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**The contribution of person/role congruence as a moderator of  
the occupational stress/strain relationship**

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**Iowa State University, 1989**

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The contribution of person/role congruence as a  
moderator of the occupational  
stress/strain relationship

by

Patricia Decker-Forsmark

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## INTRODUCTION

There has been a steadily growing research interest in recent years in the study of stress in the workplace. While 10 studies of occupational stress were reviewed by Muchinsky in the 1983 annual review by the Journal of Vocational Behavior, Muchinsky commented that "this was an underestimate of the total amount of research conducted" (p. 148). Greenhaus and Parasuraman's (1986) annual review found that "the popularity of stress as a topic of research interest continues unabated, with nearly 50 papers published on various facets of stress in both the work and nonwork domains; and on the role of coping behaviors and social support in managing the consequences of stress" (p. 145).

Additionally , Phillips, Cairo, Blustein and Myers (1988), in their annual review, also conclude that "stress, burnout and overall psychological well-being continue to be of particular interest to researchers" (p. 161).

## Definitions and Conceptualizations of Stress

Despite the growing volume of organizational stress research, understanding of the stress phenomenon is at present rather limited. As Payne, Jick and Burke (1982) state, this limited understanding "... can be attributed to a variety of dilemmas and ambiguities which confront stress researchers as well as the complexity of stress itself" (p. 131). Sharit and Salvendy (1982) also remark that "the phenomenon of stress has many facets. Unfortunately, most of them are not represented in the definitions of stress given in the literature. Instead, the definitions appear to reflect biases related to the scientific orientation of the authors" (p. 129).

There appear to be at least 3 general definitional categories for stress. These include:

- (1) Those which define stress in terms of environmental stimuli. For example, Holmes and Rahe's (1967) life events stress model implies that any event which requires a coping or adaptation response is indicative of stress, Dohrenwend and Dohrenwend (1974) suggest that stress involves some

form of environmental demand which requires a personal adjustment.

2) Those which define stress in the terms of individual responses. These include Selye (1976) who defined stress as "the nonspecific response of the body to any demand" (p. 1). Other researchers who have defined stress in this way include Ivancevich and Matteson (1980) and Parker and De Cotiis (1983).

(3) Those which define stress in terms of the relationship between environmental demands and the individual, or between environmental characteristics and individual preference. This category appears to be the most generally accepted, and includes McGrath's (1976) definition of stress in terms of a set of conditions in it. "Stress involves an interaction of person and environment. Something happens 'out there' which presents a person with a demand, or a constraint, or an opportunity for behavior" (p. 1393).

Beehr and Newman (1978) define job-related stress as a condition wherein job-related factors interact with the worker to change (disrupt or enhance) his/her psychological or physiological condition such that the person (mind and/or body) is forced to deviate from normal functioning (p. 672).

French, Rogers and Cobbs (1974) person-environment fit model suggests that job-related stress is a misfit between a person's skills and abilities and the demands of the job. Lack of fit between the person and her/his immediate environment is hypothesized to lead to unmet individual needs or unmet job demands, and thus to experiences of stress.

Schuler (1982) defines stress as a perceived dynamic state of uncertainty about something important to the individual. It can be positive or negative. The environment presents dynamic conditions (potential stressors) which can be perceived by the individual as opportunities, constraints, or demands.

Lazarus and Folkman's (1984) model of stress hypothesizes that environmental stressors and individual dis-

positions such as cognitive appraisal interact to produce stress reactions.

Edwards (1988) defines stress as "a negative discrepancy between an individual's perceived state and desired state, provided that the presence of this discrepancy is considered important by the individual" (p. 242).

As Kasl (1978) concludes, the concept of occupational stress "has not achieved any kind of closure, either in the sense of concept clarification or as delineation of boundaries. However..., two major versions of 'stress at work' are implicit or explicit in most of the work: (1) the narrower version, as excess of environmental demands over the capability to meet them, and (2) the broader version, as inadequate person-environment fit" (p. 13).

Kasl (1978) also points out that "there is one convergence of theoretical formulations of stress, and this concerns the incorporation of the idiographic, subjective approach in stress formulations. Stated most simply, this approach formalizes the presumed wisdom of the saying 'one man's meat is another man's poison'" (p.

13).

Fletcher (1988) comments that the definitional difficulty encountered in occupational stress research is "...compounded by the potentially multifaceted manifestations of stress" (p. 7).

For example, Cooper and Marshall (1976) hypothesized the presence of five clusters of work stressors, including those intrinsic to the job and those resulting from one's role in the organization.

Schuler (1982) identified 7 categories of work stressors in organizations, while Ivancevich and Matteson (1980) proposed 4 occupational stressors, including physical environment and individual, group and organizational level categories. In addition, others have included extraorganizational stressors such as level of spouse and family support (Vanfossen, 1981) and multiple work/nonwork roles (Crosby, 1982; Russell, Altmeier, & Van Velzen, 1987).

## Definitions and Conceptualizations of Strain

Much of the research on occupational stress is also concerned with the outcome of experienced stress, which has most often been studied in terms of strain. One widely accepted definition of strain as used in this context is Fletcher and Payne's (1980): "Strain is the state of being stressed as evidenced by physiological, psychological, or medical indices" (p. 21). French, Caplan and Van Harrison (1982) have defined strain similarly. They suggest that "strain is defined as any deviations from the normal state or response of the person. These include psychological strains such as job dissatisfaction and anxiety, physiological strains such as high blood pressure, and behavioral symptoms of strain such as excessive smoking and consumption of alcohol. Continued high levels of these strains can eventually affect the levels of morbidity and mortality" (p. 5).

Several epidemiological studies of occupational stress have focused on such physiological strain symptoms as heart rate, blood pressure, cholesterol levels, and ECG abnormalities (Cooper, Mallinger & Kahn, 1978; Zaleznik, Kets de Vries & Howard, 1977, and Howard, Cunningham &



Rechnitzer, 1986).

Fletcher (1988) has suggested that such epidemiological studies place greater emphasis on psychological manifestations of strain. One reason for this, Fletcher asserts, is that "more recent models of occupational stress take it as axiomatic that strain must be predicted by taking into account the individual's perception of work stressors. Failure to do so will result in little of the predictable variance being accounted for, and the subsequent failure of important psychological factors in strain being revealed" (p. 4).

A number of psychological outcome variables have been studied as indicators of occupational strain. These include level of job satisfaction, career commitment, self-esteem, depressed mood, anxiety, and boredom (Cooper & Marshall, 1978; Kasl, 1978; Beehr & Newman, 1978; Warr & Payne, 1983; French, Caplan & Van Harrison, 1982; Sutton & Rafaeli, 1987; Motowidlo, Packard, & Manning, 1986).

Brief and Atieh (1987) report that one of the most frequently used indices of job-related strains is job satisfaction, and note that Jackson and Schuler's (1985)

review cited more than three dozen studies in which job satisfaction was used in this way.

Behavioral strain indices which have been investigated include turnover, absenteeism, work performance, and abuse of alcohol, drugs, caffeine or nicotine (Ivancevich, Matteson & Preston, 1982; Mobley, Griffith, Hand & eglino, 1979; Williams, Calhoun & Ackoff, 1982; Jackson & Maslach, 1982; Markowitz, 1987; and Vinokur & Selzer, (1975).

### The Stressor/Strain Model

While debate continues over precise definition of stress as it is manifested in the workplace, the stressor/strain model has been widely accepted as providing a way to facilitate understanding of the relationship between occupational stress and psychological and/or physiological strain.

Payne, Jick and Burke (1982) explain that:  
the majority of stress research has been correlational in its methodology. These correlational studies have been guided by what can best be described as a

general model. The model proposes that environmental stressors impinge upon the person, that factors within the person affect whether or not the stressors are perceived as threatening, that when seen as threatening they typically cause psychological and perhaps physiological strain, and that if the strain continues over time it will eventually lead to disease, either mental or physical, or both. (p. 132).

Fletcher (1988) reports that correlations between occupational stress and strain are usually small, commonly around 0.20. Frese and Zapf (1988) state that "given the complexity of the measurement problems, the role of the moderators, and the fact that the work-place is only one (albeit an important) area of stress in the life people, one should expect small correlations" (p. 398).

Fletcher (1988) presents a simple stressor/strain model of the role of occupational factors in psychological and physical disease based on several similar conceptualizations (Cooper & Marshall, 1976; French, Caplan & Van Harrison, 1982; Kagan & Levi, 1974; Schuler, 1982).

As Fletcher explains, "such models make no real attempt to predict the levels of strain, or the subtle interactions between their many variables, or to facilitate in the conceptual understanding of what occupational stress is. They are useful, however as thumbnail sketches to envelope and list the critical factors which any predictive model should deal with, and to provide a chart of the current state of knowledge and belief" (p. 12).

Occupational stressors can be viewed as factors which increase the probability of strain reactions. Thus, stressors are causal precursors to strain. However, as Fletcher (1988) points out, "just as pathogens do not necessarily result in clinical manifestations of disease, stressors do not invariably produce strain. Occupational stressors are factors in the work environment which increase the probability of strain reactions. In the same way mediators are factors which increase the likelihood that a change in the normal stressor-strain relationship will occur" (p. 10).

Individual difference variables which have been investigated as possible moderators of the stress-strain relationship have included Type A behavior (Van Dijkvizen

Spector, 1982), and coping style (Fleishman, 1984; Billings & Moos, 1981; Menaghan & Merves, 1984; Newton & Keenan, 1985); and trait anxiety (Kahn, Wolfe, Quinn, Snoek & Rosenthal, 1964; Cooper & Marshall, 1977; Depue & Monroe, 1986).

Other possible moderators of the stress-strain relationship include social support (Cohen & Wills, 1985; Wells, 1985; Kaufman & Beehr, 1986; Abdel-Halim, 1982; Ganster, Fusilier & Mayes, 1986), and nonwork variables and family relationships (Hendrix, Ovalle & Troxler, 1985; Greenhaus, Bedeian & Mossholder, 1987; Berkowitz & Perkins, 1984; Billings & Moos, (1982).

Osipow and Spokane (1984) have developed a model which reflects a similar conceptualization of the stress/strain relationship as well as the moderating effects of coping. The model makes 2 basic assumptions: (1) that people's perception of the social role assigned to them in the workplace is of critical importance, and (2) that these roles interact with people's capacity to cope with negative aspects in ways that can reduce the consequent undesirable effects called strain" (p. 71). Their system suggests that if perceived stressors are equal for two

people, differences in coping resources would serve to moderate the resulting strain. Thus, "high occupational stress by itself does not necessarily predict strain. Only by including the degree to which coping resources exist is an adequate predictor of strain possible" (p.71).

Schuler (1982) has stated that " the organizational conditions that most frequently identified and researched as stressors are job qualities, roles in the organization, and relationships at work. The job qualities commonly associated with stress are work underload and work overload (both qualitative and quantitative), although only limited research exists regarding underload" (p. 6).

### Occupational Stressors

#### Work Overload

Katz and Kahn (1978) define overload as "the perception that one is being asked to do more than time permits, although the required activities themselves are neither intrinsically incompatible or beyond one's abilities" (p. 598). Conversely, underload is discussed in terms of jobs "which make use of few of the worker's skills and abili-

ties (although they may make heavy demands on those few)" (p. 599).

Ivancevich, Matteson and Preston (1982) included measures of both quantitative and qualitative work overload in a study which examined the prevalence of work stressors among three managerial levels. Significant group differences were present for quantitative overload. Shaw and Weekley (1985), found that both quantitative and qualitative overload resulted in greater psychological strain than did underload.

Keenan and Newton (1985), in a study of stress in professional engineers found that qualitative and quantitative overload as well as underload were among the group's most important stressors. However, Yogev (1982), found that female faculty members who worked an average of 107 hours/week felt no more overloaded than women who worked an average of 78 hours/week.

Finally a study of U.S. military officers (Rogers, Li, and Shani, 1987), found that several psychological and physiological responses were associated with qualitative and quantitative underload, including job satisfaction,

Li, and Shani, 1987), found that several psychological and physiological responses were associated with qualitative and quantitative underload, including job satisfaction, low self-esteem, and job tension.

### Role Conflict and Role Ambiguity

Role conflict and role ambiguity have been widely researched as two qualities of roles in an organization (Van Sell, Brief and Schuler, 1981).

Katz and Kahn (1978), define role ambiguity as "...uncertainty about what the occupant of a particular office is supposed to do" (p. 20). Schuler (1982), points out that role ambiguity is a potential stressor because it "may prohibit an individual from experiencing a sense of accomplishment because the individual is unclear about what to accomplish" (p. 10). Similarly, Schaubroeck, Cotton and Jennings (1989), suggest that "role ambiguity is believed to increase stress because concerns about how to proceed with critical tasks lead to frustration, and this frustration results in tension. In addition, lack of clarity should impede the opportunity to improve performance and obtain rewards, thus reducing satisfac-



compliance with one would make compliance with the other more difficult" (Katz & Kahn, 1978). Role conflict may be a potential stressor because "it may prohibit an individual from doing well in all roles, or at least cause uncertainty about whether that is possible" (Schuler, 1982). Role conflict and role ambiguity have been consistently correlated each other (Jackson & Schuler, 1985; Van Sell, Brief & Schuler, 1981).

Schaubroeck et al. (1989) state that "evidence that perceptions of role conflict and role ambiguity are positively related to symptoms of emotional distress, job dissatisfaction and withdrawal behaviors has accumulated over the last two decades" (p. 36).

Similarly, Breugh (1980), states that a number of variables have been found to be positively correlated with role conflict and role ambiguity, including tension, job, satisfaction, absenteeism and psychological strain (Schuler, Aldag & Brief, 1977; Hamner & Tosi, 1974; Orpen, 1982; Gupta & Beehr, 1979).

