

Differential effects of strain on two forms of work performance: individual employee sales and creativity

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Summary

In this research, we develop and test a model of the links between psychological strain (subjective experiences of feeling conflict and tension) and work performance. Our model includes two types of strain (work strain and home strain) and two forms of work performance (quantity of individual sales performance and creativity). Thus we acknowledge the importance of work and non-work sources of strain as well as the multidimensional nature of work performance. We test the proposed relationships with data collected over six months from a field sample of 195 hair salon stylists (personal service workers who interact directly with customers and provide services directly to individuals and not to other firms). Results demonstrate a positive relation between work strain and individual employee sales performance and a negative relation between home strain and employee creativity at work. Leader–member exchange moderated the effects of work strain and home strain on creativity. We discuss findings and implications, emphasizing multiple roles, the importance of differentiating types of strain, and the multidimensionality of work performance. We conclude by suggesting that strain may be particularly relevant to work performance of employees in jobs like those in our sample which are characterized by high social interdependence and low task interdependence. Copyright © 2001 John Wiley & Sons, Ltd.

Introduction

Although an increasing amount of research acknowledges the existence of work roles and home roles and the potential links between these two domains (Zedeck, 1992), the relationships between various forms of psychological strain (subjective experiences of conflict and tension) and work performance have received little research attention. Although scholars have examined stress, strain, and work performance relationships (e.g., Jex, 1998; Beehr *et al.*, 2000; Motowidlo *et al.*, 1986) as well as work and family relationships (e.g., Frone *et al.*, 1992; Zedeck, 1992), we are aware of no research that contrasts the effects of work strain and home strain on multiple aspects of work performance.

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This is an important research topic because employee work performance is multidimensional and essential for organizational success (Campbell, 1990). At the same time, an increasing number of individuals must simultaneously try to balance the demands of multiple roles such as work and home (Crouter, 1984; Edwards and Rothbard, 2000; Frone *et al.*, 1992; Jex, 1998; Zedeck, 1992). Thus, understanding the links between types of psychological strain and multiple aspects of work performance, as well as moderators of these relationships, has theoretical as well as practical implications. Expanding our models of work performance to include within-domain conflict from multiple domains (work and home) and inter-role conflict based on strain associated with roles in multiple domains (work and home) can enhance the ability of organizations to anticipate performance problems, while also facilitating specific interventions to help employees cope with difficult situations.

Research Questions

In this research, we draw on the role-conflict and role stress literatures to develop and test a model that contrasts the effects of strain based on interpersonal conflict at home and at work on two forms of employee work performance (individual employee sales and creativity). In addition, we examine the quality of leader–member exchange relationships as a potential moderator to the relationship between strain and work performance. Our basic proposition is that employees fill multiple roles (e.g., work roles and home roles), that psychological strain involving conflict and tension occurs in each of these roles, and that strain (work and home) will be related to performance at work. From an applied perspective, we are also interested in the quality of supervisor–employee relationships as a moderator that might change the relation between strain and work performance. In examining these issues, we focus on three general research questions: (1) What are the relations between home strain/work strain and performance? (2) What is the relation between strain and different aspects of performance? (3) Does leader–member exchange influence the relations between strain and work performance?

Context: Personal Service Jobs and Strain

We examine these research questions in an important, but under-researched context—that of hair salon stylists. We suggest that this is an important setting for research on strain and work performance for two reasons. First, hair stylists are part of the growing ‘personal services’ industry. Personal service firms provide services directly to individuals rather than to other organizations. These services include hair care, manicures, dry cleaning, laundry, home cleaning, child care, elder care, nanny service, personal fitness, and for some individuals home health assistance, housekeeping, gardening, and chauffeuring. Overall, the service sector is important because it accounts for over 70 per cent of all workers and over 90 per cent of all new jobs created in recent decades (Applebaum and Batt, 1994; Meisenheimer, 1998; Personick, 1987). Yet this domain has not been the typical focus of research which investigates employees work outcomes.

A second reason we chose to assess strain and work performance in personal service jobs is the nature of the work performed by these employees. Personal service jobs typically require employees to manage their emotions (Parkinson, 1991; Rafaeli and Sutton, 1989) and since this can cause

personal strain, we anticipated that strain would be particularly relevant to employee work performance in these jobs. Service sector jobs are often differentiated from manufacturing and traditional office jobs because service employees work directly with customers and must involve the customer in the production and delivery of the services (Sasser *et al.*, 1978). Direct contact with customers means that employee behavior and customer interactions are not always observed or coordinated by management. As such, individual employee behavior, including individual employee performance, has important implications for customer satisfaction (Guttek, 1995; Schmitt and Allscheid, 1995). Thus, we viewed hair stylist jobs as an important context in which to increase our understanding of how home and work strain are related to the quantity and creativity of employee performance at work.

Strain and Employee Work Performance

Consistent with early definitions of subjective or psychological strain (Lazarus *et al.*, 1952), we use the word 'strain' to represent a psychological state—an individual's subjective feelings in response to stressors in the environment. This is comparable to prior research on subjective strain (Motowidlo *et al.*, 1986), strain (Jex, 1998) and strain-based conflict (Greenhaus and Beutell, 1985) where tension in one role can affect behavior in that role and in other roles. Work strain occurs in the workplace. It can be based on conflict or tension with co-workers and supervisors and can involve arguments, nervousness, and tension at work. Home strain has similar characteristics (i.e., conflict, tension, arguments, etc.) but is based on relationships, responsibilities, and events that occur at home.

To date, most research on job-related strain has emphasized work role characteristics such as role conflict, role ambiguity, and role overload (Kahn and Byosiere, 1992; Kahn and Quinn, 1970) and has focused primarily on predicting well-being and health (Barling, 1990; Greenhaus and Parasuraman, 1987). Less research has examined role strain and work performance, and even less research has considered the effect of multiple roles (both work and home) on work performance.

In reviews of the literature on stressors and strain, Jex and Beehr (1991), Frone and colleagues (1992), and Kahn and Byosiere (1992) called for research on a wider variety of outcomes (including objective measures of performance), research that examines interactions among types of strain, and research on factors that strengthen or weaken the effects of strain. More recently, Beehr and colleagues (2000) and Jex (1998) emphasized the multidimensionality of work performance. Drawing on the work of Campbell (1990) and Organ (1977) that conceptualizes performance as multidimensional, Jex proposed that different types of stressors and strain may have differential effects on different aspects of performance. We designed our research to respond to Jex's conclusion that the 'the biggest gap' in this literature is our understanding of strain and different aspects of performance (Jex, 1998: 61).

