Comparison of Multiple Data Sources

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It is widely accepted that job conditions are a causal factor in stress outcomes for employees. This conclusion, however, is based almost entirely on single data source, self-report studies, which demonstrate correlations between environmental perceptions and stress outcomes. This study collected stressor data from two sources, the job incumbent and her supervisor. Convergent and discriminant validities were found for four stressors (autonomy, workload, number of hours worked, and number of people worked for) but not for three others (role ambiguity, constraints, and interpersonal conflict). Correlations were found between perceptions of stressors and outcomes, the latter including both affective and symptoms. Smaller correlations were found between supervisor reports of stressors and outcomes. Alternative causal models relevant to these results are discussed. The need for causal research including experimental designs, longitudinal designs, and multiple data sources are also discussed.

Work stress has become a popular topic of both discussion and research over the past few years. On the basis of the general stress literature, organizational researchers have conducted studies designed to demonstrate relations between the work environment and health outcomes. These outcomes have been broadly defined and have included affective reactions (e.g., job satisfaction), somatic symptoms (e.g., headache), and disease (e.g., heart attack). This research has been quite successful in establishing correlations between job conditions that are considered stressors and a number of outcomes. It has had less success at demonstrating causal relations among stressors and outcomes, or in showing that manipulations of the work environment can successfully reduce stress outcomes. One of the major problems with this research is its almost exclusive reliance on subject self-report measures of environmental conditions. The current study was designed to address this problem by collecting data on job stressors from two sources—the job incumbent and her supervisor. Convergent and discriminant validity of self-report measures were investigated as well as the convergence in relations of both sources with stress outcomes.

Relation of Stressors and Outcomes

Correlations between stressors and outcomes have been well established for at least some stressors and some outcomes. As might be expected, strongest correlations occur among affective variables and perceptions of job characteristics, such as autonomy and job satisfaction or frustration.

Reasonably consistent correlations of stressors with out-

comes have been found in meta analyses for role conflict and ambiguity (Jackson & Schuler, 1985), and for control and autonomy (Spector, 1986a). Evidence of the stressful effects of workload can also be found. For example, Spector (1987a) found significant positive correlations between workload and anxiety, frustration, reported symptoms, and job dissatisfaction. Ganster, Fusilier, and Mayes (1986) found positive relations between work underload and dissatisfaction, symptoms, and depression. In a nonquestionnaire study, Frankenhaueser (1979) reported relations between number of hours worked per week and catecholamine content in urine samples.

Interpersonal conflict has received little attention in the literature, despite its apparent importance (Keenan & Newton, 1985). Recently, Spector (1987a) found significant positive correlations of interpersonal conflict at work with anxiety, frustration, symptoms, and dissatisfaction. Finally, research has shown that organizational constraints—conditions of work that prevent employees from performing their jobs or achieving their goals—can lead to adverse affective reactions (O'Connor, Peters, Rudolf, & Pooyan, 1982).

Although the stress research is provocative, the almost total reliance on subject self-report data on both stressors and outcomes makes definitive conclusions difficult. What is certainly well established is that perceptions of the work environment are correlated with self-reported outcomes. The causal nature of these relations is open to question.

The major concern is the issue of what the job incumbent's perceptions of job conditions actually represent and what other variables cause them. Most stress research using subject self-reports is based on an implicit assumption that the self-reports are valid indicators of environmental conditions. Some authors have included personality or other variables as possible influences on perceptions (e.g., Ivancevich & Matteson, 1980). These variables complicate, but do not change, the basic assumption that self-reports reflect the environment.

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Models of Job Stress

Most of the job-stress research is guided, either implicitly or explicitly, by a general framework or model. This framework assumes that the work environment causes a number of cognitive, emotional, and behavioral reactions, which result in health symptoms and disease (Cox, 1978). Self-reports of the work environment are assumed to represent perceptions of that environment, which mediate the relation between environment and health outcomes. Particular theorists have differentiated stressors, strains, and various level outcomes (e.g., Ivancevich & Matteson, 1980, p. 44; Mayes, Ganster, Sime, & Tharp, 1984) as well as added moderators, such as personality (Ivancevich & Matteson, 1980) and social support (Ganster et al., 1986). The causal flow through all these models is from environment to perceptions to outcomes.