Variables which have been found to be negatively correlated with role conflict and role ambiguity include

1982; Gupta & Beehr, 1979).

Variables which have been found to be negatively correlated with role conflict and role ambiguity include job satisfaction (Breaugh, 1980), and decision-making and organizational commitment (Fisher and Gitelson, 1983).

Research on role conflict and role ambiguity had been very homogeneous. From 50% (Van Sell et al., 1981) to 85% (Jackson & Schuler, 1985) of the literature uses scales developed by House and Rizzo (1972). However, Dougherty and Pritchard (1985), have developed new measures of role ambiguity, role conflict and role overload using specific job products rather than global role perceptions.

The original study of role conflict by Kahn et al. (1964), and subsequent others (Beehr, 1976), have identified five types of role conflict within an organization. These include:

- (1) intersender conflict, in which expectations from one role sender are incompatible with those from another role sender;
- (2) intrasender conflict, in which different expectations are received from a single role sender;
- (3) person/role conflict, in which role requirements violate an individual's personal values or other expectations associated with her/his position;
- (4) inter-role conflict, in which the role pressures from one position are incompatible with the role pressures from a different position;
- (5) role overload, in which the sum of the role demands more than a person's time or ability to comply.

Rabinowitz and Stumpf (1987), investigated relationships among the facets of role conflict and role-specific performances over 3 organizational levels of one occupation. Results indicated that role conflict should be

treated as a multidimensional concept, and examined with respect to role specific performance.

Other models of role conflict address the relationship between role conflict at work and family. Gutek, Repetti and Silver (1988) state that three approaches to studying role processes (the distribution of one's time, energy and opportunities be social roles) can be identified in the literature. In this framework, inter-role conflict refers to those situations in which behaviors required to enact work and family roles are incompatible.

Role overload on the other hand, refers to situations in which both work and family compete for one's personal resources, with the probability that an individual may become overburdened. Gutek et al. suggest that "problems with time and scheduling in work and family roles are usually viewed as examples of interrole conflict, whereas a limited amount of personal energy to meet multiple demands and resulting fatigue are viewed as examples of role overload. Both are usually associated with the individual's subjective experience of role strain or job dissatisfaction" (p. 142).

Finally, role accumulation refers to a more positive set of events, in which the benefits of multiple roles are additive and present more opportunities for social interaction and enhancement of self-esteem.

Greenhaus and Beutell's (1985), model hypothesizes that pressures or stress from work or family can increase the conflict between work and family roles. For example, time spent in one role may spillover into another, and behavior appropriate to one role may be inappropriate in the other. Greenhaus, Bedeian and Mossholder (1987), examined the interaction between job performance and specific work experiences and family/personal well-being. Results showed that extensive role conflict and perceptions of a nonsupportive work environment were associated with low levels of marital adjustment and quality of life and with high levels of work-family conflict.

Much of the literature on nonwork influences on job stress have used women as subjects. Gutek et al. (1988) state that "the development of interest in nonwork factors that affect work coincided with an increase in women's employment and research on working women" (p. 141). Gutek et al. (1988) also comments that nonwork variables almost

always refer to family variables, with other nonwork factors, such as health or leisure, being much less frequently studied in the job stress literature.

### Environmental Stressors

Another potential stressor in the workplace is the physical environment. Several studies have investigated stressors in the physical environment which may be particularly associated with blue collar workers. These include heavy work, noise, dust, heat, or the presence of toxic substances (Ostberg & Nilsson, 1985; Poulton, 1978; Cohen, 1980).

Other environmental stressors include crowding or lack of privacy (Zalesny & Farace, 1987; Oldham & Rotchford, 1983; Davis, 1984; Szilagyi & Holland, 1980). Sutton and Rafaeli (1987) found that overworked employees concentrate harder on their work than other employees and ignore intrusions from the physical environment.

### Relationships at Work

Finally, relationships with others in the organization may be sources of occupational stress, Schuler (1982)

states that "relationships with supervisors are often stressors for individuals in organizations" (p. 10). Beehr (1981) found that dissatisfaction with co-workers was significantly correlated with measures of strain. Leiter and Meechan (1986) investigated social interactions and burnout in mental health service providers. Results showed that the more an individual's social contacts were prescribed by a formal work area, the higher the emotional exhaustion. Leiter and Maslach (1988) (cited in Payne, 1988), asked a sample of nurses to identify sources of stress in their jobs and found that subjects mentioned interactions with co-workers ten times more often than interactions with patients. Savicki and Cooley (1987) found that work environments characterized by encouragement of co-workers relationships and supportive supervisors were associated with low levels of burnout.

#### Hypothesized Moderators of the Stress/Strain Relationship

Frese and Zapf (1988) have provided a thoughtful discussion of the role of moderating variables in the stress-strain relationship. They begin by distinguishing between the terms "mediator" and "moderator". Mediating

variables relate a stressor to dysfunctioning. Mediators are related to the independent and dependent measures, but do not really change the relationship between the two.

Frese and Zapf give the example of blood alcohol as a nearly pure mediating variable. If one does not measure blood alcohol, the empirical relationship between alcohol intake and intoxication still exists.

Moderating variables on the other hand do change the empirical relationships of the independent and dependent variables and are of more practical importance. Moderating effects "can be analyzed by comparing the correlations of stressors with dysfunctioning between different subgroups (high or low on the moderator) or by using an interaction term in a regression analysis" (p. 397). Moderating variables have also been conceptualized as "buffering" the effects of stress (Caplan, Cobb, French, Van Harrison and Pinneau, 1975).

The most frequently studied moderators of the occupational stress-strain relationships are social support, and individual difference variables such as locus of control, Type A behavior, coping methods, trait anxiety, and self-



esteem (Abdel-Halim, 1982; Kahn et al. 1964; Beehr, 1976; La Rocco, House & French, 1980; Spector, 1982; Keenan & McBain, 1979; Organ & Greene, 1974; Ivancevich, Matteson & Preston, 1982; Dearborn & Hastings, 1987; and Billings & Moos, 1981).

Payne (1988) points out that it is particularly important to understand the role of individual differences when testing the proposition that environmental stress leads to psychological strain, and uses self-reports of symptoms and individual perceptions of environmental stressfulness. "Clearly, any correlation between these two variables could be due to one causing the other, but it also could be due to a third variable, such as an individual difference variable" (p 217).

### Locus of Control

Locus of control has been investigated as one individual difference variable which may affect perceptions of stressful environments. Organ and Greene (1974) and Batlis (1980) have reported significant correlations between locus of control and role ambiguity. Sandler and Lakey (1982) found individuals with an internal locus of

control to be better able to deal with the effects of stress than externals.

Krause and Stryker (1984) reported that subjects with external locus of control experienced higher levels of strain because of stressful events, including job events, than subjects with internal locus of control. Brousseau and Prince (1981) found that locus of control served as a moderator of occupational stress on cardiovascular health. Storms and Spector (1987) found that for employees in a mental facility, an external locus of control increased the probability of responding to frustration in a counter productive manner.

### Type A Behavior

The evidence for Type A behavior as a moderator of the stress/strain relationship is mixed. Caplan and Jones (1975) found that Type A behavior moderated the relationship between workload and anxiety, with Type A's reporting a higher relationship between perceived workload and anxiety than B's. Keenan and Mc Bain (1979) found no relationship between Type A behavior and self-report of job tension. Ivancevich, Matteson and Preston (1982)

found that the relationship between environmental stressors and stress reactions was moderated by Type A's experiencing more stress over uncontrollable events than Type B's. Kelly and Houston (1985) found a strong relationship between Type A and job tension using middle-class women. Dearborn and Hastings (1987) found that for Type B women job stress tends to be associated with only other work symptoms, but for Type A women, job stress spreads to nonwork settings.

Payne (1988) reports that "understanding the influence of Type A on strain is further complicated by the role of other individual difference variables which relate both to Type A and to symptom levels" (p. 214). One of these other individual difference variables is trait anxiety. Payne (1988) states that "Type A behavior relates quite strongly to self-reports of variables which directly or indirectly measure trait neuroticism".

### Trait Anxiety

Depue and Monroe (1986) note that when large numbers of people are randomly selected for study from the general population, a substantial number will have chronic condi-

tions which will lead to them reporting high levels of negative psychological symptoms. De Pue and Monroe suggest that there is a personality trait which is stable over time called trait anxiety.

Payne (1988) comments that "trait anxiety/neuroticism has been largely ignored in 25 yrs. of stress research..., it has rarely been measured in studies of occupational stress in particular. Yet the 'man in the street' would surely suggest that the disposition to be anxious would be an important factor to take into account in studying stress" (p. 216).

Similarly, Brief and Atieh (1987) suggest that "if an individual reports the existence of unfavorable job conditions and also that he or she is distressed, it is possible that both of these responses may be indicative of this underlying personality disposition, negative affectivity. Thus, it may not be the job conditions per se that are producing the distress, but rather a stable personality trait is influencing both self-reports of job conditions and distress (p. 123).

### Coping

Coping has often been viewed in terms of a stable personality style. Used in this way, such individual differences as locus of control, Type A behavior pattern, or hardiness are conceptualized as ways of dealing with stress. Payne (1988) points out that while these traits may in one sense be considered a way of coping, they tend to be "built-in" and not a coping style in the same sense as emotion-focused and problem-focused coping styles.

Edwards (1988) agrees and suggests that the lack of support for the stress buffering effects of personal traits or styles may be due to three factors: (1) personal traits and styles are often poor predictors of actual situational appraisals and coping behaviors, (2) actual coping processes are usually inferred from the personality measures under question, and rarely measured and (3) the personal trait and style approach to coping assumes that coping is unidimensional and stable across time and situations, which conflicts with empirical evidence. Edwards concludes that "by characterizing coping in terms of a personal trait or style, we fail to predict actual coping behaviors, rarely measure these

behaviors and ignore the multidimensional and dynamic nature of actual coping responses" (p. 236).

Edwards (1988) sees a more productive approach as conceptualizing coping in terms of specific methods. An example of this is Billings and Moos (1981) taxonomy of the following coping methods: (1) active-cognitive, (2) active-behavioral, and (3) avoidance.

Parasuraman and Cleek (1984) investigated the impact of both adaptive and maladaptive coping behaviors in influencing manager's affective reactions to role stressors. Results showed that maladaptive coping heightened the level of stress experienced in response to role ambiguity and both qualitative and quantitative overload. Contrary to expectations, adaptive coping did not show significant beneficial effects on either perceived stress or job satisfaction, even though subjects exhibited nearly four times as many adaptive coping behaviors as maladaptive coping behaviors.

Kessler, Price and Wortman (1985) report similar results as far as ineffective coping mechanisms heightening the perceived negative effects of stress. Brenner,

Sorbom and Wallins (1985), on the other hand, did not find evidence for a moderating role for coping in their study of teachers and stress.

Osipow and Davis (1988) tested the relationship of coping resources as moderators of the stress/strain relationship. Results showed that role overload was the most significant stressor, and that coping resources were effective in reducing global strain. Specifically, psychological strain related to role overload, responsibility and role ambiguity was moderated by self-care. An interesting result of this study was the finding that in some cases low levels of a coping resource were more effective in reducing the stress/strain relationship.

Matheny, Aycock, Pugh, Curlette, and Cannella (1986) suggest that social skills training, problem-solving, cognitive restructuring, and relaxation training were the most effective treatments for stress coping. Higgins (1986) also found progressive relaxation as an effective coping strategy in dealing with occupational stress. Finally, Wheaton (1985) has presented two statistical models illustrating a dual buffering role of coping resources in stress/strain relationships.

### Social Support

Kahn et al. (1964) were among the first to suggest that interpersonal relationships or social support may buffer or moderate an individual's response to occupational stressors. Caplan et al. (1975) also supported the concept of a buffer hypothesis to explain the interaction between stress, strain and social support. Social support was conceptualized as including the helpful activities of others and ease of communication with others.

Cobb (1976) defined social support as "information that leads a person to believe he/she is cared for, esteemed and valued, and belongs to a network of communication and mutual support" (p. 37).

The research examining social support has resulted in mixed findings. While some studies have found that social support buffers the effect of job stress (Abdel-Halim, 1982; Etzion, 1984; House, 1981; Seers, McGee, Serey & Graen, 1983), others have not found such a relationship (Kaufman & Beehr, 1986; Fisher, 1985; Ganster, Fusilier & Mayes, 1986).



Abdel-Halim (1982) investigated the moderating effects of social support variables (support from the work group and supervisor) on the relationship between role conflict and ambiguity to job satisfaction, involvement, and anxiety. Results showed that while support tended to buffer against negative effects in job satisfaction and involvement, it did not moderate heightened feelings of anxiety associated with role stressors.

House (1981) presented evidence for the moderating effects of social support, and showed that as stress levels increase, the role of social support becomes more important in preventing deterioration in performance. La Rocco, House and French (1980) found that social support moderated the effects of perceived role overload and work overload on complaints of irritation and depression.

Cohen and Wills (1985) have suggested that social support may not only have a buffering effect that lessens the adverse effects of stress, but also a main effect on stress symptomology. They suggest that buffering is most likely to occur when there is a reasonable match between coping requirements and available support.

Sykes and Eden (1985) found a main effect for social support on measures of satisfaction, but no evidence for a moderating effect on the stress/strain relationship.

Fisher (1985) also found a main effect for social support from co-workers and supervisors on reducing stress from unmet expectations in a sample of nurses. Ganster, Fusilier, and Mayes (1986) also showed that social support had a main effect, rather than moderating strain.