Campbell's (1990) taxonomy of performance includes eight key components: job-specific task proficiency, non-job-specific task proficiency, communication, demonstrating effort, personal discipline, facilitating cooperation, supervision, and management/administration. According to Jex (1998), one possible reason for inconsistencies in past research may be the overly general conceptualization of performance. According to Campbell, performance components must be specified for a particular job because all components are not relevant for all jobs. Acknowledging the importance of multidimensionality and specificity, we included two aspects of work performance in our study: sales performance (which emphasizes quantity and job-specific task proficiency) and creativity (which emphasizes quality and demonstrating effort). Sales is a core substantive or technical task that forms the basis of service jobs. In contrast, creativity requires extra effort in going beyond basic skills to meet customer needs and preferences.

Work strain and employee sales performance

One of the first models to be applied to strain and performance is a variation of the Yerkes–Dodson Law (1908) which describes an inverted-U shaped relation between physiological arousal and performance (Cohen, 1980; Sullivan and Bhagat, 1992). The explanation for this U-shaped relation is typically based on activation theory. Low to moderate arousal helps individuals to focus attention on task-relevant cues and to ignore irrelevant cues, thus enhancing task performance (Baron, 1986). In contrast, when arousal is moderate to high, further narrowing of attention causes individuals to neglect task-relevant cues and instead causes them to focus on reducing their arousal (Groff *et al.*, 1983). According to Scott (1996), the non-task focus associated with high levels of arousal reduces performance. Applying these ideas to strain and work performance suggests that performance would be low when strain is either very low or very high and that performance would be high when strain is moderate.

Although the above described curvilinear model may be intuitively appealing, research generally provides little support for curvilinear effects of stress or strain on performance. Instead, most research indicates a negative linear relation. For example, Motowidlo and associates' (1986) study of nurses reported a negative relation between subjective strain and supervisor ratings of quality, composure, tolerance, and interpersonal effectiveness aspects of performance. Jamal's (1984) study of nurses indicated support for a negative linear relation between job stressors (role ambiguity, overload, conflict, and resource inadequacy) and role performance. In a second study involving two additional samples (blue collar and managerial), Jamal (1985) again demonstrated more support for a negative linear relation than for a positive or curvilinear relation. Although none of these prior studies examined strain exactly as defined in our study (subjective feelings in response to stressors in the environment), we think prior results are relevant to our research. In thinking about the specific context of our study, it seemed that the empirical findings of Jamal (1984) and Motowidlo *et al.* (1986) have the most relevance to our interest in personal service jobs in hair care salons. Both of these studies focused on nursing jobs which can be viewed as a form of personal service work because nursing emphasizes direct contact with customers as a key aspect of the work. Accordingly, consistent with prior research, we expected a negative effect of strain on work performance. Thus,

Hypothesis 1a: Work strain will be negatively related to employee sales performance.

Work strain and employee creativity at work

Creativity is the production of ideas, products, or procedures that are novel and potentially useful to the organization (Amabile, 1988). Creativity involves gathering information from multiple sources, recognizing unusual connections, and generating ideas with practical implications (Oldham and Cummings, 1996). Creative outcomes are novel and can not be defined in advance. Thus, in most jobs, creativity is closer to quality than quantity aspects of performance.

While little research directly addresses impediments to creativity, we expect work and home strain to diminish employee creativity. According to Farr and Ford (1990), strain produces routinized, well-rehearsed behavior patterns and generally interferes with novel or creative responses. Research on attentional conflict (Baron, 1986) suggests that distraction is particularly problematic for complex task performance (Sanders and Baron, 1975). Similarly, Jex (1998) posits that stress and strain are especially damaging to the motivational aspects of performance, such as demonstrating effort or going beyond routine job responsibilities. When employees experience strain, they may neglect the more challenging or intangible aspects of the job. When employees are distracted by other goals (such as coping with strain or reducing strain), they resort to habitual actions and forsake creative actions (Ford, 1996). Thus, we predicted that work strain will result in lower creativity.

Hypothesis 1b: Work strain will be negatively related to employee creativity at work.

Home strain and employee sales performance

Although there is less research on family to work (than work to family) effects of strain, an increasing amount of theory and research indicates that non-work factors can influence attitudes and behavior at work (Crouter, 1984; Kabanoff, 1980; Staines, 1980; Zedeck, 1992). For example, MacEwen and Barling (1994) proposed that inter-role conflict (at work or at home) produces personal strain which, in turn, leads to withdrawal from role performance, and Kelloway and Barling (1991) demonstrated that emotional exhaustion influenced job-related affective well-being and mental health of hospital employees. More recently, Edwards and Rothbard (2000) developed an enhanced theoretical model depicting a variety of mechanisms that link family and work. For example, they predicted that strain at home reduces the ability to meet demands at work and inhibits role performance.

Frone *et al.* (1997) address family to work relationships theoretically and empirically. Their results demonstrated differences in distal and proximal work and family antecedents of work behaviors. At the heart of the Frone *et al.* model is the extent to which involvement in one role interferes with the ability to meet responsibilities in another role. They theorized that domain-specific family distress and the resulting strain undermine an individual's ability or willingness to meet work role obligations and thus reduce role performance. Consistent with their predictions, results demonstrated negative relations between family distress and two work-related outcomes: family-to-work conflict and a self-report measure of work performance. Building on the work of Edwards and Rothbard (2000) and Frone and colleagues (1997), we hypothesized that home strain would detract from work performance.

Hypothesis 2a: Home strain will be negatively related to employee sales performance.

Hypothesis 2b: Home strain will be negatively related to employee creativity at work.

We also propose that home strain will accentuate the work strain–performance relation for employee sales and creativity. When high levels of home strain direct attention away from task-oriented issues (Lazarus *et al.*, 1952), this further strengthens the negative relation between work strain and work performance. For example, Edwards and Rothbard (2000) proposed that the basic relationships in their theoretical model linking family and work could be extended to include effects across work and family domains that influence role performance. Family strain combined with work strain could further detract from positive outcomes at work. Thus, we proposed an amplifying effect where high work strain combined with high home strain yield the lowest work performance (see Figure 1a for an illustration of this predicted interaction). Accordingly,

Hypothesis 3a: When home strain is high, the negative relation between work strain and employee sales performance will be stronger, such that high work strain and high home strain result in the lowest sales performance.