The observed relations among perceptions of job stressors and various outcomes have been interpreted, albeit cautiously, as supporting the general stress framework. The relations between the self-reports of job conditions and outcomes are interpreted as if those self-reports are caused by the work environment. Thus, it is assumed that the work environment affects health outcomes.

There is certainly evidence for the validity of job environment self-reports. Self-reports of job conditions have been shown to significantly relate to objective or at least other source measures of those conditions (e.g., Algera, 1983; Gerhart, 1986). Furthermore, laboratory (Farh & Scott, 1983) and field (Griffeth, 1985; Hackman, Pearce, & Wolfe, 1978; Lawler, Hackman, & Kaufman, 1973) manipulations of job conditions cause measurable changes in self-reports of those conditions. Finally, Parkes (1982) has shown how affective reactions can vary as a function of job change.

There are, however, alternative explanations of the correlations among self-reports of stressors and outcomes. The first is that affective and attitudinal reactions to the job cause the perceptions rather than the reverse. In other words, it is not the stressors in the job environment that cause perceptions and, ultimately, job dissatisfaction and other outcomes. Rather the existence of poor outcomes causes an individual to perceive the job as stressful. A second possibility is a reciprocal model in which outcomes are both the cause and the effect of perceived characteristics of jobs. Finally, it is possible that both outcomes and perceptions are caused by a third variable or set of variables. Individuals may have general dispositional tendencies that lead to perceptions of stressful conditions, poor attitudes, negative affect, and perhaps even health symptoms.

The idea for reverse causality comes from the work of Staw (1975), who was concerned with perceptions of groups and group performance. Staw (1975) found that reports of group characteristics were strongly affected by the subject's belief that the work group was performing either well or poorly. This effect has been successfully extended to leader behaviors (Downey, Chacko, & McElroy, 1979; Lord, Binning, Rush, & Thomas, 1978; and Rush, Thomas, & Lord, 1977).

According to the attitudes-cause-perceptions view, an individual who is satisfied and feels good at work will see the characteristics of a job in favorable terms. Thus, in describing job

stressors, the individual will tend to respond in a favorable or low-stress direction. The job will be described as being favorable (high) in control and autonomy, and favorable (low) in workload and ambiguity. These descriptions would not reflect accurately the objective characteristics of jobs.

James and Tetrick (1986) used complex causal modeling to test theoretical models relating perceptions of job conditions (not necessarily stressors) and job satisfaction. The model for which they found most support was one in which perceptions and satisfaction were related reciprocally. That is, perceptions caused satisfaction, which in turn affected perceptions. In this view, job conditions would partially determine self-reports of those conditions, but they would also be affected by the individual's satisfaction with the job. Satisfaction would also be affected by job conditions, mediated by perceptions. Within this framework, mere correlations between job stressors and outcomes would be difficult to interpret. It could not be determined, without additional data, if an observed correlation between a perceived job stressor and outcome variable were subject to an environmental cause.

A longitudinal, causal modeling study by Kohn and Schooler (1982) is relevant to the reciprocal model. Although based entirely on self-report, this study found support for a model in which perceived job conditions were both a cause and effect of distress.

The final possibility, that a third variable or set of variables is causal can arise in two ways. Method variance has been suggested as a possible explanation of relations among self-report variables of perceived job conditions and affective reactions (e.g., Jackson & Schuler, 1985; Roberts & Glick, 1981). Spector (1987b), however, investigated the degree to which these sorts of measures are contaminated with method variance and has found little support for this explanation.

Another explanation is that general dispositions cause self-report scales to be correlated. In other words, individuals may differ in their tendency to respond favorably or unfavorably toward the world. The unfavorable individual sees everything in a negative light, is highly anxious, frustrated, dissatisfied, and perceives the world as stressful. The favorable individual is just the opposite. These dispositions, therefore, produce the correlations observed in studies relating job stressors, or other characteristics to outcomes as measured through self-report.

Limited evidence exists in support of dispositions. Staw and Ross (1985) and Gerhart (1987) have found significant correlations between individuals' reports of job satisfaction across jobs and employers. Staw, Bell, and Clausen (1985) reported correlations between general dispositions during adolescence and job satisfaction measured several decades later. Finally, Spector (1986b) reported on the development of a scale to measure a general tendency to be satisfied, which correlated significantly with job satisfaction.