Kirkmeyer and Dougherty (1988) investigated the buffering role of social support in the relationship of work load to both tension-anxiety and coping for police radio dispatchers. Results showed a buffering role for support. "Under high perceived load, dispatchers with high social support engaged in more coping actions and felt less tension-anxiety than did low-support dispatchers. No differences were found when perceived load was low. Support also buffered effects of objective load on tension-anxiety, but not coping" (p. 125).

In conclusion, the research evidence thus far indicates that while social support is an important factor to consider when predicting variations in the stress/

strain relationship, it is not clear in what manner these changes occur. As Kirkmeyer and Dougherty (1988) remark, "the role of social support in moderating the detrimental effects of organizational stressors on personal functioning remains controversial" (p.126).

### Person/Environment Congruence

Another approach to investigating occupational stress has involved testing the concept of person/environment fit, or congruence (French et al., 1974; French et al., 1982; Van Harrison, 1978). French et al. (1974) hypothesized two types of fit between a person and her/his environment: (1) A fit between the person's needs and values and the opportunities provided by the environment in which he/she operates, and (2) A fit between the demands of the environment and the abilities of the person to meet those demands.

McMichael (1978) explains that the "basic assumption of the [person-environment fit] theory is that when person-environment misfit of either kind threatens an individual's well-being, stress will occur and manifesta-

tions such as job dissatisfaction, anxiety, depression, and physiological problems will follow" (p. 128).

French et al. (1982), in a test of the person-environment fit theory with 2,000 people in 23 different occupations found that "measures of fit accounted for about twice as much variance in strain as did the additive effects of their component measures of the environment and of the person" (p. 107). These results support Muchinsky and Monahan's (1987) statement that "the concept of person environment congruence is grounded in the interactionist theory of behavior. The interactionist theory asserts that neither personal characteristics nor situational constraints determine the lion's share of variance" (p. 268).

Similarly, Pervin (1987) states that congruence rarely involves a relation between a single motive or personality characteristic and a single dimension of the environment. Rather, more typically person-environment interaction, and thereby questions of congruence, involve relations between multiple personal goals and multiple environmental demands or opportunities for goal attainment. Processes of interaction and the question of

congruence need to be considered in terms of systems, and relations between person and environment systems (p. 229).

Muchinsky and Monahan (1987) propose that there appear to be two types of person-environment congruence. The first is supplementary congruence, and is described as essentially a model of person-person fit. The environment in this case is defined by the people in it. People assess others who make up an environment and decide whether they would be compatible with them. This supplementary model of the fit is "the foundation of vocational counseling" and "the prototypical illustration of supplementary concept of person-environment fit in vocational choice is reflected in Holland's (1973) theory" (p. 270). The second type of congruence is labeled complementary and is described as a match between an individual's talents and the corresponding needs of the environment. "By complementary we mean the characteristics of an individual serve to 'make whole' or complement the characteristics of an environment" (p. 271). Thus, complementary congruence appears to be associated with industrial-organizational psychology.

Assouline and Meir (1987) used meta-analysis to examine the results of 41 different studies on person-environment congruence. They found support for a relationship between congruence and job satisfaction, especially when specialty or specific congruence was used.

Moos (1987) reports that a few studies have examined person environment factors as moderators of job stressors and performance. "An optimal match between person and environment can contribute to morale and reduce the dysfunctional congruences of the same work settings" (p. 235). Moos suggests that persons who are involved with their jobs, and presumably congruent, are better able to overcome problems at work than less congruent persons.

Latack (1981) suggests that "insights provided by person-environment fit research might serve as a base for exploratory programs in organizations. Individuals in organizations are seldom provided with any clues for understanding the nature of their stressful situations; person-environment-fit models are at least a beginning for this purpose" (p. 92).

Latack (1981) also suggests that "... it would seem logical to explore models from vocational psychology to provide a conceptual base for the future research, rather than to proceed piecemeal and atheoretically, as has been the case with the search for moderators of the role-stress relationship" (p. 92). Latack proposes using Holland's (1973) model of person/environment congruence as a predictor of role stress.

#### Holland's Model of Congruence

A matching or congruence approach is the oldest model used in vocational psychology, with early work in this area known as the trait-factor model. One of the most prominent matching model theorists is John Holland and his career typology theory of vocational behavior.

There are several underlying principles upon which the theory is based (Holland, 1973, 1984). First, the choice of an occupation is an expression of personality. One's personality is a composite of needs, traits, competencies, and interests that have developed from both hereditary makeup and environmental influences. Second, Holland has hypothesized that people select occupations

that will allow them to use their abilities and competencies as well as personality. As part of the job selection process, people project their views of themselves and the world of work on to occupational titles. Thus, interest inventories can actually be personality inventories.

Holland observed that most of the people view the world of work in terms of occupational stereotypes. These stereotypes were hypothesized to have reliable and important psychological meaning, and if an individual has little knowledge about a particular vocation the resulting stereotype is revealing, similar to the way in which a projective test is presumed to reveal personality dynamics.

Another important principle of Holland's theory is that vocational satisfaction, stability and achievement depend upon the congruence between one's personality and the environment in which one works. Holland suggests that congruence reflects the degree to which a person's individual characteristics match the environmental demands of the chosen occupation. Holland predicts that congruent persons will be reinforced by the work environments,



experience satisfaction, and not be as likely to change work environments as incongruent persons.

Holland (1973, 1984) has classified personality orientations into 6 types; realistic, investigative, artistic, social, enterprising, and conventional. The descriptions of these types are as follows:

(1) Realistic (R) persons prefer concrete, explicit activities. They can be characterized by such adjectives as realistic, practical and frank. These persons tend to select activities requiring mechanical skill or motor coordination such as farming or carpentry.

(2) Investigative (I) people prefer symbolic and scientific activities. They can be characterized by such adjectives as achieving, curious, scientifically inclined, and reserved. These persons tend to select occupations such as mathematician or researcher in the biological and physical sciences.

(3) Artistic (A) persons prefer creative activities and those which require self-expression. They can be

characterized by such adjectives as imaginative, expressive, and sensitive. These persons tend to select occupations in the performing arts, writing, or music.

(4) Social (S) people prefer people-oriented activities. They can be characterized by adjectives such as warm, extroverted, and sociable. These persons tend to seek close interpersonal relationships, and to select occupations that involve informing or helping, such as teacher or psychologist.

(5) Enterprising (E) people prefer activities that involve influencing others. They can be characterized by such adjectives as dominant, energetic, and enthusiastic. These persons are often verbally skilled and tend to select such occupations as lawyer or salesperson.

(6) Conventional (C) people prefer structure and have a concern for rules. They are characterized by such adjectives as orderly, persistent, and conservative. These persons tend to select occupations which involve systematic manipulation of words or numbers,

such as cashiers or administrative assistant.

Holland also classified work settings or environments into the same six types, according to the predominant personality patterns in that environment. People search for environments that will let them exercise their skills and abilities and express attitudes and values. Because different types seek out different environments, congruence exists when a person's orientation and the environmental orientation are the same (an A person employed in an A environment).

Holland's concept of consistency states that some pairs of types are more closely related than others. For example, realistic-investigative have more in common than do conventional-artistic. Relationships between the types or environments can be ordered according to a hexagonal model in which distances between types or environments are inversely proportional to the theoretical relationships between them. The hexagonal arrangement is supported by scale intercorrelations of type/environment descriptions.

An interaction between an individual's personality and the characteristics of her/his environment are re-

flected in outcomes such as vocational satisfaction, vocational stability, and other aspects of behavior.

### Assessment Tools

Holland's theory has led to the development of assessment procedures to classify individuals and environments. These include the following instruments:

(1) The Self-Directed Search (SDS)

This instrument uses a self-assessment book and an occupation finder, and is intended to simulate the vocational counseling experience. It produces scores in each of the 6 areas and summary scores of each personality type are calculated and transformed into a three-letter code of highest ranking types.

(2) Vocational Preference Inventory (VPI)

This instrument was developed prior to either the theory or SDS. It consists of 160 occupational titles to which the subject is instructed to express interest or disinterest. Scale scores are obtained on each of the six types.

(3) The Strong Campbell Interest Inventory (SCII)  
With the 1974 revision, this inventory was integrated with and organized by Holland's theory. The six types were measured by the content scales and Holland categories were used as a base for reorganizing all scales.

### Research Investigations

Latack (1981) states that since Holland's theory was introduced, well over 350 studies have been published, many of which support the assumption that people choose occupations that "fit" their personality type. Spokane (1985) states that "because person-environment interaction quotients can be easily derived from conveniently available test data, many studies have investigated the relationship between an individual's personality type and the field of vocational choice that person has selected (congruence) at a single point in time" (p. 307).

Spokane (1985) explains that studies of congruence usually use one of two basic research designs. "The first design is correlational. Subjects are classified as either congruent or incongruent, and complete a set of

criterion measures on which congruent and incongruent individuals are then compared. In the second design, time series or experimental studies (change studies) are used to study changes in congruence over time. These latter studies are fewer in number, but they are more analytical" (p.11).

### Congruence and Job Satisfaction

Meir and Yaari (1988) state that Holland's (1973, 1985) hypothesis that congruence is positively correlated with job satisfaction has given rise to several studies testing its validity. "The studies differ by the specific environments on which they were conducted (e.g., specific occupations, educational institutions), by the criterion chosen as the dependent variable (e.g., satisfaction, stability), and by the measuring indices (e.g., level of congruence vs. noncongruence, on the hexagon), as well as by other attributes" (p. 99).

Although Spokane (1985) concluded from his review of several dozen of such congruence studies that "higher congruence was substantially related to job satisfaction " (p. 319), Smart, Elton, and McLaughlin (1986) state that

"the empirical foundation for this broad conclusion is weakened by several limitations in studies that have examined this relationship" (p. 217). Smart et al. point to three specific limitations, including: (1) studies of single occupational groups, (2) studies which focus only on overall job satisfaction and do not examine other dimensions of satisfaction on the job, and (3) failure of most studies to include controls for other known correlates of job satisfaction, such as educational level.

Mount and Muchinsky (1978) improved on many earlier correlational studies by using a sample of employed adults to test the relationship between congruence and job satisfaction. Results showed that congruent workers had significantly higher satisfaction scores than did incongruent workers. Magnitude and significance of differences between congruent and incongruent subjects varied across environments, which was attributed to a generally high level of satisfaction in a Holland-classified social work environment. Weiner and Klein (1978) found that job satisfaction was related to congruence in workers with long tenure, but not for workers with short tenure.

Spokane (1985) reports that for the studies he reviewed, those conducted in educational or work environments "produced mixed findings, but suggested consistent relationships between congruence and job satisfaction that have not been found in previous reviews" (p. 319).

Smart, Elton and McLaughlin (1986) found that person-environment congruence (as defined by Holland) was positively related to intrinsic job satisfaction of males and females. However, the authors note that "gender-specific differences are apparent in terms of the relationship between person-environment congruence and extrinsic (males only) and overall (females only) job satisfaction. These relationships are consistent for all personality types included in the study" (p. 216).

#### Holland's Model and Stress Research

Latack (1981) has proposed using Holland's (1973) model as both a conceptual base for studying person/role conflict, and also as an objective measure of one type of person/role conflict: person/role congruence. Latack suggests the following reasons why organizational re-



searchers should find Holland's paradigm useful in studying stress:

(1) It orders and limits the potential morass of atheoretical person/environment relationships that could be examined.

(2) It is empirically appropriate because it provides a means of measuring both the person and the role on the same dimension.

(3) The Holland model links person/role incongruence to the interactionist framework proposed and empirically supported in the general stress literature.

Latack (1981) predicts that person/role incongruence will be positively related to such strain indicators as job dissatisfaction, anxiety, and tendency to change occupations.

Payne (1988) notes that "patterns of individual differences do vary by occupation, and they may indirectly affect the emergence of psychological stress and the means people use to deal with it" (p. 211). Thus, although

Latack proposes using the Holland model to examine role stress in particular, it is reasonable to expect that congruence, as an individual difference variable, may also be used to investigate other aspects of the stress/strain relationship. Congruence, along with other individual difference variables such as locus of control or coping, may be examined as a possible moderator of the stress/strain relationship. Payne (1988) points out that several authors have treated individual difference variables as moderators and that "the assumption behind this analytical procedure is that the relationship between stress and strain will vary according to the level of the moderator variable" (p. 211). An example of this is Osipow and Davis' (1988) study of the role of coping as a moderator of the relationship between stress and strain.

In summary, the concept of person/environment congruence has proved useful in explaining one possible factor that may influence the stress/strain relationship. The Holland model of congruence, well established within the field of vocational psychology, would appear to be an additional source of information about individual differences which may moderate the effects of stress in the workplace.

## PURPOSE AND HYPOTHESES OF PRESENT STUDY

The purpose of the present study was to investigate whether person/job congruence, as measured by the Holland system, acted as a moderator to the stress/strain relationship. Congruence was thus hypothesized to be a variable which changes the relationship between occupational stress and subsequent strain. That is, the relationship between stress and strain would vary according to the level of congruence.

The independent variables were role overload, role insufficiency, ambiguity, role boundary, responsibility, and physical environment. Dependent variables were vocational, psychological, interpersonal, and physical strain and job satisfaction. Congruence was analyzed as a moderator variable.

The following hypotheses were advanced:

Hypothesis 1: High congruence will result in a weaker association between measures of occupational stress and strain (collectively) than will low

congruence. Low congruence will result in a stronger association between stressor and strain variables.

Hypothesis 2: Degree of congruence will be positively associated with job satisfaction. Highly congruent persons will report a greater degree of job satisfaction than will persons with a low degree of job congruence.

Hypothesis 3: Degree of congruence will be negatively associated with the degree of psychological and vocational strain. Highly congruent persons will report less psychological and interpersonal strain than will persons with a low degree of congruence.