Hypothesis 3b: When home strain is high, the negative relation between work strain and employee creativity at work will be stronger, such that high work strain and high home strain result in the lowest creativity.

LMX, work strain, and employee performance

In his comprehensive review of the stress, strain, and job performance literatures, Jex (1998) called for research on a broader range of moderators; Beehr *et al.* (1990) recommended that research consider

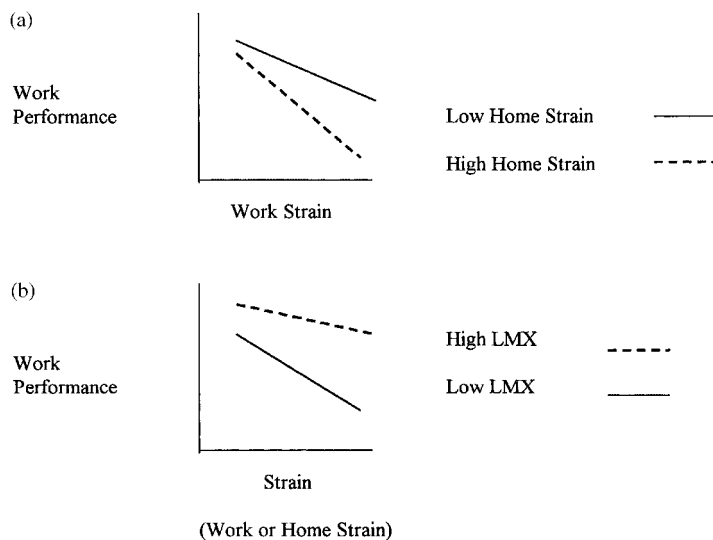


Figure 1(a). Predicted form of the interaction between work strain and home strain. (b) Predicted form of interactions between strain and LMX

specific types of relationships as moderating influences; and Beehr *et al.* (2000) suggested that researchers examine specific behaviors in particular situations. Following this advice and given the central importance of supervisors at work, we focused on the quality of the supervisor's relationship with specific employees as a moderator of the relationships proposed in hypotheses 1 and 2. When supervisors have high quality relationships with their employees, they have close working relationships characterized by high trust and confidence in the employee. Leader-member exchange (LMX) theory (Graen, 1976; Gerstner and Day, 1997) addresses this topic of relationship quality and theorizes that supervisors develop unique or particularistic relationships with each employee (Dansereau *et al.*, 1995; Dienesch and Liden, 1986; Graen and Cashman, 1975). Based on LMX theory, we propose that when supervisors know they can count on the loyalty and support of specific employees, they will treat these employees differently (perhaps sharing additional information and resources that will enhance the performance of these employees). Although we are not aware of existing research on LMX as a moderator of the strain-work performance relations, we suggest that when supervisors view their relationship with a specific subordinate in favorable terms, the positive nature of this relationship will mitigate the negative effects of strain on work performance.

Supervisors have reward and coercive power over employees. They determine pay increases, promotions, and exceptions to policies and procedures. When supervisors view employee relationships positively and when they know they can count on the employee's loyalty and support, they are more inclined to provide special consideration to these individuals. Graen and Uhl-Bien (1995) suggest that high quality supervisor-employee relationships cause supervisors to accommodate the unique needs of subordinates. This could include granting favorable work schedules, offering suggestions for how to deal with challenging work situations, or offering supportive comments when tension or conflict occurs among employees. Supervisors with high quality relationships adopt the employee's perspective, provide helpful advice, and display confidence in their work (Deci *et al.*, 1989; Dienesch and Liden, 1986). We propose that high quality LMX relationships weaken the negative effects of work strain by helping employees focus on the task and giving them confidence to perform their jobs. For example, when an employee feels pressure due to tension among peers, personal attention from the

supervisor (e.g., a comment that reinforces their personal relationship) can enhance the employee's focus on getting the work done and weaken the negative work strain–sales performance link.

Extending prior research that demonstrates high quality supervisor–employee relationships are directly related to employee creativity (Oldham and Cummings, 1996); we suggest that high quality LMX relationships will reduce the negative effect of work strain on creativity. For example, when supervisors know they can trust employees, they are non-controlling and display confidence in the employee's perspective (Deci *et al.*, 1989; Dienesch and Liden, 1986). Thus a high quality supervisor–subordinate relationship should minimize the distracting aspects of work strain (such as conflict with peers), encourage employees to think beyond the routine part of the job, and should enhance creativity. In contrast, when a supervisor–employee relationship is not high quality, supervisors are less personal and more formal (Graen and Uhl-Bien, 1995). Lacking a close and trusting relationship, employees will be more sensitive to their psychological experience of strain and less likely to try innovative approaches to their work. In sum, we hypothesized a moderating role for high quality LMX relationships relative to work strain (see Figure 1b for an illustration).

Hypothesis 4a: When supervisors have high quality relationships with employees, the negative relation between work strain and employee sales performance will be weaker, such that low LMX and high work strain result in the lowest sales performance.

Hypothesis 4b: When supervisors have high quality relationships with employees, the negative relation between work strain and employee creativity at work will be weaker, such that low LMX and high work strain result in the lowest creativity.

LMX, home strain, and employee performance

In addition, we expect that high quality LMX relationships will lessen the distracting nature of home strain and enhance both forms of work performance. When supervisors have high quality relationships with subordinates, they are more likely to allow special treatment (Graen and Uhl-Bien, 1995). We suggest that this could include flexible work hours and time-off to take care of non-work responsibilities. Special attention from the supervisor (e.g., willingness to listen to employee concerns) can help employees shift their attention back to the work. For example, if a supervisor responds empathetically to an employee's expression of concern regarding conflict between children or tension between a child and a grandparent while refocusing the employee's attention on the job, the employee may be less distracted overall by home strain and should be able to produce higher quantity sales performance. Thus we propose high quality supervisor relationships with subordinates will weaken the negative relation between home strain and sales performance.

Similarly, when supervisors express confidence in employees, this trust may lessen the distraction caused by negative feelings (Isen *et al.*, 1987) and help them produce creative work. For example, close personal relationships can generate positive feelings and may reduce the distracting nature of home strain, enhancing attentiveness to cues in the work environment. Attention to a variety of inputs, in turn, should enhance divergent thinking and creativity. Accordingly, we proposed that high quality LMX relationships will moderate the relation between home strain and employee work performance (see Figure 1b).