The Current Study

The current study investigated the relation among several job stressors and several stress outcomes. Although self-reports were used, data on stressors were collected from two sources: the job incumbent and the incumbent's supervisor. Convergent

and discriminant validities of the self-reports of stressors were investigated. Furthermore, the relations between stressors and outcomes were compared across the two sources. Finally, hypotheses were generated from four job-stress models. Although the models themselves were not actually tested, the data did provide tests of hypotheses generated from them.

The stress literature suggests that stressors, as reported by subjects, will correlate with their outcomes. Such correlations have been demonstrated many times and were expected in the current study. This basic stress framework assumes validity for self-reports of stressors. Therefore, supervisor reports should correlate with corresponding subordinate reports as well as with outcomes. Because some forms of this model recognize individual differences in perceptions, one would predict moderate convergence in self-reports and somewhat smaller correlations of outcomes with supervisor reports of stressors than with subordinate reports.

Somewhat different hypotheses are suggested by the alternative models. Both the reverse-causation and disposition models assume no validity for the stressor self-reports. Rather, stressor self-reports are caused by factors that should be uncorrelated between supervisor and subordinate. There would be, therefore, no convergence in reports of stressors. Likewise, there would be no significant correlations between supervisor reports and outcomes. The reciprocal model posits partial causation of self-reports by the environment. Convergence would be observed, although the influence of outcomes on perceptions would make convergence modest. Corresponding stressors across sources would intercorrelate to the extent that they are partially dependent on the common cause of the work environment. Finally, there would be significant correlations between environmental conditions (as reflected in supervisor self-reports) and outcomes. These would be considerably smaller than corresponding subordinate self-reports because the impact of the environment on outcomes is through perceptions, but those perceptions are also caused by the outcomes.

Method

Subjects

A total of 191 female secretaries from the University of South Florida were asked to complete a 95-item survey pertaining to their jobs. Of this candidate pool, 181 (94.8%) chose to respond. The secretaries ranged in age from 23 to 70 years with a mean age of 40.6 years. Tenure ranged from 3 to 252 months with a mean of 71.3 months.

Supervisors of the 181 respondents were also contacted and asked to complete a 57-item parallel form of the survey. One hundred fifty-six (86.2%) of the supervisor surveys were returned. As a result, there were 156 usable secretary-supervisor survey pairs. It should be noted that 21 of the supervisors provided multiple surveys, because they supervised more than 1 secretary. Of these 21 supervisors, 19 supervised 2 secretaries, 1 supervised 3 secretaries, and 1 supervised 5 secretaries.

All of the secretaries were from one of three job classification categories—secretary, secretary specialist, or administrative secretary—and they represented all major colleges at the University (i.e., Arts and Letters, Business Administration, Education, Engineering, Fine Arts, Medicine, Natural Sciences, Nursing, Social and Behavioral Sciences, and Continuing Education). The University has approximately 25,000 students and over 4,000 employees.

Measures

Stressors. Measures of work-related stressors included subscales that tapped role ambiguity, autonomy, constraints, interpersonal conflict, and workload. Ambiguity was measured with four items taken from Beehr, Walsh, and Taber (1976). These items intended to assess the extent to which employees' goals, performance standards, and expectations were clearly delineated by the supervisor. Response choices for each item ranged from *strongly disagree* to *strongly agree* on a 7-point scale. The items were included on both the secretary and the supervisor surveys.

Autonomy was assessed with three items from the Job Diagnostic Survey (Hackman & Oldham, 1975). One item focused on the extent to which the respondent could decide (on her own) how the work would be done. The response choices for this item ranged from *very little* to *very much* on a 7-point scale. The remaining two items examined the opportunity for using personal initiative/judgment in performing the work, and the opportunity for independence/freedom in determining how to do the work. Response choices for these two items ranged from *very inaccurate* to *very accurate* on a 7-point scale. This subscale was included in both secretary and supervisor surveys.

Eleven items were used to assess the frequency of constraints that hindered job performance. These items were modified from Eulberg's (1984) Job Effectiveness Survey, which was originally based on the O'Connor et al. (1982) situational-constraints scale. The items were rated on a 5-point scale ranging from *less than once per month* to *several times per day*, and focused on rules/procedures, availability of supplies, other employees, equipment, interruptions, and training. Both the secretary and the supervisor surveys contained these items.