## METHOD

## Subjects

The subjects were 249 adult women and men who were employed in full-time positions. One hundred eighty-five subjects were employed with the University of Missouri-Columbia. The university employees were from the following departments: Campus Computing (13), Campus Police (27), Campus Dining (26), Student Counseling Service (14), Financial Aid (8), University Hospital (22), Personnel (18), Residence Life (26), Student Development (14), Department of Neurology (11), and Administration/Library, (6).

Twenty-one subjects were employed by a large midwestern insurance company. Fourteen subjects were employed at a small printing company in rural Iowa, and 29 subjects were employed by an Iowa county government.

There were 170 females and 79 males in the sample. Age range of subjects was from 21 to 72 years of age, with a mean age of 38.06. Educational level ranged from 10th grade to the Ph.D. level. The mean educational level was

two years of college education. Time on the job ranged from one month to 42 years, with a mean of six years. There were over 75 different occupations represented in the sample.

### Measures

#### Occupational Stress Inventory (OSI)

The Occupational Stress Inventory was administered to all subjects. The OSI was developed from a model of occupational stress, strain, and coping proposed by Osipow and Spokane (1983). "The model is based on the assumption that in their work people experience a variety of social role assignments which they are able to report faithfully upon request. The model is perceptually oriented" (Osipow and Davis, 1983, p. 2). Additionally, the system hypothesizes "that where perceived occupational stressors are equal for two people, differences in coping resources would serve to moderate the resulting strain" (p. 2).

This instrument consists of 3 separate questionnaires. The Occupational Roles Questionnaire (ORQ) is a

60-item, 5-position Likert-scaled inventory with six subscales of 10 items each (role overload, role insufficiency, role ambiguity, role boundary, responsibility, and physical environment). This scale represented the independent variables in the study. The Personal Strain Questionnaire (PSQ) is a 40-item Likert-scaled inventory with 4 sub- scales of 10 items each (vocational strain, psychological strain, interpersonal strain, and physical strain). This scale represented four of the five dependent variables in the study. The Personal Resources Questionnaire (PRQ) is a 40-item inventory with four subscales (recreation, self-care, social support, and rational/ cognitive coping). Although subjects completed this scale as well, responses to the PRQ were not analyzed in the present study. The entire inventory took subjects from 30-45 minutes to complete.

Normative data were collected by Osipow and Spokane (1983) on 909 adult subjects in 130 occupations primarily those employed in manufac- turing settings, technical, professional and managerial positions, schools, and service organizations. Items are written at a seventh-grade reading level.

Overall internal consistency scores for the three inventories were .89 (ORQ), .94 (PSQ), and .88 (PRQ). Internal consistency scores for the individual subscale ranged from .71 to .94.

The ORQ correlates +.52 with the PSQ and -.22 with the PRQ. This is consistent with the prediction that occupational roles (stressors) are correlated positively with personal strain, negatively with personal resources. The PSQ correlates -.50 with the PRQ, which again confirms the hypothesis that strain will be negatively correlated with personal resources. Further validity evidence has been found through factor analysis and a number of unpublished studies.

#### Vocational Preference Inventory (VPI)

All subjects completed the Vocational Preference Inventory. The VPI (Holland, 1985) is a self-administered inventory consisting entirely of 160 occupational titles. Subjects complete the inventory by simply indicating the occupations they like or dislike on an accompanying answer sheet.



Although the VPI has 11 scales, only 6 are used to assess the person's primary vocational interest. These scales are realistic, artistic, investigative, social, enterprising, and conventional, and are interpreted according to Holland's (1973, 1985) theory. The remaining five scales assess such information as values, coping behaviors, and interpersonal relationships and are not of research interest in the proposed study.

Items are easily scored by simply counting the indicated responses. Resulting scale scores indicate a predominant personality type, according to the three highest ranked types (e.g., RIC, SIA, etc).

Although some studies use only the highest code letter to describe people's resemblance to each personality type, three-letter codes provide information that may be lost in a first-letter index. Spokane (1985) states that "first-letter agreement indices should not be used in congruence research with mixed male and female samples. Indices which use 3 or more letters of the personal code (M, K-P, Zener) are preferable to first-letter codes" (p. 334).

Moderate to high reliability has been reported for the VPI, with concurrent or predictive validity of the VPI being equal to or exceeding the concurrent or predictive validities of other interest scales (Holland, 1985).

The VPI and another of Holland's instruments, the Self-Directed Search (SDS) are similar in that both instruments assess a subject's resemblance to the six personality types in Holland's theory. The VPI was chosen for this study because it is less expensive and takes less time to complete than SDS, and is more oriented to the needs of clinicians who are not interested in long range career counseling (Holland, 1985). Work environment was classified by Holland type using the Occupations Finder of the SDS and the Holland Dictionary of Occupational Titles.

The two three-letter codes, one from the subject and one from the work environment were then assessed for degree of congruence using the Iachan (Iachan, 1984) index. The Iachan index is "the most accurate technique for assessing the degree of agreement between any pair of three-letter codes" (Holland, 1985). Degree of congruence was analyzed as a moderator variable.

Minnesota Satisfaction Questionnaire (MSQ)

The Minnesota Satisfaction Questionnaire was administered to all subjects. The MSQ (Weiss, Davis, England & Lofquist, 1967), is a self-administered, Likert-format questionnaire designed to obtain information about how people feel about their jobs. The MSQ was developed to test a theory of work adjustment based on the premise that work adjustment is a continuous and dynamic interaction between an individual and a work environment. The MSQ was designed to parallel a companion measure of vocational needs, the Minnesota Importance Questionnaire (MIQ).

The MSQ has a long form and a short form. The short form was used in the present study. It consists of 20 statements that are intended to assess how satisfied a person is with the possible reinforcers of his/her job. The short form of the MSQ was developed from the long form by choosing one representative item from each of 20 scales on the long form. The MSQ has 3 scales: intrinsic and extrinsic satisfaction, as well as general satisfaction.

Hoyt internal consistency reliability coefficients for the intrinsic scale range from .84 to .91 for the

intrinsic scale; from .77 to .82 for the extrinsic scale, and from .87 to .92 for the general satisfaction scale. Stability for the general satisfaction scale may be inferred from the long form MSQ since both tests use the same 20 items. The long form test-retest yielded coefficients of .89 over a one-week period, and .70 over a one-year period.

Validity on the MSQ short form may also be inferred from the long form. Acceptable construct validity reported in the manual for the long form is derived from construct validation studies based on the theory of work adjustment. Intercorrelations among the three short form MSQ scales are: intrinsic-extrinsic: .60, intrinsic-general: .88, extrinsic-general: .82.

The MSQ is scored by assigning a score of 1-5 (1=very dissatisfied; 2=dissatisfied; 3=neither; 4=satisfied; 5=very satisfied) to each item response. The raw score is determined by adding individual scores. The three scales are derived from the following items:

Intrinsic: 1,2,3,4,5,6,7,8,9,10,11,15,16,20

Extrinsic: 5,6,12,13,14,19

General: all item scores

General satisfaction is the primary variable of interest in the present study.

### Negative Affectivity Scale

Negative affectivity was measured by the 14-item Negative Emotionality scale from Tellegen's Multidimensional Personality Questionnaire (Tellegen, 1982). The NEM scale focuses on the experience of negative affect and contains no somatic complaints or health-related items. The NEM demonstrates high test-retest reliability ( $r=.72$  over a twelve-week period). Factor analyses of the NEM items show a single factor.

### Procedure

A letter explaining the purpose of the study and requesting participation was presented to employees at one of their regularly scheduled staff meetings. The confidentiality of subjects' responses as well as the voluntary nature of their participation was stressed. This letter was designed to give interested employees the information

necessary to make an informed decision about participation in the study, and was approved by the Iowa State University Human Subjects Review Committee. See Appendix F. Employees were informed that only group summary statistics would be reported, and that individual responses would be anonymous.

Employees who chose to participate signed up for one of several assessment sessions which the researcher conducted at the worksites. The majority of subjects completed the surveys during regularly scheduled work hours, and approximately 30 subjects completed the questionnaires outside a scheduled session and mailed the completed measures to the researcher.

### Analyses

Pearson product-moment correlations were used to investigate Hypotheses 2 and 3. Additionally, correlations were used to investigate the strength and direction of relationships among major variables.

Multiple regression analyses were used to test Hypothesis 1. In these analyses, role overload, role insuf-

iciency, role ambiguity, role boundary, responsibility, and physical environment represented the independent variables. Vocational strain, psychological strain, interpersonal strain, physical strain, and job satisfaction represented the dependent variables.

The first step in the regression analysis was to test for main effects when dependent variables of strain and job satisfaction were regressed onto the independent variables of stress. Next an interaction term containing congruence and each independent variable was added to the model statement for main effects. Moderating effects were evidenced if there was a significant increase in R-square from the main effect to R-square for the full model.

## RESULTS

### Descriptive Statistics

Descriptive statistics for the stress variables are presented in Table 1. Mean scores on all stress variables indicate that this subject sample reported moderate levels of stress that were within the "normal" range when scored by the OSI.

Descriptive statistics for the strain variables are presented in Table 2. Again, scores on all strain variables fall with the moderate range.

The mean score for general job satisfaction was 74.16 with a standard deviation of 11.41 (100 represents a maximum score indicating the subject was very satisfied on all dimensions of job satisfaction being measured). The manual for the Minnesota Satisfaction Questionnaire, from which this scale was taken, reports a mean general job satisfaction score of 74.85 for the norm group.



Table 1. Descriptive statistics for stress variables

Variables	n	Mean	Standard Deviation
Role Overload	249	24.60	6.81
Role Insufficiency	249	24.95	8.36
Role Ambiguity	249	20.66	6.31
Role Boundary	249	21.62	6.78
Responsibility	249	24.85	7.21
Physical Environment	249	16.31	6.06

Table 2. Descriptive statistics for strain variables

Variables	n	Mean	Standard Deviation
Vocational Strain	249	17.54	4.45
Psychological Strain	249	20.04	6.53
Interpersonal Strain	249	20.65	5.76
Physical Strain	249	19.85	7.07

### Correlations Among Independent Variables

Intercorrelations among stress variables are shown in Table 3. A significant relationship was shown between role overload and role ambiguity ( $r=.28, p<.0001$ ), role boundary ( $r=.30, p<.0001$ ), and responsibility ( $r=.57, p<.0001$ ). The correlation between role overload and responsibility is high, and indicates that as subjects perceived that they were being asked to "wear more hats," they also felt an increased sense of responsibility to do so.

Role ambiguity showed a substantial relationship with role boundary ( $r=.54, p<.0001$ ). This finding indicates that as subjects experienced conflicting role demands and loyalties in the work setting, that they also experienced a lack of clarity about priorities and expectation criteria.

A similar finding showed role insufficiency strongly related to role boundary ( $r=.61, p<.0001$ ). In this instance, subjects' perceptions regarding their training, education, and experience with respect to job requirements

Table 3. Correlations among stress variables

Variables	RO	RI	RA	RB	Ry	PE
Role Overload (RO)	----					
Role Insufficiency (RI)	-.099	----				
Role Ambiguity (RA)	.278*	.313*	----			
Role Boundary (RB)	.304*	.614*	.541*	----		
Responsibility (Ry)	.573*	-.060	.127	.226	----	
Physical Environment (PE)	.143	.194	.116	.248*	.243*	----

\* Significant at  $p < .01$ .

were highly related to their perceptions of role demands in the work setting.

Role ambiguity and role insufficiency showed a significant relationship ( $r=.31$ ,  $p<.001$ ). This finding indicates that subjects' perceptions about their ability to meet job requirements were related to their perceptions about expectations and criteria for job performance.

Physical environment showed a significant relationship with role boundary ( $r=.25$ ,  $p<.0001$ ), as well as with responsibility ( $r=.24$ ,  $p<.0001$ ). Interpretation of this result is not clear, but may indicate that stressors in subjects' physical environments lead to questions regarding loyalties in the work setting, as well as an increased feeling of responsibility for the welfare of others on the job. This would likely be especially the case for those subjects whose occupations were in law enforcement.

Although intercorrelations were present among the independent variables, they were not at a level that would suggest the presence of multicollinearity.

### Correlations Among Dependent Variables

Intercorrelations among strain variables and the three dimensions of job satisfaction are shown in Table 4.

The strain measures were all significantly intercorrelated. Vocational strain was significantly related to psychological strain ( $r=.60$ ,  $p<.0001$ ), interpersonal strain ( $r=.34$ ,  $p<.0001$ ), and physical strain ( $r=.41$ ,  $p<.0001$ ). Psychological strain was significantly related to interpersonal strain ( $r=.54$ ,  $p<.0001$ ), and physical strain ( $r=.70$ ,  $p<.0001$ ). Interpersonal strain was significantly related to physical strain ( $r=.54$ ,  $p<.0001$ ). These findings suggest that when subjects experienced the effects of strain, those effects tended not to be isolated in one particular area of their lives at work. For instance, if subjects were experiencing interpersonal strain, or having difficulties with others in their work environments, those difficulties would tend to be highly related to the physical strain subjects experienced in the form of headaches or other bodily manifestations of strain.

Table 4. Correlations among strain variables and job satisfaction

Variable	VS	Psy	IS	Phs	Int	Ext	Gen
Vocational Strain (VS)	----						
Psychological Strain (Psy)	.612*	----					
Interpersonal Strain (IS)	.344*	.543*	----				
Physical Strain (Phs)	.412*	.695*	.544*	----			
Job Satisfaction (Int)	-.501*	-.425*	-.177*	-.242*	----		
Job Satisfaction (Ext)	-.407*	-.430*	-.177**	-.301*	.740*	----	
Job Satisfaction (Gen)	-.503*	-.475*	-.194*	-.293*	.960*	.865*	----

\* Significant at  $p < .01$ .

\*\* Significant at  $p < .05$ .