Hypothesis 5a: When supervisors have high quality relationships with employees, the negative relation between home strain and employee sales performance will be weaker, such that low LMX and high home strain result in the lowest sales performance.

Hypothesis 5b: When supervisors have high quality relationships with employees, the negative relation between home strain and employee creativity at work will be weaker, such that low LMX and high home strain result in the lowest creativity.

Comparison of strain relations

Thus far we have hypothesized that work strain and home strain will be related to two forms of work performance: employee sales and employee creativity. As a final step in our research, we were curious about the relative strength of home strain and work strain in predicting work performance. Since we are aware of no prior research or theory that provides adequate support for predicting specific differences, we address this issue on an exploratory basis. We pose two questions. First: Do work strain and home strain make equal contributions to the prediction of sales performance; Do work strain and home strain make equal contributions to the prediction of creativity? Second: Does work strain make equal contributions to the prediction of sales performance and creativity; Does home strain make equal contributions to the prediction of sales performance and creativity? Both of these comparisons are consistent with our theme of examining the effects of different types of strain on different aspects of performance.

In summary, we have proposed that work strain and home strain will be related to two forms of individual employee performance at work: sales performance and creativity, and that these relations will be moderated by LMX.

Method

Sample

We examined these research questions in a convenience sample of 195 stylists and their supervisors who worked for hair care salons owned and managed under one master franchise. Salons were located in six states in the Midwestern section of the United States and represented 95 per cent of the units in the organization (41 out of 43). Two salons did not participate because the organization's senior management determined that participation was not timely or appropriate. In one of these salons, the supervisor was terminally ill and in the other, the supervisor had just resigned and had not yet been replaced. Salons provided value-based hair care in local neighborhoods where (according to overall company records) individual stylists typically developed ongoing relationships with 43 per cent of their customers. Stylist compensation was based on salaries and tips; stylists did not rent space from the organization.

Stylist jobs, like most personal service jobs, differ from office jobs and from production jobs (Gutek, 1995). Cutting and styling hair requires tangible physical activity such that stylists work in close physical contact with customers. For repeat customers, stylists must remember personal hair preferences as well as the content of prior conversations. Stylists work in close physical proximity to their co-workers and have little opportunity to 'escape' or get away. In the organization we studied, the primary determinant of an individual stylist's overall performance was personal popularity with customers, based on repeat business. This is because new customers were assigned to stylists on a rotating basis, but repeat customers made appointments with specific stylists. In sum, we suggest that results of this study may have relevance to a variety of personal service jobs and perhaps to other jobs characterized by high social interdependence with clients and co-workers, but low task interdependence.

The employee sample was 97 per cent female and 46 per cent were full-time. On average, participants were 28 years old (range: 16–66) and had worked for the organization two years. Seventy-one per cent had at least one to two years of college or technical school, and 56 per cent had worked in the hair care industry for at least five years. Supervisors were 95 per cent female and 100 per cent were full-time. On average, supervisors were 30 years old (range: 22–48), had worked four years for the organization, and had ten years of total full-time work experience. Eighty per cent of the supervisors had at least one to two years of college or technical school.

Procedure

At time 1, employees completed surveys in group meetings held at company facilities which were administered as part of a larger study on work attitudes and behavior. Participants were assured their individual responses would remain confidential and that they could withdraw from the study at any time (92 per cent response rate). Two research assistants, trained by the primary researcher, conducted the meetings using identical scripts. This assured that all respondents completed their questionnaires under the same circumstances. The presence of a research assistant during data collection meetings prevented discussion of responses among employees. Employee questionnaires included measures of psychological strain and demographic characteristics.

Supervisors were not present during employee meetings to reduce potential demand factors that might influence responses. At time 1, supervisors ($n = 41$) completed questionnaires that included LMX items. Three months later, we obtained sales performance data for each stylist from organizational records. At time 2, six months after the initial surveys, supervisors completed questionnaires which included items on employee creativity. The specific timing of the data collections was determined primarily by the organization's requirements rather than by theoretical considerations. Our main objective was to obtain information from the most appropriate sources and minimize common source bias.

Variables

Since employees worked in salons with different physical locations and different supervisors, we examined the predictors and outcomes to evaluate the relative amount of variance (individual level versus salon or group level). This is important because salon location and demand could influence employee opportunity to obtain sales and because supervisors rated creativity of employee in each salon. Results of the 30° WABA test for sales performance ($E = 0.36$), creativity ($E = 0.35$), work strain ($E = 0.37$), home strain ($E = 0.35$), and LMX ($E = 0.48$) all fell below 0.58, indicating a parts within-groups condition with little between-group effect (little salon effect) (Dansereau *et al.*, 1984).

Outcome variables

We obtained individual sales performance data from corporate records and, based on management's recommendation, averaged three months of individual sales performance to even-out atypical variability in sales. Since a stylist's opportunity to obtain sales could be influenced by salon location, we standardized sales performance within each salon. Following Amabile and other creativity researchers (Amabile, 1983; Oldham and Cummings, 1996; Tierney *et al.*, 1999), we used expert ratings of creativity provided by direct supervisors of stylists (at time 2). We viewed supervisors as the best qualified raters given the centrality of creativity to the salon's mission and the regular training sessions provided by the organization on creative styling trends and novel approaches to cutting hair. Assessing creativity was an ongoing and routine aspect of the supervisor's jobs. They assessed each stylist on the following items (1 = very much does not meet performance expectations; 4 = meets performance expectations;

7 = very much exceeds performance expectations) adapted from Oldham and Cummings (1996)—‘rate this employee’s creativity in performing the job and rate this employee’s creativity in styling hair’ (Cronbach’s alpha = 0.88).