Interpersonal conflict, which was measured with four items from Spector (1987a), appeared on both surveys. Participants were asked to respond on a 5-point scale, which ranged from *less than once per month* to *several times per day*. Questions were related to the frequency of arguments with others and how often others were rude to or yelled at the person.

Several items were created to assess workload. These items were generated from scales developed by Arsenaault and Dolan (1983), Caplan (1971), Mayes et al. (1984), and Payne and Fletcher (1983) and were incorporated into both surveys. The measures focused on the requirement to work hard and fast, quantity of work, and amount of free time. Response choices ranged from *less than once per month* to *several times per day* on a 5-point scale. In addition, three objective indicators of workload were also included (i.e., number of hours worked at the university, number of hours worked outside the university, and number of people for whom the secretary regularly did work). The first and last of these questions were included on both supervisor and secretary form. The second was completed only by the secretary.

In all cases the supervisor and secretary responded to the same items with the same response choices. Supervisors were asked to respond to the particular secretary's job, not secretaries in general.

Outcomes. Outcomes included measures of absenteeism, anxiety, frustration, health symptoms, doctor visits, intent to quit, performance, and satisfaction. *Absenteeism* was measured with a single item in which respondents were asked to indicate the number of sick days taken in the past 3 months. Only the secretary survey contained this item.

Anxiety was assessed with the 10-item state scale of Spielberger's (1979) State Trait Personality Inventory. The instructions to the participants were altered somewhat, asking respondents how they generally felt at work for the past 30 days. The items included feeling calm, tense, nervous, relaxed, worried, and frightened. The measures used a 4-point scale, ranging from *not at all* to *very much so*. Only the secretaries responded to these items.

The 3-item Peters and O'Connor (1980) frustration scale was used to measure secretarial *frustration* on the job. Statements relating to frus-

Table 1
Means, Standard Deviations, Ranges, and Reliabilities for Subordinate Variables

Variable	N	M	SD	Range	Possible range	Coefficient alpha
Autonomy	156	16.0	3.7	5-21	3-21	.70
Workload	150	20.7	6.0	8-33	7-35	.85
Constraints	156	21.3	7.8	11-53	11-55	.84
Ambiguity	156	10.7	5.0	4-26	4-28	.71
Conflict	154	5.3	2.4	4-17	4-20	.81
USF hours worked	156	38.4	6.0	20-50	n.a.	—
Total hours worked	153	40.7	8.2	20-64	n.a.	—
People worked for	153	9.7	11.2	0-92	0-—	—
Anxiety	152	18.8	6.3	10-38	10-40	.90
Frustration	155	10.4	4.2	3-18	3-18	.83
Satisfaction	155	14.7	3.2	3-18	3-18	.90
Symptoms (doctor)	156	0.4	0.9	0-6	0-21	—
Symptoms (no doctor)	156	5.0	3.6	0-17	0-21	—
Symptoms (total)	156	5.4	3.6	0-17	0-21	—
Doctor visits	152	0.9	1.9	0-12	0-—	—
Absenteeism	155	2.2	2.3	0-12	0-—	—
Intent to quit	155	2.9	1.3	1-6	1-6	—

Note. USF = University of South Florida. n.a. = not applicable.

tration were rated on a 6-point scale, which ranged from *strongly disagree* to *strongly agree*. The items were presented only in the secretary survey.

Health symptoms were assessed by presenting the respondents with a list of 21 specific health symptoms (e.g., nausea, backache, headache, eye strain, and fatigue) preceded by the question: "During the past 30 days, did you have . . . ?". Participants were to respond with either "No, I didn't," "Yes, I did but did not see doctor," or "Yes, I did and I saw doctor." These responses allowed an assessment of the symptoms experienced by the respondents and of whether the respondent saw a doctor for the symptom(s). Only the secretaries completed these items.

Intent to quit was measured with a single item in which the secretary was asked how often she had seriously considered quitting her job. The response choices ranged from *never* to *extremely often* on a 6-point scale.

Secretarial performance was measured in terms of five major work-related components: typing speed, typing accuracy, receptionist duties, administrative business, and maintaining workload. Supervisors were asked to indicate their secretary's level of performance, relative to other secretaries, on each of the five components. The supervisor was presented with the question: "She does her job better than [what percentage] of other secretaries?," which was followed by the five components. Response choices ranged from 0% to 90% on a 10-point scale. Only the supervisors completed this measure.