As expected, the three dimensions of job satisfaction were highly intercorrelated. Intrinsic job satisfaction scores correlated significantly with extrinsic job satisfaction ( $r=.74$ ,  $p<.0001$ ), and general job satisfaction ( $r=.96$ ,  $p<.0001$ ). Extrinsic job satisfaction scores also were significantly correlated with general job satisfaction ( $r=.87$ ,  $p<.0001$ ). All three dimensions of job satisfaction were significantly negatively correlated with the strain variables. These negative correlations corroborate prior studies showing job satisfaction decreasing as occupational strain increases. Particularly high negative correlations were shown for the relationship between job satisfaction and both vocational and psychological strain (vocational strain  $r= -.50$ , psychological strain  $r= -.48$ , interpersonal strain  $r= -.19$ , and physical strain  $r= -.29$ ).

#### Correlations Between Independent and Dependent Variables

Intercorrelations among the major independent and dependent variables are shown in Table 5.



Table 5. Correlations between stress, strain variables, and job satisfaction

Variable	RO	RI	RA	RB	Ry	PE
Vocational Strain	.326*	.483*	.478*	.584*	.318	.165
Psychological Strain	.391*	.316*	.354*	.529*	.383*	.223
Interpersonal Strain	.331*	.174	.252*	.246*	.266*	.234*
Physical Strain	.300*	.135	.275*	.301*	.266*	.161
Job Satisfaction (Int)	-.044	-.694*	-.454*	-.692*	.072	-.138
Job Satisfaction (Ext)	-.169	-.536*	-.529*	-.636*	-.106	-.141
Job Satisfaction (Gen)	-.077	-.697*	-.487*	-.720*	.003	-.168

\* Significant at  $p < .01$ .

Vocational strain was significantly related to role overload ( $r=.33$ ,  $p<.0001$ ), role insufficiency ( $r=.48$ ,  $p<.0001$ ), role ambiguity ( $r=.48$ ,  $p<.0001$ ), role boundary ( $r=.58$ ,  $p<.0001$ ), and responsibility ( $r=.32$ ,  $p<.0001$ ). These relationships suggest that as subjects perceived problems in work quality, work output, or in attitudes toward work, they also experienced difficulties with the various work role dimensions. This seems particularly true for the relationship between vocational strain and role boundary.

Psychological strain was significantly related to role overload ( $r=.39$ ,  $p<.0001$ ), role insufficiency ( $r=.32$ ,  $p<.001$ ), role ambiguity ( $r=.35$ ,  $p<.0001$ ), role boundary ( $r=.55$ ,  $p<.0001$ ), and responsibility ( $r=.38$ ,  $p<.0001$ ). Again, role boundary showed a strong relationship to subjects' perceptions of psychological and/or emotional difficulties. Role overload also showed a moderately strong relationship to psychological strain, indicating that subjects were more likely to experience emotional problems if they perceived that their job demands exceeded their personal resources.

Interpersonal strain was significantly related to role overload ( $r=.33$ ,  $p<.0001$ ), role ambiguity ( $r=.25$ ,  $p<.0001$ ), role boundary ( $r=.25$ ,  $p<.0001$ ), responsibility ( $r=.27$ ,  $p<.0001$ ), and physical environment ( $r=.23$ ,  $p<.0001$ ). The relationships between the role variables and interpersonal strain indicate that as subjects experienced difficulty in such areas as having conflicting role demands or ambiguity in job expectations, they also tended to experience some degree of disruption in their interpersonal relationships.

Physical strain was significantly related to role overload ( $r=.30$ ,  $p<.0001$ ), role ambiguity ( $r=.28$ ,  $p<.0001$ ), role boundary ( $r=.31$ ,  $p<.0001$ ), and responsibility ( $r=.27$ ,  $p<.0001$ ). These relationships suggest that subjects' degree of difficulty in dealing with work-related role demands may be reflected by increased concern about their health as well as physical symptoms of stress.

Job satisfaction was negatively correlated with both stress and strain variables.

Role insufficiency was highly negatively correlated with intrinsic job satisfaction ( $r = -.69$ ,  $p < .0001$ ), extrinsic job satisfaction ( $r = -.54$ ,  $p < .0001$ ), and general job satisfaction ( $r = -.70$ ,  $p < .0001$ ).

Role ambiguity was negatively correlated with intrinsic job satisfaction ( $r = -.45$ ,  $p < .0001$ ), extrinsic job satisfaction ( $r = -.53$ ,  $p < .0001$ ), and general job satisfaction ( $r = -.48$ ,  $p < .0001$ ).

Negative relationships at a significant level were also found for role boundary and intrinsic job satisfaction ( $r = -.69$ ,  $p < .0001$ ), extrinsic job satisfaction ( $r = -.64$ ,  $p < .0001$ ), and general job satisfaction ( $r = -.72$ ,  $p < .0001$ ).

#### The Relationship Between Stress and Strain

One purpose of the present study was to test the validity and usefulness of the stress/strain model of occupational stress. A first step in this investigation involved a multiple regression analysis in which the four strain variables and general job satisfaction were regressed onto the six stress variables. Table 6 presents the

Table 6a. Multiple regression of strain on stress: Multiple correlations and standardized partial regression coefficients

Variable	RO	RI	RA	RB	Ry	PE
<u>Vocational Strain</u> ( $R^2 = .47$ , $p = .0001$ )						
p	.0334	.0001	.0002	.0110	.0006	.4284
$\beta^a$	.1323	.3342	.2143	.1864	.2024	-.0392
r	.3260	.4830	.4780	.5840	.3180	.1650
<u>Psychological Strain</u> ( $R^2 = .38$ , $p = .0001$ )						
p	.0138	.0694	.2392	.0001	.0012	.4574
$\beta$	.1664	.1275	.0720	.3047	.2078	.0399
r	.3910	.3160	.3540	.5290	.3830	.2230
<u>Interpersonal Strain</u> ( $R^2 = .19$ , $p = .0001$ )						
p	.0008	.0246	.0554	.4169	.2036	.0199
$\beta$	.2603	.1806	.1341	-.0733	.0924	.1436
r	.3310	.1740	.2520	.2460	.2660	.2340

<sup>a</sup> $\beta$  = standardized partial regression coefficient.

Table 6b. Multiple regression of physical strain and job satisfaction on stress:  
Multiple correlations and standardized partial regression coefficients

Variable	RO	RI	RA	RB	Ry	PE
<u>Physical Strain</u> ( $R^2=.17$ , $p=.0001$ )						
p	.0570	.7276	.0569	.1823	.0944	.3533
$\beta^a$	.1490	.0283	.1355	.1225	.1236	.0579
r	.3000	.1350	.2750	.3010	.2660	.1610
<u>Job Satisfaction</u> ( $R^2=.62$ , $p=.0001$ )						
p	.9635	.0001	.0014	.0001	.0573	.8552
$\beta$	.0023	-.3841	-.1488	-.4266	.0916	.0074
r	-.0770	-.6970	-.4870	-.7200	.0030	-.1680

<sup>a</sup> $\beta$  = standardized partial regression coefficient.

results of the multiple regression analyses of strain on stress. Included in Table 6 are regression effects (R-squares) for each dependent variable. The R-square figures equal the proportion of variance that is "explained" by the independent variables. Thus, 38% of the variance in psychological strain is associated with the independent stress variables, while 17% of the variance in physical strain is associated with the stress variables.

R-square is a measure of the degree to which the best combination of stress variables predicts the dependent variables. Results of the regression analyses showed the R-square was significant in all cases, which supports the hypothesis that stress variables can predict strain in this sample. The independent variables also account for 62% of the variance in general job satisfaction.

Table 6 also presents the standardized partial regression coefficients of strain on stress. The standardized partial regression coefficients index the degree of relationship of each independent variable to the dependent variables of strain and job satisfaction.

An examination of Table 6 shows that role insufficiency had the largest contribution to vocational strain (.3342), followed by role ambiguity (.2143), and responsibility (.2024). Role boundary was the largest contributor to psychological strain (.3047), followed by responsibility (.2078), with role overload (.2603) being the largest contributor to interpersonal strain.

### Congruence

Congruence in this study was defined as the degree of agreement between the subject's three-letter code as derived from the Vocational Preference Inventory and the three-letter code derived from the subject's actual occupation. Congruence was computed using the Iachan (1984) index. Congruence scores computed in this manner can range from 0 (no congruence or match of any letter combination) to 28 (perfect congruence, an ordered match of all letter pairs). One difficulty in computing congruence was handling the presence of tied scores in the VPI scores. It was determined that ties be broken in a random fashion, and this was accomplished by adding the capability for random number generation to the computer scoring program for the VPI.



In order to test the hypothesis that congruence acts as a moderator to the stress/strain relationship, a second multiple regression analysis was performed. If congruence acted as a moderator, there should be a significant interaction between congruence and the independent variables of stress such that the detrimental effects of stress would be less pronounced. Thus, the interaction of congruence with each independent variable was added to the model statement for main effects. Evidence for congruence showing a moderating effect would be demonstrated by an increase in R-square from the unmoderated regression. Table 7 shows the results of the moderated and unmoderated regression analysis in terms of the R-square for each analysis.

An examination of Table 7 shows that congruence did not appear to moderate the relationship between stress and strain for vocational strain, psychological strain, or general job satisfaction. A slight moderating effect for congruence was shown for interpersonal strain (increment to R-square of .027) and physical strain (increment to R-square of .024). Tables 8 and 9 show the ANOVAS for the moderated regression analysis with interpersonal and physical strain respectively.

Table 7. R-square\* for moderated and unmoderated regression analysis

Variable	Unmoderated	Moderated
Vocational Strain	.474	.476
Psychological Strain	.381	.392
Interpersonal Strain	.194	.221
Physical Strain	.170	.194
General Job Satisfaction	.621	.642

\* All values are significant at the .05 level.

Table 8. ANOVA of impact of congruence on interpersonal strain

Source	DF	MS	F	p
Model				
Interpersonal Strain	12	158.586	5.69	.0001
Error	240	27.889		

Table 9. ANOVA of impact of congruence on physical strain

Source	DF	MS	F	p
Model				
Physical Strain	12	210.278	4.82	.0001
Error	240	43.647		

In order to analyze further the relationship between congruence and stress, congruence was first divided into three levels. The basis for the division was as follows: scores of <9 were placed in the low-scoring group; scores of >10 and <21 were placed in the intermediate-scoring group; and scores >21 were placed in the high-scoring group. Division of the sample into high, intermediate, and low levels of congruence was guided by the goal of obtaining as close to a 33-33-33 percent split as possible.

A series of ANOVAS was performed which compared the impact of the three congruence levels on strain and job satisfaction. Post-hoc comparisons using Tukey's HSD procedures (Kirk, 1982) indicated no significant differences among congruence levels.

### Secondary Analyses of Congruence

The failure of the congruence variable to show a strong moderating effect then led to a closer examination of the relationship between congruence and the three dimensions of job satisfaction,. Surprisingly, congruence was not significantly correlated with job satisfaction,

and in fact showed a slightly negative correlation ( $r = -.033$ ,  $p = .599$ ).

Exploratory analyses were then performed which evaluated the possible impact of the 14 different job settings on congruence and job satisfaction. These analyses revealed that there were no significant differences in congruence by job setting. However there were significant mean differences in job satisfaction by job setting ( $F = 3.82$ ,  $p < .0001$ ).

Based on this finding, and in an effort to remove possible setting effects, all job satisfaction scores were standardized within job settings to a mean of 50 and a standard deviation of 10. These standardized job satisfaction scores were then correlated with congruence. Unfortunately, the standardization procedure did not prove to be effective. The overall correlation between congruence and job satisfaction remained in a negative direction and was not significant ( $r = -.062$ ,  $p = .329$ ).

Finally, the correlation between congruence and job satisfaction were examined within each job setting. Again, no significant correlations were found. This analysis was

limited, however, by the small sample size within job settings which ranged from only eight to 27 subjects.

### Negative Affectivity

The negative affectivity measure used in this study was included as a measure of a subject's tendency to respond in a chronically negative manner, as distinct from responding to objective stress he/she may be experiencing. The mean negative affectivity score for the sample was 5.02, on a scale from 1-14; the standard deviation was 3.69.

Table 10 presents the correlations between negative affectivity scores and scores on other major variables. As an examination of Table 10 reveals, 11 out of 13 correlations are significant. Negative affectivity is particularly highly correlated with psychological strain ( $r=.54$ ,  $p<.0001$ ), and physical strain ( $r=.53$ ,  $p<.0001$ ).

Although several other measures of negative affectivity include some questions referring to somatic complaints, the scale used in this study does not. Therefore, the correlation with physical strain may suggest

Table 10. Correlation between negative affectivity and major variables

Variable	Negative Affectivity
Role Overload	.124*
Role Insufficiency	.181*
Role Ambiguity	.158*
Role Boundary	.243**
Responsibility	.117
Physical Environment	.082
Vocational Strain	.347**
Psychological Strain	.538**
Interpersonal Strain	.358**
Physical Strain	.527**
Intrinsic Job Satisfaction	-.201*
Extrinsic Job Satisfaction	-.161*
General Job Satisfaction	-.215*

\* Significant at  $p < .05$ .

\*\* Significant at  $p < .01$ .



that subjects' responses to questions about physical symptoms reflect an underlying dimension of negative affectivity.

The high degree of relationship between psychological strain and negative affectivity would appear to be predictable, given that psychological strain measures a subject's feelings of depression, anxiety, and irritability. Likewise, negative affectivity scores may reflect a broad range of aversive mood states which could include anxiety, depression, and dissatisfaction.

#### Factor Analysis

Table 11 presents the principal axes varimax factors for stress, strain, job satisfaction and negative affectivity. Three factors emerged from this analysis.