Predictor variables

We measured psychological strain at time 1, with self-report items from Brett *et al.*’s (1990) measures of home strain and work strain. Consistent with our conceptualization of strain, we selected specific items that focused only on individuals’ subjective response to perceptions of interpersonal conflict and tension. Thus, the strain items describe subjective and affective feelings; they do not describe the presence or perception of stressors in the environment. We also followed recommendations of Jex *et al.* (1992) and avoided scales and items that included the words ‘strain’ or ‘stress’ since respondents often interpret these words differently from researcher intentions. The strain scales started with the phrase ‘indicate how frequently you are bothered by the following feelings’ (1 = never, 4 = sometimes, 7 = always). Three items assessed employee’s subjective perceptions of work strain—feeling that you get into too many arguments in your work group, feeling that you have a lot of conflict in your work group, and feeling that you work under a great deal of tension (Cronbach’s alpha = 0.83); and three items assessed employee’s subjective perceptions of home strain—feeling that you get into too many arguments with your spouse/partner, feeling that you have a lot of conflict at home, and feeling that your home life has a great deal of tension (Cronbach’s alpha = 0.90).

Moderator

We assessed LMX (alpha = 0.90) at time 1, with supervisor responses to seven LMX items based on Dienesch and Liden (1986). Items included: ‘I have a close working relationship with this employee’; ‘I have a high degree of confidence in this employee’; ‘I have a high level of trust in this employee’ (1 = strongly disagree; 7 = strongly agree).

Controls

Past research has demonstrated that gender, part-time work status, and work experience can influence performance (Feldman, 1990). Thus, we controlled for work status (0 = part time; 1 = full time), gender (1 = male; 2 = female), and work experience (number of years) in our statistical tests.

Analyses

We assessed the discriminant validity of constructs with principal component factor analysis. All items loaded on the appropriate factors, primary loadings exceeded 0.60, and no cross-loadings exceeded 0.40. We tested hypotheses 1 through 5 with hierarchical regression, centering interactions per Aiken and West (1991), and illustrated interactions using GLM and marginal means (to account for the controls). To assess the exploratory research questions, we used Steiger’s (1980) z tests.

Results

Table 1 reports descriptive statistics, correlations, and Cronbach’s alpha. Before reporting results of our hypotheses, we comment briefly on the correlations reported in Table 1. First, we note the non-significant correlation between sales performance and creativity ($r = -0.08$). Second, the contrasting

Table 1. Descriptive statistics, correlations, and Cronbach's alpha

Variable	M	SD	1	2	3	4	5	6	7	8
1. Sales performance	0.00	0.86	—							
2. Creativity	4.90	1.01	-0.08	(0.88)						
3. Work strain	2.44	1.37	0.15*	-0.02	(0.83)					
4. Home strain	2.89	1.64	0.15*	-0.22‡	0.10	(0.90)				
5. LMX	5.71	0.97	0.03	0.37	-0.04	-0.08	(0.90)			
6. Work status ¹	0.13	0.34	0.15	0.11	0.02	0.08	-0.03	—		
7. Gender ²	1.98	0.14	0.07	0.03	-0.06	-0.08	0.07	-0.05	—	
8. Work experience	8.54	6.35	-0.07	-0.06	0.01	-0.16 [†]	0.09	-0.02	-0.02	—

Notes. Coefficient alpha values are reported in parentheses on the diagonal.

¹0 = Part-time, 1 = full-time; ²1 = male, 2 = female.

* $p < 0.10$; [†] $p < 0.05$; [‡] $p < 0.01$; ^{||} $p < 0.001$.

relationship of home strain with the two types of work performance (positive for sales and negative for creativity) suggests important differences in these two aspects of performance. Third, we note that the correlation of sales performance with both forms of strain is the same ($r = 0.15$). In the remainder of the discussion, we address these relationships and the results of the statistical tests of our hypotheses in more detail.

Strain and work performance

Table 2 summarizes the hierarchical regression results for work performance (sales and creativity). After accounting for the control variables (work status, gender, and work experience), the beta values for work strain ($\beta = 0.20, p < 0.05$) and home strain ($\beta = 0.25, p < 0.01$) were significant in predicting sales performance, but the direction of these relations was opposite of our prediction for H1a and H2a.

Table 2. Results of hierarchical regression for employee sales performance and creativity

Step	Variable	Sales Performance ¹			Creativity ¹		
		Beta	ΔR^2	ΔF	Beta	ΔR^2	ΔF
1.	Work status ²	0.17			0.12		
	Gender ³	-0.08			0.00		
	Work experience	-0.09			-0.09		
			0.04	1.61		0.03	0.94
2.	Work strain (WS)	0.20 [†]			0.00		
	Home strain (HS)	0.25 [‡]			-0.25 [‡]		
			0.10	6.21 [‡]		0.06	3.69 [†]
3.	LMX (LMX)	0.09			0.36		
			0.01	0.92		0.14	19.52
4.	WS × HS	-0.04			-0.05		
			0.00	0.14		0.00	0.33
5.	WS × LMX	-0.01			0.22 [†]		
	HS × LMX	-0.09			-0.15*		
			0.01	0.40		0.06	4.36 [‡]
	Overall R^2		0.16			0.29	

Notes. ¹Step by step Beta values; ²0 = Part-time, 1 = full-time; ³1 = male, 2 = female.

* $p < 0.10$; [†] $p < 0.05$; [‡] $p < 0.01$; ^{||} $p < 0.001$.

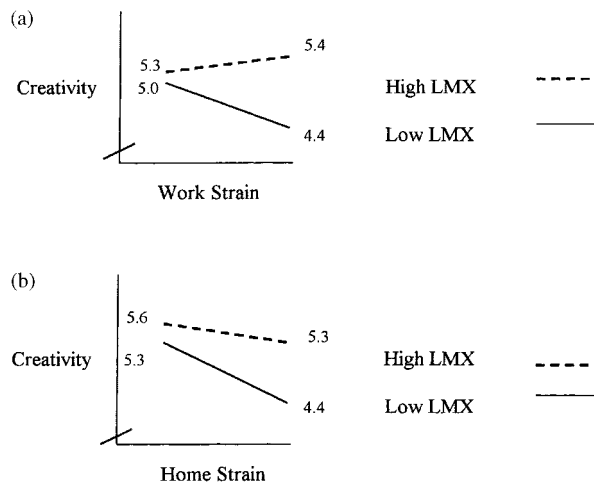


Figure 2(a). Interaction between work strain and LMX on creativity. (b) Interaction between home strain and LMX on creativity

Results do not support H1b: work strain was not related to employee creativity ($\beta = 0.00$, $p > 0.05$). Results support H2b with a significant and negative beta for home strain in predicting employee creativity ($\beta = -0.25$, $p < 0.01$). The interactions between work strain and home strain failed to reach significance (sales performance H3a: $\beta = -0.04$, $p > 0.05$; creativity H3b: $\beta = -0.05$, $p > 0.05$) and thus do not support hypothesis 3.