General level of *satisfaction* was measured with the overall job-satisfaction scale from the Michigan Organizational Assessment Questionnaire (Cammann, Fichman, Jenkins, & Klesh, 1979). Response choices for the three satisfaction items ranged on a 6-point scale from *strongly disagree* to *strongly agree*. Both survey forms contained these items. Supervisors were asked to estimate how their secretary would respond to each question.

Procedure

Most of the 191 secretaries in the original pool were contacted in person and asked to participate in the study. About 5% of the potential respondents were contacted through organizational mail because of locating difficulties. Those who agreed to participate were given a survey

form to complete. For about half of the secretaries, the completed surveys were picked up by one of the authors; for the other half, envelopes were provided and the completed surveys were returned by interoffice mail. Each participant was paid \$2.50 for returning a completed survey. The surveys were distributed during May and June 1986.

As each completed secretarial survey was returned, the supervisor of that secretary was contacted and asked to complete a parallel questionnaire. Because of supervisor availability problems, only about half of the supervisors were contacted in person. The remaining half were contacted through organizational mail or through a survey that was left with the departmental secretary to forward to the supervisor. About 80% of the completed surveys were returned through interoffice mail; the remainder were picked up in person. One hundred thirty-eight supervisor surveys were initially returned. A follow-up letter delivered a few weeks after the initial distribution resulted in 18 more returned surveys. Supervisors who chose to participate were paid \$2.50 for each completed survey. Distribution of the supervisor surveys occurred in June and July 1986.

Results

Results of this study are presented in four parts. First are descriptive statistics for the study variables. Second is an analysis of relations among the outcome variables. Third is the multi-trait-multimethod analysis used to assess convergent and discriminant validities. Fourth is a comparison of relations between stressors and outcomes across the two sources of stressor data.

Descriptive Statistics

Descriptive statistics on all study variables are presented in Table 1 for subordinate measures, and Table 2 for supervisor measures. Included are sample sizes, means, standard deviations, observed ranges, possible ranges, and reliabilities (coefficient alpha). As can be seen, sample sizes varied slightly due

Table 2
Means, Standard Deviations, Ranges, and Reliabilities for Supervisor Variables

Variable	N	M	SD	Range	Possible range	Coefficient alpha
Autonomy	156	16.4	3.2	4-21	3-21	.75
Workload	152	19.8	6.1	8-34	7-35	.85
Constraints	156	22.1	7.5	11-43	11-55	.88
Ambiguity	155	9.8	4.4	4-28	4-28	.79
Conflict	152	5.3	1.8	4-16	4-20	.71
Satisfaction	156	14.0	3.2	4-18	3-18	.88
Hours worked	155	38.3	6.5	20-60	n.a.	—
People worked for	155	7.7	8.0	1-40	0-—	—
Performance	155	35.8	9.1	1-45	0-45	.91

Note. n.a. = not applicable.

to missing data. The observed range for most variables covered almost the entire possible range; thus, restriction of range was not a problem. Even supervisor ratings of job performance, typically troubled by leniency error, covered almost the entire range. An exception was the number of symptoms for which subjects saw a doctor, which ranged from 0 to 6 out of a possible 0 to 21. Coefficient alphas were calculated where appropriate from the current data set and all were reasonably high. The lowest were .70 for subordinate autonomy and .71 for subordinate role ambiguity and supervisor interpersonal conflict.

Relations Among Outcome Variables

Table 3 contains correlations among the outcome variables. As can be seen, many were intercorrelated. For example, the intercorrelations for the affective variables, anxiety, frustration, and job satisfaction (subordinate and supervisor) ranged from .33 to .58 in absolute value. Doctor visits was correlated with absenteeism (.45), which is as expected, because absenteeism is officially associated with being sick or going to the doctor. Performance was correlated with job satisfaction (.34) and with

intention of quitting (-.20). Intention of quitting was correlated with job satisfaction (-.69).

Multitrait-Multimethod Analysis

Convergent and discriminant validity of the variables measured by both sources was tested using multitrait-multimethod analysis. Table 4 contains the matrix of eight traits by two methods. The traits include the seven job stressors and job satisfaction. Subordinate measures are at the top of the table (Variables 1-8); supervisor measures are at the bottom (Variables 9-16).

