

THE RELATIONSHIP BETWEEN JOB STRESS AND JOB SATISFACTION AMONG INDUSTRIAL AND TECHNICAL TEACHER EDUCATORS

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ABSTRACT

The researchers examined the relationship between job stress and job satisfaction among a random sample of 133 industrial and technical teacher educators. Correlational analysis revealed a strong inverse relationship between the constructs, with stressors related to lack of organizational support being more strongly associated with job satisfaction than stressors related to the job itself were. There also were significant differences ($p \leq .05$) in correlations between job satisfaction and frequency of stressors and correlations between job satisfaction and intensity of stressors, suggesting that frequency of stressors had a greater impact on participants' job satisfaction than did intensity of stressors. These results have implications for addressing job stress and job satisfaction in higher education.

The salience of job stress as a research topic has been due in part to the magnitude of its effects. In addition to being associated with a variety of physical diseases including hypertension (Buunk, de Jonge, Ybema, & de Wolff, 1998; O'Connor, O'Connor, White, & Bundred, 2000; Tindall, 1998), high levels of job stress can have a negative effect on emotional well-being (Bennett, Lowe, Matthews, Dourali, & Tattersall, 2001; Paterniti, Niedhammer, Lang, & Consoli, 2002; Sharma, Yadava, & Yadava, 2001). On the organizational level, high levels of job stress have been linked to low levels of productivity (Blix, Cruise, Mitchell, & Blix, 1994; Gandham, 2000; Reynolds, 1997).

In general, job stress has been viewed as an antecedent of job satisfaction, and the two constructs have been treated as related yet distinct (Stanton, Bachiochi, Robie, Perez, & Smith, 2002). An inverse relationship between job stress and job satisfaction among various populations has been reported consistently in the literature (Beehr, Walsh, & Taber, 1976; Cotton, Dollard, & de Jonge, 2002; Dua, 1994; Hawe, Tuck, Manthei, Adair, & Moore, 2000; Heslop, Smith, Metcalfe, Macleod, & Hart, 2002; Lu, Shiao, & Cooper, 1997; Richardsen & Burke, 1991; Ulleberg & Rundmo, 1997). What has been less clear than the direction of the relationship has

been the nature of its development. This study contributed to understanding the development of this relationship by providing insights into what stress-related factors impacted specific facets of job satisfaction and by investigating whether or not frequency of job stressors or intensity of job stressors had a greater impact on job satisfaction among a sample of industrial and technical teacher educators.

THEORETICAL PERSPECTIVES

A number of conceptions of stress have emerged since the 1970s. The theory underlying this study was Person-Environment Fit (P-E Fit) theory (French & Caplan, 1972; French, Caplan, & Harrison, 1982; Harrison, 1978). The basic tenet of P-E Fit theory has been that stress arises from the fit—or, more precisely, misfit—between an individual and his or her environment. This misfit can occur at different levels (Edwards, Caplan, & Harrison, 1998). For example, stress can occur if there is a mismatch between the demands placed on an individual and his or her abilities to meet those demands. Furthermore, misfit between demands and abilities induces coping and defense mechanisms, which in turn influence objective and subjective representations of the environment (Edwards et al.). Misfit between the objective *reality* of the work environment and an individual's subjective *perceptions* of the work environment also can result in stress.

Outcomes of stress include psychological strains, which can be defined as deviations from normal functioning (Edwards et al., 1998). One such psychological strain is dissatisfaction. Job dissatisfaction indicates negative feelings that individuals have regarding their jobs or facets of their jobs (Spector, 1997). Herzberg, Mausner, and Snyderman (1959) formulated a two-factor theory categorizing factors affecting job dissatisfaction as well as job satisfaction. They used the term *hygiene factors* to refer to factors that affect job dissatisfaction. Examples of hygiene factors include benefits, organizational policies, salary, supervision, and working conditions.

Although hygiene factors can have an impact on job dissatisfaction, they do not impact job satisfaction, which has been defined as “a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences” (Locke, 1976, p. 1300). Herzberg and colleagues (1959) referred to factors that influence job satisfaction as *motivators*. Examples of motivators include achievement, advancement, recognition, responsibility, and work itself.

REVIEW OF LITERATURE

JOB STRESS AMONG POSTSECONDARY FACULTY

Job stress among faculty members in higher education has become a critical issue for faculty members and administrators alike (Bowen & Schuster, 1986; Smith, Anderson, & Lovrich, 1995). Research on job stress among postsecondary faculty members has been conducted with large, national samples (Blackburn & Bentley, 1993; Dey, Ramirez, Korn, & Astin, 1993; Gmelch, Wilke, & Lovrich, 1986) as well as with samples from a single higher education institution (Smith et al.) or system (Blix et al., 1994). In addition, research has focused on how stress impacts particular groups among postsecondary faculty, including ethnic minorities (Thompson & Dey, 1998), women (Lease, 1999), and new faculty (Lease; Olsen, 1993).