The interactions for LMX were not significant in predicting employee sales performance (H4a and H5a). Results for creativity, however, support hypothesis 4b and 5b. The interaction between work strain and LMX was significant ($\beta = 0.22$, $p < 0.05$), and the form of the interaction (as illustrated in Figure 2a) is consistent with our prediction. High quality LMX weakened the negative relation between work strain and employee creativity. For hypothesis 5b, the interaction between LMX and home strain approached traditional significance levels ($\beta = -0.15$, $p < 0.10$). Again, the form of the interaction (as illustrated in Figure 2b) is consistent with our prediction and shows that high quality LMX relationships weakened the relation between home strain and employee creativity.

Post hoc comparison of strain relations

For the first exploratory analyses, Steiger's (1980) z test ($z = 0.00$) indicates no statistical difference in the strength of the relation between work strain and sales performance ($r = 0.15$) compared to that of home strain and sales performance ($r = 0.15$). In contrast, results indicate that the home strain–creativity relation ($r = -0.22$) is stronger ($z = 2.10$) than the work strain–creativity relation ($r = -0.02$). For the second set of exploratory analyses, the z test ($z = -1.61$) indicates no statistical difference in the strength the relation between work strain and creativity ($r = -0.02$) versus that of work strain and sales performance ($r = 0.15$). In contrast, the home strain–creativity relation ($r = -0.22$) is stronger ($z = -3.53$) than the home strain–sales relation ($r = -0.02$). In sum, the type of strain (work versus home) made a difference for creativity (but not for sales performance) and the type of performance (sales versus creativity) made a difference for home strain (but not for work strain).

Discussion

This study contrasted work strain and home strain relations with two forms of employee work performance (sales performance and creativity) in a sample of hair care stylists. Results indicate that the role of strain depends on type of strain and the nature of the performance criterion. This suggests one possible explanation for previous inconsistent relations between strain and performance (Jex, 1998). It also indicates the benefits of future research that further examines specific forms of strain and specific aspects of work performance. We discuss four aspects of our findings that highlight the contrasting pattern of results for employee sales and creativity below.

Our first observation concerns the overall differences in the findings for sales performance versus creativity. We view these results as an initial step toward meeting Jex's challenge for research to fill the 'biggest gap in our understanding of the relation between job stress and job performance' and determining 'whether stressors have a different impact on different aspects of performance' (1998: 61). Results demonstrate contrasting main effects for the two forms of performance. Work strain and home strain were positively related to sales performance ($r = 0.15$) and home strain was negatively related to creativity ($r = -0.22$). If these findings are replicated in other samples, researchers should continue to refine their conceptualization and specification of various forms of strain and various types of performance. Future research should assess whether this contrast in main effects is unique to personal service jobs where sales and creativity are key elements of performance.

Our second observation relates to the unexpected positive sign of the relation between both types of strain and sales performance. The observations of Farr and Ford (1990) and Ford (1996) provide one possible interpretation of this finding. According to these authors, strain can cause individuals to focus on habitual actions. At work, this could mean a focus on sales performance. Since the stylists in our study had significant amounts of work experience (average = 8 1/2 years) and significant hair care experience (average = six years), it is possible that interpersonal conflict and tension at work and at home caused them to focus specifically on interacting with clients and generating sales. Similarly, attention-conflict theory (Baron, 1986) suggests that for some jobs, strain can facilitate well learned aspects of performance. Consistent with this, we suggest that strain may have caused the employees in our sample to focus on their work, thus producing high sales performance (a well-defined work behavior) with increased efficiency. Future research is needed to determine if these effects generalize to other samples, to other service jobs, and to other jobs that involve customer relationships and sales performance.

Third, continuing our discussion of the contrasting results for sales performance and creativity, we note that LMX did not have main or moderated links to sales performance. This is disappointing because sales performance is critical for the success of business organizations. We speculate that generating sales revenue is a fundamental aspect of service jobs. As such, it may be less influenced by supervisor-employee relationships and more a function of employee conscientiousness. Another possible explanation is the 'objective' nature of the sales performance data and the perceptual nature of the data on creativity. In our study, supervisors assessed their LMX relationships with employees at time 1 and rated employee creativity at time 2. Although common source issues may be a factor in these results, our primary interest was the moderating role of LMX, and supervisors assessed creativity six months after LMX. An interesting possibility for future research would be to assess LMX as a moderator following Gerstner and Day's (1997) recommendations of using both supervisor and employee perceptions of this construct.

Also related to LMX, the two interactions predicting creativity both exhibited classic 'buffering' relations, where high quality supervisory relationships mitigated the negative role of strain (both work strain and home strain). As illustrated in Figure 2a, there is no relation between work strain and creativity for those with high LMX, and the relation is negative for those with low LMX. Overall,

creativity is lowest when work strain is high and LMX is low. Figure 2b also supports our prediction and shows that LMX weakens the negative effects of home strain. This figure, however, also illustrates a subtle difference between the results for work strain and home strain. Here, the main effect for home strain is negative overall, whereas there is no overall negative main effect for work strain. This is consistent with the regression results, suggesting that home strain may be more damaging to creativity than work strain. Another possible interpretation of these interactions was suggested by one reviewer. Perhaps employee feelings of tension and interpersonal conflict (our operationalization of strain) create management problems for the supervisor. Perhaps supervisors with high quality LMX relationships with specific employees overlook high levels of employee strain when these employees demonstrate high levels of creativity on the job.

Our final observations concern the exploratory comparisons. Home strain was more strongly related to creativity (than work strain) and home strain was also more strongly related to creativity (than to sales performance). We offer the following interpretation (focusing on the differences in the two types of strain) as one possible explanation for the differences in these relations. In both comparisons with significant differences, the negative relation of home strain with creativity was stronger. Thus creativity seems to be especially sensitive to home strain. We suggest that home strain depletes employee resources, reduces the attention available for less tangible or more complex aspects of performance (Baron, 1986), and makes it more difficult for employees to consider and integrate a wide range of alternatives (Farr and Ford, 1990). Thus, the intangible aspects of creativity seem to make it especially vulnerable to high levels of home strain.