As can be seen in the validity diagonal (boldface italicized values), five of the measures showed reasonable convergent validity, with correlations equal to or greater than .45 between both sources measuring the same construct. Three measures—constraints, ambiguity, and conflict—had validity coefficients too low to conclude that there was convergent validity. In fact, the value for ambiguity was not statistically significant. For the measures indicating convergent validity, for the most part, the validity coefficients were higher than correlations with other variables, thus suggesting discriminant validity. For example,

Table 3
Correlations Among Outcome Variables

Outcome variable	1	2	3	4	5	6	7	8	9	10	11
1. Anxiety	—										
2. Frustration	.51*	—									
Satisfaction											
3. Subordinate	-.41*	-.52*	—								
4. Supervisor	-.33*	-.37*	.58*	—							
Symptoms											
5. Doctor	.22*	.08	-.13	-.08	—						
6. No doctor	.45*	.21*	-.16*	-.10	-.09	—					
7. Total	.51*	.23*	-.20*	-.12	.18*	.97*	—				
8. Doctor visits	.16	.05	-.08	-.03	.44*	.03	.14	—			
9. Absenteeism	.15	.04	-.09	-.04	.20*	.07	.12	.45*	—		
10. Intent to quit	.41*	.57*	-.69*	-.50*	.07	.19*	.20*	.16	.14	—	
11. Performance	-.16*	-.13	.34*	.42*	-.10	.02	-.01	.02	-.06	-.20*	—

Note. N = 148-156. * $p < .05$.

Table 4
Multitrait–Multimethod Analysis of Supervisor and Subordinate Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Subordinate																
1. Autonomy	—															
2. Workload	-.04	—														
3. Constraints	-.21	.55	—													
4. Ambiguity	-.30	.14	.44	—												
5. Conflict	-.16	.38	.57	.21	—											
6. Satisfaction	.50	-.28	-.45	-.47	-.30	—										
7. Hours worked	.18	.13	.09	.05	.03	.07	—									
8. People worked for	-.10	.08	.23	.14	.24	-.26	-.15	—								
Supervisor																
9. Autonomy	.45	-.01	-.11	-.13	-.06	.27	.22	-.06	—							
10. Workload	-.04	.49	.20	.02	.14	.02	.11	-.06	-.06	—						
11. Constraints	-.16	.39	.31	.04	.21	-.16	.02	-.02	-.24	.55	—					
12. Ambiguity	-.12	.18	.18	.08	.00	-.10	.07	-.08	.03	.32	.35	—				
13. Conflict	-.08	.19	.22	-.07	.30	-.06	.16	-.02	-.05	.32	.55	.31	—			
14. Satisfaction	.36	-.16	-.30	-.39	-.26	.55	.03	-.07	.26	-.05	-.22	-.26	-.22	—		
15. Hours worked	.25	.13	.00	.05	-.01	.13	.83	-.20	.28	.08	-.05	.09	.17	.07	—	
16. People worked for	-.18	-.05	.07	.02	.17	-.22	-.24	.65	-.20	-.12	-.06	-.16	-.01	-.13	-.31	—

Note. $N = 135$. Correlations greater than .17 are significant at the .05 level, two-tailed. Correlations in boldface form the validity diagonal.

the two number-of-people-worked-for measures correlated more highly with each other than they did with other measures. Although there were some exceptions—for example, subordinate autonomy correlated higher with subordinate satisfaction (.50) than with supervisor autonomy (.45)—the general pattern suggested reasonable discrimination. This was not true for the three measures that had low-validity coefficients.

For those measures demonstrating convergent validity, it is possible to test for the possibility of method variance. Method variance would produce results in which correlations among different traits measured with the same method would be higher than corresponding correlations across methods. In this case there are two sets of within-source correlations, supervisor and subordinate. There is one set of relations among traits across methods, such as supervisor autonomy with subordinate satisfaction. For the five measures demonstrating convergent validity, there were 20 within-source and 20 across-source correlations. For each possible pair of variables (e.g., autonomy and workload), there were two within-source and two across-source coefficients. The 2 corresponding correlations within source and the 2 across source were averaged, yielding 10 within-source and 10 across-source average coefficients. Each corresponding average correlation had the same sign. The differences between corresponding absolute values were computed, and a mean of the differences was calculated. Although the within-source correlations were on the average .02 greater in absolute value than the across-source correlations, these differences were not statistically significant, $t(9) = 1.68$, $p > .05$. A comparison of the two within sources, to see if supervisors or subordinates were more subject to method variance, yielded a nonsignificant mean difference of .02, with subordinates having slightly higher correlations, $t(9) = .53$, $p > .05$.