Factor one appeared to be a vocational stress factor. There are high loadings on role insufficiency (.75), role ambiguity (.54), and role boundary (.80) as well as on vocational strain (.54). The high negative loadings on job satisfaction (-.89) and (-.76) illustrate that job dissatisfaction appears to be a function of role

Table 11. Principal axes varimax factors for stress, strain, job satisfaction and negative affectivity

Variable	Factor 1	Factor 2	Factor 3
Role Overload	.07	.17	.77
Role Insufficiency	.75	.13	-.15
Role Ambiguity	.54	.16	.25
Role Boundary	.80	.18	.28
Responsibility	-.01	.18	.72
Physical Environment	.17	.14	.21
Vocational Strain	.54	.39	.30
Psychological Strain	.37	.74	.33
Interpersonal Strain	.13	.57	.27
Physical Strain	.15	.78	.20
Intrinsic	-.89	-.16	.10
Extrinsic	-.76	-.14	-.11
Negative Affectivity	.13	.64	.01

insufficiency, role boundary and responsibility as they are expressed in vocational strain.

Factor two appeared to reflect the experience of being stressed. This factor represented personal strain, as distinct from vocational strain. High loadings appear for psychological strain (.74), interpersonal strain (.57) and physical strain (.78). Negative affectivity also loaded highly on this factor (.64) and appears to tap neuroticism/trait anxiety. Factor three appeared to be a responsibility factor with high loadings on role overload (.77) and responsibility (.72).

## DISCUSSION

Stress in the workplace has become an increasingly important concern to individuals and organizations because of its potentially detrimental effects. Stress has been implicated as a factor which may lead to job dissatisfaction, absenteeism, and voluntary turnover (Cooper & Marshall, 1978; French, Caplan & Van Harrison, 1982; Motowidlo, Packard & Manning, 1986; Ivancevich & Matteson, 1980; Ganster, Fusilier & Mayes, 1986). Other behavioral outcomes which have been linked to occupational stress include poor work performance and abuse of alcohol, drugs, or nicotine (Mobley, Griffith, Hand & Meglino, 1979; Markowitz, 1987; Poulton, 1978; Ivancevich, Matteson & Preston, 1982; Markowitz, 1987, Williams, Calhoun & Ackoff, 1982). Negative physiological manifestations in which work stress has been implicated include hypertension, headaches, elevated blood cholesterol levels, and immune suppression (Cooper, Mallinger & Kahn, 1978; Howard, Cunningham & Rechnitzer, 1986; Cooper & Marshall, 1976).

The potential costs of occupational stress should not be underestimated. A growing body of literature suggests

that stress at work is a critical factor in the determination of employee health and well-being. To the extent that stress is manifested in low productivity, job dissatisfaction, and high turnover rates, the organizational and personal costs can be extremely significant (Payne, Jick & Burke, 1982; Sharit & Salvendy, 1982; Hendrix, Steel & Schultz, 1987).

In order to deal effectively with stress and its effects, it is important to know what stress is, and the processes by which it produces detrimental effects.

The present study sought to answer two questions. First, is a stress/strain model of occupational stress valid for an average sample of working women and men? Second, does vocational congruence, or the degree to which one "fits" her/his work environment, act as a moderator to the stress/strain relationship?

### Occupational Stressors

The occupational stress variables that were investigated in this study were role overload, role insufficiency, role ambiguity, role boundary, responsibility, and the

physical environment. These occupational stressors are the predictors of occupational strain.

Role overload may be either quantitative or qualitative. Quantitative overload describes a condition in which an employee perceives that job demands exceed personal resources. Overload may thus consist of too much work to do or too little time to do the work. Qualitative overload on the other hand, refers to an employee's perception that she/he lacks the ability or skills necessary to complete the job, regardless of time or work load constraints.

The questions designed to measure role overload in this study included both quantitative and qualitative dimensions. Role overload "...measures the extent to which job demands exceed resources (personal and workplace), and the extent to which an individual is able to accomplish work loads" (Osipow & Spokane, 1983, p.1).

A moderate correlation (.28) was found between role overload and role ambiguity. Role ambiguity is a measure of the extent to which a person is unclear about his/her job responsibilities and expectations. The relationship

between role overload and role ambiguity suggests that if employees are unclear about what is expected of them at work or about what constitutes the scope of their job responsibilities, there is a tendency to err in the direction of taking on more duties or expecting more of oneself. This finding is further strengthened by the high correlation (.57) between role overload and responsibility.

Role boundary is a measure of the extent to which a person experiences conflicting role demands (role conflict) in the job setting. Role conflict may be a result of an employee receiving contradictory messages from supervisors, for example, or it may come from a discrepancy between one's goals and values and those of the organization. It is not surprising then, that a high correlation (.54) was found between role ambiguity and role boundary. Both variables are characterized by uncertainty and probably by an accompanying sense of frustration as well.

Role insufficiency measures "the extent to which an individual's training, education, skills, and experiences are appropriate to job requirements" (Osipow & Spokane,

1983, p. 1). Role insufficiency was highly correlated with role boundary (.61). Perhaps if an employee receives conflicting messages about job expectations or evaluation criteria, for example, she/he is also more likely to question her/his qualifications for the job. Conversely, one would expect that a work setting in which role expectations were clear and consistent would also be a setting in which employees would be less likely to continue questioning their skills and abilities.

### Occupational Strain

The occupational strain variables that were measured in this study were vocational strain, psychological strain, interpersonal strain, and physical strain. All strain variables were significantly intercorrelated. Vocational strain was significantly related to psychological strain ( $r=.60$ ), interpersonal strain ( $r=.34$ ), and physical strain ( $r=.41$ ). Psychological strain was strongly related to interpersonal strain ( $r=.54$ ), and physical strain ( $r=.70$ ). Interpersonal strain was significantly related to physical strain ( $r=.54$ ). This suggests that occupational stress can be manifested in several different areas of one's life. In



addition, all strain variables were significantly negatively correlated with all three dimensions of job satisfaction. These results corroborate the findings of previous studies which have found positive correlations among strain variables and negative correlations between strain variables and job satisfaction (Missbach, 1984; Osipow & Spokane, 1983).

#### The Relationship Between Stress and Strain

Results of this study support the validity of a stress/strain model of occupational stress for this sample of employed adults. Stress variables were significantly related to strain variables, with most correlations in the .25 to .35 range. Since most studies have found rather slight but significantly positive correlations between occupational stress and strain (Osipow & Spokane, 1983), these results lend strength to the stress/strain model. Fletcher (1988) has stated that correlations between occupational stress and strain are usually small, often in the .20 range.

Particularly high correlations were found for four of the stress variables and vocational strain. Role insuffi-

ciency (.48), role ambiguity (.48), role boundary (.58), and role overload (.33) were all significantly related to vocational strain. These relationships suggests that if employees were uncertain about their job performance, unsure about how well their abilities and skills fit their jobs, or were experiencing conflicting messages about their work roles, it was quite likely that the outcomes would be manifested in terms of lower work productivity and/or negative attitudes toward work.

In addition to its high correlation with vocational strain, role boundary was also highly correlated with psychological strain (.53). These results suggest that subjects who experienced conflicting demands at work, or whose values and goals may have differed from the organization's were quite likely to show symptoms of occupational strain. These symptoms may include not only negative attitudes toward work, but also feelings of anxiety or perhaps helplessness. These findings also illustrate the interconnectedness of the strain variables.

Further evidence for the validity of the stress/strain model in this sample is shown by the results of the unmoderated regression analyses, which indicate that the

stressor variables are reliably predicting strain variables. The stressors best predict vocational strain, followed by psychological strain, interpersonal strain, and physical strain. These findings are consistent with previous research conducted on the model (Osipow & Davis, 1988).

Results of the factor analysis, as well as the correlational results, show that role insufficiency, role ambiguity, and role boundary were the most powerful contributors to occupational strain. Results also showed that these three stressors were being expressed in vocational strain.

The results of this study would appear to add significantly to the research base not only for the model itself, but also for the instrument used to measure stress and strain of the OSI. The subject sample used in this study was quite heterogeneous in terms of occupation, educational level, age, and time on the job. This heterogeneity should help to strengthen predictions based upon the stress/strain model for diverse groups of working people.

### Job Satisfaction

Job satisfaction was included, along with the other personal strain variables, as an additional index of job-related strain. Job satisfaction is one of the most frequently used outcome variables in the occupational stress literature (Brief & Atieh, 1987). Although general job satisfaction was the primary variable of interest in this study, intrinsic and extrinsic job satisfaction were also assessed. All three dimensions of job satisfaction were negatively correlated with both the stress and strain variables in 16 out of 18 nonredundant correlations. The mean general job satisfaction score for this sample was 74.16 which is consistent with the mean score of 74.85 for the norm group. Results also showed that there were significant mean differences in job satisfaction scores for different job settings.

### Congruence

The hypothesis that vocational congruence would moderate the stress/strain relationship was not supported, although slight moderating effects were found for interpersonal and physical strain.

There would seem to be several avenues to explore when further investigating possible reasons for this result. The first begins with the finding that in this sample there seemed to be absolutely no relationship between congruence and job satisfaction. This was unexpected, and contrary to Holland's (1984) theory as well as the results of several studies which confirms that relationship. On the other hand, a number of studies have reported mixed results, in which the congruence/job satisfaction relationship is not clearly demonstrated (Mount & Muchinsky, 1978; Smart, Elton & McLaughlin, 1981; Spokane, 1985).

One possibility is that there truly is no relationship between congruence and job satisfaction. It is possible to envision instances in which a person is not congruent with her/his job, but still is satisfied because of other aspects of the job such as interaction with co-workers, pay, working conditions, etc. Conversely, it is also possible that a person could be congruent with his/her occupation, yet still be dissatisfied with the particular job he/she happened to be employed in at the time. This brings up the distinction between occupational satisfaction and job satisfaction. Mount and Muchinsky (1978)

have suggested that "when the relationship of Holland's theory to work satisfaction is being investigated, occupational satisfaction rather than job satisfaction may be a more appropriate unit of analysis " (p. 99).

Job satisfaction is a complex variable, and may not have been adequately assessed by the relatively short measure (MSQ) used in this study. Smart, Elton, and McLaughlin (1986) have commented in this regard that "scholars would be advised to incorporate multiple dimensions of job satisfaction in their studies since the findings of [the authors'] study indicate that the 'person-environment' hypothesis is not equally applicable to all dimensions of job satisfaction. Thus, the hypothesis should not be regarded as universally applicable" (p. 223-224). On the other hand, the current measure of job satisfaction was substantially negatively correlated with all the strain variables, indicating that job satisfaction was validly measured.

Another possibility is that the method used to categorize the environment left too much room for error. The environment was categorized by assigning a three-letter Holland code (based on Holland's Dictionary of Occupation-

al Titles and the Occupations Finder of the SDS) to the subject's actual job title. While in most cases this was a straightforward procedure, there were some jobs in the academic setting that required a "best guess" categorization.

Accurately assessing the environment has been an issue in much of the congruence research. Mount and Muchinsky (1978) have stated that it is "very important to accurately categorize both the interest and the environment typology accurately, but very little research has been done to empirically validate the environmental code associated with specific occupations" (p. 99).

Finally, there is some question about the usefulness of the Vocational Preference Inventory for this sample. Subjects appeared to readily accept and understand questions regarding their lives at work and the stresses involved. They also appeared to understand the rationale behind questions about job satisfaction and even more personal questions about difficulties they may have been facing in their personal lives. But many subjects, while willing to complete the VPI, clearly could not understand its purpose even on a general level.

The willingness to respond appropriately to the VPI seemed to vary with age and education. Testing sessions with older or less highly educated persons invariably meant more time was spent explaining the VPI than in sessions with younger or more highly educated persons. Older subjects overall seemed less inclined to even speculate about alternative occupations. This may have occurred because they had, through interaction with their work environments, achieved congruence on their own terms and did not wish to challenge it.

What is needed it seems are more accurate methods to assess both the work environment and the worker within it. Both shape the other, and perhaps aspects of that shaping process are already subsumed in the stress and strain variables.

### Negative Affectivity

The role of negative affectivity in this study was intriguing. Negative affectivity is an individual difference variable characterized by general dissatisfaction and a predisposition to respond in a chronically negative fashion. Negative affectivity has also been called trait



anxiety, and although it has been recognized as a potentially important variable, it has not been measured in most studies of occupational stress (Payne, 1988).

Negative affectivity was positively correlated with many of the stress and strain variables, indicating that it may tap an underlying mood disposition toward negative emotional states. Negative affectivity showed a strong correlation with physical strain ( $r=.53$ ,  $p<.0001$ ), which may suggest that subjects who had a tendency to attend to negative mood also were more likely to attend to physical complaints or sensations.

Results of the factor analysis showed negative affectivity, along with psychological, interpersonal, and physical strain, loading on the same factor. This again suggests a dimension of personal (versus vocational) strain as well as trait anxiety.

#### Limitations of the Present Study and Conclusions

The present study represents a fairly heterogeneous sample of working adults. However the sample size within particular job settings was relatively small, which

limited statistical inferences. Another limitation was that job satisfaction was assessed by only one instrument and this may not have provided an accurate measure of such a complex variable. Finally, no environmental assessment was made of stressors in the subjects' workplaces. Such information would have increased the probability of a more accurate assessment of subjects' work lives and the stresses they may have been experiencing.

In conclusion, the present study found evidence of a stress/strain model of occupational stress. Vocational congruence did not appear to function as a moderator of stress and strain, and the reasons for this result appear to be related to either difficulties in assessing congruence or in the conceptualization of congruence itself. Future research would benefit from multiple measures of job satisfaction as well as more accurate assessment of subjects' work environments.