Contributions, limitations, and conclusion

This study contributes to the work performance literature because the contrasting findings for sales performance and creativity indicate the importance of differentiating quantity aspects from quality or creativity aspects of work. We recommend that future research on strain examine additional dimensions of work performance and additional types of jobs. The study also contributes to the strain literature. To date, most research on strain has focused on role conflict, role ambiguity, and well-being at work. Our study responds to the suggestions of Jex (1998) and Frone *et al.* (1997) for additional research on the effects of strain on performance. In addition, we extended prior strain research by contrasting strain relations with two aspects of performance. The study also adds to the limited prior research on spillover from home to work. We concur with Zedeck (1992) that future research should examine strain and the 'work' that occurs in family or non-work domains as well as the 'work' that occurs in the work domain.

Although our research has a number of strengths, it suffers from several weaknesses. First, lacking an experimental design, we cannot draw conclusions about causality. Perhaps those with high sales performance have high strain levels because they are overloaded by high demand for their services (Beehr *et al.*, 2000). Perhaps the stylists who are most efficient and most popular with customers generate the highest sales, but in the process also experience high levels of strain. Perhaps their strain was caused by the volume of clients they served. Perhaps those who handled the most customers and thus had high sales performance created their own strain. This would be consistent with the findings of Sutton and Rafaeli's (1988) study of convenience stores which demonstrated that staff in stores with higher sales were less friendly. In discussing this unexpected finding, Sutton and Rafaeli speculated that the pace of work in busy stores may have caused strain, heightened interpersonal conflict, and reduced friendliness of the staff. Alternatively, perhaps these stylists experienced strain at work and at home due to heavy financial needs and consequently used high sales performance to generate more income. These are interesting questions for future research.

Second, our research did not explicitly assess stressors, inter-role conflict, or the mediating process of allocating attention toward various aspects of work performance (Edwards and Rothbard, 2000; Frone *et al.*, 1997). Also, we did not examine situational factors such as work group norms or climate that can influence the relationships between strain and work outcomes (Jex and Bliese, 1999). We recommend future research that specifically examines processes that may link stressors, psychological strain, and work performance.

Third, future research is required to see if our results generalize beyond the present sample. We suggest that our findings may have relevance to other personal service jobs, to human service jobs (which are often described as high in burnout), and to jobs characterized by high social interdependence and low task interdependence. For example, this could include physical therapists, occupational therapists, masseuses, manicurists, personal shoppers, and personal fitness trainers. Results may also be relevant to other types of jobs where the multi-dimensionality of performance creates potential for within domain role conflict between competing demands for quantity of performance (such as production or output) and creativity. This could include product design and consulting jobs where employees function as individual contributors and have multiple forms of work performance. This suggests possible benefits of examining these research questions in jobs outside the service sector. Thus, even though the nature of our sample suggests boundary conditions for the generalizability of our results, findings may be relevant to a wide variety of jobs.

In summary, this research adds to our understanding of multiple roles, strain, and work performance. First, it acknowledges employee home life and demonstrates contrasting links between home strain and two aspects of work performance. Second, it indicates LMX differentially moderates the strain–creativity relations, allowing additional comparisons between the two forms of strain and the two aspects of work performance. Third, and perhaps most interesting, our results show contrasting findings for home strain versus work strain and for sales performance versus creativity.

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References

- Aiken LS, West SG. 1991. *Multiple Regression: Testing and Interpreting Interactions*. Sage: Newbury Park, CA.
- Amabile TM. 1983. *The Social Psychology of Creativity*. Springer-Verlag: New York.
- Amabile TM. 1988. A model of creativity and innovation in organizations. *Research in Organizational Behavior* **10**: 123–167.
- Applebaum E, Batt R. 1994. *The New American Workplace: Transforming Work Systems in the United States*. IIR Press: Ithaca, NY.
- Barling J. 1990. *Employment, Stress, and Family Functioning*. Wiley: Chichester.
- Baron RS. 1986. Distraction–conflict theory: progress and problems. *Advances in Experimental Social Psychology* **19**: 1–40.
- Beehr TA, King LA, King DW. 1990. Social support and occupational stress: talking to supervisors. *Journal of Vocational Behavior* **36**: 61–81.
- Beehr TA, Jex SM, Stacy BA, Murray MA. 2000. Work stressors and coworker support as predictors of individual strain and job performance. *Journal of Organizational Behavior* **21**: 391–405.
- Brett JM, Stroh LK, Reilly AH. 1990. *Impact of Societal Shifts and Corporate Changes on Employee Relocation*. Employee Relocation Council: Washington, DC.
- Campbell JP. 1990. Modeling the performance prediction problem in industrial and organizational psychology. In *Handbook of Industrial and Organizational Psychology* (2nd edn). Vol. 1, Dunnette MD, Hough LM (eds). Consulting Psychologists Press: Palo Alto, CA; 687–732.
- Cohen S. 1980. Aftereffects of strain on human performance and social behavior: a review of research and theory. *Psychological Bulletin* **88**: 82–108.
- Crouter AC. 1984. Spillover from family to work: the neglected side of the work–family interface. *Human Relations* **37**: 425–442.
- Dansereau F, Alutto JA, Yammarino FJ. 1984. *Theory Testing in Organizational Behavior: The Variet Approach*. Prentice Hall: Englewood Cliffs.
- Dansereau F, Yammarino FJ, Markham SE, Alutto JA. 1995. Individualized leadership: a new multiple-level approach. *Leadership Quarterly* **6**: 413–450.
- Deci EL, Connell JP, Ryan RM. 1989. Self-determination in a work organization. *Journal of Applied Psychology* **74**: 580–590.
- Dienesch RM, Liden RC. 1986. Leader–member exchange model of leadership: a critique and further development. *Academy of Management Review* **3**: 618–634.
- Edwards JR, Rothbard NP. 2000. Mechanisms linking work and family: clarifying the relationship between work and family constructs. *Academy of Management Review* **25**: 178–199.
- Farr JL, Ford CM. 1990. Individual innovation. In *Innovation and Creativity at Work*, West MA, Farr JL (eds). Wiley: New York.
- Feldman DC. 1990. Reconceptualizing the nature and consequences of part-time work. *Academy of Management Review* **15**: 103–112.
- Ford CM. 1996. A theory of individual creative action in multiple social domains. *Academy of Management Review* **21**: 1112–1142.
- Frone MR, Russell M, Cooper ML. 1992. Antecedents and outcomes of work–family conflict: testing a model of the work–family interface. *Journal of Applied Psychology* **77**: 65–78.
- Frone MR, Yardley JK, Markel KS. 1997. Developing and testing an integrative model of the work–family interface. *Journal of Vocational Behavior* **50**: 145–167.
- Gerstner CR, Day DD. 1997. Meta-analytic review of leader-member exchange theory: correlates and construct issues. *Journal of Applied Psychology* **82**: 827–844.
- Graen GB. 1976. Role-making processes within complex organizations. In *Handbook of Industrial and Organizational Psychology*, Dunnette MD (ed.). Rand McNally: Chicago; 1201–1245.