Researchers have sought to identify sources of stress among postsecondary faculty members. Their findings have indicated that time pressures (Astin, 1993; Barnes, Agago, & Coombs,

1998; Gmelch et al., 1986; Olsen, 1993; Smith et al., 1995; Thompson & Dey, 1998), high self-expectations (Gmelch et al.; Smith et al.), and research and publication demands (Astin; Blix et al., 1994; Smith et al.) produce stress for postsecondary faculty. How these sources of stress could interact with and build on one another is not difficult to conceive. Recognizing the importance of conducting research and publishing its results, a faculty member strives to write an article for a peer-reviewed journal. However, the constant pressures (e.g., teaching demands, service committees, administrative tasks) exerted on the faculty member's time interrupt the writing process. Consequently, the faculty member might be hindered from meeting his or her own self-expectations relative to writing the article, which in turn could increase his or her level of stress.

In addition to the detrimental impact that stress can have on both an individual's (O'Connor et al., 2000; Tindall, 1998) and an organization's (Gandham, 2000; Reynolds, 1997) health, stress can have negative effects particular to higher education. For example, high levels of stress have been associated with decreased research productivity (Blackburn & Bentley, 1993). Also, Barnes and colleagues (1998) found a relationship between stress-related factors and faculty members' intentions to leave academia.

JOB SATISFACTION AMONG POSTSECONDARY FACULTY

Job satisfaction has been the most frequently investigated variable in organizational behavior (Spector, 1997), and higher education has not been ignored in job satisfaction research. A plethora of studies have examined job satisfaction in the postsecondary education context (McBride, Munday, & Tunnell, 1992; Moody, 1996; Olsen, Maple, & Stage, 1995; Sanderson, Phua, & Herda, 2000; Tack & Patitu, 1992; Tang & Talpade, 1999; Truell, Price, & Joyner, 1998; U.S. Department of Education, 2001; Valadez & Anthony, 2001; Wergin, 2001). This proliferation of research has focused attention on the need to understand job satisfaction as it relates specifically to postsecondary faculty.

In studies with postsecondary faculty members as the researched population, certain trends have emerged. For example, ethnic minorities generally have expressed lower job satisfaction than have their White counterparts (Sanderson et al., 2000; Tack & Patitu, 1994). Likewise, women have reported lower levels of job satisfaction than men have (Fiorentino, 1999; Hagedorn, 1996, 1998; Tang & Talpade, 1999; U.S. Department of Education, 1998), although results have not been consistent across each facet of job satisfaction. Another demographic variable that has influenced job satisfaction among faculty members has been tenure status. In general, tenured faculty members have reported higher job satisfaction than have tenure-track faculty members (Clark, 1986; Sanderson et al., 2000; U.S. Department of Education, 2001), but faculty at institutions with no tenure system have reported being very satisfied more often than have faculty in tenured or tenure-track positions (Sanderson et al.; U.S. Department of Education). However, in a study of job satisfaction among industrial and technical teacher educators, demographic factors explained little of the variance in respondents' reported levels of job satisfaction (Brewer & McMahan-Landers, 2003), thereby suggesting that other factors affect job satisfaction in this population.

INTENSITY AND FREQUENCY OF STRESSORS

In his qualitative examination of the nature of work stress, Dewe (1989) noted that individuals expressed a need to discuss work stressors frequency of occurrence as well as intensity of work stressors. Spielberg and Vagg (1999) cautioned that failure to consider the frequency that a

particular stressor occurs could result in “overestimating the effects of highly stressful events that rarely occur in a particular work setting, while underestimating the impact of moderately stressful events that occur quite frequently” (p. 5). Schattner and Coman (1998) suggested the possibility of a cumulative effect in which a series of minor stressors could lead to a pervasive level of high stress. For example, although a onetime shouting match with a coworker is likely to generate increased stress, the effects of constant negative comments made in a subdued manner over an extended period might be more devastating. Furthermore, prolonged exposure to stress can result in burnout (Maslach & Schaufeli, 1993).

The literature contains evidence that the frequency of stressors impacts levels of perceived stress as well as job satisfaction (Piotrkowski, 1998). However, there also is evidence that intensity of stressors has a larger impact on job satisfaction than does frequency (Gellis, 2001). Furthermore, other variables such as gender might impact perceptions of intensity and frequency of certain stressors (Spielberger & Reheiser, 1994). Therefore, further research is needed to clarify these issues.