## REFERENCES

- Abdel-Halim, A. (1982). Social support and managerial affective responses to job stress. Journal of Occupational Behavior, 3, 281-295.
- Assouline, M., & Meir, E. (1987). Meta-analysis of the relationship between congruence and well-being measures. Journal of Vocational Behavior, 31, 319-332.
- Batlis, N. (1980). Job involvement and locus of control as moderators of role/perception/individual outcome relationship. Psychological Reports, 46, 111-119.
- Beehr, T. (1976). Perceived situational moderators of the relationship between subjective role ambiguity and strain. Journal of Applied Psychology, 61, 35-40.
- Beehr, T. (1981). Work-role stress and attitudes toward co-workers. Group and Organizational Studies, 6, 35-40.
- Beehr, T., & Newman, L. (1978). Job stress, employee health, and organizational effectiveness: A facet analysis model and literature review. Personnel Psychology, 31, 665-699.
- Berkowitz, A., & Perkins, H. (1984). Stress among farm women: Work and family as interacting systems. Journal of Marriage and the Family, 46, 161-166.
- Billings, A., & Moos, R. (1981). The role of coping responses and social resources in attenuating the stress of life events. Journal of Behavioral Medicine, 4, 139-157.
- Billings, A., & Moos, R. (1982). Work stress and the stress-buffering roles of work and family resources. Journal of Occupational Behavior, 3, 215-232.
- Breaugh, J. (1980). A comparative investigation of three measures of role ambiguity. Journal of Applied Psychology, 65, 584-589.

- Brenner, S., Sorbom, D., & Wallins, E. (1985). The stress chain: A longitudinal confirmatory study of teacher stress, coping, and social support. Journal of Occupational Psychology, 58, 1-13.
- Brief, A., & Atieh, J. (1987). Studying job stress: Are we making mountains out of molehills? Journal of Occupational Behavior, 18, 115-126.
- Brousseau, K., & Prince, J. (1981). Job-person dynamics: An extension of longitudinal research. Journal of Applied Psychology, 66, 59-62.
- Caplan, R., Cobb, S., French, J., Van Harrison, R., & Pinneau, S. (1975). Job demands and worker health: Main effects and occupational differences. Washington, DC: U.S. Government Printing Office.
- Caplan, R., & Jones, K. (1975). Effects of workload, role ambiguity, and Type A personality on anxiety, depression, and heart rate. Journal of Applied Psychology, 60, 713-719.
- Cobb, S. (1976). Social support as a moderator of life stress. Psychosomatic Medicine, 38, 300-314.
- Cohen, S. (1980). After-effects of stress on human performance and social behavior: A review of research and theory. Psychological Bulletin, 88, 82-108.
- Cohen, S., & Wills, T. (1985). Stress, social support, and the buffering hypothesis. Psychological Bulletin, 98, 310-357.
- Cooper, C., Mallinger, M., & Kahn, R. (1978). Identifying sources of occupational stress among dentists. Journal of Occupational Psychology, 51, 227-234.
- Cooper, C., & Marshall, J. (1976). Occupational sources of stress: A review of the literature relating to coronary heart disease and mental ill-health. Journal of Occupational Psychology, 49, 11-28.
- Cooper, C., & Marshall, J. (1977). Understanding executive stress. New York: PBI Books.

- Cooper, C., & Marshall, J. (1978). Sources of managerial and white collar stress. In C. Cooper & R. Payne (Eds.), Stress at work (pp. 81-105). New York: Wiley.
- Crosby, F. (1982). Relative deprivation and working women. New York: Oxford University Press.
- Davis, T. (1984). The influence of the physical environment in offices. Academy of Management Review, 9, 271-283.
- Dearborn, M., & Hastings, J. (1987). Type A personality as a mediator of stress and strain in employed women. Journal of Human Stress, 5, 53-60.
- Depue, R., & Monroe, S. (1986). Conceptualization and measurement of human disorders in life stress research: The problem of chronic disturbance. Psychological Bulletin, 99, 36-51.
- Dohrenwend, B., & Dohrenwend, B. (1974). Overview and prospects for research on stressful life events. In B. P. Dohrenwend & B. S. Dohrenwend (Eds.), Stressful life events and their context. New York: Neale Watson Academic Publications Inc.
- Dougherty, T., & Pritchard, R. (1985). The measurement of role variables: Exploratory examination of a new approach. Organizational Behavior and Human Decision Processes, 35, 141-155.
- Edwards, J. (1988). The determinants and consequences of coping with stress. In C. Cooper & R. Payne (Eds.), Causes, coping and consequences of stress at work (pp. 233-263). New York: Wiley.
- Etzion, D. (1984). Moderating effect of social support on the stress and burnout relationship. Journal of Applied Psychology, 69, 615-622.
- Fisher, C. (1985). Social support and adjustment to work: A longitudinal study. Journal of Management, 11, 39-53.
- Fisher, C., & Gitelson, R. (1983). A meta-analysis of the correlates of role conflict and role ambiguity. Journal of Applied Psychology, 68, 320-333.

- Fleishman, J. (1984). Personality characteristics and coping patterns. Journal of Health and Social Behavior, 25, 229-244.
- Fletcher, B. (1988). The epidemiology of occupational stress. In C. Cooper & R. Payne (Eds.), Causes, coping and consequences of stress at work (pp. 3-50). New York: Wiley.
- Fletcher, B., & Payne, R. (1980). Stress at work: A review and theoretical framework, part 1. Personnel Review, 9(1), 19-29.
- French, J., Caplan, R., & Van Harrison, R. (1982). The mechanisms of job stress and strain. New York: Wiley.
- French, J., Rogers, W., & Cobb, S. (1974). Adjustment as a person-environment fit. In G. Coelho, D. Hanburg, & J. Adams (Eds.), Coping and adaptation: Inter-disciplinary perspectives. New York: Basic Books.
- Frese, M., & Zapf, D. (1988). Methodological issues in the study of work stress: Objective vs subjective measurement of work stress and the question of longitudinal studies. In C. Cooper & R. Payne (Eds.), Causes, coping and consequences of stress at work (pp. 375-411). New York: Wiley.
- Ganster, D., Fusilier, M., & Mayes, B. (1986). Role of social support in the experience of stress at work. Journal of Applied Psychology, 71, 102-110.
- Greenhaus, J., & Beutell, N. (1985). Sources of conflict between work and family roles. Academy of Management Review, 10, 76-88.
- Greenhaus, J., Bedeian, A., & Mossholder, K. (1987). Work experiences, job performance and feelings of personal well-being. Journal of Vocational Behavior, 31, 200-215.
- Greenhaus, J., & Parasuraman, S. (1986). Vocational and organizational behavior, 1985: A review. Journal of Vocational Behavior, 29, 115-176.

- Gupta, N., & Beehr, T. (1979). Job stress and employee behavior. Organizational Behavior and Human Performance, 23, 373-387.
- Gutek, B., Repetti, R., & Silver, D. (1988). Nonwork roles and stress at work. In C. Cooper & R. Payne (Eds.), Causes, coping and consequences at work (pp. 141-174). New York: Wiley.
- Hamner, W., & Tosi, H. (1974). Relationship of role conflict and role ambiguity to job involvement measure. Journal of Applied Psychology, 59, 497-499.
- Hendrix, W., Ovalle, N., & Troxler, R. (1985). Behavioral and physiological consequences of stress and its antecedent factors. Journal of Applied Psychology, 70, 188-201.
- Higgins, N. (1986). Occupational stress and working women: The effectiveness of two stress reduction programs. Journal of Vocational Behavior, 29, 66-78.
- Holland, J. (1973). Making vocational choices: A theory of careers. Englewood Cliffs, NJ: Prentice-Hall.
- Holland, J. (1984). Making vocational choices: A theory of Careers (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Holland, J. (1985). Manual for the Vocational Preference Inventory. Odessa, FL: Psychological Assessment Resources, Inc.
- Holland, J. (1987). 1987, Manual supplement for the Self-Directed Search. Odessa, FL: Psychological Assessment Resources, Inc.
- Holmes, T., & Rahe, R. (1967). The social readjustment rating scale. Journal of Psychosomatic Research, 11, 213-218.
- House, J. (1981). Work stress and social support. Reading, MA: Addison-Wesley.
- House, J., & Rizzo, J. (1972). Role conflict and ambiguity as critical variables in the model of organizational behavior. Organizational Behavior and Human Performance, 7, 467-505.

- Howard, J., Cunningham, D., & Rechnitzer, P. (1986). Role ambiguity, Type A behavior, and job satisfaction: Moderating effects on cardiovascular and biochemical responses associated with coronary risk. Journal of Applied Psychology, 71, 95-101.
- Iachan, R. (1984). A measure of agreement for use with the Holland classification system. Journal of Vocational Behavior, 24, 133-141.
- Ivancevich, J., & Matteson, M. (1980). Stress and work: A managerial perspective. Glenview, IL: Scott, Foresman & Co.
- Ivancevich, J., Matteson, M., & Preston, C. (1982). Occupational stress, Type A behavior, and physical well-being. Academy of Management Journal, 25, 373-391.
- Jackson, S., & Maslach, C. (1982). After-effects of job-related stress: Families as victims. Journal of Occupational Behavior, 3, 63-78.
- Jackson, S., & Schuler, R. (1985). A meta-analysis and conceptual critique of research on role ambiguity and role conflict in work settings. Organizational Behavior and Human Decision Process, 36, 16-78.
- Kagan, A., & Levi, L. (1974). Health and environment-psychosocial stimuli: A review. Social Science and Medicine, 8, 225-241.
- Kahn, R., Wolfe, D., Quinn, R., Snoek, J., & Rosenthal, R. (1964). Organizational stress: Studies in role conflict and ambiguity. New York: Wiley.
- Kasl, S. (1978). Epidemiological contributions to the study of work stress. In C. Cooper & R. Payne (Eds.), Stress at work (pp. 3-48). New York: Wiley.
- Katz, D., & Kahn, R. (1978). The social psychology of organizations (2nd ed.). New York: Wiley.
- Kaufman, G., & Beehr, T. (1986). Interactions between job stressors and social support: Some counterintuitive results. Journal of Applied Psychology, 71, 522-526.



- Keenan, A., & McBain, G. (1979). Effects of Type A behavior, intolerance of ambiguity, and locus of control on the relationship between role stress and work-related outcomes. Journal of Occupational Psychology, 52, 277-285.
- Keenan, A., & Newton, T. (1985). Stressful event stressors and psychological strains in young professional engineers. Journal of Occupational Behavior, 6, 151-156.
- Kelly, K., & Houston, B. (1985). Type A behavior in employed women: Relation to work, marital and leisure variables, social support, stress, tension and health. Journal of Personality and Social Psychology, 46, 1067-1079.
- Kessler, R., Price, R., & Wortman, C. (1985). Social factors in psychopathology: Stress, social support, and coping processes. Annual Review of Psychology, 36, 531-572.
- Kirk, R.E. (1982). Experimental design: Procedures for the behavioral sciences (2nd ed.). Belmont, CA: Brooks/Cole.
- Kirkmeyer, S., & Dougherty, T. (1988). Work load, tension and coping: Moderating effects of supervisor support. Personnel Psychology, 41, 125-139.
- Krause, N., & Stryker, S. (1984). Stress and well-being: The buffering role of locus of control beliefs. Social Science and Medicine, 18, 783-790.
- La Rocco, J., House, S., & French, J. (1980). Social support, occupational stress, and health. Journal of Health and Social Behavior, 21, 202-218.
- Latack, J. (1981). Person/role conflict: Holland's model extended to role-stress research, stress management, and career development. Academy of Management Review, 6, 89-103.
- Lazarus, R., & Folkman, S. (1984). Stress, appraisal and coping. New York: Springer.

- Leiter, M., & Meechan, K. (1986). Role structure and burnout in the field of human services. Journal of Applied Behavioral Sciences, 33, 47-52.
- Markowitz, M. (1987). The organization and employee alcohol misuse. Human Relations, 40, 833-852.
- Matheny, K., Aycock, D., Pugh, J., Curlette, W., & Cannella, K. (1986). Stress coping: A qualitative and quantitative synthesis with implications for treatment. The Counseling Psychologist, 14, 499-549.
- McGrath, J. (1976). Stress and behavior in organizations. In M. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 1350-1396). Chicago, Rand McNally.
- McMichael, A. (1978). Personality, behavioral, and situational modifiers of work stressors. In C. Cooper & R. Payne (Eds.), Stress at work (pp. 127-147). New York: Wiley.
- Meir, E., & Yaari, Y. (1988). The relationship between congruent specialty choice within occupations and satisfaction. Journal of Vocational Behavior, 33, 99-117.
- Menaghan, E. & Merves, E. (1984). Coping with occupational problems: The limits of individual efforts. Journal of Health and Social Behavior, 25, 406-423.
- Missbach, J. (1984). An exploratory study of the relationship between occupational stress, strain, and coping and job satisfaction in law enforcement. Unpublished doctoral dissertation, Ohio State University, Columbus.
- Mobley, W., Griffith, R., Hand, H., & Meglino, B. (1979). Review and conceptual analysis of the employee turnover process. Psychological Bulletin, 86, 493-522.
- Moos, R. (1987). Person-environment congruence in work, school, and health care settings. Journal of Vocational Behavior, 31, 231-247.