Relation Between Stressors and Outcomes

The correlations between stressors, as measured by both sources and outcomes, are shown in Table 5. As can be seen,

for subordinate measures of stressors, several of the outcome variables were correlated with the stressors. Correlations were as high as .57 between constraints and intention of quitting. In general, the affective outcomes were most highly correlated with stressors. Somatic symptoms and illness variables, such as doctor visits, showed a few small correlations with stressors.

Although the signs of the correlations were mostly the same and the overall pattern was similar, the correlations with supervisor reports of stressors were considerably smaller than with subordinate and far fewer were statistically significant. For example, intention of quitting only correlated .19 with supervisor constraints. Doctor visits and absenteeism were not significantly correlated with any stressors.

Discussion

This study was conducted with three purposes in mind. The first was to explore the convergent and discriminant validities of self-report measures. The second was to compare the correlations between stressors and outcomes across two sources of data. The third was to test hypotheses derived from alternative models of the observed correlations among stressors and outcomes.

The multitrait–multimethod analysis suggested that five of eight measures had reasonable convergent and discriminant validities. Autonomy, workload, job satisfaction, reports of number of hours worked per week, and number of people worked for all showed both validities. Role ambiguity, constraints, and interpersonal conflict showed little of either validity. Role ambiguity had the lowest validity coefficient (.08). It should be noted that the items in this scale involved supervisor behavior, such as providing clear goals and performance standards. It may have been that these items produced defensiveness on the part of the supervisor, and supervisor reports were distorted to make the supervisors appear in a more favorable light. Constraints also may have been seen by the supervisors as being a direct reflec-

Table 5
Correlations Between Stressors and Outcome Variables

Variable	Anxiety	Frustration	Satisfaction			Symptoms			Doctor visits	Absenteeism	Intent to quit	Performance
			Subordinate	Supervisor	Doctor	No doctor	Total					
Subordinate stressor												
Autonomy	-34	-27	51	38	-07	-11	-13	-12	-01	-36	36	
Workload	37	56	-26	-16	10	21	24	04	03	35	09	
Constraints	44	51	-47	-35	16	17	21	20	11	57	-18	
Ambiguity	28	29	-51	-41	23	01	07	24	17	40	-17	
Conflict	36	39	-35	-32	14	18	22	06	06	50	-06	
Total hours worked	17	10	-16	-20	-04	10	09	07	01	27	-08	
USF hours worked	11	01	04	00	04	13	14	04	-06	05	01	
People worked for	24	17	-22	-04	21	07	12	08	11	24	-07	
Supervisor stressor												
Autonomy	-16	-08	24	19	-06	02	01	01	-10	-10	39	
Workload	12	20	08	-01	01	07	07	06	-06	02	28	
Constraints	23	22	-14	-18	00	13	13	06	-03	19	07	
Ambiguity	18	23	-08	-22	-07	06	04	04	-10	11	-02	
Conflict	25	19	-07	-20	05	14	16	09	-01	16	03	
USF hours worked	10	-01	09	03	06	14	15	07	01	01	10	
People worked for	15	03	-15	-07	18	09	14	06	04	01	-11	

Note. USF = University of South Florida. $N = 148-156$. Correlations greater than .15 are significant at the .05 level, two-tailed.

tion on them, and bias in their reports may have been introduced.

It would be premature to suggest that these measures be avoided due to lack of validity. It may well be that supervisors had inadequate knowledge of these job stressors to respond accurately. The failure to find convergent validity, however, suggests the need for further investigation of validity and possible defensiveness bias. Perhaps additional sources of data, such as peers, trained observers, or objective indicators, would help clarify these results.