PURPOSE OF STUDY

The purpose of this study was to explore the relationship between job stress and job satisfaction among industrial and technical teacher educators. We also explored whether or not intensity of or frequency of stressors had a greater impact on job satisfaction. By examining these issues, we hoped to contribute to the body of knowledge about the relationship between job stress and job satisfaction. Doing so has practical relevance for designing and implementing strategies and interventions to combat job stress and increase job satisfaction among industrial and technical teacher educators.

METHODOLOGY

POPULATION AND SAMPLE

The population for the study was industrial and technical teacher educators from 2- and 4-year postsecondary educational institutions across the United States. The sampling frame for the population was the 2000-2001 *Industrial Teacher Education Directory* (Bell, 2000/2001). A random sample of 347 was drawn from the 1,752 industrial and technical teacher educators (excluding department heads, coordinators, and other administrators) identified in the *Directory*. Since Krejcie and Morgan (1970) recommended a sample size of at least 317 for a population of 1,800, our sample of 347 exceeded the number recommended for the size of the chosen population.

INSTRUMENTS AND DEMOGRAPHIC QUESTIONNAIRE

Strax Spielberger and Vagg's (1999) Job Stress Survey was used to assess job stress. Respondents rate the intensity of 30 common workplace stressors on a 9-point scale by comparing each stressor to an event perceived as producing an average amount of stress (i.e., “Assignment of disagreeable duties”), which has been assigned the midpoint value of 5. Then, respondents report on a scale of 0 to 9+ days how often each stressor has occurred in the past 6 months.

The Job Stress Survey consists of three scales. The Job Stress Index (JS-X) measures an individual's overall stress level; the Job Stress Severity (JS-S) represents an individual's average

intensity rating for the 30 stressors; and the Job Stress Frequency (JS-F) indicates the average frequency of occurrence for the 30 stressors within the past 6 months. In addition, the survey has six subscales: (a) the Job Pressure Index (JP-X) assesses the combined intensity and frequency of 10 stressor events reflecting pressures directly related to the job's structure, design, or duties; (b) the Job Pressure Severity (JP-S) measures an individual's average level of intensity of the 10 stressors associated with job pressures; (c) the Job Pressure Frequency (JP-F) indicates the average frequency of occurrence of the 10 stressors related to job pressures; (d) the Lack of Organizational Support Index (LS-X) measures the combined intensity and frequency of occurrence for 10 stressor events related to organizational policies or other people involved with the organization; (e) the Lack of Organizational Support Severity (LS-S) indicates the average level of intensity an individual perceives in regard to the 10 stressors related to lack of organizational support; and (f) the Lack of Organizational Support Frequency (LS-F) reflects the average frequency of occurrence of the 10 stressor events involving lack of organizational support. Spielberger and Vagg reported coefficient alphas ranging from a low of .80 for the JP-X and the LS-X to a high of .89 for the JS-S and the JS-F.

Job satisfaction. Spector's (1997) Job Satisfaction Survey (JSS) was used to measure job satisfaction. The JSS consists of 36 items comprising nine facets: (a) pay, (b) promotion, (c) supervision, (d) fringe benefits, (e) contingent rewards, (f) operating conditions, (g) coworkers, (h) nature of work, and (i) communication. Respondents rate each item on a six-point Likert scale from 1 (*disagree very much*) to 6 (*agree very much*). Individual facet scores can range from 4 to 24, and overall job satisfaction scores can range from 36 to 216. Spector reported coefficient alphas ranging from .60 for the coworker facet to .91 for the overall measure.

Demographics. Participants also completed a demographic questionnaire. The questionnaire gathered data relative to participants' (a) age, (b) gender, (c) marital status, (d) ethnicity, (e) years working in industrial/technical teacher education, (f) institutional affiliation, (g) tenure status, (h) academic rank, (i) employment status, and (j) typical workload during last year. We chose these characteristics based upon a review of related literature.

DATA COLLECTION PROCEDURES

The sample population received the three instruments along with a demographic questionnaire, a cover letter, and a self-addressed, stamped return envelope via the mail. To limit follow-up notifications, questionnaires were coded numerically, in accordance with procedures recommended by Dillman (2000). We sent follow-up emails requesting completion and return of survey instruments 3 weeks after the initial mailing; we mailed letters to individuals for whom no working email address could be located. All responses were kept confidential.