- Motowidlo, S., Packard, J., & Manning, M. (1986). Occupational stress: Its causes and consequences for job performance. Journal of Applied Psychology, 71, 618-629.
- Mount, J., & Muchinsky, P. (1978). Person-environment congruence and employee job satisfaction: A test of Holland's theory. Journal of Vocational Behavior, 13, 84-100.
- Muchinsky, P. (1983). Vocational behavior and career development: A review. Journal of Vocational Behavior, 23, 123-178.
- Muchinsky, P., & Monahan, C. (1987). What is person-environment congruence? Supplementary versus complementary models of fit. Journal of Vocational Behavior, 31, 268-277.
- Newton, T., & Keenan, A. (1985). Coping with work-related stress. Human Relations, 38, 107-126.
- Oldham, G., & Rotchford, N. (1983). Relationship between office characteristics and employee reactions: A study of the physical environment. Administrative Science Quarterly, 28, 542-556.
- Organ, D., & Greene, E. (1974). Role ambiguity, locus of control, and work satisfaction. Journal of Applied Psychology, 59, 101-120.
- Orpen, C. (1982). Type A personality as a moderator for the effects of role conflict, role ambiguity and role overload on individual strain. Journal of Human Stress, 8, 8-14.
- Osipow, S., & Davis, A. (1988). The relationship of coping resources to occupational stress and strain. Journal of Vocational Behavior, 32, 1-15.
- Osipow, S., & Spokane, A. (1983). A manual for measure of occupational stress, strain and coping. Odessa, FL: PAR, Inc.
- Osipow, S., & Spokane, A. (1984). Measuring occupational stress, strain, and coping. Applied Social Psychology Annual, 5, 67-86.

- Ostberg, O., & Nilsson, C. (1985). Emerging technology and stress. in C. Cooper & R. Smith (Eds.), Job stress and blue collar work (pp. 163-184). New York: Wiley.
- Parasuraman, S., & Cleek, M. (1984). Coping behaviors and managers' affective reactions to role stressors. Journal of Vocational Behavior, 24, 179-193.
- Parker, D., & De Cotiis, T. (1983). Organizational determinants of job stress. Organizational Behavior and Human Performance, 32, 160-177.
- Parkes, K. (1984). Locus of control, cognitive appraisal, and coping in stressful episodes. Journal of Personality and Social Psychology, 3, 655-668.
- Payne, R. (1988). Individual differences in the study of occupational stress. In C. Cooper & R. Payne (Eds.), Causes, coping and consequences of stress at work (pp. 209-232). New York: Wiley.
- Payne, R., Jick, T., & Burke, R. (1982). Whither stress research? An agenda for the 1980s. Journal of Occupational Behavior, 3, 131-145.
- Pervin, L. (1987). Person-environment congruence in the light of the person-situation controversy. Journal of Vocational Behavior, 31, 222-230.
- Phillips, S., Cairo, P., Blustein, D., & Myers, R. (1988). Career development and vocational behavior, 1987: A review. Journal of Vocational Behavior, 33, 119-184.
- Poulton, E. (1978). Blue collar stressors. In C. Cooper & R. Payne (Eds.), Stress at work (pp. 51-79). New York: Wiley.
- Rabinowitz, D., & Stumpf, S. (1987). Facets of role conflict, role-specific performance, and organizational level within the academic career. Journal of Vocational Behavior, 30, 72-83.
- Rogers, R., Li, E., & Shani, A. (1987). Perceptions of organizational stress among U.S. military officers in Germany. Group and Organizational Studies, 12, 189-207.

- Russell, D., Altmeier, E., & Van Velzen, D. (1987). Job related stress, social support, and burnout among classroom teachers. Journal of Applied Psychology, 72, 269-274.
- Sandler, I., & Lakey, B. (1982). Locus of control as a stress moderator: The role of control perceptions and social support. American Journal of Community Psychology, 10, 65-80.
- Savicki, V., & Cooley, E. (1987). The relationship of work environment and client contact on burnout in mental health professionals. Journal of Counseling and Development, 65, 249-252.
- Schaubroeck, J., Cotton, J., & Jennings, K. (1989). Antecedents and consequences of role stress: A covariance structure analysis. Journal of Organizational Behavior, 10, 35-58.
- Schuler, R. (1982). An integrative transactional model of stress in organizations. Journal of Occupational Behavior, 3, 5-19.
- Schuler, R., Aldag, R., & Brief, A. (1977). Role conflict and ambiguity: A scale analysis. Organization Behavior and Human Performance, 20, 111-128.
- Seers, A., McGee, G., Serey, T., & Graen, G. (1983). The interaction of job stress and social support: A strong inference investigation. Academy of Management Journal, 26, 273-284.
- Selye, H. (1976). The stress of life (2nd ed.). New York: McGraw-Hill.
- Sharit, S., & Salvendy, G. (1982). Occupational stress: A review and reappraisal. Human Factors, 24, 129-162.
- Shaw, J., & Weekley, J. (1985). The effects of objective workload variations on psychological strain and post workload performance. Journal of Management, 11(1), 87-98.
- Smart, J., Elton, C., & McLaughlin, G. (1986). Person-environment congruence and job satisfaction. Journal of Vocational Behavior, 29, 216-225.

- Spector, P. (1982). Behavior in organizations as a function of employees' locus of control. Psychological Bulletin, 91, 482-497.
- Spokane, A. (1985). A review of research on person-environment congruence in Holland's theory of careers. Journal of Vocational Behavior, 26, 306-343.
- Storms, P., & Spector, P. (1987). Relationships of organizational frustration with reported behavioral reactions: The moderating effect of locus of control. Journal of Occupational Psychology, 60, 227-234.
- Sutton, R., & Rafaeli, A. (1987). Characteristics of work stations as potential occupational stressors. Academy of Management Journal, 30, 260-276.
- Sykes, I., & Eden, D. (1985). Transitional stress, social support, and psychological strain. Journal of Occupational Behavior, 6, 293-298.
- Szilagyi, A., & Holland, W. (1980). Changes in social density: Relationships with functional interaction and perceptions of job characteristics, role stress, and work satisfaction. Journal of Applied Psychology, 65, 28-33.
- Tellegen, A. (1982). Brief manual for the Differential Personality Questionnaire. Unpublished manuscript, Department of Psychology, University of Minnesota.
- Van Dijkvizen, N., & Reiche, H. (1980). Psychosocial stress in industry: A heartache for middle management. Psychotherapy in Psychosomatics, 34, 124-134.
- Van Harrison, R. (1978). Person-environment fit and job stress. In C. Cooper & R. Payne (Eds.), Stress at work (pp. 175-205). New York: Wiley.
- Van Sell, M., Brief, A., & Schuler, R. (1981). Role conflict and role ambiguity: Integration of the literature and directions for future research. Human Relations, 34(1), 43-71.
- Vanfossen, B. (1981). Sex differences in the mental health effects of spouse support and equity. Journal of Health and Social Behavior, 22, 130-143.

- Vinokur, A., & Selzer, M. (1975). Desirable versus undesirable life events: Their relationship to stress and mental distress. Journal of Personality and Social Psychology, 32, 329-337.
- Warr, P., & Payne, R. (1983). Affective outcomes of paid employment in a random sample of British workers. Journal of Occupational Behavior, 4, 91-104.
- Weiner, Y., & Klein, K. (1978). The relationships between vocational interests and job satisfaction: Reconciliation of divergent results. Journal of Vocational Behavior, 13, 298-304.
- Weiss, D., Dawis, R., England, G., & Lofquist, L. (1967). Manual for the Minnesota Satisfaction Questionnaire. Minnesota Studies in Vocational Rehabilitation, 22.
- Wells, J. (1985). Objective job conditions, social support and perceived stress among blue collar workers. Journal of Occupational Behavior, 3, 79-94.
- Wheaton, B. (1985). Models for the stress-buffering functions of coping resources. Journal of Health and Social Behavior, 26, 352-364.
- Williams, T., Calhoun, G., & Ackoff, R. (1982). Stress, alcoholism, and personality. Human Relations, 35, 491-510.
- Yogev, S. (1982). Are professional women overworked? Objective vs subjective perceptions of role loads. Journal of Occupational Psychology, 55, 165-169.
- Zalesny, M., & Farace, R. (1987). Traditional versus open offices: A comparison of sociotechnical social relations, and symbolic meaning perspective. Academy of Management Journal, 30, 240-259.
- Zaleznik, A., Kets de Vries, M., & Howard, J. (1977). Stress reactions in organisms: Syndromes, causes and consequences. Behavioral Science, 22, 151-162.

**APPENDIX A:**  
**DEMOGRAPHIC INFORMATION**



Demographic Data

Please complete the following questions which will be used in summarizing group data.

1. What is your age? \_\_\_\_\_
2. Gender (circle)      Male      Female
3. How long have you been employed at your present position?    Year \_\_\_\_\_ Months \_\_\_\_\_
4. What is the highest educational level you have completed?  
(please circle)  
  
High School                      College  
1   2   3   4                      5   6   7   8  
  
Graduate School                      Other  
(specify) \_\_\_\_\_
5. What is your current job title? \_\_\_\_\_

**APPENDIX B:**  
**OCCUPATIONAL STRESS INVENTORY (OSI)**

**PLEASE NOTE:**

Copyrighted materials in this document have not been filmed at the request of the author. They are available for consultation, however, in the author's university library.

**These consist of pages:**

122-126

128-129

131

133

**U·M·I**

**APPENDIX C:**  
**VOCATIONAL PREFERENCE INVENTORY (VPI)**

**APPENDIX D:**  
**MINNESOTA SATISFACTION QUESTIONNAIRE (MSQ)**

**APPENDIX E:**  
**NEGATIVE AFFECTIVITY MEASURE**

**APPENDIX F:**  
**LETTER TO EMPLOYEES**



UNIVERSITY OF MISSOURI-COLUMBIA

Department of Residential Life

125 Jesse Hall  
Columbia, Missouri 65211  
Telephone (314) 882-7275M E M O R A N D U M

TO: Residential Life  
Professional and Clerical Staff

The hours we spend at work are an important part of our lives. We are conducting a study to better understand that world of work as it affects MU employees. We request your participation to identify aspects of the work situation which are most satisfying to employees as well as those aspects which may be stressful.

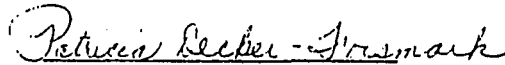
If you choose to participate, you will be asked to complete a series of questionnaires. These will require approximately 40-60 minutes to complete. Testing will be conducted by the principal investigator or her assistant. Two sessions have been scheduled for the completion of these questionnaires. One will be Tuesday, June 6 at 10:30 and the other will be Thursday, June 8 at 1:30. Both will be in Room 233-234 of Brady Commons. Your supervisor will be asking you which session you prefer if you choose to participate in this study.

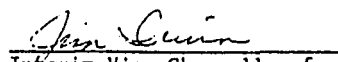
Participation in the study is voluntary. You have the right to withdraw from participation at any time. If you agree to participate, you are assured that your responses will be kept strictly confidential. Your name will not appear in any form. In fact, you are asked not to put your name on any form used in the study. Only group data, summarized from individual responses, will be reported in the results of this study.

Completed questionnaires will be collected by the researcher at the end of each testing session and kept in her possession. Completed questionnaires will not be seen by anyone other than the researcher and those assisting her in compiling the data for statistical analyses. If you have questions about any procedures in this study, please contact the principal investigator at 2-1707.

Thank you for your cooperation.

  
Director

  
Principal Investigator

  
Interim Vice Chancellor for  
Student Services

University  
of Missouri  
  
1839-1989



**APPENDIX G:**  
**HUMAN SUBJECTS RESEARCH APPROVAL**

**INFORMATION ON THE USE OF HUMAN SUBJECTS IN RESEARCH**  
**IOWA STATE UNIVERSITY**

(Please follow the accompanying instructions for completing this form.)

1. Title of project (please type): The Contribution of Person/Role  
Congruence as a Moderator of the Occupational Stress/Strain Relationship

2. I agree to provide the proper surveillance of this project to insure that the rights and welfare of the human subjects are properly protected. Additions to or changes in procedures affecting the subjects after the project has been approved will be submitted to the committee for review.

Patricia Decker-Foramark 5/2/89 Patricia Decker-Foramark  
 Typed Name of Principal Investigator Date Signature of Principal Investigator  
 Department of Psychology  
 c/o Dr. Fred Borgen 4-3236 (314) 942-1767 (work)  
 Campus Address Campus Telephone (314) 449-4043 (home)

3. Signatures of others (if any) Date Relationship to Principal Investigator  
Fred H Borgen 5-4-89 Major Professor

4. ATTACH an additional page(s) (A) describing your proposed research and (B) the subjects to be used, (C) indicating any risks or discomforts to the subjects, and (D) covering any topics checked below. CHECK all boxes applicable.

- ☐ Medical clearance necessary before subjects can participate  
☐ Samples (blood, tissue, etc.) from subjects  
☐ Administration of substances (foods, drugs, etc.) to subjects  
☐ Physical exercise or conditioning for subjects  
☐ Deception of subjects  
☐ Subjects under 14 years of age and/or ☐ Subjects 14-17 years of age  
☐ Subjects in institutions  
☐ Research must be approved by another institution or agency



5. ATTACH an example of the material to be used to obtain informed consent and CHECK which type will be used.

- ☐ Signed informed consent will be obtained.  
☒ Modified informed consent will be obtained.

6. Anticipated date on which subjects will be first contacted: Month Day Year  
5 25 89  
 Anticipated date for last contact with subjects: Month Day Year  
8 01 90

7. If Applicable: Anticipated date on which audio or visual tapes will be erased and/or identifiers will be removed from completed survey instruments:

8. Signature of Head or Chairperson Date Department or Administrative Unit  
F. H. Borgen (in GW) 5/4/89 PSYC 176L 06L1

9. Decision of the University Committee on the Use of Human Subjects in Research:

- ☒ Project Approved ☐ Project not approved ☐ No action required

Patricia M. Keith 5-19-89 DM Keith  
 Name of Committee Chairperson Date Signature of Committee Chairperson

## ACKNOWLEDGMENT

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occupational stress and to the possibility of integrating aspects of vocational psychology into it.

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