A comparison of correlations between the two sets of stressor variables yielded similar patterns, but much smaller correlations for the supervisor variables. Correlations between supervisor stressors and affective reactions were at most .25, and were generally below .20 and often statistically nonsignificant. Significant correlations with health outcomes were few and quite small. The largest correlation was between supervisor autonomy and job performance (.39). These modest correlations suggest the possibility that the work environment is less important than often assumed, or that the general stress framework is inadequate or incomplete.

Three alternative models were discussed: *reverse causality* (outcomes cause perceptions of stressors), *reciprocal causation* (outcomes and the environment cause perceptions that in turn cause outcomes), and *external cause* (dispositions cause perceptions and outcomes). Results from the current study are relevant to hypotheses derived from these models.

The dispositional explanation suggests that an additional mechanism is responsible for intercorrelations among perceived stressors and outcomes when measured through self-report. Two possible mechanisms are method variance (systematic bias inherent in a method) or a general evaluative response, inherent to a subject regardless of method. The test for the method variance pattern in the multitrait-multimethod matrix is a test for the dispositional explanation. If the subject's self-report of both outcomes and stressors is caused by a process operating at the response level, then correlations of different traits measured within a source or method of data (i.e., subordinate or supervisor) should be higher than corresponding correlations across methods. The observed mean difference in corresponding correlations of only .02 suggests that only .04% of the variance in correlations can be attributed to this explanation.

A strict reverse causality explanation says that subordinate stressors are caused by outcomes. Therefore, there should be no convergence of subordinate and supervisor reports of the same stressors, and there should be no correlation between supervisor stressors and outcomes. This was clearly not the case. There was convergence for five of the stressors in the multitrait-multimethod matrix, and several outcomes were significantly correlated with several supervisor stressors.

The final explanation is that both outcomes and the environment cause subordinate reports of stressors. This explanation leads to three hypotheses. First, there should be some convergence between supervisor and subordinate reports of stressors. Second, subordinate stressors should correlate with outcomes. Finally, supervisor stressors should correlate with outcomes, but at a lower level than subordinate stressors. All three of these hypotheses received support from the data: Five of eight stress-

ors converged across sources, subordinate stressors correlated with outcomes, and supervisor stressors correlated with outcomes, but at a lower level than subordinate stressors.

The correlations of hours-worked with outcomes is relevant to Frankenhaeuser's (1979) physiological study of work schedules. Although there were small correlations with affective variables and intention of quitting, there were no relations with symptoms or illness. It may well be that long hours produce a negative affective response that has a physiological basis, but this does not result in illness or physical symptoms.

The moderately high correlation of autonomy and performance, approximately the same across the two data sources, provides support for the vertical dyad linkage theory of leadership (Dansereau, Graen, & Haga, 1975). According to this theory, supervisors treat subordinates differently depending on their job performance. Low-performing subordinates are supervised more closely and given less autonomy (Lowin & Craig, 1968), exactly the result found here.

The high correlation between supervisor and subordinate reports of the subordinate's job satisfaction is evidence for the convergent validity of these reports, but is also an indication that satisfaction is a reaction that has detectable effects on behavior. Supervisors know how satisfied their subordinates are, undoubtedly because subordinates talk and act in ways that clearly reflect their job attitudes. Whether or not this is a function of the current organization in which subordinates may feel free to express their attitudes or is a general phenomenon needs further study.

The results of this investigation have demonstrated that there is convergent validity for at least some measures of stressors in organizations. Furthermore, there is evidence that the job environment, as reflected in the supervisor's report of stressors, does have effects on job incumbents, although more on their affective reactions than on illness. The strength of environmental effects on outcomes, found to be quite modest here, clearly needs further research with objective measures of job conditions.

Finally, these results provided tests of hypotheses derived from competing causal models, although they were not direct tests of the models themselves. The multitrait-multimethod analysis found little evidence for method variance or an overriding dispositional effect. Correlational results found connections among both sources of stressor data and outcomes. These data might be interpreted as supporting the general environment → perception → outcome model in that supervisory reports of stressors were somewhat correlated with outcomes. They do not, however, rule out the outcome → perception connection, such as in the James and Tetrick (1986) reciprocal model. Research that goes beyond simple covariation and that attempts to more fully test causal models is clearly needed. The use of multiple sources of data, complex causal modeling, longitudinal designs, and experimental manipulation of job conditions will advance our understanding of how jobs affect the people who do them.

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