ANALYSIS

Each instrument was scored according to the directions in its respective user's manual. Then, the relationship between job stress and job satisfaction was investigated by calculating Pearson's product-moment correlation coefficients, and *z*-tests were conducted to determine significant differences in correlations between job satisfaction and frequency of stressors and correlations between job satisfaction and intensity of stressors.

RESULTS

A total of 133 of the 347 packets sent to the random sample were returned, which represented a response rate of 38.3%. In cases where respondents did not answer every question, data were treated as missing values.

The typical participant was a White man who had earned tenure and was employed full-time at a public university. Regarding their typical workload, participants reported that the average time that they devoted to teaching was 58.6%, to service was 13.8%, to research was 12.2%, to administration was 11.5%, and to other activities was 3.9%. Table 1 displays other demographic characteristics reported by participants.

As expected, correlational analysis revealed significant relationships among facets of job satisfaction and stress-related factors. Table 2 displays correlations among job stress scores and job satisfaction scores. Of the 90 relationships between facets of job satisfaction and stress-related factors measured in this study, 55 were significant at the .01 level; 9 were significant at the .05 level, and 26 were not significant. Of the 26 non-significant relationships, 23 involved factors related to job pressures. In comparison, only one of the non-significant relationships involved lack of organizational support.

To determine significant differences in correlations between job satisfaction and frequency of stressors and correlations between job satisfaction and intensity of stressors, we used *z*-tests. Results of the *z*-tests indicated significant differences ($p \leq .05$) between the job satisfaction facets of contingent rewards, coworkers, communication, and total job satisfaction and the frequency of and intensity of lack of organizational support stressors. In each case, the frequency of the lack of organizational support stressor correlated significantly higher with job satisfaction than did the intensity of the lack of organizational support stressor. Likewise, the frequency of overall job stress correlated significantly higher ($p \leq .05$) with the job satisfaction facets of benefits, contingent rewards, operating conditions, and total job satisfaction than did the intensity of overall job stress. In no case did the intensity of job stressors correlate higher with a facet of job satisfaction than did the frequency of job stressors.

Table 1

Participants' Demographic Characteristics

Category	<i>n</i>	Percentage
Marital status		
Married	113	85.0
Divorced	10	7.5
Widow/er	2	1.5
Single	4	3.0
Missing values	4	3.0
Age		
31-40 years of age	8	6.0
41-50 years of age	36	27.1
51-60 years of age	58	43.6
60+ years of age	27	20.3
Missing values	4	3.0
Years working in industrial/technical teacher education		
2 years or less	1	0.8
2-5 years	7	5.3
6-10 years	17	12.8
11-15 years	22	16.5
16-20 years	16	12.0
21-25 years	22	16.5
26 years or more	41	30.8
Missing values	7	5.3
Academic rank		
Instructor	1	0.8
Assistant professor	20	15.0
Associate professor	58	43.6
Full professor	49	36.8
Other	2	1.5
Missing values	3	2.3

Table 2
Correlations Among Job Stress Scores and Job Satisfaction Scores

	JS-S	JS-F	JS-X	JP-S	LS-S	JP-F	LS-F	JP-X	LS-X
Pay	-.14	-.29**	-.37**	-.03	-.31**	-.04	-.43**	-.08	-.46**
Promotion	-.18*	-.26**	-.37**	-.02	-.42**	.04	-.53**	-.04	-.58**
Supervision	-.27**	-.30**	-.36**	.10	-.57**	.06	-.66**	.10	-.72**
Benefits	.05	-.25**	-.24**	.05	-.13	-.11	-.27**	-.07	-.28**
Contingent rewards	-.20*	-.47**	-.52**	.04	-.46**	-.16	-.71**	-.18*	-.71**
Operating conditions	-.28**	-.50**	-.49**	-.33**	-.20*	-.50**	-.34**	-.51**	-.31**
Coworkers	-.19*	-.37**	-.43**	-.03	-.40**	-.09	-.60**	-.10	-.63**
Nature of work	-.27**	-.29**	-.38**	-.20*	-.35**	-.06	-.41**	-.18*	-.47**
Communication	-.20*	-.36**	-.43**	-.10	-.39**	-.06	-.58**	-.13	-.61**
Total job satisfaction	-.27**	-.50**	-.58**	-.08	-.53**	-.14	-.75**	-.18*	-.79**

*Significant at the .05 level (2-tailed).