- Graen GB, Cashman JF. 1975. A role-making model of leadership in formal organizations: a developmental approach. In *Leadership Frontiers*, Hunt JG, Larson LL (eds). Kent State Press: Kent, OH.
- Graen GB, Uhl-Bien M. 1995. Relationship-based approach to leadership: development of leader-member exchange (LMX) theory of leadership over 25 years. *Leadership Quarterly* **6**: 219–247.
- Greenhaus JH, Beutell NJ. 1985. Sources of conflict between work and family roles. *Academy of Management Review* **10**: 76–88.
- Greenhaus JH, Parasuraman S. 1987. A work–nonwork interactive perspective of strain and its consequences. *Journal of Organizational Behavior Management* **8**: 37–60.
- Groff BD, Baron RS, Moore DL. 1983. Distraction, attentional conflict and driveline behavior. *Journal of Experimental Social Psychology* **19**: 359–380.
- Gutek BA. 1995. *The Dynamics of Service*. Jossey Bass: San Francisco.
- Howe LK. 1977. *Pink Collar Workers: Inside the World of Women's Work*. Putnam: New York.
- Isen AM, Daubman KS, Nowicki GP. 1987. Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology* **71**: 1122–1131.
- Jamal M. 1984. Job strain and job performance controversy: an empirical assessment. *Organizational Behavior and Human Performance* **33**: 1–21.
- Jamal M. 1985. Relationship of job strain to job performance: a study of managers and blue-collar workers. *Human Relations* **38**: 409–424.
- Jex SM. 1998. *Stress and Job Performance: Theory, Research, and Implications for Managerial Practice*. Sage: Thousand Oaks, CA.
- Jex SM, Beehr TA. 1991. Emerging theoretical and methodological issues in the study of work-related stress. *Research in Personnel and Human Resources Management* **9**: 311–365.
- Jex SM, Bliese PD. 1999. Efficacy beliefs as a moderator of the impact of work-related stressors: a multilevel study. *Journal of Applied Psychology* **84**: 349–361.
- Jex SM, Beehr TA, Roberts CK. 1992. The meaning of occupational strain items to survey respondents. *Journal of Applied Psychology* **77**: 623–628.
- Kabanoff B. 1980. Work and non-work: a review of models, methods, and findings. *Psychological Bulletin* **88**: 60–77.
- Kahn RL, Byosiere P. 1992. Strain in organizations. In *Handbook of Industrial and Organizational Psychology*, Dunnette MD, Hough LM (eds). 2nd edn, Vol. 3, Consulting Psychologists Press: Palo Alto, CA; 572–650.
- Kahn RL, Quinn RP. 1970. Role stress: a framework for analysis. In *Occupational Mental Health*, Mclean A (ed.). Rand McNally: New York; 50–115.
- Kelloway EK, Barling J. 1991. Job characteristics, role stress, and mental health. *Journal of Occupational Psychology* **64**: 291–304.
- Lazarus RS, Deese J, Osler SF. 1952. The effects of psychological strain upon performance. *Psychological Bulletin* **49**: 293–317.
- MacEwen KE, Barling J. 1994. Daily consequences of work interference with family and family interference with work. *Work and Stress* **5**: 244–254.
- Meisenheimer JR II. 1998. The services industry in the 'good' versus 'bad' jobs debate. *Monthly Labor Review* **121**: 22–47.
- Motowidlo SJ, Packard JS, Manning MR. 1986. Occupational stress: its causes and consequences for job performance. *Journal of Applied Psychology* **71**: 618–629.
- Oldham GR, Cummings A. 1996. Employee creativity: personal and contextual factors at work. *Academy of Management Journal* **39**: 607–634.
- Organ DW. 1977. A reappraisal and reinterpretation of the satisfaction–causes–performance hypothesis. *Academy of Management Review* **2**: 46–53.
- Parkinson B. 1991. Emotional stylists. *Cognition and Emotion* **5**: 419–434.
- Personick VA. 1987. Industry output and employment through the end of the century. *Monthly Labor Review* September; 30–45.
- Rafaeli A, Sutton RI. 1989. The expression of emotion in organizational life. *Research in Organizational Behavior* **11**: 1–42.
- Sanders GS, Baron RS. 1975. The motivating effects of distraction on task performance. *Journal of Personality and Social Psychology* **14**: 291–303.
- Sasser WE, Olsen PR, Wyckoff DD. 1978. *Management of Service Operations*. Allyn and Bacon: Boston.
- Schmitt MJ, Allscheid SP. 1995. Employee attitudes and customer satisfaction: making theoretical and empirical connections. *Personnel Psychology* **48**: 521–536.
- Scott WE. 1966. Activation theory and task design. *Organizational Behavior and Human Performance* **1**: 3–30.

- Staines GL. 1980. Spillover versus compensation: a review of the literature on the relationship between work and nonwork. *Human Relations* **33**: 111–129.
- Steiger JH. 1980. Tests for comparing elements of a correlation matrix. *Psychological Bulletin* **87**: 245–251.
- Sullivan SE, Bhagat RS. 1992. Organizational stress, job satisfaction and job performance: where do we go from here? *Journal of Management* **18**: 353–374.
- Sutton RI, Rafaeli A. 1988. Untangling the relationship between displayed emotions and organizational sales: the case of convenience stores. *Academy of Management Journal* **31**: 461–487.
- Tierney P, Farmer SM, Graen GB. 1999. An examination of leadership and creativity: the relevance of traits and relationships. *Personnel Psychology* **52**: 591–620.
- Yerkes RM, Dodson JD. 1908. The relation of strength of stimulus to rapidity of habit-formation. *Journal of Comparative Neurology and Psychology* **18**: 459–482.
- Zedeck S. 1992. *Work, Families, and Organizations*. Jossey-Bass: San Francisco.