**Significant at the .01 level (2-tailed).

DISCUSSION

Implications of the study's findings must be viewed in light of the strengths and weaknesses of the study's design. Findings are limited by the use of self-report instruments to measure respondents' levels of job stress and job satisfaction. However, because of the importance placed on appraisal and perceptions in the stress process, self-report measures are appropriate. A larger weakness is the study's low response rate (38.3%). Because no attempt was made to account for differences between respondents and non-respondents, differences in the two groups could have influenced the study's findings, thereby limiting their generalizability.

In line with most of the findings regarding the relationship between job stress and job satisfaction (Beehr et al., 1976; Cotton et al., 2002; Hawe et al., 2000; Hendrix, Summers, Leap, & Steel, 1995; Richardsen & Burke, 1991; Ulleberg & Rundmo, 1997), this study also found an inverse relationship between the constructs. Overall, stressors related to lack of organizational support seem to have a greater impact on job satisfaction than stressors related to the job itself. In terms of P-E Fit theory, this finding suggests lack of fit between the individual and the environment (i.e., lack of support in the environment), although there is not enough evidence to indicate whether this misfit is relative to demands and abilities or to objective and subjective representations of the environment. However, the high negative correlations between lack of organizational support stressors and overall job satisfaction provide convincing support for assertions by Edwards and colleagues (1998) that dissatisfaction is an outcome of high levels of stress.

Regarding whether intensity or frequency of stressors has a greater impact on job satisfaction, analysis revealed significant differences between correlations from the scale and subscales measuring intensity of stressors and the scale and subscales measuring frequency of stressors. In each case of significant difference, there was a higher correlation between job satisfaction and frequency of the stressor than there was between job satisfaction and intensity of the stressor. This finding suggests that the effects of stress over time are more damaging to job satisfaction than a single major stressful event is. To illustrate how this might apply to a postsecondary faculty member such as an industrial and technical professor, consider the effects of publication demands. Whereas a looming deadline might pose increased stress levels during the time period leading up to the deadline, the pressure of trying to juggle writing with various other teaching, administrative, and service demands seldom abates. Therefore, a faculty member could be at risk of developing high levels of dissatisfaction resultant from a high frequency of stressors.

Two specific findings suggest that stress occurring at the institutional level might have meaningful implications for job dissatisfaction among industrial and technical teacher educators:

1. Stressors related to lack of organizational support correlated higher with job satisfaction than stressors related to the job itself.
2. The only facet of job satisfaction that correlated significantly ($p \leq .01$) with each scale and subscale of the Job Stress Survey was operating conditions (i.e., organizational policies and procedures).

These findings merit serious concern because of their implications for faculty retention. Job satisfaction has been associated with a faculty member's decision to leave or to remain at a higher education institution (Hagedorn, 1996, 1998; Mallam, 1994; McBride et al., 1992; Nienhuis, 1994). If a faculty member is dissatisfied with the conditions at his or her present institution, the option to leave could appear both desirable and viable. Moreover, industrial and technical teacher educators might find the large salaries offered by business and industry particularly tempting (Ruhland, 2000; Wilson, 1999).

CONCLUSIONS AND RECOMMENDATIONS

As noted earlier, the low response rate and correspondingly low sample size of this study should be taken into account when considering recommendations generated from it. Given that consideration, our first recommendation is replication of the study with a larger sample size. Further, we recommend that future researchers utilize such measures as sending additional follow-ups and using incentives as outlined by Dillman (2000) to increase the response rate. It also would be interesting to find out if using an electronic survey yielded a higher response rate than a traditional mail survey among this population. Replication of the study would provide corroboration of the study's findings and, subsequently, further support for designing and implementing initiatives as well as for revising policies and procedures relative to their implications.

Although industrial and technical teacher educators seem to be satisfied with what they do, their satisfaction with where they do it appears less tenable. Therefore, future research—both basic and applied—should address job satisfaction and stress among this population at the institutional level. Administrators and researchers should endeavor to identify specific organizational policies

and procedures that industrial and technical teacher educators find stressful. This information might be obtained via individual or group interviews as well as through written questionnaires.

After obtaining information about stress-inducing organizational policies and procedures, special attention should be paid to how often they occur. Results from this study indicate that priority in addressing reported policies and procedures should be given to those that occur more frequently rather than those with higher perceived intensity. For example, a policy that affects faculty members weekly should be addressed before a policy that comes into play only at the end of a semester is, even if the stress associated with the latter policy is perceived as being more severe than the stress associated with the weekly policy.

We also recommend that future research employ a longitudinal design to gain further insights into the effects of frequently occurring stressors over an extended period of time. Continuing study of the same sample over time could yield answers relative to how prolonged exposure to stressors affects faculty members. Such information would be vital for designing stress intervention and management strategies, which could in turn effectively increase job satisfaction.

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